PATENT COURT DECISIONS

Patent Court of Korea

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International IP Law Research Center
of the Patent Court of Korea

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FOREWORD

Since its opening in 1998 as the first IP-specialized court in Asia, the Patent Court of Korea has shown a significant growth both in quantitative and qualitative aspects. In 2010, the court adopted the e-Court system first in Korea and established the International IP Law Research Center, a first research center at the court level, in 2017. The International Division, which was installed in June 2018, handled the first international case in January 2019 and the second case in January 2020. Since February 2020, the number of the International Division has been expanded from one to four.

The International IP Court Conference, which was first held in 2015, is an annual event of the court designed to promote academic and cultural exchange among global experts in intellectual property laws. The fifth IPCC was held in 2019 under the theme of "Court, IP and Fairness," where IP-specialized judges and practitioners from the U.S., the U.K., Germany, Japan, China, Switzerland, and the WIPO gathered and engaged in in-depth discussions focusing on various topics of IP law: claim construction, similarity of trademarks, exhaustion of rights, and enhanced damages.

As disputes over the same IP rights take place across the globe in recent years, communication among IP-specialized judges and practitioners has become essential for harmonious resolution. To promote harmonization, the court has published and distributed "Patent Court Decisions" in English every year since 2015. Since it has been published in December every year, there were many important rulings related to patent cases in 2019, which took considerable time to select, and inevitably Patent Court Decisions Vol. 5 for 2019 was published in March 2020.

The court heard a number of IP disputes and rendered meaningful decisions in 2019. Fourteen decisions were selected to be introduced including eight patent cases, four trademark cases, and two design cases. The patent cases concern clarity doctrine in specification, written description requirement, parameter invention, numerical limitation in invention, compensation for employee invention, selection invention, pharmaceutical composition, contribution rate on patent infringement case, etc. The trademark cases deal with similarity, distinctiveness, and simple and readily available mark. The design cases examine the similarity of confectionary design and well known and famous design.

I hope the Patent Court Decisions Vol. 5 for 2019 will help readers better understand trials and practices of the Patent Court and encourage them to pay continued interest in the court.

March 2020
Director of the International IP Law Research Center
Chief Judge of the Patent Court of Korea
Seung-Young Lee

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side effects. Also, it may not be deemed that it would be difficult for a skilled person to conceive the dose specified in claim 3 of the subject invention from prior art 5 and claim 3 of the subject invention has a significant or different effect which cannot be anticipated from prior art 5.

the parties until the patent applications were filed; relationship between the parties; background of filing of patent application, etc.

And the claim for employee invention compensation under the Standards for Compensation for Employee Invention accrues "where an employer, etc. succeeds,.. to the right to acquire patent, etc..." under Article 4 of the Standards for Compensation for Employee Invention and that Articles 13, 15, 16, 17, 18, etc. stipulate the time and amount of payment thereof. Rights in the inventions succeeded before the commencement of the rehabilitation proceedings were succeeded before the commencement of the rehabilitation proceedings. Thus, the claim for employee invention compensation also accrued before the date of commencement of the rehabilitation proceedings.

In the cases where there is teaching or suggesting away in the prior art that excludes a patented invention or contents that can be generalized into the generic concept of the prior art and extended to the species of the patented invention are not disclosed in the preceding literature in which the prior art of the genus can be grasped in light of the level of technology at the time of filing, a skilled person may not be able to expect that the patented invention included in the genus disclosed in the prior art is not equally suitable as a means for achieving the same purpose. Therefore, since the content of the prior art cannot be extended to the patented invention, which is a species that cannot be expected to have a characteristic common to the species in which the technical significance is disclosed in the prior art, the strict patentability requirements of selection invention regarding inventive step should be relaxed. In other words, it is necessary to treat it as a new invention and determine the inventive step as a regular invention by returning to the basic principle, and the requirements for description of effect in the specification should be relaxed.

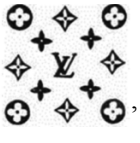
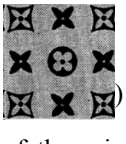
The qualitatively different effect of improving pharmacological characteristics

select, if necessary, the placement of the prestressed compound double girders at the center as in the prior art as well as placement of the girder at both ends. Thus, claim 2 of the corrected invention at Issue can be easily invented from the prior art by a skilled person. Therefore, an inventive step is denied.

Article 128(4) of the Patent Act stipulates that where a compensation for a loss is claimed by a patentee, the profits that a person who has intentionally or negligently infringed the patent has gained due to the infringement, if any, shall be deemed the loss that the patentee has sustained. Here, unless there are special circumstances, the "profits that a person who has... infringed the patent has gained due to the infringement" are the marginal profits calculated by deducting expenses additionally injected to manufacture and sell infringing products from the total sales proceeds gained from the infringing products. In this case, the contribution rate of the infringement on the patent shall be computed in light of indispensability, significance, price ratio, quantitative ratio, etc. that a part related to the infringement of the patented invention has to the entirety of the profits that the defendant gained; ① Indispensability - it cannot be viewed that a part related to the patented invention is an indispensable element in the entirety of the profits gained by way of the sales of the products practiced by the defendant. ② Significance - The patented invention is related to the response to the consumers' demand for hygiene and safety of electric pressure cookers. ③ etc - the factors, such as the defendant's promotion activity, the defendant's products, etc., contributed to the generation and increase of the sales profits. Thus, these factors shall also be considered when computing the contribution rate.

the alphabetical characters embossed in grooves of prior design 2, but also, the alphabetical characters are only the plaintiff's business name and written with a plain typeface without special designs. Thus, the subject design is one which an ordinary designer could easily create from prior design 2.

It is difficult to deem that the subject trademark(YOYO) would draw special attention from the public to overwhelm them with the awareness of "yoyo." Thus, it does not seem that a new meaning is generated or new distinctiveness is formed by exceeding the original meaning of "yoyo" with these modifications. And "yoyo" is widely recognized as a toy among parents with a baby, in light of the fact that toys titled "yoyo" are sold through online shopping malls. Thus, The subject trademark is a trademark for which it is difficult to recognize the distinctiveness of goods under social norms in relation to the baby playpens among the designated goods, or for which it is not proper for a specific person to monopolize under the public interest.

The differences in the shape of each unit figure and the existence of the logo in the subject design() and the prior trademarks ( , ) are merely minute modifications that can appear when each mark of the prior trademarks, which are well known and famous, is expressed in a design. Ultimately, the shape of the subject design is similar to each mark

and “ 

” that are indicated on the defendants’ products in that they both are composite trademarks that combined “24” which is an Arabic number and “HRS” which is the English abbreviation for ‘hours’ in uppercase. Also, their marks are identical or similar, because their sounds and meanings are identical in that both of them are referred to as the “24 HRS” or “twenty four hours” and deliver the meaning of “24 hours”. Also, the registered trademark sets various clothing and hats, such as jeans, mountain-climbing clothes, etc. as its designated goods. Since the defendants used their marks on their clothing and hats, the designated goods of the registered trademark are also identical to the products on which the defendants used their marks. Thus, the defendants infringed the trademark rights of the registered trademark by using the marks similar or identical to the registered trademark on clothing and hats that were the designated goods of the registered trademark.

PATENT COURT OF KOREA
FIFTH DIVISION
DECISION

Case No.	2017Heo4044 Invalidation (Patent)
Plaintiff	Saudi Aramco Technologies Company Saudi Arabia
Defendant	SK innovation
Date of Closing Argument	September 5, 2018
Decision Date	November 9, 2018

ORDER

1. The plaintiff's claim is dismissed.

2. The cost arising from this litigation shall be borne by the plaintiff.

PLAINTIFF'S DEMAND

The IPTAB Decision 2015Dang1754 dated April 11 2017 shall be revoked.

OPINION

1. Background

A. IPTAB Decision

1) On April 1, 2015, the defendant requested for patent

invalidation trial on the Patented Invention at Issue (hereinafter the "subject invention") under Case No. IPTAB 2015Dang1754 against the Nonlitigant Novomer Incorporated who is a patentee, arguing that an inventive step of claims 1 through 26, 29 through 34, 37 through 43, 71, and 72 before correction of the subject invention, which are described in Paragraph B shown below are denied by compared inventions 1, 3, 4 and 5.[1)]

2) On April 11, 2017, the IPTAB acknowledged that the said request for correction was granted. The IPTAB decided to grant the defendant's request for trial on the grounds that an inventive step of the following claims are denied, because the person having ordinary skill in the art (hereinafter a "skilled person") can easily invent the following claims as follows: corrected claims 1 through 15, 19, 20, 25, 29 through 33, 71 and 72 from the compared invention 1; corrected claims 16 through 18, 21, 22, 24 and 26 by combining the compared inventions 1 and 3 or 1 and 4; corrected claim 23 by combining the compared inventions 1 and 5; and corrected claims 34, 37 through 43 from the compared invention 1 or by combining the compared inventions 1 and 3 or 1 and 4 or 1 and 5.

3) On June 7 2017, Novomer Incorporated assigned the patent at issue (hereinafter the "subject patent") to the plaintiff and registered the transfer for the plaintiff.

B. Subject Invention (Plaintiff's Exhibits 2, 4)

1) Title of invention: Polycarbonate polyol compositions and

1) These are the same as the prior art 1, 3, 4 and 5 at issue, respectively.

methods

2) Date of claimed priority/ international filing date/ date of registration/ registration number: September 8, 2008/ September 8, 2009/ July 29, 2014/ No. 1426410

3) Claims (as corrected by the petition for correction dated October 21, 2015)[2)]

[Claim 1] A polymerization system for copolymerizing CO_2 and epoxides and providing aliphatic polycarbonate polyol, comprising: a metallosalenate metal complex; and a chain transfer agent having two or more sites that can initiate copolymerization of metallosalenate metal complex, CO_2 and epoxides, wherein the chain transfer agent has a structure of Y-A-(Y)n, wherein each —Y group is a functional group capable of independently initiating a chain growth of epoxides CO_2 copolymers and each Y group may be the same or different, wherein -A- is a covalent bond or a multivalent moiety, characterized in that n is an integer of 1 through 10, inclusive, wherein the chain transfer agent exists in the molar ratio of 50:1 through 1,000:1 against metal complex, wherein that the aliphatic polycarbonate polyol has at least 90% carbonate linkages, wherein that a number average molecular weight is 500g/mol through 15,000g/mol and wherein at least 98% of the end groups are –OH groups (hereinafter, the "Claim 1 Invention at Issue"; hereinafter the same shall apply; hereinafter each claim shall be commonly referred to as the "Patented Invention at Issue").

[Claims 2 through 26] Omitted (All claims are dependent claims that cite the Claim 1 Invention at Issue directly or

2) The underlined part is what was added by the correction dated October 21, 2015.

indirectly).

[Claims 27, 28] Deleted

[Claims 29 through 33] Omitted (All claims are dependent claims that cite the Claim 1 Invention at Issue directly or indirectly).

[Claim 34] A method of synthesizing aliphatic polycarbonate polyol, the method comprising: a) contacting, under the existence of CO_2, a reaction mixture that contains one or more epoxides to a polymerization system under one of Claim 1 through 26 and Claim 29 through 33 (here, the molar ratio of metal complex to epoxides shall be within a scope of 1:100 through 1:1,000,000); b) proceeding with a polymerizing reaction until the aliphatic polycarbonate polyol is formed (here, at least 98% of end groups are hydroxyl groups in an aliphatic polycarbonate polyol composition); and c) terminating the polymerization in b), wherein a number average molecular weight is 500g/mol through 15,000g/mol and wherein at least 98% of the end groups are –OH groups.

[Claims 35, 36] Deleted

[Claims 37 through 43] Omitted (All claims are dependent claims that cite the Claim 34 Invention at Issue directly or indirectly).

[Claims 44 through 70] Deleted

[Claims 71] A polymerization system for the copolymerization of CO_2 and epoxides and , the system comprising: A polymerization system for copolymerizing CO_2 and epoxides and providing aliphatic polycarbonate polyol, comprising: a chain transfer agent having two or more sites that can initiate copolymerization of metallosalenate metal complex, CO_2 and epoxides, characterized in that the chain transfer agent has a structure of Y-A-(Y)n, wherein each —Y group is a functional group capable of independently initiating a chain growth of

epoxides CO_2 copolymers and each Y group may be the same or different, wherein -A- is a covalent bond or a multivalent moiety, characterized in that n is an integer of 1 through 10, inclusive, wherein the chain transfer agent exists in the molar ratio exceeding 1,000:1 against metal complex, wherein that the aliphatic polycarbonate polyol has at least 90% carbonate linkages, wherein that a number average molecular weight is 500g/mol through 15,000g/mol and wherein at least 98% of the end groups are –OH groups.

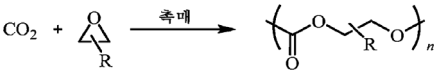
[Claim 72] Omitted (This claim is a dependent claim that cites the Claim 1 Invention at Issue directly).

[Claims 73 through 140] Deleted

4) Summary of Invention

A) Technical Field and Problem in Conventional Technology

▸ Aliphatic polycarbonate can be easily synthesized by copolymerization of carbon dioxide and epoxides as illustrated in Scheme 1 ([0007]).

▸ Scheme 1 

([0008])

▸ Recently, there are several catalytic systems utilized for such synthesis, namely: heterogeneous catalyst systems based on zinc or aluminum salts; double metal cyanide (DMC) catalysts; and homogeneous catalysts based on coordination complexes of transition metals or aluminum ([0009]).

▸ The catalytic systems using heterogeneous zinc or aluminum salts are …… generally not suitable for producing polyol resins with the low molecular weights and narrow polydispersity demanded by many applications. The catalysts are of relatively low activity and produce high molecular weight polymer with broad polydispersity. Additionally, the polycarbonate produced by these catalysts have a significant proportion of ether linkages in the chain which can be

undesirable in certain applications ([0010]).

- A second class of catalysts for the polymerization of epoxides and CO_2 are the double metal cyanide (DMC) catalysts …… However, these catalysts produce polymers having a high proportion of ether linkages and the materials they produce are more properly regarded as polycarbonate-polyether copolymers rather than as aliphatic polycarbonate per se ([0011]).
- A more recently developed class of catalysts is based on coordination complexes of aluminum or a variety of transition metals, particularly complexes of cobalt, chromium and manganese... However, at high conversions under standard conditions, these catalysts produce high molecular weight polymers that are not suitable for many polyol applications. Additionally, using these systems, it has not been practical to synthesize polycarbonate polyol having a high percentage of hydroxyl end-groups ([0012]).

B) Task to be Solved

- The other factor disfavoring the use of these catalytic systems to produce polyol resins is the fact that they produce high molecular weight polymer when taken to high conversions. Typical molecular weights are in the range of 20,000 to 400,000g/mol and this is well above the molecular weight range desired for most polyol resin applications. Potential strategies to produce lower molecular weight materials include: stopping the polymerization at low conversion; using high catalyst concentrations; degrading the high molecular weight polymer to shorter chains; or using chain transfer agents (CTAs) such as alcohols during the polymerization. Stopping the reaction at low conversion or increasing the catalyst concentration are undesirable due to cost considerations and added difficulties in purification occasioned by the increased concentration of catalyst-derived contaminants in the crude polymer. Degradation of higher molecular weight polymers to produce low molecular weight resins leads to increased poly dispersity, adds additional

steps to the production process, and leads to contamination with cyclic by-products. Chain transfer agents can be successfully employed to lower the molecular weight of the polymer without a significant increase in cost or contamination. However, this strategy does not alleviate the problem of non-hydroxyl end groups since polymer chains initiated by chain transfer agent will still have one end capped with a non-hydroxyl moiety (i.e. an ether corresponding to the alcohol used as the CTA) ([0017]).

▸ As such, there remains a need for catalysts and methods that are capable of efficiently producing polycarbonate polyol having high carbonate content ([0018]).

C) Task Solution

▸ In one aspect, the present specification encompasses polymerization systems for the copolymerization of CO_2 and epoxides comprising: 1) a metal complex including a metal coordination compound having a permanent ligand set and at least one ligand that is a polymerization initiator, and 2) a chain transfer agent having two or more sites that can initiate polymerization ([0020]).

▸ In some aspects, a ligand that is a polymerization initiator has two or more sites capable of initiating polymerization, this variation leads to polycarbonate polyol with an extremely high proportion of —OH end groups. In certain aspects, the chain transfer agent and the ligand that is a polymerization initiator are the same molecule (or ionic forms of the same molecule) ([0021]).

C. Prior Arts

1) Prior art 1 (Plaintiff's Exhibit 6)

This relates to the "Polycarbonate made using highly selective catalysts" posted in U.S. Patent Official Gazette No. 2006-0089252 published on April 27, 2006. Its main contents are omitted.

2) Prior art 2 (Defendant's Exhibit 1)

This relates to the method for producing a copolymer of alkylene oxide and carbon dioxide and an invention for copolymers posted in Japanese Patent Official Gazette No. 2008-081518 published on April 10, 2008. Its main contents are omitted.

3) Prior art 3 (Plaintiff's Exhibit 7)

This relates to the "Complex compound containing two components in a molecule and method of producing polycarbonate by copolymerization of carbon dioxide and epoxides using the same" posted in Korea Registered Patent Official Gazette No. 10-0853358 published on August 21, 2008. Its main contents are omitted.

4) Prior art 4 (Defendant's Exhibit 2)

This relates to a paper titled "A Highly Active and Recyclable Catalytic System for CO2/(Propylene Oxide) Copolymerization" supplements to Angew. Chem. Int. Ed. 2008, 47, pp. 7306~7309, disclosed online on August 11, 2008. Its main contents are omitted.

5) Prior art 5 (Defendant's Exhibit 3)

This relates to a paper titled "Selective Formation of Polycarbonate over Cyclic Carbonate : Copolymerization of Epoxides with Carbon Dioxide Catalyzed by a Cobalt (III) Complex with a Piperidinium End-Capping Arm" disclosed online on October 6, 2006. Its main contents are omitted.

6) Prior art 6 (Defendant's Exhibit 4)

This relates to the "Method of producing high molecular weight polycarbonate" posted in U.S. Patent Official Gazette No. 3,248,415 published on April 26, 1966. Its main contents are omitted.

7) Prior art 7 (Defendant's Exhibit 5)

This relates to the "Method of producing Poly (alkylene carbonates)" posted in U.S. Patent Official Gazette No. 4,686,276 published on August 11, 1987. Its main contents are omitted.

8) Prior art 8 (Defendant's Exhibit 6)

This relates to the "Process of producing polycarbonate from epoxy compound and CO2" posted in U.S. Patent Official Gazette No. 4,826,953 published on May 2, 1989. Its main contents are omitted.

9) Prior art 9 (Defendant's Exhibit 7)

This relates to the "Method of producing carbonate copolymers" posted in Japanese Patent Official Gazette No. 2575199, registered on October 24, 1996. Its main contents are omitted.

10) Prior art 10 (Defendant's Exhibit 8)

This relates to the "Porphyrin Aluminium Complex" posted in Japanese Patent Official Gazette No. 2691014, registered on August 29, 1997. Its main contents are omitted.

11) Prior art 11 (Defendant's Exhibit 9)

This relates to the "Formation of polyol polymer with a narrow polydispersity using double metal cyanide (DMC) catalysts" posted in Korea Registered Patent Official Gazette No. 10-2005-0113651 published on December 2, 2005. Its main contents are omitted.

12) Prior art 12 (Defendant's Exhibit 10)

This relates to a paper titled "Copolymerization of Carbon Dioxide and Propylene Oxide with Zinc Glutarate as Catalyst in the Presence of Compounds Containing Active Hydrogen" posted in Journal of Applied polymer Science, Vol. 104, pp. 15-20 disclosed online on

December 27, 2006.

13) Prior art 13 (Defendant's Exhibit 11)

This relates to the "Copolymerization of propylene oxide and carbon dioxide and polymerization of propylene oxide" posted in U.S. Patent Official Gazette No. 2008/0051554 published on February 28, 2008. Its main contents are omitted.

[Factual Basis] Undisputed facts, statements in Plaintiff's Exhibits 1 through 7 and Defendant's Exhibits 1 through 11, and the purport of the overall argument

2. Whether IPTAB Erred

A. Summary of Parties' Arguments and Summary of Questions

The defendant argues the followings: since the subject invention does not clarify a method of confirming whether "at least 98% of all end groups are ⁻OH groups," the subject invention violates Article 42(4)(ii) of the old Patent Act (before amendments were made to Law No. 10716 on May 24 2011, the same shall apply); since a skilled person cannot easily practice only based on what is described in the specification of the subject invention, the subject invention violates Article 42(3) of the old Patent Act; and since a skilled person can easily invent the subject invention based on prior art 1 alone or based on the combination of prior arts 1 with 6 or the combination of Prior Arts 1 and 8, an inventive step of the subject invention is denied and thus the patent thereof must be invalidated in its entirety.

In this regard, the plaintiff argues the followings: since, in the subject invention, whether "at least 98% of all end groups are ⁻OH groups" can be clearly calculated by the starting material calculation method commonly used in the art, its meaning is not unclear; the

specification of the subject invention describes the subject invention such that a skilled person can easily practice the subject invention; an inventive step of the subject invention is not denied by the prior arts that the defendant argues.

Thus, the issues in this case are whether the subject invention is deficient of description and whether an inventive step of the subject invention is denied based on Prior Art 1 alone or based on the combination of Prior Arts 1 and 6 or the combination of Prior Arts 1 and 8.

B. Whether the Subject invention Violates Article 42(4)(ii) of the Old Patent Act

1) Relevant law

Article 42(4)(ii) of the old Patent Act stipulates that each claim shall describe an invention clearly and concisely. Also, Article 97 of the old Patent Act stipulates that the scope of protection of the patented invention shall be determined by the descriptions of the claims. Thus, only clear descriptions are allowed for claims and a term that unclearly indicates the composition of an invention shall, in principle, not be allowed. Also, whether an invention is clearly describe shall be determined on a case by case basis depending not on the terms used in the claims but on whether a skilled person could clearly understand an invention to be patented in light of statements in the descriptions of an invention, drawing, etc. and a common sense in the technology at the time of filing of an application (See., e.g. Supreme Court Decision 2014Hu1563, decided April 7, 2017).

2) Analysis

A) Technical features of the subject invention

The technical features of the subject invention are as follows: the

metallosalenate metal complex (hereinafter, “element 1”); the chain transfer agent in a structure of Y-A-$(Y)_n$ which can initiate the copolymerization of CO_2 and epoxides (hereinafter, “element 2”); the molar ratio in a certain range (50:1 through 1,000:1 for claims 1 through 26, claims 29 through 34, claims 37 through 43, claim 72 and over 1,000:1 for claim 71) of the chain transfer agent to the metallosalenate metal complex in an aliphatic polycarbonate polyol polymerization system containing elements 1 and 2 (hereinafter, “element 3”); the aliphatic polycarbonate polyol that is produced by this polymerization system shall have carbonate linkages of at least 90% (hereinafter, “element 4-1”); A number average molecular weight is 500 g/mol through 15,000 g/mol (hereinafter, “element 4-2”); and at least 98% of end groups are −OH groups (hereinafter, “element 4-3”).

B) Clarity of Element 4-3

In light of statements in Plaintiff’s Exhibits 2, 4, 22, 23, 26, Defendant’s Exhibits 17, 19, 20 (including hyphenated numbers, if any) and the purport of the overall argument, the following facts and circumstances can be established: Even if, in the subject invention, different values could be derived for the “-OH group content of chain end” depending on the methods and conditions for measurement, the specification of the subject invention does not disclose any concrete method to measure its content; It is difficult to view that a skilled person could easily perceive, through the descriptions in the specification of the subject invention, that the “-OH group content of chain end” is calculated by the starting material calculation method that the plaintiff argues or that the starting material calculation method was commonly used in the art to measure the “-OH group content of chain end” at the time of filing of an application for the subject invention; and even under the statements in the specification of the subject invention and the common sense in the technology at the time of filing of an application for the subject invention, it is impossible to specify the method to measure “-OH group content of chain end.”

Also since the subject invention aims, for the object of patent, only the polymerization system under which the properties of polycarbonate polyol produced from the polymerization system that satisfies elements 1, 2 and 3 of the subject invention meets the numerical limitations of elements 4-1, 4-2 and 4-3 or the method of producing polycarbonate polyol, each numerical limitation would have very significant meaning compared to other inventions, when determining the scope of its protection. Thus, it would be reasonable to view that element 4-3 of the subject invention, in other words, "at least 98% of end groups are ⁻OH groups" cannot confirm the specific technical scope or limitation and thus falls within the statements that make an invention ambiguous.

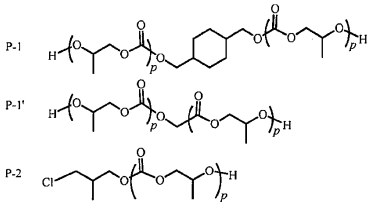
(1) As to the ⁻OH groups content of chain end that element 4-3 limits, the specification of the subject invention (Plaintiff's Exhibit 2) describes as follows:

> In certain aspects, the polycarbonate polyol compositions described above include mixtures of several chain types. In general, these chain types may be classified into two categories: namely, a first category including chains denoted as P^1 having two or more —OH end groups and a second category of chains denoted as P^2 having only one —OH end group per chain. As described above, in some aspects, compositions of the present invention have at least 90% of the polymer chain ends terminating with —OH groups. As such, chains that fall within the first category generally make up a predominance of the chains present in the compositions ([0292]).
>
> In some aspects, each of these sources of chains P^1 may have a different structure and the compositions may include several types of P^1 chain (e.g. type P^1 derived from the chain transfer agent, type P^1 derived from polyfunctional initiating ligands, and type P^1 derived from polyfunctional anions present on a co-catalyst).... Chains of type P^2 may arise from monofunctional initiating ligands present on the metal complexes or from monofunctional anions present on ionic co-catalysts ([0302], [0303]).
>
> In some aspects, polymer compositions of the present invention are characterized in that at least 90% of the chains ends are —OH. In certain

aspects, at least 90% of the chains in a polymer composition are of type P^1. In other aspects, there are two or more distinct types of P^1 chain present. In certain aspects, there are several types of P^1 chains present, but at least 80% of the P1 chains have one structure with lesser amounts of one or more P^1 chain types making up the remaining 20%. In certain aspects, polymer compositions of the present invention include more than 95% chains of type P^1. In other aspects, polymer compositions of the present invention include more than 97% chains of type P^1. In certain aspects, polymer compositions of the present invention include more than 99% chains of type P^1 ([0305], [0306]).

It should be noted that in certain aspects, polymer compositions of the present invention characterized in that at least 90% of the chains ends are —OH groups may include mixtures having less than 90% chains of type P^1, as for example when a chain transfer agent capable of initiating three or more polymer chains is used. For example, where a triol is used as the chain transfer agent, if 80% of the chains result from initiation by the triol (3-OH end groups per chain) and the remaining 20% of chains have only one —OH end group, the composition as a whole will still contain greater than 90% OH end groups (92.3%) ([0307]).

The polycarbonate polyol composition thus obtained consists predominantly of three types of polymer chains: chains P^1 arising from initiation by the cyclohexanedimethanol, chains $P^{1'}$ arising from initiation by the glycolic acid (L_I) and chains P^2 arising from the chloride counterion on the PPN co-catalyst:



Here, each p is on average approximately 20 through 21. In this particular composition, the ratio of P^1 to $P^{1'}$ to P^2 is approximately 89:1:1. The polycarbonate polyol composition contains approximately 99% OH end groups ([0439]~[0443]).

According to statements in the specification of the subject invention, it can be known that, when the ratio of P^1, $P^{1'}$ and P^2 is 89:1:1, the

content of OH end groups is about 99%. However, the specification of the subject invention does not specify how the content of OH end groups is measured.

(2) The ratio of the content of ⁻OH end groups to end groups cannot confirm an absolute value of polymer materials by nature and only a relative value is estimated through analysis methods, such as H-NMR spectrometry, titrimetry, infra-red analysis, etc. Thus, a measured value for the same material may be different depending on the measuring method.

(3) In this regard, the plaintiff argues that the subject invention calculates the content of OH end groups by the starting material calculation method.

However, in light of the following facts and circumstances, it would be difficult to deem that a skilled person can understand, through statements in the specification of the subject invention, that the content of OH end groups in the subject invention is calculated by the starting material calculation method. Also, there is no statement, in the specification of the subject invention, with which it can be deemed that the content of OH end groups is calculated by the starting material calculation method. Thus, the plaintiff's argument on this point is without merit.

① The starting material calculation method that the plaintiff argues is as follows: the content of OH end groups = the number of chain end OH / the number of all chain ends × 100. In other words, the content of OH end groups = (the number of chain end OH derived from chain transfer agent + the number of chain end OH derived from catalyst) / (the number of chain end derived from chain transfer agent + the number of chain end derived from catalyst) × 100. The number of chain end OH derived from catalyst is derived from the number of anion of metal complex (metallosalenate) and co-catalyst and the number of chain end OH derived from chain transfer agent is derived from the number of functional groups of chain transfer agent. Thus, these numbers assume that the ratio of

chain transfer agent, metal complex (catalyst) and co-catalyst which are the starting materials is the same as the ratio of each polymer generated therefrom.

Then, in case of embodiment 1, the ratio of 1.4 − metallosalenate (chain transfer agent), E1 (catalyst) and $PPN^{+}Cl^{-}$ (co-catalyst) which are the starting materials is "3.1 mmol : 0.04 mmol : 0.04 mmol", in other words "77.5 : 1 : 1." However, the ratio of P^{1}, $P^{1'}$ and P^{2} that are polymers produced therefrom is "about 89 : 1 : 1," which is different from the ratio of starting materials.

In case of embodiment 2, the ratio of profaxylated pentaerythritol (chain transfer agent), E2 (catalyst) and $PPN^{+}Cl^{-}$ (co-catalyst) which are the starting materials is "1.4 mmol : 0.07 mmol : 0.08 mmol", in other words "20 : 1 : 1.1" However, the ratio of P^{1a}, P^{2a} and P^{2} that are polymers produced therefrom is "about 20 : 1 : 1," which is different from the ratio of starting materials.

In case of embodiment 15, the ratio of paraformaldehyde (chain transfer agent), E2 (catalyst) and $PPN^{+}Cl^{-}$ (co-catalyst) which are the starting materials is "0.04 mmol : 0.016 mmol : 0.016 mmol", in other words "2.5 : 1 : 1" However, the ratio of P^{1a}, P^{2a} and P^{2} that are polymers produced therefrom is "about 2 : 1 : 1," which is different from the ratio of starting materials.[3)]

② In case of embodiment 1, the specification of the subject invention states that "the polycarbonate polyol composition thus obtained consists predominantly of three types of polymer chains: chains P^{1} arising from initiation by the cyclohexanedimethanol, chains $P^{1'}$ arising from initiation by the glycolic acid (L_I) and chains P^{2} arising from the chloride counterion on the PPN co-catalyst: …… In this particular composition, the ratio of P^{1} to $P^{1'}$ to P^{2} is approximately 89 : 1 : 1. The polycarbonate polyol composition contains approximately

3) However, in case of embodiments 7 through 14, the ratio of chain transfer agent, catalyst and co-catalyst which are the starting materials is identical to the ratio of each polymer produced therefrom.

99% OH end groups" ([0439]-[0443]). Embodiment 2 is also stated in the same format. Also, in case of embodiments 7 through 14, the specification of the subject invention states that "the polymer contained no detectable ether linkages and had greater than 98% —OH end groups. The polycarbonate polyol composition thus obtained …… In this particular composition, the ratio of P^{1a} to P^{2a} to P^2 is approximately 50 : 1 : 1." Embodiment 15 is also stated in the same format. Furthermore, in case of Embodiment 16, the specification only specifies that "the ratio of P^{1a} to P^{2a} to P^2 is approximately 2 : 1 : 1" but do not definitely specify the content of –OH end groups.

In light of the following facts, a skilled person might understand that the ratio of polymers stated in the specification of the subject invention or the content of OH end groups is calculated from actually measured values: that the ratio of polymer to the polycarbonate polyol thus "obtained" or the content of OH end group is stated; moreover, the term "medicine" is added to the ratio of polymer produced or the content of OH end groups and the ratio or the content is expressed as an approximate value; in case of embodiments 7 through 14, the ratio of P^{1a}: P^{2a}: P^2 is specified as "approximately 50 : 1 : 1" and only the following is specified: "the polymer …… had greater than 98% —OH end groups."[4]; and in case of embodiment 16, the content of OH end groups is not specified.

③ As to the statement to the effect that "where a triol is used as the chain transfer agent, if 80% of the chains result from initiation by the triol (3-OH end groups per chain) and the remaining 20% of chains have only one -OH end group" in the statements in [0307] in the specification of the subject invention, according to the starting material calculation method that the plaintiff argues, the

4) In case of embodiments 7 through 14, the content of –OH end groups is 98.08%, according to the starting material calculation method. However, the specification in the subject invention only specifies, as examined above, that "he polymer have greater than 98% —OH end groups."

content of OH end groups would be 92.86% ((80×3+20×1)/(80×3+20×2)×100). However, the content is stated as 92.3% in [0307] in the specification of the subject invention. Even in light of the facts stated above, it would b difficult for a skilled person to know the fact that the content of OH end groups in the subject invention was obtained from the starting material calculation method.

④ In this regard, the plaintiff argues that, since the "starting material calculation method" is frequently used in the art as the calculation method, a skilled person could understand the fact, from the specification of the subject invention, that the content of OH end groups is calculated by the starting material calculation method.

However, the following evidences that the plaintiff submitted to support the arguments stated above were disclosed after the filing date of application of the subject invention: paper of Professor F (p. 131 and thereafter of Plaintiff's Exhibit 22); and each disclosed patented invention whose application the defendant and Industry-Academic cooperation Foundation of Ajou University jointly filed[5] (Plaintiff's Exhibits 23-1 and 23-2). Thus, it is difficult to acknowledge, only with these evidence, that the "starting material calculation method" was commonly used measuring method in the art as of the filing date of application of the subject invention. Moreover, the paper of Professor F does not directly mention the calculation of content of $^{-}$OH end groups but only state that the ratio of polymer chain is decided depending on the ratio of chain transfer agent (CTA) and catalyst. Likewise, Plaintiff's Exhibits 23-1 and 23-2 do not mention about the calculation of content of $^{-}$OH en groups but only state that the ratio of P^1 polymer chain to P^2 polymer chain is identical to the ratio of chain transfer agent to catalyst X anion (Table 1, [0105], [0107] and Drawing 1 of Plaintiff's Exhibits 23-1 and 23-2).

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5) Since Professor F is one of the inventors, it may be viewed that this is the literature by the same subject as the paper of Professor F in Plaintiff's Exhibit 22.

Thus, the plaintiff's argument on this point is without merit.

⑤ Furthermore, it is required to know the content of each OH end group in chain transfer agent, catalyst and co-catalyst which are the starting materials in order to calculate the content of OH end groups in the subject invention by the starting material calculation method. As examined above, since there are various methods to calculate the content of OH end groups and the content can differ depending on the measuring method, the measuring method shall be specified. However, the specification of the subject invention has no mention about a method to calculate or measure the content of the OH end groups of chain transfer agent and catalyst which are the starting materials or the content of anions. Also, there is no evidence with which it can be acknowledged that there was a measuring method commonly used in the art.

In this respect, the plaintiff argues that, in case of chain transfer agent and catalyst on the market, the content of OH end groups or anions is marked as a specific value or can be confirmed from their manufacturer. The plaintiff also argue that a final user can measure or calculate the content properly.

However, in light of statements in Defendant's Exhibits 19, 20 and purport of the overall argument, the followings are confirmed: even in case of "H" or "I" product mentioned in the specification of the subject invention as a commercial product of chain transfer agent ([0333]), an amount of OH end groups is specified not as one value but as a certain range; and in case of "H" product, it is acknowledged that it contains a monofunctional polymer without functional group and a small amount of polymer. According to these established facts, it seems that it would be difficult for a skilled person to confirm, as one value, an amount of OH end groups or anions of chain transfer agent and catalysts which are the starting materials.

Also, Plaintiff's Exhibit 26 which seems that the plaintiff submitted to support the above argument does not specify how an amount of OH end groups was measured. As examined above, these measured values

can also differ depending on the measuring method. However, the specification of the subject invention mentions nothing about how to measure an amount of OH end groups or anions of chain transfer agent and catalyst which are the starting materials.

Furthermore, there is no evidence to support the fact that manufacturers provide $^{-}$OH contents measured under the same standards. Thus, in case where an user manufactures his/her own chain transfer agents, it cannot be known under what standards $^{-}$OH contents shall be measured.

Therefore, the plaintiff's argument on this point is also without merit.

3) Summary of analysis results

As examined above, as the subject invention does not specify how to measure the content of OH end groups in element 4-3, the detailed technical scope or limit cannot be specified.

As the subject invention does not describe an invention clearly, the subject invention violates Article 42(4)(ii) of the old Patent Act. Thus, the patent shall be invalidated.

C. Whether the Subject Invention Violates Article 42(3) of the Old Patent Act

1) Relevant law

Article 42(3) of the old Patent Act stipulated that "the detailed description of an invention shall clearly detail the invention under the description method prescribed by the Knowledge Economy Ministry ordinance in such manner that a skilled person can easily practice the invention."[6] This is to clarify the technical contents and scope to be

6) Article 21(3) of the Enforcement Rules of the old Patent Act (before amendments were made to Knowledge Economy Ordinance No. 189, on

protected by the patent by disclosing the contents of an invention for which a patent application is filed such that a third party can easily know the said contents only with the specification. Thus, the said provision requires the specification to be detailed such that a skilled person can understand and practice the relevant invention accurately with the statements of the specification without excessive experiments or special knowledge in terms of technical level at the time of filing of a patent application (See., e.g. Supreme Court Decision 2003Hu2072, decided November 24 2006, Supreme Court Decision 2010Hu2582, decided October 13 2011). Also, the term "practice" of an invention in an "invention of a product" refers to an act to produce, use, etc. the said product. Thus, where the specification fails to state matters regarding the production, use, etc. of the whole products specified in the claims of the relevant invention to a degree stated above, it may not be deemed that the written description requirement prescribed by the said provision is satisfied. Thus, as to an invention of a product that indicates a range of elements as numerical values, it is not required for its embodiments to illustrate the whole numerical range stated in the claims. However, where a skilled person cannot produce or use the product on the whole numerical range only with the statements in the specification without conducting excessive experiments or adding special knowledge in terms of the technical level at the time of filing of patent application (See, e.g., Supreme Court Decision 2013Hu525, decided September 24 2015).

2) Analysis

A) As examined above, the subject invention does not specify,

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June 23 2011; hereinafter the same shall apply) prescribes that the detailed description of an invention shall include the "technical field, task to be solved, task solution and other matters required for a skilled person to easily understand the invention."

in element 4-3, a method to measure the content of OH end groups. If these circumstances are viewed from a perspective of the enablement requirement for an invention, a skilled person cannot easily know, only with matters stated in the specification of the subject invention, whether the content of OH end groups of polycarbonate polyol produced falls within a scope of numeric value limited in the subject invention and a skilled person will have to conduct excessive experiments or add special knowledge to confirm the same. In this respect, it would be reasonable to deem that the subject invention violates Article 42(3) of the old Patent Act.

B) In light of the following facts and circumstances established by the evidences shown above, it seems that a skilled person cannot produce the product over the whole range of numeric values in the subject invention only with the statements in the specification without conducting excessive experiments or adding special knowledges, except very few embodiments stated in the specification of the subject invention. Thus, in this respect, it seem reasonable to view that the subject invention violates Article 42(3) of the old Patent Act.

(1) The subject invention relates to the aliphatic polycarbonate polyol polymerization system containing chain transfer agents in a structure of Y-A-$(Y)_n$ that initiate the copolymerization of metallosalenate metal complexes, CO_2 and epoxides. Element 1 contains the whole metallosalenate metal complexes. Element 2 contains the chain transfer agent in a structure of Y-A-$(Y)_n$ with many sites that can initiate the copolymerization of CO_2 and epoxides. Element 3 combines elements 1 and 2. The number of embodiments for element 3 is more than thousands and in reality the said number can be more than hundreds of thousands or several millions. The subject invention limits its claims, from a number of polymerization system that combines the metallosalenate metal complexes and Y-A-$(Y)_n$ structure, to the polymerization system in which the

polycarbonate polyol satisfies elements 4-1, 4-2 and 4-3 or a method of polymerizing polycarbonate polyol by these polymerization system. In other words, even if elements 1, 2 and 3 are satisfied, it does not mean that elements 4-1, 4-2 and 4-3 are satisfied automatically.

Moreover, the subject invention states that, in chain transfer agent $Y\text{-}A\text{-}(Y)_n$, n is an integer of 1 through 10. The specification of the subject invention states more than tens of possible combination of chain transfer agents and at least hundreds of combination of metal complexes. However, in embodiments 1 through 16, only one case is stated in which n is 3 in a chain transfer agent $Y\text{-}A\text{-}(Y)_n$ and in all the remaining cases, n is 1. And only 3 types of metal complexes are stated. Thus, a skilled person can know, through the specification of the subject invention, only some limited combinations of metal complexes and chain transfer agents and cannot know other combination of elements 1 with 2 which can satisfy the numerical range of the subject invention.

After all, a skilled person shall perform the followings to practice the subject invention: to select one from numerous metallosalenate metal complexes and one from many chain transfer agents in a structure of $Y\text{-}A\text{-}(Y)_n$; to set the molar ratio of chain transfer agent and metal complex to limited ranges of element 3, i.e. 50:1 through 1,000:1 or more than 1,000:1 and then to produce polycarbonate polyol; to check with H NMR or C NMR spectrometry whether the carbonate linkages of produced polycarbonate polyol is more than 90%; to check a number average molecular weight with GPC; and to check whether at least 98% of end groups of products are ^{-}OH groups. In case where the properties of the polycarbonate polyol fail to satisfy elements 4-1, 4-2 or 4-3, the polymerization system, i.e. Elements 1, 2 and 3 shall be amended. If the polymerization system is amended, the properties of polycarbonate polyol produced therefrom are also changed. Thus, it shall be repeated to check whether the properties of polycarbonate polyol satisfies elements 4-1, 4-2 and 4-3, until all conditions stated in the subject invention are satisfied.

(2) Whether ^{-}OH of end groups in element 4-3 exceeds 98% is determined based on the followings: the number of X anions in the metallosalenate metal complexes of Element 1; the number of functional groups in chain transfer agent (CAT) of element 2; and the adjustment of ratio of chain transfer agents of element 3 and metal complexes. The response temperature and time shall also be considered to meet the number average molecular weight of element 4-2, on which the input of chain transfer agent also has an effect. If the input of chain transfer agent is changed, the ratio of chain transfer agent and metal complex in Element 3 also changes. If the ratio of chain transfer agent and metal complex changes, the content of ^{-}OH end groups in element 4-3 also changes accordingly. In other words, elements 1, 2 and 3 have an effect on elements 4-1, 4-2 and 4-3. If elements 1, 2 or 3 is changed to meet a part of elements 4-1, 4-2 or 4-3, other part of elements 4-1, 4-2 or 4-3 may be met.

Thus, it seems that a skilled person would, even if he/she refers to embodiments stated in the specification of the subject invention, not be able to easily derive the polycarbonate polyol polymerization system that meets all limiting conditions of the subject invention without repeating many experiments on the combination of chain transfer agent, metallosalenate metal complex and co-catalyst other than the combination stated in embodiments in the specification of the subject invention.

Furthermore, it is even more so in light of the fact that it seems that the polymerization system in the subject invention shall be able to stably and repetitively produce polycarbonate polyol that meets all limiting conditions under the subject invention.

3) Summary of analysis

As examined above, a skilled person cannot easily practice the subject invention only with matters stated in the specification of the subject invention. Also, it seems that a skilled person shall conduct

excessive experiments or add special knowledges to practice the subject invention. Thus, the subject invention violates Article 42(3) of the old Patent Act and its patent shall be invalidated.

D. Summary of Discussion

As examined above, the subject invention violates not only Article 42(4)(ii) of the old Patent Act but also Article 42(3) of the old Patent Act. Thus, its patent shall be invalidated without examining whether its inventive step is denied. The IPTAB decision is consistent with the above analysis and shall be upheld.

3. Conclusion

Thus, the plaintiff's claim is without merit and thus shall be dismissed. It is as ordered.

Presiding Judge Seung Ryul SEO
Judge Yun Hyung JEONG
Judge Dong Gyu KIM

PATENT COURT OF KOREA
FIRST DIVISION
DECISION

Case No.	2017Heo1854 Invalidation (Patent)
Plaintiff	Biogen Inc. United States of America
Defendant	Celltrion
Date of Closing Argument	December 7, 2018
Decision Date	January 17, 2019

ORDER

1. The plaintiff's claim is dismissed.

2. The costs arising from this litigation shall be borne by the plaintiff.

PLAINTIFF'S DEMAND

The IPTAB Decision 2015Dang5148 dated February 7, 2017 shall be revoked.

OPINION

1. Background

A. Plaintiff's Patented Invention at Issue (hereinafter the "subject invention") (Plaintiff's Exhibit 3)

1) Title of invention: Treatment of hematologic malignancies associated with circulating tumor cells using Chimeric Anti-CD20 Antibody

2) International filing date/ priority date/ divisional filing date/ date of registration/ registration number:
November 9, 1999/ November 9, 1998/ June 8, 2011/ December 2, 2011/ No. 10-1092132

3) Claims

A) Claims at the time of patent registration

[Claim 1] A chronic lymphocytic leukemia (CLL) therapeutic combination that includes chemotherapeutic agents and pharmaceutical compositions including an anti-CD20 antibody, wherein the anti-CD20 antibody is administered simultaneously or consecutively with the chemotherapeutic agents comprising fludarabine and cyclophosphamide (hereinafter "claim 1 of the subject invention," other claims will be referred to as in the same manner).

[Claim 2] The therapeutic combination of claim 1, wherein the anti-CD20 antibody is rituximab.

[Claim 3] (1) A therapeutic combination that treats CLL by administering a therapeutically effective amount of an anti-CD20 antibody, and (2) a kit including a package insert that instructs to administer a dose of 500mg/m^2 to 1,500mg/m^2 of an anti-CD20 antibody.

[Claim 4] The kit of claim 3, wherein a package insert includes an

instruction to combine an anti-CD20 antibody and chemotherapeutic agents comprising fludarabine and cyclophosphamide.

[Claim 5] The kit of claim 3 or 4, wherein the anti-CD20 antibody is rituximab.

[Claims 6 to 12] Deleted

B) Claims for which a petition for correction was filed on July 29, 2016 (underlined parts are corrections)

[Claim 1] A chronic lymphocytic leukemia (CLL) therapeutic combination that includes chemotherapeutic agents and pharmaceutical compositions including rituximab, wherein the rituximab is administered simultaneously or consecutively with the chemotherapeutic agents comprising fludarabine and cyclophosphamide (hereinafter "claim 1 of the corrected invention," other claims will be referred to as in the same manner).

[Claim 2] Deleted

[Claim 3] (1) A therapeutic combination that treats CLL by administering rituximab whose therapeutically effective amount is 375mg/m^2 in its first administration and 500mg/m^2 to 1,500mg/m^2 in its subsequent administration, and (2) a kit including a package insert that instructs to subsequently administer a dose of 500mg/m^2 to 1,500mg/m^2 of rituximab.

[Claim 4] The kit of claim 3, wherein a package insert includes an instruction to combine rituximab and chemotherapeutic agents comprising fludarabine and cyclophosphamide.

[Claim 5] Deleted

[Claims 6 to 12] Deleted

4) Summary of invention

A) Field of the Invention

▸ The present invention is directed to the treatment of hematologic malignancies associated with high numbers of circulating tumor cells by the administration of a therapeutically effective amount of a chimeric or

humanized antibody that binds to the B-cell surface antigen Bp35 (CD20) (Paragraph [0001]).

- The use of antibodies to CD20 as diagnostic and/or therapeutic agents for B-cell lymphoma has previously been reported. CD20 is a useful marker or target for B-cell lymphomas as this antigen is expressed at very high densities on the surface of malignant B-cells, i.e., those B-cells wherein unabated proliferation can lead to B-cell lymphomas (Paragraph [0002]).
- Previously reported therapies involving anti-CD20 antibodies have involved the administration of a therapeutic anti-CD20 antibody either alone or in conjunction with a second radiolabeled anti-CD20 antibody, or a chemotherapeutic agent (Paragraph [0004).
- In fact, the Food and Drug Administration has approved the therapeutic use of one such therapeutic anti-CD20 antibody, RITUXAN®, for the treatment of relapsed and previously treated low-grade non-Hodgkin's lymphoma (NHL). Also, the use of RITUXAN® in combination with a radiolabeled murine anti-CD20 antibody has been suggested for the treatment of B-cell lymphoma (Paragraph [0005]).
- However, while anti-CD20 antibodies and, in particular, RITUXAN® have been reported to be effective for treatment of B-cell lymphoma, such as non-Hodgkin's lymphoma, it would be beneficial if effective antibody treatments for other malignancies could be developed. More specifically, it would be beneficial if anti-CD20 antibodies could be used for treating other types of malignancies (Paragraph [0006]).

B) Problem to Be Solved by the Subject Invention

- Thus, the object of the present invention is to provide a novel treatment for hematologic malignancies, which includes the administration of an anti-CD20 antibody (Paragraph [0008]).▸ A more specific object of the present invention is to provide a novel treatment for B-prolymphocytic leukemia (B-PLL), chronic lymphocytic leukemia (CLL), and transformed non-Hodgkin's lymphoma including the administration of an anti-CD20 antibody (Paragraph [0009]).
- An even more specific object of the present invention is to treat B-prolymphocytic leukemia (B-PLL) or chronic lymphocytic leukemia (CLL) including the administration of a therapeutically effective amount of RITUXAN® (Paragraph [0010]).

C) Solution to the Problem

- The present invention involves the discovery that hematologic malignancies and, in particular, those characterized by high numbers of tumor cells in the blood may be effectively treated by the administration of a therapeutic anti-CD20 antibody. These malignancies include, in particular, CLL, B-PLL, and transformed non-Hodgkin's lymphoma (Paragraph [0011]).
- This discovery is surprising notwithstanding the reported great success of RITUXAN® for the treatment of relapsed and previously treated low-grade non-Hodgkin's lymphoma. In particular, this discovery is surprising given the very high numbers of tumor cells observed in such patients, and also given the fact that such malignant cells, e.g., CLL cells, etc., typically do not express the CD20 antigen at the high densities characteristic of some B-cell lymphomas, such as relapsed and previously treated low-grade non-Hodgkin's lymphoma. Consequently, it could not have been reasonably predicted that the CD20 antigen would constitute an appropriate target for therapeutic antibody therapy of such malignancies (Paragraph [0012]).
- Effective dosages will depend on the specific antibody, condition, age, or weight of patient, or any other treatments, among other factors. Typically effective dosages will range from about 0.001mg to about 30mg per 1kg body weight, more preferably about 0.01mg to 25mg per 1kg body weight, and most preferably about 0.1mg to about 20mg per 1kg body weight (Paragraph [0024]).
- Such administration may be effected by various protocols, e.g., weekly, bi-weekly, or monthly, depending on the dosage administered and patient response. Also, it may be desirable to combine such administration with other treatments, e.g., radioactive therapy, both targeted and non-targeted chemotherapy, and lymphokine or cytokine administration, e.g., interleukin, interferons, TNF's, colony stimulating factors, etc.
- Typically, treatment will be performed weekly, for about 2 to 10 weeks, more typically about 4 weeks. A particularly preferred dosage regimen will comprise the administration of about 0.375mg/kg weekly for a total of 4 weeks of infusions. Also, the cascading increase of administration may be even more preferable (Paragraph [0026]).

Embodiment 3

Study of Phase I/II RITUXAN® in CLL

- RITUXAN® is a monoclonal antibody targeting CD20 that has

significant activity in the treatment of low-grade lymphoma (LGL). When relapsed patients (PTS) are treated at a dose of 375mg/m^2 weekly, the fourth response rate in the PTS was 43% (McLaughlin et al., (1998) J Clin Oncol 16(8):2825−33). Patients with small lymphocytic lymphoma had lower response rates (13%) and lower serum levels of RITUXAN® than patients with other subtypes of LGL. A reduced response seen in SLL patients could be related to a lower density of CD20 antigen and/or a high number of circulating B-cells. Both factors would be expected to (negatively) impact a response seen in CLL. In an attempt to maximize activities in CLL, we are conducting the phase I/II study. All patients receive the first dose of 375mg/m^2 to minimize the infusion-relapse side effects. Subsequently, weekly dosage was maintained without change for three consecutive weeks, but thereafter it was treated at an increased dosage level. Sixteen patients were treated at a dose of 500−1,500mg/m^2. The median age was 66years (in a range of 25−78). 81% had the phase III/IV terminal illness. The median white blood cell count was 40×10^9/L (in a range of 4−200) and Hgb was 11.6g/dL (in a range of 7.7−14.7). The platelets were 10^9/L (in a range of 16−160) and the median β2 immunoglobulin was 4.5mg/L (in a range of 3.1−9.2). The median number of prior treatment was 2.5 (in a range of 1−9). 60% of patients were unresponsive to treatment. Two patients developed severe hypertension with the first administration (375mg/m^2), and another patient received further treatment. Although no patient has been sufficiently evaluated at a dose of 1,500mg/m^2, the level of toxicity was low even with successive and escalated dosage. Eight patients completed the treatment (4 at a dose of 500mg/m^2, 3 at a dose of 650mg/m^2, and 1 at a dose of 825mg/m^2). One patient treated at a dose of 650mg/m^2 achieved complete remission. One patient showed progressive lymphocytosis in the treatment, and all other patients showed the reduction in peripheral blood lymphocytosis. However, the treatment was less effective on lymphatic glands. A further study on the dose increase is still ongoing (Paragraph [0035]).

B. Prior Art[1)]

1) Prior Art 1 (Plaintiff's Exhibit 12)

Prior Art 1 is a paper entitled "The old and new treatment of chronic lymphocytic leukemia: It is required to revalue their therapeutic objectives," which was published in February 1998 in *Seminars in Oncology*, Volume 25, No. 1, pp. 65-74. Its main contents are as follows:

- Chronic lymphocytic leukemia is the most common adult leukemia. However, its treatment is still difficult to grasp, and thus its treatment options are still insufficient. However, the recent findings made in laboratories and the promising results obtained from phase III clinical trials using fludarabine provided a ground to reevaluate the therapeutic objectives for patients with CLL. A clinical protocol using the combination of fludarabine and new therapeutic agents, such as Flavopiridol, IDEC-C2B8, Campath-1H, UCN-01, Bryostatin, FR 901228, or Melarsoprol, etc., will be able to generally improve survival rate and ultimately advance CLL treatment (first paragraph, left column on p. 65).
- Currently, the Eastern Cooperative Oncology Group is planning to carry out the phase II clinical trials to administer fludarabine and cyclophosphamide in combination to previously untreated CLL patients (lines 1-4 from bottom of left column on p. 68).
- In the phase II clinical trials of recurrent low-grade NHL using IDEC-C2B8, 48% and 50% of patients responded, respectively. Side effects occurred at a minimum. Due to in vitro data which show that IDEC-C2B8 chemosensitizes NHL cell line, which displays tolerance to chemotherapy and has no competitive toxicity, the treatment that combined IDEC-C2B8 and CHOP chemotherapeutic agents recently

1) Cited inventions 1 and 4 of the IPTAB decision are identical to prior art 1 and 4 of the lawsuit at issue, cited inventions 2, 3, and 5 were not submitted in the lawsuit, and prior art 5 of the lawsuit at issue was newly submitted in the lawsuit.

commenced and completed for relapsed low-grade NHL patients. It was reported that its overall response rate reached 100%. In addition, the Cancer and Leukemia Group B plans to conduct the phase III clinical trial of fludarabine and IDEC-C2B8 for untreated CLL patients (second paragraph, right column on p. 68).

2) Prior Art 4 (Plaintiff's Exhibit 4)

Prior Art 4 is a paper entitled "Acute tumor lysis in patients with B-cell chronic lymphocytic leukemia and lymphocytosis treated with anti-CD20 single clone antibody (IDED-C2B8, rituximab)," which was published in August 1998 in *Annals of Hematology*, Volume 77, pp. 89-91. Its main contents are as follows:

- This report introduces patients with B-cell chronic lymphocytic leukemia who suffer from an acute tumor lysis syndrome after being administered with a standard dose of 375mg/m^2 of human anti-CD20 antibody IDED-C2B8 (rituximab). It has been proven that IDEC-C2B8 has only minor and tolerable side effects on patients with follicular lymphoma. Patients with lymphocytosis more serious than 5,000/μL were not included in these clinical trials. Clinical researchers shall be aware of these symptoms that have not been reported on patients with high CD20-benign blood cell count (Summary on p. 89).
- The clinical trials conducted with chimeric anti-CD20 antibody IDEC-C2B8 (rituximab) showed that relapsed low-grade follicular non-Hodgkin's lymphoma had a remission rate of up to 50%. The effectiveness and safety of treatment of chronic lymphocytic leukemia (CLL) and other blood-borne tumors have never been studied till now. This paper reports a 26-year-old female with B-CLL who suffered from serious side effects and a sharp decrease in circulating malignant cells after being injected with the first rituximab (Introduction, left column on p. 89).
- In October 1997, a 26-year-old female patient with progressive low-grade B-cell lymphoma visited our hospital. She had already received various prior treatments including 12-week intensive

chemotherapy, supply of peripheral stem cells, and high-density chemotherapy. She suffered from bloated uterus and abdominis lymphatic glands, hepatomegaly, and marrow infiltration. She showed leukocytosis of 111.9×10^9/L with 97% malignant small lymphocytes, which was phenetically similar to B-cell chronic prolymphocytic leukemia (CD5+, CD10-, CD19+, CD23+, CD25+). CD20 surface marker was found in 100% of the above cells. Based on the clinical reassessment, the treatment began with anti-CD20 antibody rituximab. The treatment began with a predose of 50mg antibody. She complained of the following: some itchiness in the throat; chill; and some increase in body temperature after having the tests stated above. She recovered quickly after being administered with Pethidine, and then the remaining 550mg from the planned dosage (375mg/m^2) was administered for four and half hours. Not long after the administration, she felt a chill again, and her body temperature rose to 39.7°C. Also, her pulse rose to 124/minute, and she complained of dizziness and sickness. Her leukocyte count decreased quickly from 111.9×10^9/L to 24.0×10^9/L. Thus, she was given intensive treatment through forced diuresis including the transfusion of ondansetron, furosemide, bicarbonate, calcium, potassium, and platelets. As a result, her conditions gradually improved, and experimental parameters became normalized from the second day of clinical trial. Rituximab was additionally administered on the 8^{th}, 15^{th}, and 22^{nd} days without clinical problems. Her leukocyte count was normalized (8.8×10^9/L) for three weeks, and then she showed symptoms of progressive disease. Ultimately, she required salvage chemotherapy (Case report on pp. 89–90).

▸ The recommended standard dose of rituximab (375mg/m^2) is for patients whose follicular lymphoma and lymphocyte count is equal to or less than 5.0×10^9/L. Thus, this dose may be too high to treat patients whose peripheral blood tumor loads are substantial. As an alternative, a high peripheral blood tumor cell count shall be reduced with cytostatic drugs before administering the rituximab. Recently, we treated with rituximab six B-CLL patients and one patient with leukocytoma mantle cell lymphoma. Moreover, clinical side effects were immaterial in three patients whose lymphocyte counts were 0.2×10^9/L, 6.6×10^9/L, and 9.4×10^9/L, respectively. However, the symptoms of acute tumor lysis and toxicity of NCI class III and IV were shown in patients with

noticeable lymphocytosis whose lymphocyte counts were 30.7×10^9/L, 60.8×10^9/L, 69.8×10^9/L, 108.5×10^9/L, and 294.3×10^9/L, respectively. When treating with single clone antibody rituximab a patient with CLL and noticeable lymphocytosis, medical staff should keep in mind the dangers of acute tumor lysis and diffuse intravascular coagulation which had not been reported yet (Discussion on p. 90).

3) Prior Art 5 (Defendant's Exhibit 2-1)

Prior Art 5 is an abstract of a poster entitled "Chronic Lymphocytic Leukemia (CLL)-related RITUXAN Research in Stage I/II," which was published on November 15, 1998 in *Blood*, Volume 92, Number 10, suppl. 1. Its main contents are as follows:

▸ RITUXAN is highly effective in treating Low-Grade Lymphoma (LGL) as anti-CD20 single clone antibody. When administering 375mg/m^2 RITUXAN once a week four times, the response rate of relapsed patients was 48%. Patients with small lymphocytic lymphoma (SLL) (tissue identical to CLL) showed a response rate (13%) lower than that of patients with other subtype LGLs. Further, the serum concentration of RITUXAN was also low. The response rate of SSL patients may decrease due to the low density of CD20 antigen and/or high blood B-cell count. It is expected that the low density of CD20 antigen and high blood B-cell count would have a (negative) effect on the response rate for CLL. As an attempt to maximize the treatment effect of CLL, a research team conducted a study on the treatment to increase a dose in phase I/II. At first, CLL of 375mg/m^2 was administered to all patients to minimize drug-related side effects. Thereafter, an increased dose was administered once a week for three weeks (a fixed dose three times). Sixteen patients were administered with a dose of 500−1,500[2)] mg/m^2. The median age was 66 (in a range of 25−28). 81% were patients with RAI Stage III/IV. The median white blood cell (WBC) count was 40×10^9/L (in a range of 4−500), and Hgb count was 11.6g/dL (in a range of 7.7−14.7). The platelet count was 76×10^9/L (in a range of 16−160). The median value of β2-microglobulin was

4.5mg/L (in a range of 3.1−9.2), and its median value in the previous treatment was 2.5 (in a range of 3.1−9.2). 69% of patients did not respond to fludarabine. Since two patients displayed symptoms of serious hypotension after being administered with 375mg/m^2 for the first time, no additional treatment was conducted on them. Even if patients who were administered with a dose of 1,500mg/m^2 were not fully reviewed, the toxicity caused by an increase in dosage after the first administration faded. Eight patients completed their treatment (four patients, three patients, and one patient were administered with 500mg/m^2, 650mg/m^2, and 825mg/m^2, respectively). One patient among those who were administered with 500mg/m^2 achieved his/her PR. One of the others displayed progressive lymphocytosis. The others improved in their peripheral lymphocytosis. However, a dose of 500mg/m^2 had no substantial effect on lymphatic glands. Therapy to increase dose will continue to be conducted.

C. IPTAB Decision

1) On November 3, 2015, the defendant filed to the IPTAB an action as 2015Dang5148 against the plaintiff, a patentee of the subject invention, to invalidate the registration of the subject invention, claiming to the effect that “since the subject invention described no pharmacological effect in its specification, it corresponds to an incomplete invention. Also, as its inventive step is denied by prior art references, its registration shall be invalidated.”

2) On July 29, 2016, while the IPTAB heard this case, the plaintiff filed a petition for correction to delete claims 2 and 5 of the subject invention and correct claims 1, 3, and 4 of

2) The original text specifies “500–500.” However, this appears to be a typo for “500–1,500” in light of what is specified below.

the subject invention {hereinafter the "petition for correction"), as shown in A.3).B} above.

3) On February 7, 2017, the IPTAB disapproved the petition for correction filed by the plaintiff and rendered its decision to grant a petition for trial filed by the defendant on the grounds that "the petition for correction filed by the plaintiff on July 29, 2016 failed to meet the requirements for patent correction in the patent invalidation trials and thus was illegitimate. Therefore, the said petition shall be disapproved. The inventive step of claims 1, 2, and 4 of the subject invention cannot be denied by prior art references. However, claims 1, 2, and 4 of the subject invention fail to meet the written description requirements. Even if claims 3 and 5 of the subject invention meet the written description requirements, an inventive step thereof shall be denied by prior art 4."

[Factual basis] Undisputed facts, statements in Plaintiff's Exhibits 1 through 4 and 12, statements in Defendant's Exhibit 2-1, purport of the overall argument

2. Parties' Arguments and Questions Presented

A. Summary of Plaintiff's Arguments

The IPTAB erred in its decision by concluding otherwise notwithstanding the following facts: ① The petition for correction clarifies claim 3 of the subject invention or narrows the scope of claims and thus is legitimate. ② The subject invention is identical to an invention specified in the specification or drawings attached to the first application of the earlier-filed patent application on which the priority claim is based. Thus, the date on which it is determined

whether the requirements for patent registration are satisfied goes back to the date of claimed priority. ③ The petition for correction is described in embodiment 3 as specific clinical data. Thus, there is no deficiency of description in the specification. ④ An inventive step of the petition for correction is not denied by prior art references. However, The IPTAB decision is inconsistent with the above analysis and shall not be upheld.

B. Summary of Defendant's Arguments

The IPTAB decision is consistent with the following analysis and shall be upheld: ① A new administration method is added by the petition for correction, which corresponds to the complete modification of the essential technical idea itself. Thus, the petition for correction is illegitimate. ② The specification of the application on which the priority is based does not describe claim 3 of the subject invention and dependant claims. Thus, the priority of the subject invention is not recognized. ③ There is no description of pharmacological data or other equivalent contents on a pharmacological effect of claims 1, 2, and 4 of the subjrect invention. Claims 3 and 5 of the subject invention do not restrict usage or dose specifically. Thus, the written description requirement is not met. ④ An inventive step of the subject invention is denied by prior art references.

C. Questions Presented

The questions presented are as follows: ① Whether the petition for correction is lawful or not. ② Whether the date on which it is determined whether the subject invention or the corrected invention meets the requirements for patent registration goes back to the date of claimed priority. ③ Whether the subject invention or the corrected

invention fails to meet the written description requirement. ④ Whether an inventive step of the subject invention or the corrected invention is denied. The questions presented above will be determined in order as follows (The arguments of parties will be described in detail in the Discussion for each issue).

3. Whether Petition for Correction at Issue Erred

A. Parties' Arguments in Detail

1) Plaintiff's arguments in detail

A) Primary arguments: The fact that claim 1 of the subject invention claims the right to an invention disclosed in embodiment 3 can be verified in light of the contents of the specification and the history of examination of the patent. On the other hand, it is unclear from only the description of claims what "administering a therapeutically effective amount of an anti-CD20 antibody" and "500mg/m^2 to 1,500mg/m^2" in claim 3 of the subject invention means in light of the characteristics of anticancer therapy in which anti-cancer drugs are administered at various times. Ultimately, the petition for correction of claim 3 of the subject invention further clarifies the contents of claim 3 of the subject invention that can be perceived clearly in light of the description and examination history of the specification. Further, the petition for correction of claim 3 of the subject invention causes the purpose and effect understood from embodiment 3 described in the specification to be demonstrated as it is. Thus, it may not be deemed that the claims were changed substantially by the petition for correction.

B) Secondary arguments: Claim 3 of the subject invention contains the "continued administration of uniform dose" and the "cascading increase of administration" disclosed in the specification of

the subject invention. However, claim 3 of the corrected invention limits this to the "cascading increase of administration." Thus, the petition for correction of claim 3 of the subject invention corresponds to the reduction of claims. Also, since the petition for correction of claim 3 of the subject invention reflects, without change, the contents of embodiment 3 disclosed in the specification of the subject invention, the effect of the invention is not changed. Therefore, the petition for correction of claim 3 of the subject invention does not expand or change the claims.

2) Defendant's arguments in detail

Claim 3 of the subject invention is a medical use invention that limits the method and dose of administration, which are essential elements of claim 3 of the subject invention. However, as the petition for correction adds a new method of administration, it completely changes the key technical idea of the medical invention itself. Therefore, the petition for correction corresponds to the substantial change of claims and thus shall not be upheld.

B. Relevant Law

As to the correction of patents during patent invalidation trials, Article 133-2(1) of the Patent Act stipulates that a petition may be made for correction of the specification or any drawing of the relevant patented invention in cases specified in any of the following subparagraphs of Article 136(1) of the Act: where the number of claims is reduced; where a clerical error is rectified; or where an ambiguous description is clarified. Article 136(2) and (3) of the Act stipulate that the petition shall be limited to the descriptions in the specification or drawings of the patented invention and that the petition may not substantially expand or change the claims. (4) No correction of a specification or drawing under paragraph (1) shall

substantially extend or amend the claims. The purport of the above provisions shall be deemed to allow not to expand or change the scope of a patent right but to reduce the claims within a scope that would not infringe a third party's right, rectify a clerical error, or rectify an error by resolving the deficiency of description. It shall be construed that the correction of errors stated above includes the following: to clarify the meaning of a claim description or resolve the deficiency of description, where the claims are not described clearly; and to resolve contradictions by unifying them, where the detailed description of a patented invention is not consistent or contradictory to its claims. It would be reasonable to determine whether the correction of claims falls under the expansion or change of the claims not only with their formal description but also with the comprehensive contents of the specification and drawings including the detailed description of the patented invention (See Supreme Court Decision 2004Hu3096, decided July 28, 2006).

Meanwhile, the patent claims specify the whole or a part of the technical ideas specified in the detailed description of the patented invention as the scope of protection of the patented invention. However, it is not required for the patent claims to include all technical ideas specified in the detailed description of the invention. Thus, unless exceptional circumstances exist, it may not be deemed that even if a matter not described in the claims is included in the detailed description of an invention, the detailed description of the invention is not consistent or contradictory to its claims (See Supreme Court Decision 2004Hu2184, decided November 25, 2016).

C. Corrections

	Claims before Correction	Claims after Correction
Claim 1 (Correction 1)	A chronic lymphocytic leukemia (CLL) therapeutic combination that includes chemotherapeutic agents and pharmaceutical compositions including an anti-CD20 antibody, wherein the anti-CD20 antibody is administered simultaneously or consecutively with the chemotherapeutic agents comprising fludarabine and cyclophosphamide.	A chronic lymphocytic leukemia (CLL) therapeutic combination that includes chemotherapeutic agents and pharmaceutical compositions including an anti-CD20 antibody **rituximab**, wherein the anti-CD20 antibody **rituximab** is administered simultaneously or consecutively with the chemotherapeutic agents comprising fludarabine and cyclophosphamide.
Claim 2 (Correction 2)	The therapeutic combination of claim 1, wherein the anti-CD20 antibody is rituximab.	**(Deleted)**
Claim 3 (Corrections 1 and 3)	(1) A therapeutic combination that treats CLL by administering a therapeutically effective amount of an anti-CD20 antibody, and (2) a kit including a package insert that instructs to administer a dose of 500mg/m^2 to 1,500mg/m^2 of an anti-CD20 antibody.	(1) A therapeutic combination that treats CLL by administering ~~an anti-CD20 antibody~~ **rituximab whose therapeutically effective amount is 375mg/m^2 in its first administration and 500mg/m^2 to 1,500mg/m^2 in its subsequent administration**, and (2) a kit including a package insert that instructs to **subsequently** administer a dose of 500mg/m^2 to 1,500mg/m^2 of ~~an anti-CD20 antibody~~ **rituximab**.
Claim 4 (Correction 1)	The kit of claim 3, wherein a package insert includes an instruction to combine an	The kit of claim 3, wherein a package insert includes an instruction to combine an

	Claims before Correction	Claims after Correction
	anti-CD20 antibody and chemotherapeutic agents comprising fludarabine and cyclophosphamide.	anti-CD20 antibody **rituximab** and chemotherapeutic agents comprising fludarabine and cyclophosphamide.
Claim 5 (Correction 2)	The kit of claim 3 or 4, wherein the anti-CD20 antibody is rituximab.	**(Deleted)**

D. Analysis

1) Correction 1 corrects an anti-CD20 antibody to rituximab, and correction 2 deletes the relevant claim. Thus, these correspond to the reduction of the claims in the matters described in the specification or drawings of the subject invention but do not substantially expand or change the claims. Therefore, they shall be upheld (the defendant does not dispute this point).

2) Correction 3 corrects to add 375mg/m^2 as a dose of rituximab and administer 375mg/m^2 at first and then 500mg/m^2 to 1,500mg/m^2 subsequently. In light of the evidence and basic facts examined above, it would be reasonable to view that correction 3 does not fall under any of the grounds for correction stipulated by each subparagraph of Article 136(1).

A) First, this court examines whether correction 3 corresponds to the case where a matter not clearly described is clarified. Since it is clearly construed that claim 3 of the subject invention before correction has an anti-CD20 antibody as an effective substance, CLL treatment as a medical use, and a dose of the anti-CD20 antibody as 500mg/m^2 to 1,500mg/m^2, it may not be deemed that claim 3 of the subject invention corresponds to the case where a matter not clearly described is clarified. In other words, embodiment 3 includes in its

detailed description of the invention its administration method to administer 375mg/m^2 first and then administer 500mg/m^2 to 1,500mg/m^2 subsequently. However, as long as the claims clearly describe "to administer a dose of 500 to 1,500mg/m^2," it may not be deemed that the detailed description of the invention is inconsistent with or contradictory to its claims, because the method to administer 375mg/m^2 first and then administer 500mg/m^2 to 1,500mg/m^2 subsequently was not included in the claims but in the detailed description of the invention. Thus, it may not be deemed that correction 3 corresponds to the case of clarifying unclear matters, as the plaintiff argues primarily.

B) Next, this court examines whether correction 3 corresponds to the clear reduction of claims. As examined above, it is clear that claim 3 of the subject invention means to administer an anti-CD20 antibody in a range of 500mg/m^2 to 1,500mg/m^2. Also, it may not be deemed that claim 3 of the subject invention contains the cascading increase of administration. Thus, it is difficult to deem that it would correspond to the reduction of claims to correct to contain an administration dose of 375mg/m^2, which is not included in the range stated above. In other words, where an administration dose of 375mg/m^2, which is not within the range of 500mg/m^2 to 1,500mg/m^2, corresponding to the claims before correction, becomes the first administration dose, the range of the administration dose becomes wider than that of claim 3 of the subject invention. Ultimately, as argued in the plaintiff's secondary argument, correction 3 does not correspond to the reduction of claims.

C) In addition, the specification of the subject invention specifies that "effective dosages will depend on the specific antibody, condition, age, or weight of patient, or any other treatments, among other factors. Typically effective dosages will range from about 0.001mg to about 30mg per 1kg body weight, more preferably about 0.01mg to 25mg per 1kg body weight, and most preferably about

0.1mg to about 20mg per 1kg body weight. Such administration may be effected by various protocols, e.g., weekly, bi-weekly, or monthly, depending on the dosage administered and patient response" (Paragraphs [0024] and [2205]). In other words, since the subject invention contains various dosages and administration methods, it is difficult to deem that the dosage and the administration method in claim 3 of the subject invention before correction wrongly describe to administer 375mg/m^2 first and then 500-1,500mg/m^2 subsequently. Thus, correction 3 does not fall under any of the subparagraphs of Article 136(1) of the Patent Act and fails to meet the correction requirements.

D) Furthermore, correction 3 changes the dosage and administration method completely. Correction 3 attempts to include an invention excluded from the claims at the time of the establishment of registration (a method to continue to administer 375mg/m^2 first and then 500-1,500mg/m^2 subsequently) after the establishment of patent right is registered. Thus, it is expected that correction 3 would inflict an unforeseen loss upon a third party.

E. Summary of Discussion

Thus, the petition for correction fails to meet the requirements for correction under Article 136(1) of the Patent Act and shall not be upheld. Therefore, this court will examine whether the patented invention before a petition for correction is filed contains any ground for invalidation as the defendant argues.

4. Whether the Date on Which the Patent Requirements of the Subject Invention are Determined Goes Back to the Date of Claimed Priority

A. Parties' Arguments in Detail

1) Plaintiff's arguments in detail

The first application of the earlier-filed patent application on which the claimed priority of the subject invention is based describes identical contents to those of embodiment 3. The technical idea of the subject invention that CLL would be treated by administering 375mg/m^2 rituximab first and then 500-1,500mg/m^2 thereof is explicitly stated. Thus, the date on which an inventive step of the subject invention is determined goes back to the date of claimed priority.

2) Defendant's arguments in detail

Since the first application of the earlier-filed patent application has no specific description that corresponds to the dosage and effect of administration of claims 3 and 5 of the subject invention, it may not be deemed that the subject invention goes back to the date of claimed priority.

B. Relevant Law

Under Article 55(1) and (3) of the Patent Act, a person who intends to obtain a patent may claim priority on the invention described in the specification or drawings initially accompanying a separate application filed earlier (hereinafter the "first specification, etc. of the earlier-filed application on which the priority claim is based") for a patent to which he/she is entitled. In applying certain patent requirements, such as novelty, inventive step, etc. to the same invention as described in the first specification, etc. of the earlier-filed application on which the priority claim is based, among inventions described in a patent application claiming priority, the patent application filed subsequently

shall be deemed to have been filed at the time the earlier application was filed (hereinafter the “date of claimed priority”). However, where it is deemed that an application is filed on the date of claimed priority before the actual filing date of the application and its patent requirements are examined accordingly, an interest of a third party, such as a person, etc. who files his/her patent application between the date of claimed priority and the filing date of application accompanying the claimed priority, can be infringed unfairly, as the correction of specification or drawings is accepted under Article 47(1) of the Patent Act and its effect goes back to the filing date of the application. Likewise, it is necessary to restrict the scope of invention whose patent requirements are examined by viewing that an application is filed on the date of claimed priority. Thus, it would be reasonable to view that an invention for which the base date on which the patent requirements are applied goes back to the date of claimed priority under Article 55(3) of the Patent Act shall be limited to the matters described in the first specification, etc. of the earlier-filed application on which the priority claim is based among filed inventions accompanying the priority claim as stipulated in Article 47(2). Here, the phrase “matters explicitly described in the first specification, etc. of the earlier-filed application on which the priority claim is based” shall be matters that a person having ordinary skill in the art (hereinafter a “skilled person”) can, in light of common sense in the technology as of the date of claimed priority, understand that a filed invention accompanying the priority claim is identical to what is described in the first specification, etc. of the earlier-filed application (See Supreme Court Decision 2005Hu3130, decided February 8, 2007; Supreme Court Decision 2012Hu2999, decided January 15, 2015). These laws are applied not only to the priority claim in Korea but also to the priority claim in relation to an international treaty.

C. Comparison of Elements in the Subject Invention and Those in an Earlier Application and Determination of Identity of Invention

1) Claims 1 and 2 of the subject invention

Claim	Claims 1 and 2 of the Subject Invention	Earlier Application at Issue (Defendant's Exhibit 3)
1	A chronic lymphocytic leukemia (CLL) therapeutic combination that includes chemotherapeutic agents and pharmaceutical compositions including an anti-CD20 antibody, wherein the anti-CD20 antibody is administered simultaneously or consecutively with the chemotherapeutic agents comprising fludarabine and cyclophosphamide.	Claim 1. A method of treating hematologic malignancies related to a high count of circulating tumor cells by administering an anti-CD20 antibody of a therapeutically effective dose or a fraction thereof. Claim 3. The method of claim 1, wherein the malignancies are B-prolymphocytic leukemia or chronic lymphocytic leukemia. Claim 8. The method of claim 3, wherein the antibody is combined with irradiation, a chemotherapeutic agent, and/or lymphokine administration. A particularly desirable chemotherapeutic agent that can be used with antibody immunotherapy includes CHOP immunotherapy that administers cyclophosphamide, doxorubicin, vincristine, and prednisone in a combination thereof. (second paragraph on p. 8)
2	The therapeutic combination of claim 1, wherein the anti-CD20 antibody is rituximab.	

Claim 1 of the subject invention and an earlier-filed application are identical in that they have, as their effective substances, the combination of an anti-CD20 antibody and chemotherapeutic agents and are medically used to treat the chronic lymphocytic leukemia.

However, in claim 1 of the subject invention, the chemotherapeutic agents are composed of fludarabine and cyclophosphamide. On the other hand, the earlier-filed application administers cyclophosphamide, doxorubicin, vincristine, and prednisone in a combination thereof. There is no ground whatsoever to deem that fludarabine and cyclophosphamide are the chemotherapeutic agents combined with an anti-CD20 antibody to treat CLL at the date of claimed priority and that the general standards for dosage and administration method of chemotherapeutic agents combined with the anti-CD20 antibody correspond to common sense in the technology to a skilled person. Thus, the combination of the anti-CD20 antibody, fludarabine, and cyclophosphamide may not be viewed as a matter that can be understood to be the same as what is described in the first specification, etc. of the earlier-filed application. Therefore, it is difficult to view that claim 1 of the subject invention and claim 2 of the subject invention, which is a dependent claim of claim 1 of the subject invention, are inventions identical to the subject invention of the earlier-filed application.

2) Claim 3 of the subject invention

Claim 3 of the Subject Invention	Earlier-filed Application (Defendant's Exhibit 3)
(1) A therapeutic combination that treats CLL by administering a therapeutically effective amount of an anti-CD20 antibody, and	Claim 1. A method of treating hematologic malignancies related to a high count of circulating tumor cells by administering an anti-CD20 antibody of a therapeutically effective dose or a fraction thereof. Claim 3. The method of claim 1, wherein malignancies are B-prolymphocytic leukemia or chronic lymphocytic leukemia.

Claim 3 of the Subject Invention	Earlier-filed Application (Defendant's Exhibit 3)
(2) a kit including a package insert that instructs to administer a dose of 500mg/m^2 to 1,500mg/m^2 of an anti-CD 20 antibody.	Claim 5. The method of claim 1, wherein an antibody of 0.1−30 mg/kg is administered. Claim 9. The method of claim 1, wherein an antibody of 375 mg/m^2 is administered every week for a total of four weeks. Embodiment 3: Study of Phase I/II RITUXAN® in CLL RITUXAN® is a monoclonal antibody targeting CD20 that has significant activity in the treatment of low-grade lymphoma (LGL) ... In an attempt to maximize activities in CLL, we are conducting the phase I/II study. All patients receive the first dose of 375mg/m^2 to minimize the infusion-relapse side effects. Subsequently, weekly dosage was maintained without change for three consecutive weeks, but thereafter it was treated at an increased dosage level. Sixteen patients were treated at a dose of 500−1,500mg/m^2 ... Two patients developed severe hypertension with the first administration(375mg/m^2), and another patient received further treatment. Although no patient has been sufficiently evaluated at a dose of 1,500mg/m^2, the level of toxicity was low even with successive and escalated dosage. Eight patients completed the treatment (4 at a dose of 500mg/m^2, 3 at a dose of 650mg/m^2,

Claim 3 of the Subject Invention	Earlier-filed Application (Defendant's Exhibit 3)
	and 1 at a dose of 825mg/m^2). One patient treated at a dose of 650mg/m^2 achieved complete remission ... A further study on the dose increase is still ongoing.

Claim 3 of the subject invention and the earlier-filed application are identical in that they have an anti-CD20 antibody as their effective substances and are medically used to treat chronic lymphocytic leukemia. However, claim 3 of the subject invention administers an anti-CD20 antibody at a dose of 500−1,500mg/m^2, while the earlier-filed application claims administration of an anti-CD20 antibody at a dose of 0.1−30mg/kg or at a dose of 375mg/m^2 every week for four weeks. The embodiment describes administering the first dose of 375mg/m^2 and then treating a dose of 500−1,500mg/m^2, but the claims have no description whatsoever of administering a dose of 500mg/m^2 to 1,500mg/m^2. However, it can be known from the first specification of the earlier application (line 5 from the bottom of p.13 in Defendant's Exhibit 3) that a study is still ongoing on the dosage of an anti-CD20 antibody in treating CLL. It cannot be viewed that the fact that an anti-CD20 antibody of 500mg/m^2 to 1,500mg/m^2 is administered in treating CLL corresponds to common sense in the technology to a skilled person as of the date of claimed priority. Thus, it cannot be viewed that the dosage of 500mg/m^2 to 1,500mg/m^2 of an anti-CD20 antibody is the same as that described in the first specification, etc. of the earlier-filed application. Therefore, it is difficult to view that claim 3 of the subject invention is identical to the subject invention of the earlier-filed application.

3) Claims 4 and 5 of the subject invention

Claims 4 and 5 of the subject invention are dependent claims that cite claim 3 of the subject invention and contain all elements in claim 3 of the subject invention. Thus, claims 4 and 5 of the subject invention also do not correspond to an invention described in the first specification, etc. of the earlier-filed application since claim 3 of the subject invention does not. Therefore, it is difficult to view that claims 4 and 5 of the subject invention are identical to the subject invention of the earlier-filed application.

D. Summary of Discussion

Since the subject invention does not correspond to an invention described in the first specification of the earlier-filed application, the date on which the patent requirements are determined does not go back to the date of claimed priority. Thus, in the following, the date on which the requirements for the subject invention are determined shall be the filing date (November 9, 1999).

5. Deficiency of Description: Determination of Defendant's Secondary Arguments

A. Parties' Arguments in Detail

1) Plaintiff's arguments in detail

A) The technological characteristics of claims 1, 2, and 4 of the subject invention are to treat CLL with rituximab and detailed administration methods. These technological characteristics are described as concrete clinical data in embodiment 3 in the specification of the subject invention. Fludarabine and cyclophosphamide are

chemical drugs that were not well known at the priority date, and the subject invention only additionally claimed the possibility of joint use. Thus, claims 1, 2, and 4 of the subject invention do not correspond to deficiency of description for the specification.

B) An effect of claims 3 and 5 of the subject invention is described as the result of a clinical trial described in embodiment 3 in the specification of the subject invention. Thus, there is also no ground for the deficiency of description for the specification in claims 3 and 5 of the subject invention.

2) Defendant's arguments in detail

A) Claims 1, 2, and 4 of the subject invention are a medical invention that forms a therapy that uses an anti-CD20 antibody in combination with fludarabine and cyclophosphamide. The specification of the subject invention does not specifically describe, with trial examples which show pharmacological data, etc., the fact that the therapy of claims 1, 2, and 4 of the subject invention have a pharmacological effect. Also, there is no circumstance whatsoever to deem that the mechanism indicating the medical effects of therapy to combine an anti-CD20 antibody with fludarabine and cyclophosphamide was clearly identified. Thus, it cannot be deemed that claims 1, 2, and 4 of the subject invention meet the written description requirements of a specification as a medical use invention.

B) Claims 3 and 5 of the subject invention are a medical use invention to treat CLL whose effective substance and dosage are an anti-CD20 antibody and 500mg/m^2 to 1,500mg/m^2, respectively. Embodiment 3 is the only description on the pharmacological effect of claims 3 and 5 of the subject invention in the specification of the subject invention. However, unlike embodiment 3, claims 3 and 5 of the subject invention do not specify the first administration of 375mg/m^2 of an anti-CD20 antibody or limit the number of

administration, individual administration cycle, overall administration period, individual dosage, total dosage, etc. Thus, it cannot be viewed as substantially identical to the administration method described in embodiment 3. Also, embodiment 3 only describes that it reduced in the "peripheral blood lymphocytosis," but does not include any description from which a skilled person could understand that a treatment effect on CLL is achieved. Ultimately, a skilled person cannot, with only the description in the specification of the subject invention, accurately understand and repeat a pharmacological effect of claims 3 and 5 of the subject invention and expand or generalize a pharmacological effect of therapy described in embodiment 3 to that of claims 3 and 5 of the subject invention. Thus, it cannot be viewed that claims 3 and 5 of the subject invention are so described that a skilled person can easily execute the same with the detailed description of the invention. Also, claims 3 and 5 of the subject invention are not supported by the detailed description of the invention.

B. Relevant Law

The detailed description of an invention in the specification attached to a patent application shall describe the purpose, elements, and effect of the invention so that a skilled person can accurately understand and repeat the invention without the addition of special knowledge in light of the technological level at the time of filing. In the case of a medical use invention that shall describe a pharmacological effect, an invention can be viewed to be completed and meet the written description requirement of the specification only where, unless there are special circumstances, such as the mechanism indicating a medical effect is clearly identified before its filing, etc., trial examples with pharmacological data, etc. shall specifically describe that a specific substance has a pharmacological effect (See Supreme Court Decision 2003Hu1550, decided December 23, 2004; Supreme Court Decision

2013Hu730, decided April 23, 2015; Supreme Court Decision 2015Hu727 (Consolidated)).

C. Discussion

1) Discussion on claims 1, 2, and 4 of the subject invention

Claims 1, 2, and 4 of the subject invention are a medical use invention and fail to meet the written description requirement of the specification stipulated by Article 42(3) of the old Patent Act (before amendments were made to Law No. 6411 on February 3, 2001; hereinafter the same shall apply) in light of the following circumstances that can be known from the evidence examined above, statements in Defendant's Exhibit 53, and the purport of the overall argument: that it is difficult to find special circumstances, such as where the mechanism indicating the medical effects described in the specification was clearly identified before filing the patented invention; and there is no trial example or detailed description of pharmacological data, etc. with which an effect to treat CLL can be verified in the specification of the subject invention with an anti-CD20 antibody (rituximab) and chemotherapeutic agents such as fludarabine and cyclophosphamide as effective substances. Thus, there is no need to examine claims 1, 2, and 4 of the subject invention further in relation to the defendant's secondary argument. Further, there are grounds to invalidate claims 1, 2, and 4 of the subject invention.

A) Technological characteristics of claims 1, 2, and 4 of the subject invention

Claims 1, 2, and 4 of the subject invention have the followings in common: their effective substances are an anti-CD20 antibody (rituximab) and chemotherapeutic agents such as fludarabine and cyclophosphamide; and they are a medical use invention to treat CLL. Thus, for claims 1, 2, and 4 of the subject invention to meet the

written description requirement of the specification stipulated in Article 42(3) of the old Patent Act, there shall be special circumstances, such as where the mechanism indicating the medical effects is clearly identified before the filing of the subject invention, or the specification shall specifically describe the pharmacological effect with trial examples in which pharmacological data, etc. are shown.

B) Whether there are special circumstances, such as where the mechanism indicating the medical effect is identified

As shown below, a therapeutic use of rituximab, which is an anti-CD20 antibody, was already well known through Prior Art 5 before the filing of the subject invention. Also, the cyclophosphamide and fludarabine, which are alkylating agents, are described as chemotherapeutic agents to be used to treat CLL in Chapter 5 on "CLL and related diseases" in the 5th edition of *Williams Hematology*, which is a publication published in 1995 (Plaintiff's Exhibit 53). Furthermore, the specification of the subject invention describes that "fludarabine has shown an effect in the treatment of CLL, and gave an ORR of 50% in a group of patients treated with 25−30mg/m^2/d every 3−4weeks (http://cancernetwork.com). Although some patients have been shown to be refractory for fludarabine, such patients may also be resistant to 2-CDA because often, patients who are refractory to fludarabine may also be refractory to 2-CDA {O'Brien et al., N. Engl. J. Med. 330: 319−322(1994)}." (Paragraph [0042]). Thus, it seems that cyclophosphamide and fludarabine had been used as a medicine to treat CLL before the filing of the subject invention.

However, there is no ground at all to deem that it was clearly identified, before the filing of the subject invention, that the combination of an "anti-CD20 antibody" and a "chemotherapeutic agent of fludarabine and cyclophosphamide" was effective in treating CLL. Also, drugs go through complicated physiological responses that may accompany chemical changes in the human body. Where more than two different drugs are administered at the same time or in a

consecutive order, with an interaction between the drugs, it is difficult to anticipate that an action would appear the same as when each drug is administered in the human body (as even the plaintiff acknowledges, in pp. 10-11 of brief dated September 18, 2018, that a skilled person shall empirically verify, through actual clinical trials, an effect that each chemotherapeutic agent has on CLL, because it is impossible to accurately anticipate the effect only with a theoretical mechanism in a situation where CLL is perfectly understood in terms of science). It cannot be viewed that the mechanism indicating the medical effect of CLL is clearly identified by administering an "anti-CD20 antibody (rituximab)" with "fludarabine and cyclophosphamide" in combination only from a circumstance where the fact that each of the anti-CD20 antibody (rituximab), fludarabine, and cyclophosphamide that comprise claims 1, 2, and 4 of the subject invention were effective as CLL medicine was publicly known before the filing date of the subject invention.

C) Description in the specification of the subject invention

The specification of the subject invention does not describe, with trial examples that show pharmacological data, etc., the fact that the combination of an anti-CD20 antibody and chemotherapeutic agents, such as fludarabine and cyclophosphamide, is effective in treating CLL. The specification also does not describe the combination of an anti-CD20 antibody, fludarabine, and cyclophosphamide.

2) Discussion on claims 3 and 5 of subject invention

In light of the following circumstances that can be known from the evidence examined above and the purport of the overall argument, it is reasonable to deem that there were special circumstances, such as where the mechanism indicating the pharmacological effects in relation to claims 3 and 5 of the subject invention is clearly identified in the specification before filing the subject invention. Also, Embodiment 3 in the specification of the subject invention describes the results of

clinical trials identical to those in prior art 5. Thus, it is reasonable to deem that claims 3 and 5 of the subject invention satisfy the written description requirement of the specification stipulated by Article 42(3) of the old Patent Act. Therefore, the defendant's arguments in this part are without merit.

A) Technological characteristics of claims 3 and 5 of the subject invention

Claims 3 and 5 of the subject invention are a medical use invention to "treat the chronic lymphocytic leukemia" whose effective substance and dosage are an anti-CD20 antibody and 500mg/m^2 to 1,500mg/m^2, respectively. A pharmacological effect that claims 3 and 5 of the subject invention target is treatment of chronic lymphocytic leukemia by administering 500mg/m^2 to 1,500mg/m^2 of an anti-CD20 antibody. Thus, for claims 3 and 5 of the subject invention to meet the written description requirement of the specification stipulated in Article 42(3) of the old Patent Act, there shall be special circumstances, such as where the mechanism indicating the pharmacological effects is clearly identified before the filing of the subject invention, or the specification shall specifically describe the pharmacological effect with trial examples in which pharmacological data, etc. are shown.

B) Whether there are special circumstances, such as where the mechanism indicating the pharmacological effect is identified

Before the filing of the subject invention, patients with CLL were first administered with 375mg/m^2 of RITUXAN, which is an anti-CD20 antibody, and then administered with 500mg/m^2, 650mg/m^2, or 825mg/m^2 of the same once a week for three weeks. The following were known as a result of treatment: one patient who was administered with 500mg/m^2 of RITUXAN attained Partial Remission (PR); another patient showed progressive lymphocytosis; and all other patients showed improvement in peripheral lymphocytosis (Defendant's Exhibit 2-1, Prior Art 5). Thus, it is reasonable to deem that a skilled person was aware of the fact that it would be effective in treating

CLL if 375mg/m^2 of an anti-CD20 antibody were administered first, followed by 500mg/m^2 to 825mg/m^2 of the same thereafter.

Also, in prior art 5, in which 375mg/m^2 of RITUXAN was administered first and 500mg/m^2 to 825mg/m^2 thereof was administered thereafter, which are not that different from 500mg/m^2 to 1,500mg/m^2, the treatment was effective. Thus, it may not be deemed that a pharmacological effect of RITUXAN would differ, even if RITUXAN were administered in a range of 500mg/m^2 to 1,500mg/m^2. Thus, it may be deemed that a pharmacological effect to treat the chronic lymphocytic leukemia by administering 500mg/m^2 to 1,500mg/m^2 of an anti-CD20 antibody was already well known even before the filing of the subject invention.

C) Description in the specification of the subject invention

Embodiment 3 in the specification of the subject invention describes the result of clinical trials identical to that in prior art 5. Thus, it shall be deemed that claim 3 of the subject invention, as a medical use invention, satisfies the written description requirement of the specification.

6. An Inventive Step of Claims 3 and 5 of the Subject Invention: Determination of Defendant's Secondary Arguments

A. Parties' Arguments in Detail

1) Plaintiff's arguments in detail

In light of the following facts, an inventive step of claims 3 and 5 of the subject invention shall not be denied.

A) The date on which an inventive step of the subject invention is determined goes back to the date of claimed priority. Thus, prior art 5, which was issued after the priority date, is unfit as

prior art. Also, since it is impossible to know the exact date of issuance for Defendant's Exhibit 11, it is unfit as prior art.

B) Prior art 4 is merely a case report drafted to inform of the fact that the administration of rituximab to CLL patients generated serious side effects. prior art 4 does not describe the CLL treatment effect due to rituximab, but reports that a dosage of 375mg/m^2 would be excessive for CLL patients. Thus, prior art 4 only negatively teaches the fact that the CLL would be treated by a high dose of rituximab.

2) Defendant's arguments in detail

In light of the following circumstances, an inventive step of claims 3 and 5 of the subject invention is denied.

A) The date on which an inventive step of the subject invention is determined cannot go back to the date of claimed priority. Thus, the competence of prior art 5 as preceding literature issued before the filing date of the subject invention is recognized. Meanwhile, the contents identical to those of embodiment 3, which are the only description that can be viewed as relevant to claims 3 and 5 of the subject invention at Issue, are described in prior art 5. Thus, an inventive step of claims 3 and 5 of the subject invention is denied by prior art 5.

B) If the dose of 500mg/m^2 to 1,500mg/m^2 in claims 3 and 5 of the subject invention is construed as a total dose, the total dose shall be 1,500mg/m^2 by administering 375mg/m^2 a total of four times in prior art 4. Thus, the novelty of claims 3 and 5 of the subject invention is denied by prior art 4. Also, even if a dose of 500mg/m^2 to 1,500mg/m^2 of claims 3 and 5 of the subject invention is construed as an individual dose, claims 3 and 5 of the subject invention and prior art 4 are identical in that an anti-CD20 antibody is used to treat CLL. The only difference between them is that claims 3 and 5 of the

subject invention administer an anti-CD20 antibody of 500mg/m^2 to 1,500mg/m^2, while prior art 4 administers 375mg/m^2. However, it is known that the density to express a CD20 antigen is lower in CLL patients than in NHL patients. Thus, a skilled person can very easily be aware of the fact that a dose higher than 375mg/m^2, which is permitted for NHL patients, shall be administered for CLL patients. However, it cannot be deemed that claims 3 and 5 of the subject invention would attain a significant effect by adopting a dose of 500mg/m^2 to 1,500mg/m^2. Thus, an inventive step of claims 3 and 5 of the subject invention is denied by prior art 4.

B. Relevant Law

In a process to develop medicines, an effort is generally made to find an appropriate dose and administration method in order to resolve technological problems, such as the improvement of medicinal efficacy, effective administration methods, etc. A significant or different effect that a skilled person cannot anticipate in light of state of the art, publicly known technology, etc. shall be recognized for an inventive step of a use invention for a specific administration method and dose not to be denied (See Supreme Court Decision 2014Hu2702, decided August 29, 2017).

C. Qualification of Prior Art 5 as Prior Art

As examined in 4. above, since the subject invention does not correspond to the invention described in the first specification of the earlier-filed application, the date on which the patent requirements are determined would not go back to the date of claimed priority and shall be the filing date (November 9, 1999). Meanwhile, as examined in the background, prior art 5 corresponds to the publication issued on

November 15, 1998, which is before the filing date. Thus, prior art 5 is qualified as prior art for the subject invention.

D. An Inventive Step of Claim 3 of Subject Invention

1) Element-by-element comparison

Claim 3 of the Subject Invention	Prior Art 5
(1) A therapeutic combination that treats CLL by administering a therapeutically effective amount of an anti-CD20 antibody, and	Chronic Lymphocytic Leukemia (CLL)-related RITUXAN Research in Stage I/II As an attempt to maximize the treatment effect of CLL, a research team conducted a study on the treatment to increase a dose in phase I/II.
(2) a kit including a package insert that instructs to administer a dose of 500 mg/m^2 to 1,500 mg/m^2 of an anti-CD 20 antibody.	At first, CLL of 375mg/m^2 was administered to all patients to minimize drug-related side effects. Since then, an increased dose was administered once a week for three weeks (a fixed dose three times). Sixteen patients were administered with a dose of 500-500mg/m^2 (This appears to be a typo for 1,500 in light of what is specified below) ····· Eight patients completed their treatment (four patients, three patients and one patient were administered with 500mg/m^2, 650mg/m^2, and 825mg/m^2, respectively). One patient among those who were administered with 500mg/m^2 achieved his/her PR. One of the others displayed progressive lymphocytosis. The others improved in their peripheral lymphocytosis. However, a dose of 500mg/m^2 had no substantial effect on lymphatic glands. Therapy to increase dose will continue to be conducted.

2) Analysis on commonalities and differences

First, claim 3 of the subject invention and prior art 5 are identical in that they treat CLL by administering RITUXAN[3] of 500mg/m^2 to 1,500mg/m^2, which is an anti-CD20 antibody. However, prior art 5 is different from claim 3 of the subject invention in that the former administers 375mg/m^2 first and then administers 500mg/m^2 to 1,500mg/m^2.

3) Analysis on differences

A) Easiness of conception

In light of the circumstances stated below, the dose of claim 3 of the subject invention shall not be out of scope that can be anticipated from the dose described in prior art 5 to maintain a pharmacological effect of an anti-CD20 antibody and minimize toxicity or side effects. Also, it may not be deemed that it would be difficult for a skilled person to conceive the dose specified in claim 3 of the subject invention from prior art 5.

(1) As described below, prior art 5 features the low CD20 antigen density and the high blood B-cell count. Thus, it would be reasonable to view that rituximab, which is known as being effective in treating LGL, would be administered at more than 375mg/m^2 for CLL.

> Patients with small lymphocytic lymphoma (SLL) (tissue identical to CCL) had lower response rates (13%) and lower serum levels of rituximab than patients with other subtypes of LGL. A reduced response rate seen in SLL patients could be related to a lower density of CD20 antigen and/or a high number of circulating B-cells. Both factors would be expected to (negatively) impact a response seen in CLL. In an attempt to maximize activities in CLL, we are conducting the phase I/II study.

3) This has the same meaning as rituximab. Thus, this shall be referred to as “rituximab” hereinafter.

(2) Also, prior art 5 describes the following: eight patients completed their treatment with a dose of 500mg/m^2, 650mg/m^2, and 825mg/m^2; all patients improve in their peripheral lymphocytosis except one patient with progressive lymphocytosis; and therapy to increase dose will continue to be conducted.

(3) Prior art 5 failed to fully review patients who were administered with a dose of 1,500mg/m^2, but described that the toxicity caused by the increase in dose after the first administration diminished. Thus, it implies that even if a dose is increased up to 1,500mg/m^2, the toxicity would be of an endurable level.

B) Significant or different effect

In light of the circumstances stated below, it may not be deemed that claim 3 of the subject invention has a significant or different effect which cannot be anticipated from prior art 5.

(1) In prior art 5, all sixteen patients were administered with 375mg/m^2 of rituximab once and then 500mg/m^2 to 1,500mg/m^2 thereof per week for three weeks to minimize side effects related to the rituximab. Thus, eight patients completed their treatment. Prior art 5 describes the following: one patient who was administered with 500mg/m^2 of RITUXAN attained Partial Remission (PR); another patient showed progressive lymphocytosis; and all other patients showed a reduction in peripheral lymphocytosis but had no substantial effect on their lymphathic glands.

(2) Meanwhile, according to the effect description of embodiment 3 in the specification of the subject invention, eight patients out of sixteen patients completed their treatment, and one patient treated at a dose of 650mg/m^2 achieved complete remission. One patient showed progressive lymphocytosis, and all other patients showed reduction in peripheral blood lymphocytosis. However, the treatment was less effective on lymphatic glands (Paragraph [0035]).

(3) Ultimately, in both inventions, eight patients out of

sixteen patients completed their treatment, and one patient achieved partial remission or complete remission. One patient showed progressive lymphocytosis, and all other patients showed reduction in peripheral blood lymphocytosis. However, the treatment had no effective on lymphatic glands. Thus, there is no substantial difference in their effects.

(4) However, in prior art 5, a patient administered with 500mg/m^2 achieved partial remission, whereas a patient administered with 650mg/m^2 in embodiment 3 of the subject invention achieved complete remission. However, it may not be deemed that the administration method in embodiment 3 is completely identical to that in claim 3 of the subject invention in that ① claim 3 of the subject invention contains a dose of 500mg/m^2, but ② unlike claim 3 of the subject invention , embodiment 3 first administers 375mg/m^2 and then 500mg/m^2 to 1,500mg/m^2 thereafter. Thus, it may not be deemed that claim 3 of the subject invention has a substantial or different effect that cannot be anticipated from prior art 5 due to the differences stated above.

4) Summary of discussion

The differences between claim 3 of the subject invention and prior art 5 can be easily conceived from prior art 5 by a skilled person, and thus an effect therefrom also can be anticipated by such person. Thus, its inventive step shall be denied.

E. An Inventive Step of Claim 5 of Subject Invention

Claim 5 of the subject invention is a dependent claim that cites claim 3 of the subject invention and limits the anti-CD20 antibody to rituximab. However, as explained above, prior art 5 also uses rituximab as an anti-CD20 antibody. Thus, an inventive step of claim 5 of the subject invention is denied on the grounds identical to those

in claim 3 of the subject invention.

7. Conclusion

Therefore, there are grounds for invalidation due to the deficiency of description in claims 1, 2, and 4 of the subject invention. In the case of claims 3 and 5 of the subject invention, an inventive step is denied and invalidated. The IPTAB decision is consistent with the above analysis and shall be upheld. Thus, the plaintiff's claim to revoke the IPTAB decision is without merit and therefore dismissed. It is so ordered.

Presiding Judge Kyung Ran KIM
Judge Hyeon Seop JIN
Judge Kwang Nam KIM

PATENT COURT OF KOREA
THIRD DIVISION
DECISION

Case No.	2017Heo3720 Rejection (Patent)
Plaintiff	BlueScope Steel Limited Australia
Defendant	Commissioner of Korean Intellectual Property Office
Intervenor joining the Defendant[1)]	Dongkuk Steel Mill Co., Ltd.
Date of Closing Argument	Nov. 23, 2018
Decision Date	Jan. 25, 2019

ORDER

1. The plaintiff's claim is dismissed.

2. The litigation costs relating to the intervention is assessed against the intervenor joining the defendant. The rest is assessed against the plaintiff.

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1) This court rejected the intervenor's request to join the proceeding on October 29, 2018. However, the intervenor filed an immediate appeal from the order, which is still pending. As such, pursuant to Article 75(1) of the Civil Procedure Act, the Intervenor may continue to act in the litigation until the above order is confirmed.

PLAINTIFF'S DEMAND

The IPTAB Decision 2015Won2751 dated March 29, 2017 shall be revoked.

OPINION

1. Basic Facts

A. Plaintiff's Subject Invention at Issue (Plaintiff's Exhibit 5)

1) Title of Invention: Metal-coated Steel Strip

2) International Application Date/ Date of Claimed Priority/ Translation Filing Date/ Application Number: Mar. 13, 2009/ Mar. 13, 2008/ Jun. 30, 2010/ No. 10-2010-7014576

3) Claims (as amended on June 18, 2015)

Claim 1. A hot-dip coating method to form a corrosion-resistant Al-Zn-Si-Mg alloy coating on a steel strip, wherein said method comprises: the process of passing the steel strip through a hot-dip coating bath that contains Al, Zn, Si, and Mg ("Element 1"); the process of forming an alloy coating on the strip so that the coating thickness is no more than 30μm and the coating thickness variation is no more than 40% in any given 5mm diameter section ("Element 2"); and the distribution of Mg_2Si particles in the coating microstructure is no more than 10% by weight on the surface of the coating ("Element 3").

Claims 2-8, 10: (Omitted)

Claims 9, 11-26: (Deleted)

4) Summary of Invention

(1) Technical Field and Background Art

The subject invention describes a strip, particularly a steel strip having corrosion-resistant[2] metal alloy coating. More particularly, it relates to a corrosion-resistant metal alloy coating containing Aluminium (Al) - Zinc (Zn) - Silicon (Si) - Magnesium (Mg) (hereinafter "Al-Zn-Si-Mg alloy") as the main elements of the coating.

Typically, corrosion-resistant metal alloy coating is formed on a steel strip by the method of hot-dip coating. Fifty-five percent Al-Zn alloy coating is a known metal alloy coating on a steel strip. It usually includes α-Al dendrites and β-Zn phase in the inter-dendritic region of the coating after solidification. In relation to hot-dip metal coating method, it is known to add silicon to the coating alloy composition to prevent excessive alloying between the steel substrate and the molten coating.

(2) Solution to Problem

The applicant of the subject invention discovered that, when Mg is added to 55% Al-Zn-Si alloy coating composition, Mg changes the properties of the formed corrosion product, which in turn brings useful effect on the product performance, such as enhanced cut-edge protectio n.[3] However, the applicant also discovered that Mg reacts to Si to form a Mg_2Si phase, which offsets the above useful effect of Mg.

The subject invention focuses on a surface defect called "mottling." Mottling is a defect where multiple coarse (i.e. with large-and rough-sized crystals) Mg_2Si particle clusters on the coating surface result in a blotchy surface that is aesthetically unacceptable. More particularly, the clustered Mg_2Si particles form darker areas of approximately 1mm-5mm in size, causing non-uniformity of the surface appearance.

The subject invention is about Al-Zn-Si-Mg alloy coated steel strip having Mg_2Si particles in the coating microstructure but the coating

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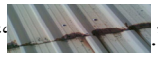
2) "Corrosion-resistance" refers to a property of being resistant to corrosion or erosion. See Iron & Steel Dictionary of Korea Iron & Steel Association at www.kosa.or.kr.

3) "Cut-edge protection" means protection of a cut edge from corrosion like "  ." See eLibrary of Australian Steel Institute at www.steel.org.au.

surface has an insignificant proportion of Mg_2Si particles or is substantially free of Mg_2Si particles.

The applicant of the subject invention discovered that the Mg_2Si particle distribution within the coating microstructure as the above provides substantial benefits and that such distribution may be achieved by any of the following methods:

(a) adding strontium on the coating alloy;

(b) selecting the cooling rate while the coated strip exiting a coating bath solidifies in relation to a given coating mass (i.e. coating thickness); and

(c) minimizing coating thickness variation.

The applicant of the subject invention discovered that, by minimizing coating thickness variation, Mg_2Si phase's distribution properties may be controlled so that the coating surface would have Mg_2Si only insignificantly or not have it at all. This is found to greatly reduce the mottling risk of Mg_2Si. The insignificant proportion of Mg_2Si on the coating surface region is 10wt% or less of Mg_2Si particles. The coating thickness of Al-Zn-Si-Mg alloy is typically 30μm or less.

The subject invention provides a hot-dip coating method for forming a corrosion-resistant Al-Zn-Si-Mg alloy coating on a steel strip and includes the process of passing the steel strip through a hot-dip coating bath that contains Al, Zn, Si, and Mn, and optionally other elements, and the process of forming an alloy coating having minimum coating thickness variation, so that the distribution of Mg_2Si particles in the coating microstructure is such that there is only a small proportion of Mg_2Si particles or substantially no Mg_2Si particles on the coating surface. Preferably, the coating thickness variation is 40% or less in any given 5mm diameter section of coating.

(3) Details to Exploit Invention

The applicant of the subject invention discovered two factors that affect the coating microstructure, especially the Mg_2Si particle distribution within the coating.

The first factor is the impact of the cooling rate of the steel strip that exits the coating bath before solidification is complete. Mottlings can be prevented by controlling the cooling rate.

The second is the uniformity of the coating thickness across the coating surface. The coating thickness variation on the coating surface is

measured in (a) long range (by weight-strip-weight method of a 50mm diameter disk across the entire width of the strip) and (b) short range (on the cross-section of the coating by 500x microscope in every 25mm across the width of the strip). In a manufacturing environment, the long-range thickness variation is typically controlled to meet the minimum coating requirements as defined in the relevant standards. However, experiments commonly show that a product perfectly meeting the minimum coating requirements as defined in the relevant standards still shows coating thickness variation, caused by two or more factors, in a short range of 5mm. Such a short-range coating thickness variation is certain to affect Mg_2Si on the coating surface.

For example, the applicant of the subject invention discovered that, if the short-range coating thickness variation is greater than 40% above the nominal coating thickness within a distance of 5mm across the strip surface, Mg_2Si particles are formed on the coating surface for AZ150 Class coatings even within a preferable range of cooling rate and this increases the risk of having mottlings. Therefore, to prevent mottlings, short-range coating thickness must be controlled to have 40% or less variation than nominal coating thickness within 5mm range across the strip surface.

(4) Effect of Invention

The subject invention removes the mottling defects and improves first-time-prime production rate. It at least substantially removes the risk of mottling defects and thus gives a coating surface a beautiful, silverly metallic appearance. As a result, first-time-prime production rate is improved, and profitability is boosted.

B. Prior Arts

1) Prior Art 1 (Plaintiff's Exhibit 8)

Prior Art 1 relates to "Al-Zn-Mg Alloy Coated Steel Products," published on November 8, 2002 as JP Laid-open No. 2002-322527. The main content and drawings are as below.

Prior Art 1 relates to primary and secondary steel products that are hot-dip coated with Al-Zn-Mg alloy, principally consisting of Al and Zn and containing Mg. The technical task is to provide Al-Zn-Mg alloy coated steel products having excellent corrosion-resistance.

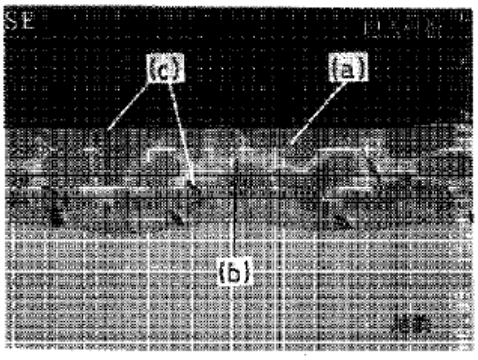
To solve this task, Prior Art 1 consists of the following: (1) Al-Zn phase takes 50% or more by volume on a coating film when surface analysis is performed using an X-ray microanalyzer on a cross section of the coating film; (2) at least some Mg-Si phase is precipitated on the surface of the coating film; and (3) the Mg-Si phase takes 70% or less by area on the surface of the coating film.

Fig. 1 below is a result of 1,000x magnification of cross-section of specimens of coatings with an X-ray microanalyzer. Roughly, three types of layer are shown. Al and Zn are found in the region corresponding to phase (a). Nearly no other elements are found from the phase. A small amount of Mg is shown in the region corresponding to phase (b), but the phase mostly consists of Zn. The region corresponding to phase (c) is a Mg-Si phase, as both Mg and Si are found in the region.

Prior Art 1 is characterized by some of Mg-Si phase being present exposed on the surface of the coating, which has the effect of enhancing corrosion-resistance. However, corrosion-resistance diminishes if the area rate of the Mg-Si phase to the total surface exceeds 70%. Therefore, it is preferred that the area rate of the Mg-Si phase to the total coating surface is 70% or less. In addition, while there is no particular lower limit value, it is desirable to have at least 2%–3% Mg-Si phase, and typically 5%–10% is present.

The coating uses a coating bath with molten quaternary alloy consisting of Al, Zn, Mg, and Si. The ratios of these elements are not specified, but preferably Al is 25wt% or more, Mg is 10wt% or less, Si is 0.5wt% or more in proportion to Al, and the remaining part is Zn. Particularly, if the amount of Mg exceeds 10wt%, the coating becomes brittle and the surface readily develops cracks. The coating bath is set to high temperature, to at least melting point and preferably 40°C–50°C higher than the melting point, and steel materials are dipped into the bath for coating. The duration of immersion should be appropriately determined based on the shape or size of the steel material. After the steel material is withdrawn from the bath, it is cooled as rapidly as possible, at in excess of 40°C/sec.

[Fig. 1]



2) Prior Art 2 (Plaintiff's Exhibit 9)

Prior Art 2 relates to "High Corrosion-resistant Steel Plate with Hot-dip Zn-Al Alloy Coating Containing Mg Exhibiting Good Surface Appearance," published on November 28, 2000 as JP Laid-open No. 2000-328214. The main content and drawings are as below.

Prior Art 2 relates to steel plates coated with hot-dip Zn-Al alloy containing Mg. Its technical task is to provide steel plates, coated with hot-dip Zn-Al alloy containing Mg, that can be mass-produced on an industrial scale, exhibiting good appearance and high corrosion-resistance.

Fig. 1-1 below is a steel plate coated with hot-dip Zn-Al alloy not containing Mg. It shows a smooth and good surface appearance. Fig. 1-2 is a steel plate coated with hot-dip Zn-Al alloy with approximately 1% Mg. White stripes from both edges of the strip extending obliquely downward are observed. The surface of the stripes has wrinkle-like embossings. Fig. 1-3 is a steel plate coated with hot-dip Zn-Al alloy containing 6% Mg. Wrinkle-like defects are found not only on the edges but also in the middle of the steel plate. Accordingly the surface appearance is significantly inferior.

Addition of a small amount of Sr can significantly prevent such wrinkle-like defects. Thus, highly corrosion-resistant steel plates coated with hot-dip Zn-Al alloy containing Mg, having good surface appearance, can be obtained by forming a coating layer on the surface of the plate

that contains Al: 25wt%-70wt%, Mg: 1.5wt%-6.0wt%, Sr: 0.01wt%-1.0wt% and preferably 0.07wt%-1.0wt%, Si within the range specified by formula (1), and preferably by formula (1)', and the remaining part of Zn and unavoidable impurities.

$$Al(wt\%) \times 0.005 \leq Si(wt\%) \leq 10 \cdots (1)$$

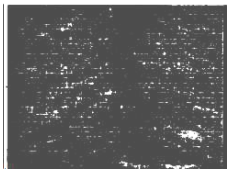
$$Al(wt\%) \times 0.03 \leq Si(wt\%) \leq 10 \cdots (1)'$$

Mg is combined with Zn and Si in the coating layer to form inter-metallic compounds of $MgZn_2$ and Mg_2Si. These inter-metallic compounds are stable products that work as a protective film by rapidly and uniformly covering the coating surface, thereby enhancing corrosion-resistance of the coating layer.

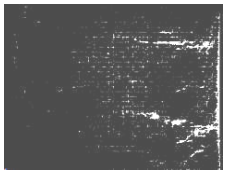
When Mg is less than 1.5wt% in the Zn-Al alloy, corrosion-resistance is not sufficiently enhanced. At the same time, if it exceeds 6wt%, wrinkle-like defects are not sufficiently suppressed on the coating surface even when Sr is added. For these reasons, Mg in the coating layer ranges between 1.5wt%-6.0wt% in the subject invention. The problem of wrinkle-like defect can be solved when an appropriate amount of Sr is added to the coating layer. It is believed that this is because Sr is oxidized prior to Mg in an unsolidified surface layer exiting the coating bath, thereby suppressing oxidization of Mg.

Si is added to make the iron-containing alloy layer, formed on the interface between the coating layer and the steel plate, thin and regular. If Si in the coating layer exceeds 10wt%, clusters are precipitated, which diminishes processability and simultaneously increases melting point and, as such, is undesirable. Therefore, the amount of Si in the coating layer should be within the range set out in the above formula (1), and particularly, the range in the formula (1)' is preferable.

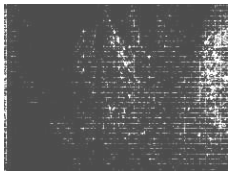
[Fig. 1-1]



[Fig. 1-2]



[Fig. 1-3]



3) Prior Art 3 (Plaintiff's Exhibit 10)

Prior Art 3 relates to a "Method for Manufacturing Hot-dip Zn-Mg-Al Coated Steel Plate with Excellent Coating Appearance," published on February 10, 2005 as JP Laid-open No. 2005-36304. The main content and drawings are as below.

Prior Art 3 relates to a method for manufacturing hot-dip Zn-Mg-Al coated steel plates having excellent coating appearance. Zn-Mg-Al coated steel plate is an excellent coated steel plate commonly used as a highly corrosion-resistant coated steel plate. However, its complex solidification structure of the coating layer makes it necessary to control the cooling rate, for otherwise it may develop visible spots, crepe-like[4] microscopic embossings on the surface, white and rough surface, or microscopic feather-like[5] defects, thus calling for improvement.

The technical task of Prior Art 3 is to solve these defects on Zn-Mg-Al coated steel plates and provide uniform and excellent coating appearance.

Prior Art 3 relates to a generally known method of manufacturing hot-dip Zn-Mg-Al coated steel plates, which is to dip a steel plate into a Zn coating bath having Al: 0.1wt%−60wt% and Mg: 0.1wt%−10wt%, withdraw the coated steel plate, control the coating mass by gas wiping,[6] and then cool it to solidify the coating layer. However, amid this typical process, Prior Art 3 contacts a solid surface with the unsolidified surface of the coating layer before cooling, thereby forming solidification nuclei in the coating layer. This process enables manufacturing of a hot-dip Zn-Mg-Al coated steel plate having excellent appearance.

4) The original text in Prior Art 3 is "梨地狀." The "crepe-like" shape, as provided in the party's translation, refers to the shapes like spots on the pear (梨) skin or textile in gingham pattern.

5) The dictionary meaning of the original text in Prior Art 3, "羽根," is "a golden rain tree drilled to make holes to put bird feathers into the holes," or "a badminton shuttlecock."

6) "Gas wiping" is a technology controlling the coating amount by using air knives (devices that jet compressed air or compressed nitrogen gas from nozzles) so that the compressed air or nitrogen gas would collide with

The solid surface contacted to the unsolidified surface of the coating has embossings, which may have average depth of 0.01μm–500μm and average in-between distance of 1μm–3,000μm. The numerical range is selected because the surface appearance of the coating was the most excellent within the range.

The above Zn coating bath may include 10% or less of Si, Sn, Cr, Ti, B, Ni, Fe, Co, Sb, Pb, and Cu, alone or combined. After solidification nuclei are formed in the unsolidified coating layer, the steel plate may be water-cooled or naturally cooled at a rate of 5°C/sec or above.

While its mechanism is not clear, it is believed that the number of initial solidification nuclei in the Zn-Mg-Al coating layer and the distance between the nuclei is affected by the embossing of the solid surface. Then, in case of the primary Al or Zn crystal[7] and the ternary Zn-Mg-Al alloy phase and further, Zn-Mg-Al coating having Si or Sn, the formation state of the inter-metallic compounds such as Mg_2Si and Mg_2Sn is changed. This solves the above-mentioned problems of spots, crepe-like microscopic embossings on the surface, white and rough surface, or microscopic feather-like shapes, leading to improved appearance.

4) Prior Art 4 (Plaintiff's Exhibit 11)

Prior Art 4 relates to "Surface-treated Steel Plate with Excellent Corrosion Resistance and Processability and Its Manufacturing Method," published on May 9, 2002 as JP Laid-open No. 2002-129300. The main content and drawings are as below.

Prior Art 4 relates to hot-dip Al-Zn-Mg-Si coated steel plate with excellent corrosion-resistance and processability. It is invented to overcome the problem of diminished corrosion-resistance of the conventional Al-Zn-Mg-Si coated steel plate due to its Mg-based inter-metallic

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the coating layer attached to the coated steel plate. See Engineering Dictionary, ENGNET (Engineering Network) at www.engnetglobal.com.

7) Primary crystal refers to the crystal that is firstly gained from molten metal.

compound (Mg_2Si) in the coating layer that has a high rate of dissolution in the corrosive environment.

The essence of Prior Art 4 is a method of manufacturing coated steel plates characterized by: (1) the coating layer having Mg: 0.5wt%−2wt%, Si: 0.2wt%−5wt%, Al: 40wt%−65wt%, Zn: 30wt%−60wt%, and 99% or more of total Mg is solid solution in the coating layer; (2) the coating includes Mg: 0.5wt%−2wt%, Si: 0.2wt%−5wt%, Al: 40wt%−65wt%, Zn: 30wt%−60wt%, and the maximum cooling rate of the coated steel strip after it exits the coating bath is controlled to 30°C/sec or above, (3) the steel strip to be dipped into the coating bath is preliminarily coated with Ni, Fe, Cu, and Cr and then hot-dip coated, and (4) one, two, or more among Ca, Be, Bi, Cr, and Co are included 0.01%−1.0% in the coating layer.

The long-term high corrosion-resistance comes from having 99% or more of total Mg in solid solution in the coating layer. For this purpose, it is desirable to set the maximum cooling rate to 30°C/sec or above after the steel strip is dipped, coated, and exited from the coating bath. Once the cooling rate is decreased, it becomes easier to extrude inter-metallic compounds such as Mg_2Si, leading to diminished long-term corrosion resistance.

C. Procedural History

1) On June 20, 2014, the patent examiner of Korean Intellectual Property Office (the "KIPO") sent a Notice of Grounds for Rejection (Plaintiff's Exhibit 6) to the plaintiff regarding the subject invention, stating that "The entire claims of the subject invention, claims 1−26, lack clarity and thus fail to meet the written description requirement. In addition, a person having ordinary skill in the art (a "skilled person") can easily invent (i) claims 1−3, 6−20, 22, and 26 from Cited Arts 1−6,[8] (ii)

8) Cited Arts 1 to 7 were submitted at the examination process of the subject invention. Prior Arts 1 to 4 were submitted at the

Prior Art	1	2	3	4
Cited Art	1	2	6	5

claims 4, 5, and 21 from Cited Arts 1-6, and (iii) claims 23-25 from Cited Arts 1-5 and 7, and thus the entire claims of the subject invention lack an inventive step. Therefore, the subject invention may not be granted patent for the above grounds."

2) In response, on December 18, 2014, the plaintiff filed a written amendment (Defendant's Exhibit 1) and a written argument (Defendant's Exhibit 2), deleting the original claims 1-9 and rewriting original claims 10–26 as claims 1–10, and adding a new claim 11 that refers to claim 1 among others. However, on February 16, 2015, the KIPO patent examiner decided to reject the subject invention (Plaintiff's Exhibit 2), concluding that the ground for rejection with regards to claims 1–10 as amended on December 18, 2014, i.e. lack of inventive step, remained unresolved.

3) The plaintiff filed an appeal against the above rejection with the Intellectual Property Trial and Appeal Board ("IPTAB") on May 19, 2015. Further, on June 18, 2015, it filed an amendment seeking reexamination, moving the feature of limiting coating thickness to 30μm or less that was recited in claim 9 to claim 1 and deleting previous claims 9 and 11 (Plaintiff's Exhibits 4 and 5). However, on July 9, 2015, the KIPO patent examiner sent a notice to the plaintiff of the reexamination result that the original decision would stand because claims 1–8 and 10, as amended on June 18, 2015, still lacked an inventive step and thus the ground for rejection remained (Defendant's Exhibit 3).

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administrative trial and this lawsuit. The corresponding relations between Cited Arts and Prior Arts are as per the chart on the right.

4) The IPTAB heard the above appeal under Case No. 2015Won2751 and dismissed the appeal on March 29, 2017 (Plaintiff's Exhibit 1), ruling that "Element 1 of claim 1 of the subject invention is substantially identical to the corresponding elements of Prior Arts 1 or 2. Element 2 can be easily derived by a skilled person from the disclosures of Prior Arts 3 and 4. Element 3 can be easily derived by a skilled person from the disclosures of Prior Arts 1–4. Therefore, claim 1 lacks an inventive step as it may be easily invented by a skilled person by combining Prior Arts 1–4, and a patent application must be rejected in its entirety when any one of the claims has a ground for rejection."

2. Summary of Parties' Argument and Issues

A. Plaintiff

Claim 1 of the subject invention does not lack an inventive step with regards to Prior Arts for the following reasons, and thus the IPTAB decision concluding otherwise is erroneous.

1) The technical task of claim 1 is to improve the appearance of a coated surface by reducing mottlings, which are surface defects caused by Mg_2Si. However, Prior Arts show no recognition of such a task.

2) In addition, claim 1 provides a method to prevent mottlings based on the technical idea that controlling the concentration gradient of Mg and Si to the thickness direction of the coating would cause the Mg and Si on the coating surface to diffuse into the coating, thereby preventing nucleation of Mg_2Si particles on the surface. The concrete solution is

short-range thickness variation control. In this regard, the plaintiff itself has come up with the parameter of "thickness variation of 40% or less in any given 5mm diameter section of the coating" in claim 1. However, Prior Arts do not provide any technical means of controlling short-range coating thickness variation to block the formation of Mg_2Si on the coating surface.

3) Therefore, a skilled person would not have easily invented claim 1 from Prior Arts that have no description or suggestion about the technical task or its solution in claim 1.

4) Meanwhile, a new ground for rejection may not be raised in a judicial action to revoke an administrative decision on rejection. The arguments in the below section B on claim 1's lack of inventive step, particularly based on the combination of Prior Art 4 with Prior Art 3 or based on Prior Art 3 alone, constitute new grounds for rejection that have never been raised during examination and administrative trial processes. Thus, the inventive step of claim 1 may not be denied based on such arguments.

B. Defendant and Intervenor Joining the Defendant

Claim 1 of the subject invention lacks an inventive step because a skilled person can easily invent it (i) by combining Prior Art 1 with Prior Art 3, (ii) by combining Prior Art 2 with Prior Art 3, (iii) by combining Prior Art 4 with Prior Art 3, or (iv) from Prior Art 3.

Since a patent application having two or more claims must be rejected in its entirety when any one of the claims has a ground for rejection, the subject invention must be rejected as a whole, and the IPTAB decision concluding accordingly was lawful.

C. Issues

In sum, the issues of the present case come down to: (i) whether claim 1 of the subject invention is denied of an inventive step by the combination of Prior Art 1 with Prior Art 3 or the combination of Prior Art 2 with Prior Art 3; (ii) whether the grounds for rejection for claim 1, lack of an inventive step based on the combination of Prior Art 4 with Prior Art 3 or based on Prior Art 3 alone, constitute new grounds for rejection that no opportunity to submit opinion in response was given during the examination or administrative trial, and if not, whether claim 1 lacks an inventive step based on Prior Arts 4 and 3, or on Prior Art 3 alone. The issues are reviewed below respectively.

3. Whether Claim 1 Lacks an Inventive Step

A. Technical Level of a Person Having Ordinary Skill in the Art

The technical level of a skilled person under this case is based on a person who has a bachelor's degree in metallurgy (mechanical) engineering and has about five years of experience in plating.[9)]

B. Comparison with Prior Art 1

1) Element-by-element Comparison

Element	Claim 1 (Plaintiff's Exhibit 5)	Prior Art 1 (Plaintiff's Exhibit 8)
1	[A hot-dip coating method to form a corrosion-resistant Al-Zn -Si-Mg alloy coating on a steel	The technical task of Prior Art 1 is to provide Al-Zn-Mg alloy coated steel product having

9) There is no dispute between the parties on this matter (See the first Court Record for Trial dated November 23, 2018).

Element	Claim 1 (Plaintiff's Exhibit 5)	Prior Art 1 (Plaintiff's Exhibit 8)
	strip, wherein said method comprises:] the process of passing the steel strip through a hot-dip coating bath that contains Al, Zn, Si, and Mg;	excellent corrosion-resistance (See Paragraph [0004]). Producing coated steel products by using a hot-dip coating bath that contains 53wt% Al, wt% Mg, 0.8wt% Si, and the remaining part of Zn and unavoidable impurities (See Paragraphs [0001] and [0027])
2	the process of forming an alloy coating on the strip so that the coating thickness is no more than 30μm and the coating thickness variation is no more than 40% in any given 5mm diameter section;	No corresponding element
3	the distribution of Mg_2Si particles in the coating microstructure is no more than 10% by weight on the surface of the coating	If the area rate of the Mg-Si phase to the total surface exceeds 70%, a bad influence is dominant and corrosion-resistance diminishes. Therefore, it is preferred that the area rate of the Mg-Si phase to the total coating surface is 70% or less. In addition, while there is no particular lower limit value, it is desirable to have at least 2%-3% Mg-Si phase, and typically 5%-10% is present (See Paragraph [0013]).

2) Commonalities and Differences

A) Element 1

Element 1 of claim 1 and the corresponding element of Prior Art 1

are common in that a hot-dip coating method to form a corrosion -resistant Al-Zn-Si-Mg alloy coating on a steel strip comprises the process of passing the steel strip through a hot-dip treatment pot (coating bath)[10] that contains Al, Zn, Si, and Mg, thereby showing no difference.

B) Element 2

While Element 2 of claim 1 relates to the process of forming an alloy coating on the strip so that the coating thickness is no more than 30μm and the coating thickness variation is no more than 40% in any given 5mm diameter section, Prior Art 1 has no corresponding element, thereby showing a difference.

C) Element 3

Element 3 of claim 1 and the corresponding element of Prior Art 1 are essentially identical in that the distribution of Mg_2Si particles in the coating microstructure is no more than 10% by weight (typically 5%−10%) on the surface of the coating.

C. Analysis of Difference

For the following reasons, the difference between Element 2 of claim 1 and Prior Art 1 can be easily overcome by a skilled person by combining Prior Art 1 with Prior Art 3 so that the inventive step of claim 1 is denied.

1) Legal Principle

Parameter invention is an invention in which elements of the invention are specified by using the physical, chemical, and biological

10) The item enclosed in parentheses refers to the element of Prior Art 1 corresponding to the elements of claim 1 of the subject invention. Hereinafter, all are expressed in the same manner in the case of comparing claim 1 with Prior Art 1.

characteristic values (parameters) newly created by the inventor or by using the correlation between multiple variables.

Considering that the inventive step of a parameter invention which includes the description that specifies an object by means of properties or characteristics should be determined based on the understanding of the technical significance of the parameters, if the parameters are expressed by changing only the expression of the properties of characteristics of a publicly known product by a prior invention, the parameter invention must be regarded as being essentially the same or similar to the prior invention with only difference in terms of technical expression, thereby lacking the novelty and inventive step.

On the other hand, in the case where the parameter has significance as a technical means for solving a problem different from publicly known inventions, and thus has a peculiar effect such as a heterogeneous effect, the inventive step may not be denied. For this, it should be described in the specification in detail that the parameter as a technical means for solving a different problem from publicly known inventions has significance and that there is a causal relationship between the parameter and the peculiar effect such as heterogeneous effect, or it should be possible for a skilled person to infer above significance as a technical means and the causal relationship from the description of the specification.

Meanwhile, even if the above technical significance cannot be recognized with the introduction of the parameter itself, most of parameter inventions take the form of limiting the newly introduced parameters by numerical values. In this case, the parameter invention can also be a numerical limitation invention, and thus the legal principle for numerical limitation invention can be applied to the determination of the invention step. In other words, if significant difference occurs between in and out of a limited numerical range, it should be considered that the inventive step is not denied.

2) Analysis

A) First, “coating thickness variation of no more than 40% in any given 5mm diameter” of Element 2 limits the elements of the invention based on the correlation between the variables such as “distance” of 5mm diameter and “coating thickness variation” of no more than 40%, thereby becoming a new parameter not shown in Prior Art 1.

B) Also, interpretation of claim 1 as a whole yields that having a coating thickness variation of no more than 40% in any given 5mm diameter of Element 2 is designed to have no more than 10% by weight of Mg_2Si particles on the surface of the coating as in Element 3. Together with the description of the specification of the subject invention (Plaintiff’s Exhibit 5) described below, the above parameters shown in Element 2 can be understood as a means to solve the problem by inhibiting the formation of Mg_2Si particles on the surface of the coating, thereby reducing the risk of mottlings, i.e. blotchy surfaces.

> [0020] More particularly, mottling is a defect where multiple coarse Mg_2Si particle clusters on the coating surface result in a blotchy surface that is aesthetically not acceptable. (The rest is omitted.)
>
> [0100] The applicant of the subject invention discovered that, if the short-range coating thickness variation is greater than 40%, the nominal coating thickness within a distance of 5mm across the strip surface, Mg_2Si particles are formed on the surface for AZ150 Class coatings ... (omitted) ... and this increases the risk of having mottlings.
>
> [0101] Therefore, ... (omitted) ... to prevent mottling, short-range coating thickness must be controlled to have 40% or less variation than the nominal coating thickness within 5mm range across the strip surface.

C) The technical task of Prior Art 3 is to solve the surface defects such as those caused by inter-metallic compounds including Mg_2Si according to the below description of Prior Art 3 (Plaintiff’s Exhibit 8), of which technical field corresponds to the subject

invention and Prior Art 1 as a method for manufacturing hot-dip Al-Zn-Si-Mg coated steel plate. That is, Prior Art 3 directly recognizes surface defects caused by Mg_2Si and includes the improvement thereof as problem to be solved. Also, improving surface defects such as spots and embossings is a basic task to be solved in the relevant technical field for enhanced quality of alloy coated products.

> [0003] Zn-Mg-Al coated steel plate ... (omitted) ... is an excellent coated steel plate commonly used as a highly corrosion-resistant coated steel plate. However, its complex solidification structure of the coating layer makes it necessary to control the cooling rate, for otherwise it may develop spots, crepe-like microscopic embossings on the surface, white and rough surface, or microscopic feather-like defects, thus calling for improvement.
>
> [0005] The subject invention ... (omitted) ... relates to a method of manufacturing hot-dip Zn-Mg-Al coated steel plate having excellent coating appearance by controlling the coating mass and contacting a solid surface with the unsolidified surface of the coating layer before cooling, thereby forming solidification nuclei in the coating layer.
>
> [0016] While its mechanism is not clear, ... (omitted) ... when Zn-Mg-Al coating contains Si or Sn, the formation of inter-metallic compounds such as Mg_2Si and Mg_2Sn are affected. This is considered to contribute to solving the problem of aforementioned defects such as spots, crepe-like microscopic embossings on the surface (caused by primary Al crystallization), white and rough surface, and microscopic feather-like shapes, leading to improved appearance.

D) In addition, even though claim 1 relates to a hot-dip coating method and is a process invention relating to a method for manufacturing a product, the method described in Element 2 merely concerns a process of making a final product (coated product) with a characteristic of thickness variation within a certain range at a certain distance, and is silent about specifically how to produce products with such characteristic. In other words, it does not provide any practical means distinguishable from known technologies by its technical

significance of providing final products with the coating thickness within the certain range.

E) In addition, the specification of the subject invention (Plaintiff's Exhibit 8) as described below merely repeats the description that the coating thickness variation is controlled to be no more than 40% within a 5mm diameter across the strip surface so that the Mg_2Si particles on the coating surface is 10wt% or less, thereby reducing the risk of mottling. Thus, it is not specifically stated that there is a causal relationship between the above parameter and the effect of achieving the distribution of Mg_2Si and ultimately the reduction of mottling and it cannot be said that a skilled person can infer this from the description in the specification.

[0030] The applicant of the subject invention discovered that, by minimizing coating thickness variations, Mg_2Si phase's distribution properties may be controlled so that the coating surface would have Mg_2Si only insignificantly or not have it at all. This is found to greatly reduce the mottling risk.

[0032] The small proportion of Mg_2Si particles on the surface of the coating is no more than 10 weight % of the Mg_2Si particles.

[100] For example, the applicant of the subject invention discovered that, if the short-range coating thickness variation was greater than 40% above the nominal coating thickness within a distance of 5mm across the strip surface, Mg_2Si particles are formed on the coating surface and this increases the risk of having mottlings.

[0101] Therefore, to prevent mottlings under the experimental conditions tested, short-range thickness variation must be controlled to have 40% or less variation than nominal coating thickness within 5mm range across the strip surface.

[0111] The short-range coating thickness variation has to be controlled to be no greater than 40% above the nominal coating thickness within a distance of 5mm across the strip surface to achieve the distribution of Mg_2Si particles of the subject invention.

F) In consideration of all the above circumstances, the parameter in Element 2 does not appear to hold significance as technical means to solve problems different from those of publicly known inventions and have different and unique effects. Therefore, as the introduction of the parameter itself cannot be said technically significant, inventive step of claim 1 cannot be acknowledged based on the introduction of the parameter alone.

G) However, since Element 2 provides numerical limitations such as having the coating thickness of no more than 30μm and the coating thickness variation of no more than 40% in any given 5mm diameter section and thus claim 1 can also be regarded as a numerical limitation invention, the significance of these numerical limitations will be discussed.

(1) First, the part where the coating thickness of no more than 30μm in Element 2 is merely a numerical limitation that can be appropriately selected by a skilled person through ordinary and repeated experiments for the following reasons.

(A) Coating thickness of no more than 30μm is a value including the thickness of coatings shown in embodiments 1 and 2 (See Plaintiff's Exhibit 10, Paragraphs [0023] and [0026]) in Prior Art 3. That is, in Prior Art 3, an alloy coating that is formed by being dipped into a bath having Zn-3% Mg-11% Al-0.2% Si has a coating mass of 135mg/m^3 under embodiment 1 and is converted into a thickness[11] of 24.1μm while having a coating mass of 90mg/m^3 under embodiment 2 and is converted into a thickness of 16.1μm, and such values are included in Element 2 where the coating thickness is no more than 30μm.

(B) In addition, according to the Korean Industrial Standards (See Defendant's Exhibit 4, Chart D.1 on Page 42) which

11) The density of the alloy having the composition of Zn-3% Mg-11% Al-0.2% Si is about 5.59g/cm^3, and the conversion is carried out based on this.

was amended on August 23, 2007, prior to the priority date of the subject invention and published at that time by the Korean Agency for Technology and Standards of the Ministry of Trade, Industry and Energy, the thickness of AZ090 of hot-dip 55% aluminium-zinc alloy-coated steel sheets and coils is 0.02mm while that of AZ100 is 0.023mm, which are converted into a thickness of 20μm and 23μm respectively, thereby also being included in Element 2 where the coating thickness is no more than 30μm.

(C) Meanwhile, the specification of the subject invention provides no description relating to significant difference in effects between in and out of such numerically limited range with respect to coating thickness.

(D) As a result, the fact that the coating thickness is no more than 30μm in Element 2 corresponds not only to the values including the thickness of the alloy coating shown in Prior Art 3 but also merely to what can be appropriately selected depending on the purpose or environment of use as a range of coating thickness ordinarily used in the relevant field.

(2) Second, the part where the coating thickness variation of no more than 40% in any given 5mm diameter section of the coating in Element 2 is merely a simple numerical limitation that can be appropriately selected by a skilled person through ordinary and repeated experiments for the following reasons.

(A) Hot-dip coating method was mainly used as a method for forming an alloy coating layer on the surface of a steel strip at the time of the priority date of the subject invention. Specifically, a steel strip passes through heat treatment furnaces and thereafter into and through a bath of molten metal alloy while the metal alloy is maintained molten in the coating pot by the use of heating inductors. Within the bath, the strip passes around one or more sink rolls and is taken upwardly out of the bath and is coated with the metal alloy as it passes through the bath. After leaving the coating

bath, the metal alloy coated strip passes through coating thickness control devices, such as air knives, where the coated surface is subjected to jets of wiping gas to control the thickness of the coating. By regulating the air pressure and the nozzle's distance from the strip, the coating thickness is controlled (Plaintiff's Exhibit 5, Paragraphs [0010] to [0012], and the witness testimony of Thomáš Prošek).

(B) However, if the thickness of the alloy coating layer formed through the hot-dip coating method is not uniform, there is a high possibility of occurrence of defects such as crack, and the surface of the coating layer is not smooth and hinders the appearance of the coating layer. Thus, a uniform thickness of the coating layers is a common task to be solved in the relevant technical field (From witness testimony of Thomáš Prošek).

(C) Also, the description of the specification of Prior Art 3 (See Plaintiff's Exhibit 10, Paragraph [0018]) that provides uniform and excellent coating appearance yields that Prior Art 3 also includes the technical task of forming an evenly coated layer on the surface.

(D) Meanwhile, the reason for not using the method for controlling the coating thickness variation within a short distance of 5mm in the process of manufacturing the conventional alloy coating is that the product standard at the time did not specify it and there was no difference in the quality of final products without such standard (From witness testimony of Thomáš Prošek).

(E) In addition, the coating thickness of no more than 30μm and the coating thickness variation of no more than 40% in any given 5mm diameter section in Element 2 means that the coating thickness can range from 18μm to 30μm. Such range is not only quite wide but also is merely in the range conventionally practiced by air knife which is a device that adjusts the coating thickness in the abovementioned hot-dip coating method (Witness testimony of Hojong Lee).

(F) Furthermore, the specification of the subject invention does not specifically describe that significant difference in

effects occurs between in and out of such numerically limited range with respect to the coating thickness variation.

(3) As a result, since the numerical limitation in Element 2 is merely a simple numerical limitation that no significant difference occurs between in and out of the limited numerical range, claim 1 including such numerical limitations should be considered what can be easily invented by combining Prior Art 1 with Prior Art 3.

D. Discussion on Plaintiff's Argument

1) Regarding this, the plaintiff argues that claim 1 is to reduce the occurrence of mottling, a surface defect caused by Mg_2Si, whereas Prior Arts do not even recognize the above technical task and thus the inventive step of claim 1 should not be denied.

However, although the technical task of Prior Art 1 is to provide alloy coated steel products having excellent corrosion-resistance and does not explicitly describe surface defects, the technical task of Prior Art 3 is to solve surface defects on coated steel plates such as those caused by inter-metallic compounds including Mg_2Si as described above. That is, Prior Art 3 directly recognizes defects on the coating surface caused by Mg_2Si and includes improvement thereof as its technical task.

While alloy coating on steel strip is basically aimed at improving corrosion resistance of steel strip products, improving corrosion resistance and controlling defects on the coating surface should be viewed as basic tasks to be considered and pursued together, rather than being incompatible.

Therefore, a skilled person has a sufficient motivation to combine Prior Art 1 relating to improving corrosion resistance

of alloy coating with Prior Art 3 which concerns the same technical field as Prior Art 1 and regards suppressing defects on the coating surface as technical task, and there will be no technical difficulties in trying such combination.
Therefore, this part of the plaintiff's argument fails.

2) In addition, the plaintiff argues that since Prior Arts do not disclose technical concept of suppressing the occurrence of mottling by allowing magnesium and silicon to diffuse into the coating layer by using the concentration gradient of magnesium and silicon in coating thickness direction as in claim 1, the inventive step of claim 1 should not be denied. However, the specification of the subject invention does not describe specifically how the coating thickness of no more than 30μm and the coating thickness variation of no more than 40% in any given 5mm diameter section of the coating affect the concentration gradient of magnesium and silicon in coating thickness direction, and as long as such relationship is not considered a general technical knowledge that can be deduced by a skilled person without a specific description of the specification, it cannot be concluded that claim 1 uses the concentration gradient of magnesium and silicon in coating thickness direction. Then, the plaintiff's above argument premised on the foregoing fails without further discussion.

E. Summary of Analysis

According to the above findings, claim 1 of the subject invention can be easily invented by a skilled person by combining Prior Art 1 with Prior Art 3, thereby lacking inventive step.

4. Conclusion

As long as claim 1 of the subject invention lacks an inventive step, according to the legal principle that a patent application having two or more claims must be rejected in its entirety when any one of the claims has a ground for rejection, the IPTAB decision that affirms the original decision that the subject invention may not be granted a patent has no erroneous grounds as asserted by the plaintiff, and the claim to revoke the administrative decision by the plaintiff has no merit.

Presiding Judge Kyu Hong LEE
Judge Sung Yop WOO
Judge Jin Hee LEE

PATENT COURT OF KOREA
TWENTY FIRST DIVISION
DECISION

Case No. 2018Na1268 Compensation for Employee Invention

Plaintiff, Appellee and Incidental Appellant
1. A
2. B

Defendants, Appellants and Incidental Appellees
HYDIS Technology

District Court's Decision Date
Seoul Central District Court Decision 2016GaHap529630, January 18, 2018

Date of Closing Argument November 15, 2018

Decision Date February 14, 2019

ORDER

1. This court modifies the District Court's decision including a claim added secondarily as follows:
   A. The followings shall be rejected: from the plaintiff A's primary claim, a part about each employee invention stated in paragraphs 2, 4 through 6, 8 through 11 and 18 of List in Appendix 1; and from the plaintiff B's action, a part about each employee invention stated in paragraphs 1, 3, 5, 7, 12 through 17, 19 through 22, 24, 25, 28, 33 and 34 of List in Appendix 1.

B. The plaintiffs' secondary claims shall be all rejected.

C. The defendant shall pay the followings: KRW 2,841,622 for the plaintiff A; KRW 24,313,097 for the plaintiff B; amounts calculated for each amount shown above at an annual interest of 5% for a period from May 31, 2016 to February 14, 2019; and amounts calculated for each amount shown above at an annual interest of 15% for a period from February 15, 2019 to the date on which each amount shown above is fully repaid.

D. The plaintiffs' remaining secondary claims shall be all dismissed.

2. Ninety percent of the total litigation cost arising between the plaintiff A and the defendant shall be borne by the plaintiff A and the remaining shall be borne by each of the defendant. 80% of the total litigation cost arising between the plaintiff B and the defendant shall be borne by the plaintiff B and the remaining shall be borne by each of the defendant.

3. Paragraph C under 1 shown above may be executed provisionally.

PLAINTIFFS' DEMAND, APPELLANT'S DEMAND AND INCIDENTAL APPELLANT'S DEMAND[1)]

1. Plaintiffs' Demand

A. Primary Demand

The defendant shall pay the plaintiff the followings: KRW

1) The plaintiffs' petition of incidental appeal dated June 14, 2018, incidental appellant's demand dated June 25, 2018 and application for change of cause shall be understood as shown above.

200,000,000; amounts calculated for the amount shown above at an annual interest of 5% for a period from May 31, 2016 to January 18, 2018; and amounts calculated for the amount shown above at an annual interest of 15% for a period from January 19, 2018 to the date on which the amount shown above is fully repaid.

B. Secondary Demand

It shall be confirmed that the followings exist (the plaintiffs added secondary claims in this court): license agreements that the defendant entered into for patents listed in Appendix after the rehabilitation procedures were initiated on September 29, 2016; and the plaintiffs' each claim for compensation for disposal against the defendant, which exceeds KRW 200,000,000, under Article 17 (Compensation for Disposal) of the defendant's Provisions for Compensation for Employee Invention.

2. Appellant's Demand

In the District Court's decision, a part that the defendant lost shall be revoked and the plaintiffs' claims against the defendant shall be dismissed.

3. Incidental Appellant's Demand

In the District Court's decision, a part that the plaintiff lost shall be revoked. The defendant shall pay the followings: KRW 195,372,315 for the plaintiff A; KRW 157,959,133 for the plaintiff B; amounts calculated for each amount shown above at an annual interest of 5% for a period from May 31, 2016 to January 18, 2018; and amounts

calculated for each amount shown above at an annual interest of 15% for a period from January 19 2018 to the date on which each amount shown above is fully repaid.

OPINION

1. Background

A. Relevant Companies' Asset Transfer Agreement

1) Around June 8, 2001, Hynix Semiconductor (changed its business name from "Hyundai Electronics Industry" on April 2, 2001; hereinafter "Hynix" collectively before and after the change of business name) entered into an agreement, in relation to LCD and TFT LCD business, under which assets including patented invention, liabilities, employees and contractual status, etc. were transferred to Hyundai Display Technology (hereinafter "Hyundai Display") which was its subsidiary.

2) On November 19, 2002, Hynix and Hyundai Display entered into, with BOE Technology Group (hereinafter "China BOE") which was a corporation in China, an asset sales and purchase agreement (hereinafter the "asset sales agreement") under which the tangible and intangible assets that Hyundai Display received from Hynix would be transferred to China BOE (Defendant's Exhibit 1-1).

3) On November 25, 2002 immediately after the conclusion of the asset sales agreement, China BOE established the defendant Hydis Technology which is its subsidiary (on September 19, 2008, its business name was changed from "BOE Hydis Technology" to "Hydis Technology"; hereinafter the "defendant"

collectively before and after the change of business name). On November 29, 2002, the defendant received all domestic rights and obligations including the contractual status of the asset sales agreement.

4) Hynix, Hyundai Display, and the defendant entered into modification agreements several time and on January 17, 2003, the final modification agreement to maintain the contents of the asset sales agreement and change the closing date to January 22, 2003 (Defendant's Exhibit 1-3).

5) The defendant, Hynix, and Hyundai Display agreed not to accept any liabilities arising from the asset sales agreement on or before January 22, 2003, irrespective of the relevance with the business.

B. Defendant's Provisions for Compensation for Employee Invention (Defendant's Exhibit 8)

The defendant's Standards for Compensation for Employee Invention (enacted on February 5, 2003; hereinafter the "Standards for Compensation for Employee Invention") related to this case shall be as follows:

Article 3 (Succession of Right)

1. This Company shall succeed and obtain employee inventions that employees, etc. invent and all rights therein (including a right to receive patent, etc.; hereinafter the "Right in Employee Invention"). However, this Company does not succeed to the Right in Employee Invention, provided that this Company acknowledges that it is not necessary or unworthy to succeed to the same.
2. Except where an inventor under Article 3(1) co-invents its employee invention with a third party and agrees separately, this Company shall succeed and obtain only the interests in the right that the said

inventor has.

3. This Company succeeds to a right under Article 3(1) and (2) at a time when an inventor signs a transfer in the declaration of employee invention (hereinafter, the "Declaration"), obtains approval of a head of his/her department and then submits the said Declaration to a supervising department.

Article 4 (Compensation for Inventor)

When this Company succeeds to a right to obtain a patent, etc. for an employee invention under Article 3, this Company shall pay an inventor the compensation prescribed by this Standards.

Article 13 (Compensation for Patent Application)

1. When this Company succeeds and obtains a right in employee invention under Article 8 and files an application for patent to the same, this Company shall pay an inventor the compensation for patent application only once for each invention under the standards that fall under any of the following subparagraphs: In case of dual application, the compensation shall be provided based on a patent (omitted).

Article 15 (Compensation for Registration)

1. When an employee invention in which this Company succeeds and obtains a right is registered, this Company shall pay the compensation for registration based on the standards that fall under any of the following subparagraphs after deliberation of the Employee Invention Deliberation Committee in consideration of superiority, practical value, etc. of the employee invention (omitted).

Article 16 (Compensation for Performance)

1. The Employee Invention Deliberation Committee shall deliberate the practice and use of an employee invention in which this Company succeeds and obtains a right and notify the results of deliberation to a head of competent department.
2. Where it is acknowledged, based on the result of deliberation under Paragraph (1) above, that the practice of employee invention substantially contributed to the business performance of this Company, a head of supervising department may pay an inventor the proper compensation after obtaining approval from the President.

Article 17 (Compensation for Disposal)

Where an employee invention whose application is filed under Article 8

and registered as a property of this Company is transferred or licensed, this Company may pay an inventor the compensation for disposal which is equivalent to less than or equal to 5% of transfer amount or license income after the deliberation of the Employee Invention Deliberation Committee and obtaining approval from the President.

Article 18 (Special Compensation)

1. Where, as to an employee invention, an application for patent is filed and the invention is registered as a property of this Company under Article 8 and the invention is adopted as a part of the technical standards, this Company may pay the special compensation not exceeding KRW 10 million per adopted technology after the deliberation of the Employee Invention Deliberation Committee and obtaining approval under the regulations for arbitrary decision of this Company.

Article 30 (Succession and Acquisition of Free Invention)

1. Where an inventor of free invention invented by employee, etc. applies to transfer to this Company the whole or a part of rights including patent, a right to be able to receive patent, etc., the declaration, application, compensation, etc. in relation to the succession of right in the free invention shall be treated under the procedures for declaration, application, compensation, etc. of employee invention, which this Company prescribes.

C. Plaintiffs' Employee Invention

1) The plaintiffs, etc. have worked as researchers in Hynix, Hyundai Display and the defendant and participated in the creation of employee inventions as stated in Appendix 1 List (hereinafter "all the employee inventions" and an individual invention shall be referred to as the "subject invention No. #"[2]))

2) Appendix 1 List also includes inventions other than the plaintiffs' employee inventions. However, the District Court's decision, the plaintiffs' brief and the defendant's brief refer to the employee inventions as the order stated in Appendix 1 List. Thus, this court will also refer to the employee inventions in the same manner.

(Defendant's Exhibits 12, 13, 16).

2) To be specific, the employee inventions in which the plaintiff A participated are as stated in Appendix 2-1 List (hereinafter the "plaintiff A's employee inventions"). Also, the employee inventions in which the plaintiff B participated are as stated in Appendix 2-2 List (hereinafter the "plaintiff B's employee inventions"). The defendant filed an application for the plaintiff A's employee inventions and the plaintiff B's employee inventions and received registration therefor, accordingly.

D. Execution by the Defendant Company (Plaintiff's Exhibits 3-1 through 10)

Since 2009, the defendant company has not made profits by manufacturing and selling LCD and TFT-LCD but collected royalties by entering into the patent license agrements (licensing; hereinafter the "license agreements") with LCD manufacturers, such as LG Display in Korea, NEC, Sharp, Mitsubishi, Hitachi, and SEID in Japan, AUO, CMO, CPT, and HANNSTAR in Taiwan, etc. The license agreements include the plaintiffs' employee inventions.

E. Defendant's Rehabilitation Proceedings

1) The defendant filed an application for rehabilitation proceedings to Seoul Central District Court (2006HoiHap11) and on September 29, 2006, the said court decided to initiate the rehabilitation proceedings. Then, on May 31, 2007, the said court decided to approve a rehabilitation plan and on April 28, 2008, decided to approve a modified rehabilitation plan. Finally, on July 4, 2008, the said court decided to end the

rehabilitation proceedings (hereinafter the "rehabilitation proceedings").

2) In the rehabilitation proceedings, the plaintiffs have not declared, as rehabilitation claims, the employee invention compensation claims for all the employee Inventions.

F. Relevant cases

1) On July 28, 2006, the nonlitigants W and X[3] filed, to Suwon District Court, an action to demand compensation for employee inventions against the defendant, Hynix, and Hyundai Display (2006GaHap14007). On July 25, 2008, the said court dismissed the plaintiffs' claims on the grounds that, since it was agreed not to accept liabilities arising on and before January 22, 2003 in the asset sales agreement, it is difficult to deem that the defendant succeeded to Hynix and Hyundai Display's liabilities for employee invention compensation.

2) On September 4, 2008, X filed an appeal against the said decision to Seoul High Court (2008Na79632). On June 3, 2009, the said court dismissed the said appeal on the following grounds: the defendant did not succeed to the liabilities for employee invention compensation; even if the said liabilities were quasi-succeeded, the said liabilities were not stated in the list of rehabilitation creditors of the rehabilitation proceedings. Thus, X cannot argue for the

3) Nonlitigant W and X were included in the co-plaintiffs in the first instance. However, the district court decided to reject the nonlitigant W's claims and dismiss the nonlitigant Y's claims. As the nonlitigant W and X did not file an appeal, the decision became final.

existence of the said claim; and Hynix and Hyundai Display have not practiced the relevant patented invention. On July 4, 2009, the said dismissal became final.

3) On August 10, 2015, the nonlitigant Y filed, to Seoul Central District Court, an action to demand compensation for employee inventions against the defendant (2015GaHap550620). On November 18, 2016, the said court decided to dismiss Y's claim on the following grounds: it is difficult to deem that the defendant succeeded to the liabilities for employee invention compensation under the asset sales agreement; and even if the said liabilities were quasi-succeeded, the said liabilities were not declared as the rehabilitation claim in the rehabilitation proceedings. Thus, Y was exempted from the said liabilities. On December 6, 2016, the said decision became final.

[Factual basis] Undisputed facts, statements in Plaintiff's Exhibit 3, Defendant's Exhibits 1 through 9, 12, 13, 15, 16 (including hyphenated number, if any; hereinafter, the same shall apply), and the purport of the overall argument.

2. Parties' Arguments and Summary of Questions

A. Summary of Plaintiffs' Arguments

1) Since the plaintiffs' employee inventions were succeeded after the date of termination of the Asset Sales Agreement, the defendant shall bear the compensation for employee invention therefor.

2) Also, since the plaintiffs' claims for employee invention compensation is under Article 17 of the Standards for

Compensation for Employee Invention, it shall be deemed that the said claim arose when the concrete license agreement was entered into. Thus, since the detailed contents of the said claims could not be known at least before the execution of license agreement, the said claims fall within the "claims for which it is impossible to declare at the time of the rehabilitation proceedings (other claims after commencement)." Even if the said claims fall within the rehabilitation claim, the plaintiffs need to supplement the declaration of rehabilitation claim. Thus, there is the benefit of confirmation for the existence of claims.

3) Thus, as to the profits that the defendant made from the license agreements executed for patents in Appendix List after the commencement of the rehabilitation proceedings, the plaintiffs seek the followings: ① Primarily, to be paid with the followings from the defendant: compensation for disposal stipulated in Article 17 of the Standards for Compensation for Employee Invention (compensation for employee invention); each KRW 200,000,000 as a partial claim of damages for delay therefor; and the damages for delay therefor; and ② Secondarily, to confirm that the plaintiffs' claims, against the defendant, for each compensation for disposal (compensation for employee invention) which exceeds each KRW 200,000,000 exist under Article 17 of the Standards for Compensation for Employee Invention.

B. Summary of Defendant's Arguments

On the following grounds, the plaintiffs' claims for employee invention compensation are without merit or an amount thereof shall be reduced to less than an amount that the district court recognized.

1) Arguments about the claim for employee invention compensation for the employee inventions except for the subject invention Nos. 29 through 32: As shown in the grounds for the district court's decision, the claim for employee invention compensation falls within the "statutory claim" arising under Article 40(1) of the old Patent Act (before the amendments were made to Law No. 7869 on March 3, 2006) and arises when "succeeding to employee inventions." The compensation for patent application, compensation for registration, compensation for disposal, etc. stipulated by the Standards for Compensation for Employee Invention relate only to "when to pay the compensations." Thus, even if the detailed contents of the claims for employee invention compensation for the employee inventions except for the subject invention Nos. 29 through 32 were not finalized before the rehabilitation proceedings were commenced, the said claims fall within the "rehabilitation claim" whose causes arose before the commencement of the rehabilitation proceedings. Since the claims were not declared in the rehabilitation proceedings, their effects were lost as the rehabilitation proceedings were concluded.

2) Arguments about the claim for employee invention compensation for the subject invention Nos. 30 and 32: There has been no separate agreement such as "implied consent" after the declaration of the subject employee invention Nos. 30 and 32 between the plaintiffs and the defendant. Moreover, there is no circumstance to view that there was an implied agreement. Rather, even if the said employee inventions have been changed and regarded as a free invention, it would be reasonable to view that the parties intended that an employer succeeded to the employees' free inventions at the time of the declaration of employee inventions. Thus, the plaintiffs' claims for employee invention compensation for the subject

invention Nos. 30 and 32 shall be deemed to fall within the "rehabilitation claim" whose causes of occurrence arose before the commencement of the rehabilitation proceedings. Moreover, since the said inventions were not declared in the rehabilitation proceedings, it shall be deemed that their effects were lost as the rehabilitation proceedings were concluded.

3) Arguments about the claim for employee invention compensation for the subject invention Nos. 29 and 31: Even if the subject invention No. 31 was divided from the subject invention No. 29 and filed for patent application, the district court viewed these inventions as separate inventions and calculated the compensation for employee inventions, accordingly. Since a patent which is divided and filed for an application is in effect included in an original patent, the said inventions shall be viewed as one invention and the compensation for employee inventions shall be calculated accordingly.

4) Argument about the calculation of compensation for employee invention: Even if the fact that the subject invention Nos. 29 through 32 are not representative patents and contributed only insignificantly to the conclusion of the License Agreement shall be taken into consideration, the district court viewed that all patents that the defendant held contributed equally to the Patent Agreement and calculated the compensation for employee invention. Thus, the said compensation is not reasonable.

5) Argument about the plaintiffs' secondary claim: The claims for employee invention compensation for the Employee Inventions were not declared as the "rehabilitation claim." Thus, as the rehabilitation proceedings were terminated, the effect of the said claims were lost with the conclusion of rehabilitation

proceedings. Also, it is impossible to supplement the declaration. Thus, there is the benefit of confirmation for the plaintiffs' secondary claim.

C. Summary of Questions

The main issues in this case are as follows: [1] Whether and when the plaintiffs' claim for employee invention compensation accrued; [2] The scope of the plaintiffs' claims for employee invention compensation whose effect is lost due to the rehabilitation proceedings; [3] Calculation of the plaintiffs' compensation for employee invention; and [4] The legitimacy of action to confirm the existence of claim for employee invention compensation for all the employee inventions.

3. Whether and When the Plaintiffs' Claim for Employee Invention Compensation Accrued

A. Relevant Law

Article 1 of the Addendum of the Invention Promotion Act (enacted under Law No. 7869 on March 3, 2006) stipulates that "this Act shall enter into force six months after the date of its promulgation (September 4, 2006)." Article 4 of the Addendum stipulates that "the compensation according to the succession of patent, right to obtain a patent, etc., accrued under the old provisions as of the enforcement of this Act or the compensation for the establishment of exclusive license shall be under the provisions of the old Patent Act." Thus, with respect to the succession of a right to obtain patent or utility model, the followings will be applied: ① Articles 39 and 40 of the old Patent Act (before amendments were made to Law No. 7869 on March 3, 2006; hereinafter the "old Patent Act"), where the said succession was

rendered on or before September 4, 2006; and ② Article 15 of the old Invention Promotion Act (before amendments were made to Law No. 11960 on July 30, 2013; hereinafter the "old Invention Promotion Act"), where the said succession was rendered after September 4, 2006 The provisions of the said two Acts shall be as follows:

■ **The Old Patent Act**

Article 39 (Employee Invention)

① Where, with respect to an invention that an employee, executive officer of a corporation, or public official (hereinafter, the "Employee, etc.") makes in connection with his/her duties, where it falls within the scope of business of the employer, the corporation, the State, or the competent local government (hereinafter, the "Employer, etc.") and the activities that have led to the invention fall within the present or past duties of the employee, etc. (hereinafter, the "Employee Invention"), the Employee, etc. obtain a patent or a person who succeeds to a right to obtain a patent obtains a patent, the Employer, etc. shall have a non-exclusive license in the patent.

Article 40 (Compensation for Employee Invention)

① The Employee, etc. shall be entitled to fair compensation where the Employer, etc. succeeds, under a contract or employment regulations, to the right to acquire patent, etc., or a patent, right, etc., for an employee's invention, or are to be granted an exclusive license in the patent right, etc.

② In determining an amount of compensation under Paragraph ① above, an amount of profits that the Employer, etc. obtains by the invention and a degree of contribution to the completion of the invention by the Employer, etc. and the Employee, etc. shall be taken into consideration. In this case, the matters required for the standards for payment of compensation shall be stipulated by Presidential Decree or ordinance.

■ **The Old Invention Promotion Act**

Article 15 (Compensation for Employee Invention)

① The employee, etc. shall be entitled to fair compensation where the Employer, etc. succeeds, under a contract or employment regulations, to the right to acquire patent, etc., or a patent, right, etc., for the employee's invention, or are to be granted an exclusive license in the patent right, etc.

② Where a contract or employment regulations stipulate the compensation under Paragraph ① and the compensation therefor is recognized as reasonable in light of circumstances under each and every subparagraph stated below, the compensation shall be deed reasonable:

1. When determining the standards for type and amount of compensation, the consultation rendered among the Employer, etc. and the Employee, etc.;
2. Where presenting the compensation standards for the Employee, etc., such as public announcement, posting, etc. of the prescribed compensation standards; or
3. When determining the type and amount of compensation, the collection of opinions from the Employee, etc.

③ Where a contract or employment regulations do not stipulate the compensation under Paragraph ① or it may not be viewed as the reasonable compensation under Paragraph ②, an amount of profits that the Employer, etc. obtains by the invention and a degree of contribution to the completion of the invention by the Employer, etc. and the Employee, etc. shall be taken into consideration when determining the amount of compensation.

On the other hand, the Former Invention Promotion Act (prior to being amended with Act No. 7869, March 3, 2006) stipulates the followings:

■ **The Old Invention Promotion Act (before amendments were made to**

Law No. 7869 on March 3, 2006)

Article 2 (Definition)

The terms used in this Act shall be defined as follows:

2. The term "employee invention" refers to an invention, design and creation of employee, executive officer of a corporation, or public official under Article 39(1) of the Patent Act, Article 20 of the Utility Model Act and Article 24 of the Design Protection Act.

3. The term "free invention" refers to an invention other than an employee invention under subparagraph 2.

Article 11 (Employee Invention, etc. to Be Viewed as Free Invention)

① Where the Employer, etc. succeeds to a right in an employee invention and then fails to file an application therefor within a term stipulated by Presidential Decree or abandons the said filing in writing, the employee invention shall be viewed as a free invention.

② The Employer, etc. may not have non-exclusive licenses in an employee invention to be viewed as a free invention under Paragraph ①, unless the Employer, etc. obtain approval from the Employee, etc. notwithstanding Article 39(1) of the Patent Act.

■ Enforcement Decree of the Old Invention Promotion Act (before amendments were made to Presidential Decree No. 19672 on September 4, 2006)

Article 5 (Term for Filing of Application for Employee Invention)

The term "term stipulated by Presidential Decree" in Article 11(1) refers to April.

B. Established Facts

In light of the facts undisputed between the parties, the statements in Defendant's Exhibits 12, 13, and the purport of the overall argument, the following facts are established:

1) The subject invention Nos. 1 through 22, 23, 25, 28, 33 and 34 (hereinafter the "inventions succeeded before the commencement of the rehabilitation proceedings") were declared and patent applications therefor were filed as employee inventions before September 29, 2006 when the rehabilitation proceedings were commenced. Some of the invention succeeded before the commencement of the rehabilitation proceedings were registered before September 29, 2006 and the rest thereof were registered after September 29, 2006.

2) The subject invention No. 32 was declared as an employee invention around April 10, 2006 which was before the commencement date of the rehabilitation proceedings. However, a patent application for the subject invention No. 32 was filed on March 21, 2008 which was after the rehabilitation proceedings were commenced and registered on December 20, 2013.

3) The subject invention No. 30 was declared as an employee invention around May 12, 2006, which was before the commencement date of the rehabilitation proceedings. However, a patent application for the subject invention No. 30 was filed on March 5, 2008, which was after the rehabilitation proceedings were commenced and registered on July 1, 209.

4) The subject invention Nos. 29 and 30 were declared as employee inventions around March 9, 2007, which was after the commencement date of the rehabilitation proceedings.

C. Determination on Whether the Plaintiffs' Claim for Employee Invention Compensation Accrued

1) According to the established facts above, the defendant declared the subject invention Nos. 30 and 32 as employee invention but failed to file applications therefor for four months. Thus, the said inventions became free inventions under Article 11(1) of the old Invention Promotion Act (before amendments were made to Law No. 7869 on March 3, 2006). After that, the defendant filed patent applications for the said inventions which became free inventions as examined above. It would be reasonable to view that, when the defendant filed patent applications, the implied succession was made between the plaintiffs and the defendant, in light of the followings: roles of the parties until the patent applications were filed; relationship between the parties; background of filing of patent application, etc.

In this regard, the defendant argues that, since there is no circumstance to view that there was a new agreement or mutual consent among the plaintiffs and the defendant from the initial succession of the said inventions to the filing of application or registration thereof, it would be reasonable to view that the plaintiffs and the defendant agreed, at the time of the initial succession, that the succession would be made even after the inventions are changed and regarded as free inventions. However, it is difficult to view, as the defendant argues, that the plaintiffs and the defendant agreed, at the time of the initial succession, that they kept in mind that the inventions would be changed to free inventions and the defendant would be able to file patent applications therefor anytime and the time of succession would go back to the time of declaration, in light of the following circumstances that can be known from background, evidence and purport of the overall argument: ① Even if the defendant did not file patent applications for the subject invention Nos. 30 and 32 at the time of initial succession thereof and thus it could be regarded

as the inventions were changed to free inventions, there is no circumstance to view that the plaintiffs and the defendant agreed to succeed at the time of succession; ② If the above facts are construed as the defendant argues, Article 11(1) of the Former Invention Promotion Act (prior to being amended with Act No. 7869, March 3, 2006) might be without effect; ③ Even the defendant's Standards for Compensation for Employee Invention separately stipulate the succession and acquisition of an free invention in its Article 30; and ④ The plaintiffs have raised no objection whatsoever, since the defendant filed patent applications for the inventions in its own name after the inventions were regarded to be changed into free inventions. Thus, the defendant's argument in this regard is without merit.

Thus, it shall be deemed that, on March 5, 2008 on which a patent application was filed, the implied succession was made for the subject invention No. 30 after it was regarded that the said invention was changed into a free invention and then the rehabilitation proceedings were commenced. Also, it shall be deemed that, on March 21, 2008 on which a patent application was filed, the implied succession was made for the subject invention No. 32 after it was regarded that the said invention was changed into a free invention and then the rehabilitation proceedings were commenced.

2) The succession was made before September 4, 2006 for the inventions succeeded before the commencement of the rehabilitation proceedings. In case of the subject invention Nos. 29 through 32, a right to obtain a patent or a utility model was succeeded after September 4, 2006. Thus, it would be reasonable to view that the claims for employee invention compensation were accrued for the inventions succeeded before the commencement of the rehabilitation proceedings

and the subject invention Nos.29 through 32 under Articles 39 and 40 of the old Patent Act and Article 15 of the old Invention Promotion Act, respectively.

3) On the other hand, under Article 4 of the Standards for Compensation for Employee Invention, where the defendant succeeds to a right to obtain a patent in an employee invention, the defendant shall pay an inventor the compensation as stipulated in the said Standards. The said Standards stipulate that the compensation for patent application, compensation for registration, compensation for performance, compensation for disposal, special compensation, etc. may be provided depending on the their causes of occurrence. Thus, as long as the said compensations stipulated by the Standards for Compensation for Employee Invention may be viewed as justifiable, the said compensations are effective and valid as agreed by the parties. Therefore, the plaintiffs may claim each compensation for employee invention under Article 4 of the Standards for Compensation for Employee Invention.

D. Determination When the Plaintiffs's Claim for Employee Invention Compensation Accrued

1) The plaintiffs seek not the compensation for employee invention under Articles 39 and 40 of the old Patent Act and Article 15 of the old Invention Promotion Act but only the compensation for employee invention under Article 17 of the Standards for Compensation for Employee Invention.[4] Thus, this court will examine when the claim for compensation for

4) See the District Court's trial record dated September 19, 2017 and pp. 1-8 in the brief dated April 7, 2017.

disposal accrued under Article 17 of the Standards for Compensation for Employee Invention.

2) Under Article 4 of the Standards for Compensation for Employee Invention, when the defendant succeeds to a right to obtain a patent in an employee invention, the defendant shall pay the compensation as stipulated by the said Standards. And the Standards for Compensation for Employee Invention stipulates the time and amount of payment of the compensation for patent application (Article 13), compensation for registration (Article 15), compensation for performance (Article 16), compensation for disposal (Article 17), special compensation (Article 18), etc.
On the other hand, Articles 39 and 40 of the old Patent Act and Article 15 of the old Invention Promotion Act stipulate that the Employee, etc. shall be entitled to fair compensation "where an employer, etc. succeeds,.. to the right to acquire patent, etc..." In light of the provisions of the old Patent Act, the old Invention Promotion Act and the Standards for Compensation for Employee Invention, it would be reasonable to view that the claim for employee invention compensation under the Standards for Compensation for Employee Invention accrues "where an employer, etc. succeeds,... to the right to acquire patent, etc..." under Article 4 of the Standards for Compensation for Employee Invention and that Articles 13, 15, 16, 17, 18, etc. stipulate the time and amount of payment thereof.

3) Rights in the inventions succeeded before the commencement of the rehabilitation proceedings were succeeded before the commencement of the rehabilitation proceedings. Thus, it would be reasonable to view that the claim for employee invention compensation also accrued before the date of

commencement of the rehabilitation proceedings. On the other hand, since the rights in the subject invention Nos. 29 through 32 were succeeded after the date of commencement of the rehabilitation proceedings, it shall be deemed that the claim for employee invention compensation therefor accrued after the date of commencement of the rehabilitation proceedings

4. Whether the Plaintiffs' Claim for Employee Invention Compensation Lost its Effect by the Rehabilitation Proceedings

A. Relevant Law and Legal Principles

The Debtor Rehabilitation and Bankruptcy Act (hereinafter the "Debtor Rehabilitation Act") stipulates the followings: Every custodian shall prepare a list of rehabilitation creditors, etc. and submit it to a court before declaring the rehabilitation creditors, etc. (Article 147); The rehabilitation claims, stated on the list shall be deemed to have been reported pursuant to the provisions of Act (Article 151); Any rehabilitation creditor, etc. who intends to participate in the rehabilitation procedures, irrespective of being included in the list, shall report his/her rehabilitation claims, etc. to the court within the period that the court sets (Article 148); and when it is decided to grant authorization for the rehabilitation plan, the debtor shall be exempted from his/her responsibilities under all of the rehabilitation claims and rehabilitation security rights, with the exception of rights recognized pursuant to the rehabilitation plan or the provisions of this Act (Article 251).

Thus, when it is decided to grant authorization for the rehabilitation plan, the rehabilitation company shall be exempted from its responsibilities under rehabilitation claims and rehabilitation security rights, irrespective of whether they are reported or not, with the exception of rights recognized pursuant to the rehabilitation plan or the

provisions of the Debtor Rehabilitation Act. Also, the term "exemption" stipulated by Article 251 of the Debtor Rehabilitation Act refers to the fact that not a debt but a responsibility becomes extinct substantively and the debt itself continues and becomes a type of natural debts whose discharge cannot be coerced against the rehabilitation company (See, Supreme Court Decision 2001Da3122, decided July 24, 2001).

Also, the term "rehabilitation claim" in the Creditor Rehabilitation Act refers to the property claims based on grounds, such as the expression of intention, etc., that arise before the commencement of rehabilitation proceedings for the debtor (Article 118). Thus, as long as the grounds for claim are based on the grounds that arise before the commencement of rehabilitation proceedings, it would not have any effect on the rehabilitation claim whether the contents thereof were not finalized in detail or the time for repayment arrived after the commencement of rehabilitation proceedings (See, Supreme Court Decision 99Da55632, decided March 10, 2000).

With respect to any property claim resulting from causes arising after rehabilitation procedures commence, which is not a priority claim, a rehabilitation claim or a rehabilitation security right, the act of repaying such claim, taking the repayment of such claim or extinguishing such claim (excluding the act of excluding) shall be prohibited from being performed from the time when the rehabilitation procedures commence to the time when the repayment period has ended (referring to the time when the rehabilitation procedures are completed where the rehabilitation procedures are completed before it is decided to grant an authorization for the rehabilitation plan and the time when the repayment is completed where repayment based on the rehabilitation plan is completed before the period has expired) (Article 181(1), Debtor Rehabilitation Act).

B. Analysis

1) As examined above, since the claims for employee invention compensation for the inventions succeeded before the commencement of the rehabilitation proceedings accrued before the date of commencement of the rehabilitation proceedings (at least the grounds for claim are based on what occurred before the rehabilitation proceedings), the said claims fall within the rehabilitation claims stipulated by Article 118 of the Credit Rehabilitation Act. On the other hand, as examined above, the plaintiffs did not declare, in the rehabilitation proceedings, the claims for employee invention compensation for all the employee inventions. Thus, the claims for employee invention compensation for the inventions succeeded before the commencement of the rehabilitation proceedings lost their effect when it is decided to grant an authorization for the rehabilitation plan for the rehabilitation proceedings. Since the defendant shall be exempted from the responsibilities for the said claims for employee invention compensation and the plaintiffs may not coerce the defendant to fulfill the said responsibilities under Article 251 of the Debtor Rehabilitation Act, the plaintiffs' claim shall have no benefit of protection of rights and thus shall not be upheld.

2) On the other hand, as examined above, the claims for employee invention compensation for the subject invention Nos. 29 through 32 accrued after the date of commencement of the rehabilitation proceedings. Thus, the claims fall under the other claims after commencement under Article 181(1) of the Debtor Rehabilitation Act. Thus, it may not be viewed that the claims lost their effect by the rehabilitation proceedings.

5. Calculation of Compensation for Employee Invention

A. Relevant Law

Under Article 15(1) of the Invention Promotion Act (including Article 13 of the old Invention Promotion Act (before amendments were made in whole under Law No. 8357, April 11, 2007)), an employee, etc. shall be entitled to fair compensation where the employer, etc. succeeds, under a contract or employment regulations, to the right to acquire patent, etc., or a patent, right, etc., for an employee's invention, or are to be granted an exclusive license in the patent right, etc. Under Article 15(6) of the Invention Promotion Act, where the amount of compensation excludes the benefits the employer, etc. is anticipated to obtain with an employee's invention and the degree of contribution by the employer, etc. and employee, etc. to the completion of the invention, the compensation paid by the employer, etc. to the employee, etc. shall not be deemed fair compensation. Thus, the fair compensation for employee invention shall be calculated in consideration of the followings: ① benefits the employer, etc. is anticipated to obtain with an employee's invention; ② ratio of compensation for the employee, etc. (inventors) by the invention; and ③ degree of contribution by the plaintiffs among the inventors. However, as examined above, the plaintiffs seek not the compensation for employee invention under the Invention Promotion Act but the compensation for employee invention under Article 17 of the Standards for Compensation for Employee Invention. It may be said that the compensation for employee invention under the said Standards is valid as agreed among the parties as long as the said compensation may be viewed as justifiable. Thus, the factors stated above shall be taken into consideration even when calculating the said compensation.

A profit that an employer obtains means a profit obtained by an employee invention itself but does not refer to a profit under accounting, such as business profits remaining after the settlement of

revenues and expenses. Thus, if there is a profit from an employee invention itself, it shall be deemed that there is a profit that an employer obtains, irrespective of the results of settlement of revenues and expenses (See, e.g., Supreme Court Decision 2009Da75178, decided July 28, 2011).

On the other hand, where an employer does not practice an employee invention but obtains royalty profits by granting the license to a third party, the royalty profits themselves become exclusive profits gained from an employee invention. Thus, unlike self practice in which the sales and exclusive right contribution rate are considered together, it shall be viewed that the royalty profits themselves are interests that the employer, etc. would obtain.

After all, where an employer grants a license for employee invention to other company and obtains profits, the compensation for employee invention shall be calculated under the following formula: (profits that an employer, etc. would obtain by license fees) × (inventors' contribution) × (the relevant plaintiff's contribution rate, among the inventors)

B. Calculation Standards

In light of the statements in Plaintiff's Exhibits 1 through 10 and purport of the overall argument, it may be established that the defendant obtains substantial profits due to patents in holding and it would be reasonable to deem that each employee invention included in Appendix 1 List Nos. 29 through 32. Unless the defendant submits no materials in this regard, the compensation for employee invention shall be calculated under the following formula with focus on the defendant's whole royalty profits and the ratio of the number of patents held by the defendant. Statements in Defendant's Exhibits 10, 14, 17 and 18 which run counter thereto do not believe such facts.

Compensation for employee invention = ① Defendant's whole royalty profits × ② Ratio of the relevant employee invention to the whole technology × ③ Degree of contribution by inventors (employees) × ④ Ratio of contribution by the Plaintiff among inventors

C. Concrete Calculation of Compensation

1) The defendant's royalty profits, the total number of patents and the number of employee inventions whose effects are not lost by the rehabilitation proceedings.

In light of statements in Plaintiff's Exhibits 3-2 through 10 and purport of the overall argument, ① the defendant's royalty profits, ② the total number of patents and ③ the number of employee inventions whose effect are not lost by the rehabilitation proceedings shall be as specified in the following table.

However, it may not be viewed that there are substantial differences between original patent and divisional patent application, the total number of patents will not be calculated separately for the divisional patent applications. Also, in relation to the number of employee inventions whose effects are not lost by the rehabilitation proceedings, the subject invention No. 31 falls within the divisional patent application of the subject invention No. 29. Thus, the total number of patents will not be calculated separately for the reasons stated above.

2) Degree of contribution by inventors (employees)

It seems that the plaintiffs A and B completed the said patented invention based on the defendant's accumulated technology and resources. Even under Article 17 of the Standards for Compensation for Employee Invention, an amount corresponding to 5% or less of the royalty profits is viewed as the compensation for disposal. Thus, it

would be reasonable to view that a degree of contribution by inventors shall be about 5% which is recognized in general unless there are special circumstances.

3) The relevant plaintiff's contribution rate among inventors

In light of statements in Defendant's Exhibits 12-31, 12-32, 13 and purport of the overall argument, the plaintiffs declared the subject invention Nos. 29 through 32 as employee inventions and, in case of joint invention, stated contribution rates among joint inventors. Also, it seems that the defendant accepted the said declaration after approving the same. Thus, it would be reasonable to view that the plaintiffs' contribution rate among joint inventors would be that stated in the declaration (even the defendant does not argue in this regard explicitly).

4) Calculation of the plaintiffs' compensation for employee invention

The compensations for employee invention for a relevant term which the defendant shall pay to the plaintiffs A and B are as follows. In particular, the compensations for employee invention that shall be paid to the plaintiff A and the plaintiff B are KRW 2,841,622 and KRW 24,313,097, respectively.

[Plaintiff A]

Year	Whole Royalty Profits	Total Number of Patents	Number of Employee Inventions	(Contribution Rate) × (Plaintiff's Contribution rate among Inventors)	Compensation for Employee Invention
2010	KRW 13,871,949,940	1,454	1 (Number 30)	0.005 - Number 30: 5% × 10%	KRW 47,702 (= KRW 13,871,949,940 × 1/1,454 × 0.005)

Year	Whole Royalty Profits	Total Number of Patents	Number of Employee Inventions	(Contribution Rate) × (Plaintiff's Contribution rate among Inventors)	Compensation for Employee Invention
2011	KRW 3,736,495,974	1,480	1 (Number 30)		KRW 12,623 (= KRW 3,736,495,974 × 1/1,480 × 0.005)
2012	KRW 19,987,939,206	1,495	1 (Number 30)		KRW 66,849 (= KRW 19,987,939,206 × 1/1,495 × 0.005)
2013	KRW 58,449,078,000	1,527	1 (Number 30)		KRW 191,385 (= KRW 58,449,078,000 × 1/1,527 × 0.005)
2014	KRW 121,391,357,000	1,591	2 (Number 30, 32)	0.01 - Number 30: 5% × 10% - Number 32: 5% × 10%	KRW 762,987 (= KRW 121,391,357,000 × 1/1591 × 0.01)
2015	KRW 105,306,894,990	1,604	2 (Number 30, 32)		KRW 656,526 (= KRW 105,306,894,990 × 1/1604 × 0.01)
2016	KRW 80,318,487,000	1,615	2 (Number 30, 32)		KRW 497,328 (= KRW 80,318,487,000 × 1/1615 × 0.01)
2017	KRW 88,205,416,000	1,455	2 (Number 30, 32)		KRW 606,222 (= KRW 88,205,416,000 × 1/1,455 × 0.01)
Total					KRW 2,841,622

[Plaintiff B]

Year	Whole Royalty Profits	Total Number of Patents	Number of Employee Inventions	(Contribution Rate) × (Plaintiff's Contribution rate among Inventors)	Compensation for Employee Invention
2010	KRW 13,871,949,940	1,454	2 (Number 29, 30)	0.045 - Number 29: 5% × 10% - Number 30: 5% × 80%	KRW 429,324 (= KRW 13,871,949,940 × 1/1,454 × 0.045)
2011	KRW 3,736,495,974	1,480	2 (Number 29, 30)		KRW 113,609 (= KRW 3,736,495,974 × 1/1,480 × 0.045)
2012	KRW 19,987,939,206	1,495	2 (Number 29, 30)		KRW 601,643 (= KRW 19,987,939,206 × 1/1,495 × 0.045)
2013	KRW 58,449,078,000	1,527	2 (Number 29, 30)		KRW 1,722,467 (= KRW 58,449,078,000 × 1/1,527 ×0.045)
2014	KRW 121,391,357,000	1,591	3 (Number 29, 30, 32)	0.085 - Number 29: 5% × 10% - Number 30: 5% × 80% - Number 32: 5% × 80%	KRW 6,485,396 (= KRW 121,391,357,000 × 1/1,591 × 0.085)
2015	KRW 105,306,894,990	1,604	3 (Number 29, 30, 32)		KRW 5,580,477 (= KRW 105,306,894,990 × 1/1,604 × 0.085)
2016	KRW 80,318,487,000	1,615	3 (Number 29, 30, 32)		KRW 4,227,288 (= KRW 80,318,487,000 × 1/1,615 × 0.085)
2017	KRW 88,205,416,000	1,455	3 (Number 29, 30, 32)		KRW 5,152,893 (= KRW 88,205,416,000 × 1/1,455 × 0.085)
Total					KRW 24,313,097

D. Summary of Discussion: Discussion on Secondary Claim

Thus, among the plaintiff A's secondary claims, for the parts regarding the Number 2, 4 through 6, 8 through 11, 18 Inventions and, among the plaintiff B's secondary claims, for the parts regarding the subject invention Nos. 1, 3, 5, 7, 12 through 17, 19 through 22, 24, 25, 28, 33 and 34, the effects were lost by the rehabilitation proceedings and there is no interest in litigation. The defendant shall pay the followings: to the plaintiff A KRW 2,841,622 as the compensation for employee inventions for the subject invention Nos. 30 and 32; to the plaintiff B KRW 24,313,097 as the compensation for employee inventions for the subject invention Nos. 29, 30 and 32 ; damages for delay calculated for each amount shown above at an annual interest of 5% for a period from May 31, 2016 on which is the day after a duplicate of petition of the district court is served to February 14, 2019 which is the date of this decision to the effect that it is reasonable for the defendant to protest the existence or scope of the Obligation Fulfillment at Issue; and damages for delay calculated for each amount shown above at an annual interest of 15% for a period from February 15, 2019 to the date on which each amount shown above is fully repaid. The plaintiffs' each remaining secondary claim is without merit.

6. Discussion on Secondary Cause of Action: Upholding of Action to Confirm Claim for Employee Invention Compensation

A. Plaintiffs' Argument

1) Even if the claim for compensation for the subject employee invention falls within the rehabilitation claim to be declared in the rehabilitation proceedings, it was difficult for the plaintiffs

to expect that the defendant would obtain profits by concluding a licence agreement, etc. with a third party after the commencement of rehabilitation proceedings. Thus, there was a circumstance that it cannot be anticipated to participate in the rehabilitation proceedings.

2) Thus, it shall be allowed for the plaintiffs to supplement afterwards the claim for compensation for employee inventions succeeded to an employer before the commencement of rehabilitation proceedings by analogically applying Article 152(1) of the Debtor Rehabilitation Act.

3) Then, there exists an interest in litigation to seek to confirm the plaintiffs' claim for employee invention compensation which falls within the rehabilitation claim to supplement the rehabilitation claim declaration.

B. Discussion in Detail

1) Under the Debtor Rehabilitation Act, where a decision on the authorization of the rehabilitation plan has been made, the rights of rehabilitation creditors, rehabilitation secured creditors, shareholders, and equity right holders shall be altered according to the rehabilitation plan (Article 252(1)). The debtor shall be exempted from his/her responsibilities under all of the rehabilitation claims and rehabilitation security rights, with the exception of rights recognized pursuant to the rehabilitation plan or the provisions of the Debtor Rehabilitation Act (Article 251). Also, an immediate appeal shall be filed against a decision on whether to grant authorization of the rehabilitation plan to appeal the effect of right alteration under the Debtor Rehabilitation Act (Article

247(1)). An application for lawsuit objecting to judgment in rehabilitation claim allowance proceedings shall be filed to be acknowledged for a right more than the already admitted rehabilitation claim (Article 170(2)). It is inappropriate to raise a separate lawsuit to seek the performance or confirmation of rehabilitation claim (See, e.g., Supreme Court Decision 2011Da10310, decided May 26, 2011).

The application for lawsuit objecting to judgment in rehabilitation claim allowance proceedings shall be filed within one month from the last day of the right inspection period or from the special inspection date (Article 170(2)). Anyone who is dissatisfied with a judgment in claim allowance proceedings may file a lawsuit objecting to such judgment in claim allowance proceedings within one month from the date he/she receives service of the written judgment thereon (Article 171(1)). When a suit objecting to the judgment in claim allowance proceedings is not filed within the period provided for in the provisions of Article 171 (1) or is dismissed without prejudice, the judgment shall have the same effect as that of the final and conclusive judgment on all of the rehabilitation creditors, rehabilitation secured creditors, shareholders and equity right holders (Article 176(2)).

2) Even according to the plaintiffs' arguments, the plaintiffs seek to confirm that the claim for employee invention compensation is the rehabilitation claim. As examined above, the same shall be sought through the rehabilitation proceedings, such as lawsuit objecting to judgment in rehabilitation claim allowance proceedings, etc. And it would be inappropriate to raise a separate lawsuit to seek to confirm that it falls within the rehabilitation claim.

C. Summary of Discussion

Thus, the plaintiffs' secondary claims are without interest in litigation and shall not be upheld.

7. Conclusion

The followings are inappropriate and thus shall be rejected: among the plaintiff A's secondary claims, for the parts regarding the subject invention Nos. 2, 4 through 6, 8 through 11, 18; among the plaintiff B's secondary claims, for the parts regarding the subject invention Nos. 1, 3, 5, 7, 12 through 17, 19 through 22, 24, 25, 28, 33 and 34; and the plaintiffs' secondary claims. The plaintiffs' claims excluding those without interest in litigation shall be granted within the said established scope. The remaining claims shall be rejected. The district court's decision is in part inconsistent with the above analysis and thus it is decided as ordered to modify, as explained above, the district court's decision including claims the plaintiffs added secondarily in this court.

Presiding Judge Kyung Ran KIM
Judge Hyeon Seop JIN
Judge Kwang Nam KIM

[별지 목록 1: 전체 대상 발명 목록]

번호	등록번호	등록일	출원일	발명의 명칭	발명자
1	특허 제0705618호	2007.04.03	2003.04.01	반투과형 액정표시장치 및 그 제조방법(Liquid crystal display and method for fabricating the same)	
2	특허 제0711216호	2007.04.18	2003.04.01	액정표시장치(LIQUID CRYSTAL DISPLAY)	
3	특허 제0713886호	2007.04.25	2003.06.25	반투과형 액정표시장치 및 그 제조방법(A transflective liquid crystal display and method for fabricating the same)	
4	특허 제0717185호	2007.05.04	2003.08.21	에프.에프.에스 모드의 액정표시장치 제조방법(Method for fabricating liquid crystal display of FFS mode)	
5	특허 제0617612호	2006.08.22	2003.08.26	에프에프에스 모드 액정표시장치(FFS mode liquid crystal display)	
6	특허 제0705621호	2007.04.03	2003.08.29	프린지 필드 구동 액정표시장치의 제조 방법(method for fabricating fringe field switching liquid crystal display)	
7	특허 제1000670호	2010.12.06	2003.08.29	액정표시장치의 지주스페이서 형성방법 및 그 구조(Method for arranging spacer of liquid crystal display and spacer structure)	
8	특허 제0653474호	2006.11.27	2003.09.26	프린지 필드 스위칭 액정표시장치(fringe field switching liquid crystal display)	
9	특허 제0577799호	2006.05.01	2004.02.16	프린지 필드 구동 모드 액정표시장치에서의 편광축 및 러빙축을 배열하는 방법(METHOD FOR ALIGNING POLARIZER AND RUBBING AXES IN FRINGE FIELD SWITCHING MODE LIQUID CRYSTAL DISPLAY)	
10	특허 제0617613호	2006.08.22	2004.02.16	프린지 필드 구동 모드 액정 표시 장치(FRINGE FIELD SWITCHING LIQUID CRYSTAL DISPLAY DEVICE)	
11	특허 제0687350호	2007.02.20	2004.05.14	울트라 프린지 필드 스위칭 모드 액정표시장치 및 그 제조방법(ULTRA FRINGE FIELD SWITCHING MODE LIQUID CRYSTAL DISPLAY AND METHOD FOR FABRICATING THE SAME)	
12	특허 제0620142호	2006.08.28	2004.07.20	프린지 필드 스위칭 모드 액정표시장치(Fringe field switching mode LCD)	
13	특허 제0590932호	2006.06.09	2004.09.23	프린지 필드 스위칭 모드 액정표시장치(Fringe field switching mode LCD)	
14	특허 제0717186호	2007.05.04	2004.11.12	프린지필드구동 액정표시장치(fringe field switching mode liquid crystal display device)	
15	특허 제0717189호	2007.05.04	2004.12.22	프린지 필드 스위칭 모드 액정표시장치(Fringe field switching mode liquid crystal display)	
16	특허 제0687357호	2007.02.20	2004.12.28	박막트랜지스터 액정표시장치(THIN FILM TRANSISTIOR LIQUID CRYSTAL DISPLAY)	
17	특허 제0707029호	2007.04.05	2005.01.27	액정표시장치(LIQUID CRYSTAL DISPLAY)	
18	특허 제0707030호	2007.04.05	2005.01.29	액정표시장치(LIQUID CRYSTAL DISPLAY)	
19	특허 제0713892호	2007.04.25	2005.02.17	반투과형 프린지 필드 스위칭 모드 액정표시장치(Transflective fringe field switching mode liquid crystal display)	
20	특허 제0717191호	2007.05.04	2005.03.23	반투과형 액정표시장치(Semitransmission type liquid crystal display)	
21	특허 제0648223호	2006.11.14	2005.05.11	반투과형 프린지 필드 스위칭 모드 액정표시장치(Transflective fringe field switching mode liquid crystal display)	
22	특허 제0735219호	2007.06.27	2005.08.25	에프에프에스 모드 액정표시장치 및 그 제조방법(Fringe field switching mode liquid crystal display device and manufacture method thereof)	
23	특허 제0707035호	2007.04.05	2005.09.14	광 투과 영역 조절 방법 및 이를 이용한 반투과형 액정표시장치(METHOD FOR ADJUSTING LIGHT TRANSMISSION FIELD AND TRANSFLECTIVE TYPE LIQUID CRYSTAL DISPLAY USING THE SAME)	
24	특허 제0678735호	2007.01.29	2005.09.26	에프에프에스 반투과형 액정표시장치(FFS transflective type liquid crystal display device)	
25	특허 제0678738호	2007.01.29	2005.10.19	프린지 필드 스위칭 모드 액정표시장치(Fringe field switching mode liquid crystal display)	
26	특허 제0744395호	2007.07.24	2006.04.07	액정표시장치(LIQUID CRYSTAL DISPLAY)	

PATENT COURT DECISIONS

번호	등록번호	등록일	출원일	발명의 명칭	발명자
27	특허 제0838324호	2008.06.09	2006.08.04	프린지 필드 액정표시소자, 그 제조 방법 및 그 구동 방법(Fringe field Liquid crystal display device, method for manufacturing the same, and method for driving the same)	
28	특허 제0810814호	2008.02.28	2006.08.14	반투과형 프린지 필드 스위칭 모드 액정표시장치(Transflective fringe field switching mode liquid crystal display)	
29	특허 제0855782호	2008.08.26	2007.01.29	에프에프에스 모드 액정표시장치 및 그 제조방법(Fringe Field Switching mode Liquid Crystal Display and Manufacturing Method Thereof)	
30	특허 제0906830호	2009.07.01	2008.03.05	액정표시장치(LIQUID CRYSTAL DISPLAY)	
31	특허 제1202058호	2012.11.09	2008.03.17	에프에프에스 모드 액정표시장치 및 그 제조방법(Fringe Field Switching mode Liquid Crystal Display and Manufacturing Method Thereof)	
32	특허	2013.12.20	2008.03.21	편광안경식 입체영상 액정표시장치(3 DIMENSIONAL LIQUID	
	제1345883호			CRYSTAL DISPLAY WITH POLARIZED GLASSES)	
33	중국특허 제 100383621호	2008.04.23	2005.04.20	Rubbing apparatus for LCD	
34	미국특허 제 7545470 호	2009.06.09	2005.08.30	Fringe field switching mode LCD with first and second pixel electrodes each having a plurality of slits where the second electrodes are positioned between the first electrodes at a predetermined angle	
35	미국특허 제 7471364 호	2008.12.30	2005.05.24	Multi-cell gap fringe field switching mode LCD	
36	미국특허 제7102706호	2006.09.05	2004.06.30	Method for aligning polymer network liquid crystal	

[별지 목록 2-1: 관련 발명 목록]

번호	등록번호	등록일	출원일	발명의 명칭	발명자	발명자	지분비율
1	특허 제0711216호	2007.04.18	2003.04.01	액정표시장치(LIQUID CRYSTAL DISPLAY)			100%
2	특허 제0717185호	2007.05.04	2003.08.21	에프.에프.에스 모드의 액정표시장치 제조방법(Method for fabricating liquid crystal display of FFS mode)			70%
3	특허 제0617612호	2006.08.22	2003.08.26	에프에프에스 모드 액정표시장치(FFS mode liquid crystal display)			70%
4	특허 제0705621호	2007.04.03	2003.08.29	프린지 필드 구동 액정표시장치의 제조 방법(method for fabricating fringe field switching liquid crystal display)			70%
5	특허 제0653474호	2006.11.27	2003.09.26	프린지 필드 스위칭 액정표시장치(fringe field switching liquid crystal display)			90%
6	특허 제0577799호	2006.05.01	2004.02.16	프린지 필드 구동 모드 액정표시장치에서의 편광축 및 러빙축을 배열하는 방법(METHOD FOR ALIGNING POLARIZER AND RUBBING AXES IN FRINGE FIELD SWITCHING MODE LIQUID CRYSTAL DISPLAY)			70%
7	특허 제0617613호	2006.08.22	2004.02.16	프린지 필드 구동 모드 액정 표시 장치(FRINGE FIELD SWITCHING LIQUID CRYSTAL DISPLAY DEVICE)			80%
8	특허 제0687350호	2007.02.20	2004.05.14	울트라 프린지 필드 스위칭 모드 액정표시장치 및 그 제조방법(ULTRA FRINGE FIELD SWITCHING MODE LIQUID CRYSTAL DISPLAY AND METHOD FOR FABRICATING THE SAME)			20%
9	특허 제0707030호	2007.04.05	2005.01.29	액정표시장치(LIQUID CRYSTAL DISPLAY)			30%
10	특허 제0906830호	2009.07.01	2008.03.05	액정표시장치(LIQUID CRYSTAL DISPLAY)			10%
11	특허 제1345883호	2013.12.20	2008.03.21	편광안경식 입체영상 액정표시장치(3 DIMENSIONAL LIQUID CRYSTAL DISPLAY WITH POLARIZED GLASSES)			10%

[별지 목록 2-2: 관련 발명 목록]

번호	등록번호	등록일	출원일	발명의 명칭	발명자	발명자	지분비율
1	특허 제0705618호	2007.04.03	2003.04.01	반투과형 액정표시장치 및 그 제조방법(Liquid crystal display and method for fabricating the same)			50%
2	특허 제0713886호	2007.04.25	2003.06.25	반투과형 액정표시장치 및 그 제조방법(A transflective liquid crystal display and method for fabricating the same)			10%
3	특허 제0617612호	2006.08.22	2003.08.26	에프에프에스 모드 액정표시장치(FFS mode liquid crystal display)			10%
4	특허 제1000670호	2010.12.06	2003.08.29	액정표시장치의 지주스페이서 형성방법 및 그 구조(Method for arranging spacer of liquid crystal display and spacer structure)			70%
5	특허 제0620142호	2006.08.28	2004.07.20	프린지 필드 스위칭 모드 액정표시장치(Fringe field switching mode LCD)			80%
6	특허 제0590932호	2006.06.09	2004.09.23	프린지 필드 스위칭 모드 액정표시장치(Fringe field switching mode LCD)			10%
7	특허 제0717186호	2007.05.04	2004.11.12	프린지필드구동 액정표시장치(fringe field switching mode liquid crystal display device)			10%
8	특허 제0717189호	2007.05.04	2004.12.22	프린지 필드 스위칭 모드 액정표시장치(Fringe field switching mode liquid crystal display)			10%
9	특허 제0687357호	2007.02.20	2004.12.28	박막트랜지스터 액정표시장치(THIN FILM TRANSISTIOR LIQUID CRYSTAL DISPLAY)			10%
10	특허 제0707029호	2007.04.05	2005.01.27	액정표시장치(LIQUID CRYSTAL DISPLAY)			80%
11	특허 제0713892호	2007.04.25	2005.02.17	반투과형 프린지 필드 스위칭 모드 액정표시장치(Transflective fringe field switching mode liquid crystal display)			10%
12	특허 제0717191호	2007.05.04	2005.03.23	반투과형 액정표시장치(Semitransmission type liquid crystal display)			10%
13	특허 제0648223호	2006.11.14	2005.05.11	반투과형 프린지 필드 스위칭 모드 액정표시장치(Transflective fringe field switching mode liquid crystal display)			10%
14	특허 제0735219호	2007.06.27	2005.08.25	에프에프에스 모드 액정표시장치 및 그 제조방법(Fringe field switching mode liquid crystal display device and manufacture method thereof)			70%
15	특허 제0678735호	2007.01.29	2005.09.26	에프에프에스 반투과형 액정표시장치(FFS transflective type liquid crystal display device)			10%
16	특허 제0678738호	2007.01.29	2005.10.19	프린지 필드 스위칭 모드 액정표시장치(Fringe field switching mode liquid crystal display)			10%

번호	등록번호	등록일	출원일	발명의 명칭	발명자	발명자	지분비율
17	특허 제0810814호	2008.02.28	2006.08.14	반투과형 프린지 필드 스위칭 모드 액정표시장치(Transflective fringe field switching mode liquid crystal display)			10%
18	특허 제0855782호	2008.08.26	2007.01.29	에프에프에스 모드 액정표시장치 및 그 제조방법(Fringe Field Switching mode Liquid Crystal Display and Manufacturing Method Thereof)			10%
19	특허 제0906830호	2009.07.01	2008.03.05	액정표시장치(LIQUID CRYSTAL DISPLAY)			80%
20	특허 제1202058호	2012.11.09	2008.03.17	에프에프에스 모드 액정표시장치 및 그 제조방법(Fringe Field Switching mode Liquid Crystal Display and Manufacturing Method Thereof)			10%
21	특허 제1345883호	2013.12.20	2008.03.21	편광안경식 입체영상 액정표시장치(3 DIMENSIONAL LIQUID CRYSTAL DISPLAY WITH POLARIZED GLASSES)			80%
22	중국특허 제 100383621호	2008.04.23	2005.04.20	Rubbing apparatus for LCD			30%
23	미국특허 제 7545470 호	2009.06.09	2005.08.30	Fringe field switching mode LCD with first and second pixel electrodes each having a plurality of slits where the second electrodes are positioned between the first electrodes at a predetermined angle			20%

PATENT COURT OF KOREA
FOURTH DIVISION
DECISION

Case No.	2018Heo2717 Invalidation (Patent)
Plaintiff	Bristol-Myers Squibb Holdings Ireland Unlimited Company (Before change: Bristol-Myers Squibb Holdings Ireland) Switzerland
Defendants	1. Navipharm Co., Ltd. 2. Intropharm, Inc. 3. Alvogen Korea Co., Ltd. 4. Huons Co. Ltd.
Intervenors Joining Defendants	1. Chong Kun Dang Pharmaceutical Corp. 2. Yuhan Corporation
Date of Closing Argument	December 14, 2018
Decision Date	March 29, 2019

ORDER

1. All of the plaintiff's claims are dismissed.
2. All of the litigation costs including those relating to the intervention are assessed against the plaintiff.

PLAINTIFF'S DEMAND

The IPTAB Decisions 2015Dang1184, 2015Dang1185(consolidated), 2015Dang1186(consolidated), 2015Dang1774(consolidated), 2015Dang 1775(consolidated) dated February 28, 2018 shall be revoked.

OPINION

1. Basic Facts

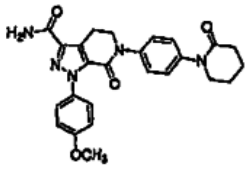
A. Plaintiff's Subject Invention at Issue (Plaintiff's Exhibits 1 and 2)

1) Title of Invention: Lactam-containing compounds and derivatives thereof as factor Xa inhibitors

2) International Filing Date of Application/ Date of Claimed Priority/ Translation Submission Date/ Registration Date/ Registration Number: September 17, 2002/ September 21, 2001/ March 19, 2004/ July 9, 2009/ No. 908176

3) Claims

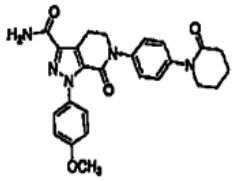
[Claim 1] A compound represented by the following Formula I[1] or a pharmaceutically acceptable salt thereof (hereinafter referred to as "Claim 1," and the same applies to the remaining claims).



Formula I

1) The compound of Formula I is "1-(4-methoxyphenyl)-7-oxo-6-[4-(2-oxo-1-piperidinyl)phenyl]-4,5,6,7-tetrahydro-1H-pyrazolo[3,4-c]pyridine-3-carboxamide" and the common name is apixaban (hereinafter referred to as "apixaban").

[Claim 2] A compound represented by the following Formula I



Formula I

[Claims 3-20] (Deleted)

4) Summary of Description of Invention and Drawing

Field of the Invention

This invention relates generally to lactam-containing compounds and derivatives thereof which are inhibitors of trypsin-like serine protease enzymes, especially factor Xa, pharmaceutical compositions containing the same, and methods of using the same as anticoagulant agents for treatment of thromboembolic disorders (Paragraph [1]).

Background of the Invention

Efficacious and specific inhibitors of factor Xa are needed as potentially valuable therapeutic agents for the treatment of thromboembolic disorders. It is thus desirable to discover new factor Xa inhibitors. In addition, it is also desirable to find new compounds with improved pharmacological characteristics compared with known factor Xa inhibitory activity and selectivity for factor Xa versus other serine proteases (i.e., trypsin). It is also desirable and preferable to find compounds with advantageous and improved characteristics in one or more of the following categories, but are not limited to: (a) pharmaceutical properties (e.g., solubility, permeability, and amenability to sustained release formulations); (b) dosage requirements (e.g., lower dosages and/or once-daily dosing); (c) factors which decrease blood concentration peak-to-trough characteristics (e.g., clearance and/or volume of distribution); (d) factors that increase the concentration of active drug at the receptor (e.g., protein binding, volume of distribution); (e) factors that decrease the liability for clinical drug-drug interactions (e.g., cytochrome P450 enzyme inhibition or induction); (f) factors that decrease the potential for adverse side-effects (e.g., pharmacological

selectivity beyond serine proteases, potential chemical or metabolic reactivity, and limited CNS penetration); and, (g) factors that improve manufacturing costs or feasibility (e.g., difficulty of synthesis, number of chiral centers, chemical stability, and ease of handling) (Paragraph [49]).

<Summary of the Invention>

Accordingly, the present invention provides novel lactam-containing compounds and derivatives thereof that are useful as factor Xa inhibitors or pharmaceutically acceptable salts or prodrugs thereof (Paragraph [51]).

Detailed Description of the Invention

<Utility>

The compounds of this invention are inhibitors of factor Xa and are useful as anticoagulants for the treatment or prevention of thromboembolic disorders in mammals (i.e., factor Xa-associated disorders). In general, a thromboembolic disorder is a circulatory disease caused by blood clots (i.e., diseases involving fibrin formation, platelet activation, and/or platelet aggregation). The term “thromboembolic disorders” as used herein includes arterial cardiovascular thromboembolic disorders, venous cardiovascular thromboembolic disorders, and thrmoboembolic disorders in the chambers of the heart. The term “thromboembolic disorders” as used herein also includes specific disorders selected from, but not limited to, unstable angina or other acute coronary syndromes, first or recurrent myocardial infarction, ischemic sudden death, transient ischemic attack, stroke, atherosclerosis, peripheral occlusive arterial disease, venous thrombosis, deep vein thrombosis, thrombophlebitis, arterial embolism, coronary arterial thrombosis, cerebral arterial thrombosis, cerebral embolism, kidney embolism, pulmonary embolism, and thrombosis resulting from (a) prosthetic valves or other implants, (b) indwelling catheters, (c) stents, (d) cardiopulmonary bypass, (e) hemodialysis, or (f) other procedures in which blood is exposed to an artificial surface that promotes thrombosis. It is noted that thrombosis includes occlusion (e.g. after a bypass) and reocclusion (e.g., during or after percutaneous transluminal coronary angioplasty). The thromboembolic disorders may result from conditions including but not limited to atherosclerosis, surgery or surgical complications, prolonged immobilization, arterial fibrillation, congenital thrombophilia, cancer, diabetes, effects of medications or

hormones, and complications of pregnancy. The anticoagulant effect of compounds of the present invention is believed to be due to inhibition of factor Xa or thrombin (Paragraph [817]).

The effectiveness of compounds of the present invention as inhibitors of factor Xa was determined using purified human factor Xa and synthetic substrate. The rate of factor Xa hydrolysis of chromogenic substrate S2222 (Diapharma/Chromogenix, West Chester, Ohio) was measured both in the absence and presence of compounds of the present invention. Hydrolysis of the substrate resulted in the release of pNA, which was monitored spectrophotometrically by measuring the increase in absorbance at 405 nm. A decrease in the rate of absorbance change at 405nm in the presence of inhibitor is indicative of enzyme inhibition. The results of this assay are expressed as inhibitory constant, Ki (Paragraph [818]).

Compounds tested in the above assay are considered to be active if they exhibit a Ki of $\leq$ 10 μM. Preferred compounds of the present invention have Ki′s of $\leq$ 1 μM. More preferred compounds of the present invention have Ki′s of $\leq$ 0.1 μM. Even more preferred compounds of the present invention have Ki′s of $\leq$ 0.01 μM. Still more preferred compounds of the present invention have Ki′s of $\leq$ 0.001 μM. Using the methodology described above, a number of compounds of the present invention were found to exhibit Ki′s of $\leq$ 10 μM, thereby confirming the utility of the compounds of the present invention as effective Xa inhibitors (Paragraph [828]).

The compounds of the present invention can be administered alone or in combination with one or more additional therapeutic agents. By "administered in combination" or "combination therapy" it is meant that a compound of the present invention and one or more additional therapeutic agents are administered concurrently to the mammal being treated. When administered in combination each component may be administered at the same time or sequentially in any order at different points in time. Thus, each component may be administered separately but sufficiently closely in time so as to provide the desired therapeutic effect. Additional therapeutic agents include other anti-coagulant or coagulation inhibitory agents, anti-platelet or platelet inhibitory agents, thrombin inhibitors, thrombolytic or fibrinolytic agents, anti-arrhythmic agents, anti-hypertensive agents, calcium channel blockers (L-type and T-type), cardiac glycosides, diuretics,

mineralocorticoid receptor antagonists, phosphodiesterase inhibitors, cholesterol/lipid lowering agents and lipid profile therapies, anti-diabetic agents, anti-depressants, anti-inflammatory agents (steroidal and non-steroidal), anti-obesity agents, anti-anxiety agents, anti-proliferative agents, anti-tumor agents, anti-ulcer and gastroesophageal reflux disease agents, growth hormone and/or growth hormone secretagogues, thyroid minetics (including thyroid receptor antagonist), anti-infective agents, anti-viral agents, anti-bacterial agents, and anti-fungal agents (Paragraphs [833], [834]).

Other anticoagulant agents (or coagulation inhibitory agents) that may be used in combination with the compounds of this invention include warfarin and heparin (either unfractionated heparin or any commercially available low molecular weight heparin), synthetic pentasaccharide, direct acting thrombin inhibitors including hirudin and argatroban as well as other factor Xa inhibitors such as those described in the publications identified above under Background of the Invention (Paragraph [835]).

The term anti-platelet agents (or platelet inhibitory agents), as used herein, denotes agents that inhibit platelet function, for example by inhibiting the aggregation, adhesion or granular secretion of platelets. Agents include, but are not limited to, the various known non-steroidal anti-inflammatory drugs (NSAIDS) such as aspirin, ibuprofen, naproxen, suilndac, indomethacin, mefenamate, droxicam, diclofenac, sulfinpyrazone, piroxicam, and pharmaceutically acceptable salts or prodrugs thereof. Of the NSAIDS, aspirin (acetylslicyclic acid or ASA) and piroxicam are preferred. Other suitable platelet inhibitory agents include IIb/IIIa antagonists (e.g., tirofiban, eptifibatide, and abciximab), thromboxane-A2 receptor antagonists (e.g., ifetroban), thromboxane-A2 synthetase inhibitors, PDE-III inhibitors (e.g., dipyridamole), and pharmaceutically acceptable salts or prodrugs thereof (Paragraph [836]).

The term anti-platelet agents (or platelet inhibitory agents), as used herein, is also intended to include ADP (adenosine diphosphate) receptor antagonists, preferably antagonists of the purinergic receptor P_2Y_1 and P_2Y_{12}, with P_2Y_{12} being even more preferred. Preferred P_2Y_{12} receptor antagonists include ticlopidine and clopidogrel, including pharmaceutically acceptable salts or prodrugs thereof. Clopidogrel is an even more preferred agent. Ticiopidine and clopidogrel are also preferred compounds since they are known to be gentle on the gastro-intestinal tract in use

(Paragraph [837]).

The term thrombin inhibitors (or anti-thrombin agents), as used herein, denotes inhibitors of the serine protease thrombin. By inhibiting thrombin, various thrombin-mediated processes, such as thrombin-mediated platelet activation (that is, for example, the aggregation of platelets, and/or the granular secretion of plasminogen activator inhibitor-1 and/or serotonin) and/or fibrin formation are disrupted. A number of thrombin inhibitors are known to one of skill in the art and these inhibitors are contemplated to be used in combination with the present compounds. Such inhibitors include, but are not limited to, boroarginine derivatives, boropeptides, heparins, hirudin, argatroban, and melagatran, including pharmaceutically acceptable salts and prodrugs thereof. Boroaginine derivatives and boropeptides include N-acetyl and peptide derivatives of boronic acid, such as C-terminal α-aminoboronic acid derivatives of lysine, ornithine, arginine, homoarginine and corresponding isothiouronium analogs thereof. The term hirudin, as used herein, includes suitable derivatives of lysine, ornithine, arginine, homoarginine and corresponding isothiouronium analogs thereof. The term hirudin, as used herein, includes suitable derivatives or analogs of hirudin, referred to herein as hirulogs, such as disulfatohirudin (Paragraph [838]).

The term thrombolytics or fibrinolytic agents (or thrombolytics or fibrinolytics), as used herein, denote agents that lyse blood clots (thrombi). Such agents include tissue plasminogen activator (natural or recombinant) and modified forms thereof, anistreplase, urokinase, streptokinase, tenecteplase (TNK), lanoteplase (nPA), factor VIIa inhibitors, PAI-1 inhibitors (i.e., inactivators of tissue plasminogen activator inhibitors), alpha2-antiplasmin inhibitors, and anisoylated plasminogen streptokinase activator complex, including pharmaceutically acceptable salts or prodrugs thereof. The term anistrepase, as used herein, refers to anisoylated plasminogen streptokinase activator complex, as described, for example, in EP 028,489, the disclosure of which is hereby incorprated herein by reference herein. The term urokinase, as used herein, is inteneded to denote both dual and single chain urokinase, the latter also being referred to herein as prourokinase (Paragraph [839]).

Examples of suitable anti-arrhythmic agents for use in combination with the present compounds include: Class I agents (such as propafenone); Class II agents (such as carvadiol and propranolo); Class III agents (such

as sotalol, dofetilide, amiodarone, azimilide and ibutilide); Class IV agents (such as ditiazem and verapamil); K^+ channel openers such as I_{Ach} inhibitors, and I_{Kur} inhibitors (e.g., compounds such as those disclosed in WO01/40231) (Paragraph [840]).

Examples of suitable anti-hypertensive agents for use in combination with the compounds of the present invention include: alpha adrenergic blockers; beta adrenergic blockers; calcium channel blockers (e.g., diltiazem, verapamil, nifedipine, amlodipine and mybefradil); diruetics (e.g., chlorothiazide, hydrochlorothiazide, flumethiazide, hydroflumethiazide, bendroflumethiazide, methylclorothiazide, trichloromethiazide, polythiazide, benzthiazide, ethacrynic acide tricrynafen, chlorthalidone, furosemide, musolimine, bumetanide, triamtrenene, amiloride, spiroiactone); renin inhibitors; ACE inhibitors (e.g.s, captopril, zofenopril, fosinopril, enalapril, ceranopril, cilazopril, delapril, pentopril, quinapril, tamipril, lisinopril); AT-1 receptor antagonists (e.g., losartan, irbesartan, valsartan); ET receptor antagonists (e.g.,. sitaxsentan, atrentan and compounds disclosed in U.S. Pat. Nos. 5,612,359 and 6,043,265); Dual ET/All antagonist (e.g., compounds disclosed in WO 00/01389); neutral endopeptidase (NEP) inhibitors; vasopepsidase inhibitors (dual NEP-ACE inhibitors) (e.g., omapatrilat, gemopatrilat and nitrates) (Paragraph [841]).

Examples of suitable calcium channel blockers (L-type or T-type) for use in combination with the compounds of the present invention include dilitiazem, verapamil, nifedipine, amlodipine and mybefradil (Paragraph [842]).

Examples of suitable cardiac glycosides for use in combination with the compounds of the present invention include digitalis and ouabain (Paragraph [843]).

Examples of suitable diruetics for use in combination with the compounds of the present invention include: chlorothiazide, hydrochlorothiazide, flumethiazide, hydroflumethiazide, bendroflumethiazide, methylchlorothiazide, trichloromdthiazide, polythiazide, benzthiazide, ethacrynic acide tricrynafen, chlorthalidone, furosemide, musolimine, bumetaide, triamtrenene, amiloride, and spironolactone (Paragraph [844]).

Examples of suitable mineralocorticoid receptor antagonists for use in combination with the compounds of the present invention include sprionolactone and eplirinone (Paragraph [845]).

Examples of suitable phosphodiesterase inhibitors for use in combination

with the compounds of the present invention include: PDE III inhibitors (such as cilostazol); and PDE V inhibitors (such as sildenafil) (Paragraph [846]).

Examples of suitable cholesterol/lipid lowering agents and lipid profile therapies for use in combination with the compounds of the present invention include: HMG-CoA reductase inhibitors (e.g., pravastatin, lovastatin, atorvastatin) and ZD-4522 (a.k.a. rosuvastatin, or atavastatin or visastatin))); squalene synthetase inhibitors; fibratesl bile acide sequestrants (such as questran); ACAT inhibitors; MTP inhibitors; lipooxygenase inhibitors; choesterol absorption inhibitors; and cholesterol ester transfer protein inhibitors (e.g., CP-529414) (Paragraph [847]).

Examples of suitable anti-diabetic agents for use in combination with the compounds of the present invention include: biguanides (e.g., metformin); glucosidase inhibitors (e.g., acarbose); insulins (including insulin secretagogues or insulin sensitizers); meglitinides (e.g., repaglinide); sulfonylureas (e.g., glimepiride, glyburide and glipizide); biguanide/glyburide combinations (e.g., glucovance), thiozolidinediones (e.g., troglitazone, rosiglitazone and piglitazone), PPAR-alpha agonists, PPAR-gamma agonists, PPAR alpha/gamma dual agonists, SGLT2 inhibitors, inhibitors of fatty acide binding protein (aP2) such as those disclosed in WO00/59506, glucagon-like peptide-1 (GLP-1), and dipeptidyl peptidase IV (DP4) inhibitors (Paragraph [848]).

Examples of suitable anti-depressant agents for use in combination with the compounds of the present invention include defazodone and sertraline (Paragraph [849]).

Examples of suitable anti-inflammatory agents for use in combination with the compounds of the present invention include: prednisone; dexamethasone; enbrel; protein tyrosine kinase (PTK) inhibitors; cyclooxygenase inhibitors (including NSAIDs, and COX-1 and/or COX-2 inhibitors); aspiring; indomethacin; ibuprofen; prioxicam; naproxen; celecoxib; and/or rofecoxib (Paragraph [850]).

Examples of suitable anti-osteoporosis agents for use in combination with the compounds of the present invention include alendronate and raloxifene (Paragraph [851]).

Examples of suitable hormone replacement therapies for use in combination with the compounds of the present invention include estrogen (e.g., conjugated estrogens) and estradiol (Paragraph [852]).

Examples of suitable anti-coagulants for use in combination with the compounds of the present invention include heparins (e.g., unfractioned and low molecular weight heparins such as enoxaparin and dalteparin) (Paragraph [853]).

Examples of suitable anti-obesity agents for use in combination with the compounds of the present invention include orlistat and aP2inhibitors (such as those disclosed in WO00/59506 (Paragraph [854]).

Examples of suitable anti-anxiety agents for use in combination with the compounds of the present invention include diazepam, lorazepam, buspirone, and hydroxyzine pamoate (Paragraph [855]).

Examples of suitable anti-proliferative agents for use incombination with the compounds of the present invention include cyclosporin A, paclitaxel, adriamycin; epithilones, cisplatin, and carboplatin (Paragraph [856]).

Examples of suitable anti-ulcer and gastroesophageal reflux disease agents for use in combination with the compounds of the present invention include famotidine, ranitidine, and omeprazole (Paragraph [857]).

Administration of the compounds of the present invention (i.e., a first therapeutic agent) in combination with at least one additional therapeutic agent (i.e., a second therapeutic agent), preferably affods an efficacy advantage over the compounds and agents alone, preferably while permitting the use of lower doses of each (i.e., a synergistic combination). A lower dosage minimizes the potential of side effects, thereby providing an increased margin of safety. It is preferred that at least one of the therapeutic agents is administered in a sub-therapeutic dose. It is even more preferred that all of the therapeutic agents be administered in sub-therapeutic doses. Sub-therapeutic is intended to mean an amount of a therapeutic agent that by itself does not give the desired therapeutic effect for the condition or disease being treated. Syndergistic combination is intended to mean that the observed effect of the combination is greater than the sum of the individual agents administered alone (Paragraph [858]).

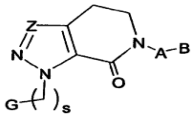
5) Patent Holder: Plaintiff

6) Inventors: Donald PINTO, Patrick LAM, etc.

B. Prior Art (Plaintiff's Exhibit 4-1)

The Prior Art relates to "Nitrogen Containing Heterobicycles[2] as Factor Xa Inhibitors" disclosed in the international patent gazette WO 00-39131 published on July 6, 2000, of which joint inventors include Donald PINTO and Patrick LAM among the inventors of the subject invention, and the technical task thereof is to provide novel nitrogen containing heterobicycles that are useful as factor Xa inhibitors or pharmaceutically acceptable salts or prodrugs thereof. The main contents are as follows.

Main Claims[3] (Pages 273~284)
[Claim 1] A compound selected from the group below or a stereoisomer or pharmaceutically acceptable salt thereof,



(Chemical structures of other groups are omitted)

wherein compounds of the above formulas are substituted with 0-2 R^3; G is a group of formula I or II:

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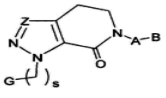
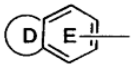
2) A heterocycle or heterocyclic system compound is a class of compound with a ring structure (circle, cyclic) that has non-carbon (hetero) atoms as members of its ring(s). Heterobicycles refer to those which have a structure including a non-carbon (hetero) atom as a part of a ring at the ring structure (cyclic, cyclic) carbon compound. Heterobicycles refer to cyclic compounds where two heterocyclic compounds share one or more bonds.

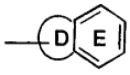
3) Claim 1 of the Korean patent No. 0628407 corresponding to Prior Art is as follows (Pages 197~200, Plaintiff's Exhibit 4-2).
A compound selected from the group below or a stereoisomer or pharmaceutically acceptable salt thereof,



(Chemical structures of other groups are omitted)

wherein compounds of the above formulas are substituted with 0-2 R^3; G is selected from the group below;

Formula I 

Formula II 

 (Chemical structures of other groups are omitted)

Z is CR^{1a};

Z^2 is H;

R^{1a} is H or $-(CH_2)_r-R^{1'}$;

$R^{1'}$ is selected from the group consisting of H, C_{1-3} alkyl, -CN, $(CF_2)_rCF_3$, NR^2R^{2a}, $C(O)R^{2c}$, $NR^2C(O)R^3$,

imidazolyl which is substituted with 0-2 R^{4a}, and tetrazolyl which is substituted with 0-2 R^{4a};

R^2, at each occurrence, is selected from the group consisting of H, C_{1-6} alkyl, carbocyclic-CH_2-residue;

R^{2a}, at each occurrence, is H or C_{1-6} alkyl;

R^{2c}, at each occurrence, is OH or C_{1-4} alkoxy;

alternatively, R^2 and R^{2a} together with the molecules to which they are attached, forming pirolidinyl

substituted with 0-2 R^{4b}, morpholinyl or imidazolyl;

R^3, at each occurrence, is H or C_{1-4} alkyl;

A is phenyl substituted with 0-2 R^4;

B is $CH_2NR^2R^{2a}$ or $CH_2CH_2NR^2R^{2a}$;

alternatively, B is phenyl, imidazolyl, imidazolynyl or benzimidazolyl and substituted with 0-2 R^{4a};

R^4, at each occurrence, is selected from the group consisting of H, F, Cl, Br and I;

R^{4a}, at each occurrence, is selected from the group consisting of H, $(CH_2)_rOR^2$, C_{1-4} alkyl, $(CH_2)_rNR^2R^{2a}$, $(CH_2)_rN{=}CHOR^3$, $SO_2NR^2R^{2a}$, and $S(O)_pR^5$;

R^{4b}, at each occurrence, is selected from the group consisting of H, $(CH_2)_rOR^3$ and C_{1-4} alkyl;

R^5, at each occurrence, is C_{1-4} alkyl;

p, at each occurrence, is selected from 0, 1, and 2;

r, at each occurrence, is selected from 0, 1, 2, and 3;

s, at each occurrence, is selected from 0, 1, and 2.

ring D is selected from -$(CH_2)_3$-, -$(CH_2)_4$-, -CH_2N=CH-, -CH_2CH_2N=CH-, and a 5-6 membered aromatic system containing from 0-2 heteroatoms selected from the group N, O, and S, provided that from 0-1 O and S atoms are present;

ring D, when present, is substituted with 0-2 R;

E is selected from phenyl, pyridyl, pyrimidyl, pyrazinyl, and pyridazinyl, substituted with 0-1 R;

R is selected from CI, F, Br, I, OH, C_{1-3} alkoxy, NH_2, NH(C_{1-3} alkyl), N(C_{1-3} alkyl)$_2$, CH_2NH_2, CH_2NH(C_{1-3} alkyl), CH_2N(C_{1-3} alkyl)$_2$, $CH_2CH_2NH_2$, CH_2CH_2NH(C_{1-3} alkyl), and CH_2CH_2N(C_{1-3} alkyl)$_2$;

alternatively, ring D is absent;

when ring D is absent, ring E is selected from phenyl, pyridyl, pyrimidyl, pyrazinyl, and pyridazinyl, and ring E is substituted with R" and R';

R" is selected from F, CI, Br, I, OH, C_{1-3} alkoxy, CN, C(=NR^8)NR^7R^9, NHC(=NR^8)NR^7R^9, NR^8CH(=NR^7), C(O)NR^7R^8, $(CR^8R^9)_t NR^7R^8$, SH, C_{1-3} alkyl-S, S(O)R^{3b}, S(O)$_2R^{3a}$, S(O)$_2NR^2R^{2a}$, and OCF_3;

R' is selected from H, F, CI, Br, I, SR^3, CO_2R^3, NO_2, $(CH_2)_t OR^3$, C_{1-4} alkyl, OCF_3, CF_3, C(O)NR^7R^8, and $(CR^8R^9)_t NR^7R^8$;

alternatively, R" and R' combine to form methylenedioxy or ethylenedioxy;
Z is N or CR^{la};

Z^1 is S, O, or NR^3;

Z^2 is selected from H, C_{1-4} alkyl, phenyl, benzyl, C(O)R^3, and S(O)$_p R^{3c}$;

R^{1a} is selected from H, -$(CH_2)_r$-$R^{1'}$, -CH=CH-$R^{1'}$, N$CH_2R^{1"}$, O$CH_2R^{1"}$, SCH_2R1", NH$(CH_2)_2(CH_2)_t R^{1'}$, O$(CH_2)_2(CH_2)_t R^{1'}$, and S$(CH_2)_2(CH_2)_t R^{1'}$;

$R^{1'}$ is selected from H, C_{1-3} alkyl, F, CI, Br, I, -CN, -CHO, $(CF_2)_r CF_3$, $(CH_2)_r OR^2$, NR^2R^{2a}, C(O)R^{2c}, OC(O)R^2, $(CF_2)_r CO_2R^{2c}$, S(O)$_p R^{2b}$, $NR^2(CH_2)_r OR^2$, C(=NR^{2c})NR^2R^{2a}, NR^2C(O)R^{2b}, NR^2C(O)R^3, NR^2C(O)NHR^{2b}, NR^2C(O)$_2R^{2a}$, OC(O)$NR^{2a}R^{2b}$, C(O)NR^2R^{2a},

$C(O)NR^2(CH_2)_rOR^2$, $SO_2NR^2R^{2a}$, $NR^2SO_2R^{2b}$, C_{3-6} carbocyclic residue substituted with 0-2 R^{4a}, and 5-10 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4a};

$R^{1"}$ is selected from H, $CH(CH_2OR^2)_2$, $C(O)R^{2c}$, $C(O)NR^2R^{2a}$, $S(O)R^{2b}$, $S(O)_2R^{2b}$, and $SO_2NR^2R^{2a}$;

R^2, at each occurrence, is selected from H, CF_3, C_{1-6} alkyl, benzyl, C_{3-6} carbocyclic residue substituted with 0-2 R^{4b}, a C_{3-6} carbocyclic-CH_2-residue substituted with 0-2 R^{4b}, and 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4b};

R^{2a}, at each occurrence, is selected from H, CF_3, C_{1-6} alkyl, benzyl, C_{3-6} carbocyclic residue substituted with 0-2 R^{4b}, and 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4b};

R^{2b}, at each occurrence, is selected from CF_3, C_{1-4} alkoxy, C_{1-6} alkyl, benzyl, C_{3-6} carbocyclic residue substituted with 0-2 R^{4b}, and 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4b};

R^{2c}, at each occurrence, is selected from CF_3, OH, C_{1-4} alkoxy, C_{1-6} alkyl, benzyl, C_{3-6} carbocyclic residue substituted with 0-2 R^{4b}, and 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4b};

alternatively, R^2 and R^{2a}, together with the atom to which they are attached, combine to form a 5 or 6 membered saturated, partially saturated or unsaturated ring substituted with 0-2 R^{4b} and containing from 0-1 additional heteroatoms selected from the group consisting of N, O, and S;

R^3, at each occurrence, is selected from H, C_{1-4} alkyl, and phenyl;

R^{3a}, at each occurrence, is selected from H, C_{1-4} alkyl, and phenyl;

R^{3b}, at each occurrence, is selected from H, C_{1-4} alkyl, and phenyl;

R^{3c}, at each occurrence, is selected from C_{1-4} alkyl, and phenyl;

A is selected from:

C_{3-10} carbocyclic residue substituted with 0-2 R^4, and

5-10 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^4;

B is selected from:

X-Y, $C(=NR^2)NR^2R^{2a}$, $NR^2C(=NR^2)NR^2R^{2a}$,

C_{3-10} carbocyclic residue substituted with 0-2 R^{4a}, and

5-10 membered **heterocyclic system** containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4a};

X is selected from C_{1-4} alkylene, $-CR^2(CR^2R^{2b})(CH_2)_t-$, $-C(O)-$, $-C(=NR^{1''})-$, $-CR^2(NR^{1''}R^2)-$, $-CR^2(OR^2)-$, $-CR^2(SR^2)-$, $-C(O)CR^2R^{2a}-$, $-CR^2R^{2a}C(O)$, $-S(O)_p-$, $-S(O)_pCR^2R^{2a}-$, $CR^2R^{2a}S(O)_p-$, $-S(O)_2NR^2-$, $NR^2S(O)_2-$, $-NR^2S(O)_2CR^2R^{2a}-$, $-CR^2R^{2a}S(O)_2NR^2-$, $NR^2S(O)_2NR^2-$, $C(O)NR^2-$, $-NR^2C(O)-$, $C(O)NR^2CR^2R^{2a}-$, $-NR^2C(O)CR^2R^{2a}-$, $-CR^2R^{2a}C(O)NR^2-$, $-CR^2R^{2a}NR^2C(O)-$, $-NR^2C(O)O-$, $-OC(O)NR^2-$, $-NR^2C(O)NR^2-$, $-NR^2-$, $-NR^2CR^2R^{2a}-$, $-CR^2R^{2a}NR^2-$, O, $-CR^2R^{2a}O-$, and $-OCR^2R^{2a}-$;

Y is selected from:

$CH_2NR^2R^{2a}$;

$CH_2CH_2NR^2R^{2a}$;

C_{3-10} carbocyclic residue substituted with 0-2 R^{4a}, and

5-10 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4a};

R^4, at each occurrence, is selected from H, =O, $(CH_2)_rOR^2$, F, Cl, Br, I, C_{1-4} alkyl, -CN, NO_2, $(CH_2)_rNR^2R^{2a}$, $(CH_2)rC(O)R^{2c}$, $NR^2C(O)R^{2b}$, $C(O)NR^2R^{2a}$, $NR^2C(O)NR^2R^{2a}$, $C(=NR^2)NR^2R^{2a}$, $C(=NS(O)_2R^5)NR^2R^{2a}$, $NHC(=NR^2)NR^2R^{2a}$, $C(O)NHC(=NR^2)NR^2R^{2a}$, $SO_2NR^2R^{2a}$, $NR^2SO_2NR^2R^{2a}$, NR^2SO_2-C_{1-4} alkyl, $NR^2SO_2R^5$, $S(O)_pR^5$, $(CF_2)_rCF_3$, $NCH_2R^{1''}$, $OCH_2R^{1''}$, $SCH_2R^{1''}$, $N(CH_2)_2(CH_2)_tR^{1'}$, $O(CH_2)_2(CH_2)_tR^{1'}$, and $S(CH_2)_2(CH_2)_tR^{1'}$;

alternatively, one R^4 is a 5-6 membered aromatic heterocycle containing from 1-4 heteroatoms selected from the group consisting of N, O,

and S;

R^{4a}, at each occurrence, is selected from H, =O, $(CH_2)_rOR^2$, $(CH_2)_r$-F, $(CH_2)_r$-Br, $(CH_2)_r$-CI, CI, Br, F, I, C_{1-4} alkyl, -CN, NO_2, $(CH_2)_rNR^2R^{2a}$, $(CH_2)_rC(O)R^{2c}$, $NR^2C(O)R^{2b}$, $C(O)NR^2R^{2a}$, $(CH_2)_rN=CHOR^3$, $C(O)NH(CH_2)_2NR^2R^{2a}$, $NR^2C(O)NR^2R^{2a}$, $C(=NR^2)NR^2R^{2a}$, $NHC(=NR^2)NR^2R^{2a}$, $SO_2NR^2R^{2a}$, $NR^2SO_2NR^2R^{2a}$, NR^2SO_2-C_{1-4} alkyl, $C(O)NHSO_2$-C_{1-4} alkyl, $NR^2SO_2R^5$, $S(O)_pR^5$, and $(CF_2)_rCF_3$;

alternatively, one R^{4a} is a 5-6 membered aromatic heterocycle containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-1 R^5

R^{4b}, at each occurrence, is selected from H, =O, $(CH_2)_rOR^3$, F, CI, Br, I,

C_{1-4} alkyl, -CN, NO_2, $(CH_2)_rNR^3R^{3a}$, $(CH_2)_rC(O)R^3$, $(CH_2)_rC(O)OR^{3c}$, $NR^3C(O)R^{3a}$, $C(O)NR^3R^{3a}$, $NR^3C(O)NR^3R^{3a}$, $C(=NR^3)NR^3R^{3a}$, $NR^3C(=NR^3)NR^3R^{3a}$, $SO_2NR^3R^{3a}$, $NR^3SO_2NR^3R^{3a}$, NR^3SO_2-C_{1-4} alkyl, $NR^3SO_2CF_3$, NR^3SO_2-phenyl, $S(O)_pCF_3$, $S(O)_p$-C_{1-4} alkyl, $S(O)_p$-phenyl, and $(CF_2)_rCF_3$;

R^5, at each occurrence, is selected from CF_3, C_{1-6} alkyl, phenyl substituted with 0-2 R^6, and benzyl substituted with 0-2 R^6;

R^6, at each occurrence, is selected from H, OH, $(CH_2)_rOR^2$, halo, C_{1-4} alkyl, CN, NO_2, $(CH_2)_rNR^2R^{2a}$, $(CH_2)_rC(O)R^{2b}$, $NR^2C(O)R^{2b}$, $NR^2C(O)NR^2R^{2a}$, $C(=NH)NH_2$, $NHC(=NH)NH_2$, $SO_2NR^2R^{2a}$, $NR^2SO_2NR^2R^{2a}$, and $NR^2SO_2C_{1-4}$ alkyl;

R^7, at each occurrence, is selected from H, OH, C_{1-6} alkyl, C_{1-6} alkylcarbonyl, C_{1-6} alkoxy, C_{1-4} alkoxycarbonyl, $(CH_2)_n$-phenyl, C_{6-10} aryloxy, C_{6-10} aryloxycarbonyl, C_{6-10} arylmethylcarbonyl, C_{1-4} alkylcarbonyloxy C_{1-4} alkoxycarbonyl, C_{6-10} arylcarbonyloxy C_{1-4} alkoxycarbonyl, C_{1-6} alkylaminocarbonyl, phenylaminocarbonyl, and phenyl C_{1-4} alkoxycarbonyl;

R^8, at each occurrence, is selected from H, C_{1-6} alkyl and $(CH_2)_n$-phenyl;

alternatively, R^7 and R^8 combine to form a 5 or 6 membered saturated, ring which contains from 0-1 additional heteroatoms selected from

the group consisting of N, O, and S;

R^9, at each occurrence, is selected from H, C_{1-6} alkyl and $(CH_2)_n$-phenyl;

n, at each occurrence, is selected from 0, 1, 2, and 3;

m, at each occurrence, is selected from 0, 1, and 2;

p, at each occurrence, is selected from 0, 1, and 2;

r, at each occurrence, is selected from 0, 1, 2, and 3;

s, at each occurrence, is selected from 0, 1, and 2; and,

t, at each occurrence, is selected from 0, 1, 2, and 3.

Field of the Invention (Lines 5~9, Page 1)

This invention relates generally to nitrogen containing heterobicycles, which are inhibitors of trypsin-like serine protease enzymes, especially factor Xa, pharmaceutical compositions containing the same, and methods of using the same as anticoagulant agents for treatment and prevention of thromboembolic disorders.

Summary of the Invention (Lines 1~21, Page 3)

Accordingly, one object of the present invention is to provide novel nitrogen containing heterobicycles that are useful as factor Xa inhibitors or pharmaceutically acceptable salts or prodrugs thereof.

It is another object of the present invention to provide pharmaceutical compositions comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of at least one of the compounds of the present invention or a pharmaceutically acceptable salts or prodrugs form thereof.

It is another object of the present invention to provide a method for treating thromboembolic disorders comprising administering to a host in need of such treatment a therapeutically effective amount of at least one of the compounds of the present invention or a pharmaceutically acceptable salt or prodrug form thereof.

It is another object of the present invention to provide novel bicyclic compounds for use in therapy.

It is nother object of the present invention to provide the use of novel

bicyclic compounds for the manufacture of a medicament for the treatment of a thromboembolic disorder.

These and other objects, which will become apparent during the following detailed description, have been achieved by the inventors' discovery that the presently claimed bicyclic compounds, or pharmaceutically acceptable salts or prodrug forms thereof, are effective factor Xa inhibitors.

Detailed Description of the Invention

Definitions

The term "heterocycle" or "heterocyclic system," as used herein, is intended to mean a stable 5, 6, or 7-membered monocyclic or bicyclic or 7, 8, 9, or 10-membered bicyclic heterocyclic ring which is saturated, partially unsaturated or unsaturated (aromatic), and which consists of carbon atoms and 1, 2, 3, or 4 heteroatoms independently selected from the group consisting of N, NH, O and S and including any bicyclic group in which any of the above-defined heterocyclic rings is fused to a benzene ring. The nitrogen and sulfur heteroatoms may optionally be oxidized. The heterocyclic ring may be attached to its pendant group at any heteroatom or carbon atom that results in a stable structure. The heterocyclic rings described herein may be substituted on carbon or on a nitrogen atom if the resulting compound is stable. A nitrogen in the heterocycle may optionally be quaternized. It is preferred that when the total number of S and O atoms in the heterocylce exceeds 1, then these heteroatoms are not adjacent to one another. It is preferred that the total number of S and O atoms in the heterocycle is not more than 1. As used herein, the term "aromatic heterocyclic system" or "heteroaryl" is intended to mean a stable 5, 6, or 7-membered monocyclic or bicyclic or 7, 8, 9, or 10-membered bicyclic heterocyclic aromatic ring which consists of carbon atoms and 1, 2, 3, or 4 heteroatoms independently selected from the group consisting of N, NH, O and S. It is to be noted that total number of S and O atoms in the aromatic heterocycle is not more than 1.

...(omitted)... Examples of heterocycles include, but are not limited to, acridinyl, azocinyl, ...(omitted)... pyrimidinyl, phenanthridinyl, phenanthrolinyl, phenazinyl, phenothiazinyl, phenoxathinyl, phenoxazinyl, phthalazinyl, piperazinyl, **piperidinyl**, piperidonyl, 4-piperidonyl,

piperonyl, pteridinyl, purinyl, pyranyl, pyrazinyl, pyrazolidinyl, pyrazolinyl, pyrazolyl, pyridazinyl, pyridooxazole, pyridoimidazole, pyridothiazole, pyridinyl, pyridyl, pyrimidinyl, pyrrolidinyl, pyrrolinyl, 2H-pyrrolyl, pyrrolyl, quinazolinyl, quinolinyl, 4H-quinolizinyl, quinoxalinyl, quinuclidinyl, tetrahydrofuranyl, tetrahydroisoquinolinyl, tetrahydroquinolinyl, tetrazolyl, 6H-1,2,5-thiadiazinyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thianthrenyl, thiazolyl, thienyl, thienothiazolyl, thienooxazolyl, thienoimidazolyl, thiophenyl, triazinyl, 1,2,3-triazolyl, 1,2,4-triaolyl, 1,2,5-triazolyl, 1,3,4-triazolyl, and xanthenyl. Also included are fused ring and spiro compounds containing, for example, the above heterocycles (Line 25, Page 59 ~ Line 31, Page 60).

"Therapeutically effective amount" is intended to include an amount of a compound of the present invention or an amount of the combination of compounds claimed effective to inhibit factor Xa. The combination of compounds is preferably a synergistic combination. Synergy, as described, for example, by Chou and Talalay, *Adv. Enzyme Regul*. 1984, 22:27-55, occurs when the effect (in this case, inhibition of factor Xa) of the compounds when administered in combination is greater than the additive effect of the compounds when administered alone as a single agent. In general, a synergistic effect is most clearly demonstrated at sub-optimal concentrations of the compounds. Synergy can be in terms of lower cytotoxicity, increased antiviral effect, or some other beneficial effect of the combination compared with the individual components (Lines 21~30, Page 62).

Utility

The compounds of this invention are useful as anticoagulants for the treatment or prevention of thromboembolic disorders in mammals. The term "thromboembolic disorders" as used herein includes arterial or venous cardiovascular or cerebrovascular thromboembolic disorders, including, for example, unstable angina, first or recurrent myocardial infarction, ischemic sudden death, transient ischemic attack, stroke, atherosclerosis, venous thrombosis, deep vein thrombosis, thrombophlebitis, arterial embolism, coronary and cerebral arterial thrombosis, cerebral embolism, kidney embolisms, and pulmonary embolisms. The anticoagulant effect of compounds of the present invention is believed to

be due to inhibition of factor Xa or thrombin.

The effectiveness of compounds of the present invention as inhibitors of factor Xa was determined using purified human factor Xa and synthetic substrate. The rate of factor Xa hydrolysis of chromogenic substrate S2222 (Kabi Pharmacia, Franklin, OH) was measured both in the absence and presence of compounds of the present invention. Hydrolysis of the substrate resulted in the release of pNA, which was monitored spectrophotometrically by measuring the increase in absorbance at 405 nM. A decrease in the rate of absorbance change at 405 nm in the presence of inhibitor is indicative of enzyme inhibition. The results of this assay are expressed as inhibitory constant, K_i (Lines 1-18, Page 263).

Factor Xa determinations were made in 0.10 M sodium phosphate buffer, pH 7.5, containing 0.20 M NaCl, and 0.5% PEG 8000. The Michaelis constant, K_m, for substrate hydrolysis was determined at 25℃ using the method of Lineweaver and Burk. Values of K_i were determined by allowing 0.2-0.5 nM human factor Xa (Enzyme Research Laboratories, South Bend, IN) to react with the substrate (0.20 mM-1 mM) in the presence of inhibitor. Reactions were allowed to go for 30 minutes and the velocities (rate of absorbance change vs time) were measured in the time frame of 25-30 minutes. The following relationship was used to calculate K_i values:

$$(v_o-v_s)/v_s = I/K_i\ (1+S/K_m))$$

where:

v_o is the velocity of the control in the absence of inhibitor;

v_s is the velocity in the presence of inhibitor;

I is the concentration of inhibitor;

K_i is the dissociation constant of the enzyme:inhibitor complex;

S is the concentration of substrate;

K_m ist he Michaelis constant.

Using the methodology described above, a number of compounds of the present invention were found to exhibit a K_i of $\leq$ 10 μM, thereby confirming the utility of the compounds of the present invention as effective Xa inhibitors.

Compounds tested in the above assay are considered to be active if they exhibit a K_i of$\leq$10 μM. Preferred compounds of the present invention have K_i's of $\leq$ 1 μM. More preferred compounds of the

present invention have K_i's of $\leq$ 0.1 μM. Even more preferred compounds of the present invention have K_i's of $\leq$ 0.01 μM. Still more preferred compounds of the present invention have K_i's of $\leq$ 0.001 μM (Line 19 of P 263 ~ Line 10 of P264).

The compounds of the present invention can be administered alone or in combination with one or more additional therapeutic agents. These include other anti-coagulant or coagulation inhibitory agents, anti-platelet or platelet inhibitory agents, thrombin inhibitors, or thrombolytic or fibrinolytic agents.

The compounds are administered to a mammal in a therapeutically effective amount. By "therapeutically effective amount" it is meant an amount of a compound of Formula I that, when administered alone or in combination with an additional therapeutic agent to a mammal, is effective to prevent or ameliorate the thromboembolic disease condition or the progression of the disease.

By "administered in combination" or "combination therapy" it is meant that the compound of Formula I and one or more additional therapeutic agents are administered concurrently to the mammal being treated. When administered in combination each component may be administered at the same time or sequentially in any order at different points in time. Thus, each component may be administered separately but sufficiently closely in time so as to provide the desired therapeutic effect. Other anticoagulant agents (or coagulation inhibitory agents) that may be used in combination with the compounds of this invention include warfarin and heparin, as well as other factor Xa inhibitors such as those described in the publications identified above under Background of the Invention.

The term anti-platelet agents (or platelet inhibitory agents), as used herein, denotes agents that inhibit platelet function such as by inhibiting the aggregation, adhesion or granular secretion of platelets. Such agents include, but are not limited to, the various known non-steroidal anti-inflammatory drugs (NSAIDS) such as aspirin, ibuprofen, naproxen, sulindac, indomethacin, mefenamate, droxicam, diclofenac, sulfinpyrazone, and piroxicam, including pharmaceutically acceptable salts or prodrugs thereof. Of the NSAIDS, aspirin (acetylsalicyclic acid or ASA), and piroxicam are preferred. Other suitable anti-platelet agents include ticlopidine, including pharmaceutically acceptable salts or prodrugs thereof. Ticlopidine is also a preferred compound since it is known to be

gentle on the gastro-intestinal tract in use. Still other suitable platelet inhibitory agents include IIb/IIIa antagonists, thromboxane-A2-receptor antagonists and thromboxane-A2-synthetase inhibitors, as well as pharmaceutically acceptable salts or prodrugs thereof.

The term thrombin inhibitors (or anti-thrombin agents), as used herein, denotes inhibitors of the serine protease thrombin. By inhibiting thrombin, various thrombin-mediated processes, such as thrombin-mediated platelet activation (that is, for example, the aggregation of platelets, and/or the granular secretion of plasminogen activator inhibitor-1 and/or serotonin) and/or fibrin formation are disrupted. A number of thrombin inhibitors are known to one of skill in the art and these inhibitors are contemplated to be used in combination with the present compounds. Such inhibitors include, but are not limited to, boroarginine derivatives, boropeptides, heparins, hirudin and argatroban, including pharmaceutically acceptable salts and produrgs thereof. Boroarginine derivatives and boropeptides include N-acetyl and peptide derivatives of boronic acid, such as C-terminal a-aminoboronic acid derivatives of lysine, ornithine, arginine, homoarginine and corresponding isothiouronium analogs thereof. The term hirudin, as used herein, includes suitable derivatives or analogs of hirudin, referred to herein as hirulogs, such as disulfatohirudin. Boropeptide thrombin inhibitors include compounds described in Kettner et al., U.S. Patent No. 5,187,157 and European Patent Application Publication Number 293 881 A2, the disclosures of which are hereby incorporated herein by reference. Other suitable boroarginine derivatives and boropeptide thrombin inhibitors include those disclosed in PCT Application Publication Number 92/07869 and European Patent Application Publication Number 471,651 A2, the disclosures of which are hereby incorporated herein by reference.

The term thrombolytics (or fibrinolytic) agents (or thrombolytics or fibrinolytics), as used herein, denotes agents that lyse blood clots (thrombi). Such agents include tissue plasminogen activator, anistreplase, urokinase or streptokinase, including pharmaceutically acceptable salts or prodrugs thereof. The term anistreplase, as used herein, refers to anisoylated plasminogen streptokinase activator complex, as described, for example, in European Patent Application No. 028,489, the disclosure of which is hereby incorporated herein by reference herein. The term urokinase, as used herein, is intended to denote both dual and single

chain urokinase, the latter also being referred to herein as prourokinase.

Administration of the compounds of Formula I of the invention in combination with such additional therapeutic agent, may afford an efficacy advantage over the compounds and agents alone, and may do so while permitting the use of lower doses of each. A lower dosage minimizes the potential of side effects, thereby providing an increased margin of safety (Line 17, Page 265 ~ Line 15, Page 267).

C. Procedural History (Plaintiff's Exhibit 3)

1) Aju Pharm Co. Ltd.,[4] defendant Navipharm Co. Ltd., and defendant Intropharm, Inc. by 2015Dang1184, 2015Dang1185, and 2015Dang1186 on March 20, 2015, and defendants Alvogen Korea Co. Ltd. and Huons Co. Ltd by 2015Dang1774 and 2015Dang1775 on April 2, 2015, each filed petitions seeking invalidation of the patented invention at issue (the "respective petition(s) at issue") with the Intellectual Property Trial and Appeal Board (the "IPTAB") stating that "The patented invention at issue (the "patented invention") is a selection invention and its detailed description of the invention fails to provide quantitative description confirming qualitatively different effect or quantitatively significant difference enough for a person having ordinary skill in the art (a "skilled person") to understand such effect and easily exploit it and therefore lacks an inventive step."

2) The IPTAB heard the respective petitions at issue in consolidation and granted them on February 28, 2018 ruling that "The patented invention is a selection invention, the prior art of which stating a genus as an element, that comprises

4) On March 26, 2018, while this lawsuit was in progress, the plaintiff withdrew its case against Corporation P.

elements that are only the species falling within the genus, and does not possess significant difference in quantity as well as difference in quality compared with those of the prior art, thereby lacking an inventive step."

[Factual Basis] Undisputed facts, Plaintiff's Exhibits 1-4 (multi-level numbers are included if they exist, and the same shall apply hereinafter unless otherwise specified), and purport of the overall argument

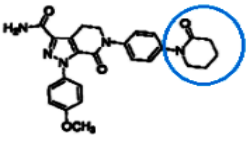
2. Summary of Parties' Argument

A. Plaintiff

The patented invention does not lack an inventive step for the following reasons, and thus the IPTAB decision concluding otherwise is erroneous.

1) The prior art, while disclosing compounds which can be variously combined in a general formula, not only fails to specifically disclose a compound containing a lactam ring[5] but also excludes apixaban in a preferred embodiment, presenting no motivation to derive the patented invention. Therefore, the patented invention does not allow a skilled person to recognize and easily derive a genus from the description of the prior art and thus should not be regarded as

5) The lactam structure is a structure comprising a cyclic (ring-structured) compound containing an atomic group of –CONH- in the ring. The lactam ring (oxopiperidinyl group) of apixaban is the part marked with a blue circle in the chemical structure on the right.



a selection invention.

2) Even if the patented invention is a selection invention, it would be extremely difficult for a skilled person to derive apixaban of the patented invention from the prior art because the prior art discloses billions of compounds only as a general formula and includes no description even in the embodiments that confirms the existence of apixaban of the patented invention. Therefore, difficulty in composition should be recognized in comparison with the prior art, thereby making the existing strict effect description requirement for a selection invention inapplicable.

3) Compared to the prior art, ① excellent pharmacological properties and ② the effects of co-administration are described in the specification of the patented invention. Those effects are not described in the prior art and thus are qualitatively different from those of the prior art. In addition, ③ the effect of factor Xa affinity (low Ki value) in comparison with the prior art is significant. These effects can also be confirmed through additionally submitted experimental data.

B. Arguments by the Defendants[6] and Intervenors Joining the Defendants

The patented invention lacks an inventive step for the following reasons, and the IPTAB decision concluding the same is lawful.

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6) Defendant Navipharm Co. Ltd. did not take action such as filing an answer or a brief in the case, but the actions in litigation such as arguing lack of an inventive step undertaken by other defendants that are quasi-compulsory joint litigants are effective upon the defendant because the defendant would also benefit from the actions.

1) The patented invention is a selection invention of which elements are only a species encompassed by the elements stated as the genus in the prior art, and thus when determining an inventive step of the patented invention, difficulty in composition cannot be considered.

2) Even if difficulty in composition is considered, since the lead structure and the substituents of apixaban are already disclosed in the embodiment of the prior art, it is possible to easily derive the genus of apixaban from the prior art.

3) In order for the patented invention to have an inventive step as selection invention, the specification thereof must clearly describe qualitatively different or significant effect of the invention. However, the specification of the patented invention does not clearly describe an effect qualitatively different or significant quantitative difference compared with the prior art.

3. Whether IPTAB Decision Is Lawful

A. Whether Claim 1 Is a Selection Invention

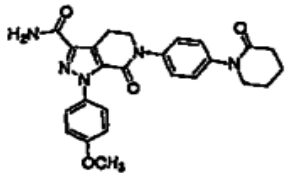
1) Standards

A selection invention is an invention of which part or all of the elements are only a species encompassed by the elements stated as the genus in the prior or publicly known art (See Supreme Court Decision 2014Hu1631, decided May 11, 2017; Supreme Court Decision 2012Hu3664, decided May 16, 2014).

2) Comparison of Elements

Claim 1 (Plaintiff's Exhibit 2)

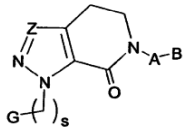
A compound of Formula I or pharmaceutically acceptable salt thereof.



【Formula I】

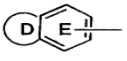
Prior Art (Plaintiff's Exhibit 4-1)

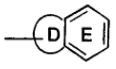
Claim 1. A compound selected from the group below or a stereoisomer or pharmaceutically acceptable salt thereof,



(Chemical structures of other groups are omitted)

wherein compounds of the above formulas are substituted with 0-2 R^3;
G is a group of Formula I or II:

Formula I 

Formula II 

ring D is selected from $-(CH_2)_3-$, $-(CH_2)_4-$, $-CH_2N=CH-$, $-CH_2CH_2N=CH-$, and a 5-6 membered aromatic system containing from 0-2 heteroatoms selected from the group N, O, and S, provided that from 0-1 O and S atoms are present;

ring D, when present, is substituted with 0-2 R;

E is selected from phenyl, pyridyl, pyrimidyl, pyrazinyl, and pyridazinyl, substituted with 0-1 R;

R is selected from CI, F, Br, I, OH, C_{1-3} alkoxy, NH_2, $NH(C_{1-3}$ alkyl), $N(C_{1-3}$ alkyl$)_2$, CH_2NH_2, $CH_2NH(C_{1-3}$ alkyl), $CH_2N(C_{1-3}$ alkyl$)_2$, $CH_2CH_2NH_2$, $CH_2CH_2NH(C_{1-3}$ alkyl), and $CH_2CH_2N(C_{1-3}$ alkyl$)_2$;

alternatively, ring D is absent;

when ring D is absent, ring E is selected from phenyl, pyridyl, pyrimidyl, pyrazinyl, and pyridazinyl, and ring E is substituted with R" and R';

R" is selected from F, CI, Br, I, OH, C_{1-3} alkoxy, CN, $C(=NR^8)NR^7R^9$, $NHC(=NR^8)NR^7R^9$, $NR^8CH(=NR^7)$, $C(O)NR^7R^8$, $(CR^8R^9)_tNR^7R^8$, SH, C_{1-3} alkyl-S, $S(O)R^{3b}$, $S(O)_2R^{3a}$, $S(O)_2NR^2R^{2a}$, and OCF_3;

R' is selected from H, F, CI, Br, I, SR^3, CO_2R^3, NO_2, $(CH_2)_tOR^3$, C_{1-4} alkyl, OCF_3, CF_3, $C(O)NR^7R^8$, and $(CR^8R^9)_tNR^7R^8$;

alternatively, R" and R' combine to form methylenedioxy or ethylenedioxy;

Z is N or CR^{la};

Z^1 is S, O, or NR^3;

Z^2 is selected from H, C_{1-4} alkyl, phenyl, benzyl, $C(O)R^3$, and $S(O)_pR^{3c}$;

R^{1a} is selected from H, $-(CH_2)_r-R^{1'}$, $-CH=CH-R^{1'}$, $NCH_2R^{1"}$, $OCH_2R^{1"}$, $SCH_2R^{1"}$, $NH(CH_2)_2(CH_2)_tR^{1'}$, $O(CH_2)_2(CH_2)_tR^{1'}$, and $S(CH_2)_2(CH_2)_tR^{1'}$;

$R^{1'}$ is selected from H, C_{1-3} alkyl, F, CI, Br, I, -CN, -CHO, $(CF_2)_rCF_3$, $(CH_2)_rOR^2$, NR^2R^{2a}, $C(O)R^{2c}$, $OC(O)R^2$, $(CF_2)_rCO_2R^{2c}$, $S(O)_pR^{2b}$, $NR^2(CH_2)_rOR^2$, $C(=NR^{2c})NR^2R^{2a}$, $NR^2C(O)R^{2b}$, $NR^2C(O)R^3$, $NR^2C(O)NHR^{2b}$, $NR^2C(O)_2R^{2a}$, $OC(O)NR^{2a}R^{2b}$, $C(O)NR^2R^{2a}$, $C(O)NR^2(CH_2)_rOR^2$, $SO_2NR^2R^{2a}$, $NR^2SO_2R^{2b}$, C_{3-6} carbocyclic residue substituted with 0-2 R^{4a}, and 5-10 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4a};

$R^{1"}$ is selected from H, $CH(CH_2OR^2)_2$, $C(O)R^{2c}$, $C(O)NR^2R^{2a}$, $S(O)R^{2b}$, $S(O)_2R^{2b}$, and $SO_2NR^2R^{2a}$;

R^2, at each occurrence, is selected from H, CF_3, C_{1-6} alkyl, benzyl, C_{3-6} carbocyclic residue substituted with 0-2 R^{4b}, a C_{3-6} carbocyclic-CH_2-residue substituted with 0-2 R^{4b}, and 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4b};

R^{2a}, at each occurrence, is selected from H, CF_3, C_{1-6} alkyl, benzyl, C_{3-6} carbocyclic residue substituted with 0-2 R^{4b}, and 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4b};

R^{2b}, at each occurrence, is selected from CF_3, C_{1-4} alkoxy, C_{1-6} alkyl, benzyl, C_{3-6} carbocyclic residue substituted with 0-2 R^{4b}, and 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4b};

R^{2c}, at each occurrence, is selected from CF_3, OH, C_{1-4} alkoxy, C_{1-6} alkyl, benzyl, C_{3-6} carbocyclic residue substituted with 0-2 R^{4b}, and 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4b};

alternatively, R^2 and R^{2a}, together with the atom to which they are attached, combine to form a 5 or 6 membered saturated, partially saturated or unsaturated ring substituted with 0-2 R^{4b} and containing from 0-1 additional heteroatoms selected from the group consisting of N, O, and S;

R^3, at each occurrence, is selected from H, C_{1-4} alkyl, and phenyl;

R^{3a}, at each occurrence, is selected from H, C_{1-4} alkyl, and phenyl;

R^{3b}, at each occurrence, is selected from H, C_{1-4} alkyl, and phenyl;

R^{3c}, at each occurrence, is selected from C_{1-4} alkyl, and phenyl;

A is selected from:

C_{3-10} carbocyclic residue substituted with 0-2 R^4, and
5-10 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^4;

B is selected from:

X-Y, $C(=NR^2)NR^2R^{2a}$, $NR^2C(=NR^2)NR^2R^{2a}$,
C_{3-10} carbocyclic residue substituted with 0-2 R^{4a}, and
5-10 membered **heterocyclic system** containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4a};

X is selected from C_{1-4} alkylene, $-CR^2(CR^2R^{2b})(CH_2)_t-$, $-C(O)-$, $-C(=NR^{1"})-$, $-CR^2(NR^{1"}R^2)-$, $-CR^2(OR^2)-$, $-CR^2(SR^2)-$, $-C(O)CR^2R^{2a}-$, $-CR^2R^{2a}C(O)$, $-S(O)_p-$, $-S(O)_pCR^2R^{2a}-$, $CR^2R^{2a}S(O)_p-$, $-S(O)_2NR^2-$,

$NR^2S(O)_2$-, $-NR^2S(O)_2CR^2R^{2a}$-, $-CR^2R^{2a}S(O)_2NR^2$-, $NR^2S(O)_2NR^2$-, $C(O)NR^2$-, $-NR^2C(O)$-, $C(O)NR^2CR^2R^{2a}$-, $-NR^2C(O)CR^2R^{2a}$-, $-CR^2R^{2a}C(O)NR^2$-, $-CR^2R^{2a}NR^2C(O)$-, $-NR^2C(O)O$-, $-OC(O)NR^2$-, $-NR^2C(O)NR^2$-, $-NR^2$-, $-NR^2CR^2R^{2a}$-, $-CR^2R^{2a}NR^2$-, O, $-CR^2R^{2a}O$-, and $-OCR^2R^{2a}$-;

Y is selected from:

$CH_2NR^2R^{2a}$;

$CH_2CH_2NR^2R^{2a}$;

C_{3-10} carbocyclic residue substituted with 0-2 R^{4a}, and

5-10 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4a};

R^4, at each occurrence, is selected from H, =O, $(CH_2)_rOR^2$, F, Cl, Br, I, C_{1-4} alkyl, -CN, NO_2, $(CH_2)_rNR^2R^{2a}$, $(CH_2)_rC(O)R^{2c}$, $NR^2C(O)R^{2b}$, $C(O)NR^2R^{2a}$, $NR^2C(O)NR^2R^{2a}$, $C(=NR^2)NR^2R^{2a}$, $C(=NS(O)_2R^5)NR^2R^{2a}$, $NHC(=NR^2)NR^2R^{2a}$, $C(O)NHC(=NR^2)NR^2R^{2a}$, $SO_2NR^2R^{2a}$, $NR^2SO_2NR^2R^{2a}$, NR^2SO_2-C_{1-4} alkyl, $NR^2SO_2R^5$, $S(O)_pR^5$, $(CF_2)_rCF_3$, $NCH_2R^{1''}$, $OCH_2R^{1''}$, $SCH_2R^{1''}$, $N(CH_2)_2(CH_2)_tR^{1'}$, $O(CH_2)_2(CH_2)_tR^{1'}$, and $S(CH_2)_2(CH_2)_tR^{1'}$;

alternatively, one R^4 is a 5-6 membered aromatic heterocycle containing from 1-4 heteroatoms selected from the group consisting of N, O, and S;

R^{4a}, at each occurrence, is selected from H, **=O**, $(CH_2)_rOR^2$, $(CH_2)_r$-F, $(CH_2)_r$-Br, $(CH_2)_r$-CI, CI, Br, F, I, C_{1-4} alkyl, -CN, NO_2, $(CH_2)_rNR^2R^{2a}$, $(CH_2)_rC(O)R^{2c}$, $NR^2C(O)R^{2b}$, $C(O)NR^2R^{2a}$, $(CH_2)_rN=CHOR^3$, $C(O)NH(CH_2)_2NR^{2a}$, $NR^2C(O)NR^2R^{2a}$, $C(=NR^2)NR^2R^{2a}$, $NHC(=NR^2)NR^2R^{2a}$, $SO_2NR^2R^{2a}$, $NR^2SO_2NR^2R^{2a}$, NR^2SO_2-C_{1-4} alkyl, $C(O)NHSO_2$-C_{1-4} alkyl, $NR^2SO_2R^5$, $S(O)_pR^5$, and $(CF_2)_rCF_3$;

alternatively, one R^{4a} is a 5-6 membered aromatic heterocycle containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-1 R^5;

R^{4b}, at each occurrence, is selected from H, =O, $(CH_2)_rOR^3$, F, CI, Br, I, C_{1-4} alkyl, -CN, NO_2, $(CH_2)_rNR^3R^{3a}$, $(CH_2)_rC(O)R^3$, $(CH_2)_rC(O)R^{3c}$, $NR^3C(O)R^{3a}$, $C(O)NR^3R^{3a}$, $NR^3C(O)NR^3R^{3a}$, $C(=NR^3)NR^3R^{3a}$, $NR^3C(=NR^3)NR^3R^{3a}$, $SO_2NR^3R^{3a}$, $NR^3SO_2NR^3R^{3a}$, NR^3SO_2-C_{1-4}

alkyl, $NR^3SO_2CF_3$, NR^3SO_2-phenyl, $S(O)_pCF_3$, $S(O)_p$-C_{1-4} alkyl, $S(O)_p$-phenyl, and $(CF_2)_rCF_3$;

R^5, at each occurrence, is selected from CF_3, C_{1-6} alkyl, phenyl substituted with 0-2 R^6, and benzyl substituted with 0-2 R^6;

R^6, at each occurrence, is selected from H, OH, $(CH_2)_rOR^2$, halo, C_{1-4} alkyl, CN, NO_2, $(CH_2)_rNR^2R^{2a}$, $(CH_2)_rC(O)R^{2b}$, $NR^2C(O)R^{2b}$, $NR^2C(O)NR^2R^{2a}$, $C(=NH)NH_2$, $NHC(=NH)NH_2$, $SO_2NR^2R^{2a}$, $NR^2SO_2NR^2R^{2a}$, and $NR^2SO_2C_{1-4}$ alkyl;

R^7, at each occurrence, is selected from H, OH, C_{1-6} alkyl, C_{1-6} alkylcarbonyl, C_{1-6} alkoxy, C_{1-4} alkoxycarbonyl, $(CH_2)_n$-phenyl, C_{6-10} aryloxy, C_{6-10} aryloxycarbonyl, C_{6-10} arylmethylcarbonyl, C_{1-4} alkylcarbonyloxy C_{1-4} alkoxycarbonyl, C_{6-10} arylcarbonyloxy C_{1-4} alkoxycarbonyl, C_{1-6} alkylaminocarbonyl, phenylaminocarbonyl, and phenyl C_{1-4} alkoxycarbonyl;

R^8, at each occurrence, is selected from H, C_{1-6} alkyl and $(CH_2)_n$-phenyl;

alternatively, R^7 and R^8 combine to form a 5 or 6 membered saturated, ring which contains from 0-1 additional heteroatoms selected from the group consisting of N, O, and S;

R^9, at each occurrence, is selected from H, C_{1-6} alkyl and $(CH_2)_n$-phenyl;

n, at each occurrence, is selected from 0, 1, 2, and 3;

m, at each occurrence, is selected from 0, 1, and 2;

p, at each occurrence, is selected from 0, 1, and 2;

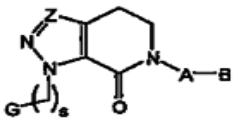
r, at each occurrence, is selected from 0, 1, 2, and 3;

s, at each occurrence, is selected from 0, 1, and 2; and

t, at each occurrence, is selected from 0, 1, 2, and 3.

[2] In a preferred embodiment,[7] the present invention provides a novel compound, wherein the compound is selected from the group below:

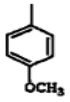
7) The preferred embodiment of the second step is the same as in claim 2.



(Chemical structures of other groups are omitted)

wherein compounds of the above formulas are substituted with 0-2 R^3;

G is selected from the group below:



(Chemical structures of other groups are omitted)

A is selected from one of the following carbocyclic and heterocyclic systems which are substituted with 0-2 R^4;

phenyl, piperidinyl, piperazinyl, pyridyl, pyrimidyl, furanyl, morpholinyl, thiophenyl, pyrrolyl, pyrrolidinyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, pyrazolyl, imidazolyl, oxadiazolyl, thiadiazolyl, triazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl, benzofuranyl, benzothiofuranyl, indolyl, benzimidazolyl, benzoxazolyl, benzthiazolyl, indazolyl, benzisoxazolyl, benzisothiazolyl, and isoindazolyl;

B is selected from H, Y, and X-Y;

X is selected from C_{1-4} alkyl, -C(O)-, -C(=NR)-, $-CR^2(NR^2R^{2a})-$, $-C(O)CR^2R^{2a}-$, $-CR^2R^{2a}C(O)$, $-C(O)NR^2-$, $-NR^2C(O)-$, $-C(O)NR^2CR^2R^{2a}-$, $-NR^2C(O)CR^2R^{2a}-$, $-CR^2R^{2a}C(O)NR^2-$, $-CR^2R^{2a}NR^2C(O)-$, $-NR^2C(O)NR^2-$, $-NR^2-$, $-NR^2CR^2R^{2a}-$, $-CR^2R^{2a}NR^2-$, O, $-CR^2R^{2a}O-$, and $^-OCR^2R^{2a}$;

Y is $CH_2NR^2R^{2a}$ or $CH_2CH_2NR^2R^{2a}$;

alternatively, Y is selected from one of the following carbocyclic and heterocyclic systems that are substituted with 0-2 $\mathbf{R}^{4a}$;

cyclopropyl, cyclopentyl, cyclohexyl, phenyl, **piperidinyl**, piperazinyl, pyridyl, pyrimidyl, furanyl, morpholinyl, thiophenyl,

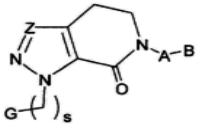
pyrrolyl, pyrrolidinyl, oxazolyl, isoxazolyl, isoxazolinyl, thiazolyl, isothiazolyl, pyrazolyl, imidazolyl, oxadiazolyl, thiadiazolyl, triazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl, benzofuranyl, benzothiofuranyl, indolyl, benzimidazolyl, benzoxazolyl, benzthiazolyl, indazolyl, benzisoxazolyl, benzisothiazolyl, and isoindazolyl;

alternatively, Y is selected from the following bicyclic heteroaryl ring systems:

(chemical structures are omitted.)

K is selected from O, S, NH, and N;
s is 0 (Line 1, P 50 ~ Line 25 Page 56).

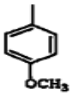
[9] In a preferred embodiment[8], the present invention provides a novel compound, wherein the compound is selected from the group below:



(Chemical structures of other groups are omitted)

wherein compounds of the above formulas are substituted with 0-2 R^3;

G is selected from the group:



(Chemical structures of other groups are omitted)

A is selected from one of the following carbocyclic and heterocyclic systems which are substituted with 0-2 R^4;

phenyl, piperidinyl, piperazinyl, pyridyl, pyrimidyl, furanyl, morpholinyl, thiophenyl, pyrrolyl, pyrrolidinyl, oxazolyl, isoxazolyl, thiazolyl, isothiazdyl, pyrazolyl, imidazolyl, oxadiazolyl, thiadiazolyl, triazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl,

8) The preferred embodiment of the ninth step is the same as in claim 9.

1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-triazolyl, benzofuranyl, benzothiofuranyl, indolyl, benzimidazolyl, benzoxazolyl, benzthiazolyl, indazolyl, benzisoxazolyl, benzisothiazolyl, and isoindazolyl;

B is selected from H, Y, X-Y;

X is selected from C_{1-4} alkylene, -C(O)-, -C(=NR)-, $-CR^2(NR^2R^{2a})-$, $-C(O)CR^2R^{2a}-$, $CR^2R^{2a}C(O)$, $-C(O)NR^2-$, $-NR^2C(O)-$, $-C(O)NR^2CR^2R^{2a}-$, $-NR^2C(O)CR^2R^{2a}$, $-CR^2R^{2a}C(O)NR^2-$, $-CR^2R^{2a}NR^2C(O)-$, $NR^2C(O)NR^2-$, $-NR^2-$, $-NR^2CR^2R^{2a}-$, $-CR^2R^{2a}NR^2-$, O, $-CR^2R^{2a}O-$, and $-OCR^2R^{2a}-$;

Y is $CH_2NR^2R^{2a}$ or $CH_2CH_2NR^2R^{2a}$;

alternatively, Y is selected from one of the following carbocyclic and heterocyclic systems which are substituted with 0-2 R^{4a};

cyclopropyl, cyclopentyl, cyclohexyl, phenyl, piperidinyl, piperazinyl, pyridyl, pyrimidyl, furanyl, morpholinyl, thiophenyl, pyrrolyl, pyrrolidinyl, oxazolyl, isoxazolyl, isoxazolinyl, thiazolyl, isothiazolyl, pyrazolyl, imidazolyl, oxadiazolyl, thiadiazolyl, triazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,3-triazolyl, 1,2,40triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl, benzofuranyl, benzothiofuranyl, indolyl, benzimidazolyl, benzoxazolyl, benzthiazolyl, indazolyl, benzisoxazolyl, benzisothiazolyl, and isoindazolyl;

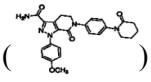
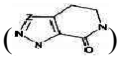
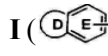
alternatively, Y is selected from the following bicyclic heteroaryl ring systems
(chemical structures are omitted):

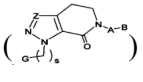
K is selected from O, S, NH, and N; and,

s is 0 (Line 1, Page 50 ~ Line 25, Page 56).

3) Discussion

A) Both Claim 1 and the prior art relate to nitrogen-containing heterobicycles.

The compound disclosed in the prior art, as a compound () having the same lead structure () as apixaban of Claim 1, is described by using the so-called Markush type claiming in which elements that can be selectively substituted at the positions of G, Z, A, and B are arranged in parallel. To be specific, a compound which can be compared with apixaban of Claim 1 is a concept that includes the following about the substituent. That is, ① the substituent Z is N or **CR^{1a}**; R^{1a} is selected from H, **$-(CH_2)_r-R^{1'}$**, etc., wherein r is selected from 0, 1, 2, and 3; $R^{1'}$ is selected from H, C_{1-3} alkyl, **$C(O)NR^2R^{2a}$**, etc.; R^2 and R^{2a} are selected from H and CF_3, etc., respectively; ② The substituent G is either **Formula I** () or Formula II (); wherein when ring D is absent, ring E is selected from **phenyl**, pyridyl, etc., ring E is substituted with R'' and R', and R'' and R' are selected from F, C1, **C_{1-3} alkoxy**, etc., and H, F, C1, respectively; ③ The substituent A is selected from C_{3-6} carbocyclic residue, etc. substituted with **0**-2 R^4; and ④ The substituent B is selected from 5-10 membered heterocyclic system substituted with 0-2 R^{4a} containing **1**-4 heteroatoms selected from the group consisting of $C(=NR^2)NR^2R^{2a}$, etc. **N**, O, and S, wherein R^{4a} is selected from H, **=O**, etc.

In contrast, apixaban of Claim 1 is a compound () having the same lead structure () as the compound disclosed in the prior art and has substituents selected as follows: ① The substituent Z of the prior art is selected from CR^{1a}, wherein R^{1a} is selected as $-(CH_2)_r-R^{1'}$(r=0), wherein $R^{1'}$ is limited to $C(O)NR^2R^{2a}$ and R^2 and R^{2a} are each limited to carboxamide () which selects H; ② The substituent G of the prior art selects **Formula I**  , wherein in the

absence of ring D, ring E selects **phenyl** and is limited to 4-methoxyphenyl () which selects **C_{1-3} alkoxy (metoxy**[9]**)** and H as R" and R', respectively; ③ The substituent A of the prior art is selected from C_{3-10} carbocyclic residue substituted with 0 R4 and limited to phenyl () having 6 Cs. ④ The substituent B of the prior art is selected from 5-10 membered heterocyclic system containing 1-4 heteroatoms selected from the group consisting of N, O, and S and substituted with 0-2 R^{4a}, wherein one R^{4a} is defined as oxopiperidinyl () which selects =O.

Therefore, Claim 1 is a selection invention, of which elements are only a species encompassed by the elements stated as the genus in the prior art {this matter will be discussed in more detail in below B. 2) A)}.

B) On the other hand, the plaintiff argues that, while relevant law of the precedents for selection invention stipulates that a selection invention is established only when a skilled person can recognize a genus from the description of the prior art and there is a reasonable expectation that the patented invention can be easily derived therefrom, in this case, the prior art discloses more than hundreds of millions of compounds in a general formula and excludes the structure of apixaban containing the lactam ring, providing no motivation to derive the concept thereof, and thus the patented invention is not considered a selection invention because a genus cannot be recognized from the prior art and it cannot be reasonably expected to easily derive the patented invention therefrom.

Whether or not a skilled person can recognize a genus from the prior art and easily derive a selection invention therefrom, however, is not easy to distinguish from the grounds for determining novelty or

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9) A methoxy group in which one carbon atom is present among the alkoxy groups is referred to as a methoxy group (-OCH_3).

inventive step of the selection invention. In addition, it is not necessary to determine in the previous stage whether the invention is a selection invention or not based on the recognition level of a skilled person. If the concept of selection invention is considered unnecessary, it may be different. However, if a selection invention is an invention of which part or all of the elements are only a species encompassed by the elements stated as the genus in the prior or publicly known art, it is necessary to treat the invention differently from general inventions in determining patentability as shown later. If the concept is introduced for the classification, determining a selection invention based on the recognition level of a skilled person would only cause confusion in the stage of defining the concept. Therefore, if an invention falls within the above definition, it can be regarded as a selection invention on its own, and it is sufficient to consider the arguments of the plaintiff at the stage of determining whether the invention has novelty or an inventive step. The plaintiff's arguments shall not be accepted (The plaintiff argues that, citing the Supreme Court Decision 2010Hu3424, decided August 23, 2012 in particular, that the patented invention in the above decision was a selection invention because it was easily understood that the compound of the patented invention was included in the compounds described in general formula in the prior art, that is the genus of the patented invention, since a specific compound which was highly similar in structure to the compound of the patented invention was disclosed in the prior art. However, the Supreme Court decision did not hold that the invention at issue was a selection invention for the same reason as the plaintiff's argument, but only for the reason that the prior art described the general formula of the compound corresponding to the genus of the compound of the patented invention).

B. Whether Claim 1 Has an Inventive Step

1) Standard

A) Established Position and Gist of Precedents on Selection Invention

(1) In order to deny the novelty of a selection invention, a prior art must specifically disclose species which form the selection invention. This includes when a skilled person can recognize the existence of selection invention directly from what is stated in the preceding literature and the common technical knowledge at the time of application as well as when literal wordings concerning the selection invention exist in the preceding literature stating the prior art (See Supreme Court Decision 2011Hu2985, decided April 25, 2013).

In order for a selection invention not to lack an inventive step, all of the species included in the selection invention must have different effects in quality from those of the prior art or, if not, significant difference in quantity, and the description of the selection invention must clearly describe those effects, which requires specific contents that confirm qualitative difference or quantitative description of significant difference in quantity (See Supreme Court Decision 2010Hu3424, decided August 23, 2012). However, it is not necessary to include comparative experimental data which can confirm significance of such effects. If those effects are uncertain, the applicant should submit concrete experimental data to support and prove those effects after the filing date (See Supreme Court Decision 2001Hu2740, decided April 25, 2003).

(2) The above strict patentability standard in determining an inventive step of selection inventions is required because the selection of the species must be associated with a particular technical effect unexpected from the prior art in order for the selection invention in which only the species included in the generic concept having a specific effect already disclosed in the prior art is selected as

elements to have an inventive step. It is because, considering that the purpose of the Patent Act is to promote technological development and to contribute to industrial development by protecting and encouraging inventions and promoting the use of inventions and that exclusive rights to patent holders are granted in exchange for technological contribution to the field, simply selecting any species from the genus of the prior art does not escape the scope of overlapping invention without special circumstances and is thus unlikely to have contributed to new technological development. In the case of a specific species of the prior art, a special technological effect that cannot be predicted by a skilled person is identified and a new invention is derived from such a species as an element, the technical significance of such species is recognized, and the inventive step of the selection invention is recognized. As such, considering the characteristics of selection invention which recognize patentability on special effects that were not expected by the prior art, whether there is such special effects that grant an inventive step compared with the prior art should be subject to a strict review.[10)]

In addition, an inventor must be aware that a special technical effect will be produced in the species selected by the inventor at the time of filing, and since the inventor's awareness can only be confirmed from the description of the specification, different effects in quality or significant difference in quantity should be clearly stated in the description of the specification of the selection invention.[11)] Therefore,

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10) As such, a selection invention is patentable when its genus is known but it has a special unexpected effect. Thus, it is deemed that while the strict standard is applied to the requirements for an inventive step, the standard for novelty is somewhat relaxed by requiring specific disclosure.

11) In addition, as in this case, the invention of chemistry or medicine, which is called the science of experiment, may lack predictability significantly, depending on the content and the technical level of each invention. Thus, even if the composition of a substance is known, it is often difficult to recognize or understand the effect of the invention from disclosure of

in order for a selection invention to have an inventive step, it should be clearly stated in the specification that the inventor recognized that the selection of the species would result in qualitatively different or significant effects in comparison with the prior art, if not the description of experimental data that clearly confirm such effects. On the other hand, if vague expectation or abstract effect of a selection invention were described without such clear description of effect, and an inventor is allowed to submit experimental data later when an inventive step of the invention is at issue in invalidation or infringement cases, the inventive step of the invention would be recognized based on the effect of the selection invention that the inventor did not recognize at the time of filing but later confirmed, resulting in unreasonable retroactive effect to the filing date. Furthermore, such a later recognition would in effect allow a person who did not make a true contribution to the technical field to hold a monopolistic superiority by extending the patent term of the prior art when the patent holder of the prior art is the same as that of the selection invention.

B) Where strict patentability requirements for inventive step of selection invention are relaxed

(1) Then, it is difficult to conclude that demanding the strict patentability requirements for determining an inventive step of selection invention is a legal principle to be followed in any case. The meaning of the foregoing precedent is that if the technical effect for which the prior art is aimed is expected to appear in the entire genus disclosed in the prior art, the species included in the genus regardless of the size of the genus, can be all equally seen as a technical feature that can achieve the effect disclosed in the prior art. In this case, it can be understood that the selection invention of the species is an overlapping invention in its essence unless the selection achieves the

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only the composition of the invention in the specification.

special effect that cannot be recognized from the prior art. Conversely, strict patentability requirements can be relaxed when the selection invention is inherently difficult to be seen as an overlapping invention. In this case, since it can be seen that the patented invention is in effect not included in the technical scope or scope of rights (hereinafter both referred to as the "scope of rights") of the prior art, it is necessary to perceive the patented invention as a general invention and consider both difficulty in composition and the effect instead of applying the conventional relevant law for selection invention as an overlapping invention, and it is sufficient to describe the effect as much as that of the general invention.

(2) Then, what is the case in which the selection invention is not essentially an overlapping invention becomes at issue. In this regard, the plaintiff argues that it is not reasonable to strictly require description of effect for inventions in which difficulty in selection is acknowledged because it cannot be regarded as an overlapping invention if it is not easy to derive the selection invention from the prior art.

However, as long as the genus is disclosed in the prior art the selection invention of the species is basically included in the scope of rights. Therefore, if selection inventions of which the difficulty in selection is recognized are all viewed as not to be overlapping inventions, such conclusion may render the scope of rights of the prior art meaningless if the prior art is a patented invention. In other words, the scope of rights of the prior art may be unfairly reduced to the extent that is within the scope of the embodiments of the prior art or equivalents thereof, and in particular, when Markush claims are used for the prior art, it results in an unfair conclusion that new patents may be granted for all inventions of species of the prior art based on having an inventive step due to the difficulty in selection. While the inventor's efforts to come up with a selection invention by combining a number of options in the prior art and finding optimal combinations

through repeated trial and error must not be overlooked, creation of substance that is different in structure or unexpected does not guarantee an inventive step without considering the effects thereof when the result makes no or uncertain contribution to industrial development. In the chemistry or medicine field in which selection inventions are particularly at issue, considering that it is possible to make a myriad of substances derived from a conventional substance showing a difference in the structure from that of the conventional substance, an inventive step may not be recognized merely because other materials are created by changing only substituents or certain structures without examining whether such a change produces new effects. The essence of the selection invention is in the discovery of new effects. Therefore, in determining an inventive step of a substance which belongs to the scope of publicly known prior arts in principle, it is appropriate to focus more on discovery of a new effect different from the conventional one, and difficulty in selection may not be a criterion for determining whether or not it is an overlapping invention.

(3) As a result, whether or not the selection invention is essentially an overlapping invention should be approached from the perspective of the scopes of the patented invention and the prior art. The scope of rights of a patent is determined according to the description of the claims on the specification attached to the patent application, and when the technical scope is clear by what is stated in the claims alone, the description of the claim cannot be construed as limited by the other description of the specification in principle. However, when it is obviously unreasonable to construe claims literally in light of other description of the specification, such as some parts that are constructed literally as being included in the claims are not supported by the description of the invention or deemed to be purposefully excluded from the scope of rights by the applicant, the scope of rights may be narrowly interpreted by taking into account of the content of the technical idea as filed, other description on the specification, the applicant's intention, and the legal stability of third

parties (Supreme Court Decision 2001Hu2856, decided July 11, 2003). This decision is based on the nature of patent rights that a patent is granted in exchange for the disclosure of the invention.

In the light of the above legal principle, it is reasonable to believe that cases where the patented invention can be judged as not falling within the scope of rights for prior arts include ① the preceding literature teaches or suggests away from the patented invention, or ② the contents which can be expanded to the species of the patented invention are not disclosed in the preceding literature in which the prior art of the genus can be understood in the light of the technical level at the time of filing. In other words, if the prior art teaches a skilled person not to consider the prior art or discourages the person from reaching the patented invention, it is obviously impossible to deny an inventive step of the patented invention even if the prior art is a genus of the patented invention. Inventive step would not be denied in such cases unless by hindsight reconstruction. However, these requirements must be strictly applied in view of the risks such as rendering the prior art meaningless as described above. In other words, ① it cannot be said that there is exclusionary teaching or suggesting away simply because of lacking, e.g., specific embodiments are not disclosed, and there must be circumstances such as the prior art clearly teaches or suggests away from the characteristics of the patented invention or, at least, guides to a different direction from the method utilized by the patented invention. Secondly, ② in the case where the preceding literature in which the prior art of the genus can be grasped does not disclose the contents which can be generalized and extended to the species of the patented invention, that is, if the prior art encompasses numerous species and the effect disclosed on the prior art is not properly confirmed from the broad scope of species, the prior art cannot act as a genus of the patented invention which is one of the species. That is because the contents that can be extended to the patented invention which is literally construed as included in the claims of the prior art are not disclosed. Among the broad scope of

rights of the prior art, the part determined as not expandable by generalization to the genus of the prior art may be seen as an area where the scope of rights of the prior art cannot reach. Therefore, in this case, there is no reason to handle it differently from the general invention, and in that case, when a selection invention selects a species and at last confirms its effect, it is difficult to say that the selection invention is not technically worthy in itself. In addition, in this case, it cannot be seen that the selection invention will be used as an unfair means of preoccupying the patent right or extending the term of the patent.

(4) In summary, in the cases where there is teaching or suggesting away in the prior art that excludes a patented invention or contents that can be generalized into the generic concept of the prior art and extended to the species of the patented invention are not disclosed in the preceding literature in which the prior art of the genus can be grasped in light of the level of technology at the time of filing, a skilled person may not be able to expect that the patented invention included in the genus disclosed in the prior art is not equally suitable as a means for achieving the same purpose. Therefore, since the content of the prior art cannot be extended to the patented invention, which is a species that cannot be expected to have a characteristic common to the species in which the technical significance is disclosed in the prior art, the strict patentability requirements of selection invention regarding inventive step should be relaxed. In other words, it is necessary to treat it as a new invention and determine the inventive step as a regular invention by returning to the basic principle, and the requirements for description of effect in the specification should be relaxed.

(5) On the other hand, the plaintiff argues that since it is not right to require the inventor to strictly describe the effect of the invention in the specification when the inventor does not recognize that the invention is a selection invention,

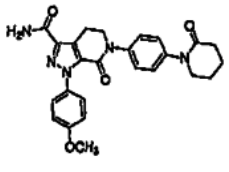
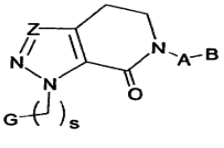
strict patentability requirements for inventive step of selection invention should be relaxed. This argument is interpreted as follows: It may be reasonable to require the inventor to describe such significant effects in the specification when the inventor can easily identify and recognize that the invention is a selection invention; on the contrary, in the case where it is difficult for the inventor to understand even the fact that the invention is a selection invention because it is not easy to derive the selection invention from the prior art, even if the excellent and outstanding effects of the invention are confirmed, the inventor fails to receive a patent because those effects are not specifically described in the specification. In addition, requiring the inventor who is unaware of the fact that the invention is a selection invention to clearly describe how the invention has a qualitatively different effect and how significant the effects are in comparison with the prior art which describes a genus is nothing less than an impossible demand.

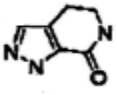
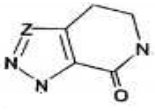
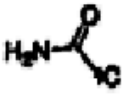
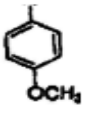
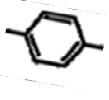
However, the points that the inventor is specifically aware of the fact that the selection invention has qualitatively different or significant effects compared to the prior art and that such effects are clearly described in the specification so that a skilled person would understand the technical significance thereof is a matter of whether there has been technical contribution by the invention at the time of filing as a selection invention that cannot be determined based on the subjective circumstances of the inventor. Even in the case of general inventions other than selection invention, even if the inventor does not recognize and review all prior arts, if the same invention has already been disclosed in any publication distributed before the application, the novelty of the invention is denied, thereby invalidating the invention. The fact that the inventor had subjective difficulty recognizing all prior art before the application does not change the outcome. In conclusion,

it is reasonable to objectively review whether the patented invention is a selection invention based on the relationship between the prior art and the patented invention. Moreover, in this case, there is no dispute between the parties that the patent holder is the plaintiff in both the patented invention and prior art; as stated in 1. A. and B above, the same inventors, Donald PINTO and Patrick LAM, are listed as the joint inventors; and the "Background of the Invention" of the specification describes the prior art specifically [Paragraphs 17~19]. For this reason, it seems that the inventors clearly recognized the existence of the prior art at the time of filing the application of the patented invention and cannot be deemed that they were unaware of the prior art as a genus. Therefore, the plaintiff's argument based on a different premise shall not be accepted (The plaintiff argues that the inventors of the patented invention did not recognize the prior art as a genus based on the description of the above specification "in particular, the compounds disclosed in WO 00/39131 is not considered part of the patented invention" [Paragraph 19]; however, in light of the above circumstances, it is difficult to believe that the above inventors failed to recognize such a point).

2) Discussion

A) Structural comparison of Claim 1 of the patented invention with prior art

	Patented Invention (Apixaban) (Plaintiff's Exhibit 2, Claim 1)	Prior Art (Plaintiff's Exhibit 4-1, Claim 1)
Overall Structure		

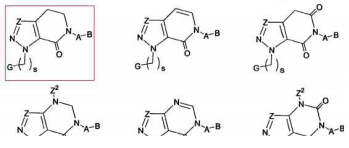
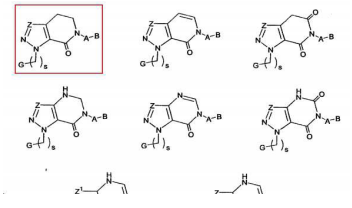
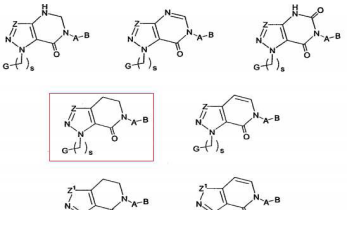
	Patented Invention (Apixaban) (Plaintiff's Exhibit 2, Claim 1)	Prior Art (Plaintiff's Exhibit 4-1, Claim 1)
Selected Element 1	 (lead structure)	
Selected Element 2	 (carboxamide)	Z
Selected Element 3	 (4-Methoxyphenyl)	G
Selected Element 4	 (phenyl)	A
Selected Element 5	 (oxopiperidinyl)	B

(1) Selected element 1

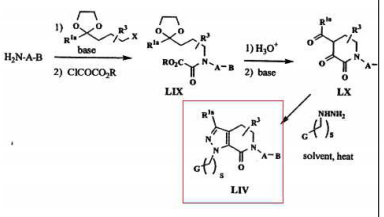
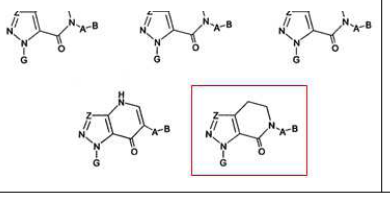
Selected element 1 (), which is the lead structure of apixaban of Claim 1, is specifically disclosed in the prior art. As shown below, the above lead structure is consistently included in the process of defining the preferred lead structure up to the third step[12] in the prior

12) The prior art defines the structure described in the general formula in Step 1 to the preferred form up to Step 7, but there is a difference in the selected elements limited to each step. Step 2 defines the selection of the lead structure and substituents G, A, and B; Step 3 defines the selection of the lead structure and the substituent G; Steps 4, 5, and 6 define the substituents G, Z, A, and B (Step 4 defines the substituent G, Step 5 defines substituents Z, A, and B, and Step 6 defines substituents A and B). Step 7 lists specific examples of the compounds in general formulas

art, and specifically disclosed in the "more preferred embodiment" in the seventh step. In addition, the prior art specifically discloses a method for producing the lead structure of the selected element 1. Moreover, in the prior art, a number of examples including the above-described lead structure are described together with the synthesis method and are also included in the representative examples disclosed as the combination of the defined lead structure and the substituent.

	Description in Prior Art	Remarks
Step 1		Disclosed as one of 66 lead structures that are disclosed in parallel
Step 2		Disclosed as one of the disclosed selectable lead structures that are reduced to 36
Step 3		Disclosed as one of the disclosed selectable lead structures that are reduced to 34
Step 7	The lead structure, '-1,4,5,6-tetrahydropyrazolo[3,4-c]pyridine-7-one,' is explicitly described.	Compounds having a lead structure are explicitly described

in specific chemical structures. In addition, the prior art defines the structures described in the general formula in the eighth steps to the preferred form in the nineth step.

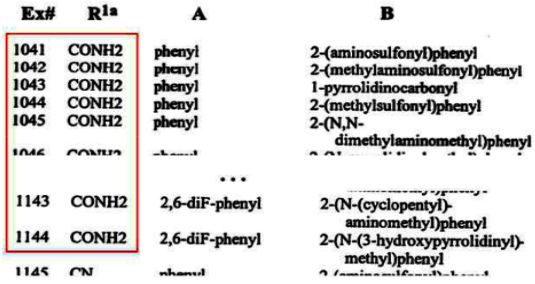
	Description in Prior Art	Remarks
Manufacturing Method		Describing how to manufacture the lead structure
Examples	17, 18, 19, 47, 48, 49, 50, 51, 52, 53, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 83, 84, 85, 86, 99, 100, 101, 102, 103, 104, 108, 109	Examples having the structure of selected element 1
Representative Examples		Disclosed as one of 141 selectable lead structures that are described

(2) Selected element 2

The structure of the prior art corresponding to the selected element 2 ( ; carboxamide) of Claim 1 is the substituent Z. The prior art describes gradually reducing the range of the selectively described substituents of the selected element 2 through steps 1 and 5, and the selected element 2 is specifically disclosed in the "more preferred embodiment" of step 7. There are also a number of examples that include the selected element 2 in the prior art, and representative examples disclosed as combination of defined lead structures and substituents also include many of the selected element 2.

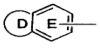
	Description in Prior Art	Remarks
Step 1	Z is N or **CR^{1a}**; **R^{1a}** is selected from H, **-(CH$_2$)$_r$-R$^{1'}$**, -CH=CH-R$^{1'}$, NHCH$_2$R$^{1''}$, OCH$_2$R$^{1''}$, SCH$_2$R$^{1''}$, NH(CH$_2$)$_2$(CH$_2$)$_t$R$^{1'}$, O(CH$_2$)$_2$(CH2)$_t$R$^{1'}$, and S(CH$_2$)$_2$(CH$_2$)$_t$R$^{1'}$; ... (omitted)	General formula containing the selected element 2 (CONH$_2$) is

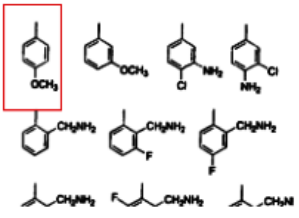
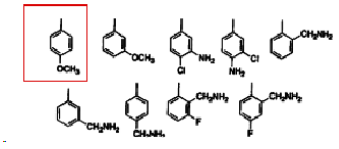
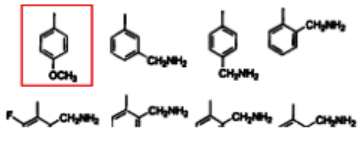
	Description in Prior Art	Remarks
	$R^{1'}$ is selected from H, C_{1-3} alkyl, F, CI, Br, I, -CN, -CHO, $(CF_2)_rCF_3$, $(CH_2)_rOR^2$, NR^2R^{2a}, $C(O)R^{2c}$, $OC(O)R^2$, $(CF_2)_rCO_2R^{2C}$, $S(O)_PR^{2b}$, $NR^2(CH_2)_rOR^2$, $C(=NR^{2c})NR^2R^{2a}$, $NR^2C(O)R^{2b}$, $NR^2C(O)R^3$, $NR^2C(O)NHR^{2b}$, $NR^2C(O)_2R^{2a}$, $OC(O)NR^{2a}R^{2b}$, **$\underline{C(O)NR^2R^{2a}}$**, $C(O)NR^2(CH_2)_rOR^2$, $SO_2NR^2R^{2a}$, $NR^2SO_2R^{2b}$, C_{3-6} carbocyclic residue substituted with 0-2 R^{4a}, and 5-10 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4a}; ... (omitted) **$\underline{R^2}$**, at each occurrence, is selected from **$\underline{H}$**, CF_3, C_{1-6} alkyl, benzyl, C_{3-6} carbocyclic residue substituted with 0-2 R^{4b}, and 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4b}; **R^{2a}**, at each occurrence, is selected from **$\underline{H}$**, CF_3, C_{1-6} alkyl, benzyl, C_{3-6} carbocyclic residue substituted with 0-2 R^{4b}, and 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4b};	described
Step 5	R^2, at each occurrence, is selected from **$\underline{H}$**, CH_3, CH_2, CH_3, cyclopropylmethyl, cyclobutyl, and cyclopentyl; R^{2a}, at each occurrence, is **$\underline{H}$** or CH_3;	Reduced R^2 and R^{2a} substituent types that determine Z
Step 7	'3-(aminocarbonyl)-' of the selected element 2 is explicitly described as the substituent Z.	Selected element 2 is explicitly described
Exam ples	3, 6, 10, 13, 28, 29	Examples having the structure of the selected element 2

	Description in Prior Art	Remarks
Representative examples		Examples including the selected element 2 (1041~1144, 104 examples)

(3) Selected element 3

The structure of the prior art corresponding to the selected element 3 ( ; 4-(methoxy)phenyl) of Claim 1 is the substituent G. The prior art discloses gradually defining the structure of the substituent through steps one to four, and the selected element 3 is explicitly described in the "more preferred embodiment" of step 7. There are a number of examples that include the selected element 3 in the prior art, and representative examples disclosed as combination of defined lead structures and substituents also include the selected element 3 among the structures that can be selected as the substituent G.

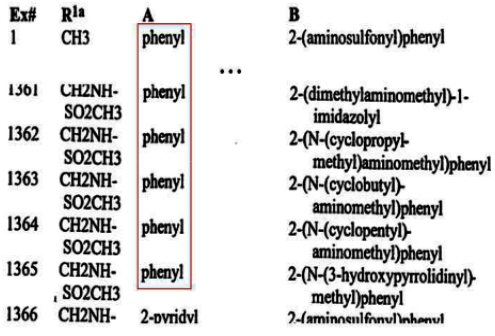
	Description in Prior Art	Remarks
Step 1	G is a group of **formula I** or II: Formula I  (omitted) alternatively, **ring D is absent**; when ring D is absent, **ring E** is selected from **phenyl**, pyridyl, pyrimidyl, pyrazinyl, and pyridazinyl, and **ring E is substituted with R" and R'**; **R"** is selected from F, CI, Br, I, OH, **C_{1-3} alkoxy**, CN, $C(=NR^8)NR^7R^9$, $NHC(=NR^8)NR^7R^9$, $NR^8CH(=NR^7)$, $C(O)NR^7R^8$, $(CR^8R^9)_tNR^7R^8$, SH, C_{1-3} alkyl-S, $S(O)R^{3b}$, $S(O)_2R^{3a}$,	General formula containing the selected element 3 is described abstractly

	Description in Prior Art	Remarks
	$S(O)_2NR^2R^{2a}$, and OCF_3; **R'** is selected from **H**, (omitted)	
Step 2		Selected element 3 is explicitly described among the 54 selectable structures
Step 3		Selectable structures are reduced to 33
Step 4		Selectable structures are reduced to 14
Step 7	'[4-(methoxy)phenyl]-' of the selected element 3 is explicitly described as the substituent G.	Selected element 3 is explicitly described
Examples	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 20, 21, 23, 24, 26, 27, 28, 29, 30, 33, 34, 35, 44, 45, 66, 68, 69, 70, 89, 90, 91, 97, 98, 99	Examples having the structure of the selected element 3
Representative examples	**G is selected from:** **4-(methoxy)phenyl;** **2-(aminomethyl)phenyl;**	Selected element 3 is included among 17 selectable substitutent G

(4) Selected element 4

The structure of the prior art corresponding to the selected element 4 ( ; phenyl) of Claim 1 is the substituent A. The prior art discloses gradually defining the structure of the substituent through steps 1, 2, 5, and 6, and the selected element 4 is explicitly described in the "more preferred embodiment" of step 7. There are a number of examples that include the selected element 4 in the prior art, and representative examples disclosed as combination of defined lead structures and substituents also include many of the selected element 4.

	Description in Prior Art	Remarks
Step 1	A is selected from **C_{3-10} carbocyclic residue** substituted with **0**-2 **R^4**, and 5-10 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^4;	R^4 structure and number, carbocyclic ring, and aromaticity not determined
Step 2	A is selected from one of the following carbocyclic and heterocyclic groups which are substituted with **0**-2 **R^4**; **phenyl**, piperidinyl, piperazinyl, pyridyl, pyrimidyl, furanyl, morpholinyl, thiophenyl, pyrrolyl, pyrrolidinyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, pyrazolyl, imidazolyl, ... (omitted);	Phenyl is specified among 41 selectable basic structures
Step 5	A is selected from **phenyl**, pyridyl, and pyrimidyl, and substituted with **0**-2 **R^4**;	Basic structures are reduced to 3
Step 6	A is selected from the group consisting of **phenyl**, 2-pyridyl, 3-pyridyl, 2-pyrimidyl, 2-CI-phenyl, 3-CI-phenyl, 2-F-phenyl, 3-F-phenyl, 2-methylphenyl, 2-aminophenyl, and 2-methoxyphenyl;	Selected element 4 is explicitly disclosed

	Description in Prior Art	Remarks
Step 7	**phenyl**[13] of the selected element 4 is explicitly described as the substituent A.	
Examples	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 23, 24, 25, 31, 32, 33, 35, 36, 37, 38, 39, 46, 47, 48, 49, 50, 51, 56, 61, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 95, 96, 99, 100, 101, 104, 105, 107	Examples including the selected element 4 are explicitly described
Representative examples		Examples including the selected element 4 are explicitly described (1~13, 105~117, 209~221, 313~325, 417~429, 521~533, 625~637, 729~741, 833~845, 937~949, 1041~1053, 1145~1157, 1249~1261, 1353~1365, 182 examples)

13) Some of the substituents in Step 7 are described as “biphenyl,” which is a compound in which two phenyl groups are directly bonded. If substituent B of the selected element 5 described below also has the lead structure of phenyl group, the structure of the –A-B becomes a form of two phenyl groups being combined, and thus it seems that many of the examples described above also include the selected element 4.

(5) Selected element 5

The structure of the prior art corresponding to the selected element 5 ( ; oxopiperidinyl) of Claim 1 is the substituent B, and the description of the prior art confirms the followings: B can be selected from 5-10 membered heterocyclic system (6-membered heterocyclic containing one N) containing from 1 to 4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-2 R^{4a}, in which one R^{4a} can be selected from =O, and the inclusion of piperidinyl () among the selectively described lead structure of B. However, it has not been directly disclosed in the prior art concerning the lactam structure such as at which position piperidinyl is connected to an adjacent substituent A and at which position of the piperidinyl is substituted with the keto group.

	Description in Prior Art	Remarks
Step 1	B is selected from: X-Y, $C(=NR^2)NR^2R^{2a}$, $NR^2C(=NR^2)NR^2R^{2a}$, C_{3-10} carbocyclic residue substituted with 0-2 R^{4a}, and **5-10 membered heterocyclic system containing from 1-4 heteroatoms selected from the group consisting of N**, O, and S **substituted with 0-2 R^{4a}**; **R^{4a}**, at each occurrence, is selected from H, **=O**, $(CH_2)_rOR^2$, $(CH_2)_r$-F, $(CH_2)_r$-Br, $(CH_2)_r$-CI, CI, Br, F, I, C_{1-4} alkyl, -CN, NO_2, $(CH_2)_rNR^2R^{2a}$, $(CH_2)_rC(O)R^{2c}$, $NR^2C(O)R^{2b}$, $C(O)NR^2R^{2a}$, $(CH_2)_rN=CHOR^3$, $C(O)NH(CH_2)_2NR^{2a}$, $NR^2C(O)NR^2R^{2a}$, $C(=NR^2)NR^2R^{2a}$, $NHC(=NR^2)NR^2R^{2a}$, $SO_2NR^2R^{2a}$, $NR^2SO_2NR^2R^{2a}$, NR^2SO_2-C_{1-4} alkyl, $C(O)NHSO_2$-C_{1-4} alkyl, $NR^2SO_2R^5$, $S(O)_pR^5$, and $(CF_2)_rCF_3$; ... (omitted)	Need to select multiple substituents

	Description in Prior Art	Remarks
Step 2	B is selected from H, **Y**, and X-Y, ...(omitted)... **Y** is $CH_2NR^2R^{2a}$ or $CH_2CH_2NR^2R^{2a}$, alternatively, Y is selected from one of the following carbocyclic and heterocyclic groups which are substituted with 0-2 R^{4a}; cyclopropyl, cyclopentyl, cyclohexyl, phenyl, **piperidinyl**, ...(omitted);	Piperidinyl, the basic structure of the selected element 5, is explicitly described
Examples	None	

B) Whether the strict patentability requirements for judging an inventive step of a selection invention should be relaxed in this case

(1) First, according to the foregoing, it is difficult to say that there is teaching or suggesting away in the prior art that excludes apixaban of Claim 1.

(2) Next, whether the disclosure of the prior art can be generalized to a genus of the prior art and extended to include a species such as apixaban of Claim 1 is reviewed.

(A) The prior art discloses compounds capable of inhibiting factor Xa in the form of a general formula that can produce numerous combinations and reduces and specifies the range of the lead structure and substituents by presenting several steps of embodiment. Thus, the process of specifying the lead structure or substituents where the genus of the prior art is selectively described such as “preferred embodiment (step 2),” “more preferred embodiment (step 3),” and “even more preferred embodiment (step 4)” and the examples of the prior art should be comprehensively considered to determine whether a skilled person can generalize the genus of the prior art and extend it to include a species such as apixaban of Claim 1.

(B) In light of the foregoing facts and the circumstances from Plaintiff’s Exhibits 2, 4, and 21 each and the purport of the

overall argument, it is reasonable to view that a skilled person can generalize the genus of the prior art to include the species such as apixaban of Claim 1.

① The prior art has significantly reduced the size of selectable candidates for each selected element by limiting selectively described species to compounds capable of exhibiting the activity of factor Xa inhibitors. Therefore, it can be considered by a skilled person that species defined at individual steps among the genera disclosed in the prior art or species which are similar in structure or expected to have similar physiochemical properties to those species disclosed in the examples may achieve the technical task of the prior art.

② In addition, not only specific names of all selected elements of apixaban except for the substituent B are directly described, but also the compounds comprising each substituent are specifically illustrated and how the substituents can be linked to the lead structure is specified in the specification of the prior art. Moreover, examples including all of the selected elements 2 through 4 of apixaban of Claim 1 are also described (examples 6, 10, 13). Although the above examples are not bound to the lead structure identical to that of apixaban, they are representative examples of the prior art disclosing that combinations of apixaban's lead structure (selected element 1) and the substiuent G (selected element 3) selected from 14 and 17 structural formulas, respectively, may be paired with combinations (examples 1041~1053) including all of the selected elements 2 and 4 as a substituent. Thus, it is reasonable to view that the technical feature of the prior art may be extended to the structure in which the selected elements 2 through 4 are combined with the lead structure of apixaban.

③ Furthermore, although the lactam structure is not directly disclosed in specific examples of the prior art for the substituent B of the prior art corresponding to the selected element 5 of Claim 1, it is reasonable to view that there is no difficulty in generalizing to the genus of the prior art from the description thereof and extending it to the case where the substituent B of the prior art has piperidinyl or

lactam structure.

Ⓐ According to the following description of the prior art, it can be seen that the prior art defines the heteroatoms capable of forming the "heterocyclic system," the total number of preferred heteroatoms, and the position in the heterocycle of the substituent B and discloses a preferred heterocyclic compound and takes piperidinyl as an example.

> As used herein, the term "heterocycle" or "heterocyclic system" is intended to mean a stable 5, 6, or 7-membered monocyclic or bicyclic or 7, 8, 9, or 10-membered bicyclic heterocyclic ring which is saturated, partially unsaturated or unsaturated (aromatic), and which consists of carbon atoms and 1, 2, 3, or 4 heteroatoms independently selected from the group consisting of N, NG, O and S and including any bicyclic group in which any of the above-defined heterocyclic rings is fused to a benzene ring. The nitrogen and sulfur heteroatoms may optionally be oxidized. The heterocyclic ring may be attached to its pendant group at any heteroatom or carbon atom that results in a stable structure. The heterocyclic rings described herein may be substituted on carbon or on a nitrogen atom if the resulting compound is stable. A nitrogen in the heterocyclic may optionally be quaternized. It is preferred that when the total number of S and O atoms in the heterocyclic exceeds 1, then these heteroatoms are not adjacent to one another. It is preferred that the total number of S and O in the heterocyclic is not more than 1. ... (omitted)... Examples of heterocycles include, but are not limited to, acridinyl, azocinyl, ... (omitted) ... pyrimidinyl, phenanthridinyl, phenanthriolinyl, phenazingly, phenothiazingly, phenoxathinyl, phenoxazinyl, phthalazinyl, piperazinyl, **piperidinyl**, piperdonyl, 4-piperidonyl, piperonyl, pteridinyl, purinyl, pyranyl, pyrazinyl, phrazolidinyl, pyridinyl, pyridyl, pyrimidinyl, pyrrolidinyl, pyrrolinyl, 2H-pyrrolyl, pyrrolyl, quinazolinyl, quinolinyl, 4*H*-quinolizinyl, quinoxalinyl, quinuclidinyl, tetrahydrofuranyl, tetrahydroisoquinolinyl, tetrahydropquinolinyl, tetrazolyl, 6*H*-1,2,5-thidiazinyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thianthrenyl, thiazolyl, thienyl, thienothiazolyl, thienoozazolyl, thienoimidazolyl, thiophenyl, triazinyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl, and xanthenyl. Also included are fused ring and spiro compounds containing, for example, the above heterocycles. (Paragraph 25, Page 59 ~ Paragraph 31, Page 60)

Furthermore, piperidinyl is explicitly included among the possible basic structures of the preferred embodiments of step 2 (Claim 2) and the preferred embodiments of the step 9 (Claim 9), and the heterocyclic structure[14] in which the substituent B includes nitrogen (N) is also disclosed in the specific examples of the prior art.

Ⓑ While the prior art defines the selectively described species of the substituent B in two steps, it is explicitly disclosed that a keto (=O) group may be included in R4a and R4b which can be bonded as substituent to the basic structure of the substiuent B, and the description in the specification of the prior art, "when a substituent is keto (i.e.,=O), then 2 hydrogens on the atom are replaced" (paragraphs 3~7 of page 58), specifically explains when to be substituted with keto.[15]

Ⓒ The prior art describes both the example where the substituent (R4a) is bonded to the basic structure of the substituent B and the example where the substituent is not bonded. In view of such description of the prior art, a skilled person will have no difficulty in extending the scope of the prior art to include the case where at least the substituent B is a heterocyclic structure containing 5 to 6-membered nitrogen having one

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14) Although it is a five-membered structure, many examples including pyrrolidine ( : Examples 11~14, 24, 27~29, 32, 35, 36, 39~41, 47, 48, 58, 60, 61, 64, 66, 68~70, 74, 77, 79, 82~84, 88, 89, 92, 94, 95, 97, 100, 102, 103) and imidazole ( : Examples 9, 10, 15, 25, 44, 45, 63, 104~108) are disclosed.

15) In addition, the prior art discloses a method for synthesizing the lead structure and describes that the A-B residue can be made by a method known to a skilled person by citing WO 97/23212, WO 97/30971, WO 97/38984, WO 98/06694, WO 98/01428, WO 98/28269, and WO 98/28282 (Lines 1~5, Page 96), of which WO 98/28269 discloses the substitution of a keto (=O) group with the substitution B (Reference 6, International Patent Publication WO 98/28269).

R4a substituent as a hetero atom.

Ⓓ From the description of Defendant's Exhibit 21, it can be recognized that the prior art is in the list of approved drug products in the U.S. and Canada (Orange Book) as a patent of apixaban. According to the above recognition, it seems that the patentee of the patented invention has also recognized that the prior art includes apixaban (The plaintiff claims, however, that the inventor of the patented invention did not recognize such fact at the time of filing the application, but only after. Meanwhile, the plaintiff does not respond to the court's order to clarify specifically when and how the inventor perceived this from the prior art, which has no suggestion to derive apixaban according to the plaintiff's argument).

(C) The plaintiff argues that it is extremely difficult to derive apixaban from the prior art that describes more than billions of compounds in general formulas and provides no motive or suggestion to derive apixaban and that the genus of the prior art cannot be generalized and extended to include the species such as apixaban of Claim 1.[16] However, the plaintiff's claim is unacceptable for the following reasons.

① A skilled person will try to consider the teaching of the preferred species included in the genus of the prior art, disclosure of the species selectively described as equivalent to the examples of the prior art, and the species similar in structure to the compounds directly

16) The plaintiff argues that the technical feature of the prior art cannot be extended or generalized to include the species including apixaban of Claim 1 but also argues that whether the prior art is invalid for the lack of sufficient description based on the legal principle of the Supreme Court Decision 2004Hu1120 decided May 11, 2006 should be determined according to the laws of each country while arguing that it is difficult to view that the legal principle of the Supreme Court decision is applied to the prior art. The purport of the plaintiff's argument is not clear, but the decision will be made assuming that the focus is placed on the former.

perceived as the genus of the prior art to understand the species that are expected to have similar characteristics to the prior art and find those with improved properties. Therefore, the mere fact that numerous compounds are described in general formulas in the prior art and not all features of the selection invention are explicitly disclosed in the examples thereof does not lead to the conclusion that no motive is provided to select the species of the selection invention from the prior art or the contents which can be extended to the scope of the invention of the genus are not disclosed in the preceding literature containing the contents which can lead to the genus of the invention (Rather, if all compositions of the selection invention are explicitly described or directly recognizable in the prior art, the novelty of the selection invention may be called into question).

② As discussed above, the prior art suggests a preferred direction of the compound by limiting the selectable structure over the several steps. In addition, the prior art has not only significantly reduced the size of the candidate group of substituents of the prior art which can derive the selected elements of Claim 1, but also suggests the structure in a specific chemical formula rather than a general formula.

③ It is not clearly described in the prior art whether piperidine is connected to an adjacent structure, the substituent A, and at which position of piperidine the keto (=O) group is introduced. However, it is difficult to conclude that the prior art cannot be extended to the species that include the selected element 5 because there are too many cases in introducing piperidine and the keto (=O) group into the substituent B considering the following matters: there are only five positions in piperidine ( , positions marked with blue arrows) in which the keto (=O) group can be substituted, and considering the symmetric structure of piperidine, substituents having three different structures are possible; there are also only five positions ( , out of the six positions marked with red arrows, one position that is

substituted with the keto (=O) group is excluded); in the examples of the prior art, when the substituent B has a heterocycle structure, the heteroatoms and the substituent A are connected.

④ The plaintiff also argues that the selected element 5 cannot be easily predicted because it is likely to cause unwanted reactions by substituting one keto (=O) group for piperidinyl. However, it cannot be said that the synthesis process hinders the prior art from being extended to include the species that includes the selected element 5 in consideration of the following: Ⓐ it is difficult to view that the process of selecting the individual structures disclosed in the prior art and the process of synthesizing the actually selected structures are the same; Ⓑ Selecting piperidinyl and a keto (=O) group as an individual substituent does not necessarily mean that the actual synthesis process must also introduce piperidinyl and then replace the keto (=O) group;[17] Ⓒ Considering the fact that the oxopiperidinyl structural compound of the selected element 5 is already commercially available worldwide (Defendant's Exhibit 42), the use of it in the synthesis process may be sufficiently considered.

(3) Taken together, it cannot be said that there is teaching or suggesting away that excludes apixaban of Claim 1 in the prior art,

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17) Moreover, it is difficult to believe that the prior art is an invention characterized by introducing a heterocycle ring first and then a keto group. In addition, a method of introducing a structure including a lactam structure into a chemical formula (such as Buchwald-Hartwig reaction) appears to be a synthesis method already well known in the field of organic synthesis prior to the date of claimed priority, and thus it would not be difficult to introduce a oxopiperidiny group itself to the substituent B by using this method. Furthermore, the coupling reaction to form a bond between the substituent A and substituent B of Claim 1 takes place between a carbon atom and a nitrogen atom, and in Example 9 of the prior art a compound in which an aryl group has a ring through which nitrogen is linked is disclosed, and the method for synthesizing this is described in the specification. In this light, the court cannot conclude that the reaction for forming such a bond is not disclosed at all in the prior art (see Plaintiff's Brief dated March 25, 2019).

and it should be deemed that a skilled person could generalize the genus of the prior art to include the species of apixaban of Claim 1, and thus, this case cannot be seen as a case where a strict patentability requirements should be relaxed in determining an inventive step of selection invention.

C) Whether there exist qualitatively different or significant effects

Returning to the established principle regarding selection invention, it is necessary to examine whether there exists qualitatively different or quantitatively significant effects compared to the prior art in order to determine an inventive step of Claim 1.

(1) Regarding qualitatively different effects of Claim 1

(A) Improvement of pharmacological characteristics

The plaintiff argues that, according to the following description of the patented invention, Claim 1 has all the effects described from (a) to (g) in the below specification, has the effect of improving the pharmacological properties which are not disclosed at all in the prior art, and these qualitatively different effects only require qualitative description, and thus qualitatively different effects of Claim 1 regarding "low clearance,[18] volume of distribution,[19] and protein binding" can be clearly understood through the specification of the

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18) Clearance, also called total body clearance, refers to the volume of plasma from which drugs are removed per unit time. Drugs and metabolites absorbed by the human body are finally excreted through the kidneys, bile, etc. The main mechanisms by which drugs are removed from the body are renal clearance (CLr), which is excreted into the kidneys, liver metabolism where the drug is converted to metabolites, and bile excretion which is excreted through bile (liver metabolism and bile excretion are together called hepatic clearance (CLh)). Usually, drugs are mostly lost through these mechanisms, and thus total body clearance (CLt) can be expressed as the sum of renal clearance (CLr) and hepatic clearance (CLh).

19) Volume of distribution means the volume (Vd) required to contain the total amount of drug in the body, assuming that the drug is present in the body at the same concentration as the blood concentration.

patented invention.

> Therefore, efficacious and specific inhibitors of factor Xa are needed as potentially valuable therapeutic agents for the treatment of thromboembolic disorders. It is thus desirable to discover new factor Xa inhibitors. In addition, it is also desirable to find new compounds with improved pharmacological characteristics compared with known factor Xa inhibitors. For example, it is preferred to find new compounds with improved factor Xa inhibitory activity and selectivity for factor Xa versus other serine proteases (i.e., trypsin). It is also desirable and preferable to find compounds with advantageous and improved characteristics in one or more of the following categories, but are not limited to: (a) pharmaceutical formulations (e.g., solubility, permeability, and amenability to sustained release formulations); (b) dosage requirements (e.g., lower dosages and/or once-daily dosing); (c) factors which decrease blood concentration peak-to-trough characteristics (e.g., clearance and/or volume of distribution); (d) factors that increase the concentration of active drug at the receptor (e.g., protein binding, volume of distribution); (e) factors that decrease the liability for clinical drug-drug interactions (e.g., cytochrome P450 enzyme inhibition or induction); (f) factors that decrease the potential for adverse side-effects (e.g., pharmacological selectivity beyond serine proteases, potential chemical or metabolic reactivity, and limited CSN penetration); and, (g) factors that improve manufacturing costs or feasibility (e.g., difficulty of synthesis, number of chiral centers, chemical stability, and ease of handling). [Paragraph 49]
>
> <Summary of the Invention>
> Accordingly, the present invention provides novel lactam-containing compounds and derivatives thereof that are useful as factor Xa inhibitors or pharmaceutically acceptable salts or prodrugs thereof. [Paragraph 51]

However, it is difficult to say that Claim 1 has qualitatively different effects of improving the pharmacological characteristics when compared with the prior art for the following reasons.

$V_d = \frac{D(\text{투여량})}{C_0(\text{혈중농도})}$ (D: dosage, C_0: blood concentration)

① Ⓐ Effects of the invention refer to industrial uses that are specific to the invention, and a description of the extent to which the effects of the invention are clarified should be included in the specification. However, in view of the language of the specification of the patented invention, the description of the effects that the plaintiff claims is generally and abstractly described, so that various interpretation are possible to understand the technical contribution of the patented invention, and technical significance or usefulness of the patented invention are not specifically stated. Ⓑ As factor Xa inhibitors, the patented invention discloses not only apixaban but also numerous compounds that include apixaban in general formula. Ⓒ The above description is not in the "Utility" section, but in the "Background of the Invention" of the specification of the patented invention. Ⓓ Among the above descriptions, it is stated "efficacious and specific inhibitors of factor Xa are needed as potentially valuable therapeutic agents for the treatment of thromboembolic disorders." ... (omitted) ... Also, given the description, "it is also desirable and preferable to find compounds with advantageous and improved characteristics in one or more of the following categories," a skilled person would not clearly understand how apixaban of Claim 1 will have any of the characteristics (a) ~ (g) above only by the above description. Therefore, it cannot be said that there is a description in the specification of the patented invention that can be recognized as "a description for qualitatively different effects that only apixaban has."

② Among the characteristics described in the above paragraph, which the plaintiff claims to be related to apixaban of Claim 1, there are characteristics that are hardly considered to match apixaban. That means that Eliquis tablets, which are tablets containing apixaban as active ingredients, are drugs of which 2.5mg or 5mg tablets are taken twice daily (Defendant's Exhibits 33-1, 33-2), and thus the above-mentioned characteristic (b), once-daily dosing, does not match that of apixaban. Moreover, there is no objective data to suggest that

characteristics (a) (e.g., solubility, permeability, and amenability of sustained release formulations) also match those of apixaban.

③ Even if it is limited to the above characteristics (c) and (d), viewed as describing "effects on clearance and/or volume of distribution, protein binding" of apixaban of Claim 1, it is difficult to clearly understand the desirable volume of distribution, clearance, and protein binding from the above description in consideration of the following circumstances:

Ⓐ Adding to Plaintiff's Exhibits 17, 18, 22 each, Defendant's Exhibit 24, and the overall purport of the argument, those following facts are found: The half-life of the drug, which is the time it takes for the concentration of the drug in the blood to halve, absent special circumstances, is proportional to the volume of distribution and inversely proportional to the clearance[20]; when clearance is low, blood concentration peak-to-trough, an indicator of how much the concentration of a drug in the blood changes over time, is lowered, while the longer the half-life of the drug is, the slower the blood concentration of the drug falls and thus blood concentration peak-to-trough decreases.[21] Therefore, it is likely that a skilled person who has encountered the description of characteristics (c) would deduce that it is desirable to have pharmacological characteristics of "high" volume of distribution and "low" clearance.

Ⓑ Meanwhile, this court finds that, assuming the drug is present

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20) $t_{1/2} = \frac{0.693\, V_d}{(CL_h + CL_r)}$ [V_d: volume of distribution, CL_h: hepatic clearance, CL_r: renal clearance]

21) Blood concentration peak-to-trough is related to the characteristic where the highest and the lowest drug concentrations in the blood change with time and takes into account the ratio between the highest and the lowest concentrations of drug in the blood.

in the whole body at the same concentration as the blood concentration, the target drug is more widely distributed in the tissue with the increase of the volume of distribution, which is the size of the volume required to contain the total amount of the drug in the body, according to Defendant's Exhibits 24 and 48 each. Therefore, considering that the protein targeted by Claim 1 is the factor Xa present in the blood, it may be interpreted that, in order to increase the concentration of the active drug in the receptor, it is desirable that the active drug is distributed in the activated free form by binding to plasma proteins at low levels while being distributed in the blood rather than being distributed into the tissue. If so, a skilled person who has encountered the description of characteristics (d) would likely infer that it is desirable to have pharmacological characteristics of "low" volume of distribution and low rate of binding to plasma protein.

Ⓒ According to the above paragraphs Ⓐ and Ⓑ, considering the general technical knowledge at the time of the claimed priority date of the patented invention, a skilled person could derive desirable characteristics in the opposite direction in terms of volume of distribution, and thus it is difficult to view that the above descriptions clearly present the direction of the pharmacological characteristics of apixaban of Claim 1. Furthermore, according to paragraph Ⓑ, it is inferred that the protein binding rate of apixaban is low, and the plaintiff also acknowledges that the actual protein binding rate of apixaban is 87% (Page 14, Plaintiff's Brief dated Oct. 22, 2018). It is much higher than those (70%) of vinblastine, vincristine, etc., which are listed in Table 3-4 of the Defendant's Exhibit 48 and known as drugs with high protein binding rate, and thus it is difficult to view that the above inferred characteristics are consistent with those of apixaban.

④ According to Defendant's Exhibits 24 and 48 each, it is found that factors affecting the tissue distribution of the drug include the amount of blood supplied to the tissue, binding to the plasma proteins, binding to components within tissue cells, tissue cell membrane permeability, difference in pH between tissue extra-cellular fluid and intra-cellular tissue fluid, and fat solubility of the drug molecule, and the volume of distribution is not only determined by binding to plasma protein but also influenced by the fat solubility of the drug molecule or binding to tissue components.[22] However, even in the specification of the patented invention, there is no suggestion of molecular characteristics such as electrical properties, fat solubility, etc. of apixaban. Therefore, considering that the volume of distribution of drug is affected by various factors such as binding rate to plasma protein, fat solubility of drug molecules, binding to tissue components, and influx into tissues through drug transporter, it may be difficult for a skilled person to predict characteristics of Claim 1 such as volume of distribution and binding rate to plasma proteins only from the above description in the situation where that skilled person cannot predict the electrical properties, fat solubility and behavior of the drug in the body.

⑤ According to Defendant's Exhibits 3, 4, and 9 each, the same description as Paragraph [49] of the specification of the patented invention is also included in the specification of the plaintiff's other patent applications, including the invention of therapeutic agents for

22) According to Plaintiff's Exhibit 33 submitted after the oral argument session is closed, the volume of distribution is a function of plasma unbound fraction and tissue unbound fraction, and the relationship between protein binding and volume of distribution cannot be judged only by blood protein binding ratio but should be expressed as unbound fraction in blood relative to unbound fraction in tissue. Therefore, the high plasma protein binding rate of certain substances does not necessarily mean that the volume of distribution is low.

arthritis with the goal of pharmacological characteristics different from those pursued by the Xa inhibitors of the patented invention.

⑥ The plaintiff argues that the qualitatively different effect of Claim 1 is that it shows desirability of an anticoagulant having a "low" volume of distribution contrary to the general technical knowledge of a skilled person at the time of patent application. If the pharmacological characteristics of apixaban is a qualitatively different effect contrary to the general technical knowledge of a skilled person as claimed by the plaintiff, the effects should be disclosed more specifically and clearly in the specification so that the skilled person could understand the qualitatively different effects. Therefore, the claim that a skilled person could fully understand the pharmacological characteristics of apixaban only by the above description and the claim that the above effect is qualitatively different contrary to the general technical knowledge are incompatible with each other.

⑦ The plaintiff argues that pharmacological characteristics of Claim 1 can be confirmed even by additional experimental data (Plaintiff's Exhibits 9, 10) before the date of claimed priority. However, it is difficult to believe that the pharmacological characteristics of Claim 1 can be confirmed only by the above exhibits submitted by the plaintiff in consideration of the following matters in a comprehensive manner: Ⓐ It cannot be concluded that the above additional experimental data was confirmed before the date of claimed priority; Ⓑ It cannot be concluded that the structures of examples 55, 61, 221, and 1053, which are to be compared in the additional experimental data, are likely to be the structures similar to that of apixaban among the compounds explicitly disclosed in the prior art as they have significant differences in their lead structure or substituents[23]; Ⓒ Even if it was

23) In particular, with respect to Example 1053, considering that Example 1043 is a structure in which all of the selected elements 1 through 4 are the same and include a heterocycle containing a keto (=O) group and nitrogen (N) as the substituent B and that Example 1048 is a structure in

confirmed before the date of the claimed priority, unless there is specific information that confirms qualitative differences in the description of the invention, acknowledging an inventive step of the patented invention on the basis of comparative data not included in the specification is unacceptable because that is to complete an incomplete invention after application, incur unforeseen damages to a third party who believed the disclosure of the patented invention and has carried out research in reliance thereof, and grant the patent without disclosing the technical details of the invention to a third party; and ⓓ Considering the balance with the degree of description of effects required in the general invention, it is unreasonable to consider the effects that are not clearly described and difficult to deduce only based on the post-experimental data in the selection invention.

(B) Effect of concomitant administration

The plaintiff argues that Claim 1 confirms the possibility of concomitant administration of various drugs which are not disclosed in the prior art and that the qualitatively different effects are recognized.

However, in consideration of the above facts and the following circumstances which can be deduced from Plaintiff's Exhibits 2, 4, 10, 12 each, Defendant's Exhibits 12 through 14, and 55 each, and the purport of the overall argument, it is difficult to view that Claim 1 has qualitatively different effects in concomitant administration when compared with the prior art.[24)]

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which all of the elected elements 1 through 4 are the same and include a heterocycle containing nitrogen (N) as the substituent B, it cannot be concluded that Example 1053 is the structure most similar to Claim 1 and there is no objective data to acknowledge otherwise.

24) Even if the effect is regarded as qualitatively the same and the degree of effect that may occur due to concomitant administration is reviewed, contrary to what the plaintiff argues, considering that in the specification of the patented invention, it is stated "Administration of the compounds of the present invention (i.e., a first therapeutic agent) in combination with at least one additional therapeutic agent (i.e., a second therapeutic

① According to what is described in the specification of the prior art, “The compounds of the present invention may be administered in combination with at least one additional therapeutic agent, which may include other anticoagulant agents or coagulation inhibitory agents, anti-platelet or platelet inhibitory agents, thrombin inhibitors, or thrombolytic or fibrinolytic agents,” the prior art provides anticoagulant agents, coagulation inhibitory agents, anti-platelet platelet inhibitory agents, thrombin inhibitors, thrombolytic agents, fibrinolytic agents, etc. as additional therapeutic agent that can be administered in combination with the compound of the prior art, but is not limited to those presented.

② In the specification of the patented invention, specific drugs that can be administered in combination are listed as additional therapeutic agents including other anticoagulant or coagulation inhibitors, anti-platelet or platelet inhibitory agents, thrombin inhibitors, thrombolytics or fibrinolytics, anti-arrhythmic agents, anti-hypertensive agents, calcium channel blockers (L-type and T-type), cardiac glycosides, diuretics, mineralocorticoid receptor antagonists, phosphodiesterase inhibitors, cholesterol/lipid lowering agents and lipid profile therapies, anti-diabetics, antidepressants, anti-inflammatory agents (steroidal and non-steroidal), anti-osteoporosis agents, hormone replacement therapies, oral contraceptive, anti-obesity agents, anti-anxiety agents, anti-proliferative agents, anti-tumor agents, anti-ulcer and gastroesophageal reflux disease agents, growth hormone and/or growth

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agent), preferably affords an efficacy advantage over the compounds and agents alone, preferably while permitting the use of lower doses of each (i.e., a synergistic combination). A lower dosage minimizes the potential of side effect, thereby providing an increased margin of safety” [Paragraph 858], which is also described in the prior art (Lines 11~15, Page 267), it is difficult to view that both inventions have a significant difference in quantity when it comes to the effect of concomitant administration.

hormone secretagogues, thyroid mimetics (including thyroid receptor antagonist), anti-infective agents, anti-viral agents, anti-bacterial agents, and anti-fungal agents. However, the possibility of being administered in combination may vary depending on the individual drug, and it is difficult to predict easily. Therefore, it is less likely that a skilled person would recognize that apixaban of Claim 1 can be administered in combination with all the drugs listed in the specification of the patented invention only from the description of the vague possibility of being administered in combination as described above.

③ According to Defendant's Exhibits 11 and 12 each, the plaintiff described the co-administration drugs nearly identically to those of the patented invention in the specification for other drugs whose structures are different from that of Claim 1. Therefore, it is difficult to view that the plaintiff actually identified and described the possibility of being administered in combination with apixaban for the drugs listed in the specification of the patented invention.

④ Drugs enumerated as therapeutic agents that may be administered in combination in the specification of the patented invention ([Paragraphs 836, 837]) also include "GPIIb/IIIa receptor inhibitors, thienopyridine (clopidogrel), which are not actually recommended for use in combination with Apixaban (Lines 12~13, Bottom of Page 8, Plaintiff's Exhibit 12).

⑤ The plaintiff argues that the effect of concomitant administration is confirmed on the basis of the ARISTOTLE trial (Apixaban for Reduction in Stroke and Other Thromboembolic Events in Atrial Fibrillation), a multinational double-blind trial comparing apixaban with warfarin (Plaintiff's Exhibit 10) in relation to the risks of stroke and non-central nervous system systemic embolism.

However, as discussed above, the specification of the patented invention does not have specific details that can confirm the qualitative difference of concomitant administration of apixaban, and thus it is difficult to believe that such qualitatively different effects are clearly

described. Therefore, additional test results must not be taken into account to determine an inventive step. Furthermore, even if the above test results are taken into account, it is hard to believe that the above evidence alone confirms the qualitatively different effects of concomitant administration in consideration of the following matters: Ⓐ In the above test results, in relation to concomitant medications, only the proportion of patients in each classification is described by classifying the warfarin and apixaban patients group in the ARISTOTLE test by the concomitant drugs; Ⓑ Even when considering the test result of "less bleeding and low mortality compared with warfarin" as claimed by the plaintiff, it only means relative safety against warfarin, and thus it is hard to view that all the possibilities of concomitant administration described in Plaintiff's Exhibit 10 and apixaban are proven; and Ⓒ In addition, the paper on the ARISTOTLE trial (Paragraph 3 from the left column on page 990, Defendant's Exhibit 55) showed side effects, serious side effects, abnormal rates in liver function tests, and serious side effects related to liver were similar in the group tested with apixaban and warfarin, and thus it is also difficult to view that the safety of concomitant administration of apixaban is confirmed by the above test.

(2) Regarding the significant effect of Claim 1

(A) Effect of prior art

The prior art relates to a nitrogen-containing heterobicyclic compound as a factor Xa inhibitor, which has a low Ki value and provides a compound with high factor Xa affinity, and the effect of being administered with additional therapeutic agents including anticoagulant agents or coagulation inhibitory agents is as discussed above.

(B) Effect of Claim 1

The effect of Claim 1 is described in the specification as follows. According to this description, Claim 1 relates to pharmaceutical compositions containing lactam-containing compounds which are

inhibitors of factor Xa and anticoagulant agents for treatment of thromboembolic disorders, and the compound of Claim 1 can be administered in combination with other drugs and has a high Xa affinity and thus has an excellent effect as inhibitor of factor Xa.

This invention relates generally to lactam-containing compounds and derivatives thereof which are inhibitors of trypsin-like serine protease enzymes, especially factor Xa, pharmaceutical compositions containing the same, and methods of using the same as anticoagulant agents for treatment of thromboembolic disorders. [Paragraph 1]

Compounds tested in the above assay are considered to be active if they exhibit a Ki of≦10 μM. Preferred compounds of the present invention have Ki's of≦1 mM. More preferred compounds of the present invention have Ki's of≦0.1 mM. Even more preferred compounds of the present invention have Ki's of≦0.01 μM. Still more preferred compounds of the present invention have Ki's of≦0.001 μM. Using the methodology described above, a number of compounds of the present invention were founds to exhibit Ki's of≦10mM, thereby confirming the utility of the compounds of the present invention as effective Xa inhibitors. [Paragraph 828]

The compounds of the present invention may also be useful as inhibitors of serine proteases, notably human thrombin, Factor VIIa, Factor IXa, Factor XIa, urokinase, plasma kallikrein, and plasmin. Because of their inhibitory action, these compounds are indicated for use in the prevention or treatment of physiological reactions, blood coagulation and inflammation, catalyzed by the aforesaid class of enzymes. Specifically, the compounds have utility as drugs for the treatment of diseases arising from elevated thrombin activity such as myocardial infarction, and as reagents used as anticoagulants in the processing of blood to plasma for diagnostic and other commercial purposes. [Paragraph 30]

The compounds of the present invention can be administered alone or in combination with one or more additional therapeutic agents. By "administered in combination" or "combination therapy" it is meant that a compound of the present invention and one or more additional therapeutic agents are administered concurrently to the mammal being treated. When administered in combination each component may be administered at the

same time or sequentially in any order at different points in time. thus, each component may be administered separately but sufficiently closely in time so as to provide the desired therapeutic effect. Additional therapeutic agents include other anti-coagulant or coagulation inhibitory agents, anti-platelet or platelet inhibitory agents, thrombin inhibitors, thrombolytic or fibrinolytic agents, anti-arrhythmic agents, anti-hypertensive agents, calcium channel blockers (L-type and T-type), cardiac glycosides, diuretics, mineralocorticoid receptor antagonists, phosphodiesterase inhibitors, cholesterol/lipid lowering agents and lipid profile therapies, anti-diabetic agents, anti-depressants, anti-inflammatory agents (steroidal and non-steroidal), anti-osteoporosis agents, hormone replacement therapies, oral contraceptives, anti-obesity agents, anti-anxiety agents, anti-proliferative agents, anti-tumor agents, anti-ulcer and gastroesophageal reflux disease agents, growth hormone and/or growth hormone secretagogues, thyroid mimetics (including thyroid receptor antagonist), anti-infective agents, anti-viral agents, anti-bacterial agents, and anti-fungal agents. [Paragraphs 833, 834]

Administration of the compounds of the present invention (i.e., a first therapeutic agent) in combination with at least one additional therapeutic agent (i.e., a second therapeutic agent), preferably affords an efficacy advantage over the compounds and agents alone, preferably while permitting the use of lower doses of each (i.e., a synergistic combination). A lower dosage minimizes the potential of side effect, thereby providing an increased margin of safety. It is preferred that at least one of the therapeutic agents be administered in a sub-therapeutic dose. It is even more preferred that all of the therapeutic agents be administered in sub-therapeutic doses. Sub-therapeutic is intended to mean an amount of a therapeutic agent that by itself does not give the desired therapeutic effect for the condition or disease being treated. Synergistic combination is intended to mean that the observed effect of the combination is greater than the sum of the individual agents administered alone. [Paragraph 858]

If so, both the prior art and Claim 1 have the same effect in that they provide a compound having good Xa affinity as Xa inhibitor and capable of being administered in combination with other drugs. While additional therapeutic agents such as anti-arrhythmic agents,

anti-hypertensive agents, and calcium channel blockers (L-type and T-type) are disclosed in the specification of the patented invention, in addition to the additional therapeutic agents listed in the prior art in a non-limiting way as “other anti-coagulant or coagulation inhibitory agents, anti-platelet or platelet inhibitory agents, thrombin inhibitors, or thrombolytic or fibrinolytic agents,” it is difficult to believe that there is qualitatively different or quantitatively significant effect in concomitant administration as discussed above. As a result, both the prior art and Claim 1 seem to be effective in improving the factor Xa affinity and thus this effect is to be compared.

(C) Assessment of the effect on factor Xa affinity

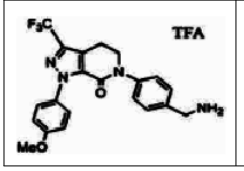
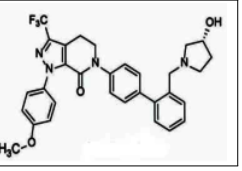
The specification of the patented invention provides, “Compounds tested in the above assay are considered to be active if they exhibit a Ki of ≤ 10 μM. Preferred compounds of the present invention have Ki′s of ≤ 1 μM. More preferred compounds of the present invention have Ki′s of ≤ 0.1 μM. Even more preferred compounds of the present invention have Ki′s of ≤ 0.01 μM. Still more preferred compounds of the present invention have Ki′s of ≤ 0.001 μM. Using the methodology described above, a number of compounds of the present invention were found to exhibit Ki′s of ≤ 10 μM, thereby confirming the utility of the compounds of the present invention as effective Xa inhibitors (Paragraph [828]).” In general, the lower the Ki value, the higher the factor Xa affinity, and the Ki value of Claim 1 is similar to the preferred range of the Ki value of the compounds disclosed in the prior art (≦ 0.001 μM), and thus it is difficult to view that there is a significant difference in the factor Xa affinity between the prior art and Claim 1.

Furthermore, there is no description that confirms the Ki value of the individual compounds in the specification of the patented invention. In addition, what is described, “Still more preferred compounds of the present invention have Ki′s of ≤ 0.001 μM. Using the methodology described above, a number of compounds of the

present invention were found to exhibit Ki's of ≤ 10 μM," only discloses a general method of measuring the Ki value, and thus it is not possible to conclude that the Ki value described in the specification of the patented invention relates to apixaban of Claim 1. Therefore, it is difficult to view that there is a quantitative description that can confirm that Claim 1 has a significant difference in quantity compared to the prior art.

On the other hand, the plaintiff argues that Claim 1 has a significantly low Ki value compared to Example 99 of the prior art, which is the most similar in structure, and so is when compared with Example 221, and thus an excellent effect as factor Xa inhibitor of Claim 1 should be acknowledged.

However, ① as discussed above, since a structure in which only one substituent is different from Claim 1 can be directly recognized from the prior art, Examples 99 and 221 in which the two substituents (selected elements 2, 5) are different should not be seen as the most similar to Claim 1 in structure for comparison of the effect of the compound as inhibitors of factor Xa (Ki value); ② Furthermore, Examples 99 and 221 contain halogen elements (F, fluorine) in the substituent Z, so that the properties of the substituents will be greatly different compared to Claim 1 having the aminocarbonyl group (-CONH2) in the substituent group Z. Thus, it may be not appropriate that the compounds are selected from the prior art as the compounds to be compared with Claim 1; and ③ As discussed above, considering that the quantitatively significant effect of apixaban in terms of factor Xa affinity is not deemed to be clearly described, the effect of Claim 1 as inhibitors of factor Xa is hardly considered to be quantitatively significant compared with the prior art. The plaintiff's above argument shall not be accepted.

Example 99	Example 221
	

Meanwhile, the plaintiff seems to argue that since Examples 61 and

1053 of the prior art cannot be developed as drugs due to toxicity and inferior pharmacological characteristics even though they have a low Ki value, only apixaban of Claim 1 should be acknowledged to have an excellent effect as inhibitors of factor Xa.

However, whether or not Claim 1 has significantly improved effect as inhibitors of factor Xa compared with the prior art is sufficiently judged based on the factor Xa affinity (Ki value), and whether Claim 1 shows the reduction in toxicity or improvement in pharmacological characteristics, qualitatively different or quantitatively significant from the prior art, should be determined individually as separate effect. Thus, the plaintiff's claim itself is without merit. Furthermore, since the effect of reducing toxicity or improving the pharmacological characteristics is not described in the specification of the patented invention as discussed above, those effects cannot be considered to determine an inventive step of Claim 1. The plaintiff's above claim shall not be accepted either.

(3) Summary of analysis

According to the above circumstances, the qualitatively different effect of improving pharmacological characteristics and concomitant administration effect or the quantitatively significant effect of factor Xa affinity compared to the prior art is not considered to be clearly described in the specification of the patented invention, and thus it is difficult to view that Claim 1 has the above effect.

3) Summary

Therefore, Claim 1 has no qualitatively different or quantitatively significant effect as compared to the prior art as selection invention, and thus an inventive step thereof is denied.

C. Whether or not Claim 2 has an inventive step

Claim 2 only includes apixaban of Claim 1 as it is in the "compound

represented by the following Formula I (apixaban)" and does not include selected elements that can newly show an inventive step. Therefore, Claim 2 lacks an inventive step as selection invention for the same ground as Claim 1.

D. Summary of Discussion

In conclusion, the patented invention lacks an inventive step, thereby invalidating the patent, and therefore the IPTAB decision concluding the same shall be upheld.

4. Conclusion

The plaintiff's claim to revoke the administrative decision is without merit and therefore dismissed in its entirety.

Presiding Judge Sung Sik YOON
Judge Soon Min KWON
Judge Taek Soo JUNG

PATENT COURT OF KOREA
FIRST DIVISION
DECISION

Case No.	2018Heo8210 Rejection (Patent)
Plaintiff	CHEMAS
Defendant	Commissioner of Korean Intellectual Property Office
Date of Closing Argument	April 18, 2019
Decision Date	May 30, 2019

ORDER

1. The plaintiff's claim is dismissed.

2. The costs arising from this litigation shall be borne by the plaintiff.

PLAINTIFF'S DEMAND

The IPTAB Decision 2018Won2091 dated August 31, 2018 shall be revoked.

OPINION

1. Background

A. Claimed Invention at Issue (hereinafter the "subject invention") (Plaintiff's Exhibits 3, 7, 10, and 12)[1)]

1) Title of invention: Pharmaceutical composition for inhibiting cancer metastasis, comprising tetraarsenic oxide

2) Filing date of application/ publication date/ filing number: January 23, 2017/ May 17, 2018/ No. 10-2017-0010370

3) Claims[2)]

[Claim 1] A pharmaceutical composition (hereinafter "claim 1 of the subject invention") for inhibiting breast cancer metastasis (hereinafter "element 2") transmitted by human epidermal growth factor receptor-2 (HER-2), comprising tetraarsenic oxide (As_4O_6) (hereinafter "element 1").

4) Main contents

【1】 Background and Technical Field The present invention relates to a pharmaceutical composition for

1) Hereinafter, where an invention described in the whole of the specification of the subject invention is referenced, it shall be referred to as the "subject invention." Where the invention described in claim 1 is referenced, it shall be referred to as "claim 1 of the subject invention."

2) On March 21, 2018, the claims were amended by the amendment submitted simultaneously with the claim for reexamination. At the time of application, the claims were composed of claims 1 through 5. The first amendment deleted claims 2 and 3. The amendment made at reexamination deleted all remaining claims except claim 1.

inhibiting cancer metastasis comprising tetraarsenic oxide (As_4O_6). Cancer metastasis is a phenomenon in which primary tumor cells spread to other organs and can be considered as the last stage of cancer. Cancer metastasis accounts for more than 90% of cancer deaths. Research on cancer metastasis mechanism has been actively conducted to find a solution for cancer metastasis. Cancer cell metastasis goes through various steps, such as the invasion of peripheral tissues, influx into blood, survival in blood, invasion of and survival in other tissues, and new cancer formation in secondary organs (Obenauf AC, et al., 2015). In particular, **the invasiveness of cells invading tissues surrounding them is essential, which is one of the characteristics of cancer cells**. Such invasiveness **is related to the following: proteolysis, which degrades extracellular matrix (ECM) and basement membrane; and cell migration, which moves through degraded matrix**. **MMP (matrix metalloproteinase)** is one of the representative proteolytic enzymes that degrade ECM. In particular, it was reported that **MMP-2 and MMP-9 play an important role in the cell invasiveness**. ([0001]-[0002])

Human epidermal growth factor receptor-2 (HER-2) is part of the human epidermal growth factor receptor family and, like epidermal growth factor receptor (EGFR, HER-1), which is another human epidermal growth factor receptor, has **receptor tyrosine kinase (RTK) activity**.

Recently, the following was reported: Tetraarsenic oxide (As_4O_6) shows an anticancer effect, as As_2O_3 does, by acting on cancer cells selectively and inducing cancer cells to die (Ahn W.S., et al., 2004; Lee W.S., et al., 2015; Gwak H.S., et al., 2014; Park I.C., et al., 2003). Also, it was established that As_4O_6 is related to various signal transduction processes, such as the NF-κB signal transmission process (Lee W.S., et al., 2015), caspase-dependent apoptosis (Chang H.S., et al., 2007), autophagic cell death, etc. However, the relevance of invasion and migration of breast cancer cells is not yet established. ([0009])

2 Problem to Be Solved

The purpose of the present invention is to provide a pharmaceutical composition for inhibiting cancer metastasis including tetraarsenic oxide (As_4O_6).

3 Solution to Problem ([0015]-[0023])

The present invention relates to a pharmaceutical composition for inhibiting cancer metastasis including tetraarsenic oxide (As_4O_6).

The cancer metastasis may include **cancer metastasis mediated by epidermal growth factor receptor (EGFR)**.

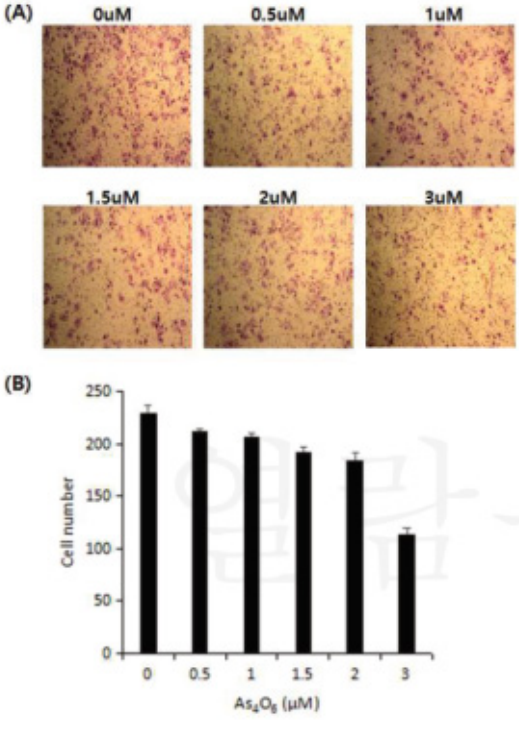
The cancer metastasis may include cancer metastasis mediated by EGFR and **human epidermal growth factor receptor-2 (HER-2)**.

The cancer may be at least one selected from the group consisting of breast cancer, liver cancer, ovarian cancer, colon cancer, lung cancer, and brain tumors. Preferably, the cancer may be breast cancer.

5 Details to Practice Invention

<Embodiment 2-2. Confirmation of Inhibition of HER-2-Mediated Cell Invasion> ([0041]-[0044])

【도 2】



도 2	Drawing 2

A transwell invasion assay was performed to confirm the inhibition of HER-2-mediated breast cancer cell invasion by As_4O_6. SKBR3 cells in Embodiment 1 were placed in a 6-well plate at 5×10^5 cells per well and cultured overnight. On the following day, the cells were treated so that As_4O_6 would be each of 0, 0.5, 1, 1.5, 2, and 3 μM, and then they were cultured for 48 hours.

(Omitted)

The cells that had invaded the membrane were fixed with methanol and then treated with 0.1% crystal violet for 15−20 minutes to stain the cells. The stained cells were identified using a microscope, and the number of stained cells was measured and indicated in Drawing 2.

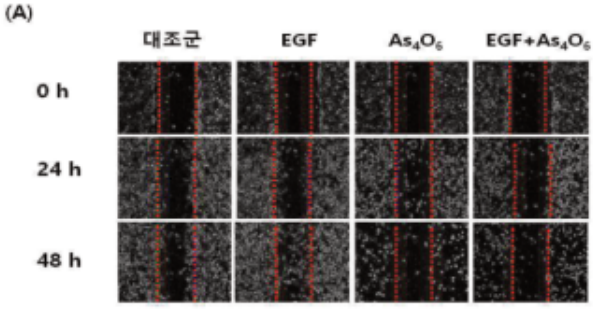
As shown by the result of confirmation of invaded cells through microscope (A) and the result of measurement of the number of invaded cells (B) shown in Drawing 2, it was confirmed that the invasion of cells was inhibited depending on As_4O_6 treatment concentration compared to a control group in which no treatment was performed on SKBR3 cells, which are breast cancer cells in which HER-2 was overexpressed, when As_4O_6 was treated. ([0043])

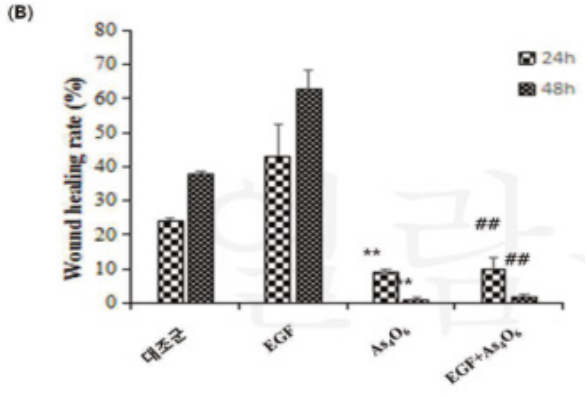
From these results, it was found that the As_4O_6 of the present invention inhibits an invasive activity of breast cancer cells by HER-2 mediation. ([0044])

<Embodiment 3. Confirmation of Inhibition of Breast Cancer Cell Migration by As_4O_6> ([0045]−[0049])

Embodiment 3-1. Confirmation of Inhibition of EGFR-Mediated Cell Migration

【도 3】





도 3	Drawing 3
대조군	Control Group

A wound healing migration assay was performed to confirm the inhibition of migration of EGFR-mediated breast cancer cells by As_4O_6. MDA-MB-231 cells of Embodiment 1 were placed and cultured overnight in a 6-well plate so that the number of MDA-MB-231 cells became 5×10^5 per well. On the following day, cells that were being cultured on a plate were wounded with a sterile pipette tip of 10 μL and then washed three times with phosphate buffer saline (PBS). After the treatment of each material according to the conditions specified in Table 1 above, the degree of cell migration was observed using a microscope at 0, 24, and 48 hours, and the results are shown in Drawing 3. The degree of cell migration was determined by the percentage of the wound area filled and is shown in a graph.

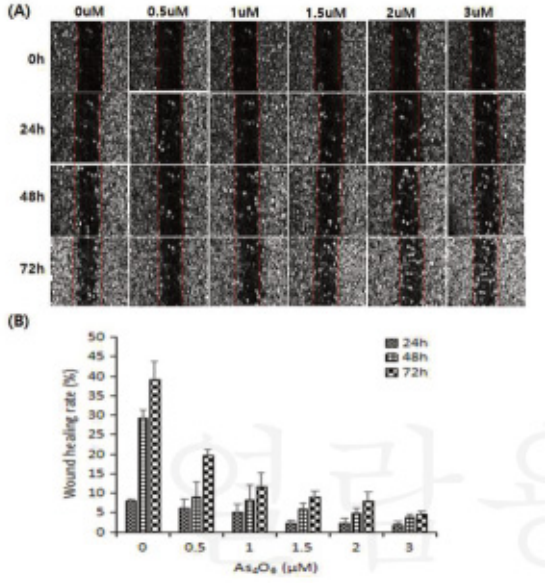
As shown in Drawing 3, as the result of confirmation of the degree of cell migration using a microscope (A) and the result of quantification of the degree of cell migration (B), compared to the control group, the cell migration was inhibited and a wounded part was not filled in experimental group 1. Also, the following was confirmed: compared to the control group, the cell migration was increased and a wounded part was almost filled in experimental group 2, treated only with EGF; and the cell migration increased by EGF was inhibited in experimental group 3, treated with EGF and As_4O_6 at the same time.

As examined above, it can be known that As_4O_6 inhibits the migration activity of breast cancer cells by EGFR mediation.

<Embodiment 3-2. Confirmation of Inhibition of HER-2-Mediated Cell Migration> ([0050]-[0054])

A wound healing migration assay was performed to confirm the inhibition of migration of HER-2-mediated breast cancer cells by As_4O_6.

【도 4】



도 4	Drawing 4

The wound healing migration assay was carried out in the same manner as in Embodiment 3-1. Here, SKBR3 cells were used, As_4O_6 was treated to 0, 0.5, 1, 1.5, 2, and 3 μM, and a degree of the cell migration was observed using a microscope at 24, 48, and 72 hours. Drawing 4 shows the result of cell migration in which a degree that a wounded area is filled is converted to percentage.

As shown in the result of confirming the degree of cell migration through a microscope in Drawing 4 (A) and the graph that quantified the degree of cell migration (B), it was confirmed that the migration of SKBR3 cells in which HER-2 was overexpressed was inhibited depending on the concentration and time of As_4O_6 treatment.

As a result, it was found that the As_4O_6 of the present invention inhibits the migration activity of breast cancer cells by HER-2 mediation.

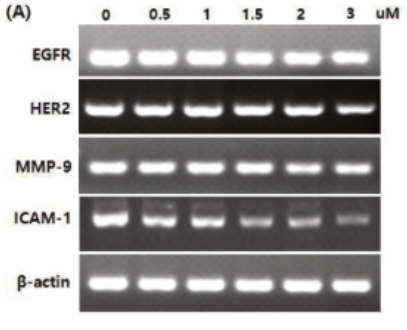
<Embodiment 5. Confirmation of Mechanism to Inhibit HER-2-Mediated Breast Cancer Cell Metastasis by As_4O_6>

Embodiment 5-1. Confirmation of a degree of the mRNA expression of molecules related to the invasion and migration of cells.

A degree of mRNA expression of MMP-9 and ICAM-1 (intracellular adhesion molecule-1) related to the invasion and migration of cells was confirmed to identify a mechanism for As_4O_6 to inhibit HER-2-mediated breast cancer cell metastasis.

The SKBR3 cells of Embodiment 1 were added to a 6-well plate and cultured overnight so that the number of SKBR3 cells became 5×10^5. On the following day, the cells were treated so that As_4O_6 in the cells became each of 0, 0.5, 1, 1.5, 2, and 3 μM and then cultured for 48 hours. After 48 hours, the cells were collected and washed with cold PBS. The total RNA was isolated using the Trizol reagent (Trizol reagent, TaKaRa, Japan) according to the method stipulated by the manufacturer. The concentration was confirmed by measuring the absorbance at a wavelength of 260 nm.

【도 6】



도 6	Drawing 6

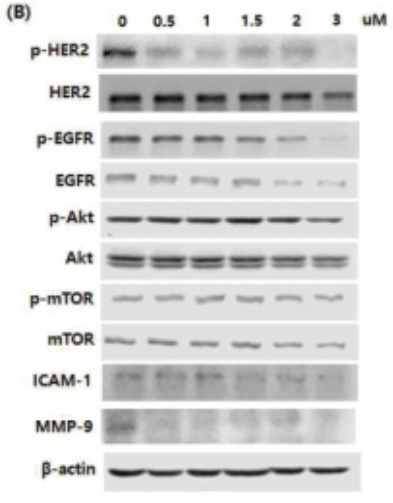
Among the isolated total RNA, 500 ng was used as a template, and cDNA was synthesized using an AMV reverse transcription kit (TaKaRa). Additionally, 5 μL of the synthesized cDNAs was used as a template, and polymerase chain reaction (PCR) was performed using the primer set in Table 2[3)] below and Taq DAN polymerase of TaKaRa. Here, β-actin

3) Table 2 is related to the sequence listing of primers and thus is omitted.

was used as a loading control group. The PCR products obtained after PCR were electrophoresed on 1.5% agarose gel to compare a degree of mRNA expression. Results thereof are shown in Drawing 6(A).

<Embodiment 5-2. Confirmation of Phosphorylation of Molecules related to Invasion and Migration of Cells through Western Blot and Molecules related to HER-2 Signal transduction Mechanism ([0067]-[0071])

In order to identify the mechanism for As_4O_6 to inhibit HER-2-mediated breast cancer cell metastasis, a degree of the protein expression of MMP-9 and ICAM-1 related to the invasion and migration of cells and a degree of phosphorylation of cells related to HER-2's signal transduction mechanism were confirmed through Western blot.



The SKBR3 cells of Embodiment 1 were added to a 6-well plate and cultured overnight so that the number of SKBR3 cells became 5×10^5. On the following day, the cells were treated so that As_4O_6 in the cells became each of 0, 0.5, 1, 1.5, 2, and 3 μM and then cultured for 48 hours. After 48 hours, Western blot was performed in a method identical to that in Embodiment 4, and the results were shown in Drawing 6(B).

In the case of HER-2, EGFR, Akt, and mTOR, as shown in Drawing 6(B), an amount of **HER-2 (p-HER2), EGFR (p-EGFR), and Akt (p-Akt) phosphorylated depending on the As_4O_6 treatment concentration was decreased**. On the other hand, **in the case of mTOR, an amount of phosphorylated mTOR (p-mTOR) was not changed despite As_4O_6**

treatment. Also, **in the case of MMP-9 and ICAM-1, an amount of protein expression was decreased by As_4O_6 treatment**.

Through this, the following can be known: the As_4O_6 of the present invention affects the higher signaling mechanism of HER-2 and EGFR, thereby inhibiting the phosphorylation of HER-2 and EGFR; and the As_4O_6 of the present invention affects Akt in the lower signaling mechanism of HER-2 and EGFRand inhibits the expression of MMP-9 and ICAM-1. That is, the As_4O_6 of the present invention inhibits cancer metastasis by HER-2 and EGFR mediation.

B. Prior Art (Plaintiff's Exhibit 8)

This prior art relates to the "Use of Novel Natural Chemical Substance Tetraarsenic Oxide as Anti-Tumor Treatment Agent and Pharmaceutical Composition thereof" published in Korea Patent Publication No. 10-272835 disclosed on December 6, 1999.

1 Background

The present invention relates to use of the novel natural chemical substance tetraarsenic oxide as an anti-tumor treatment agent and a pharmaceutical composition thereof. More particularly, the present invention relates to use of anti-cancer drugs for which it is confirmed that a pharmaceutical composition which removes toxicity from nephrolith, produces As_4O_6, and contains the substance as its active component directly inhibits cell toxicity and neovascularization around tumors.

Meanwhile, arsenic has been known as a powerful environmental carcinogen that causes cancer in the skin and lungs. Biochemically, it was reported that arsenic binds to sulfhydryl, which is an enzyme activation site, inactivates some enzymes, inhibits phosphorylation and dephosphorylation, and induces some enzymes to be inactivated. Therefore, it can be said that research has been conducted thus far mainly from a toxicological perspective. The present invention processes, isolates, and refines a source material of arsenic that has been used as a medicinal

herb through a multistep process and confirmed that the compound As_4O_6 has a strong anticancer effect without side effects.

Therefore, an object of the present invention is to provide the compound As_4O_6, which is a novel natural chemical substance whose toxicity is removed from natural nephrolith and which is isolated and refined.

Another object of the present invention is to provide **an anti-tumor therapeutic composition** containing the compound As_4O_6 as its effective substance.

2 Description

1) Technical problem

The present invention achieved the objects in the following manners: to remove toxicity by heating nephrolith containing arsenic several times, isolate and refine HD-2, which is a natural chemical substance, and analyze its structure; to **treat the white substance to tumor cell lines originated from mice and humans** and then **investigate whether its anti-cancer effect is due to a mechanism to kill tumor cells by apoptosis**; to investigate toxicity depending on acute administration by observing clinical changes in rats after orally administering to rats the HD-2, which is a natural chemical substance that has been isolated and refined; to investigate toxicity depending on subacute administration by observing clinical changes in rats after orally administering to rats, at a slow pace, the HD-2, which is a natural chemical substance; to investigate an effect to inhibit cancer metastasis by measuring the number of tumor groups metastasized to the lungs after giving mice an intravenous injection of a cell line whose target tissue is the lungs and giving oral administration or intravenous injection of HD-2, which is a natural chemical substance of the present invention; to investigate the anti-cancer mechanism of this substance by measuring the number of blood vessels newly formed by tumors after giving mice a melanomatous intradermal injection and oral administration of HD-2, which is a natural chemical substance of the present invention; to investigate an effect to inhibit cancerization by giving an oral administration of HD-2, which is a natural chemical substance of the present invention, after causing cancer by injecting a carcinogen to mice; and to manufacture a pharmaceutical composition for clinical purposes by adding various medicinal herbs to a natural active

anticancer substance extracted as explained above and giving a terminal cancer patient an oral administration of the composition and investigate an effect as an anti-cancer drug. Hereinafter, the specific composition and operation of the present invention will be explained.

2) Composition and operation of invention

The present invention is composed of the following steps: a step to establish that HD-2, a white natural chemical substance, is **As_4O_6** by analyzing its structure after manufacturing it through multistage heat treatment of natural nephrolith containing arsenic and reagent arsenic, etc.; a step to investigate an anti-cancer effect against various tumors by adding As_4O_6, a natural chemical substance of the present invention manufactured as stated above, to a tumor cell line culture medium originated from mouse and human bodies; a step to investigate whether an anti-cancer effect of As_4O_6, the natural anticancer active substance, is under the mechanism to kill tumor cells by apoptosis; a step to investigate toxicity after acute administration by observing clinical changes in rats after giving to female and male rats an acute oral administration of various amounts of As_4O_6, a naturally active anticancer substance; a step to investigate toxicity depending on subacute administration by observing clinical changes in female and male rats after orally administering to them, at a slow pace, the same amount of As_4O_6, which is a naturally active anticancer substance of the present invention; a step to investigate an effect to inhibit cancer metastasis **by measuring the number of tumor groups metastasized to the lungs** after giving mice an intravenous injection of a high-metastasis tumor cell line whose target tissue is the lungs and giving oral administration and intravenous injection of As_4O_6, which is a naturally active anticancer substance; a step to investigate the anti-cancer mechanism of As_4O_6 by measuring the tumor size and the number of blood vessels newly formed by tumors after giving mice a melanomatous intradermal injection and oral administration of As_4O_6, which is a naturally active anticancer substance of the present invention; a step to investigate an effect to inhibit cancerization by giving an oral administration of As_4O_6, which is a naturally active anticancer substance of the present invention, after causing cancer by injecting a carcinogen to mice and **measuring the repetition rate and size of tumors in the lungs and liver**; a step to

manufacture As_4O_6, which is a naturally active anticancer substance of the present invention, in a form of tablet, capsule, liquid, etc. suitable for oral administration after adding various medicinal herbs; and a step to investigate an effect to inhibit cancer by the composition of the present invention by giving patients with terminal uterine cancer, lung cancer, antral cancer, renal cancer, or bladder cancer an oral administration of manufactured medicine in the form of a pill and investigating changes in cancer cells by C-T and MRI scan.

[Embodiment 1 (Isolation and Refinement of HD-2) and Embodiment 2 (Determination of Structure of HD-2) are omitted]

[Embodiment 3: In Vitro Investigation of Anticancer Effect of HD-2 on tumor cell lines]

An anticancer effect of HD-2, which is a natural chemical substance of the present invention obtained from Embodiment 1, was investigated by **measuring** in vitro **the direct cell toxicity on tumor cells**. Here, cisplatin was used as the control group.

[Experimental Example 1: Investigation of anti-cancer effect of HD-2, a natural chemical substance of the present invention, on tumor cell lines originated from mouse and human]

The following cell lines were cultured in EMEM, DMEM, and RPMI-1640 media containing FBS of 7.5% in accordance with ATCC: Mouse-derived P388 *Leukemia; L1210 Leukemia; L5178Y Lymphoma; Colon26-M3.1 Carcinoma; Bl6-BL6 Melanoma and human-derived K562 Leukemia; Liver Carcinoma HEP-G2; **Hs578T breast cancer cells**; AN-3-CA Adenocarcinoma; DLD colon carcinoma; and HeLa carcinoma cell lines. In an investigation of cytotoxic effects of HD-2,, which is a natural chemical substance and its components on tumor cells, each tumor cell was taken from each well at a cell concentration of 1×10^4/100μL, and then HD-2, which is a natural chemical substance, and cisplatin were added to each well at various concentrations as the control group. Then, each plate was incubated for two days in an environment of 37°C and 5% CO_2. The cytotoxic effect on each cell line was represented by the sample concentration (ED_{50}*) that shows the 50% proliferation inhibitory effect compared with the growth of the tumor control group. The experiment results show that HD-2, which is a natural chemical substance, has a direct cytotoxic effect which is about 50±30 times higher than that of cisplatin.

*Leukemia: Osteomyelitis cell line

ED_{50}*: 50% effective dose, refers to a weight with which half of subjects show an effect

*murine: Mouse

[Experimental Example 2: Investigation of anti-cancer effect of HD-2 of the present invention on 3T3 fibroblastic cell lines]

In order to investigate more in detail the cytotoxic effect of each sample on tumor cell lines, the following were performed: culturing 3T3 fibroblast cell lines in a medium in the manner specified in Experimental Example 1; taking 3T3 fibroblast cell lines from each well at a cell concentration of 1×10^4/100μL; to add, to adding to each well HD-2 of the present invention and cisplatin at various concentrations as the control group; and investigating the cytotoxic effect depending on the passage of time (2, 4, 6, and 24 hours). Here, this investigation is performed by adding HD-2 and cisplatin. Additionally the cytotoxic effect depending on the passage of time is measured with the XTT method. As illustrated in Drawing 3, the cytotoxic effect of cisplatin was not observed until 24 hours had passed after a sample was administered. On the other hand, the cytotoxic effect of HD-2 was observed from 4 hours after the sample was administered. In other words, the ED50 values of HD-2 were 1.10μL/mL and 0.21μL/mL after 4 hours and 6 hours, from administration, respectively. This means that **HD-2 has an effect to inhibit the growth of cancer cells from the early stage of HD-2 administration**.

[Embodiment 4: Investigation of Mechanism for HD-2 to Kill Tumor Cells]

An experiment was conducted to confirm whether HD-2 of the present invention kills tumor cells by apoptosis. HL-60 cells were inoculated at a concentration of 2×10^4 cells/mL, and 24 hours later, a proper concentration of HD-2 was dissolved in a cell culture solution. Cisplatin and the culture solution were added to a positive control group and a negative control group, respectively. After being cultured for 24 hours, cells were collected by centrifugation and rinsed with PBS. Then, the cells were reacted for 24 hours at a temperature of 50°C in the following extraction buffer solutions: 500mM Tris-C1 (pH 9.0); 20mM EDTA; 10 mM NaCl; 1% SDS; and 500mg/mL proteinase K. After extracting the cell lysates with phenol, electrophoresis was performed in 1.5% agarose gel on the

total DNA obtained by ethane precipitation. As illustrated in Drawing 4, the experiment result shows the DNA fragmentation of about 180bp at a range of HD-2 concentration from 25μL/mL to 2.5μL/mL, which is a typical biochemical feature of apoptosis.

[Embodiment 7: Investigation of Effect of HD-2 on Cancer Metastasis]

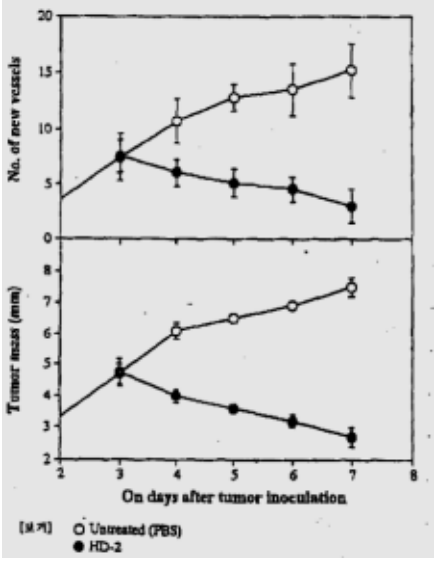
[Experimental Example 1: Investigation of Cancer Metastasis Inhibition Effect of HD-2 by Oral Administration]

The effect of HD-2 of the present invention on tumor metastasis was compared with that of cisplatin using the winter mouse experiment model on tumor cell lines. It was found, according to the result of Embodiment 5, that if a single dose (500mg/kg/day) of HD-2 is administered to rats, no side effects would ensue. Thus, using mice, it was investigated whether HD-2 less than this dose had an effect on the inhibition of tumor metastasis. According to the experimental results, an oral administration (10−0.1mg) of HD-2 of the present invention showed, compared to the control group, a valid effect of inhibition of tumor metastasis. Also, upon administration of 1mg, an activity was highest and the anticancer effect was about 86%. The result of an experiment in which the same dose of HD-2 was administered orally on the 7^{th} day when the tumor was fully settled in the target organ showed that the valid tumor metastasis inhibition effect was about 70% at its maximum. Thus, the effect of tumor treatment by oral administration was acknowledged.

[Experimental Example 2: Investigation of Cancer Metastasis Inhibition Effect of HD-2 by Intravenous Injection]

As in Experimental Example 1 above, an effect of HD-2 was investigated after giving an intravenous injection of HD-2 of the present invention with a dose less than 500mg/kg/day to mice in which high metastasis tumor cell lines were implanted and whose lungs are a target cell. Also, cisplatin was used as the control group. The result of the experiment shows a good anticancer activity. This means that HD-2 is substantially therapeutic even on terminal tumors.

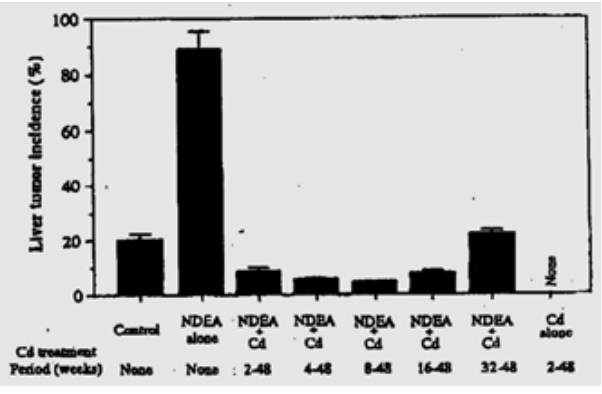
[Embodiment 8: Investigation of HD-2's In Vitro Anti-Tumor Mechanism]



<Drawing 5>

An experiment was conducted using mice as follows to investigate HD-2's in vivo anti-tumor mechanism. 4×10^5 BI6-BL6 melanoma were floated in 50mL of PBS and inoculated through intradermal injection to two spots on the backs of 6- or 7-week-old C57BL/6 mice. 1mg of HD-2 was orally administered at 3 days after a tumor was inoculated. The size of the tumor of melanoma inoculated on the backs of mice and **the number of blood vessels** formed from the tumor were **investigated** from day 1 to day 5 after sample administration. Here, the control group was treated with PBS. The result of the experiment showed, as illustrated in Drawing 5, **a tendency in which the number of new blood vessels involved in the proliferation or metastasis of the tumor decreased after HD-2 was administered**, and the size of solid cancer decreased meaningfully in proportion thereto. As a result, it can be known that **HD-2 inhibits the mechanism to invade or adhere to tumor tissues**, which are essentially involved in the neovascularization by the tumor.

[Embodiment 9: Investigation of HD-2's Oncogenesis Inhibition Effect]



<Drawing 6>

To investigate the oncogenesis inhibition effect of HD-2 of the present invention on the tumor generation by carcinogens, the following were performed: causing cancer by injecting to the abdominal cavity of B6C3F1 N-NDEA at a concentration of 90mg/kg as a carcinogen; orally administering HD-2 of 100 μg at weeks 2, 4, 8, 16, and 32; and administering the same amount of water to the control group. At week 42 after treating NDEA, mice were sacrificed, and the repetition rate and size of tumors formed in their lungs and livers were measured. The result of the experiment showed that a tumor was generated more than 90% by NDEA, but, where HD-2 was administered, a tumor was generated at a rate of 5~22% despite the differences in administration time. In addition, the administration of HD-2 completely inhibited spontaneous tumors, which accounted for about 20%. Also, Drawing 6 illustrates that HD-2 inhibited the generation of lung tumors induced by NDEA. As a result, an effect to inhibit tumor generation was not effective in the case of the liver, compared to that in the lungs. However, the administration of HD-2 from week 4 after treating NDEA showed an oncogenesis inhibition effect of about 30%. Even in this case, however, HD-2 completely inhibited the generation of spontaneous tumors, where HD-2 was orally administered at a proper concentration. However, as shown by the results of Drawing 7, the average number of lung tumors in mice to which HD-2 was administered was about 2. On the other hand, the average number of lung tumors in the control group was 7. Thus, a valid inhibition effect was acknowledged.

C. IPTAB Decision (Plaintiff's Exhibits 1, 4 through 7)

1) On September 18, 2017, an examiner of the KIPO notified the plaintiff to the effect that since the invention described in all claims in the subject invention is one which can be easily invented by a person having ordinary skill in the art (hereinafter a "skilled person") to which this invention belongs, its inventive step is denied, and that since the subject invention fails to meet the written description requirement of the specification, the subject invention may not receive a patent. The summary of written arguments related to a defect in an inventive step of claim 1 is as follows (Plaintiff's Exhibit 4):[4)]

단지 출원발명은 암 전이 억제용이라는 점에서 차이가 있으나, **인용발명1**에 '육산화사비소(As_4O_6)는 자궁암, 폐암, 상악동암, 신장암 및 방광암 말기환자에 치료 효과가 있다(실험예1 내지 5 참조)' 및 '동물실험에서도 암전이 억제효과를 나타냈었다(발명의 효과 참조)'고 나타나 있고, 항암 효과는 암의 전이 억제에 대한 효과를 포함하고 있는 것이어서. 통상의 기술자가 이로부터 육산화사비소(As_4O_6)를 포함하는 조성물을 암 전이 억제용으로 적의 선택하여 사용할 수 있는 정도이어서, 이에 특별한 기술적 의의가 있다고 볼 수 없으므로, 상기 발명은 인용발명1에 대해 별다른 구성의 곤란성이 없고, 효과에 있어서도 통상의 기술자가 예측할 수 없는 현저한 효과가 있다고 인정되지 않는바,

The subject invention is different in that it is for inhibiting cancer metastasis. However, **cited invention 1** specifies that "As_4O_6 has a therapeutic effect on terminal patients with uterine cancer, lung cancer, maxillary sinus cancer, renal cancer, and bladder cancer" (refer to Experimental Examples 1 through 5) and that "As_4O_6 showed an effect to inhibit cancer metastasis" (refer to Effect of Invention). Since an anticancer effect includes an effect to inhibit cancer metastasis, a skilled person can select and use a composition containing As_4O_6 to inhibit cancer metastasis. Thus, it may not be deemed that the subject invention has special technological significance. Therefore, the Claimed Invention is not difficult in terms of its structure compared to Cited Invention 1, and

4) Cited invention 1 is the same invention as the prior art.

it is not acknowledged that the subject invention has a significant effect that a skilled person cannot expect.

2) In this respect, on December 18, 2017, the plaintiff amended claims 1 and 4 and deleted claims 2 and 3. However, on February 22, 2018, an examiner of the KIPO issued a rejection on the grounds that an inventive step of the invention described in claims 1, 4, and 5 was denied, because the invention could be easily invented by a skilled person and the written description requirement of the specification was not met (Plaintiff's Exhibit 5, Defendant's Exhibit 1).

3) In this respect, on March 21, 2018, the plaintiff amended claim 1 as examined above and deleted claims 4 and 5, demanding that the rejection be re-examined. An examiner of the KIPO issued a rejection again (hereinafter the "final rejection") on the ground that a reason for rejection was not resolved notwithstanding the amendment (Plaintiff's Exhibits 6, 7 and Defendant's Exhibit 2).

4) On May 14, 2018, the plaintiff filed to the IPTAB an appeal against the final rejection. On August 31, 2018, after hearing this case under 2018Won2091, the IPTAB decided to dismiss the plaintiff's petition for trial (hereinafter the "IPTAB decision") by determining that the final rejection shall be upheld, deeming that an inventive step was denied on the grounds that "① The phrase "mediated by HER-2" in claim 1 of the subject invention is only a pharmacological mechanism to achieve a breast cancer metastasis inhibition effect of As_4O_6. The phrase cannot be viewed as an element. ② Moreover, it cannot be acknowledged, only with the specification of the subject invention and materials that the

plaintiff submitted, that As_4O_6 is excellent in inhibiting breast cancer cell metastasis, compared with other types of cancers as explained in prior art" (Plaintiff's Exhibit 1).

[Factual Basis] Undisputed facts, statements and images in Plaintiff's Exhibits 1, 4 through 7, Defendant's Exhibits 1, 2, and purport of the overall argument

2. Summary of Parties' Arguments

A. Plaintiff

An inventive step of claim 1 of the subject invention is not denied by prior art. However, the IPTAB decision is inconsistent with the above analysis and shall not be upheld.

1) In the description of "for inhibiting breast cancer metastasis mediated by HER-2" (hereinafter the "subject description") in claim 1 of the subject invention, the phrase "mediated by HER-2" modifies and limits breast cancer. Thus, the subject description shall be understood to mean "for inhibiting metastasis of specific breast cancer" and cannot be construed to describe the pharmacological mechanism of As_4O_6.

2) According to the specification of the subject invention, it can be known that As_4O_6 has an anticancer effect on breast cancer cells in which HER-2 is overexpressed. However, the description or implication to the effect that As_4O_6 has a significant anticancer effect on breast cancer cells in which HER-2 is overexpressed would be found in prior art. Thus, claim 1 of the subject invention would not be derived from prior art as a use invention of As_4O_6.

B. Defendant

Since claim 1 of the subject invention can be easily derived from prior art, its inventive step is denied. Thus, the IPTAB decision is consistent with the above analysis and shall be upheld.

1) In the subject description, the phrase “mediated by HER-2” modifies and limits the “metastasis.” Thus, it is construed to mean “As_4O_6 inhibits the metastasis medicated by HER-2 receptor, among metastasis elements of breast cancer”. After all, the phrase “mediated by HER-2”, which describes the pharmacological mechanism of As_4O_6, cannot be viewed as an element of claim 1 of the subject invention.

2) The use of As_4O_6 to inhibit breast cancer metastasis, which is the use of claim 1 of the subject invention, can be easily anticipated from an effect of As_4O_6 to inhibit the metastasis of other types of cancers, which is described in prior art. Further, the specification of the subject invention presents no experiment data, etc. that support the fact that As_4O_6 has a significant effect to selectively inhibit the metastasis of breast cancer, compared to other cancers, in which HER-2 is overexpressed. Since claim 1 of the subject invention can be easily derived from prior art by a skilled person, its inventive step is denied.

3. Discussion of this Court

As determined by the IPTAB decision, the issues in this case are as follows: ① whether the subject description “for inhibiting the metastasis of breast cancer mediated by HER-2” is to describe the pharmacological mechanism of As_4O_6 or the therapeutic use for

specific breast cancer; and ② whether an inventive step of claim 1 of the subject invention is denied by prior art. This court will examine these issues in order.

A. Relevant law

A medical use invention is composed of a specific substance and a medical use thereof. The pharmacological mechanism is an attribute indivisibly inherent in a specific substance and is merely an opportunity to derive the combination of the specific substance and medical use. Thus, the pharmacological mechanism described in the claims of the medical use invention is an element of the invention only within a limit to specify a medical use of a specific substance, and it shall not be viewed that the pharmacological mechanism itself is an element to limit the scope of claims (See Supreme Court Decision 2012Hu3664, decided May 16, 2014, Supreme Court Decision 2012Hu238 and 245, decided May 16, 2014).

On the other hand, claims describe the matters that an applicant wants protected as a patented invention. Thus, an invention subject to the determination of novelty and an inventive step shall be finalized by the matters described in the claims. However, since the technical meaning of the matters described in the claims could be understood only in consideration of the detailed description, drawings, etc. of the invention, such matters shall be construed objectively and reasonably after considering the detailed description, drawings, etc. of the invention based on the literal meaning from a general perspective and inquiring as to the technical meaning that such matters intend to express. However, even if the detailed description, drawings, etc. of inventions are taken into consideration, the claims shall not be construed to be limited or expanded by other description, such as the detailed description, drawings, etc. of inventions (See Supreme Court Decision 2006Hu3625, decided October 25, 2007, Supreme Court Decision 2011Hu3230, decided December 27, 2012).

B. Interpretation of the subject description

1) In the subject description, it is not clear whether the phrase "mediated by HER-2" modifies and limits breast cancers, means a specific type of breast cancers, such as "breast cancer mediated by HER-2," or refers to the pharmacological mechanism of an As_4O_6 composition by modifying and limiting the "metastasis prohibition." Thus, while referring to the literal meaning from a general perspective and the detailed description of the invention under the relevant law as examined above, this shall be construed in reference to the knowledge that is in common use in the art.

A) The HER-2 receptor is a term to refer to one type of Epidermal Growth Factor Receptor (EGFR). There are 4 receptors, such as HER-1, HER-2, HER-3, and HER-4, in EGFR (p. 3, Defendant's Exhibit 3), which are collectively referred to as the "EGFR Family". The EGFR receptor is activated, where a neurotransmitter,[5] such as the Epidermal Growth Factor (BGF), is combined with a domain other than an EGF cell. Thus, if the EGFR receptor is activated by being combined with a ligand, the receptor, which was a monomer, is united with another EGFR receptor and becomes a dimer. Here, the Receptor Tyrosine Kinase (RTK)[6] inherent in a receptor is activated, and the tyrosine is autophosphorylated. Thus, the following will ensue: mobilization of organics within cell; inducement of phosphorylation; generation of signals accelerating cell division; activation of other cells, etc. Thus, if there is a problem in these EGFR receptors, an abnormal signal that accelerates the cell division can be generated, and cancer cells which continue to be proliferated abnormally can also be generated. Various types of cancers, such as prostate cancer, breast cancer, stomach cancer,

5) See as the Ligand.

6) Receptor Tyrosine Kinase (RTK)

colorectal cancer, ovarian cancer, etc., are developed in relation to the overexpression of EGFR receptors (See to p. 3 of Defendant's Exhibit 3).

B) The specification of the subject invention presents drawings, etc. which include embodiments for various experiments and analysis results thereof. These are classified into the following and described accordingly: experimental examples (Embodiment 2-1 and Drawing 1) in which As_4O_6 is injected into 2 types of breast cancer cell lines (MCF-7 and MDA-MB-231), in which HER-2 is not expressed, and then an invasion inhibition effect, etc. are confirmed; and experimental examples (Embodiment 2-2 and Drawing 2) in which As_4O_6 is injected at various concentrations into breast cancer cell lines (SKBR3 cells), in which HER-2 is overexpressed, and then an invasion inhibition effect, etc. are confirmed.

Also, in the description of the Embodiments stated above, the breast cancer cell lines are referred to as the "EGFR-mediated cells (MCF-7 and MDA-MB-231)" and the "HER-2-mediated cells (SKBR3 cells)". Further, "mediated" is used as a term to modify cancer cell lines ([0029], [0035], [0041], [0042], [0044], [0045], [0046], [0047], [0049], [0050], [0051], [0054], [0055], [0058], [0059], [0061], [0068], [0071], [0072], [0073]). In other words, it seems that the terms "EGFR-mediated cells" and "HER-2-mediated cells" mean "EGFR receptor–mediated cancer cells" and "HER-2 receptor–mediated cancer cells", respectively.

The overexpression of HER-2 receptor is known as an outbreak or metastasis factor. Even if a degree of HER-2 overexpression is somewhat different depending on the type of cancers, it was investigated that the degree of HER-2 overexpression was 10.5% in breast cancers, which was higher than 2.7%, an average value for cancers as a whole (Plaintiff's Exhibit 12).

In light of the breakout or metastasis factors of breast cancer, the above descriptions in the specification of the subject invention relate to the experiments on breast cancer cells which occurred or metastasized by overexpression of HER-2 receptors or EGFR receptors. On the

other hand, the above experiments may be understood as experiments on a specific type of breast cancers, i.e., HER-2-mediated breast cancer cells or breast cancer cells occurring by another cause. In this case, the phrase "HER-2-mediated" in the subject description modifies the "breast cancer" and thus can be construed to mean a specific type of breast cancers, such as the "breast cancer which occurred or metastasized by overexpression of HER-2 receptors."

C) In the specification of the subject invention describes "problem to be solved" and the "effect of invention" and the "detailed description of the subject invention" as follows.

A. Human epidermal growth factor receptor-2 (HER-2) is part of the human epidermal growth factor receptors family and, like the epidermal growth factor receptor (EGFR, HER-1), which is another human epidermal growth factor receptor, has receptor tyrosine kinase (RTK) activity. The activity of Receptor Tyrosine Kinase (RTK) controls development, progress, proliferation, differentiation, and metastasis of cancers by regulating various signal transduction channels. In particular, previous studies reported that the EGFR is related to cancer metastasis (Sirkisoon S.R., et al., 2016; Sasaki T., et al., 2013). Accordingly, EGFR and HER-2 have become important targets in the development of cancer treatment.([0006])

Here, the prevent inventor confirmed, while researching the relevance of As_4O_6 and breast cancer metastasis, that As_4O_6 inhibits the invasion and migration of breast cancer cells, and that the inhibition is rendered by EGFR mediation activated by EGF and HER-2 mediation. The present invention could be completed by confirming that these cancer metastasis inhibition effects are better than As_4O_6. ([0010])

B. The present invention's composition for inhibiting cancer metastasis has, in particular, an effect to inhibit the cancer metastasis caused by phosphorylation of EGF and the cancer metastasis caused by phosphorylation of HER-2. The phosphorylation of EGFR and HER-2 could cause the cancer metastasis by inducing the invasion and migration of cancer cells. ([0020], [0021])

The present invention relates to the pharmaceutical composition for inhibiting cancer metastasis. It was confirmed that As_4O_6 inhibits the

> phosphorylation of EGFR and HER-2 in breast cancer cells and that As_4O_6 inhibits the cancer metastasis by inhibiting the invasion and migration of cancer cells. Also, it was confirmed that the cancer metastasis inhibition activity of As_4O_6 is better than that of As_2O_3. Through this, it is expected that the As_4O_6 of the present invention would be able to be used as a medicine that prevents or inhibits EGFR- and HER-2-mediated cancer metastasis. ([0027], [0028])

The descriptions stated above explain, according to the background of the subject invention and what an applicant or an inventor of the subject invention understands, the technical problem and effect thereof which the subject invention intends to solve (A and B are paragraph numbers not specified in the specification but provided for the convenience of explanation).

The main point of part A is that the "EGFR family and HER-2 receptor thereof are widely known as being related to the metastasis of cancers, such as breast cancer, etc., and have become a main target for the development of cancer treatment."

The main point of part B is that "As_4O_6 is highly effective in inhibiting the metastasis of breast cancer expressed by phosphorylation of EGFR family and HER-2 receptor. As_4O_6 inhibits the invasion and migration of cancer cells by inhibiting phosphorylation of EGFR family and HER-2 receptor." Also, the last part of B describes that "As_4O_6 is a medicine to inhibit EGFR family- and HER-2-mediated cancer metastasis". Here, the term "mediated" is used to modify the "cancer metastasis."

D) Technology regarding embodiment 6 of the "detailed description of the subject invention" is described as follows.

> Through this, it can be known that As_4O_6 has an effect on Akt in the lower signaling mechanism of HER-2 and EGFR and inhibits the expression of MMP-9 and ICAM-1 by inhibiting the phosphorylation of

> HER-2 and EGFR and influencing the upper signaling mechanism of HER-2 and EGFR. In other words, it can be known that As_4O_6 of the present invention inhibits cancer metastasis caused by HER-2 and EGFR mediation. ([0071])

It can be known from the description of embodiments that the term "mediated" is used in relation to the mechanism of cancer metastasis.

E) Thus, it can be known that the main technical idea of the subject invention is that "a breast cancer can be metastasized, as EGFR or HER-2 receptor is phosphorylated. As_4O_6 inhibits the metastasis of breast cancer progressed by the phosphorylation of EGFR or HER-2 receptor by inhibiting the phosphorylation of EGFR or HER-2 receptor."

In light of the above effect of EGFR family and HER-2 receptor and the technical idea of the subject invention, the phrase "HER-2 mediated" modifies and limits the "metastasis," and thus it would be natural to construe the subject description to "inhibit the metastasis by HER-2 phosphorylation of breast cancer" (the detailed description of the subject invention in the specification of the subject invention does not classify the metastasis inhibition by phosphorylation of EGFR receptor by As_4O_6 and the metastasis inhibition by phosphorylation of HER-2 receptor. Also, the initial claims also include both of them together (claim 2 related to the former and claim 3 related to the latter). In other words, the subject invention included the contents, at the time of the initial filing, that As_4O_6 inhibited the two types of phosphorylation. Then, as an examiner notified the grounds for rejection based on prior art, the claims were reduced and matters regarding the former were deleted. The plaintiff argues that the main technical idea of the subject invention relates to the matters regarding the latter).

F) Also, the interpretation stated above is not inconsistent with the following: the results of experiments on cancer cell lines on

which HER-2 was not expressed and on cancer cell lines on which HER-2 was expressed as examined in ③ above; or use examples of terms, such as "EGFR-mediated cells," "HER-2-mediated cells," etc.

In other words, terms such as "EGFR-mediated cells," "HER-2-mediated cells," etc. do not mean specific types of cancer cells, such as the "breast cancer cells generated by EGFR expression," "breast cancer cells generated by HER-2 expression," etc., but could be understood as the "metastasis by EGFR expression of cancer cells" or the "metastasis by HER-2 expression of cancer cells." In this case, the "EGFR-mediated cell" comes to mean the "cells to which cancer is metastasized in relation to EGFR," and the "HER-2-mediated cell" comes to mean the "cells to which cancer is metastasized in relation to HER-2." Also, the experiments stated above could be understood as experiments that inject As_4O_6 to these cells and confirm how much the metastasis is inhibited.

2) Thus, the term "mediated by HER-2" is construed to represent the metastasis element or metastasis process of breast cancer, but not to limit the type or characteristics of breast cancer, like the "breast cancer generated in relation to HER-2 receptor," as the plaintiff argues. Therefore, the plaintiff's argument, which is inconsistent with the above analysis, shall not be accepted.

C. Whether the subject description describes a pharmaceutical mechanism of As_4O_6

1) The term "pharmaceutical mechanism" or "action mechanism" of medicine refers to a biologically active action as to what enzyme or receptor the medicine combines with and what biochemical action the medicine generates in a clinical setting to represent the therapeutic effect of the medicine. Likewise,

the pharmaceutical mechanism is a concept that means an attribute inextricably inherent in a specific substance and is different from the diagnosis or prescription for disease or the achievement of a disease treatment effect. Also, according to the definition of Nature, which is an organization that publishes an academic journal, the term "mechanism of action" means what describes the "process to represent a pharmacological effect by the function of molecules, such as medicine, etc., and may indicate an effect on biological readout, such as cell growth or interaction or modulation of an object of direct biological molecules (e.g., protein or nucleic acid)."[7)]

2) If the subject description is construed as "for inhibiting the ongoing metastasis caused by the HER-2 phosphorylation of breast cancer" as examined above, it may be deemed to describe the therapeutical effect or use of As_4O_6, but it would be difficult to view that the subject description describes the pharmacological mechanism which is a biologically active action of As_4O_6 in the body (if the subject description described this otherwise as the "composition for inhibiting breast cancer metastasis of As_4O_6 by inhibiting HER-2 phosphorylation", it may be viewed to describe the pharmacological mechanism of As_4O_6).

Even if the subject description describes the pharmacological mechanism of As_4O_6 as the defendant argues, the pharmacological mechanism means an element of an invention within a limit to specify a medical use of a specific substance (however, the description itself cannot be viewed as an element to limit the claims). After all, it would be reasonable to understand that claim 1 of the subject invention, which

7) Source: https://www.nature.com/subjects/mechanism-of-action

includes the subject description, is an invention composed of 2 elements, namely "pharmaceutical composition of As_4O_6" and "for inhibiting the metastasis of breast cancer."

D. Whether an inventive step of claim 1 of the subject invention is denied

Here, we will examine whether an inventive step of claim 1 of the subject invention is denied by prior art, where claim 1 of the subject invention is understood as a use invention composed of 2 elements, "pharmaceutical composition of As_4O_6" and "medical use to inhibit metastasis in progress by HER-2 phosphorylation of breast cancer."

1) Relevant law

An inventive step of a medical use invention is denied if a skilled person could easily anticipate, from prior art, a specific substance's pharmaceutical effect on a specific disease (See Supreme Court Decision 2016Hu502, decided January 31, 2019).

2) Element-by-element comparison

The table below illustrates the comparison by element in claim 1 of the subject invention and prior art.

Element	Claim 1 of the Subject Invention (Defendant's Exhibit 2)	Prior Art (Embodiment 7, Claim 1, Plaintiff's Exhibit 8)
1	Pharmaceutical composition comprising As_4O_6	Composition of As_4O_6
2	For inhibiting the metastasis of breast cancer progressed by HER-2 phosphorylation	Inhibition of cancer metastasis (skin cancer (BI6-BL6), colon cancer (26-M3.1))

3) Analysis of commonalities and differences

A) Element 1

Both inventions are common in that they are compositions which contain As_4O_6.

B) Element 2

Claim 1 of the subject invention specifies, in element 2, the type and metastasis process of cancer as inhibiting the "metastasis of breast cancer progressed by HER-2 phosphorylation." On the other hand, the prior art only discloses an effect to inhibit the metastasis of skin cancer (BI6-BL6) and colon cancer (26-M3.1). The latter is different from the former in that the latter does not include breast cancer or limit the metastasis process (hereinafter the "**differences**").

4) Analysis on differences

In light of the following facts and circumstances that can be acknowledged or known from the following evidence, it would be reasonable to view that a skilled person would easily overcome the differences by referring to the prior art and common sense in the technology widely known or used in the field of molecular cell biology which studies drugs and signal transduction.

A) In the prior art, mice are injected with BI6-BL6 (skin cancer cell line) and 26-M3.1 (colon cancer cell line) and then receive oral administration or intravenous administration of As_4O_6 1 week from the injection. The prior art describes that the results of measurement of the number of tumor groups metastasized to the lungs, which were a target tissue, showed that As_4O_6 had a high tumor metastasis–inhibiting effect of about 86%. Also, the prior art describes that the results of oral administration of As_4O_6 on day 7, when a tumor completely settled in a target tissue, showed a valid tumor metastasis–inhibiting effect of about 70% (See Table 8 and Embodiment 7 in Plaintiff's Exhibit 8).

Also, table 5 in embodiment 3 (Experimental Example 1) of the

prior art discloses that HD-2 (As_4O_6) has a cytotoxic effect on various cancer cell lines, including Hs578T, which is a "breast cancer cell line derived from humans". Also, embodiment 7 discloses that HD-2 inhibits the tumor metastasis from other tumor cells, such as skin cancer, colon cancer, etc. It could not be clearly known from these descriptions under what principle or action the anti-cancer effect is generated. Since the prior art describes that As_4O_6 has an "effect to inhibit the metastasis" of skin cancer, colon cancer, etc. and a cytotoxic effect on "breast cancer cell lines," a skilled person could infer, without difficulty, that As_4O_6 has an "effect to inhibit the metastasis" of "breast cancer."

B) The overexpression of HER-2 receptor is known as an outbreak or metastasis factor of breast cancer. Even if a degree of HER-2 overexpression is somewhat different depending on the type of cancers, it was as shown above that the degree of HER-2 overexpression was 10.5% in breast cancers, which was higher than 2.7%, an average value for cancers as a whole.

C) In embodiment 4 of the prior art, an experiment to investigate the tumor cell apoptosis of HD-2 is disclosed. In particular, embodiment 4 of the prior art discloses the process and result of an experiment on HL-60 cell line (leukemia) as to whether HD-2 (As_4O_6) could cause apoptosis and stated that HD-2 induced the apoptosis on the cell lines, as the DNA fragmentation of 180 bp was observed.

The apoptosis may occur due to the inactivation of RTK, which is a receptor in cells. The fact that the inactivation of EGFR family, which includes HER-2 receptor, could induce the apoptosis through RTK signal transduction channels was already publicly known and commonly used in the technical field to which the subject invention belongs (See Defendant's Exhibit 3). It could be known that research on the activation (expression) or inactivation of HER-2 receptor was already conducted in the technical field of anticancer medicine. This is also supported by the description in the specification of the subject

invention to the effect that “in case of breast cancer, the expression of hormone receptors and the overexpression of HER-2 genes are utilized from its diagnosis and treatment without exception” (Paragraph [0005] in Plaintiff’s Exhibit 3).

Thus, a skillled person could block the RTK signal transduction channel, which is the most important channel through which $As4O_6$ could cause the apoptosis of breast cancer cells. Accordingly, a skilled person could sufficiently perceive that As_4O_6 would be able to have a valid effect on the metastasis of breast cancer by EGFR family or HER-2 receptor, which activates the RTK signal transduction channel.

D) The plaintiff argues that since the subject invention found that As_4O_6 would have a high metastasis-inhibiting effect only on the breast cancer, claim 1 of the subject invention has a significant effect compared to prior art, and its inventive step as a use invention shall not be denied. Thus, this court would examine whether As_4O_6 has a selectively significant effect on the breast cancer in terms of metastasis inhibition.

(1) In order to admit the difference in effect, as the plaintiff argues, the following matters shall be described or materials that can support the following matters shall be submitted: what kinds of differences As_4O_6 has in terms of its effect to inhibit the metastasis of breast cancer and other types of cancers; and what kinds of differences As_4O_6 has in terms of the inhibition of breast cancer metastasis by HER-2 receptor and by other receptors. However, the specification of the subject invention fails to describe these matters and submit materials that support them.

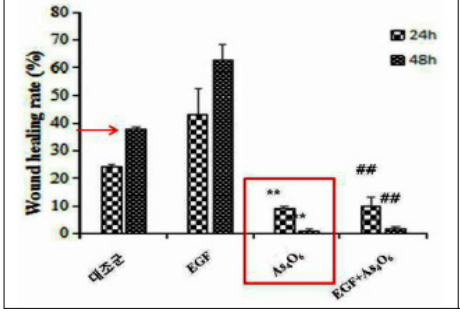
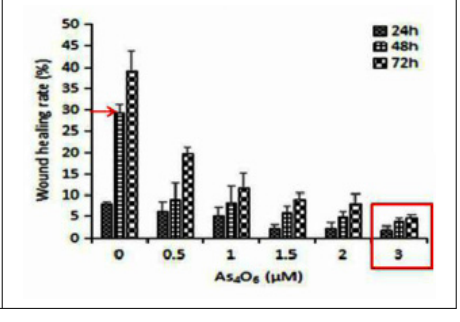
However, as examined above, the specification of the subject invention only confirmed the invasion-inhibiting effect, etc. by injecting As_4O_6 into 2 types of breast cancer cell lines (MCF-7 and MDA-MB-231[8]) induced by EGFR in which HER-2 receptor is not

8) MDA-MB-231 cell line is a cell line in which EGFR is expressed, while MCF-7 cell line is a cell line in which EGFR is not expressed.

expressed (Embodiment 2-1 and Drawing 1) or described on experimental examples that confirmed the invasion-inhibiting effect, etc. at different concentrations of As_4O_6 on cell lines (SKBR3 cell) in which HER-2 receptor is overexpressed (Embodiment 2-2 and Drawing 2). According to the descriptions stated above, only the following could be known: As_4O_6 has a high invasion-inhibiting effect on EGFR-mediated breast cancer cells and HER-2-mediated breast cancer cells.

Thus, the following cannot be acknowledged with only the descriptions of these experimental results, as the Plaintiff argues: under the subject invention, "As_4O_6 has a selectively high inhibiting effect on the breast cancer compared with other types of cancers and on the breast cancer metastasis in relation to HER-2."

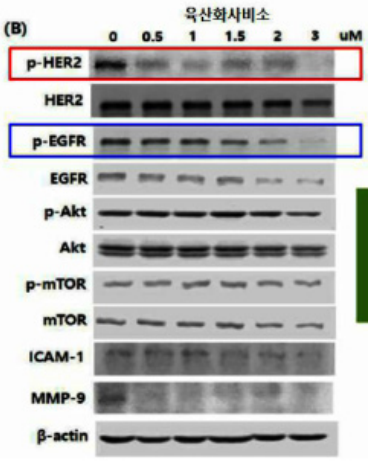
(2) According to the comparison of the invasion-inhibiting effect of As_4O_6 on EGFR-mediated breast cancer cells (MDA-MB-231), EGFR-negative breast cancer cells (MCF-7), which are described in embodiment 2-1 of the subject invention, and on HER-2-mediated breast cancer cells (SKBR-3), described in embodiment 2-2, the following could be deemed as illustrated below:

MCF-7 (HER-2 is not expressed)	SKBR-3 (HER-2 is expressed)
	

As_4O_6 has a substantially lower cancer cell metastasis-inhibiting effect on HER-2-mediated breast cancer cells (SKBR-3) than on EGFR-negative breast cancer cells (MCF-7); and As_4O_6 has a high degree of a metastasis-inhibiting effect on the HER-2-mediated metastasis of breast cancer (The graph on the left shows the results of

As_4O_6 administration of 3 μM on MCF-7 cell lines. In 48 hours, about 40% of cells had migrated in the control group, but almost 0% of cells to which 3 μM As_4O_6 was administered had migrated. On the other hand, the graph on the right shows the results of As_4O_6 administration of 3 μM on SKBR-3 cell lines. In 48 hours, about 30% of cells had migrated in the control group, and about 5% of cells to which 3 μM As_4O_6 was administered were inhibited. Thus, it can be known that a degree of cell migration inhibition is higher in MCF-7 cell lines in which HER-2 is not expressed).

(3) On the other hand, the plaintiff argues the following in embodiment 5-2 described in the specification of the subject invention: A degree of HER-2 phosphorylation inhibition by As_4O_6 is about 6 times higher than a degree of EGFR phosphorylation inhibition (excluding HER-2 receptor among the receptor family); and the Western bolt experimental results in drawing 6(B) support the same (The gist of the plaintiff's argument is that where 0.5 μM As_4O_6 is administered, p-HER 2 band[9] almost disappears and there is almost no change in the band thickness despite the rising As_4O_6 concentration. On the other hand, since it was confirmed that p-EGFR band almost disappears only where 0.5 μM As_4O_6 is administered, the concentration of As_4O_6 which inhibits the phosphorylation differs by up to 6-fold (= 3/0.5)).



However, the experimental results shown above only show whether

9) If a band is thick, this means that the relevant substance exists in abundance. The prefix "p-" in p-HER2 and p-EGFR indicates phosphorylation. Thus, if a thickness of p-HER2 band is decreased, this means that an amount of phosphorylated HER-2 receptors decreased and the phosphorylation of HER-2 was ultimately inhibited.

As_4O_6 inhibits the expression of each signal transduction substance or lower signal transduction substance for SKBR-3 cells in which HER-2 is overexpressed, but do not confirm whether the expression of a signal transduction substance or lower signal transduction substance is inhibited even in EGFR-mediated breast cancer cell lines. Also, as shown in the results illustrated above, when 1 μM As_4O_6 was administered to SKBR-3 cells, the thickness of p-HER2 band became substantially thinner than that of p-EGFR band. Thus, it can be known that the phosphorylation of HER-2 was inhibited more strictly. However, it seems that the fact that the phosphorylation of HER-2 receptor would be inhibited more than a degree of EGFR phosphorylation could be anticipated without the experimental results shown above, because the HER-2 receptor is overexpressed in SKBR-3 cells and a degree of expression of EGFR receptor (excluding HER-2 receptor from EGFR receptor family) is lower than that of HER-2 receptor. Also, it could be known that where 1.5 μM and 2 μM As_4O_6 is administered, p-HER2 band would be thicker than a case of adminstration of 1 μM. Thus, it is difficult to view, as the Plaintiff argues, that the phosphorylation-inhibiting effect on HER-2 would reach its highest degree when 0.5 μM As_4O_6 is administered. Also, it is difficult to deem, as the Plaintiff argues, that a phosphorylation -inhibiting effect of As_4O_6 on HER-2 receptor would be 6 times higher than that on EGFR receptor.

(4) Even if the subject invention disclosed, as the plaintiff argues, the fact that a phosphorylation-inhibiting effect of As_4O_6 on HER-2 receptor would be 6 times higher than that on EGFR receptor, the fact that As_4O_6 includes the inactivation of EGFR receptor family or HER-2 receptor, which is part of this family and thus inhibits the breast cancer metastasis, was already well known to a skilled person at the time of filing of the subject invention, or a skilled person could derive such fact without difficulty. It does not seem that a special idea is required or technical difficulty exists where a skilled person confirms how much As_4O_6 inhibits the phosphorylation of each

receptor. Also, the fact that As_4O_6 shows differences of up to 6-fold in terms of a phosphorylation inhibition effect by receptor shall be viewed as verifiable by ordinary and repeated experimentation. Thus, it is difficult to view, based only on the facts stated above, that claim 1 of the subject invention has an inventive step as a use invention.

5) Determination of an inventive step when construing as limiting types of breast cancer (presumptive determination)

The plaintiff argues the following: that claim 1 of the subject invention shall be construed to limit to specific breast cancers, i.e., “breast cancer caused by HER-2 mediation”; and that an inventive step of claim 1 of the subject invention as a use invention for As_4O_6 is to inhibit the metastasis of specific breast cancer.

Even if the use of claim 1 of the subject invention is construed to be limited to that for “specific breast cancer”, as the plaintiff argues, an inventive step of claim 1 of the subject invention shall be denied by prior art in light of the following facts: at the time of the filing of the subject invention, it was widely known to a skilled person that As_4O_6 induces the inactivation of EGFR receptor family or HER-2 receptor, which is part of this family, and thus inhibits the breast cancer metastasis, or a skilled person could derive such fact without difficulty; the subject invention does not contain data to check whether As_4O_6 has a different degree of metastasis-inhibiting effects on breast cancer cells and other types of cancer cells or data allowing comparison of the metastasis-inhibiting effects of As_4O_6 on breast cancer cell lines in which HER-2 receptors are overexpressed and breast cancer cell lines in which HER-2 receptors are not overexpressed (the plaintiff himself/herself argues, in the specification of the subject invention, not to compare the experimental results on cell lines in which HER-2 is overexpressed and the experimental results on cell lines in which EGFR is not overexpressed); embodiment 5-2 described in the specification of the subject invention and drawing

6(B), on which the plaintiff bases his/her argument, only display the distribution of a neurotransmitter in the breast cancer cell lines in which HER-2 receptor is overexpressed. Thus, the differences in a metastasis-inhibiting effect by As_4O_6 cannot be known on the breast cancer cell lines in which HER-2 receptor is overexpressed and the breast cancer cell lines in which HER-2 receptor is not overexpressed; and it does not seem that the experimental results in drawing 6(B) are different in figures from what the plaintiff argues.

E. Summary of discussion

To summarize, even if the IPTAB decision that the subject description describes the pharmacological mechanism of As_4O_6 is inconsistent with the interpretation of the claims, an inventive step of claim 1 of the subject invention is denied by prior art, notwithstanding whether the subject description is viewed as a description of a pharmacological mechanism or not. Thus, it cannot be said that the IPTAB decision, which is consistent with the above analysis, shall not be upheld as the plaintiff argues. Also, as examined above, the plaintiff, who is also an applicant, received from an examiner during the application phase the grounds for rejection to the effect that an inventive step of the subject invention was denied by prior art and was given an opportunity to present his/her opinions. Since the main points of the grounds for rejection were substantially identical to what the defendant argues in this court regarding a defect in an inventive step of the subject invention, there is no reason that the defendant's argument and evidence thereon could not be a ground for determination as to whether the IPTAB erred in its decision.

5. Conclusion

Therefore, the plaintiff's claim to revoke the IPTAB decision is without merit and therefore dismissed. It is so ordered.

Presiding Judge Kyung Ran KIM
Judge Byeong Guk KIM
Judge Hee Young JEONG

PATENT COURT OF KOREA
FIFTH DIVISION
DECISION

Case No.	2019Heo1599 Invalidation (Patent)
Plaintiff	A
Defendant	Wookyung Engineering & Construction
Date of Closing Argument	April 24, 2019
Decision Date	June 14, 2019

ORDER

1. The plaintiff's claim is dismissed.

2. The costs arising from this litigation shall be borne by the plaintiff.

PLAINTIFF'S DEMAND

The IPTAB Decision 2017Dang3293 dated December 7, 2018 shall be revoked.

OPINION

1. Assumed Facts

A. IPTAB Decision

1) On October 18, 2017, the defendant filed to the IPTAB against

the plaintiff, who was the patentee of the patented invention at Issue (hereinafter the "subject invention") described in Paragraph B. shown below, a trial on patent invalidation (2017Dang3293) for pre-correction claims 1, 3, and 4 of the subject invention, arguing that "since pre-correction claims 1, 3, and 4 of the subject invention can be easily invented with the compared inventions[1] by a person having ordinary skill in the art (hereinafter a "skilled person"), an inventive step thereof is denied."

2) On August 13, 2018, the plaintiff filed in the administrative trial for invalidation a petition for correction (hereinafter the "petition for correction") to correct the claims of the subject invention as described in Paragraph B. 4) shown below.

3) On December 7, 2018, the IPTAB acknowledged that the petition for correction shall be upheld and rendered its decision to grant the defendant's petition for trial on the grounds that "an inventive step of post-correction claims 1 and 2 of the subject invention is denied by the compared inventions."

B. Subject Invention (Plaintiff's Exhibits 1 and 3)

1) Title of invention: Girder using upper and lower members and bridge construction method using girder

2) Filing date of application/ date of registration/ registration number: December 20, 2012/ September 23, 2013/ No. 1312300

3) Patentee: Plaintiff

1) These are identical to the prior art.

4) Claims

a) Claims at the time of registration

[Claim 1] A girder comprising: an upper member (110) made of standardized I-shaped steel; and a lower member (130) made of standardized T-shaped steel welded to a bottom of a flange under the upper member (110), wherein the lower member (130) moves with the upper member (110) as one unit, wherein a strength of the lower member (130) is greater than that of the upper member (110), wherein an upper part and a lower part of a neutral axis in the girder are formed such that residual stress which is compressive stress is introduced in advance, wherein the residual stress is applied to a non-composite and incurvated girder in which the upper member and the lower member are tack-welded such that the upper member and the lower member are integrated and a non-composite girder is formed into a composite girder, and wherein the residual stress is introduced by an elastic restoring force by removing the compressive stress and releasing a girder in a composite state.

[Claim 3] The girder comprising the upper member and the lower member according to Claim 1, wherein the tack-welded non-composite girder is installed such that both ends of the girder are supported to a lower support as the girder is flipped over, wherein both of the ends are fixed and supported to the lower support with anchorage, wherein the upper member and the lower member are completely welded and formed in a state in which a vertical load is applied upward to the upper member of the girder fixed to the lower support, and wherein the residual stress is introduced by the elastic restoring force of the upper member and the lower member formed by removing the vertical load.

[Claim 4] A method of manufacturing and constructing a bridge, the method comprising: manufacturing a girder according to Claim 1; placing the girder in a branch part; connecting the girder placed in

the branch part with the standardized I-shaped steel between the girders; installing a perforated plate (40) on an upper surface of the girder and the standardized I-shaped steel; and using the upper member and the lower member.

[Claim 2] (Deleted)

b) Post-correction claims (The underlined part is what is corrected by the petition for correction. Hereinafter, the subject invention corrected by the petition for correction shall be referred to as the "corrected invention," and claim 1 shall be referred to as "claim 1 of the corrected invention"; hereinafter, the same shall apply to the remaining claims.)

[Claim 1] A girder comprising: an upper member (110) made of standardized I-shaped steel; and a lower member (130) made of standardized T-shaped steel welded to a bottom of a flange under the upper member (110), wherein the lower member (130) moves with the upper member (110) as one unit (hereinafter "**element 1**"), wherein a strength of the lower member (130) is greater than that of the upper member (110), wherein an upper part and a lower part of a neutral axis in the girder are formed such that residual stress which is compressive stress is introduced in advance (hereinafter "**element 2**"), wherein the residual stress is applied to a non-composite and incurvated girder in which the upper member and the lower member are tack-welded such that the upper member and the lower member are integrated and a non-composite girder is formed into a composite girder, and wherein the residual stress is introduced by an elastic restoring force by removing the compressive stress and releasing a girder in a composite state (hereinafter "**element 3**"), wherein the tack-welded non-composite girder is installed such that both ends of the girder are supported to a lower support (210) as the girder is flipped over, wherein both of the ends of the girder are fixed and supported to the lower support with anchorage (220), wherein the upper member (110) and the lower member (120) are

completely welded and formed in a state in which a vertical load is applied upward to the upper member of the girder fixed to the lower support (210), and wherein the residual stress is introduced by the elastic restoring force of the upper member and the lower member formed by removing the vertical load (hereinafter "**element 4**"), wherein the lower support (210) is formed by separating and installing 2 I-shaped steel supports (211) transversely, wherein an upper support frame (232) is formed into one unit inside of the I-shaped support (211) of the said lower support (210) and between both sides of a vertical support frame (231) such that an end support frame (230) is formed for an upper part of the upper support frame (232) to touch an upper surface of an upper flange of the 2 I-shaped supports (211), wherein an end bottom surface of a girder (100) is supported at a center of the upper support frame (232), wherein the end support frame (230) is fastened and fixed to the lower support (210), wherein a center support frame (242) is formed as one unit between vertical support frames (241) on both sides and a load support frame (240) is set such that a hydraulic jack (250) is installed on a top surface of the center support frame (242), wherein an end of a hydraulic cylinder touches, through the operation of the hydraulic jack (250), a bottom surface of an upper flanger in a fastened and installed girder and is extended upwards such that a load (P1) is loaded on the girder (100), and wherein the end support frame (230) and load support frame (240) are installed such that their positions are adjusted according to a position of an end and the load (P1) which are different depending on the girders (100) inside the I-shaped support (211) of the lower support (210) (hereinafter "**element 5**").

[Claim 2] A method of manufacturing and constructing a bridge, the method comprising: manufacturing a girder according to claim 1; placing the girder in a branch part; connecting the girder placed in the branch part with the standardized I-shaped steel between the girders; installing a perforated plate (40) on the upper surface of the

girder and the standardized I-shaped steel; and using the upper member and the lower member.

[Claims 3, 4] (Deleted by the petition for correction)

5) Summary of invention

A) Technical Field and Problem to be Solved

The present invention relates to a girder using upper and lower members, and a bridge manufacturing and construction method using the same. More specifically, the present invention relates to girders using upper and lower members which are advantageous for stiffness reinforcement and manufacturing by introducing residual stress (compressive stress) in advance into the girders, and methods for manufacturing and construction of bridges using the same. ([0001])

The present invention provides a steel plate girder such that even if the standardized I-shaped steel product is not provided in a desired cross-sectional size, the steel plate girder could be manufactured in the desired cross-sectional size by combining the standardized I-shaped steel products to minimize the possible cross-sectional height. Thus, the problem that the present invention intends to solve is to economically provide steel girders using residual stress, a method of manufacturing the same, and a method of manufacturing and constructing bridges using the same. ([0018])

B) Solution to Problem

In order to address the problem, the present invention ([0019])

First, the upper member and lower member of the steel plate girder are manufactured by vertically fixing them together as one unit, each of them using the standardized I- and T-shaped steel without change. ([0019])

In other words, if the required cross-sectional height is determined and it is impossible to use the standardized I-shaped steel, the built-up girders are manufactured. In this case, the manufacturing costs will increase. Thus, the present invention prepares, as the upper member, the standardized I-shaped steel that can be secured and welds a cut web of the standardized T-shaped steel (by cutting a web of the standardized I-shaped steel) to the bottom center of a lower flange in the upper

member. Ultimately, the girder is manufactured using the standardized I-shaped steel and the standardized T-shaped steel. Here, the standardized T-shaped steel is made of steel having greater strength than the standardized I-shaped steel to minimize the cross-sectional heights of the standardized T-shaped steel and the entire girder. ([0021], [0022])

Second, since the girder manufactured using the standardized I-shaped steel and the standardized T-shaped steel has different strengths and is a bending member installed at the branch part, the upper part and lower part of a neutral axis are subject to tensile stress and compressive stress, respectively. In this case, a tendon may be used to effectively resist the tensile stress and shorten the cross-sectional height. However, the present invention can further minimize the cross-sectional height of the whole girder by enabling effective resistance of the tensile stress generated in the upper member by applied load by causing the compressive stress to remain in the upper member as the residual stress when integrating the upper member and the lower member. ([0023], [0024])

Third, when manufacturing the girder of the present invention, the upper member and the lower member are combined to have the compressive stress remain in the upper member through tack welding (non-composite), and if the compressive stress is generated in the upper member against vertical loads, then the upper member and the lower member are completely welded (composite) together. Here, the compressive stress is introduced into the upper member by the elastic restoring force of the upper member and the lower member by releasing the applied vertical load. ([0025], [0026])

Fourth, when manufacturing the girder of the present invention, the manufacturing device is equipped such that an operator can weld downwards when he/she performs tack welding and complete welding. If this manufacturing device is used, a load can be delivered stably when applying and releasing the vertical load when manufacturing the girder, and since welding is also easy, it is possible to provide a girder capable of introducing residual stress precisely. ([0027])

C) Details to Practice Invention

[Girder using the upper and lower members of the present invention (100)] ([0043])

The girder (100) of the present invention integrates through welding, as illustrated in Drawing 2a, the lower member (120), which is standardized

T-shaped steel, to the bottom of the upper member (110), which is also standardized I-shaped steel (refer to the middle picture). ([0049])

Here, the girder manufacturing costs can be reduced because the girder is not manufactured by a built-up method. However, since there is no difference in the cross-sectional height, the present invention uses the lower member (130) made of structural steel whose strength is higher than that of the upper member (10). ([0055])

Accordingly, the lower member (130) with increased strength can reduce the cross-sectional height in securing bending strength for the same load action. As a result, as shown in Drawing 2a, the girder (100) manufactured by integrating the upper member (110) and the lower member (130) having the strength greater than that of the upper member can secure the same bending strength with a smaller cross-sectional height compared to a girder using the standardized I-shaped steel and the standardized T-shaped steel whose cross-sectional heights are the same as those in the conventional structural steel plate girders. ([0056] through [0058])

In the case of the allowable stress of the girder (100) manufactured by integrating the upper member (110) and the lower member (130) having a greater strength (high strength) than the upper member, the allowable stress of the lower member is greater than that of the upper member, as illustrated in Drawing 2b. However, the tensile stress generated in the upper member would exceed the allowable stress. Thus, horizontal stiffeners, etc. should be installed to respond to excessive tensile stress. To solve this problem, the present invention introduces the compressive stress (residual stress) to the upper and lower parts of a neutral axis of the girder in the course of integrating the upper member and the lower member. Thus, at the time of (common) load action, the tensile and compressive stresses caused by the applied stress are applied to the girder such that they would not exceed the final allowable stress. ([0059], [0060])

[Girder manufacturing method of the present invention] ([0066])

First, as illustrated in Drawing 3a, the upper member (110) and the lower member (130) are tack-welded vertically to each other to be bound together. ([0069])

The tack welding means that the upper member (110) and the lower member (130) are integrated and move together, but that the upper

member (110) and the lower member (130) are bound to each other. As illustrated in Drawing 3a, the tack-welding state can be maintained by welding both ends and the center parts of the lower member (130) and the lower flange thereof.[2] ([0072])

Where the load (P1) is applied to the non-composite girder (100), the upper member (110) and the lower member (130) do not move as one unit. Thus, the load (P1) is applied to each of the upper member (110) and the lower member, and the compressive stress and the tensile stress are generated in the upper member (110) and the lower member, respectively. ([0075])

Next, as illustrated in Drawing 3b, the upper and lower members tack-welded to each other are completely welded to each other to be structurally integrated with each other. Thus, since the upper member (110) and the lower member (130) are integrated with each other, there would be no change in stress in the girder. ([0078])

Therefore, if the load (P1) is removed, that is, if the load (P1) is released, the tensile stress and the compressive stress are introduced by the elastic restoring force to the upper part of the girder neutral axis and the lower part of the girder neutral axis, respectively. As a result, the compressive stress will remain in the upper part and the lower part of the girder (100). Thus, if the final load is released, the compressive stress and the residual stress are introduced to the upper part and the lower part of the girder (100), respectively. When a common load is applied, the compressive stress offsets the tensile stress generated in the upper part by the common load, but the compressive stress generated in the lower part would increase. Thus, the lower member uses the high-strength structural steel with high allowable stress. ([0079], [0080])

[Girder manufacturing apparatus of the present invention] ([0082])

Thus, an apparatus for efficiently introducing such residual stress into the girder is illustrated in Drawings 4a through 4c. In the girder manufacturing apparatus (200) disclosed in Drawing 4a, the non-composite girder (100) of the present invention is installed upside down on the lower support (210) (the lower member (130) is positioned upwards). ([0085], [0086])

---

2) It seems that this is a typo of the “upper member.”

The girder manufacturing apparatus (200) is configured to include the lower support (210), anchorage (220), end support frame (230), load support frame (240), and hydraulic jack (250). ([0087])

The hydraulic jack (250) is installed on the load support frame (240) of the lower support (210) such that the load (P1) is applied to the girder (100) upward in a state where the girder (100) is fastened and settled to the end support frame (230) installed between the lower supports (210) by the anchorage (220). ([0088])

At this time, the anchorage (220) is installed at the position of both ends (a) of the girder (100), as illustrated in Drawing 3a. Also, the loading support frame (240) and the hydraulic jack (250) are installed at a position to which the load (P1) is applied, as illustrated in Drawing 3b. ([0089])

First, the lower support (210) is arranged so that the 2 I-shaped steel supports (211) on the floor are spaced apart from each other in the lateral direction, as illustrated in Drawing 4b. Also, it is installed such that both ends are supported by the support member on the floor. ([0090])

In other words, since the position of the end may be different for each girder (100) and the loading position of the load (P1) may change, the fastening holes (213) are formed to be spaced apart in the upper flange, web, and the lower flange of the 2 I-shaped steel supports (211) to adjust the position of the end support frame (240) and the load support frame (240) according to the positions of the ends and loads. ([0092])

At this time, as illustrated in Drawing 4b, the end support frame (230) is formed to be fastened with bolts and nuts on the inner surfaces of the upper flange, the web, and the lower flange between 2 I-shaped steel supports (211). Both lateral vertical support frames (231) are fastened with bolts and nuts on the inner surfaces of the upper flange and the web of the I-shaped steel. The upper support frames (232) are formed as a unit between the upper parts of both lateral vertical support frames (231). Thus, the bottom side of the upper part of the upper support frame (232) is set to touch the upper surface of the upper flange of the 2 I-shaped steel supports (211). Thus, the end bottom surface of the girder (100) is supported with bolts and nuts to the center of the upper support frame (232) that comprises the end support frame (230) manufactured between the 2 I-shaped steel supports (211) with a C-shaped steel plate and I-shaped steel. ([0093] through [0095])

Next, the loading support frame (240) is for bearing the load (P1) on the girder (100) fastened and settled to the end support frame (230) installed in the lower support (210). The load support frame is fastened and fixed to the lower support (210) with the end support frame (230), and the hydraulic jack (250) is installed on its upper surface. ([0102])

The center support frame (242) is integrally formed between both of the lateral vertical support frames (241), and the hydraulic jack (250) is installed on the upper surface of the center support frame (242). The hydraulic jack (250) is operated so that the hydraulic cylinder touches the bottom surface of the upper flanger whose ends are fastened and fixed and extends upwards so that the load (P1) is loaded on the girder (100). ([0105], [0106])

[Girder (100) manufacturing method using the upper and lower members with the girder manufacturing apparatus (200) of the present invention] ([0110])

First, as illustrated in Drawing 5a, the lower support (210) in which the hydraulic jacks (250) are installed in the end support frame (230) and the load support frame (240) is installed to be supported on a floor. The end support frame (230) is installed so that both ends of the non-composite girder (100) are fastened and settled with its upside down. Accordingly, the girder (100) is fastened and settled on the lower support (210) using anchorage. ([0112] through [0114])

Here, the hydraulic jack (250) is set to be positioned below the bottom surface of the upper member of the fastened girder. Accordingly, where the hydraulic jack (250) is operated as illustrated in Drawing 5b, since both ends of the girder (100) are fastened and settled on the lower support (210) with the anchorage (220), the vertical load (P1) is introduced such that it is bent upwards in a tack-weld state. In this state, the upper member and the lower member constituting the girder are completely welded to each other to be integrated, and the composite girder (100) is manufactured. ([0118] through [0120])

Next, when a hydraulic cylinder of the hydraulic jack is restored to its initial state (release), the composite girder (100) bent upward becomes a girder in which residual stress is introduced by an elastic restoring force. Accordingly, the girder of the present invention is completed by separating the composite girder (100) from the lower support (210) by releasing the fastening nuts of the anchorage (220) and introducing the

residual stress. ([0122], [0123])

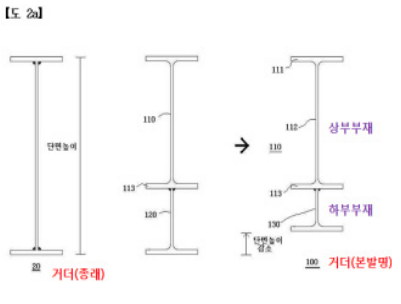
[Bridge construction method using the girder (100) of the present invention] ([0124])

The composite girder (100) into which the residual stress is introduced is separated from the girder manufacturing apparatus (200) and installed, with its upside down, on the upper part of each branch point (section C-C) of a pre-constructed bridge. ([0126])

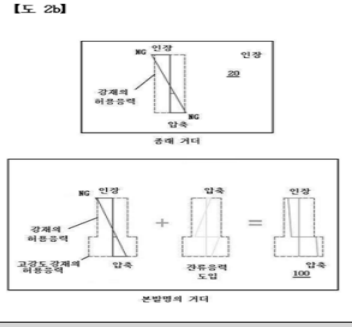
Next, the standardized I-shaped steel girder (100, cross section A-A) is connected between the upper members of the present invention, which were installed in advance, with bolts and nuts, and the final girders are continuously installed in the longitudinal direction. By installing the perforated plate (40) on the upper surface of the girder, the final bridge can be completed. ([0127], [0128])

라 Drawings

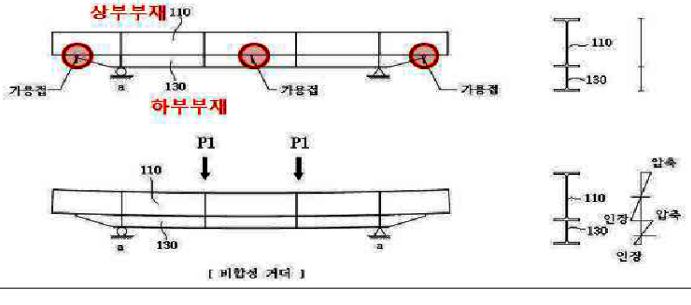
[Drawing 2a] Girder manufacturing drawing using the upper and lower members of the present invention



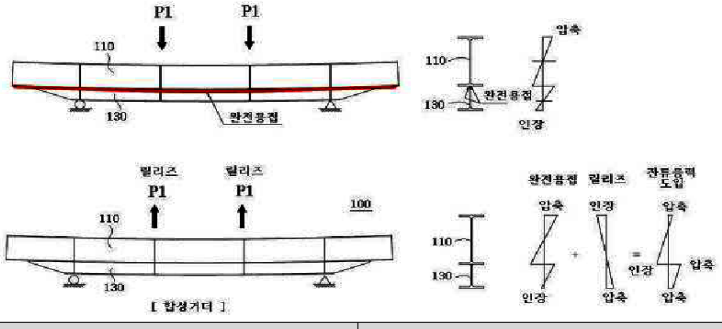
[Drawing 2b] Girder conceptual drawing using upper and lower members of the present invention



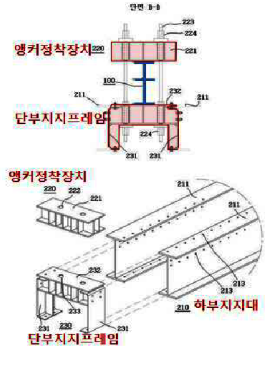
[Drawing 3a] Front view and sectional view of the girder manufacturing apparatus of the present invention



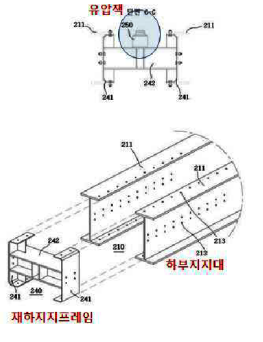
[Drawing 3b] Front view and cross-sectional view of girder manufacturing apparatus of the present invention



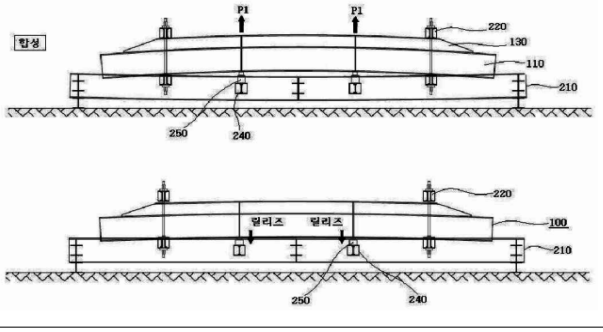
[Drawing 4b] Conceptual drawing of the manufacturing of girders of the present invention



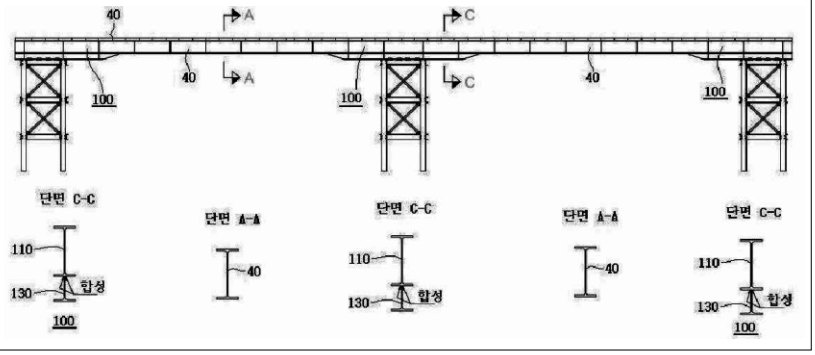
[Drawing 4c] Conceptual drawing of the manufacturing of girders of the present invention



[Drawing 5b] Girder manufacturing flow chart of the present invention



[Drawing 6] Front view of bridge construction using girder with the upper and lower members of the present invention and cross-sectional view of girder between branch parts in bridge



거더 (종래)	Girder (Conventional)
거더 (본 발명)	Girder (The Present Invention)
상부 부재	Upper Member
하부 부재	Lower Member
단면 높이 감소	Decrease in Cross-Sectional Height
인장	Tensile
강재의 허용응력	Allowable Stress of Structural Steel
압축	Compression
강재의 허용응력	Allowable Stress of Structural Steel
고강도 강재의 허용응력	Allowable Stress of High-Strength Structural Steel
잔류응력 도입	Introduction of Residual Stress
압축	Compression
종래 거더	Conventional Girder
본 발명의 거더	Girder of the Present Invention
앵커정착장치	Anchorage
단부지지프레임	End Support Frame
하부지지대	Lower Support
유압잭	Hydraulic Jack
재하지지프레임	Load Support Frame

합성	Composite
릴리즈	Release
단면	Cross Section
완전용접	Complete Welding
인장	Tensile
합성거더	Composite Girder
잔류응력 도입	Introduction of Residual Stress
완전용접	Complete Welding

C. Prior Art (Plaintiff's Exhibit 4)

The prior art related to the "Temporary Bridge Using Prestressed Compound Double Girders in which Prestress is Introduced to Double Girders Manufactured by Connecting H-Beams Vertically and Method for Installing the Temporary Bridge" published in the Registered Patent Publication No. 10-0449231 was publicly announced on September 18, 2004, and the main content and drawings thereof are as follows.

A) Technical Field

The present invention relates to a temporary bridge installed by assembling and connecting a support apparatus installed on an upper part of a temporary vent with prestressed compound double girders manufactured by introducing prestress to double girders which connect upper and lower flanges of an H-beam with different hardness. Also, the present invention relates to a method for installing a temporary bridge as follows: mounting the double girders to which the upper and lower flanges of the H-beam with different hardness are connected with tack-welding or temporary bolting and then manufacturing the prestressed compound double girders to which the prestress is introduced with a hydraulic jack; installing the support apparatus to install the prestressed compound double girders on the temporary vent of the temporary bridge; installing the prestressed compound double girders on the temporary vent such that double girders to which the prestress is not introduced are installed on the temporary vent at both ends of the temporary bridge;

installing the prestressed compound double girders to which the prestress is introduced at a center of the temporary vent; and installing the upper H-beam between the double girders and the prestressed compound double girders and then linking to the connecting plate at a web of each H-beam with bolts. (lines 35-43 on p. 2)

B) Technical Problem

The present invention relates to installation, on a temporary bridge, of a compound double girder in which prestress is introduced to H-beams vertically connected to double girders. The present invention also develops a method of installing a temporary bridge using a pragmatic prestressed compound girder which can effectively respond to beam hardness increase, deflection, vibration, etc. and provide a method of installing a temporary bridge economically and pragmatically by enabling easy manufacture and use of a support apparatus at a construction site, which can decrease lower stress and negative reaction with temperature-dependent shrinking and swelling along a longitudinal direction of the temporary bridge. (lines 10-15 on p. 3)

C) Constitution and Practice of Invention

The present invention relates to a temporary bridge installed by connecting a support apparatus installed on an upper part of a temporary vent in the temporary bridge with prestressed compound double girders manufactured by introducing prestress to double girders which connect, by tack-welding or temporary bolting, upper and lower flanges of an H-beam with different hardness. The present invention features the temporary bridge (10) installed in the following manners: mounting, on a workbench (60), the double girders (20) to which the upper and lower flanges (23, 24) of the upper and lower H-beams (21, 22) with different hardness are connected and then manufacturing the prestressed compound double girders (30) to which the prestress is introduced with a hydraulic jack (62); installing the support apparatus (40) to install the prestressed compound double girders (30) on the temporary vent (11) of the temporary bridge (10); installing the prestressed compound double girders (30) on the temporary vent (11) such that double girders to which the prestress is not introduced (20) are installed on the temporary vent at both ends of the temporary bridge (10); installing the prestressed compound double girders (30) to which the prestress is introduced at the center of the temporary vent (11); and installing the upper H-beam (21)

between the double girders (20) and the prestressed compound double girders (30) and then linking to a connecting plate (51) at a web of each H-beam with bolts (49-2). (lines 17–26 on p. 3)

The upper H-beam (21) is SM400 and its allowable stress (fa) is 1,400 kgf/cm^2, while the lower H-beam (22) is SM490 and its allowable stress (fa) is 1,900 kgf/cm^2. (lines 27–28 on p. 3)

Drawing 1 illustrates the temporary bridge installed using the prestressed compound double girders of the present invention. The temporary bridge (10) is installed as follows: installing, on the temporary vent (11) of the temporary bridge (10), the upper H-beam (21) on the upper part of the double girders (20) in which the upper and lower flanges (23, 24) of the upper and lower H-beams (21, 22) with different hardness and the prestressed compound double girders (30) in which the prestress is introduced using the hydraulic jack (62); installing the support apparatus (40) on the temporary vent (11) of the temporary bridge (10); installing, on the end temporary vent at both of the ends of the temporary bridge (10), the double girders to which the prestress is not introduced (20); installing the prestressed compound double girders (30) to which the prestress is introduced at the center of the temporary vent; and installing the upper H-beam (21) between the double girders (20) and the prestressed compound double girders (30), which means a span in the temporary bridge (10), and then linking to the connecting plate (51) at the web of each H-beam with bolts (49-2). (lines 30–37 on p. 3)

Drawings 2(a), (b), (c), and (d) show the procedure for manufacturing the prestressed compound double girders of the present invention. Drawing 2(a) illustrates the formation of the double girders (20) by vertically tack-welding or temporarily bolting the lower flange (24) of the upper H-beam (21) made of rolled structural steel (soft steel, SM400) and the upper flange (23) of the lower H-beam (22) made of high-strength rolled steel (high-strength steel, SM490). At this time, as illustrated in Drawing 1, the extension (25) shall be formed such that both of the side ends of the lower H-beam (22) would be extended to a certain length. The purpose of the extension (25) is to hold the upper H-beam (21) and bolt and nut connection using the connecting plate (51), when the double girders (20) installed on the temporary vent (11), the prestressed compound double girders (30), and the upper H-beam (21) are connected together in the span. (lines 38–43 on p. 3)

Drawing 2(b) illustrates the introduction of the prestress to the double girders (20) by placing the double girders (20) on a workbench (60), as illustrated in Drawing 3, and applying the prestress load (P) with the hydraulic jack at a distance of 1/4 L from both of the ends of the upper H-beam (21) to the center. In this case, a compression force and a tensile force are generated in the upper flange (23) of the upper H-beam (21) and the lower flange (24) of the lower H-beam (22), respectively. (lines 44-47 on p. 3)

Drawing 2(c) illustrates the manufacturing of completely integrated prestressed compound double girders (30) by connecting, with bolts and nuts, or completely welding a part in which the lower flange (24) of the upper H-beam (21) and the upper flange (23) of the lower H-beam (22) are vertically tack-welded or temporarily bolted, while the prestress load (P) is applied to introduce the prestress to the double girders (20). (lines 48-50 on p. 3)

Drawing 2(d) illustrates the removal of applied prestress load (P). (line 51 on p. 3)

Drawings 3 and 4 show the workbench (60) installed to introduce the prestress to the double girders (20) of the present invention. The workbench is installed by connecting, with bolts and nuts, 5 stringers (64) at an interval of 1/4 L on 2 crossbeams (63) installed on the ground, installing the double girders (20) thereon such that the upper H-beams (21) face each other, and then installing the hydraulic jack (62) therebetween. In addition, a reaction force support (61) is connected, with bolts and nuts, to 2 stringers (64) installed at an end of both sides of the workbench (60) such that each stringer is close to the double girders (20). Thus, the reaction force support (61) and the double girders (20) are installed to be stuck together for them to act as a point when the prestress load (P) is applied by the hydraulic jack (62). The reaction force support (61) is installed over 3 stringers (64) at the center at which the possibility of buckling is high. A lateral buckling preventing board (65) is connected, with bolts and nuts, to the top of the reaction force support (61) to prevent the occurrence of lateral buckling on the double girders (20) when the prestress load (P) is introduced by the hydraulic jack (62). 3 spaces (61) are placed at a certain interval between the reaction force support (61) and the double girders (20). A space (66) is formed for the double girders (20) to bend to both sides and to enable

the prestress to be introduced to the double girders (20) when the prestress load (P) is applied by the hydraulic jacks (62) installed at a distance of 1/4 L of both sides of the double girders (20). The reaction force support installed over 3 stringers at the center acts as a support to install a guide and the lateral buckling preventing board. Thus, the reaction force support is different from what acts as a point of the reaction force supports installed at both ends. (lines 4-18 on p. 4)

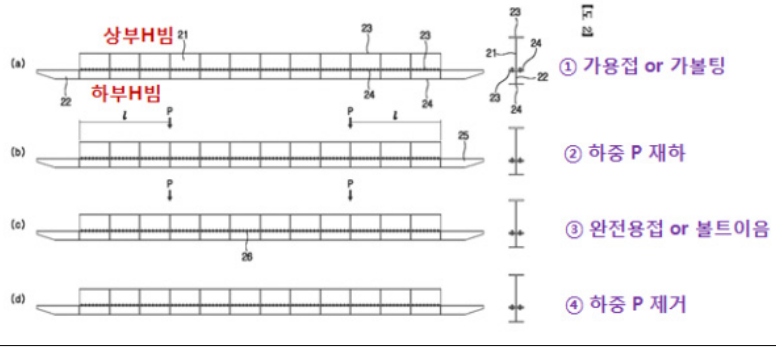
D) Effect of Invention

It is possible to satisfy the usability through the increase in stress and cross section of compound girder by connecting 2 H-beams vertically and installing a temporary bridge using the prestressed compound double girder into which the prestress is introduced. Also, it is possible to manufacture compound girders used in a bridge within a short period of time and maximize the economic feasibility and constructability by working on the ground and placing directly on the temporary vent (line 53-55 on p. 4).

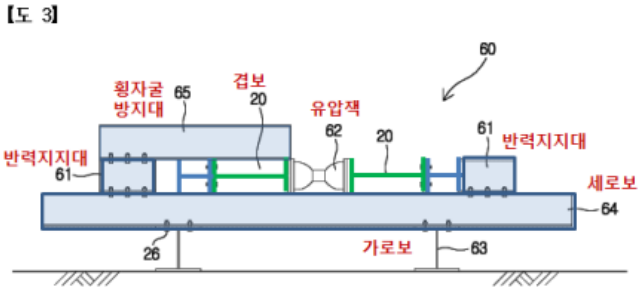
E) Main Drawings

[Drawing 1] Temporary Bridge Installed Using Prestress Compound Double Girders of the Present Invention

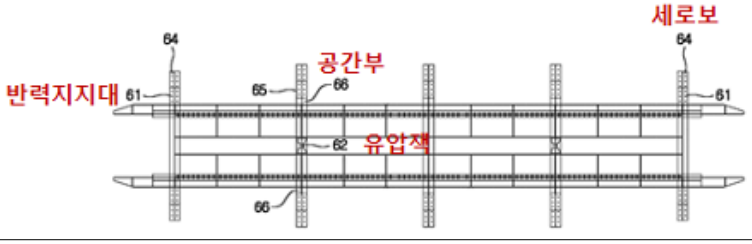
[Drawings 2a, b, c, and d] Flowchart of Manufacturing of Prestressed Compound Double Girders of the Present Invention



[Drawing 3] Drawing that Illustrates Workbench Installed to Introduce Prestress to Double Girders of the Present Invention



[Drawing 4] Plane View that Illustrates the Installation of Double Girders on Workbench Illustrated in Drawing 3



겹보	Double Girders
상부 H빔	Upper H-Beam
프리스트레스트 합성겹보	Prestressed Compound Double Girders
도 1	Drawing 1
하부 H빔	Lower H-Beam
가용성 or 가볼팅	Usability or Temporary Bolting
하중 P 재하	Load P Application
완전용접 or 볼트이음	Complete Welding or Bolt Connection
하중 P 제거	Load P Removal
도 2	Drawing 2
도 3	Drawing 3
반력지지대	Reaction Force Support
횡좌굴 방지대	Lateral Buckling Preventing Board
유압잭	Hydraulic Jack
세로보	Stringer

가로보	Crossbeam
도 4	Drawing 4
공간부	Space

[Factual Basis] Statements in Plaintiff's Exhibits 1 through 4, and the purport of the overall argument

2. Summary of Parties' Arguments and Questions Presented

A. Plaintiff's Arguments

1) The compound girder comprising the standardized I-shaped steel and the standardized T-shaped steel in claim 1 of the corrected invention is not shown in the prior art and, compared to the compound girder comprising the standardized H-shaped steel and the standardized H-shaped steel in the prior art, can not only increase the cross-sectional secondary moment that resists the bending, but it can also save the amount of structural steel.

2) Claim 1 of the corrected invention can form a compound girder in which a good quality of residual stress is introduced and whose quality is uniformly controlled and which can be completely welded. On the other hand, where a compound girder is manufactured by complete welding under the prior art, its welding operability would not be good, and thus the residual stress with good quality would not be introduced.

3) Since claim 1 of the corrected invention and claim 2 of the corrected invention, which is an invention of a method for manufacturing and construction of a bridge using a girder under claim 1 of the corrected invention, cannot be easily invented with the prior art by a skilled person, an inventive

step thereof is not denied. Thus, the IPTAB decision, which is inconsistent with the above analysis, shall not be upheld.

B. Defendant's Arguments

1) The T-shaped steel, which is the lower member of the girder in element 1 of claim 1 of the corrected invention, and the lower H-beam in the prior art are standardized products widely known and used in the field. When changing the lower H-beam in the prior art to T-shaped steel, it is not required to add any special element, but it would be sufficient simply to apply T-shaped steel instead of the lower H-beam. Thus, it would be easy to a skilled person to derive claim 1 of the corrected invention by changing the lower H-beam of the prior art to T-shaped steel.

2) Elements 2 and 3 of claim 1 of the corrected invention are identical to the corresponding elements in the prior art in terms of their constitution and effects. Elements 4 and 5 relate to a method of introducing residual stress to a girder and have no special effect on the structure or nature of the girder itself in claim 1 of the corrected invention, which is an invention of a product whose manufacturing method is described. Further, the prior art also disclose the constitution of a compound girder to which residual stress is introduced, and it is merely well-known and commonly used art to install a girder upside down and apply a load upwards. Even if the lower part is welded upward in the course of welding the upper part H-beam and the lower part H-beam of the prior art, it may not be said that the residual stress could be introduced precisely, as the plaintiff argues.

3) Also, claim 2 of the corrected invention is an invention of a

method of manufacturing and constructing a bridge using the girder of claim 1 of the corrected invention, and the prior art discloses a constitution corresponding to a girder of claim 1 of the corrected invention to manufacture prestressed compound double girders and place the same at the center, connect an H-beam between the girders, and install a perforated plate on the girders and the top of the H-beam. Thus, a skilled person could easily choose to install the prestressed compound double girders up to both ends, if required.

4) Since claim 1 of the corrected invention and claim 2 of the corrected invention could be easily invented from the prior art and the well-known and commonly used art by a skilled person, an inventive step thereof is denied. Thus, The IPTAB decision, which is consistent with the above analysis, shall not be upheld.

C. Questions Presented

The defendant did not argue regarding the part in which the IPTAB viewed the corrected invention as what shall be upheld and admitted the same in the IPTAB decision. Further, there is no other ground to deem that the IPTAB decision shall not be upheld. Hereinafter, this court will examine whether claims 1 and 2 of the corrected invention, which are the issue of this case, have an inventive step or not.

3. Discussion of whether the IPTAB Erred

A. Inventive Step of Claim 1 of the Corrected Invention

1) Relevant law

In determining an inventive step of an invention, the following shall

be identified at the least based on the data on record: the scope and contents of prior art; difference between the prior art and an invention subject to determination of an inventive step; evidence on the technological level of a skilled person; etc. Based on the foregoing and in light of the technological level at the time of filing of the patent application, it shall be examined whether a skilled person would have been able to overcome the difference between the prior art and the invention subject to the determination of an inventive step and easily create the invention from the prior art. In this case, it shall not be determined whether a skilled person would have been able to easily create the invention in hindsight assuming that a skilled person already knows the technology disclosed in the specification of the invention (See Supreme Court Decision 2014Hu2184, decided November 25, 2016).

On the other hand, Article 2(iii) of the Patent Act classifies inventions into “invention of a product,” “invention of a process,” and “invention of a process of manufacturing a product.” In the case of an invention whose claims describe a product as a whole but include the description of a process of manufacturing the product (hereinafter the “product-by-process claim”), the subject matter is not its process of manufacturing but the product itself to be obtained finally, notwithstanding the fact that the process of manufacturing is also described. Thus, the invention falls within the “invention of a product.” Since the claims for an invention of a product shall be described in a manner to specify the constitution of the product, a process of manufacturing described in the claims for the invention of a product is only meaningful as a means of specifying structure, properties, etc. of the product which is the final product. Thus, in determining the requirements for patent registration of an invention of a product whose process of manufacturing is described, its technical constitution shall be understood not by being limited to the process of manufacturing itself but by including products with structure, properties, etc. specified by the description of the process of

manufacturing, all other descriptions in the claims, etc. Then, its novelty, an inventive step, etc. shall be examined in comparison to the prior art publicly known at the time of filing of the patent application (See Supreme Court En Banc Decision 2011Hu927, decided January 22, 2015).

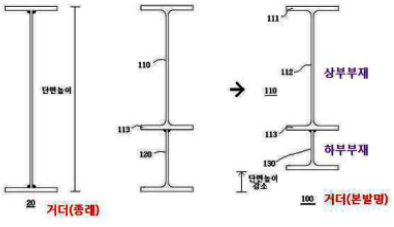
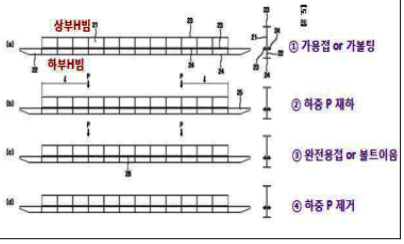
2) Comparison of composition between the prior art and claim 1 of the corrected invention

The following table illustrates the comparison of each corresponding element in the prior art and claim 1 of the corrected invention.

Element	Claim 1 of Corrected Invention	Prior Art (Plaintiff's Exhibit 4)
1	A girder comprising: an upper member (110) made of standardized I-shaped steel; and a lower member (130) made of standardized T-shaped steel welded to a bottom of a flange under the upper member (110), wherein the lower member (130) moves with the upper member (110) as one unit	- Completely integrated prestressed compound double girders (30) are manufactured by completely welding or connecting, with bolts and nuts (26), the lower flange (24) of the upper H-beam (21) and the upper flange (23) of the lower H-beam (22) vertically. (refer to lines 48-50 on p. 3, Drawings 2a through 2d) - Double girders (20) are formed by vertically tack-welding or temporarily bolting the lower flange (24) of the upper H-beam (21) made of rolled structural steel (soft steel, SM400) and the upper flange (23) of the lower H-beam (22) made of high-strength rolled steel (high-strength steel, SM490). (lines 38-40 on p. 3)
2	wherein a strength of the lower member (130) is greater than that of the upper member (110), wherein an upper part and a lower part of a neutral axis in the girder are formed such that residual stress	- Compound double girders (20) are manufactured by mounting, on a workbench (60), the double girders (20) to which the upper and lower flanges (23, 24) of the upper and lower H-beams (21, 22) with

Element	Claim 1 of Corrected Invention	Prior Art (Plaintiff's Exhibit 4)
	which is compressive stress is introduced in advance	different hardness are connected and then manufacturing the prestressed compound double girders (30) to which the prestress is introduced with a hydraulic jack (62). (lines 19–21 on p. 3) - The upper H-beam (21) is SM400 and its allowable stress (fa) is 1,400 kgf/cm^2, while the lower H-beam (22) is SM490 and its allowable stress (fa) is 1,900 kgf/cm^2. (lines 27–28 on p. 3)
3	wherein the residual stress is applied to a non-composite and incurvated girder in which the upper member and the lower member are tack-welded such that the upper member and the lower member are integrated and a non-composite girder is formed into a composite girder, and wherein the residual stress is introduced by an elastic restoring force by removing the compressive stress and releasing a girder in a composite state	Completely integrated prestressed compound double girders (30) are manufactured by connecting, with bolts and nuts, or completely welding a part in which the lower flange (24) of the upper H-beam (21) and the upper flange (23) of the lower H-beam (22) are vertically tack-welded or temporarily bolted, while the prestress load (P) is applied to introduce the prestress to the double girders (20) and then by removing the applied prestress load (P). (lines 39–51 on p. 3, Drawings 2a through 2d)
4	wherein the tack-welded non-composite girder is installed such that both ends of the girder are supported to a lower support (210) as the girder is flipped over, wherein both of the ends of the girder are fixed and supported to the lower support with anchorage (220), wherein the upper member (110) and the lower member (120) are completely welded and formed in a state in which a vertical load	In a state of tack-welding, installing non-compound double girders on the stringer (64) of the workbench (60) so that H-beams (21) face each other, adjusting both ends with the reaction force support (61) so that they come close together, welding and integrating the upper H-beam and the lower H-beam in a state where a load is applied to the double girders (the upper H-beam) and introducing the residual stress

Element	Claim 1 of Corrected Invention	Prior Art (Plaintiff's Exhibit 4)
	is applied upward to the upper member of the girder fixed to the lower support (210), and wherein the residual stress is introduced by the elastic restoring force of the upper member and the lower member formed by removing the vertical load	to compound double girders (30) by removing the load. (lines 5−10 on p. 4, Drawings 3 and 4)
5	wherein the lower support (210) is formed by separating and installing 2 I-shaped steel supports (211) transversely, wherein an upper support frame (232) is formed into one unit inside of the I-shaped supports (211) of the lower support (210) and between both sides of a vertical support frame (231) such that an end support frame (230) is formed for an upper part of the upper support frame (232) to touch an upper surface of an upper flange of the 2 I-shaped supports (211), wherein an end bottom surface of a girder (100) is supported at a center of the upper support frame (232), wherein the end support frame (230) is fastened and fixed to the lower support (210), wherein a center support frame (242) is formed as one unit between vertical support frames (241) on both sides and a load support frame (240) is set such that a hydraulic jack (250) is installed on a top surface of the center support frame (242), wherein an end of a hydraulic cylinder touches, through operation of the hydraulic jack (250), a bottom surface of an upper flanger in a	- The workbench is installed by connecting, with bolts and nuts, 5 stringers (64) at an interval of 1/4 L on 2 crossbeams (63) installed on the ground, installing the double girders (20) thereon such that the upper H-beams (21) face each other, and then installing the hydraulic jack (62) therebetween. In addition, the reaction force support (61) is connected, with bolts and nuts, to 2 stringers (64) installed at an end of both sides of the workbench (60) such that each stringer is close to the double girders (20). (lines 5−9 on p. 4) - The reaction force support (61) is installed over 3 stringers (64) at the center at which the possibility of buckling is high. The lateral buckling preventing board (65) is connected, with bolts and nuts, to the top of the reaction force support (61) to prevent the occurrence of lateral buckling on the double girders (20) when the prestress load (P) is introduced by the hydraulic jack (62). 3 spaces (61) are placed at a certain interval between the reaction force support (61) and the double girders (20).

Element	Claim 1 of Corrected Invention	Prior Art (Plaintiff's Exhibit 4)
	fastened and installed girder and is extended upwards such that a load (P1) is loaded on the girder (100), and wherein the end support frame (230) and load support frame (240) are installed such that their positions are adjusted according to the position of an end and the load (P1) which are different depending on the girder (100) inside the I-shaped supports (211) of the lower support (210)	The space (66) is formed for the double girder (20) to bend to both sides and to enable the prestress to be introduced to the double girders (20) when the prestress load (P) is applied by the hydraulic jacks (62) installed at a distance of 1/4 L of both sides of the double girders (20). The reaction force support installed over 3 stringers at the center acts as a support to install a guide and the lateral buckling preventing board. Thus, the reaction force support is different from what acts as a point of the reaction force supports installed at both ends. (lines 10-18 on p. 4) - Since the spans of a temporary bridge are various, a length of the compound girder will differ depending on the length of the span. Thus, compound girders with various lengths can be placed and used on the workbench by perforating in advance a number of bolt holes on the stringer. (lines 20-22 on p. 4)
Representative drawing	【Drawing 2a】 	

3) Commonalities and differences

a) Element 1

Element 1 and the corresponding element of the prior art are common in that they are girders (double girders)[3] in which standardized beams are stacked and then combined by welding, etc. such that they move as a unit.

However, the girder of element 1 uses I-shaped steel as the upper member and T-shaped steel as the lower member. On the other hand, the double girders in the prior art use H-shaped steel for the upper and lower members.

Even if the upper members in both inventions are different in that they are made of I-shaped steel and H-shaped steel, respectively, I-shaped steel and H-shaped steel are both representative standardized steel and are common in their fundamental structure[4] in that they are composed of 2 flanges and 1 web. Also, the specification of the corrected invention (Plaintiff's Exhibit 3) describes that the girder is a layer girder in which the upper member and the lower member are separated, but "as the upper structure of the temporary bridge, H is the upper member (11) made of a rolled shape including an I-shaped beam" ([0015]). Thus, it would be reasonable to deem that the issue of whether I-shaped steel or H-shaped steel would be used as the upper member of a girder would fall within a matter that a skilled person could properly select, if required (even the plaintiff does not argue this point).

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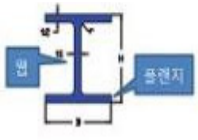
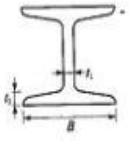
3) What is inside the parentheses means an element in the prior art which corresponds to the element of the corrected invention. Hereinafter, the same shall apply in comparing the prior art with the corrected invention.

4) (H-shaped steel) (I-shaped steel)





Ultimately, in element 1, the lower member connected to the standardized upper member is T-shaped steel. On the other hand, in the prior art, the lower member connected to the standardized upper member is H-shaped steel (hereinafter, the “differences”).

b) Element 2

Element 2 and the corresponding element in the prior art are not different in that they use the lower member whose strength is higher than that of the upper member, and that the residual stress (prestress) is introduced into a girder (double girder) in a compound state.

c) Element 3

Element 3 and the corresponding element in the prior art are identical in that a girder is formed in a compound state by uniting the upper member and the lower member in a state where a load is applied to a tack-welded girder (double girder) such that the girder (double girder) is curved and then the residual stress is introduced by removing the load.

d) Elements 4, 5

(1) Elements 4 and 5 and the corresponding elements in the prior art are common in that both ends of the tack-welded noncompound girder (double girder) are fastened to the lower support (stringer of workbench) using anchorage (reaction force support), a load is applied using the hydraulic jack installed on the lower part of the upper member, the upper member and the lower member are completely welded, and the residual stress (prestress) is introduced by an elastic restoring force of the upper member and the lower member by removing the load.

(2) Elements 4 and 5 install a tack-welded noncompound girder with its upside down such that both of its ends are fastened to the lower support and apply the vertical load upwards to the upper member of the girder. On the other hand, the prior art installs the double girders to lie on their side over the stringer of the workbench

and applies a load from a horizontal direction. Also, Elements 4 and 5 support the bottom surface of the girder ends with the lower support composed of 2 I-shaped steel supports and the end support frame. On the other hand, the prior art mounts the double girders over the stringer installed on 2 crossbeams. Moreover, in elements 4 and 5, the hydraulic jack is installed on the top surface of the load support frame. On the other hand, in the prior art, the hydraulic jack is installed on the crossbeam.

(3) However, claim 1 of the corrected invention relates to the "girder using the upper and lower members", and its claims are described as a product as a whole and include an apparatus to manufacture the girder and a process of manufacturing the girder using the apparatus. Thus, it may be deemed that claim 1 of the corrected invention falls within the "product-by-process claim.". Thus, elements 4 and 5 are meaningful only as means to specify the structure or properties of the "girder" which is the final product. It cannot be said that the technical composition of claim 1 of the corrected invention, which is the invention of a product whose process of manufacturing is described, could be understood only with the process of manufacturing itself. According to the following statements in the specification of the corrected invention (Plaintiff's Exhibit 3), it could be known that the girder using the upper and lower members under the manufacturing process described in claim 1 of the corrected invention has the structure and properties "for the residual stress to be introduced", which is not different from the prior art, which introduces the residual stress to the double girders.

> The present invention relates to a girder using upper and lower members, and a bridge manufacturing and construction method using the same. More specifically, the present invention relates to girders using upper and lower members which are advantageous for stiffness reinforcement and manufacturing by introducing residual stress (compressive stress) in advance into the girders, and methods for

manufacturing and construction of bridges using the same. (Paragraph [0001])

The present invention provides a steel plate girder such that even if the standardized I-shaped steel product is not provided in a desired cross-sectional size, the steel plate girder could be manufactured in the desired cross-sectional size by combining the standardized I-shaped steel products to minimize the possible cross-sectional height. Thus, the problem that the present invention intends to solve is to economically provide steel girders using residual stress, a method of manufacturing the same, and a method of manufacturing and constructing bridges using the same. (Paragraph [0018])

The residual stress is curved by applying a load to the girder in a non-synthetic state in which the upper member and the lower member are fusion-welded to each other. It provides a girder using upper and lower members to form and release the load of the synthetic partner by raising the load so that the residual stress is introduced by the elastic restoring force of the girder. (Paragraphs [0031] and [0032])

In addition, preferably, the girder in the non-synthesized state of the tack weld is installed such that both ends are supported on the lower support in an upside-down state, and both ends of the girder are fixed to the lower support by an anchor fixing device, and the upper member and the lower member are completely welded to each other in a state in which a vertical load is applied upward to the upper member of the girder fixed to the girder, and the girder using upper and lower members to introduce residual stress by the elastic restoring force of the synthesized upper member and lower member by removing the vertical load is provided. (Paragraphs [0032] and [0033])

4) Analysis of differences

a) It would be reasonable to view that a skilled person could easily overcome the differences stated above with the prior art, in light of the following facts and circumstances that can be established from the evidence presented above, statements in Plaintiff's Exhibits 5, 6, and 7, and the purport of the overall argument:

① According to the following statements in the specification

of the corrected invention, it seems that claim 1 of the corrected invention connects T-shaped steel to the lower part of I-shaped steel for the following: ⓐ to provide an economical girder by combining standardized shaped steel as one unit, where a girder whose cross-sectional height is taller than that of standardized I-shaped steel; and ⓑ to increase the girder's residual stress by welding shaped steel in a state where a load is applied.

- The present invention provides a steel plate girder such that, even if the standardized I-shaped steel product is not provided in the desired cross-sectional size, the steel plate girder could be manufactured in a desired cross-sectional size by combining the standardized I-shaped steel products to minimize the possible cross-sectional height. Thus, the problem that the present invention intends to solve is to economically provide steel girders using residual stress, a method of manufacturing the same, and a method of manufacturing and constructing bridges using the same. ([0018])
- In this case, a tendon may be used to effectively resist the tensile stress and shorten the cross-sectional height. However, the present invention can further minimize the cross-sectional height of the whole girder by enabling effective resistance of the tensile stress generated in the upper member by an applied load by causing the compressive stress to remain in the upper member as the residual stress when integrating the upper member and the lower member. ([0024])

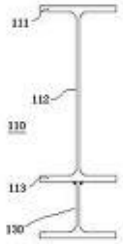
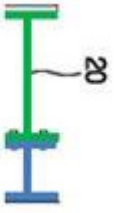
According to the following statements in the specification of the prior art, the prior art also has technical features to vertically combine H-beams and weld shaped steel while a load is being applied in order to increase the hardness of double girders and introduce prestress to the double girders at the same time.

- As a relatively easy way, if a bridge is installed while the hardness of an H-beam is increased and the prestress is introduced into the H-beam, the stress generated by a load applied to the bridge in the future would be offset, and it would be easy to manufacture and install. Also, a

temporary bridge would be installed safely and economically by allowing vertical shrinking and expansion with the support installed on the temporary vent and reducing the stress applied to the lower part of the temporary vent and the negative reaction applied to both sides of the temporary bridge. (lines 45-49 on p. 2)

- The present invention proposes to solve the problems stated above related to installation, on a temporary bridge, of compound double girders which introduce the prestress to an H-beam vertically connected to double girders ... The purpose of the present invention is to enable the manufacture and use of products inexpensively and easily at a site to provide a process of installing a temporary bridge economically and pragmatically. (lines 10-15 on p. 3)

Thus, the prior art and claim 1 of the corrected invention are common in that they weld 2 pieces of standardized shaped steel to easily manufacture a girder (double girder) whose height is taller than that of standardized shaped steel but which adds the residual stress to the girder when manufacturing the girder, and that a reinforcing plate is placed in the middle of the girder (double girder), as illustrated in the following drawings:

Claim 1 of Corrected Invention	Prior Art
 [Part of Drawing 2a]	 [Part of Drawing 3]

② Not only H-shaped steel but also T-shaped steel are widely used (Moreover, the specification of the corrected invention

describes that "since the lower member (120) is the said standardized T-shaped steel and can be purchased and used as a plant product, it can save the manufacturing expenses.[5] Here, a user can cut and use I-shaped steel at its web instead of the T-shaped steel." (Paragraph [0051], Plaintiff's Exhibit 3)) Even if T-shaped steel is used instead of H-shaped steel as the lower member of the prior art, it would not deviate from the technological solution principles of the prior art as explained above, and it seems that there is no need to modify an apparatus to manufacture the compound girder of the prior art.

③ The difference in the girder (double girder) generated by the type of the lower member is ultimately the number of flanges that exist in the center. The plaintiff argues that if the cross-sectional areas of the girder (double girder) are similar and if their cross-sectional heights are similar, the hardness of the girder in claim 1 of the corrected invention would be greater than that of the double girders in the prior art, and thus an amount of structural steel can be saved due to such differences. Claim 1 of the corrected invention, which uses T-shaped steel as its lower member, could obtain the same hardness[6] with a smaller cross-sectional area (small volume) than the prior art, which uses H-shaped steel as its lower member. However, it is

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5) The specification of the corrected invention (Plaintiff's Exhibit 3) describes that "the manufacturing expenses can save." However, this seems to be a typo of "they can save the manufacturing expenses."

6) The greater the cross-sectional secondary moment is, the stronger the bending moment is. The cross-sectional secondary moment is the sum of multiplication of microarea dA when a cross section and X axis are given and the square of Y, which is a distance to the X axis. Thus, where the cross-sectional areas are the same, the cross-sectional secondary moment is relatively large, provided that the area distribution is distant from the central axis compared to a case in which the area distribution is concentrated on the central axis. In this case, an area is concentrated in the center in the prior art, in which 2 flanges exist at the center, compared to claim 1 of the corrected invention, in which only 1 flange exists at the center.

difficult to deem that it is substantially effective when there is only 1 flange at the center, as in claim 1 of the corrected invention, compared to a case in which 2 flanges exist at the center, as in the prior art, in light of the following: ⓐ it is obvious that where the cross-sectional heights of the compound girder are the same, the girder hardness of the prior art in which 2 flanges exist at the center would be greater, unlike what the plaintiff argues, provided that the thickness of the web and flange which comprise the shaped steel are the same. Also, the girder of the prior art, which has many flanges at the center, would decrease the possibility of partial buckling;[7] and ⓑ the prior art combines flanges face-to-face. Thus, in a process to apply the residual stress, they can be supported more stably compared to claim 1 of the corrected invention, in which an I-shaped steel flange and a T-shaped steel web are combined face-to-face. Also, they can be combined with bolts and nuts in addition to welding.

④ Thus, it is only a simple design change that a skilled person can practice in light of the following to select whether to use T-shaped steel or H-shaped steel as the lower member of the girder: shaped steel purchasing expenses; manufacturing convenience; required girder height; hardness; etc.

5) Discussion of the plaintiff's argument

a) The plaintiff argues that it may not be deemed that a skilled person can easily select T-shaped steel instead of H-shaped steel as the lower member of the prior art in light of the following:

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7) The specification of the corrected invention (Plaintiff's Exhibit 3) describes that "not only the standardized I-shaped steel, in particular, in the case of the built-up girder, there is a possibility of partial buckling at the lower part of the web. Thus, in many cases, a horizontal stiffener (a type of stiffeners) is welded to the web." (Paragraph [0010]) and that "the lower flange (113) of the upper member (110) plays a role of a girder horizontal stiffener and reinforces the beam hardness" (Paragraph [0053]).

that the compound girder can be easily manufactured by replacing H-shaped steel in the prior art with T-shaped steel in claim 1 of the corrected invention and connecting with bolts and nuts or welding using flanges; a structural problem occurring in the joint can be solved by connecting wide flanges; and it hampers an advantage of the prior art to be reusable for other purposes by connecting the flange with bolts and nuts.

> - The present invention proposed to solve the problems stated above related to installation, on a temporary bridge, of compound double girders which introduce the prestress to an H-beam vertically connected to double girders ... The purpose of the present invention is to enable to the manufacture and use of products inexpensively and easily at a site to provide a process of installing a temporary bridge economically and pragmatically. (lines 10–15 on p. 3)

However, even if it is possible to anticipate, as the plaintiff argues, the advantages of the prior art that adopted H-shaped steel as its lower member, the prior art sets, according to the following statements, to provide a economical compound girder that can be manufactured with more affordable expenses as one of its technical problems. As examined above, claim 1 of the corrected invention also can save expenses in manufacturing a girder with the same hardness with relatively less volume of shaped steel. Thus, it shall be deemed that a skilled person who intends to provide an economical compound girder that can be manufactured with more affordable expenses would try to change H-shaped steel used as the lower member in the prior art to T-shaped steel. Therefore, the plaintiff's arguments stated above are without merit.

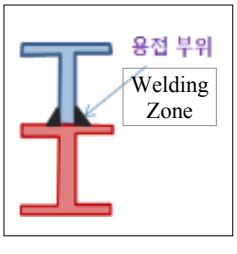
b) The girder manufacturing method displayed in Elements 4 and 5 enables flat position welding and thus precise welding. Accordingly, the characteristics of the girder obtained by the girder manufacturing method displayed in Elements 4 and 5 shall be deemed

to be not a “girder into which the residual stress is introduced”, but a “girder into which the precise residual stress is introduced.” In claim 1 of the corrected invention, a compound girder is manufactured such that both sides of the girder are completely welded through flat position welding. Thus, it is possible to form a completely welded compound girder into which a good quality of residual stress is introduced. However, the prior art cannot introduce a precise residual stress due to the following restrictions: ① where a compound girder is manufactured with complete welding, there is no space for welding in the lower part in the flange part in which the upper H-beam and the lower H-beam of the noncompound double girders touch each other; ② even if space for welding is separately provided, overhead position welding shall be performed, and thus the welding workability is not recommendable; ③ flat position welding shall be performed on one side, and overhead position welding shall be performed on the other side. Thus, a precise residual stress cannot be introduced due to different welding postures depending on the welding zone; and ④ where welding is performed on the upper part of the noncompound double girders and then flat position welding is performed on the other side to maintain the welding workability at a favorable level, a state set to introduce the residual stress to noncompound double girders (a state in which a load is applied in a horizontal direction) shall be released, and the same load shall be applied again. Thus, the plaintiff argues that the prior art does not show an apparatus or a process enabling manufacture of the compound girder such that a precise residual stress can be introduced with complete welding.

In light of the following facts and circumstances that can be established from the evidence presented above and the purport of the overall argument, the plaintiff assumes that the structure and properties of the girder manufactured by a process of manufacturing of elements 4 and 5 are the “girder into which a precise residual stress is introduced”, or that there is a difference in the quality of residual stress in the compound girder of claim 1 of the corrected invention

and the compound double girders of the prior art. Therefore, the plaintiff's arguments above are without merit.

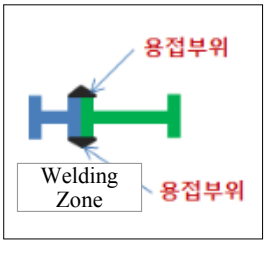
① ⓐ Element 4 describes that "a tack-welded noncompound girder is installed such that both of its ends are supported by the lower support (210) in a state whose upside is down"; ⓑ the specification of the corrected invention describes that "when manufacturing a girder of the present invention, the manufacturing device is equipped such that an operator can weld downwards when he/she performs tack-welding and complete welding. If this manufacturing device is used, a load can be delivered stably when applying and releasing the vertical load when manufacturing the girder" ([0027]); ⓒ Claim 1 of the corrected invention only describes introduction of the "residual stress" to a compound girder, but does not limit whether the residual stress introduced to a compound girder is accurate or not. In light of the fact that in addition to the above descriptions in the specification of the corrected invention, there is no description as to the "accurate residual stress" distinguished from the prestress introduced to the compound girder of the prior art in the claims, detailed description, and drawings of claim 1 of the corrected invention, as the plaintiff argues. Claim 1 of the corrected invention has technical features to enable performing the flat position weld on the upper member and the lower member, as illustrated by the drawing on the right, to improve the convenience of the welding operation and the quality of the welding zone.



② On the other hand, the specification of the prior art describes to "install for the upper H-beam (21) to face the double girders (20) over 2 crossbeams (63) installed on the ground" (lines 6, 7 on p. 4). It also describes to "manufacture completely integrated prestressed compound double girders (30) by connecting with bolts and nuts or completely welding a tack-weld or temporarily welded part of the lower flange (24) of the upper H-beam (21) and the upper flange

(23) of the lower H-beam (22) while applying the prestress load P to introduce the prestress into the double girders (20)" (lines 48–51 on p. 3). According to these descriptions, the prior art is in a structure in which the welding is performed in a state in which the upper H-beam and the lower H-beam lie on their sides. Thus, as illustrated in the drawing on the right, flat position welding is performed on the upper part of the flange. On the other hand, overhead position welding is performed on the lower part of the flange.

③ In claim 1 of the corrected invention, flat position welding is performed on the upper member and the lower member. On the other hand, in the prior art, overhead position welding is performed on the lower part of the flange. According to Plaintiff's Exhibits 5 through 7,[8] it is acknowledged that flat position welding is less difficult than overhead position welding. However, it cannot be said categorically, as the Plaintiff argues, that the quality of flat position welding would be different from that of overhead position welding, in light of the following: ⓐ the quality of welding depends on workmanship,



8) Plaintiff's Exhibit 5 is an Internet posting of the Daehan Welding Society, which specifies the grading by welding posture of the ASME. In the case of the plate weld, flat position welding and overhead position welding fall within "1G" grade and "4G" grade, respectively. In the case of the fillet weld, flat position welding and overhead position welding fall within "1F" grade and "4F" grade, respectively. Also, Plaintiff's Exhibit 7 is the materials as to "structural welding code – steel" among U.S. National Standards published by the American Welding Society. Plaintiff's Exhibit 7 describes the contents identical to Plaintiff's Exhibit 5 (See p. 120).
On the other hand, Plaintiff's Exhibit 6 is the standard specification for national construction standards for welding published by the Ministry of Land, Infrastructure, and Transport and describes that "a welding posture shall be a flat position or a horizontal position using a rotary welding jig, as long as possible" (See p. 9).

concentration, etc. of the welder. There is no objective data to show that a low welding difficulty would guarantee high welding quality; ⓑ moreover, even according to the data that the plaintiff submitted, not only flat position welding but also overhead position welding are presented as standard welding postures, and it seems that both positions are widely practiced in construction sites; ⓒ where the complete welding is performed to introduce the residual stress, it is obvious to a skilled person to maintain the welding quality at a uniform and excellent level.

Also, it is common sense in the technology to guarantee a space for welding by raising the height of a crossbeam on which the noncompound double girders are placed or installing a crossbeam on another support, etc. where overhead position welding shall be performed as in the prior art. According to drawing 4 of the prior art, there is only a fragment in the lower part where it is impossible to weld due to stringers while the prestress load is applied. It seems that a skilled person could easily derive welding the fragment after completing the welding of other parts and moving the double girders.

[Drawing 4 of Prior Art]

반력지지대	Reaction Force Support
공간부	Space
세로보	Stringer
유압잭	Hydraulic Jack

c) Prior to the correction, the plaintiff registered claim 1 of

the corrected invention as an “invention of a product.” Also, since it is not allowed to change the category of an invention to an “invention of a process” in the procedures of petition for correction, the plaintiff could not raise the petition for correction to an “invention of a process.” The plaintiff argues that these circumstances should be taken into consideration in determining an inventive step of claim 1 of the corrected invention.

However, as discussed above, in determining the requirements for patent registration of claim 1 of the corrected invention for which a petition for correction was lawfully raised to an invention of a product whose manufacturing process is described in the administrative trial for invalidation, its technical constitution shall not be limited to the manufacturing process itself, but shall be understood as a product with a structure, properties, etc. specified by all descriptions in the claims including the descriptions of the manufacturing process. Further, an inventive step shall be examined in comparison with the prior art publicly known prior to its filing. Therefore, the plaintiff’s arguments above based on different premises are without merit.

6) Summary of analysis

To summarize, claim 1 of the corrected invention can be easily invented from the prior art by a skilled person. Thus, an inventive step is denied.

B. Inventive step of claim 2 of the corrected invention

The following table illustrates the comparison of each corresponding element in the prior art and claim 2 of the corrected invention.

Claim 2 of Corrected Invention	Prior Art (Plaintiff's Exhibit 4)
A method of manufacturing and constructing a bridge, the method comprising: manufacturing a girder according to Claim 1; placing the girder in a branch part; connecting the girder placed in the branch part with the standardized I-shaped steel between the girders; installing a perforated plate (40) on the upper surface of the girder and standardized I-shaped steel; and using the upper member and the lower member.	A method of installing a temporary bridge using the prestressed compound double girders to introduce the prestress to the double girders manufactured by connecting H-beams vertically, the method comprising: installing the prestressed compound double girders over the support apparatus at the center; installing and connecting the upper H-beam between the double girders and the prestressed compound double girders; and installing a perforated plate on the top of a beam of the temporary bridge such that it is possible to pass through. (refer to Claim 8 and Drawing 1)

To summarize, the elements of claim 2 of the corrected invention and the corresponding elements of the prior art are identical in that the girder (prestressed compound double girder) in claim 1 of the corrected invention is placed at a point (point at the center), that the standardized I-shaped steel (the upper H-beam) is connected between girders, and that perforated plates are installed at the top surface of the girder of claim 1 of the corrected invention (the prestressed compound double girder) and the standardized I-shaped steel (H-beam).

However, claim 2 of the corrected invention places girders to which the residual stress is introduced on the center and both ends. On the other hand, the prior art places the prestressed compound double girders only on the center, and the compound double girders to which the prestress is not introduced are placed at both ends.

However, a skilled person can select, if necessary, the placement of the prestressed compound double girders at the center as in the prior art as well as placement of the girder at both ends.

Thus, claim 2 of the corrected invention at Issue can be easily invented from the prior art by a skilled person. Therefore, an inventive

step is denied.

C. Summary of Discussion

An inventive step of claims 1 and 2 of the corrected invention are denied by the prior art, and their registration shall be invalidated. Thus, the IPTAB decision is consistent with the above analysis and shall be upheld.

4. Conclusion

The plaintiff's claim to revoke the IPTAB decision is without merit and therefore dismissed. It is so ordered.

Presiding Judge	Seung Ryul SEO
Judge	Yun Hyung JEONG
Judge	Dong Gyu KIM

PATENT COURT OF KOREA
TWENTY-SECOND DIVISION
DECISION

Case No.	2018Na1893 Patent Infringement Injunction, etc.
Plaintiff, Appellant, and Appellee	Cuckoo Electronics that takes over an action from Cuckoo Holdings
Defendant, Appellee, and Appellant	Cuchen that takes over an action from Lihomcuchen
District Court's Decision Date	Seoul Central District Court Decision 2015GaHap503488, June 21, 2018
Date of Closing Argument	July 9, 2019
Decision Date	August 29, 2019

ORDER

1. The plaintiff's claim and the defendant's claim are dismissed.

2. The costs arising from this appeal shall be borne by each party.

3. Order Nos. 1 and 2 of the lower court's decision were modified by the reduction of claims before this court as follows:

   A. The defendant shall not produce, use, transfer, lend, or import each product described in [Appendix 1] Products practiced by

the defendant. Also, the defendant shall not subscribe or exhibit the product for transfer or lending.

B. The defendant shall discard finished goods and half-finished goods (articles that have the structure of finished goods but are not yet completed) of each product described in [Appendix 1] Products practiced by the defendant in the head office, branch office, office, business office, plant, or warehouse of the defendant. Also, the defendant shall discard all facilities used solely for the production of the goods.

PLAINTIFF'S DEMAND and APPELLANT'S DEMAND

1. Plaintiff's Demand

A and B of ORDER No. 3. Further, the defendant shall pay the plaintiff the following: KRW 10,000,000,000, of which KRW 100,000,100 is to be paid from the day after the date on which a duplicate of the complaint is served, and KRW 9,899,999,900 is to be paid from the day after the date on which a duplicate of the plaintiff's demand dated December 22, 2016 and the application for modification of cause of action are served, each at an annual rate of 15% until the day on which the calculated amount is paid in full (the plaintiff reduced the plaintiff's demand in the claim for injunction and disuse before this court).

2. Appellant's Demand

A. Plaintiff

A part as to the order of payment as specified below, which the plaintiff lost in the lower court, shall be revoked. The defendant shall

pay the following: KRW 6,440,000,000, of which KRW 6,440,000,000 is to be paid at an annual rate of 15% from the day after the date on which a duplicate of the plaintiff's demand dated December 22, 2016 and the application for modification of cause of action are served until the day on which the calculated amount is paid in full.

B. Defendant

A part which the defendant lost in the lower court shall be revoked. The plaintiff's claim as to the revoked part shall be dismissed.

OPINION

1. Background

A. Parties' Status

1) The plaintiff (plaintiff Cuckoo Holdings before this litigation split up its home appliance business and established Cuckoo Electronics, which took over this litigation; hereinafter the "plaintiff" irrespective of the takeover of litigation) is a company that manufactures and sells electrical appliances and a patentee of the patented invention at issue for the "Electric Pressure Cooker with Detachable Lid of Inner Pot Having Safety Device."

2) The defendant (defendant Lihomecuchen before this litigation split up its personnel and established Cuchen, which took over this litigation; hereinafter the "defendant" irrespective of the takeover of litigation) is a company that manufactures and sells electrical appliances.

B. Main Contents of the Plaintiff's Patented Invention at Issue (hereinafter the "patented invention") (Plaintiff's Exhibits 1 and 2)

1) Title: Electric pressure cooker with detachable lid of inner pot having safety device

2) Filing date of application/ date of registration/ registration number: June 13, 2007/ January 6, 2009/ No. 878255

3) Claims

[Claim 1] An electric pressure cooker with a detachable lid of an inner pot having a safety device (hereinafter referred to as the "**patented invention**"), comprising: a main body whose upper part is opened and closed by a lid of the main body; an inner pot accommodated in the main body; a lid of the inner pot that is detachable from the lid of the main body and can open and close the inner pot; a locking rim with a locking groove on one side rotatably mounted to the inside of the lid of the main body, coupled with the inner pot with a rotating operation; a locking knob which is connected to the locking rim and rotates the locking rim; and locking means which is installed on the lid of the main body and prevents the locking rim from rotating when the lid of the inner pot is detached from the lid of the main body and locked in the locking groove.

[Claim 2] (Omitted)

① Art to Which the Invention Pertains and Prior Art

The present invention relates to an electric pressure cooker with a detachable lid of an inner pot having a safety device for preventing a safety accident when the inner pot is detached from the electric pressure cooker with the detachable lid of the inner pot. (Paragraph <18>)

In conventional electric pressure cookers, the lid of the inner pot (4) is impossible to detach from the lid of the main body (3) when it is connected thereto. This is because if a user arbitrarily detaches the lid of the inner pot (4) from the lid of the main body (3) and fails to firmly combine them at a correct position, pressure will not be regulated normally. That is, if the inner pot (2) is not sealed completely, the pressure cannot be maintained at a high degree at the time of cooking. Also, when the cooking is completed, steam of high temperature and high pressure would be relieved from an unspecified area, and thus an accident would occur. (Paragraph <22>)

Problems to be Solved by the Invention

The objective of the present invention is to an provide electric pressure cooker with a detachable lid of an inner pot having a safety device that can prevent unexpected accidents by having the cooker not operate in a state where the lid of the inner pot is detached from the electric pressure cooker so that the lid of the inner pot can be managed in a hygienic way. (Paragraph <24>)

Constitution and Operation of the Invention

In this embodiment, an electric pressure cooker is equipped with a main body (10), an inner pot (20) accommodated in the main body (10), a lid of the main body (30) that is connected to the main body (10) with hinges and opens and closes the upper part of the main body (10), and a lid of the inner pot (40) that is connected to the bottom of the lid of the main body (30) and closes the inner pot (20). Additionally, heating means (50) to heat the inner pot (20) within the main body (10) and control means (not shown) to control the heating means are installed within the main body (10). (Paragraph <29>)

Thus, in the present invention, with the structure for which detachment of the inner pot lid (40) is possible, since the locking means (90) is disengaged from or inserted against the locking groove of the locking rim (60), the lid of the inner pot (40) can operate only in a state bonded to the lid of the main body (30) side, and the lid of the inner pot (40) cannot operate in the state of separation from the lid body (30). (Paragraph <36>)

Effect of the Invention

As described above, the present invention would not operate in a state

where the lid of the inner pot is detached from the lid of the main body by the locking groove and locking means of the locking rim. Accordingly, the present invention would improve the use stability by preventing unexpected accidents, such as the leakage of high-pressure and high-temperature steam, etc., caused by the use of the cooker in a state where the lid of the inner pot is detached. (Paragraph <38>)

4) Main contents and drawings

C. Production and Sales of the Products Practiced by the Defendant

The defendant produced and sold electric pressure cookers practiced by the defendant described in [Appendix 1] from 2010 to 2017 (hereinafter the "defendant's products"). The defendant's products contain the structure of the invention for review as described in [Appendix 3].

D. Progress of Relevant Event

1) Preliminary injunction against patent infringement (Plaintiff's Exhibit 4)

On June 13, 2013, the plaintiff filed an application for preliminary injunction against the defendant to seek the prohibition of patent infringement with the Seoul Central District Court 2013GaHap1294 on the ground that the defendant's products[1] infringe the patented invention. On April 23, 2014, the Seoul Central District Court decided

1) In the preliminary injunction case stated above, the plaintiff specified the defendant's products as the "electric pressure cookers that the defendant manufactures and have the structure in which a locking rim can rotate only when a lid of an inner pot is connected to a lid of a main body."

to dismiss the plaintiff's application on the ground that the plaintiff proved the fact that the defendant's products infringed the patented invention but failed to prove the need for preservation.

2) Invalidation (Plaintiff's Exhibits 5 and 9)

On July 16, 2013, the defendant requested invalidation of the registration of the patented invention against the plaintiff with the IPTAB 2013Dang1907. However, on November 27, 2014, the IPTAB decided to dismiss the plaintiff's request on the ground that the inventive step of the patented invention was not denied. Thus, the defendant raised litigation to seek the cancellation of the decision with Patent Court 2014Heo9338. However, on June 19, 2015, the Patent Court decided to dismiss the defendant's claim. As an appeal against the decision was dismissed on October 29, 2015, the decision was finalized, accordingly.

3) Confirmation for scope of rights case

A) On January 21, 2015, the defendant requested defensive confirmation of scope of rights against the plaintiff under IPTAB 2015Dang176, arguing that the invention for reivew described in [Appendix 2] does not fall under the scope of rights of the patented invention. However, on May 29, 2015, the IPTAB decided to dismiss the plaintiff's request. Thus, the defendant raised litigation to seek the cancellation of the decision with Patent Court 2015Heo4231. However, on June 30, 2016, the Patent Court decided to dismiss the defendant's claim. As an appeal against the decision was dismissed on October 27, 2016, the decision was finalized, accordingly.

B) On March 3, 2015, the defendant requested defensive confirmation of scope of rights against the plaintiff with IPTAB 2015Dang675, arguing that the invention for review described in [Appendix 3] does not fall under the scope of rights of the patented invention. On July 14, 2015, the IPTAB decided to grant the

defendant's request. Thus, the plaintiff raised litigation to seek the cancellation of the decision with Patent Court 2015Heo4804. However, on June 30, 2016, the Patent Court decided to grant the plaintiff's claim on the ground that the invention for review described in [Appendix 3] is equivalent to the patented invention. As an appeal against the decision was dismissed on October 27, 2016, the decision was finalized, accordingly.

[Factual basis] Undisputed facts, statements in Plaintiff's Exhibits 1 through 5, 8, 9, and 10, and purport of the overall argument

2. Discussion on Claim for Injunction and Disuse

A. Discussion on Cause of Action

The parties do not dispute the point of whether the defendant's products contain all elements identical or equivalent to the elements in the patented invention and thus fall within the scope of claims. Also, as examined above, the defendant produced and sold the defendant's products from 2010 to 2017. The concerns over infringement are also acknowledged in light of the period of the infringement, an aspect of the infringement, the progress of the dispute between the plaintiff and the defendant, etc.

Thus, the defendant shall not produce, use, transfer, lend, or import the defendant's products or subscribe or display for the transfer or lending of the same. Also, the defendant shall discard the following: finished goods and half-finished goods (articles that have the structure of finished goods but are not yet completed) of the defendant's products in the head office, branch office, office, business office, plant, or warehouse of the defendant; and facilities to be used only to produce the products.

B. Discussion on Defendant's Arguments

In this regard, the defendant argues that since the defendant modified, in February 2017, its production process to monitor the detachment of a lid of an inner pot with an electronic senor, the defendant no longer used the patented invention that uses mechanical locking means. Also, the defendant argues that since there is no concern over infringement, the claim for injunction and disuse against the defendant may not be granted.

In light of statements in Defendant's Exhibits 176 and 187 through 189 (including each hyphenated number, if any; hereinafter the same shall apply) and the purport of the overall argument, it is acknowledged that in February 2017, the defendant changed a device from a mechanical latch to an electronic sensor to confirm the detachment of a lid of an inner pot in some of the defendant's products.

However, it is difficult to reverse the above acknowledgement as to the concerns over infringement only with the following facts that are established by statements in Plaintiff's Exhibits 82 and 83 and the purport of the overall argument: ① The defendant was one of the plaintiff's competitors in the field of electric pressure cookers and infringed the patented invention from 2010 to 2017. Further, on April 23, 2014, in the case of preliminary injunction against patent infringement, the facts regarding patent infringement were proven and the decision of injunction was rendered. Also, even though this lawsuit was instituted on January 14, 2015 for the prohibition of patent infringement and the claim for damages, the defendant continued to infringe the patented invention for several years. ② It seems that even after February 2017, the defendant continued to produce and sell electric pressure cookers under a product name identical to that of the products practiced by the defendant. ③ The following cannot be stated categorically: that in February 2017, the defendant changed a device from a mechanical latch to an electronic sensor to confirm the

detachment of a lid of an inner pot in the products practiced by the defendant; and that there is no concern over future infringement, because it is easy to include the functions in the patented invention into electric pressure cookers that the defendant currently produces and sells using the existing production facilities. ④ The defendant testified in the lower court to the effect that the defendant would admit and would not argue against the claim for infringement prohibition (see the trial record dated May 3, 2018 and p. 2 in the defendant's brief dated April 26, 2018). However, the court found no other special circumstance to determine otherwise. Thus, the defendant's arguments stated above are without merit.

3. Discussion on Claim for Damages

A. Occurrence of Liability for Damages

1) Discussion on cause of action

As examined above, the defendant infringed the patent rights intentionally or negligently by producing and selling the products practiced by the defendant from 2010 to 2017. Further, the plaintiff, who competed with the defendant in producing and selling electric appliances, which the defendant's products fall under, suffered damages due to the infringement. Thus, the defendant shall be liable for the damages caused by the infringement of the patent rights.

2) Discussion on defendant's arguments

The grounds for judgment of this court are the same as the description for the relevant part in the grounds for judgment of the first instance (from line 8 on p. 8 to line 10 on p. 11 of the written judgment of the first instance). Thus, a judgment of the first instance shall be granted in accordance with Article 420 of the Civil Procedure Act.

B. Scope of Liability for Damages

1) Parties' arguments

A) Plaintiff's arguments

Article 128(4) of the Patent Act stipulates that the profits that a person who infringed gained due to infringement are to be deemed as the loss that the patentee has sustained. The profits that the defendant gained by infringing the patent rights are KRW 89,000,000,000, and the rate at which the infringement on the patent rights contributes to the defendant's profits is 100%, because the patented invention is related not to a part of the products practiced by the defendant, but to the entirety of the products practiced by the defendant. Thus, KRW 89,000,000,000 is the plaintiff's loss presumed under Article 128(4) of the Patent Act. Therefore, the defendant shall be liable to pay the plaintiff KRW 10,000,000,000, which is a part of the above loss, and the damages for delay according to the plaintiff's claim.

B) Defendant's arguments

The defendant does not argue the fact that KRW 89,000,000,000 is the profits gained by infringing the patent rights. However, the defendant argues the following: even if the patented invention features the constitution of mechanical safety devices to confirm whether a lid of an inner pot is properly installed to a lid of a main body, this constitution contributes very insignificantly to the sales of the products practiced by the defendant; since the profits that the defendant gained from the production and sales of the products practiced by the defendant include those which are not related to the infringement on the patent rights, such as those owing to the superiority of design and quality of the products practiced by the defendant, the defendant's efforts for promotion, advertisement, market development, cost reduction, emergence of a third competitor, etc., the rate at which the infringement on the patented invention contributes to the defendant's profits is only 0.014-0.204%; and thus, such contribution rate shall be

considered when calculating the loss under Article 128(4) of the Patent Act.

2) Calculation of damages under Article 128(4) of the Patent Act

A) Relevant law

Article 128(4) of the Patent Act stipulates that where a compensation for a loss is claimed by a patentee, the profits that a person who has intentionally or negligently infringed the patent has gained due to the infringement, if any, shall be deemed the loss that the patentee has sustained. Here, unless there are special circumstances, the "profits that a person who has ... infringed the patent has gained due to the infringement" are the marginal profits calculated by deducting expenses additionally injected to manufacture and sell infringing products from the total sales proceeds gained from the infringing products.

Where a practiced part of the patented invention is not the entirety of the products but only a part of the products, or where it is acknowledged that in addition to the patented technology that an infringer infringed, various factors, such as the infringer's capital, business capability, trademarks, corporate credit, product quality, design, etc., contributed to the creation and increase of sales profits, it cannot be said that the entirety of the profits that the infringer gained from the production and sales of products come from the infringement. Also, the rate at which an act to infringe a relevant patent contributes to the entirety of the profits gained by manufacturing and selling the products shall be computed, and the profits resulting due to the infringing act shall be calculated based on such rate. Such contribution rate shall be determined in light of indispensability, significance, price ratio, quantitative ratio, etc. that a part related to the infringement of the patent has to the entirety of the profits that the infringer gained (See Supreme Court Decision 2002Da18244, decided June 11, 2004). In calculating the contribution rate, an infringer shall prove the

following in addition to the practice of the patented invention: factors which contributed to the creation and increase of sales profits of an infringer; and how much these factors contributed thereto (See Supreme Court Decision 2005Da36830, decided October 13, 2006 and Supreme Court Decision 2005Da75002, decided March 27, 2008).

3) Defendant's profit resulting from production and sales of products practiced by the defendant

The parties do not argue the following facts: KRW 530,448,000,000 was the total sales profits that the defendant gained by selling the products practiced by the defendant from 2010 to 2017; and KRW 89,000,000,000 was the marginal profits calculated by deducting from the total sales profits expenses injected additionally to manufacture and sell the products practiced by the defendant.

4) Computation of contribution rate

A) Technical meaning of the patented invention and necessity to consider contribution rate

(1) As examined above, the patented invention is related to an electric pressure cooker with a detachable lid of an inner pot having a safety device. The patented invention features the following: as a lid of an inner pot can be detached from a lid of a main body, it is easy to clean; it is equipped with a safety device to disrupt it from operating, as an elastic member in the lid of the main body prevents a locking rim from rotating while the lid of the inner pot is detached; it prevents high-temperature and high-pressure steam generated from cooking from being released from an unspecified part; and it reduces the risk of safety accidents, such as burns caused by high-temperature steam, etc.

(2) The claims of the patented invention are "an electric pressure cooker with a detachable lid of an inner pot having a safety device, comprising: a main body whose upper part is opened and

closed by a lid of the main body; an inner pot accommodated in the main body; a lid of the inner pot that is detachable from the lid of the main body and can open and close the inner pot; a locking rim with a locking groove on one side rotatably mounted to the inside of the lid of the main body, coupled with the inner pot with a rotating operation; a locking knob which is connected to the locking rim and rotates the locking rim; and locking means which is installed on the lid of the main body and prevents the locking rim from rotating when the lid of the inner pot is detached from the lid of the main body and locked in the locking groove." Thus, the patented invention describes through its claims not some parts of an electric pressure cooker, but the entirety of the electric pressure cooker. However, in light of statements in Defendant's Exhibits 27 and 31 through 93 and the purport of the overall argument, the following facts are acknowledged: that the products practiced by the defendant are not composed only of the technology of the patented invention; that the products practiced by the defendant contain a number of patents and utility models of the defendant, which are necessary for main functions of electric pressure cookers, such as cooking, warming, etc. and other additional functions; and that technical features other than the technology in the patented invention would become factors for consumers to purchase the defendant's products. Thus, the plaintiff's argument to the effect that a contribution rate of the infringement of the patented invention to the defendant's profits would be 100% cannot be accepted.

(3) Thus, the contribution rate of the infringement on the patent shall be computed in light of indispensability, significance, price ratio, quantitative ratio, etc. that a part related to the infringement of the patented invention has to the entirety of the profits that the defendant gained.

B) Indispensability

The products practiced by the defendant are an electric pressure cooker whose intrinsic function is to cook. However, the patented

invention applied to the products practiced by the defendant is a safety device related to a detachable lid of an inner pot (clean cover) and is related to cleaning convenience. It is difficult to view that a function for cleaning convenience is functionally integral for the cooking. Also, it is not impossible, in terms of structure, to manufacture electric pressure cookers even without parts related to the working of the patented invention. Thus, it cannot be viewed that a part related to the patented invention is an indispensable element in the entirety of the profits gained by way of the sales of the products practiced by the defendant.

C) Significance

(1) The patented invention is related to the response to the consumers' demand for hygiene and safety of electric pressure cookers. Further, it is deemed that the patented invention was functionally substantially significant in the products practiced by the defendant in 2010 when the defendant began manufacturing and selling the products practiced by the defendant in light of the following facts established by statements in Plaintiff's Exhibits 2, 6, 7, 21, 22, 32 through 39, 42, 44 through 46, 68, and 81, Defendant's Exhibits 170 through 172 and 174, and the purport of the overall arguments:

(A) An electric cooker is a home appliance to cook rice with heat generated from a hotplate made of electrothermal wires installed under the cooker. An electric cooker has advantages, such as convenient cooking, hygiene in detaching and cleaning a lid of an inner pot, etc. Meanwhile, since a pressure cooker cooks rice by applying high pressure to the inside of the cooker, it can increase the boiling point of ricewater compared to general electric cookers and thus cook rice at a temperature higher than that of general electric cookers.

(B) In 1995, LG Electronics developed and released, in Korea, electric pressure cookers which combined the advantages of electric cookers and pressure cookers. However, a lid of an inner pot

could not be detached due to concerns over safety accidents, etc. However, since, in electric pressure cookers whose inner pot lids cannot be detached, it is difficult to remove cooking byproducts and residues from the lid of the inner pot after cooking, consumers required the lid of the inner pot in electric pressure cookers to be detachable.

(C) In 2004, as a total of seven explosion accidents occurred in two months in electric pressure cookers released by LG Electronics, LG Electronics initiated a large-scale recall. These accidents occurred because the cookers failed to endure an internal pressure which was rising during the cooking, as a protrusion of the inner pot was manufactured smaller than the specification, and thus the inner pot and the lid of the main body were not tightened accurately. Since the electric cookers of LG Electronics exploded due to imperfect tightening of the lid of the main body and the inner pot, other companies that manufactured or sold electric cookers would not attempt to detach the lid of the inner pot from the main body. Thus, a safety device became necessary to make the lid of the inner pot detachable and confirm, before cooking, whether the lid of the inner pot is completely tightened in order to meet consumers' demands and satisfy safety concerns.

(D) The plaintiff researched the technology to emphasize the merits of an electric pressure cooker and resolve the problem to run an electric pressure cooker in a state where a lid of an inner pot is not properly installed on a lid of a main body. Further, the plaintiff completed the patented invention in 2007.

(E) In July 2008, the plaintiff released its electric pressure cookers that practice the patented invention for the first time in Korea and advertised the fact that they had the "detachable cover" and thus were convenient to clean. This product satisfied consumers' demands for the hygiene and safety of electric pressure cookers. Further, general consumers liked this product. In a consumer survey that the plaintiff conducted in 2010 on 1,200 housewives who resided

in Seoul and the metropolitan area, the "detachable cover" was selected as the first function related to the reasons why they purchased their electric pressure cookers.

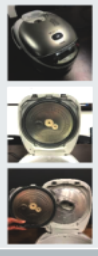
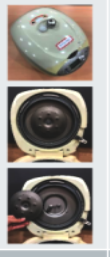
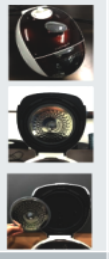
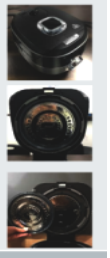
(F) Meanwhile, the defendant produced and sold, from 2010 to 2017, its electric pressure cookers with a detachable inner pot lid having a safety device that infringed the patented invention.

(G) The plaintiff and the defendant stressed in their product brochures that a detachable cover is easy to clean. Whether a "lid of an inner pot is detachable in an electric pressure cooker" was one of the important factors to be considered when consumers purchase their electric pressure cookers.

(2) In this respect, the defendant argues the following: as shown in the following table, a detachable cover has been used in electric cookers for a long time; the claims of the patented invention are not the detachable cover itself but a device to confirm the detachment in the form of a mechanical latch to prevent a locking rim from rotating when the lid of the inner pot is detached; the device to confirm the detachment is not what consumers are not interested in, and the plaintiff and the defendant have never advertised such device.

Even if a detachable cover itself is the existing technology that has been used in the field of electric cookers, it seems that the plaintiff's product that was released in July 2008 was the first electric pressure cooker in Korea to which the detachable cover was applied. As examined above, since an electric pressure cooker must maintain high pressure and high temperature, it is important for a main body and a lid to be tightly fastened together. It is deemed that the patented invention played an important role in releasing in Korea an electric pressure cooker with a detachable cover by providing a mechanical safety device that prevents the cooker from running when the lid of the inner pot is not properly fastened to the lid of the main body, in a circumstance where an electric pressure cooker with a detachable cover had not yet been released in Korea due to a concern that if the

lid of the inner pot is not fastened tightly, the pressure could not be maintained and thus a safety accident might occur. In other words, the plaintiff and the defendant have never advertised a device to confirm the detachment in the patented invention. Moreover, even if consumers are not interested in the structure of the device, the safety and quality of an electric pressure cooker with a detachable cover are preconditions to sell the same to consumers. Thus, it would not be unreasonable to determine the significance of the patented invention based on the significance of and consumers' interest in the detachable cover itself. Therefore, the defendant's arguments are without merit.

	국내 단순형	국내 마이콤	일본 압력	국내 압력		
모델명	금성 RC-123B	금성 RJ-1530F	TOSHIBA RC-18VS	쿠첸 SP-S-05S	쿠첸 WHA-VE1050GD	쿠첸 CJR-PK1000RHW
제품사진						
출시 시점	1990. 5.	1997. 5.	2006. 7.	2005. 12.	2013. 11.	2017. 9.
내용	비압력 전기 밥솥 밥솥 뚜껑 중앙부 돌기에 아노다이징 처리된 알루미늄 판재로 가공된 분리형 커버를 실리콘으로 고정하는 구조	비압력 전기 밥솥 밥솥 뚜껑 중앙부 돌기에 아노다이징 처리된 알루미늄 판재로 가공된 분리형 커버를 실리콘으로 고정하는 구조	압력 전기 밥솥 분리형 내솥커버가 Stainless Steel(STS)로 되어 있으며, 패킹과 분리형 내솥 커버가 일체형으로 분리되는 구조	압력 전기 밥솥 탑플레이트에 구비된 돌기에 분리형 커버를 실리콘으로 고정하는 구조	압력 전기 밥솥 분리형 내솥커버와 압력패킹이 별도로 분리됨	압력 전기 밥솥 원터치 분리형 내솥 커버로 내솥커버와 압력패킹이 일체형으로 분리됨

국내 단순형	Korea Simple Type
국내 마이콤	Korea MICOM
일본 압력	Japan Pressure
국내 압력	Korea Pressure
모델명	Model name
금성 RC-123B	Goldstar RC-123B
금성 RJ-1530F	Goldstar RJ-1530F
쿠첸 SP-5-055	Cuchen SP-5-055
쿠첸 WHA-VE1050GD	Cuchen WHA-VE1050GD
쿠첸 CIR-PK1000RHW	Cuchen CIR-PK1000RHW

제품사진	Product picture
출시시점	Release
내용	Details
비압력 전기 밥솥	Electric non-pressure cooker
압력 전기 밥솥	Electric pressure cooker
밥솥 뚜껑 중앙부 돌기에 아노다이징 처리된 알루미늄 판재로 가공된 분리형 커버를 실리콘으로 고정하는 구조	A detachable cover processed with an anodized aluminium board is fastened with silicone to a protrusion at the center of a cooker cover.
분리형 내솥커버가 Stainless Steel (STS)로 되어 있으며, 패킹과 분리형 내솥 커버가 일체형으로 분리되는 구조	A detachable inner pot cover is made of stainless steel (STS). Packing and a detachable inner pot cover are detached as one unit.
탑플레이트에 구비된 돌기에 분리형 커버를 실리콘으로 고정하는 구조	A detachable cover is fastened with silicone to a protrusion on a top plate.
분리형 내솥커버와 압력 패킹이 별도로 분리됨	A detachable inner pot cover and pressure packing are detached separately.
원터치 분리형 내솥 커버로 내솥커버와 압력패킹이 일체형으로 분리됨	One-touch detachable inner pot cover. An inner pot cover and pressure packing are detached as one unit.

(3) In light of statements in Defendant's Exhibits 27, 32 through 37, 41, 42, and 62 and the purport of the overall argument, it can be acknowledged that since 2010, various patent and utility model technologies have been newly applied to the products practiced by the defendant to implement, in addition to the clean cover function examined above, the following functions: a triple power packing function (Defendant's Exhibit 32, registered on January 9, 2014); a slow open function (Defendant's Exhibit 34, registered on August 1, 2013); a one-touch detachable cover function (Defendant's Exhibit 35, registered on April 21, 2014); a double clean cover (Defendant's Exhibit 36, registered on November 10, 2014); an auto safe lock function (Defendant's Exhibit 37, registered on February 24, 2016); a function to register the frequently executed menu in the bookmark menu (Defendant's Exhibit 42, registered on July 3, 2015); a porridge

cooking function (Defendant's Exhibit 62, registered on April 26, 2016); etc. It seems that as the additional functions stated above contributed to inducing consumers to buy the products practiced by the defendant, the significance of the clean cover function would continue to diminish as time went on.

D) Price ratio and quantitative ratio

(1) Price ratio

(A) Defendant's Exhibit 182 describes that three components, FIX BUTTON, FIX SPRING, and TAPPING SCREW, were applied to the patented invention, and the total of the unit prices of these components was KRW 98. Defendant's Exhibit 182 also describes that in light of the fact that the manufacturing cost of the defendant's products was KRW 119,471~169,063, a price ratio based on the component price corresponds to 0.06~0.08% (p. 53 in Defendant's Exhibit 182).

(B) Defendant's Exhibit 186 describes that the three components FIX BUTTON, FIX SPRING, and TAPPING SCREW were applied to the patented invention, and the total of the unit prices of these components was KRW 98. Defendant's Exhibit 186 also describes that in light of the fact that the manufacturing cost of the defendant's products was KRW 120,519, a price ratio based on the component price corresponds to 0.08% (p. 30 in Defendant's Exhibit 186).

(2) Quantitative ratio

(A) Defendant's Exhibit 182 describes that the three components FIX BUTTON, FIX SPRING, and TAPPING SCREW were applied to the patented invention. Defendant's Exhibit 182 also describes that in light of the fact that the total number of components in the products practiced by the defendant was 226~2,523, a quantitative ratio based on the number of components corresponds to 1.2~1.3% (p. 59 in Defendant's Exhibit 182).

(B) Defendant's Exhibit 186 describes that the two

components FIX BUTTON and FIX SPRING were applied to the patented invention. The products practiced by the defendant are classified into ① a device, ② electric and electronic components, ③ an electric and electronic component control program, and ④ a recipe implementation algorithm. Among these, the device is further classified into thirteen components, such as BODY SUB ASSY, TOP COVER ASSY, etc. Defendant's Exhibit 186 also describes that in light of the fact that among these, TOP COVER ASSY is further classified into 43 sub-components, a quantitative ratio based on the number of technologies corresponds to 0.09% (1/4×1/13×2/43) (p. 29 in Defendant's Exhibit 186).

(3) Evaluation of description in Defendant's Exhibits 182 and 186 on price ratio and quantitative ratio

Defendant's Exhibits 182 and 186 calculated the price ratio and the quantitative ratio stated above on the premise that only the "FIX BUTTON, FIX SPRING, and TAPPING SCREW" fall within the patented invention. However, as examined above, it cannot be stated categorically that only the "FIX BUTTON, FIX SPRING, and TAPPING SCREW" fall within the patented invention in light of the following facts: the patented intention claims, as a whole, an electric pressure cooker with a detachable lid of an inner pot having a safety device; and the effect of the patented invention is achieved by combining its elements described in the claims, such as a main body, a lid of an inner pot, a locking rim, a locking knob, locking means, etc. Thus, as described in Defendant's Exhibits 182 and 186, it would be improper to calculate a price ratio and a quantitative ratio based on such three components. Also, there is no other objective data with which the price ratio and quantitative ratio of the patented invention can be calculated.

E) Factors that contribute to the generation and increase of sales profits other than the practice of the patented invention

(1) In light of the following facts established by statements in Defendant's Exhibits 29, 30, 98-5, 98-6, 103-7, 105-1, 107-1, 109-7, 114-1 through 114-9, 115 through 145, 164-1, 165-1 through 165-3, and 166 and the purport of the overall arguments, it is acknowledged that the factors, such as the defendant's promotion activity, the defendant's products, etc., contributed to the generation and increase of the sales profits. Thus, these factors shall also be considered when computing the contribution rate.

① The defendant has paid about KRW 5,000,000,000~10,000,000,000 every year as advertising expenses for the products practiced by the defendant, using celebrities toward whom consumers had very good feelings. The details thereof are as illustrated in the table below: ⓐ In 2010 and 2011, the defendant advertised the product's main features, such as "Korea's first luxury iron inner pot", etc., with Hyori Lee as a model and under the advertising copy "Let's eat!" ⓑ In 2012, the Defendant advertised the product's main features, such as "Korea's first smart dial (jog dial)", etc., with Donggun Jang as a model under the advertising copy "Don't press, dial!" ⓒ In 2014, the defendant advertised the product's main features, such as "smart color LCD", etc., with Donggun Jang as a model under the advertising copy "E which shows." ⓓ In 2015, the Defendant advertised the product's main features, such as "Control touch LCD", etc., with Donggun Jang as a model under the advertising copy "Smart E that cooks with fingertips."

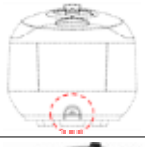
Model	Product	Example	Main Features
Hyori Lee	2010: LX Model 2011: BT, CT Model	 (Excerpt from Defendant's Exhibit 98-5)	Luxury iron inner pot, automatic steam warming, one touch clean cover, black diamond coating, automatic cleaning, etc. (Defendant's Exhibit 98-6)

Model	Product	Example	Main Features
Dong gun Jang	2012: PA Model	 (Excerpt from Defendant's Exhibit 103-7)	Smart dial (jog dial), luxury iron inner pot, charcoal coating, etc. (Defendant's Exhibit 103-7)
	2014년: PC Mo	 (Excerpt from Defendant's Exhibit 105-1)	Smart color LCD, luxury iron inner pot, charcoal coating, smart dial, etc. (Defendant's Exhibit 105-1)
	2015: PD Model	 (Excerpt from Defendant's Exhibit 107-1)	Control touch LCD, automatic locking device, motion sensor, etc. (Defendant's Exhibit 107-1)

② Furthermore, as illustrated in the table below, a number of the defendant's registered designs are applied in part or in whole to the products practiced by the defendant, some of which were selected as a good industrial design product under Article 6(1) of the Industrial Design Promotion Act (WHA-BT1000iD, CJH-PA1000iC, CJH-PC1000iCT, etc.).

No.	Design Registration No.	Date of Registration	Product/ Component		Exhibit
1	30-0822268	October 23, 2015		Inner potincluding PA06 (Donggun Jang cooker), etc.	Defendant's Exhibit 120
2	30-0822267	October 23, 2015		Inner pot including PE10	Defendant's Exhibit 121
3	30-0836772	December 1, 2015		PE10	Defendant's Exhibit 124
4	30-0828645	December 1, 2015		PE10 MC	Defendant's Exhibit 125
5	30-0828635	December 1, 2015		PF10	Defendant's Exhibit 126
6	30-0802669	June 19, 2015		PD10 (Donggun Jang cooker)	Defendant's Exhibit 127
7	30-0768131	October 22, 2014		PC10(Donggun Jang cooker)	Defendant's Exhibit 128

No.	Design Registration No.	Date of Registration	Product/ Component		Exhibit
8	30-0770076	November 3, 2014		PC06, 10 (Donggun Jang cooker) GUI (Rice)	Defendant's Exhibit 129
9	30-0770077	November 3, 2014		PC06, 10 (Donggun Jang cooker) GUI (cooking)	Defendant's Exhibit 130
10	30-0770078	November 3, 2014		PC06, 10 (Donggun Jang cooker) GUI (Bookmark)	Defendant's Exhibit 131
11	30-0770079	November 3, 2014		PC06, 10 (Donggun Jang cooker) GUI (Scheduled cooking)	Defendant's Exhibit 132
12	30-0769420	November 3, 2014		PC06, 10 (Donggun Jang cooker) GUI (Automatic cleaning)	Defendant's Exhibit 133
13	30-0770080	November 3, 2014		PC06, 10 (Donggun Jang cooker) GUI (Setting)	Defendant's Exhibit 134
14	30-0769421	November 3, 2014		PC06, 10 (Donggun Jang cooker) GUI (energy saving)	Defendant's Exhibit 135
15	30-0770081	November 3, 2014		PC06, 10 (Donggun Jang cooker) GUI (problem report)	Defendant's Exhibit 136
16	30-0771972	November 14, 2014		Lid pattern of PC06, 10 (Donggun Jang cooker)	Defendant's Exhibit 137
17	30-0783919	February 5, 2015		Partial design of PC10 (Donggun Jang cooker)	Defendant's Exhibit 138
18	30-0757870	August 18, 2014		PB10	Defendant's Exhibit 139

No.	Design Registration No.	Date of Registration	Product/ Component		Exhibit
19	30-0707899	September 2, 2013		PA10 (Donggun Jang cooker)	Defendant's Exhibit 140
20	30-0741410	April 25, 2014		Product control panel & jog dial of PA10 (Donggun Jang cooker)	Defendant's Exhibit 141
21	30-0676509	January 9, 2013		HP10	Defendant's Exhibit 142
22	30-0668815	November 14, 2012		Warming sensor mounting of BT06, 10 (Hyori Lee cooker)	Defendant's Exhibit 143
23	30-0668814	November 14, 2012		Curved surface of BT06, 10 (Hyori Lee cooker)	Defendant's Exhibit 144
24	30-0663134	November 14, 2012		BT10 (Hyori Lee cooker)	Defendant's Exhibit 145

(2) In this respect, in light of the facts that the plaintiff also advertised its own products with celebrities whose popularity was lower than the celebrities that the defendant hired, and that there is no ground to deem that a design of the products practiced by the defendant is better than that of the plaintiff's product, it would be reasonable to deem that when consumers purchased the products practiced by the defendant, other factors, such as advertisement, design, etc., specially contributed to the purchase. Thus, the plaintiff argues to the effect that such factors should not be considered when

calculating the damages.

According to statements in Plaintiff's Exhibit 75 and Defendant's Exhibits 94-1 through 94-5 and the purport of the overall argument, the plaintiff and the defendant control the electric cooker market in oligopoly. In particular, the plaintiff and the defendant account for about 65% and 35%, respectively (60:40, 60:40, 65:35, 65:35, and 68:32 in 2013, 2014, 2015, 2016, and 2017, respectively). The following facts can be established, as the table below illustrates based on the market share stated above: that the plaintiff has advertised its own electric cooker products with popular celebrities, such as Won Bin, Seunggi Lee, Soohyun Kim, etc.; and that the plaintiff has produced and sold electric cooker products with good designs which can induce consumers to purchase the products.

원고	Plaintiff
원빈	Won Bin
이승기	Seunggi Lee
김수현	Soohyun Kim
피고	Defendant
이효리	Hyori Lee
장동건	Donggun Jang
송중기	Joongi Song

원고	Plaintiff
뚜껑 부분과 몸체, 하부를 3등분하여 실버, 블랙, 실버 색상을 배치함	Product divided into three even parts, such as a lid, body, and lower part, these being colored with silver, black, and silver, respectively.
돌출 형태의 핸들을 반매립 형태로 변경함	Handle changed from a projected shape to a half-buried shape.
뚜껑과 앞 부분을 둥근 라인으로 이어지도록 디자인함	Lid and front designed to be connected in a round line.
화이트와 실버 색상을 이용한 디자인을 개발	Design developed with white and silver colors.
원형의 핸들 테두리에 원 모양으로 도금하였음	Circular edge of handle plated in the form of a circle.
뚜껑 부분과 몸체, 하부를 3등분하여 실버, 블랙, 실버 색상을 배치함	Product divided into three even parts, such as a lid, body, and lower part, these being colored with silver, black, and silver, respectively.
돌출 형태의 핸들을 반매립 형태로 변경함	Handle changed from a projected shape to a half-buried shape.
뚜껑과 앞 부분을 둥근 라인으로 이어지도록 디자인함	Lid and front designed to be connected in a round line.
화이트와 실버 색상을 이용한 디자인을 개발	Design developed with white and silver colors.
원형의 핸들 테두리에 원 모양으로 도금하였음	Circular edge of handle plated in the form of a circle.

In light of the facts stated above, it is not highly likely that the factors, such as the defendant's capital, business capability, trademarks, company credit, product quality, design, etc., would contribute to the generation and increase of sales profits of the infringing products as factors differentiated from the plaintiff's sales capability, design, etc. However, as examined above, it cannot be viewed that the factors, such as the defendant's advertising activity, application of good design, etc., did not contribute at all to the generation and increase of sales profits of infringing products as factors differentiated from factors such as the plaintiff's advertisement, design, etc. Thus, the plaintiff's argument to the effect that the factors such as the defendant's advertising activity, design, etc. should not be taken into consideration when calculating the damages is without merit.

F) Computation of contribution rate by comprehensive consideration

It would be reasonable to view that a contribution rate of the patented invention for the sales profits of the defendant's products shall be 4% in light of the following facts established by statements in Plaintiff's Exhibit 81 and Defendant's Exhibits 182 and 186 and the purport of the overall argument:

(1) The main technologies of an electric cooker and their significance ratio can be divided as follows: ① 40% for an apparatus (main body); ② 15% for electric and electronic components; ③ 15% for a control program of electric and electronic components; and ④ 30% for a recipe implementation algorithm (refer to p. 8 in Defendant's Exhibit 186).[2)]

2) According to Defendant's Exhibit 182, the main technologies of an electric cooker and their significance ratio are as follows: ① 30% for an apparatus (main body); ② 15% for electric and electronic components; ③ 15% for a control program of electric and electronic components; and ④ 40% for a recipe implementation algorithm (refer to p. 46 of Defendant's Exhibit 182). An apparatus (main body) accounts for the appearance and internal shape of products and means the total of each of the structural

(2) Meanwhile, the apparatus (main body) of an electric cooker can be divided as follows: ① an upper lid; ② an inner pot; ③ a main body; and ④ a lower part. Their significance ratios are as follows: ① 22% for an upper lid; ② 23% for an inner pot; ③ 28% for a main body; and ④ 27% for a lower part (refer to p. 48 in Defendant's Exhibit 182)[3].

(3) As a channel to connect the inside and the outside of an inner pot, the "upper lid" performs a function to seal and control pressure, which is essential for the cooking function of an electric pressure cooker. A variety of safety devices are installed in the upper lid to prevent unexpected accidents, such as explosion, etc. when a lid is opened in a high internal pressure state. The patented invention includes an element to resolve the problems of a pressure drop and a

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members that enable the cooking by combining various mechanical factors. When dividing an electric cooker into structural parts and electrical parts, it would be reasonable to view that the structural part would account for at least 40%. Thus, this court did not follow the analysis in Defendant's Exhibit 182 but divided, according to the analysis in Defendant's Exhibit 186, the main technologies of an electric cooker, and their significance ratio are as follows: ① 40% for an apparatus (main body); ② 15% for electric and electronic components; ③ 15% for a control program of electric and electronic components; and ④ 30% for a recipe implementation algorithm.

3) In Defendant's Exhibit 186, the apparatus (main body) of an electric cooker is divided into BODYSUB ASSY, PWB ASSY, JOG ASSY, SIDE HEATER CASE ASSY, BASE WORK COIL ASSY, CONTROL PLATE ASSY, BASE ASSY, TOP COVER ASSY, ONE TOUCH DETACHABLE, POISE ASSY, STEAM COVER ASSY, OVEN ASSY, and other items, and their significance is analyzed (40% for TOP COVER ASSY; refer to p. 6 in Defendant's Exhibit 186). Such analysis may be proper in analyzing their ratios in consideration of the number of components and technologies that comprise the products. However, in analyzing their ratios, it would be more appropriate to, according to Defendant's Exhibit 182, divide the apparatus (main body) into ① an upper lid, ② an inner pot, ③ a main body, and ④ a lower part and evaluate their ratios, accordingly.

safety accident that can occur when the lid of the inner pot is detached. As examined above, a detachable cover can be adopted in an electric pressure cooker by way of the patented invention without concerns over safety and quality deterioration. Thus, the patented invention resolved a problem that had not been resolved for a long time, notwithstanding the demand of consumers who wanted to clean their electric pressure cookers. It may be viewed that in 2010, the existence of a detachable cover in an electric pressure cooker was one of the major parts in an upper lid of an electric pressure cooker, which drew consumers' attention. It may be viewed that the importance of consumers' attention thereto has fallen due to the subsequent advancement of technology. However, it shall be viewed that the patented invention accounts for at least 50% of the significance ratio in an upper lid part in terms of the consumers' attention.

(4) In light of the circumstances stated above, a contribution rate that the patented invention accounts for the products practiced by the defendant may be viewed as 4.4% (=40%×22%×50%). However, as examined above, it may be viewed that the factors such as the defendant's advertising activities, design applied to the products practiced by the defendant, etc. have also contributed somewhat to the generation and increase of sales profits from the products practiced by the defendant. In sum, it would be reasonable to view a contribution rate of the patented invention to the sales profits of the products practiced by the defendant as being about 4%.

(5) In this regard, the defendant argues to the effect that since the defendant's patent (Plaintiff's Exhibit 8) is also applied to a device to confirm the fastening of a clean cover in the products practiced by the defendant, a part related to what the defendant's patent contributed shall be deducted from the contribution rate.

However, according to statements in Plaintiff's Exhibit 8, the products practiced by the defendant use an essential technical idea of the patented invention, as it stands, which is to prevent a locking ring

from rotating from a locking release position to a locking position when a lid of an inner pot is detached. However, the products practiced by the defendant add an inclined plane of a locking ring and an inclined groove of a locking pin as additional means to enable the locking ring to rotate to a locking release position when a lid of an inner pot is detached while the locking ring is in a locking position. Where a lid of a main body is closed in a state where a lid of an inner pot is installed, it is difficult to separate the lid of the inner pot and the lid of the main body. Thus, it is unlikely that a situation that the products practiced by the defendant assume would occur in reality. Therefore, it is difficult to acknowledge that the additional means in Plaintiff's Exhibit 8 or a function related to the additional means plays an essential role in applying a clean cover to an electric pressure pot or creates consumer demand. Thus, the defendant's argument to deduct a contribution rate based on Plaintiff's Exhibit 8 is without merit.

(6) Also, the defendant argues that a contribution rate shall be computed in consideration of the fact that a ratio of alternative technology is 1/3, because it was possible at the time when the defendant practiced the products practiced by the defendant to detect whether a lid of a detachable inner pot was detached in the following three ways: ① a mechanical latch as in the patented invention; ② a method to prevent a lid of a product from being closed; and ③ an alternative technology of an electronic detection method.

However, as examined above, the plaintiff and the defendant controlled the electric cooker market in oligopoly. Thus, even if there were alternative technologies when the defendant practiced the products practiced by the defendant, it is presumed that all of the demands for the products practiced by the defendant would be transferred to the plaintiff, provided that the defendant did not practice the patented invention. Since there is no evidence to deem that such demands would be dispersed to products in which an alternative technology is used, the defendant's argument to deduct a contribution

rate based on the existence of alternative technology is without merit.

(7) Furthermore, the defendant argues that since other competitors, such as Corporation H, etc., in addition to the plaintiff and the defendant existed in Korea's electric cooker market, it could not be stated categorically that if the defendant had not committed an act of patent infringement, the products practiced by the defendant could have been sold by the plaintiff. Thus, the defendant argues that such fact shall be considered when calculating the damages.

According to the statements in Defendant's Exhibit 165, there was a press report to the effect that in December 2015, Winiadimchae entered the electric pressure cooker market and accounted for about 10% of the market in about 1 year. However, there is no evidence of the fact that Winiadimchae was selling non-infringing alternative products which could replace functions of the patented invention. Thus, it is difficult to acknowledge that if the defendant had not committed an act of infringement, a part of the demand related to the sales of the products practiced by the defendant could have been dispersed to Winiadimchae. Thus, the defendant's argument stated above is without merit.

5) Summary of discussion

Thus, the defendant is liable for the following: KRW 3,560,000,000 (= KRW 89,000,000,000×0.04) as damages for infringement on the patent rights; as to KRW 100,000,100 of the KRW 3,560,000,000, damages for delay calculated at an annual rate of 15% as stipulated by the Act on Special Cases Concerning Expedition, etc. of Legal Proceedings for a period from December 22, 2016, which is obviously on record, the day after the date on which a duplicate of the Complaint at Issue is served, until the day on which the KRW 100,000,100 is paid in full; and as to the remaining KRW 3,459,999,900, damages for delay calculated at an annual rate of 5% prescribed by the Civil Act for a period from December 23, 2016,

which is obviously on record, the day after the date on which a duplicate of the plaintiff's demand dated December 22, 2016 and the application for modification of cause of action were served, until June 21, 2018, on which the first instance decided that it is reasonable for the defendant to argue as to the existence and scope of an obligation to perform, and thereafter, damages for delay calculated at an annual rate of 15% stipulated by the Act on Special Cases Concerning Expedition, etc. of Legal Proceedings until the day on which the relevant amount is paid in full.

4. Conclusion

The District Court's decision is consistent with the above analysis and shall be upheld. Thus, the plaintiff's appeal and the defendant's appeal are without merit and therefore dismissed. Provided, that Order Nos. 1 and 2 of the District Court's Decision are modified as Order No. 3 by the plaintiff's claim restriction before this court.

Presiding Judge Je Jeong LEE
Judge Ki Su KIM
Judge Ji Young YI

[Appendix 1]

Products Practiced by the Defendant

Each model described in Nos. 1 through 14 in the table below and derivative models thereof: Provided, that a method of detecting the detachment of a detachable lid of an inner pot using a mechanical latch is used.

순번	모델명	파생모델명
1	CJH-PC0608iCT	
1-1		CJH-PC0602iCT
1-2		CJH-PC0609iCT
1-3		CJH-PC0603iCT
1-4		CJH-PC0610RC
1-5		CJH-PC0619RC
1-6		CJH-PC0612RC
1-7		CJH-PC0609iCTUS
1-8		CJH-PC0611RC
2	CJH-PC1009iCT	
2-1		CJH-PC1010RC
2-2		CJH-PC1019RC
2-3		CJH-PC1011RC
2-4		CJH-PC1012RC
2-5		BORK U803
2-6		CJH-PC1003iCT
2-7		CJH-PC1000iCT
2-8		CJH-PC1004iCT
2-9		CJH-PC1006iCT
2-10		CJH-PC1007iCT
2-11		CJH-PC1009iCTCN
2-12		BORK U802
2-13		CJH-PC1009iCTUS
2-14		CJH-PC1001iCT
3	CJH-PB1000iC	
3-1		CJH-PB1009iC
3-2		CJH-PB1020iD
3-3		CJH-PB1021iD
3-4		CJH-PB1009ICCN
4	CJH-PA0609iC	
4-1		CJH-PA0603iC
4-2		CJH-PA0602iC
4-3		CJH-PA0608iC

4-4		CJH-PA0610iC
4-5		BORK U801
4-6		CJH-PA0609iCUS
4-7		CJH-PA0620ED
4-8		CJH-PA0621ED
4-9		CJH-PA0629ED
4-10		CJH-PA0640S
4-11		CJH-PA0650iC
4-12		CJH-PA0622iC
4-13		CJH-PA0609iCCN
5	CJH-PA1000iC	
5-1		CJH-PA1001iC
5-2		CJH-PA1010iC
5-3		CJH-PA1012iC
5-4		CJH-PA1011iC
5-5		CJH-PA1031iC
5-6		CJH-PA1040iC
5-7		CJH-PA1051iC
5-8		CJH-PA1009iC
5-9		CJH-PA1039iC
5-10		CJH-PA1060ED
5-11		CJH-PA1000iCCN
5-12		BORK U800
5-13		CJH-PA1000iCUS
5-14		CJH-PA1061ED
5-15		CJH-PA1080iC
5-16		CJH-PA1090SD
5-17		CJH-PA1071iC
5-18		CJH-PA1008ICCN
5-19		CJH-PA1009ICCN
6	CJH-BT0601iC	
6-1		CJH-BT0602iC
6-2		CJH-BT0603iC
6-3		CJH-BT0609iC
6-4		CJH-BT0610SD
6-5		CJH-BT0601ICUS
6-6		CJH-BT0611SD
6-7		CJH-BT0605iC
6-8		CJH-BT0609ICCN

6-9		CJH-BT0608iCCN
6-10		CJH-BT0601iCCN
7	LJP-HP100iC	
7-1		LJP-HP101iC
7-2		CJH-HP1000iC
7-3		CJH-HP1001iC
7-4		CJH-HP1010SD
7-5		CJH-HP1011SD
8	WHA-LX0601iD	
8-1		WHC-LX0610GD
8-2		WHQ-LX0603iD
8-3		WHQ-LX0611GD
8-4		WHC-LX0604iC
8-5		WHC-LX0609iD
8-6		WHC-LX0633SD
8-7		CJH-LX0634SD
8-8		WHQ-LX0650iD
8-9		WHC-LX0602iD
8-10		WHQ-LX0631SD
8-11		WHA-LX0640iD
8-12		WHQ-LX0641iD
8-13		WHC-LX0649iD
8-14		CJH-LX0605iD
8-15		WHQ-LX0632SD
8-16		CJH-LX0602iDCN
8-17		WHA-LX0601IDUS
8-18		WHA-LX0601iDAU
8-19		CJH-LX0607iD
8-20		CJH-LX0642iD
8-21		CJH-LX0610GDCN
9	WHA-BT1000iD	
9-1		WHC-BT1013iD
9-2		WHA-BT1010iD
9-3		WHC-BT1003iD
9-4		WHA-BT1030iC
9-5		WHC-BT1031iC
9-6		HRC-LBT102SD
9-7		CJH-BT1010iDCN
9-8		BORK U710

9-9		WHA-BT1000IDUS
9-10		CJH-BT1019IDCN
10	WHC-CT1003D	
10-1		WHC-CT1010GD
10-2		WHQ-CT1004iD
10-3		WHA-CT1000iD
10-4		WHC-CT1029iD
10-5		WHA-CT1030SD
10-6		WHK-CT1031SD
11	WHA-LX1000iD	
11-1		WHC-LX1020GD
11-2		WHQ-LX1004iD
11-3		WHK-LX1005iD
11-4		WHC-LX1003iD
11-5		WHC-LX1070SH
11-6		WHC-LX1022GD
11-7		WHQ-LX1023GD
11-8		WHQ-LX1071iD
11-9		CJH-LX1060SD
11-10		CJH-LX1063SD
11-11		CJH-LX1064SD
11-12		CJH-LX1070iD
11-13		WHC-LX1059iD
11-14		WHQ-LX1040iD
11-15		WHA-LX1041iD
11-16		WHC-LX1049iD
11-17		CJH-LX1008iDCN
11-18		WHA-LX1000IDUS
11-19		WHA-LX1000iDAU
11-20		CJH-LX1006iD
11-21		CJH-LX1091SD
11-22		CJH-LX1092SD
11-23		CJH-LX1065SD
11-24		CJH-LX1080iD
11-25		CJH-LX1089iD
11-26		CJH-LX1090SD
11-27		CJH-LX1009iDCN
11-28		WHA-LX1000IDCN
12	CJH-PD1009iCM	

12-1		CJH-PD1010iCM
12-2		CJH-PD1000iCM
12-3		CJH-PD1001iCM
13	CJH-PE1009ED	
13-1		CJH-PE1020ED
13-2		CJH-PE1019ED
13-3		CJH-PE1010ED
13-4		CJH-PE1011ED
13-5		CJH-PE1001ED
13-6		CJH-PE1002ED
13-7		CJH-PE1012ED
13-8		CJH-PE1030iD
14	CJH-PF1009ED	
14-1		CJH-PF1000ED
14-2		CJH-PF1010iD

The end.

[Appendix 2]

Description and Drawings of the Invention for Review

1. Title of the Invention for Review

Electric pressure cooker with detachable inner pot lid

2. Description of the Invention for Review

An electric pressure cooker of the invention for review, as illustrated in drawings 1 and 2, includes the following:

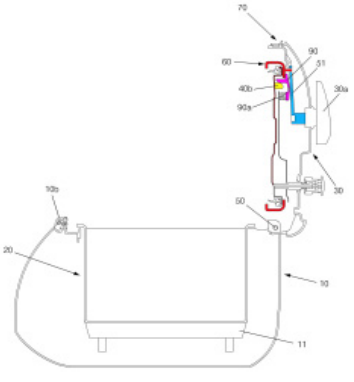
a main body (10); an inner pot (20) which is accommodated in the main body and along whose edge locking jaws are equipped at regular intervals; a heater (11) that heats the inner pot (20); a lid of the main body, which opens and closes the top of the main body (10); a lid of an inner pot (40) which is equipped with packing which seals the upper part of the inner pot (20); a locking rim (60) which is installed inside the lid of the main body (30) to be able to rotate, but along which protruding locking jaws are formed at regular intervals; a locking knob (30a) to rotate the locking rim (60) and a rotating lever (51) which is installed to be able to rotate the locking rim (60) by delivering a force to rotate the locking knob (30a) to the locking rim (60); a hook member (10b) which is installed in the main body (10) and in which locking jaws are formed to which the locking member (70) of the lid of the main body (30) is locked when closing the lid of the main body (30); a hinge axis (50) to combine with hinges the lid of the main body (30) to the main body (10); a spring (not shown) which is installed on the hinge axis (50) and rotates the lid of the main body (30) in an open state with elastic forces, if the locking member (70) of the lid of the main body (30) is not locked to the locking jaws of the hook member (10b); and control means (not shown) which input electricity to the heater (11), only where the locking jaws of the locking rim (60) are locked to the locking jaws of

the inner pot (20).

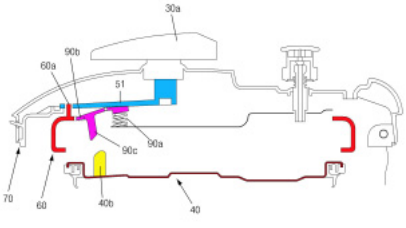
In the locking rim (60) of the invention for review, a protruding pin (60a) is formed as illustrated in drawing 3 and inserted into an insertion hole (51a) formed on one side of a rotation lever (51) illustrated in drawing 4. Thus, the locking rim (60) is rotated by a force to rotate a rotating knob (30a).

The invention for reivew is, as illustrated by drawings 1 and 2, an "apparatus to ensure installation of a lid of an inner pot (40) to be detachably connected to a lid of a main body (30)." The Invention in Question is equipped with a locking end (90b) and a protruding end (90c) and can rotate with an elastic force of a spring (90a). The Invention in Question includes the following: a stopper (90) installed on the lid of the main body (30); a push side (40b) formed on the lid of the inner pot (40) so that the stopper (90) can be rotated by pushing up the protruding end (90c), as the lid of the inner pot (40) is installed; and a locking groove (60b) formed so that the locking rim (60) is inserted into the locking end (90b). Where the lid of the inner pot (40) is installed on the lid of the main body (30), as the locking end (90b) is broken away from the locking groove (60b) of the locking rim (60), the locking rim (60) becomes rotatable. Where the lid of the inner pot (40) is not installed, the locking end (90b) is inserted into the locking groove (60b) of the locking rim (60) by the elastic force of the spring (90a) and the locking rim (60) becomes not rotatable.

Drawing 1

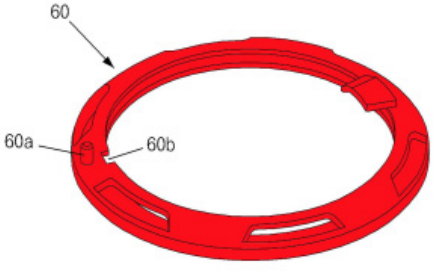


Drawing 2

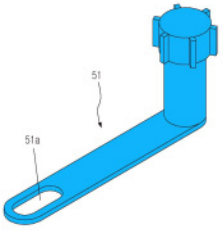


3. Drawings of the Invention for Review

Drawing 3



Drawing 4



10: Main body
20: Inner pot
30: Lid of main body
30a: Locking knob
40: Lid of inner pot
40b: Push side
60: Locking rim
60b: Locking groove
90: Stopper
90a: Spring
90b: Locking end
90c: Protruding end

[Appendix 3]

Description and Drawings of the Invention for Review

1. Title of the Invention for Review

Electric pressure cooker

2. Description of the Invention for Review

As drawings 1, 2, 3, and 4 illustrate, the invention for review includes the following:

a main body (10) which has a heating space whose upper part is opened;

an inner pot (20) which is accommodated in the main body (10) and along whose edges locking jaws are formed at regular intervals;

a heater (11) which heats the inner pot (20);

first steam release means (30) which are equipped with a pressure weight (31);

second steam release means (40) which are equipped with a solenoid valve (41);

a lid of the main body (50) which opens and closes the top of the main body (10);

a pressure lid (60) which is locked with the inner pot (20) using a locking rim (80), which cannot be cleaned with water and detergent, as fastened to the lid of the main body (50) with screws (55) and thus not easily detachable and which is equipped with a first steam release hole (61) to be combined with the first steam release means (30) and a second steam release hole (63) to be combined with the second steam release means (40);

a scattering prevention plate (70) in which a number of penetration holes (71, e.g.: diameter of 4 mm) are formed at a position of the first and second steam release holes (61, 63) when they are inserted into a latch member (65, 69) formed along an edge of the pressure lid (60)

and installed on the pressure lid (60) and different positions in terms of upward and downward directions so that cooking contents over a certain size would not pass, which prevents the first and second steam release holes (61, 63) from being clogged by the cooking contents by preventing the cooking contents from scattering directly to the first and second steam release holes (61, 63), which causes the pressure lid (60) to maintain, with the penetration hole (71), a steam pressure within the inner pot (20), generated by the cooking steam inside the inner pot (20) and which causes steam in the inner pot (20) to be released through the first and second steam release holes (61, 63);

first packing (67) which is installed on the pressure lid (60) and which sticks to a margin of the scattering prevention plate (70) when the scattering prevention plate (70) is installed on the pressure lid (60);

second packing (73) which is installed on the scattering prevention plate (70) and which prevents the cooking contents from overflowing to the outside of the inner pot (20) at the time of cooking by sticking to an edge at the top of the inner pot (20) when the lid of the main body (50) is closed;

a locking rim (80) which is installed so that it can rotate on the inside of the lid of the main body (50) and in which protruding locking jaws (83) are formed at regular intervals;

a locking knob (85) which rotates the locking rim (80);

a rotating lever (87) which is installed to be able to rotate the locking rim (80) by delivering a force to rotate the locking knob (85) to the locking rim (80);

a hook member (10b) which is installed in the main body (10) and in which locking jaws are formed to which a locking member of the lid of the main body (50) is locked when closing the lid of the main body (50);

a hinge axis (13) to combine with hinges the lid of the main body (50) to the main body (10);

a spring (15) which is installed on the hinge axis (13) and rotates the lid of the main body (50) in an open state with elastic forces, if

the locking member of the lid of the main body (50) is not locked to the locking jaws of the hook member (10b); and

control means (not shown) which input electricity to the heater (11), only where the locking jaws (83) of the locking rim (80) are locked to the locking jaws of the inner pot (20).

In the locking rim (80), the protruding pin (80a) is formed and inserted into an insertion hole (87a) formed on one side of the rotation lever (87). Thus, the locking rim (80) is rotated by a force to rotate the rotating knob (85).

If the scattering prevention plate (70) is installed on the pressure lid (60), the first packing (67) installed on the pressure lid (60) sticks to a margin between the pressure lid (60) and the scattering prevention plate (70). If the lid of the main body (50) is closed in this state, the second packing (73) installed on the scattering prevention plate (70) sticks to upper edges of the inner pot (20). Additionally, if the locking rim (80) is rotated from a “locking release position” to a “locking position”, the pressure lid (60) is locked with the inner pot (20) by the locking rim (80). If locking is fastened, electricity is input to said heater (11).

As illustrated in drawing 5,

A stopper (90) is installed on the pressure lid (60).

A stopper (90) is installed on a protruding end (93) formed at a locking end (91), and the bottom of the locking end (91) and can move upward and downward by an elastic force.

The protruding end (93) is formed smaller than a penetration hole (66) so that the protruding end (93) can be inserted into the penetration hole (66) formed on the pressure lid (60). The protruding end (93) is formed larger than the penetration hole (66) so that the protruding end (93) is not inserted into the penetration hole (66).

An inclined groove (91a) is formed on one side of the locking end (91), and a bottom part (91b) is formed which touches the upper side of the pressure lid (60). A protrusion (92) on which one end of a spring (95) is installed is formed on the upper side of the locking end

(91). Additionally, a spring guide wall (94) in a form of wrapping the spring (95) is formed on an external side of the protrusion (92). A guide plate (97) that guides the ascending and descending of the locking end (91) is installed on the pressure lid (60). In the guide plate (97), the first, second, and third plates form a shape of "ㄷ", and a boss (98) is formed on the second plate which connects the first and third plates. A screw hole is formed in the boss (98), to which a bolt (96) with an expanded head is fastened. One end of the spring (95) is fastened to the expanded head of the bolt (96), and the other end is fastened to the locking end (91). Thus, the stopper (90) is provided with elastic forces.

The process to install and separate the scattering prevention plate (70) to and from the pressure lid (60) is as illustrated in drawing 6. In other words, one side of the scattering prevention plate (70) is inserted into a latch (65) of the pressure lid (60) and then, as illustrated in drawings 7 and 8, the other side of the scattering prevention plate (70) is inserted into a latch (69) of the pressure lid (60). Thus, the scattering prevention plate (70) is installed. When detaching the scattering prevention plate (70) from the pressure lid (60), the insertion is released by rotating the latch (69) to the outside.

When the scattering prevention plate (70) is already detached from the pressure lid (60) as illustrated in drawing 7, the protruding end (93) of the stopper (90) is inserted into the penetration hole (66) of the pressure lid (60) by elastic forces of the spring (95) and the bottom side of the locking end (91) touches the upper side of the pressure lid (60).

As illustrated in drawing 8, if the scattering prevention plate (70) is installed on the pressure lid (60), the upper side of the scattering prevention plate (70) pushes the protruding end (93) of the stopper (90), and the locking end (91) of the stopper (90) is separated from the upper side of the pressure lid (60) and goes up.

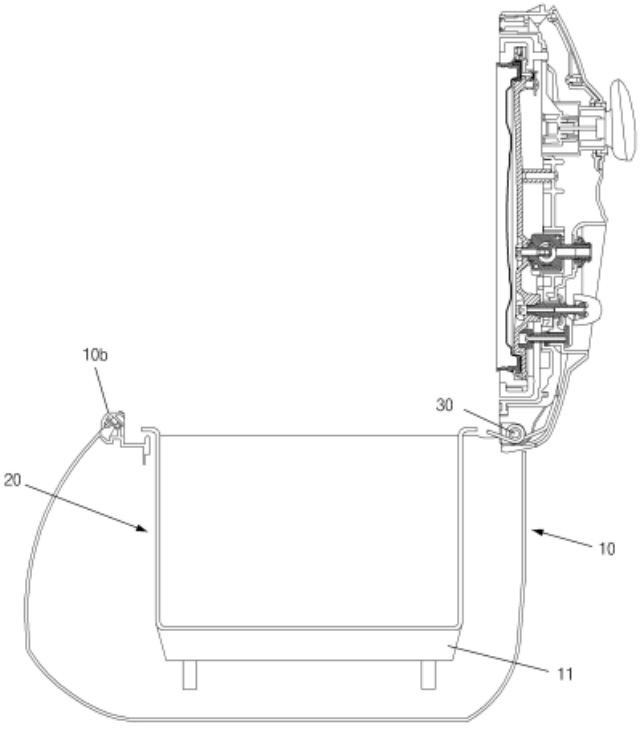
Drawing 9 illustrates rotating the locking rim (80) in a state where the scattering prevention plate (70) is installed on the pressure lid (60).

As illustrated in drawing 9, since the locking end (91) is elevated higher than the locking protrusion (81) of the locking rim (80), the locking rim (80) can rotate from side to side. An arrow direction illustrated in drawing 9(a) is a direction to rotate the locking rim (80) from the "locking position" of the locking rim (80) and the inner pot (20) to the "locking release position". Meanwhile, an arrow direction illustrated in drawing 9(b) is a direction to rotate the locking rim (80) from the "locking release position" of the locking rim (80) and the inner pot (20) to the "locking position". As illustrated in drawing 9(a) and drawing 9(b), where the scattering prevention plate (70) is fastened to the pressure lid (60), the locking rim (80) can be rotated from the "locking position" of the locking rim (80) and the inner pot (20) to the "locking release position", and vice versa.

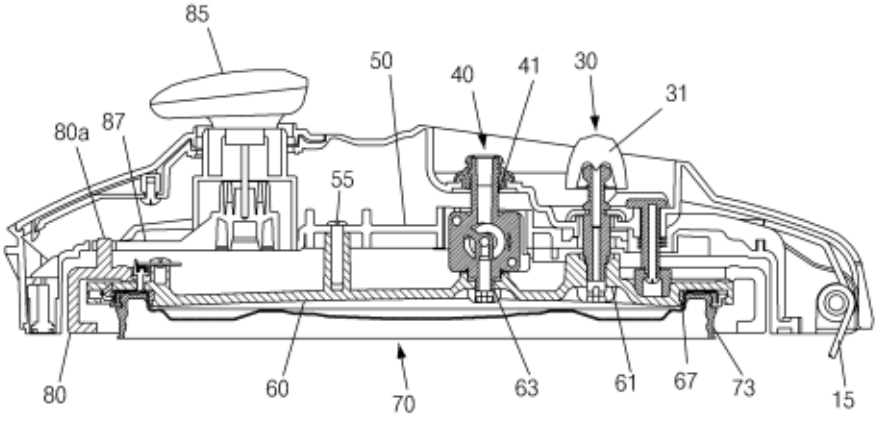
Drawings 10 and 11 illustrate the rotation of the locking rim (80) in a state where the scattering prevention plate (70) is separated from the pressure lid (60). Drawing 10 illustrates rotating the locking rim (80) from the "locking position" of the locking rim (80) and the inner pot (20) to the "locking release position", and drawing 11 illustrates rotating the locking rim (80) from the "locking release position" of the locking rim (80) and the inner pot (20) to the "locking position". As illustrated in drawing 10, if the locking rim (80) is rotated, an inclined surface (81a) on the locking protrusion (81) of the locking rim (80) is inserted into the inclined groove (91a) on the locking end (91) of the stopper (90) and pushes up the locking end (91) (drawing 10(b)). After the locking protrusion (81) of the locking rim (80) passes the bottom side of the locking end (91), the locking end (91) touches the upper side of the pressure lid (60) by elastic forces of the spring (95) (drawing 10(b)). Meanwhile, as illustrated in drawing 11, where the locking rim (80) is rotated from the "locking release position" of the locking rim (80) and the inner pot (20) to the "locking position", the locking protrusion (81) of the locking rim (80) touches the locking end (91) of the stopper (90), and the rotation of the locking rim (80) is checked.

3. Drawings of the Invention for Review

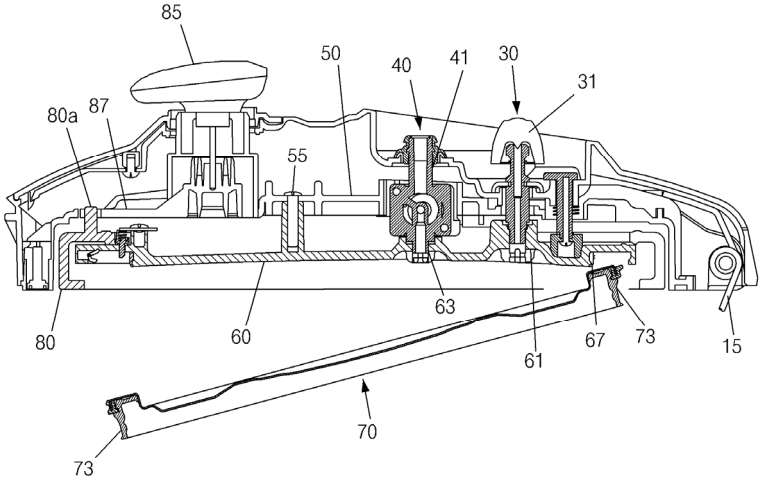
Drawing 1



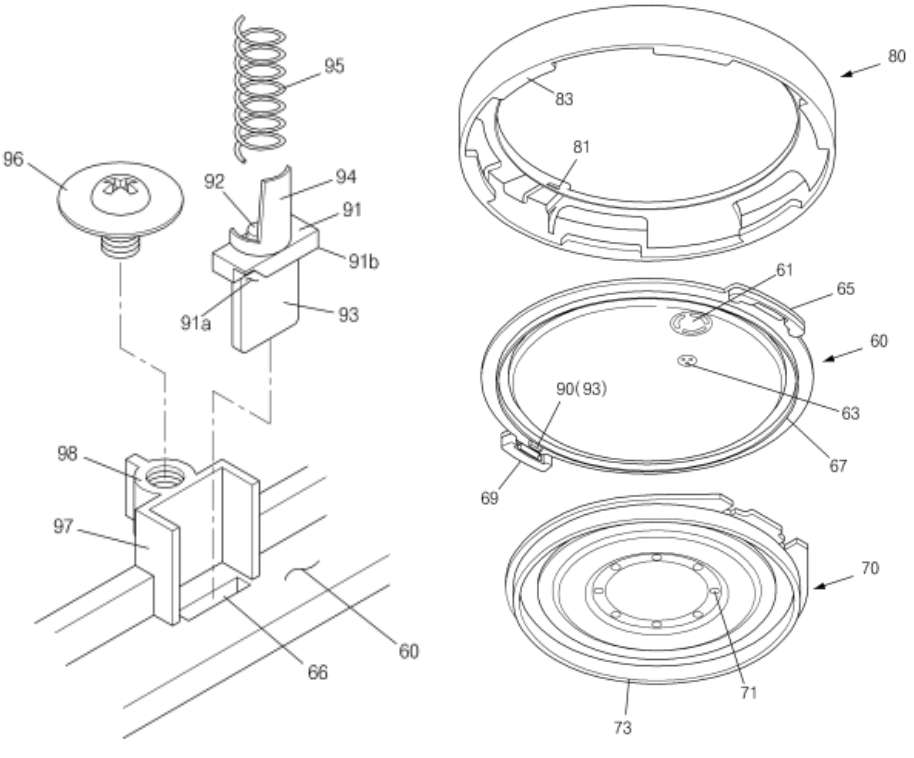
Drawing 2



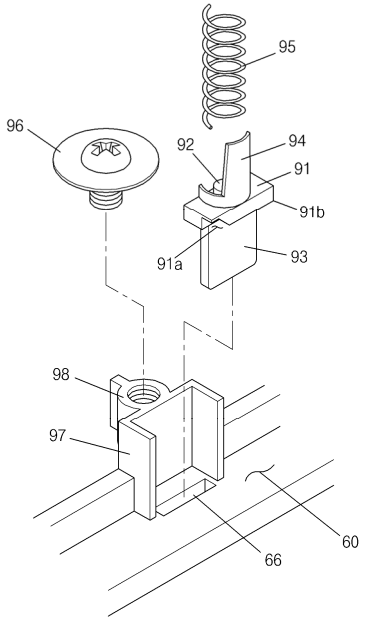
Drawing 3



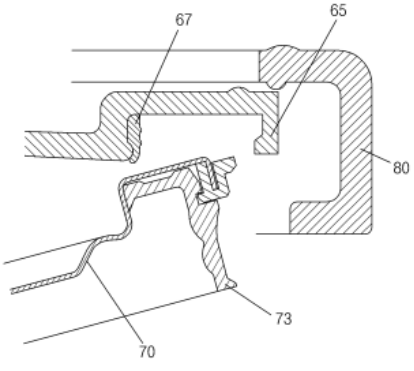
Drawing 4



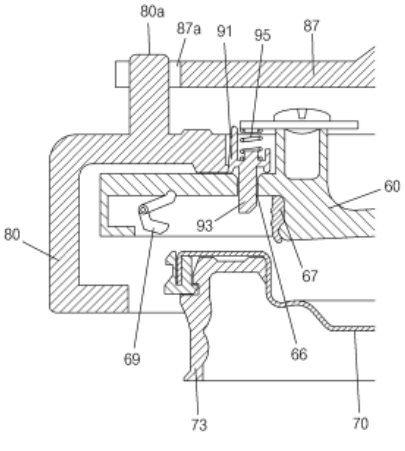
Drawing 5



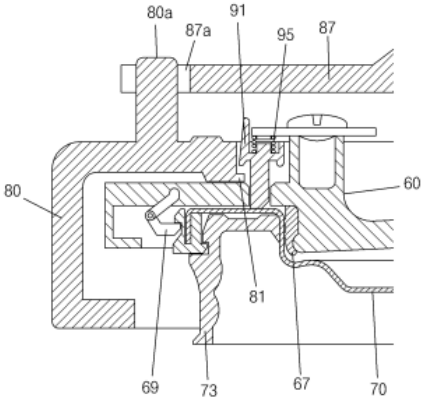
Drawing 6



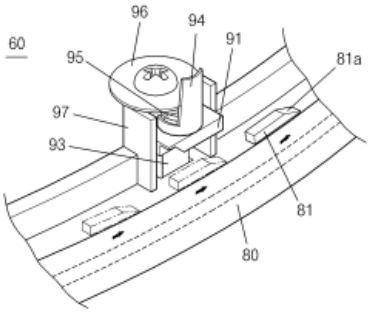
Drawing 7



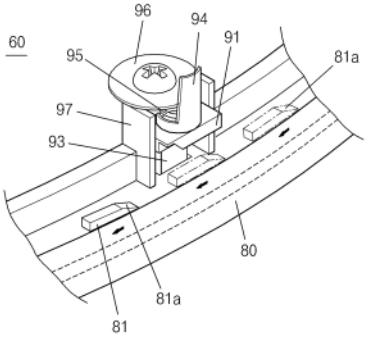
Drawing 8



Drawing 9

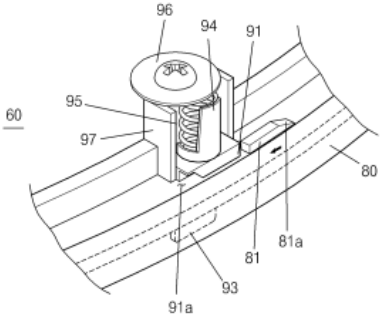


(a)



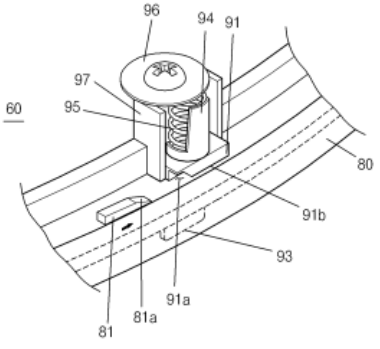
(b)

Drawing 11

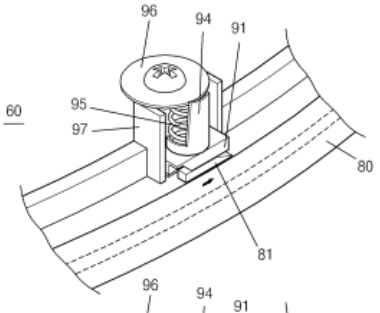


Drawing 10

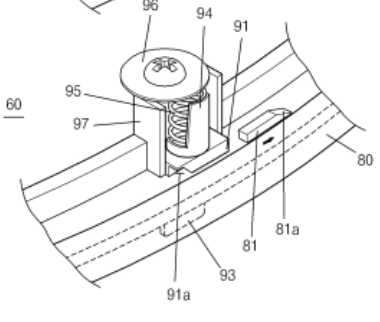
(a)



(b)



(c)



The end.

PATENT COURT OF KOREA
FOURTH DIVISION
DECISION

Case No.	2018Heo5594 Invalidation (Trademark)
Plaintiff	Starbucks Corporation United States of America
Defendant	A
Date of Closing Argument	November 16, 2018
Decision Date	December 7, 2018

ORDER

1. The plaintiff's claim is dismissed.

2. The litigation costs are assessed against the plaintiff.

PLAINTIFF'S DEMAND

The IPTAB Decision 2017Dang3490 dated May 3, 2018 shall be revoked.

OPINION

1. Basic Facts

A. Registered Trademark (Service Mark)

1) Filing Date of Application/ Registration Date/ Registration

Number: May 10, 2016/ August 14, 2017/ No. 400732

2) Mark: 

3) Designated Services: Cafe services, coffee shops, cafe and cafeteria services, teahouse, canteens, restaurant services, bar services, Western restaurant services, traditional tea rooms, management of traditional tea shop, restaurants chains, tea shops, serving of tea, coffee, cocoa, carbonated drinks or fruit juice beverages, food preparation services, Japanese restaurant services, bakeries, cocktail lounge services, fast-food outlets, Korean restaurant services, and cafe services for providing herbal teas other than for medical and medicinal use in Class 43 under Classification of Services

4) Right Holder: Defendant

B. Prior-registered Marks

1) Prior-registered Mark 1[1)]

A) International Registration Date/ Subsequent Designation Date (Filing Date of Application)/ Registration Date/ Registration Number: November 8, 2004/ March 13, 2008/ August 24, 2009/ No. 840436

B) Mark: 

C) Designated Goods: As listed in the Appendix

D) Registered Right Holder: Plaintiff

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1) Corresponds to “Prior-registered International Mark” in the administrative trial stage.

2) Prior-registered Mark 2[2)]

A) Filing Date of Application/ Registration Date/ Registration Number: December 24, 2012/ June 16, 2014/ No. 49842

B) Mark: **TEAVANA**

C) Designated Goods: Tea concentrates with fruit flavoring, herbal tea-based concentrates with fruit flavoring, ready-to-drink tea, teas, tea blends, etc. in Class 30 under Classification of Goods

D) Registered Right Holder: Plaintiff

3) Prior-registered Mark 3[3)]

A) Filing Date of Application/ Registration Date/ Registration Number: September 13, 2013/ October 24, 2014/ No. 51806

B) Mark: **TEAVANA**

C) Designated Services: Wholesale stores services all in the field of coffee, wholesale stores services all in the field of tea, wholesale stores services all in the field of cocoa, etc. in Class 35 under Classification of Services.

D) Registered Right Holder: Plaintiff

C. Procedural History

1) On November 10, 2017, the plaintiff filed a petition seeking invalidation of the registered trademark against the defendant with the Intellectual Property Trial and Appeal Board (the

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2) Corresponds to “Service Mark in Prior Registration 1” in the administrative trial stage.

3) Corresponds to “Service Mark in Prior Registration 2” in the administrative trial stage.

"IPTAB"), stating that the registered trademark falls under Article 7(1)(vii) of the old Trademark Act (the Trademark Act before being wholly amended by No. 14033 on February 29, 2016. Hereinafter the "old Trademark Act") with respect to the prior-registered trademarks (2017Dang3490).

2) On May 3, 2018, the IPTAB rendered its decision to dismiss the plaintiff's petition for administrative trial on the grounds that the registered trademark is not similar in mark to the prior-registered trademarks, and thus does not fall under Article 7(1)(vii) of the old Trademark Act without further discussing similarity of designated goods and services (the "administrative decision at issue").

[Factual Basis] Undisputed facts, Plaintiff's Exhibits 1-5, and purport of the overall argument

2. Discussion on Whether to Uphold Administrative Decision at Issue

A. Summary of Parties' Argument and Issues

1) Plaintiff

The registered trademark is similar in appearance to the prior-registered trademarks in that there is no difference in the type and arrangement of the remaining alphabets except the fifth letter "E" of the registered trademark and the seventh letter "A" of the prior-registered trademarks, and the registered trademark is phonetically similar to the prior-registered marks in that the former sounds "*ti-ben*" and the latter sounds "*ti-ba-na*." As such, the registered trademark and the prior-registered trademarks are similar in mark and identical or similar

in designated goods, and thus there exist grounds for invalidation under Article 7(1)(vii) of the old Trademark Act. Therefore, the administrative decision at issue ruling otherwise is erroneous and should be revoked.

2) Defendant

The registered trademark and the prior-registered trademarks are clearly distinguished in appearance due to design of alphabet, presence or absence of background, and color. Also, while the prior-registered trademarks sound "*ti-ba-na*," the registered trademark sounds "*ti-beun*," which is not phonetically similar. As such, the registered trademark is not similar in mark to the prior-registered trademarks, and thus there is no likelihood of causing misconception or confusion as to the source. Therefore, there exist no grounds for invalidation under Article 7(1)(vii) of the old Trademark Act, and the administrative decision at issue concluding the same is lawful.

B. Whether Registered Trademark Falls Under Article 7(1)(vii) of Trademark Act

1) Legal Principle

Determination on the similarity between two trademarks used on the same goods is to be based on whether there are concerns for ordinary consumers to misperceive or confuse the origin of the designated goods in transactions from the perspective of their intuitive perception of the trademark, grounded in an objective, overall observation of any one of the sight, sound, and meaning of the trademark by recollection. Even if any one of the sight, sound, and meaning of the trademarks is similar, those trademarks cannot be considered similar when confusion about the source of goods can be clearly avoided as a whole in view of other matters. On the contrary, however, despite any difference,

trademarks should be regarded similar when there is likelihood of creating misconception or confusion among ordinary consumers due to similar sound or sight thereof. In addition, in consideration of the fact that it has become frequent today to advertise trademarks through voice media or to order goods by phone with the popularization of advertising media such as broadcasting and telephones, the similarity of sound is one of the most important factors in determining the similarity of letter trademarks (see Supreme Court Decision 97Hu3050, decided February 25, 2000).

In determining the similarity of trademarks, the sound of a trademark that comprises foreign language letters shall be determined according to how most of the traders and consumers of Korea naturally pronounce it without any special difficulties, and in the case where a specific manner of use such as the way the trademark is written in Korean by Korean traders or consumers is found, the sound of the trademark should be determined in consideration of such actual use (see Supreme Court Decision 2004Hu2093, decided November 10, 2005). These principles shall apply equally to service marks.

2) Discussion

A) Sight

(1) When comparing the appearance of the registered trademark "  " with the prior-registered trademarks "TEAVANA", although the first four characters in the alphabet composition are the same and the difference is only in the remaining part, these trademarks are clearly distinguished from each other due to the clear difference in the presence or absence of background color, the design of alphabet "A" ("  "), font of alphabet characters, and the alphabet composition, etc. Therefore, the registered trademark cannot be considered identical or similar in appearance to the prior-registered trademarks.

(2) Regarding this, the plaintiff argues that, in consideration of the purpose of Article 91-2(1) of the old Trademark Act, difference in color such as the presence or absence of background color cannot affect the judgment of similarity of marks. Color should certainly be taken into account when judging the similarity of sight, although it may be said in general that the sight is similar when the difference is only in the color, considering the purpose of said Paragraph. However, as seen above, when the registered trademark differs from the prior-registered trademarks in the design of alphabet, font of alphabet characters, and the alphabet composition, if the difference in color such as the presence or absence of background color is also considered in a comprehensive manner, the registered trademark and the prior-registered trademarks are not considered similar in sight. Thus, the plaintiff's above argument fails.

B) Sound

(1) As long as a specific manner of use is not known, considering the level of the foreign language of ordinary consumers, the registered trademark is likely to be called "*ti-beun*", the English pronunciation thereof, and there is also a possibility where the trademark will be called "*ti-ben*." On the contrary, the prior-registered trademarks are likely to be called "*ti-ba-na*" (there is no dispute between the parties regarding the sound of prior-registered trademarks).

(2) When compared, while the first syllable of "*ti-beun*" or "*ti-ben*" and "*ti-ba-na*" is the same as "ti" and the initial sound of their second syllable is the same as "b," the total number of syllables is two and three respectively. In addition, while "*ti-beun*" or "*ti-ben*" has the final consonant, this is not the case with "*ti-ba-na*." As such, the pronunciation of the registered trademark and the prior-registered trademarks is clearly different, and thus it cannot be said that the registered trademark is identical or similar in sound to the prior-registered trademarks.

(3) Regarding this, the plaintiff argues that the last syllable

of the prior-registered trademarks is pronounced weaker than the two preceding syllables, and thus the prior-registered trademarks and the registered trademark should be considered similar in sound. However, even if "na" of the last syllable and "ba" of the second syllable are compared in sound, it is difficult to conclude that the former sounds weaker than the latter, and thus the plaintiff's above argument fails.

C) Summary of Comparison Results

The registered trademark, like the prior-registered trademarks, is a coined mark, and thus it is not possible to compare the concept thereof. However, as seen above, the registered trademark and the prior-registered trademarks are not identical nor similar both in sight and sound, and therefore mark of the registered trademark cannot be said identical or similar to that of prior-registered trademarks.

3) Discussion on Plaintiff's Argument

A) The plaintiff argues that according to the results of the survey (see Plaintiff's Exhibits 6 and 7), 35.2% of the respondents answered that there is likelihood of causing confusion between the registered trademark and the prior-registered trademarks, and thus there is concern that the registered trademark can cause misconception and confusion with the prior-registered trademarks as to the source of goods.

B) However, in light of the following matters, the results of the above survey are insufficient to deduce the plaintiff's alleged misconception and confusion, and there is no other evidence to be acknowledged. Therefore, the plaintiff's above argument fails.

(1) The results of the survey are based on an online survey of 511 men and women aged 20-59 nationwide conducted by the plaintiff from June 15 to June 21, 2018.

(2) First, the above survey was conducted arbitrarily by the plaintiff, and the questions of the survey were not reviewed in advance by the court.

(3) In addition, the above period is after the plaintiff's

petition for the administrative trial and the ruling of the administrative decision, which is about two years from the filing date of the registered trademark on May 10, 2016.

(4) The results of the above survey were based on the following questions: ① The sentence, "The following questions are about a teashop brand," that precedes individual questions, can give respondents a perception of the brand that it may be "a well-known brand," regardless of the issues concerned. The above questions are followed by the yes/no question "I am aware of or have seen" the mark presented, which is the mark of the prior-registered trademarks **(TEAVANA)**. This order of questions may suggest that the prior-registered trademarks are a well-known and famous trademark. ② Moreover, the survey included "Have you ever been to STARBUCKS, a coffee shop?" or "TEAVANA is a tea brand that is sold by STARBUCKS, a coffee shop," which could mislead the respondents, regardless of the issues concerned. ③ Among others, after exposing the respondents to the prior-registered trademarks (**TEAVANA**) and the registered trademark() three times each, yes/no questions such as "The two presented trademarks look similar" or "The two presented trademarks look similar and can be confused with each other" are asked.

4) Summary of Discussion

According to the above findings, it cannot be said that there exist grounds to invalidate the defendant's registered trademark under Article 7(1)(vii) of the old Trademark Act arising with respect to the prior-registered trademarks and no further discussion is needed on whether the designated goods and services of the registered trademark are identical or similar to those of the prior-registered trademarks. Therefore, the IPTAB decision concluding the same shall be upheld.

3. Conclusion

The claim to revoke the administrative decision by the plaintiff is without merit and therefore dismissed as ordered.

Presiding Judge Sung Sik YOON
Judge Soon Min KWON
Judge Taek Soo JUNG

[Appendix]

Designated Services of Prior-registered Trademark 1

Retail store services featuring teas; retail store services featuring electric tea pots; retail store services featuring non-electric tea pots; retail store services featuring electric tea kettles; retail store services featuring non-electric tea kettles; retail store services featuring cookies; retail store services featuring electrical strainers; retail store services featuring electrical frothers; retail store services featuring hand-operated strainers; retail store services featuring hand-operated frothers; retail store services featuring tea cups; retail store services featuring tea mugs; retail store services featuring glass pitchers; retail store services featuring ceramic plates; retail store services featuring salad bowls; retail store services featuring soup bowls; retail store services featuring storage containers for teas; retail store services featuring candles; retail store services featuring musical recordings; retail store services featuring books; Mail order services featuring teas; mail order services featuring electric tea pots; mail order services featuring non-electric tea pots; mail order services featuring electric tea kettles; mail order services featuring non-electric tea kettles; mail order services featuring cookies; mail order services featuring electrical strainers; mail order services featuring electrical frothers; mail order services featuring hand-operated strainers; mail order services featuring hand-operated frothers; mail order services featuring tea cups; mail order services featuring tea mugs; mail order services featuring glass pitchers; mail order services featuring ceramic plates; mail order services featuring salad bowls; mail order services featuring soup bowls; mail order services featuring storage containers for teas; mail order services featuring candles; mail order services featuring musical recordings; mail order services featuring books in Class 35 under Classification of Goods. End.

PATENT COURT OF KOREA
THIRD DIVISION
DECISION

Case No.	2018Heo5037 Invalidation (Design)
Plaintiff	LOTUS BAKERIES Belgium
Defendant	Cheongwoo food
Date of Closing Argument	December 21, 2018
Decision Date	March 8, 2019

ORDER

1. The IPTAB Decision 2017Dang901 dated May 15, 2018 shall be revoked.

2. The costs arising from this litigation shall be borne by the defendant.

PLAINTIFF'S DEMAND

As ordered.

OPINION

1. Background

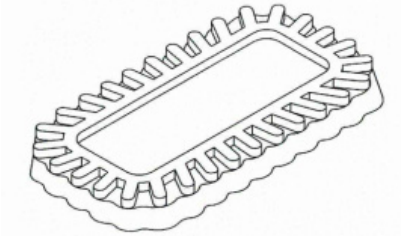
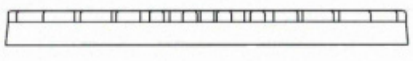
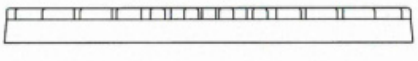
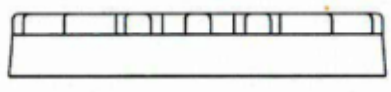
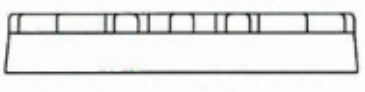
A. Plaintiff's Registered Design at Issue (hereinafter the "subject design") (Plaintiff's Exhibits 1 and 2)

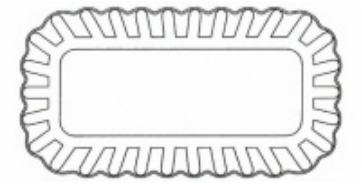
1) Filing date of application/ date of registration/ registration number: May 7, 2010/ June 7, 2010/ No. 564018

2) Article to which design is applied: Confectionery

3) Main contents and drawings

Description of the Design
1. The materials are a mixture of flour, sugar, butter, milk, and egg. 2. The confectionery with the Registered Design at Issue has a rectangular shape, and its edge at the top of the plane has a concavo-convex shape. A rectangular groove is formed at the center of the top of the plane. 3. The concavo-convex shape formed at the edge of the top of the plane is slanted more from its center to its left and right. Thus, it shows off its simplicity and sophistication.
Gist of Design Creation
The gist of design creation is the combination of the confectionery shape and form

Perspective View	
	
Front View	Rear View
	
Left Side View	Right Side View
	

Plane View	Bottom View
	

B. Prior Designs[1)]

1) Prior design 1 (Plaintiff's Exhibit 4)

Prior design 1 is the product pictures listed on pp. 7 and 10 of the Plaintiff's catalog titled "COURMET CENTER" published in 2006.

Perspective View	Plane View
	

2) Prior design 2 (Plaintiff's Exhibit 5)

Prior design 2 is the product pictures listed on pp. 24 and 34 of the Plaintiff's catalog titled "COURMET CENTER" published in 2004.

Perspective View	Plane View
	

1) The prior designs are actually the pictures listed in a book. However, they are all referred to as the "Design" for the sake of convenience in comparing with the subject design.

C. IPTAB decision

1) On March 24, 2017, the plaintiff filed against the defendant, who is the right-holder of the subject design, a petition for trial to invalidate the subject design to the IPTAB, arguing to the effect that "since the subject design is the same as or identical to prior designs 1 and 2, it falls under Article 5(1) of the 'old Design Protection Act (before the whole amendments were made to Law No. 11848, May 28, 2013; hereinafter the 'old Design Protection Act').' Or, since a person having ordinary skill in the art (hereinafter an 'ordinary designer') can easily create the subject Design from prior designs 1 and 2, the subject design falls under Article 5(2) of the old Design Protection Act, and thus its registration shall be invalidated."

2) The IPTAB examined the plaintiff's petition for trial under Case No. 2017Dang901 and, on May 15, 2018, rendered its decision (Plaintiff's Exhibit 3) to dismiss the plaintiff's petition for trial on the ground that "the subject design is not similar to prior designs 1 and 2, and an ordinary designer cannot easily create the same from prior designs 1 and 2. Thus, the subject design does not fall under Article 5(1) and (2) of the old Design Protection Act."

2. Summary of Parties' Arguments

A. Plaintiff

The subject design shall be invalidated on the following grounds. However, the IPTAB decision is inconsistent with the following analysis and thus shall not be upheld.

1) The commonalities between the subject design and prior designs 1 and 2 are those which are well visible and thus correspond to dominant features that can attract consumers' attention. Thus, the aesthetic sense of the subject design is, on the whole, similar to that of prior designs 1 and 2. Therefore, the novelty of the subject design is denied.

2) The subject design simulates prior design 1 or 2 by changing only the shape of some minor parts therein. Thus, the subject design is merely one which an ordinary designer could easily create from prior design 1 or 2.

B. Defendant

The subject design shall be not invalidated on the following grounds. Further, the IPTAB decision is consistent with the following analysis and thus shall be upheld.

1) In this case, the breadth of similarity shall be determined relatively narrowly in light of the following facts: the confectionery to which the subject design and the Prior Designs are applied is sensitive to trends, and various designs have been developed and registered thus far; and since the confectionery is wrapped in wrapping paper and distributed in a state in which a part or the whole thereof is blocked from view, its form would not directly arouse observers' interest.

2) The differences between the subject design and prior designs 1 and 2 correspond to the dominant feature of the design. Thus, the aesthetic sense of the subject design is, on the whole, different from that of the prior designs.

3) Furthermore, the subject design did not simply simulate the prior designs, but chose and combined them. Thus, the subject

design does not correspond to a design that an ordinary designer could easily create from prior designs 1 or 2.

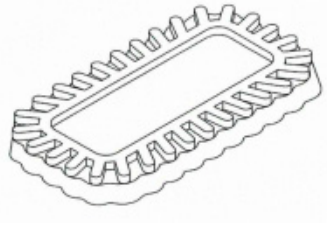
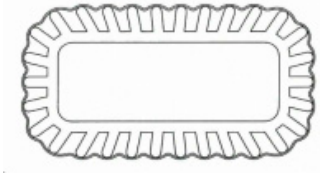
3. Whether the Subject Design Falls under Article 5(2) of the Old Design Protection Act

A. Whether an Article to which the Subject Design is Applied is the Same as or Identical to which Prior Design 2 is Applied

Since the article to which the subject design is applied and the article to which prior design 2 is applied are a confectionery, they are the same article. Neither party argues this point.

B. Whether the Difficulty of Creation of the Subject Design is Denied by Prior Design 2

1) Comparison of the subject design and prior design 2

Classification	Registered Design at Issue	Prior Design 2
Perspective View		
Plane View		

2) Analysis of commonalities and differences

a) Commonalities

① The overall shape is a rectangle, and its edges are slightly rounded.

② As illustrated in a plane view and a perspective view, all edges on the plane are formed in a concavo-convex shape. The concavo-convex shapes are symmetrically slanted toward the edges at both ends from a center of each side in the rectangle.

On this point, the defendant argues to the effect that the subject design and prior design 2 are different in that a concavo-convex shape in prior design 2 is formed low and round and thus is not distinctively prominent, while that in the subject design is vertical to a perpendicular interface.

However, as illustrated in a perspective view of prior design 2, a concavo-convex shape in the edges has a vertical side and is distinctively prominent, as to be mostly similar to the subject design. Thus, the defendant's arguments stated above shall not be granted.

③ A rectangular groove is formed at the center of the top of the plane.

④ As illustrated in plane views, the subject design and prior design 2 are almost identical in the following aspects: the ratio of length and width in a rectangle; and the ratio of grooves at the center of the top of the plane in the whole rectangle. Thus, the width of a concavo-convex shape in the edges is the same on all four sides.

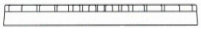
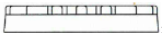
b) Differences

Ⓐ As illustrated in plane views, in the subject design, a concavo-convex shape in an edge is formed to be gradually slanted as both ends drift away from the center of each side in the rectangle, while prior design 2 has formed a number of parallel concavo-convex shapes whose grades are identical at the center of each side in the rectangle.

Ⓑ As illustrated in plane views, an almost perpendicular

concavo-convex shape, such as “  ”, is formed at the center of each side in the subject design. However, in prior design 2, a bud shape, such as “  ”, is formed in the middle.

Ⓒ The grooves in the middle of the subject design are rectangular, and their edges are slightly rounded. Also, their rectangular bodies have no special shape and are flat. On the other hand, in prior design 2, the rectangular edges of the grooves have an angular shape, and the alphabetical characters “LOTUS” are embossed therein, such as “  ”.

Ⓓ As illustrated in front (rear) views, such as  , or left (right) side views, such as  , of the subject design, the edges at the bottom of the grooves are formed in a slanted shape in which the lower part is slightly wider than the upper part. On the other hand, in prior design 2, the edges at the bottom of the grooves are almost perpendicular, such as “  ”.

3) Analysis

It shall be deemed on the following grounds that the subject design is one which an ordinary designer could easily create from prior design 2.

a) As illustrated in plane views, the subject design and prior design 2 feature in attracting observers’ attention and forming an aesthetic sense with an overall shape, a ratio of each element thereof, and a concavo-convex pattern. Commonalities ① through ④ and differences Ⓐ through Ⓒ shown above are related to the features stated above.

b) Meanwhile, difference Ⓓ is only a detailed and subtle difference that can be verified only by close observation. Thus, difference Ⓓ does not have an effect on the overall aesthetic sense of

both designs.

c) Notwithstanding the commonalities between the subject design and prior design 2, general consumers and traders who observe both designs would feel different aesthetic senses on the whole due to differences Ⓐ through Ⓒ in features that form the aesthetic sense, as explained above.

d) However, it shall be deemed that the different aesthetic senses between both designs caused by differences Ⓐ through Ⓒ are merely those which an ordinary designer could create easily from prior design 2.

① As to differences Ⓐ and Ⓑ, the subject design maintains, in a situation where the four sides of concavo-convex shapes are almost identical to those in prior design 2, the pattern in which the concavo-convex shapes are symmetrically slanted toward the edges at both ends from the center of each side in the rectangle. However, in the subject design, the grade of the concavo-convex shapes is changed to increase gradually. Thus, the concavo-convex shape in the middle of each side is formed to be almost perpendicular to each side. As a result, the subject design does not have a bud shape as in prior design 2. Ultimately, this only adjusts the grade of the concavo-convex shapes in a given edge. An ordinary designer would be able to easily try the adjustment without substantial creative efforts.

② Also, as to an argument in relation to difference Ⓒ, not only does the subject design delete the alphabetical characters embossed in grooves of prior design 2, but also, the alphabetical characters are only the plaintiff's business name and written with a plain typeface without special designs. Thus, it is merely a simple commercial and functional transformation to delete the alphabetical characters. Therefore, it may not be deemed that other aesthetic value is acknowledged due to the alphabetical characters.

③ Furthermore, in relation to difference Ⓒ, each rectangular edge of the grooves in the middle is slightly rounded in

the subject design, which is also merely a transformation common in the relevant design field.

C. Summary of Analysis

As analyzed above, the subject design is one which an ordinary designer could easily create from prior design 2. Thus, there exists a ground for invalidation of the subject design by failing to meet the requirement of difficulty in creation.

4. Conclusion

Therefore, the registration of the subject design shall be invalidated under Article 68(1)1 and Article 5(2) of the old Design Protection Act. Thus, the IPTAB decision is inconsistent with the above analysis and shall not be upheld. The plaintiff's claim to revoke the IPTAB decision is therefore well grounded.

Presiding Judge Kyu Hong LEE
Judge Sung Yop WOO
Judge Jin Hee LEE

PATENT COURT OF KOREA
SECOND DIVISION
DECISION

Case No.	2018Heo9442 Rejection (Trademark)
Plaintiff	BABYZEN France
Defendant	Commissioner of Korean Intellectual Property Office
Date of Closing Argument	May 2, 2019
Decision Date	June 5, 2019

ORDER

1. The plaintiff's claim is dismissed.

2. The costs arising from this litigation shall be borne by the plaintiff.

PLAINTIFF'S DEMAND

The IPTAB Decision 2017Won2034 dated November 22, 2018 shall be revoked.

OPINION

1. Background

A. Claimed Trademark at Issue (hereinafter the "subject trademark")

1) Filing number/ filing date of application: No. 40-2016-74619/ September 22, 2016

2) Mark: YOYO

3) Designated goods: Baby walker, baby playpens, wind chime for outdoor decoration and nonmetallic basket under Goods Category No. 20

B. IPTAB Decision

1) As to the plaintiff's subject trademark, on January 4, 2017, an examiner of the KIPO notified the grounds for rejection to the effect that "since the subject trademark falls under Articles 33(1)(vii), 34(1)(vii), and 38(1) of the Trademark Act, the subject trademark may not be registered."

2) On February 28, 2017, the plaintiff submitted opinion documents and an amendment for the grounds for rejection stated above. However, on April 7, 2017, an examiner of the KIPO issued a rejection on the ground that "the grounds for rejection stated above were re-examined with the plaintiff's written documents and amendment. However, the ground for rejection in relation to Article 33(1)(vii) of the Trademark Act was not resolved."

3) On April 27, 2017, the plaintiff claimed an appeal against the rejection (2017Won2034) to the IPTAB. On November 22, the IPTAB decided to dismiss the plaintiff's petition for trial stated above on the ground that "since the subject trademark is a trademark which is unrecognizable for consumers to identify which goods related to whose business it indicates,

and it is not proper for a specific person to monopolize the subject trademark for public interest, the subject trademark falls under Article 33(1)(vii) of the Trademark Act."

[Factual basis] Undisputed facts, statements and images in Plaintiff's Exhibits 1 through 4, purport of the overall argument

2. Whether the IPTAB Erred

A. Summary of Plaintiff's Argument for Revocation of IPTAB Decision

The mark of the subject trademark is sufficiently distinctive as an arbitrary mark in light of the following: the fact that the mark is uniquely designed; the concept in the trademark; relation with the designated goods; the actual state of transaction; etc. Thus, the mark of the subject trademark does not fall under Article 33(1)(vii) of the Trademark Act, and the IPTAB decision is therefore inconsistent with the above analysis and shall be revoked.

B. Whether the Subject Trademark Falls under Article 33(1)(vii) of the Trademark Act

1) Relevant law

As one of the circumstances in which a trademark may be registered, Article 33(1)(vii) of the Trademark Act stipulates that "in addition to trademarks under subparagraphs 1 through 6, a trademark which is unrecognizable for consumers to identify which goods related to whose business it indicates." This means that even a trademark that does not fall under subparagraphs 1 through 6 of the same Article may not be registered where the trademark cannot identify a source of its own goods and a source of other goods. Whether a certain

trademark is distinctive or not shall be objectively determined in light of the concept in the trademark, its relation with the designated goods, the actual state of transaction, etc. Where it is difficult to recognize the distinctiveness according to social norms or it is recognized that it is not proper for a specific person to monopolize a trademark, it may be deemed that the trademark is not distinctive (See Supreme Court Decision 2008Hu4721, decided July 29, 2010; Supreme Court Decision 2012Hu2951, decided December 27, 2012).

Whether the subject trademark meets the distinctiveness requirement in each subparagraph of Article 33(1) shall, in principle, be determined when deciding whether to register the subject trademark. Where it is decided whether to register the subject trademark by an appeal to rejection, whether the subject trademark meets the distinctiveness requirement in each subparagraph of Article 33(1) shall be determined at the time of administrative decision (See Supreme Court Decision 99Hu2785, decided February 8, 2002; Supreme Court Decision 2011Hu1142, decided April 13, 2012).

2) Established facts

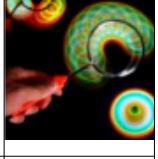
The following facts are established in light of the following: statements and images in Plaintiff's Exhibits 5, 8, 10, 11, and 14 as well as in Defendant's Exhibits 1 through 4 and 7 (including each hyphenated number, if any; hereinafter the same shall apply).

A) According to the Knowledge Encyclopedia of Naver, which is an Internet portal site, the term "yoyo" is a Filipino word which means "to return." A "yoyo" is a toy that applies the principle of a gyroscope, created in China and conveyed from the East Indies to Europe in the 18th century. Duncan Toys Company in the U.S., which made the first commercial yoyo, is known as the oldest yoyo company. In addition, the Knowledge Encyclopedia of Naver introduces that Yomega, Russell, Coca-Cola, etc. are also well-known yoyo companies.

Naver and Daum English dictionaries specify that the term “yoyo” means the following: “yoyo (toy); you’re on your own; to fluctuate (a number of times radically); and fool.” Naver Korean dictionary specifies that the term “yoyo” means “a toy that applies the principle of a gyroscope, in which the central axes of two pieces of round boards are connected and fastened, to which one end of a thread is tied and other end of the thread is held by a person who rotates the boards by lifting and lowering them.”

B) As of April 9, 2019, when searching for “yoyo” in Naver and Daum, 3,880 items were found under the toy category in Naver and 15,602 items were found under the toy/education/teaching aid category in Daum.

As illustrated in the table below, a number of online shopping malls are selling various types of “yoyo” toys, from those with special materials and additional functions that teenagers and adults may use to those in a simple form so that even babies can use them.

11Street	Gmarket	We Make Price	SSG.COM	LOTTE.COM	Naver Shopping
					
Plaintiff’s Exhibit 11	Plaintiff’s Exhibit 14-3	Plaintiff’s Exhibit 14-6	Plaintiff’s Exhibit 14-9	Plaintiff’s Exhibit 14-12	Defendant’s Exhibit 4-2

C) Meanwhile, according to the Nursing Dictionary in Naver Knowledge Encyclopedia, the term “early childhood” is “one of the stages of development and refers to from one to six years of age. Even if the growth of the upper body is slow, the lower body grows rapidly. Thus, he or she will become slender and long-limbed...”

D) As illustrated in the table below, when searching for “baby playpens” in online shopping malls, etc., the following were found: rubber doll playpens, woodworking playpens, kitchen playpens, and puppet playpens.

Defendant’s Exhibit 7-1		Defendant’s Exhibit 7-2	
			
Rubber doll playpens	Woodworking playpens	Kitchen playpens	Puppet playpens

3) Discussion

The subject trademark is a trademark for which it is difficult to recognize the distinctiveness of goods under social norms in relation to the baby playpens among the designated goods, or for which it is not proper for a specific person to monopolize under the public interest in light of the established facts stated above, evidence, the purport of the overall argument, and the following circumstances:

A) YOYO, which is the subject trademark, is a character mark composed of only lowercase alphabet characters, in which the ends of the “y” are rounded and a space is placed between the “ \ ” and “ / ” of the “y.” Also, even if modifications are applied, such as to extend the width of the “y” so that the ratio of the width and length is about 1:1, etc., it is difficult to deem that the subject trademark would draw special attention from the public to overwhelm them with the awareness of “yoyo.” Thus, it does not seem that a new meaning is generated or new distinctiveness is formed by exceeding the original meaning of “yoyo” with these modifications.

B) As examined above, the term “yoyo” refers to toys, etc.

which move up and down under the principle of a gyroscope as winding and unwinding thread into and out of a spool in the shape of a flat reel composed of two pieces. Around November 22, 2018, which is the date when the administrative decision of this case was rendered, it could be known that "yoyo" is widely recognized as a toy among parents with a baby, in light of the fact that toys titled "yoyo" are sold through online shopping malls, etc.

C) Meanwhile, it seems that various baby playpens, such as rubber doll playpens, woodworking playpens, kitchen playpens, puppet playpens, etc., are being sold through online shopping malls, etc., and that these baby playpens also target parents with a baby as their main customers.

4) Determination of the plaintiff's arguments

A) The plaintiff argues the following: ① Since YOYO, which is the subject trademark, has various meanings, it may not be decided that the subject trademark is recognized only as a name of a toy, and ② the "baby playpens" are the "playpens for babies" under the KIPO Goods Classification Codes and refer to a safety fence for babies under two years of age. The "baby playpens" are different from "toy" yoyos for elementary school students or above in their product attributes, scope of consumers, state of transaction, use purpose, etc. Thus, where the term "baby playpens" is used for baby playpens or baby walkers, it sufficiently indicates the source of the goods.

As examined above, the term "yoyo" also means that "you're on your own," "fool", etc. However, it is difficult to view that meanings other than that of a toy using the principle of a gyroscope are widely known to consumers, and there is no evidence to recognize otherwise, in light of the following: an origin of the term "yoyo"; a time when it is made into a toy; the fact that the term "yoyo" is widely recognized and used as a toy; etc.

Also, among the designated goods of the subject trademark, the

"baby playpens" are classified as "playpens for babies" under the KIPO Goods Classification Codes (Plaintiff's Exhibit 6), and the "playpen" refers to a "playpen to enclose a small area so that a baby or a child can play safely" (Plaintiff's Exhibit 7). Also, as shown in the table below, a fence to protect a baby can be searched for in online shopping malls.

However, it is difficult to view that, as the plaintiff argues, a baby playpen is restricted to a safety fence for protection of a baby, in light of the following facts: as examined above, since the term "baby" lexically refers to a "child from one year of age to six years of age," it is difficult to restrict the term "baby" to only babies under two years of age; since the KIPO Goods Classification Codes only classify the goods for the convenience of filing, it is difficult to determine that the Codes reflect the perception or situation in the industry that transacts the goods; as examined above, the term "playpen" is used for things that can be classified as toys, as illustrated in the table below. The plaintiff's argument stated above is without merit.

Search with "baby fence" or "baby room"			**Search with "baby playpens"**	
Plaintiff's Exhibit 12	**Plaintiff's Exhibits 14-1 and 10**	**Plaintiff's Exhibit 14-7**	**Defendant's Exhibit 7-1**	**Defendant's Exhibit 7-2**
				
				

B) The plaintiff argues that the "yoyo" mark including the subject trademark is distinctive in its relation with designated goods, such as baby walkers, baby playpens, etc., as the mark is registered as a trademark in various countries.

However, the registration of the subject trademark shall be independently determined in relation to designated goods under the Trademark Act in Korea and is not restricted by the registration in foreign countries with different legislative systems or linguistic habits (See Supreme Court Decision 2002Hu1768, decided May 16, 2003). The plaintiff's argument stated above is also without merit.

C. Whether the IPTAB Erred

Since the subject trademark falls under Article 33(1)(vii) of the Trademark Act, it may not be registered. Thus, the IPTAB decision is consistent with the above analysis and shall be upheld.

3. Conclusion

The plaintiff's claim to revoke the IPTAB decision is without merit and therefore dismissed. It is so ordered.

Presiding Judge Je Jeong LEE
Judge Ki Su KIM
Judge Ji Young Yi

PATENT COURT OF KOREA
FIRST DIVISION
DECISION

Case No.	2019Heo2967 Cancellation (Design)
Plaintiff	A
Defendant	Commissioner of Korean Intellectual Property Office
Intervenor for Defendant	Louis Vuitton Malletier France
Date of Closing Argument	July 11, 2019
Decision Date	July 25, 2019

ORDER

1. The plaintiff's claim is dismissed.

2. The costs arising from this litigation, including those caused by intervention, shall be borne by the plaintiff.

PLAINTIFF'S DEMAND

The IPTAB Decision 2018Chui1 dated March 7, 2019 shall be revoked.

OPINION

1. Background

A. Registered Design at Issue (hereinafter the "subject design")

1) Filing date of application/ date of registration/ registration number: April 26, 2017/ July 10, 2017/ Design No. 0914610

2) Article to which the design is applied: Bag fabric

3) Design right-holder: Plaintiff

4) Description of design, main content of creation and drawing: As per Appendix 1

B. Prior Designs and Prior Trademarks

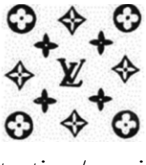
1) Prior designs

A) Date of disclosure/ location: April 21, 2004/ Naver (http://blog.naver.com/D)

B) Title of article: Bag

C) Drawing: As per Appendix 2

2) Prior trademark 1

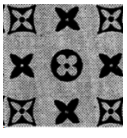
A) Trademark: 

B) Date of registration/ registration number: January 17, 1985/ Trademark No. 109060

C) Trademark owner: Intervenor for Defendant

D) Designated goods: Book bag, briefcase, leather box, Boston bag, travelling trunk, handbag, etc. under Category of Goods Class 18

3) Prior trademark 2

A) Trademark: 

B) Date of registration/ registration number: January 17, 1992/ Trademark No. 231194

C) Trademark owner: Intervenor for defendant

D) Designated goods: Travelling trunk, travelling bag, travelling handbag, handbag, briefcase, leather key case, etc. under Category of Goods Class 18

C. IPTAB Decision

1) As soon as the subject design was registered, the intervenor for the defendant filed a formal objection thereto on September 22, 2017. On July 2, 2018, a panel of KIPO examiners cancelled the registration on the grounds that the subject design is similar to prior trademarks 1 and 2, which were remarkably well known, such that the subject design could be perceived as a specific person's trademark, and thus the subject design could be confused with goods related to others' business. Accordingly, on July 30, 2018, the plaintiff filed to the IPTAB a petition for trial to appeal the cancellation of registration.

2) The IPTAB heard the petition for trial under Case No. 2018Chui1 and on March 7, 2019, decided not to accept the plaintiff's petition for trial to the effect specified in the decision to cancel the registration.

[Factual Basis] Undisputed facts, statements in Plaintiff's Exhibits 1 through 6 and Defendant's Exhibits 1 through 3, and purport of the overall argument (including each hyphenated number; hereinafter the same shall apply)

2. Parties' Arguments

A. Summary of Plaintiff's Arguments

Since the subject design does not correspond to a design likely to cause confusion with goods of the prior trademarks, the IPTAB decision is inconsistent with the above analysis and shall not be upheld.

B. Summary of Arguments by Defendant and Intervenor for Defendant

1) Since the subject design is a design likely to cause confusion with goods of the prior trademarks, which are well-known and famous trademarks of the intervenor for the defendant (hereinafter the "intervenor"), the IPTAB decision is consistent with the above analysis and shall be upheld.

2) Furthermore, since the subject design is a design that can be easily created from the prior trademarks and the prior designs, the registration of the subject design shall be cancelled.

3. Discussion on the Merits of the IPTAB Decision

A. Relevant law

Article 34(iii) of the Design Protection Act stipulates that "a design mistakable as related to an article associated with any other person's

business" is not eligible for design registration. A design is not, in itself, an identifier of goods. However, since a design comprises the appearance of goods, it can be the standard for general consumers to determine the source of goods when they choose goods. Thus, the general consumers may be misled or confused as to the source of goods as related to others' business. In particular, where the goods related to others' business and the design or trademark used therein are well known and famous, it would result in having a free ride on the credit accrued from others' business. Thus, the purpose of this provision is to establish a sound distribution order and protect the interests of general consumers by preventing an act of unfair competition in business through the use of registered designs. Thus, it shall be deemed that the following designs also fall under the designs stipulated by Article 34(iii) of the Design Protection Act: a design that is identical or similar to a well-known trademark or well-known design of another, which functions as a trademark; or a design likely to cause, by using the motif of a trademark or design of another as it is, the general consumers to mistake goods that use the design for goods produced and sold by others or specially related parties.

B. Discussion

1) According to the following facts or circumstances established from the Defendant's Exhibits 3 through 14 and the purport of the overall argument, it would be reasonable to view that the intervenor displayed, as a source of goods, the prior trademarks on textiles, clothes, bags, etc. which the intervenor produced and sold before the filing date of the application for the subject design, and that the prior marks were well known to the general consumers in Korea.

A) The intervenor is a total fashion company in France which was founded in 1910 and has produced and sold fabric, clothes,

perfume, accessories, bags, jewelry, etc.

B) The intervenor created its logo marks in which LV, which is its acronym, and a pattern of a flower (or star) in Art Nouveau style and continued to use the logo marks in the design of various fashion products, such as fabric, clothes, bags, etc. Also, the intervenor received trademark registration with the logo mark as its minimum unit and bags, etc. as its designated goods. The prior trademarks are the representative logo trademarks of the intervenor.

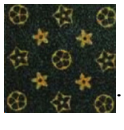
C) According to brand valuation agencies, such as Interbrand, Forbes, Millward Brown, etc., "LOUIS VUITTON," which is a business name trademark of the intervenor, has been a trademark whose asset values were in the top 30 in the world.

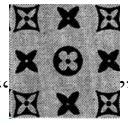
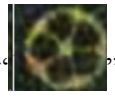
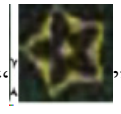
D) In 1991, the intervenor founded its subsidiary, E Korea, in Korea. Sales of E Korea were about KRW 372.1 billion, KRW 427.3 billion, and KRW 497.3 billion in 2009, 2010, and 2011, respectively (after 2012, E Korea changed from a corporation to a limited liability company; since then, its financial statements have not been disclosed).

E) Currently, the goods of the intervenor, on which the prior trademarks are used, are sold in 35 stores on a national scale.

F) The prior trademarks had been included, for many years including from 2011 to 2017, in the "Frequently Stolen Domestic and Foreign Trademarks" published by the KIPO.

2) The designated goods of the subject design is "bag fabric," while that of the prior trademarks is "bag" or falls under the category of goods in which "bag fabric" is used. Thus, both goods are identical or economically closely related (See 1. Background above).

3) In the subject design, a fixed form of a flower (or star) is regularly arranged as follows:  . Also, in the prior

trademarks, a fixed form of a flower (or star) is regularly arranged such as "  " (Prior Trademark 1), and "  " (Prior Trademark 2), or a logo () is combined with the arrangement (Prior Trademark 1). To be more specific, even if "  ", "  ", and "  ", which are unit figures of the subject design, are somewhat different from "  ", "  ", and "  ", which are unit figures of the prior trademarks, in terms of the number of petals, area, or positions of bright and dark parts in flower patterns (differences from prior trademarks 1 and 2 shown above), existence of the logo (difference from prior trademark 2 shown above), etc., the overall motif of each corresponding unit figure in the subject design and the prior trademarks is similar in the following aspects: a simplified form of a flower that has plural round petals is placed in a circle to fill the circle (each left-most unit figure in the unit figures shown above); and a simplified form of a flower that has plural petals whose tips are slightly sharp is placed in a small circle in a form where each petal is wide open (each right-most unit figure in the unit figures shown above). Moreover, the subject design and the prior trademarks are similar in the following aspects: they are designs (or marks) in which each unit figure maintains regular spacing and size and continues to encircle the surroundings; and each unit figure is arranged regularly and repeatedly along the vertices

of a square or diamond shape in the directions of North, South, East, and West. In terms of the proportional size and spacing of each unit figure, the proportional size and spacing of each unit figure are almost identical in the subject design and the prior trademarks.

In light of the facts stated above, dominant features, such as the composition of each unit figure, arrangement motif, etc., are similar on the whole in the subject design and the prior trademarks, notwithstanding the differences in the existence of the logo and those in the unit figures of the subject design and the prior trademarks.

4) Meanwhile, as examined above, the subject design slightly modifies each unit figure of the prior trademarks, combines them in accordance with the overall composition, arrangement, and expression of the prior trademarks, and then represents them in the entirety of the "bag fabric," which is the subject article.

5) In light of the established facts or circumstances stated above, it may be deemed that the differences in the shape of each unit figure and the existence of the logo in the subject design and the prior trademarks are merely minute modifications that can appear when each mark of the prior trademarks, which are well known and famous, is expressed in a design. Ultimately, the shape of the subject design is similar to each mark of the prior trademarks. Also, the general consumers do not closely examine and remember even the details of the unit figures, but perceive goods depending on the dominant impression of the design at large. In particular, where a well-known and famous mark is expressed in a design, the practice of general trading is to identify the source of the relevant goods depending on the perception thereof. Thus,

where the subject design is embodied on the “bags,” which are the designated goods of the prior trademarks or the goods for which the “bag fabric” is used and then sold accordingly, it would be reasonable to deem that the general consumers are likely to mistake or confuse a bag on which the subject design is embodied and goods, such as bags, etc., which are handled by the intervenor, who is a holder of rights in the prior trademarks, which are well known an famous, or a party in a special relationship with the intervenor.

C. Summary of Discussion

Since the subject design is similar to the marks in the prior trademarks of the intervenor, which are well known and famous, the subject design is a design that is likely to cause confusion with goods, such as bags, etc., related to the business of the intervenor. Thus, the subject design shall be de-registered under Article 34(iii) of the Design Protection Act without the need to further examine whether the marks in the prior trademarks can be easily created.

4. Conclusion

The IPTAB decision, which is consistent with the above analysis, shall be upheld. Further, the plaintiff’s claim to revoke the IPTAB decision is without merit and therefore dismissed. It is decided as ordered.

Presiding Judge Kyung Ran KIM
Judge Byeong Guk KIM
Judge Hee Young JEONG

[Appendix 1]

Subject Design

【Article to Which the Design Is Applied】 Bag fabric

【Description of Design】

1. The materials are fabric or leather.
2. The present design is used as fabric for a wallet, purse, belt, handbag, business card wallet, travelling carrier, etc.
3. A pattern displayed on a surface of the present design is repeated continuously in the directions of North, South, East, and West.
4. Drawing 1.1 represents a surface view of the present design.
5. The other side contains no pattern.

【Gist of Design Creation】

The gist of design creation is the combination of the shape and form of “bag fabric.”

[Drawing 1.1]

[Appendix 2]

Prior Design

End.

PATENT COURT OF KOREA
FIRST DIVISION
DECISION

Case No.	2019Heo2240 Rejection (Trademark)
Plaintiff	Watch Tower Bible and Tract Society of Pennsylvania United States of America
Defendant	Commissioner of the Korean Intellectual Property Office
Date of Closing Argument	September 03, 2019
Decision Date	September 19, 2019

ORDER

1. The IPTAB Decision No. 2017Won1805 rendered on December 27, 2018 shall be revoked.

2. The cost arising from this litigation shall be borne by the defendant.

PLAINTIFF'S DEMAND

As ordered.

OPINION

1. Basic Facts

A. Claimed Trademark at Issue

1) International Registration No./Date of International Registration /Date of Claimed Priority: No. 1284180/November 02, 2015/ May 13, 2015

2) Mark: 

3) Designated goods and services: See Appendix.

B. Rejection and Summary of IPTAB Decision

1) On March 14, 2017, an examiner for KIPO decided that the Claimed Trademark at Issue (hereinafter the "subject trademark") only combines the followings: "JW" which is a simple and readily available; ".ORG" which is non-distinctive; and a black rectangle. Thus, the examiner rejected the subject trademark on the ground that it fell under Article 6(1)(vi) and (vii) of the Old Trademark Act (before amendment by Act No. 14033, February 29, 2016, hereinafter the "Old Trademark Act").

2) The plaintiff filed an administrative appeal against the rejection. The IPTAB heard this case under Case No. 2017Won1805. On December 27, 2018, the IPTAB determined that the subject trademark fell under Article 6(1)(vii) of the Old Trademark Act and rendered the administrative decision to

reject the plaintiff's claim (hereinafter the "IPTAB Decision").

[Factual basis] Undisputed facts, statements in Plaintiff's Exhibits 1 through 4 (including hyphenated numbers, if any), purport of the overall argument

2. Summary of Parties' Arguments

A. Plaintiff

1) In the subject trademark, "JW" is not simple nor readily available and distinctive parts, such as ".ORG", a black rectangle, etc. are combined thereto. Thus, the subject trademark does not fall under the non-distinctive trademark prescribed in Article 6(1)(vii) of the old Trademark Act.

2) The IPTAB erred in its decision and shall be revoked.

B. Defendant

1) In the subject trademark, "JW" is simple and readily available. Also, ".ORG" and the black figure are not distinctive. Thus, it can be said that the subject trademark is distinctive in its entirety.

2) Therefore, the IPTAB decision is consistent with the above analysis and shall be upheld.

3. Discussion

A. Legal Principle

In light of the actual state of transaction, whether it may be allowed to use a mark on an exclusive basis, etc., it shall be determined whether a trademark for which an application is filed falls under a "trademark consisting solely of a simple and readily available mark" as prescribed by Article 6(1)(vi) of the old Trademark Act and thus can be registered (Supreme Court Decision 2003Hu2942, decided November 26, 2004). However, this requirement implies that a trademark consisting solely of marks that are simple and readily available may not be registered not that a trademark composed only of marks that are simple or readily available may not be registered (Supreme Court Decision 84Hu93, decided January 29, 1985). The term "readily available mark" means, as the mark is used in various ways by a third party, it can be found easily or it will be likely to be able to be found easily in future.

Article 6(1) of the old Trademark Act prescribes in subparagraph (vii), as one of the cases where a trademark may not be registered, that "in addition to trademarks under subparagraphs (i) through (vi), a trademark which is unrecognizable for consumers to identify which goods related to whose business it indicates." This subparagraph means that even a trademark that does not fall under any of subparagraphs (i) through (vi) may not be registered, if the trademark cannot identify sources of its own goods and those of other goods. It shall be objectively determined whether a certain trademark is non-distinctive, in light of the followings: the concept of the trademark; the relationship between the trademark and goods; trade practice, etc. In cases where it is difficult to acknowledge, under social norms, that a trademark is distinctive or it is recognized that it would be unreasonable for a specific person to monopolize the trademark, it may be deemed that the trademark is non-distinctive (Supreme Court

Decision 2012Hu2951, decided December 27, 2012).

The Commissioner of the Korean Intellectual Property Office shall bear the burden of proof to prove that there is a ground to reject the registration of the claimed trademark.

B. Analysis

1) Whether "JW" is simple and readily available

The "JW" in the subject trademark is an acronym for "Jehovah's Witness" which is an English name of religious organization known as the "Yeohowaui Jeungin" in Korea. There is no objective data to support an argument to the effect that the term "JW" is recognized as the "Yeohowaui Jeungin."

Since the "JW" is consisting of two English alphabets, it may fall under a "simple mark." And as to whether the "JW" may fall under a "readily available mark," the "JW" is used or registered as a mark only in "JWSOFT" (Plaintiff's Exhibit 6-1), "JW'S" (Plaintiff's Exhibit 6-2), etc. In addition, there is no other objective data to show that "JW" is being used in various ways by a third party.

In this respect, the defendant argues that the "JW" is a "readily available mark", because, even if the "JW" is not frequently used as a mark, it is highly likely that it would be frequently used in future. However, there is no data to support the said argument. Thus, the defendant's argument stated above cannot be accepted.

Therefore, it may be deemed that the "JW" that constitutes the subject trademark falls under the "simple and readily available mark."

2) Whether a part combined thereto is non-distinctive

In the subject trademark, ".ORG" and "JW" are arranged in different lines and placed within a black rectangle.

In light of the fact that, even if ".ORG" implies a domain name of

non-profit organization (Defendant's Exhibit 1), the common nature of designated goods of the subject trademark is, as specified in Appendix, the publication, such as book, magazine, etc. of religious organization or the provision of information through these media, ".ORG" implies only that a non-profit organization uses a mark. However, it does not seem that the nature of designated goods or service industry is known intuitively through ".ORG."

In addition, an example in which characters are arranged in two lines and placed within a black rectangle cannot be found easily (The defendant presented no material while the plaintiff submitted only the Plaintiff's Exhibit 7-1).

Thus, the subject trademark in which ".ORG" is arranged in a line under "JW" and these characters are placed within a black rectangle does not, regardless of the distinctiveness of "JW", fall under a "trademark consisting solely of a simple and readily available mark" or "in addition to a trademark which is unrecognizable" prescribed by the Article 6(1)(vii) of the Old Trademark Act.

3) Review of other circumstances

The plaintiff stated its opinion to the effect that, even if the subject trademark is registered, the effect of trademark rights reaches only to a mark which combines "JW", ".ORG" and black rectangle but not to each of the components (see the record of trial for this case). Thus, it seems that it is not likely that a third party would suffer an unforeseen disadvantage, even if the subject trademark is registered.

Also, since 2012, the plaintiff has used "JW.ORG" that composes the subject trademark not only in Korea but also in other countries as a domain name of its own Internet website (Defendant's Exhibits 2 and 3). However, there is no case in which a third party uses "JW" as a mark for designated goods or service industry of the subject trademark or in relation thereto. Thus, the claim to reject the registration of the subject trademark is well grounded even from an

aspect of concrete state of transaction and adequacy for exclusivity.

Therefore, the IPTAB erred in its decision and thus it shall be revoked.

4. Conclusion

The plaintiff's claim to revoke the IPTAB decision is therefore well grounded and shall be granted. It is so ordered.

Presiding Judge Kyung Ran KIM
Judge Byeong Guk KIM
Judge Hee Young JEONG

[Appendix]

Designated Goods of the Internationally Registered Trademark at Issue

- Class 09 under the Category of Goods: Digital media in the field of religious education, namely pre-recorded video discs (of music), pre-recorded video discs (of non-music), downloadable audio recordings, downloadable video recordings, pre-recorded high definition video discs (of music), and pre-recorded high definition video discs (of non-music), all featuring religious information relating to the tenets of the jehovah's witnesses denomination, downloadable software in the nature of a mobile application for accessing, viewing and downloading audio and video recordings, music, digital print publications, online publications, documents, forms, audio and digital content, and web pages, all featuring religious information relating to the tenets of the jehovah's witnesses denomination, digital versatile disks, DVDs.

- Class 16 under the Category of Goods: Printed materials in the field of religious education, namely, books, magazines, brochures, booklets, leaflets, newsletters, informational sheets, calendars, informational cards, and paper signs, all featuring religious information relating to the tenets of the jehovah's witnesses denomination.

- Class 41 under the Category of Service Industries: Providing an educational information from a website in the field of religious education, namely, audio and video recordings, music, digital print publications, online publications, documents, forms, audio and digital content, and web pages, all featuring religious information relating to the tenets of the jehovah's witnesses denomination.

PATENT COURT OF KOREA
TWENTY FIRST DIVISION
DECISION

Case No.	2018Na1640 Injunction against Trademark Right Infringement, etc.
Plaintiff-Appellant	A
Defendants-Appellees	1. B 2. Shinsegae
District Court's Decision	Seoul Central District Court Decision, 2017GaHap523615, decided May 24, 2018
Date of Closing Argument	September 10, 2019
Decision Date	October 31, 2019

ORDER

1. The lower court's decision is revoked.

2. A. When advertising and selling products described in the Appendix "Goods", defendant B shall not indicate or use marks described in the Appendix "Marks that the Defendants Use."

   B. Defendant B shall destroy finished products, semi-products, prototypes, wrapping, packing containers, advertisement and manufacturing equipment which use marks described in the Appendix "Marks that the Defendants Use" and are stored in the headquarter, branch, office, store, factory and warehouse

of defendant B.

C. The defendants shall pay the plaintiff the followings:
   1) Defendant B shall pay the Plaintiff the followings: KRW 3,000,000; an amount calculated for KRW 3,000,000 shown above at an annual interest of 5% for a period from April 14, 2017 to October 31, 2019; and an amount calculated for KRW 3,000,000 shown above at an annual interest of 12% for a period from November 1, 2019 to the date on which KRW 3,000,000 shown above are fully repaid.
   2) Defendant Shinsegae shall, jointly with defendant B, pay the plaintiff the followings: KRW 1,000,000; an amount calculated for KRW 1,000,000 shown above at an annual interest of 5% for a period from April 13, 2017 to October 31, 2019; and an amount calculated for KRW 1,000,000 shown above at an annual interest of 12% for a period from November 1, 2019 to the date on which KRW 1,000,000 shown above are fully repaid.

D. All of other claims by the plaintiff against the defendants are dismissed.

3. Four-fifths of the cost arising from this litigation shall be borne by the plaintiff and the remaining cost shall be borne by the defendants.

4. Orders 2(A) through (C) are subject to provisional execution.

PLAINTIFF'S DEMAND AND APPELLANT'S DEMAND

The lower court's decision shall be revoked. The defendants shall perform Article 2(A) and (B) in Order and pay the plaintiff the

followings: KRW 15,000,000; and an amount calculated for KRW 15,000,000 shown above at an annual interest of 15% for a period from the following day of the date on which a duplicate of the complaint is served to the date on which KRW 15,000,000 shown above are fully repaid.

OPINION

1. Basic Facts

A. Plaintiff's Registered Trademark

The plaintiff is a right holder of the registered trademark shown below (hereinafter the "registered trademark").

1) Application date/ Registration date/ Registration number: October 23, 2006/ March 18, 2008/ No.741025

2) Mark: 

3) Designated goods:

○ Class 18: Fur, leather briefcase, leather suitcase, leather handbag, multipurpose sports bag, double bag, backpack, multipurpose purse, climbing bag, business card case, case not of precious metal, business bag, briefcase, shopping bag, shoulder bag, sports bag, shoe bag, credit card case, suitcase, key case, trunk, purse (excluding purse made of precious metal), book bag, tote bag, parasol, umbrella, mountaineering stick

○ Class 25: Leather shoes, golf shoes, high heels, loafers, dress shoes, mountain climbing shoes, running shoes, boots, sandals, sneakers, children's shoes, sports shoes, jeans, golf

clothing, leather jacket, men's suit, women's suit, blue jeans, double coat, denim trousers, mountain climbing clothes, one-piece dress, T-shirt, short-sleeved sports shirt, fur coat, mink jacket, skirt, children's wear, negligee, swimsuit, sweater, slip, sleepwear, leather gloves, necktie, scarf, socks, muffler, stockings, suspenders for clothing, belt for clothing, hat, belt

B. Defendants' Position and Mark Use

1) Defendant B sells clothing, etc. under the company name "LEATA" (hereinafter "LEATA") and defendant Shinsegae Co. Ltd. (hereinafter the "defendant company") runs Shinsegae Department Store Gyeonggi Branch and Gangnam Branch as well as Shinsegae Internet Shopping Mall (http://www.ssg.com; hereinafter the "Shinsegae Mall").

2) Around September 2015, defendant B launched products, such as clothing, hats, etc., to which marks described in Appendix "Marks that the Defendants Use" (hereinafter the "used mark") were attached, as the product group for "2015 F/W Season" of LEATA.

3) Defendant B and the defendant company entered into an agreement for special purchase for short-term special events of department and a special agreement for online operation (hereinafter collectively the "Agreement at Issue") to the effect that defendant B shall sell the Products at Issue in Shinsegae Department Store Gyeonggi Branch and Gangnam Branch as well as Shinsegae Mall of the defendant company and then receive the sales payment from which a specific sum of money or a fixed ratio shall be deducted, as specified in the following table:

Order	Store		Date of Agreement	Date of Termination
1	Shinsegae Department Store Gyeonggi Branch		January 29, 2015	July 17, 2016
2	Shinsegae Department Store Gangnam Branch		September 10, 2015	December 31, 2016
3	Shinsegae Mall	Gyeonggi Branch	January 29, 2015	July, 17, 2016
		Gangnam Branch	September 10, 2015	December 31, 2016

4) Defendant B supplied the product in accordance with the Agreement at Issue. The product was displayed and sold at Shinsegae Department Store Gyeonggi Branch and Gangnam Branch as well as Shinsegae Mall of the defendant company.

C. Procedural History of Relevant IPTAB Decisions

1) The plaintiff requested, to the IPTAB against the defendants, an affirmative trial to confirm the scope of rights to the effect that the used mark falls within the scope of rights of the registered trademark[1] (Case No. IPTAB 2016Dang3088 against defendant B and Case No. IPTAB 2016Dang3208 against the defendant company). On March 14, 2017, the IPTAB decided to accept the plaintiff's all claims in the said trial. The decisions became final and binding.

2) The Spanish Company Grupo Del Pozo S. L. (hereinafter the "nonlitigant company") requested, to the IPTAB against the plaintiff, a trial to invalidate the trademark registration of the registered trademark (Case No. 2018Dang7), arguing that "the

1) In the said trial to confirm the scope of rights, the plaintiff designated, as a product that used the used mark, T shirt against the defendant B and hats against the defendant company, respectively.

registration of the registered trademark shall be invalidated, because the registered trademark is likely to mislead consumers about the quality of goods or deceive consumers in relation to the previously used trademarks of the nonlitigant company, which were widely recognized in Spain and all the countries of the world and because the plaintiff filed an application for the registered trademark and received the registration thereof to gain undue profits by imitating the well-known and famous previously used trademarks." On May 1, 2018, the IPTAB decided to dismiss the said request on the grounds that it may not be viewed that the previously used trademarks of the nonlitigant company were remarkably known in Korea and abroad at the time of application of the registered trademark or that the previously used trademarks of the nonlitigant company were known as trademarks of a specific person in Korea by the time of the decision to register the registered trademark. The decision became final and binding.

3) G requested, to the IPTAB against the plaintiff, a non-use cancellation trial of the registered trademark, having jeans, golf clothing, etc. as the designated goods (IPTAB Case No. 2016Dang3549). However, on June 28, 2017, the IPTAB decided to dismiss the said request, admitting the fact that the registered trademark was used on the golf clothing on the following grounds: an agreement to use the registered trademark that was entered into by and between the plaintiff and H on May 20, 2012; manufacturing orders for tags and business cards of the registered trademark by H around September 2015 and November 2015; and an order of golf clothing on which the registered trademark was marked. The decision became final and binding.

[Factual basis] Undisputed facts, statements in Plaintiff's Exhibits 1, 6-2, 6-3, 7-1 through 7-3, 8 through 11, 14-1 through 15-1 and Defendant's Exhibits A1, A5-2, A7-1, 7-3, 7-5, A8, Defendant's Exhibits B1, 2, B3-1 though 3-4, B4−1 through 4-4, and purport of the overall argument

2. Parties' Arguments

A. Summary of Plaintiff's Arguments

The defendant B affixed the marks described in Appendix "Marks that the Defendants Use" (hereinafter the "used mark") identical to the registered mark to goods identical or similar to the designated goods of the registered mark and sold the said goods. The defendant company infringed the trademark of the registered trademark by indicating, exhibiting and giving wide publicity of the used mark on tags after arranging a space to sell the said goods in Shinsegae Department Store Gyeonggi Branch and Gangnam Branch as well as Shinsegae Mall.

Thus, defendant B shall, as described in the Order, stop the use of the used mark and destroy the infringing composition. Also, the defendants shall, as a part of damages for their infringement, pay KRW 15,000,000 respectively, primarily under Article 110(3) (equivalent to the defendants' profits) of the Trademark Act or secondarily under Article 110(4) (equivalent to royalties) of the same Act.

B. Summary of Defendants' Arguments

1) The defendants used the used mark not as a trademark but only as a design.
2) Even if the goods on which the used mark was indicated were

displayed, promoted and sold in Shinsegae Department Store Gyeonggi Branch and Gangnam Branch as well as Shinsegae Mall that the defendant company ran, defendant B was the party that actually displayed, promoted and sold the said goods. It may not be deemed that the defendant company used the used mark (the defendant company's argument).

3) It is obvious that the registration of the registered trademark would become invalid, because the registered trademark falls under any of the followings: ① The registered trademark falls within a trademark whose marks and designated goods are identical or similar to those of "24 HRS DUO" that is an earlier-filed trademark; ② The registered trademark is a trademark identical or similar to those that are perceived, among foreign consumers, to indicate the goods of the non-litigant Spanish company Grupo Del Pozo; or ③ The registered trademark falls under a mark indicating the use of the designated goods in a common manner. Thus, the plaintiff's claim based on the trademark right of the registered trademark is an abuse of right.

4) The plaintiff had not used the registered trademark for a long time. However, after the Defendants used the registered trademark, the plaintiff artificially made it look like to do business with the registered trademark and then filed the present lawsuit. Even if the plaintiff satisfied the formal requirements for the exercise of a right, the plaintiff actually abused or misused the Trademark Act. Thus, it may not be viewed as the legitimate exercise of a right under the Trademark Act.[2)]

5) Since the plaintiff has never used the registered mark as

2) See p. 11, etc. in Defendant B's Reply.

business, it may not be viewed that the plaintiff suffered damages in the business caused by the Defendants' use of the registered mark.[3)]

3. Discussion on the Infringement of Trademark Right

A. Discussion on the Plaintiff's Arguments

As examined above, the defendant B, under the agreement, supplied the defendant company with the product to which the used mark was affixed and the products were displayed and sold in Shinsegae Department Store Gyeonggi Branch and Gangnam Branch as well as Shinsegae Mall that the defendant company ran.

Moreover, the appearance of "24HRS" that is the registered trademark is the identical or similar to "  ", "  " and "  " that are indicated on the defendants' products in that they both are composite trademarks that combined "24" which is an Arabic number and "HRS" which is the English abbreviation for 'hours' in uppercase. Also, their marks are identical or similar, because their sounds and meanings are identical in that both of them are referred to as the "24 HRS" or "twenty four hours" and deliver the meaning of "24 hours."

Also, the registered trademark sets various clothing and hats, such as jeans, mountain-climbing clothes, etc. as its designated goods. Since the defendants used their marks on their clothing and hats, the designated goods of the registered trademark are also identical to the products on which the defendants used their marks.

Thus, unless there are special circumstances, it may be said that the defendants infringed the trademark rights of the registered trademark by using the marks similar or identical to the registered trademark on

3) See p. 3, etc. in Defendants' Brief dated August 30, 2018.

clothing and hats that were the designated goods of the registered trademark.

B. Discussion on the Defendants' Arguments

1) Whether the defendants' use of the used mark falls only within the use as a design

It would be an act to infringe a trademark right of another person to use another person's registered trademark on goods identical or similar to the designated goods for the registered trademark. However, in cases where a registered trademark of another person is used but not to indicate its source, which is the fundamental function of a trademark, and thus is not used as a trademark, the said use cannot be viewed as an infringing act of a trademark right of the registered trademark. And it shall be determined whether a mark indicated in actual trade is used as an identifier of goods in light of the followings: the mark's relation with the goods; manner of use (position, size, etc. of mark); whether the mark is well-known and famous; user's intention; background, etc. (See Supreme Court Decision 2010Da20044, decided March 29, 2012). Also, a design and a trademark are not mutually exclusive or selective. Thus, where an image or shape that can be a design also functions as a source identifier, the fundamental function of a trademark, it shall be deemed that the image or shape is used as a trademark (See e.g., Supreme Court Decision 2011Do13441, decided February 14, 2013).

On the other hand, in light of statements in Plaintiff's Exhibits 6 through 11 and purport of the overall argument, the following facts can be established: ① When defendant B first released the product on which the used mark is indicated, defendant B posted on LEATA's official blog that "in 2015 F/W season, LEATA will introduce its regular line-ups produced under the theme of 24HRS"; and ② As in the product, the used mark was indicated clearly in a size that can

attract consumer attention in the upper right of shirts, left side of pants and at the front of hats.





In light of the particular modes of the used mark, such as the contents of advertisement, position, size, etc. of marks, it only seems that the use of the used mark falls under the typical use example of trademark to identify a source of goods, such as clothing and hats. It may not be viewed that the used mark was used only as a design excluding the function as a trademark.

Thus, it would be reasonable to deem that the used mark was used as an identifier of goods. Therefore, the defendants' arguments stated above are inconsistent with the above analysis and shall not be upheld.

2) Whether the defendant company used the used mark

In light of the statements in Plaintiff's Exhibit 9 through 11, Defendant's Exhibit B3 through B6 and purport of the overall argument, the following facts can be established: that the defendant company was described as a seller of the product in a product search box in "SSG," an online shopping mall site, and in a receipt that the defendant company issued in its offline stores; that the defendant company paid the defendant B a product payment that the defendant company received from purchasers of the product under the agreement excluding a fixed rate of sales commission and; that the defendants sold and promoted the product in stores in mutual consultation under the agreement. Thus, it would be reasonable to view that the defendant company used the used mark through the sales or promotion of the product. And there is no counterevidence to disprove the said view

(Provided, that it would be reasonable to view that, in light of the fact established above, the defendant company sold or promoted the product in conjunction with defendant B).

Thus, the defendant company's arguments in this regard are based on different assumptions and shall not be upheld.

3) Whether it is obvious that the registered trademark will be invalidated

A) Analysis on possibility of invalidation due to earlier filed trademark

Under Article 76(1) of the Old Trademark Act (prior to being amended with Act No. 11113, December 2, 2011), no trial to invalidate trademark registration shall be requested under Article 8 (Invalidation due to Existence of Earlier Filed Trademark) of the Old Trademark Act after five years elapse from the date of trademark registration. On the other hand, as examined above, the date of trademark registration of the registered trademark was March 18, 2008 and it is obvious that five years elapsed from the March 18, 2008. Also, there is no material to acknowledge, on the record, that an invalidation trial was requested for the registered trademark within the said statute of repose.

Thus, it may not be viewed that the circumstances fall within a case where it is obvious that the registered trademark would be invalidated through an invalidation trial under Article 8(1) of the Old Trademark Act, i.e., the existence of an earlier filed similar trademark.

In this regard, the defendants argue that, even if the statute of repose elapsed, it falls under the abuse of a trademark right for the plaintiff to actively exercise the trademark right against the defendants, as long as there exists an foundational ground for invalidation in the registered trademark.

However, the purpose why the Trademark Act sets the statute of repose to a request for trial based on the grounds for invalidation is to

promote the stability of legal relation around a registered trademark by deciding the same as soon as possible (See, e.g., Supreme Court Decision 2011Hu2275, decided February 23, 2012; Supreme Court Decision 2008Hu4691, decided May 28, 2009). If the other party may protest, even after the elapse of the statute of repose, against the exercise of a right by a trademark right holder on the grounds that the exercise is abuse of right, the said purpose to set the statute of repose would not be achieved. As examined above, it may not be viewed that, as long as the statute of repose elapsed, the registered trademark would fall under a case in which it is obvious for the registered trademark to be invalid by an administrative invalidation trial due to the elapse of statute of repose. Exercise of a right may be recognized as abuse of right only where it is recognized that the right is not worthy to be protected, in light of all circumstances, such as the balance between public interest and private interest, expressed in the argument in the specific case. In this case, on April 3, 2017, the IPTAB decided to revoke the registration of the registered trademark on the grounds that the international trademark registration No. 926501 (**24 HRS DUO**) which was an earlier filed trademark and a ground for the violation of Article 8(1) of the Old Trademark Act by the registered trademark had never been used in Korea. In light of the fact that the IPTAB decision became final and binding,[4] it is difficult to acknowledge that there is a public interest to prevent confusion or the other party who filed a trademark earlier and whose interest would be adjusted.

Thus, it would be reasonable to deem that there is no circumstance to view the plaintiff's exercise of a trademark right as the abuse of a right, as long as the statute of repose under Article 8(1) of the Old Trademark Act has elapsed.

B) Analysis on possibility of invalidation due to well-known

4) See Reference 1 attached to the Plaintiff's Brief dated May 8, 2018.

pre-use trademark

In order for the registered trademark to fall within Article 7(1)12 of the Old Trademark Act (prior to being amended with Act No. 8190, January 3, 2007; hereinafter the "Former Old Trademark Act"), a pre-use trademark shall be a well-known trademark that is conspicuously known as a trademark of a specific person among domestic or foreign consumers. Whether a pre-use trademark is a well-known trademark shall be determined based on the standards at the time of application (See, e.g., Gist of Supreme Court Decision 2002Hu1362, decided May 14, 2004).

In light of statements in Defendant's Exhibits B28-1 through B28-8, the followings are established: the nonlitigant company ran an advertisement on pre-use trademarks, such as  , etc. which seems similar to the registered trademark, in the magazine FOOTWEAR in Australia around January 2005, in the magazine iHOLA in Spain around October 2006, in the magazine Mujer de hoy in Spain in 2006, in the magazine Botticelli in Spain in 2006 and in Vogue in Russia in 2005; the nonlitigant company ran, in Europe, such as Spain, etc., a few stores where 24HRS that seems identical or similar to the registered trademark was marked; It seems that the nonlitigant company received several letters of thanks for presents to celebrities and; It seems that an article on 24 HRS which seems a pre-use trademark of the nonlitigant company was published in a newspaper issued in Spain around 2000.

However, there are no circumstances that inform the circulation, market share, etc. of the said magazines. Also, there is no materials on the number of stores and sales. Thus, it is insufficient to establish that the pre-use trademark of the nonlitigant company conspicuously perceived among consumers at home or abroad as indicating goods of the nonlitigant company at the time of application of the registered trademark. Also, there is no other evidence to establish the same.

Thus, the defendants' above arguments are without merit.

C) Analysis on possibility of invalidation as a descriptive mark

According to the statements in Defendant's Exhibit A11-1 through A11-3, B16 and B17, the following facts can be established: "24HRS" was perceived to mean 24 hours; Several trademarks that included "24HRS" as one element of a mark were registered in Class 18 and Class 25 which are the classification for designated goods of the registered trademark and; In a 2016 case where an application was filed, in which a mark identical to the registered trademark has the Class 3 as its designated goods, an examiner of the KIPO notified a ground for rejection to the effect that "'24HRS' in this claimed trademark means '24 hours' and falls within an indication of nature, such as quality, effect, etc. as instinctively perceived to be maintained for 24 hours in relation to the designate goods."

However, it is difficult, only with the facts stated above, to state categorically that the registered trademark lacks distinctiveness when being used in the designated goods that fall within Class 18 and Class 25 under the category of goods. And there is no evidence to approve the same.

Thus, the defendants' arguments in this regard are without merit.

D) After all, it may not be deemed that it is obvious that the registered trademark would be invalidated in an administrative invalidation trial. The defendants' arguments based on other premises are all without merit.

4) Whether the plaintiff's filing of the lawsuit at issue is abuse of right under the disguise of exercise of right

A) Relevant law

Where, in light of the purpose and background under which a trademark right holder filed an application and registered a mark, specific and particular circumstances, etc. under which the trademark right holder became to exercise a trademark right, it is acknowledged

that the exercise of trademark right is not worthy of legal protection as the exercise disrupts a fair competition order and a commercial transaction order by deviating from the purpose or function of trademark system to maintain the credit of trademark users and protect the interest of consumers, causing confusion among consumers or violating the duty of good faith, the exercise of trademark right shall not be allowed as the abuse of a right in the registered trademark, notwithstanding the fact that the exercise of trademark satisfies the formal conditions of the exercise of a right (See, e.g., Supreme Court Decision 2005Da67223, decided January 25, 2007).

B) Discussion

The defendants' arguments in this regard assume the followings: (i) the plaintiff has not used the registered trademark for a long time after its registration and (ii) the plaintiff artificially met the formal conditions only after the defendants began to use the registered trademark. Thus, this court sums up the established facts before examining each argument in this regard.

(1) Established underlying facts

[Relationship among the plaintiff, H and J]

In light of the following facts or circumstances established by the statements in Plaintiff's Exhibits 2, 4, 21, 25, 33 through 37, 44 through 49, Defendant's Exhibits A21, B24, B26, B27 (including each hyphenated number), it seems that the plaintiff, H and J have formed very close business relation from when H and J commenced their own business.

① On April 2, 2007, Corporation Barney's New York was established for manufacturing, wholesale and retail businesses of clothing, shoes, miscellaneous items at the initiative of the plaintiff. Thereafter, its business name was changed into Corporation LBS GABER on October 21, 2009 and then Corporation LBS Korea on June 12, 2012.

② Around May 10, 2012 when the plaintiff changed the business

name of the company described in ① into LBS Korea Corporation (엘비에스코리아)(hereinafter, correctively before and after the change of business name, "LBS Korea Corp."), H established a private business for manufacturing, wholesale and retail businesses of clothing, shoes and miscellaneous items, similar to that of the plaintiff, under the trade name "LBS Korea (엘비스코리아)," also similar to the plaintiff's. On May 20, 2012 which was about ten days later, H drafted, with the plaintiff, an agreement for the use of the registered trademark.

③ Around March 15, 2014, J established a private business for wholesale and retail businesses of clothing and miscellaneous items which were similar to the types of business described in ① and ② above under the business name of "LBS" which was similar to each business name described in ① and ② above. On April 28, 2014 which was about one month later, J drafted, with H, a product supply agreement and a production agreement for the registered trademark. On the other hand, on November 9, 2017, J changed its business name from "LBS" to "24 Hours" (Defendant's Exhibit A24) and around November 17, 2017, J declared an online marketing business with "24hrs.co.kr" as its domain (Defendant's Exhibit A21).

④ The plaintiff managed LBS Korea Corp. as its CEO. However, around April 5, 2013, the plaintiff resigned from CEO of LBS Korea Corp. and on June 20, 2013, LBS Korea Corp. declared its closure. Also, the plaintiff substantively managed LBS Korea in which H was declared as CEO.[5] However, around May 4, 2017, it was declared that the plaintiff and H were joint business owners of LBS Korea.

⑤ Even if the business information in "www.24hrs.co.kr" which was a homepage of shopping mall that sold shoes on which the

5) The plaintiff stated that he has substantively managed N since April 5, 2013 (refer to p. 5 in the Plaintiff's Brief dated September 9, 2019).

registered mark was affixed described its CEO as ”H”, its business number was stated as OOO-OO-OOOOO which was J’s business number and its deposit account was specified as J’s account in Kookmin Bank. Thus, the information of H and J were mixed without distinction (Defendant’s Exhibits A20-1 and A20-2).

⑥ In the final judgment of the relevant case,[6] it was admitted that LBS Korea Corp. owned the domain of “LBS-HEALING-S”, which H operated.

⑦ In the business information of LBSKOREA | (주)엘비스코리아 LBS KOREA published in the brochure of 2016 Busan International Shoe Show, the followings were specified: “CEO H” and; “Person in Charge: A, Sales: J, Purchasing: Z.”[7] Thus, it seems that not only the business names of companies that the plaintiff, H and J managed but also the names of persons in charge were mixed (Defendant’s Exhibits B27-1 and B27-2).

[Type of retention, use and sales of the plaintiff’s trademarks]

① The plaintiff currently owns about 40 registered trademarks including the registered trademark for several designated goods under the category of goods. However, about 80 trademarks for which the plaintiff filed applications were rejected. Also, there have been a number of legal disputes over the trademarks that the plaintiff owned (Defendant’s Exhibits A17-1 through A18-14).

② On July 24, 2015, the plaintiff drafted and uploaded, on Distribution

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6) See Patent Court Decision 2014Heo3231 (final and binding, Defendant’s Exhibit B15-3).

7) The plaintiff’s wife (undisputed fact) and CEO of Freedom House Co., Ltd. (date of closure: December 14, 2007) that was a lessee under the lease agreement (Plaintiff’s Exhibit 20-4) that the plaintiff submitted to support its argument that the registered trademark was used in Lluce store.

Science Research Association which was an Internet cafe, a post to the effect that the plaintiff suggested the business plan (see the contents in an upper part of trademark list at the bottom) under which the plaintiff provides its registered trademarks for "businesses that could produce designs and products on their own" (see the title of the post) and receives trademark royalties from the said businesses (Defendant's Exhibit B10).

③ On December 1, 2015, the plaintiff published, on Naver Internet cafe, a post titled "New Year's greeting from LBS Korea which provides shoes for health and bodily balance." This posting contained an advertisement on LBS Korea's functional shoes and an introduction of each product. In this posting, marks in a form that combines "ERDEM" and "LBSS" with each specific number were used as the trademark of each product. At that time, the registered trademark was not contained in the said introduction of products (Defendant's Exhibit B9).

④ Around October 2015, the plaintiff registered shoes called "24HRS-3581" to "Naver Shopping" that was a platform for Internet shopping mall (Plaintiff's Exhibit 26-1). However, according to the posts and promotional materials that the plaintiff uploaded on Internet blogs around December 1, 2015, the products that looked similar to the shoes sold with product number of "24HRS-3581" in Plaintiff's Exhibit 26-1 were promoted under a brand of "ERDEM" whose trademark the plaintiff registered and sold with product number of "ERDEM -4783".

⑤ Also, the plaintiff argues that the products that looked similar or identical to the products that have been sold under the title of "24HRS-8802" since January 2016 were released under the title of "LBSS-8802" in which only a front part was modified from the said "24HRS-8802" by "LBS-HEALINGS" that seems to be related to the plaintiff (The plaintiff presented no reply to the defendants' argument that both products were substantively

identical only with different names).

[See Defendant's Exhibits B21-1 and B21-2]

⑥ The plaintiff submitted, as evidences for the use of the registered trademark, Plaintiff's Exhibits 22-1 through 23. The evidences are the Internet screens, such as homepage, blog, facebook, twitter, image, etc. captured in relation to the use of the registered trademark.

In case of homepage, blog, facebook, twitter, etc., a person who published a post can amend the title and content of the post from time to time. Thus, it is impossible to confirm whether the registered trademark was included in the specific title or content when the post was published for the first time. In fact, it was confirmed that the posts at issue that were published on the plaintiff's blog were amended or deleted[8] in or after April 2018 (See Corporation W's replay dated August 16, 2019 to this court).

Furthermore, Plaintiff's Exhibit 22-3 that the plaintiff submitted as the "promotional video materials" contains many images on health class or promotion for the plaintiff's other trademarks, such as "LBS Korea", "LBS GABER", "lbs healing-s", etc., not in accordance with the title of post in which the registered trademark is indicated (Defendant's Exhibit B20).

⑦ In light of the established facts or circumstances stated above, it seems that the plaintiff possessed many registered trademarks as well as affixed and used different trademarks to products on a discretionary basis and that, before September 2015, the plaintiff manufactured and sold products, such as function shoes, etc. by using, as its main trademarks, not the registered trademark but trademarks similar to its own business name, such as "LB(E)S

8) On August 16, 2019, Naver Corporation replied to this court to the effect that "it is impossible to identify the date of deletion, because a deleted post is not saved for more than 4 days."

Korea", "lbs healing-s", etc. or other registered trademarks, such as "ERDEM", etc.

(2) Whether the registered trademark has been used after its registration until around September 2015

(A) Analysis on the relevant evidence

① Trademark license agreement between the plaintiff and H, etc. (Plaintiff's Exhibit 4, Plaintiff's Exhibit 34)

(i) The plaintiff submitted Plaintiff's Exhibit 4 to the effect that, on May 20, 2012, the trademark use agreement was concluded to allow H (LBS Korea) to use the registered trademark on an exclusive basis and authorize H to give a third party a license for the registered trademark. The plaintiff submitted Plaintiff's Exhibit 34 to the effect that the plaintiff received, from H, a sum of KRW 37,590,800 as the loyalties on the registered trademark for a period from May 20, 2012 to December 31, 2012 under the said agreement.

(ii) However, as examined above, the plaintiff and H have been economically very closely related to each other since the establishment of LBS Korea. And it seems that the plaintiff and H mainly used not the registered trademark but trademarks similar to its own business name, such as "LBS" or "엘비에스" or other registered trademarks, such as "ERDEM", etc. On the other hand, as explained below, no evidence was submitted, which can objectively prove the fact that the registered trademark was actually used on the designated goods, such as clothing, hats, etc.[9] The trademark license agreement dated May 20, 2012 cannot be a sufficient evidence, on its own, as to whether the plaintiff or H actually used the registered trademark in the course of business even before September 2015.

(iii) Also, Plaintiff's Exhibit 34 that the plaintiff submitted as the detailed statement of royalties on the registered trademarks is a material that confirms the fact that LBS Korea transferred to the

9) The results of review on other evidences that the plaintiff submitted shall be described separately later.

plaintiff an irregular amount (KRW 300,000 through KRW 2,300,000 at a time and a total of KRW 37,590,800) for a period from May 14, 2012 to November 27, 2012 on an irregular basis (3 through 5 times a month and a total of 29 times) (It seems that the plaintiff drafted p. 1 and 2 of Plaintiff's Exhibit 34 and titled the same as "24hrs Royalties Payment Details" on a discretionary basis while aggregating materials that confirmed the transfer via Internet banking in p. 3 through 28 of the same Exhibit).

(iv) However, it is impossible to prove, only with the transfer confirmation materials stated above, that the amounts were transferred as royalties not on the plaintiff's other trademarks but on the registered trademark in light of the following facts: each transfer confirmation materials contains no description on the registered trademark; the detailed transfer statement included the transfer made on May 14, 2012 with which it would be reasonable to deem that the transfer was not related to the registered trademark, because the transfer was made before the trademark license agreement was drafted (May 20, 2012) and; in a relevant case,[10] the plaintiff stated that the plaintiff "has provided H with all trademarks and goods of LBS Korea Corp. since July 2012. And LBS Korea Corp. supplied all products sold in LBS Korea (H)."

② Evidence on stores in Mapo, store in Seongsu-dong, Taepyeong Department store and Lluce Korea store (Plaintiff's Exhibits 20-1 through 20-4)

(i) Plaintiff's Exhibits 20-1 through 20-4 relate to the followings: Each lease agreement or specific purchase agreement entered into by and between LBS Korea Corp. and each lessor or the other party for "Mapo store," "Seongsu-dong store," and "Taepyeong Department store" as well as that entered into by and between Freedom House Co.

10) A lawsuit to revoke an administrative decision on non-use cancellation of "BRIANATWOOD" which is the plaintiff's other registered trademark (Patent Court Decision 2014Heo3231).

Ltd[11] and the other party for "Lluce Korea store" (Agreements for Mapo store, Seongsu-dong store, Taepyeong Department store and Lluce Korea store were entered into on December 6, 2007, in 2011, in March 2008 and on September 13, 2007, respectively); pictures for the exterior of the buildings and; pictures for the inside of the stores.

(ii) Each lease agreement and pictures for the exterior of the buildings contain no description or image on the registered trademark.

(iii) The pictures of the inside of each store in which the registered trademark is indicated on interior accessories, such as exhibition, etc. contain no indication with which the date on which the pictures were taken can be confirmed.

(iv) Moreover, as in the picture (1) below, the picture for the inside of "Taepyeong Department store" contains the registered mark in white on a black sash which encloses the sides of exhibition stand at the center. However, in the administrative trial to cancel "BRIANATWOOD" which was the plaintiff's another registered trademark based on non-use and a litigation to revoke the administrative trial decision (Patent Court Decision 2014Heo3231), the plaintiff submitted the picture (2) below to prove the fact that the "BRIANATWOOD" trademark was used in "Taepyeong Department store" in March 2009 (Defendant's Exhibit B19). From the picture (1) submitted in this case and the picture (2) submitted in Patent Court Decision 2014Heo3231, it can be known, except a part in the exhibition stand to which the registered trademark is affixed, that the detailed aspect of exhibits within stores, exhibition types, store structures, etc. are identical in those two pictures.

In light of these circumstances, it seems that the picture (1) and the picture (2) were taken for the same exhibits at the same place in the same time. However, the picture (2) submitted in the Patent Court Decision 2014Heo3231 contains no image of the registered trademark affixed to the exhibition stand unlike the picture (1) submitted in this

11) A company where Z, plaintiff's wife, was a CEO, as previously discussed.

case does. Thus, this court has no choice but to raise a serious question on the reliability of picture (1) that the plaintiff submitted to prove the fact that the registered trademark was actually used (To this effect, the plaintiff did not reply to the defendants' argument that Plaintiff's Exhibit 20-3 was fabricated. Also, the plaintiff did not respond to the request of a district court to submit an original image of Plaintiff's Exhibit 20-3, on account of loss thereof).

<Picture 1 (Plaintiff's Exhibit 20-3, evidence submitted in this case)>

<Picture 2 (Defendant's Exhibit B19), evidence submitted in Patent Court Decision 2014Heo3231>

③ Plaintiff's Exhibits 21, 35 and 36 are contracts to the effect that,

on April 28, 2014, as to the products that used the registered trademark, H (LBS Korea) entered into with J the product supply agreement (Plaintiff's Exhibits 21 and 35) and the production agreement (Plaintiff's Exhibit 36).

It cannot be deemed that J, who was economically closely related to the plaintiff and H since the commencement of the business, has used the registered trademark on his own when the trademark had no special relevance to his business name, unlike those of the plaintiff and H, in light of the following established facts and circumstances: (i) The plaintiff, H and J have been economically closely related to one another since an early stage of business of H and J; (ii) Before September 2015, the plaintiff and H used, as their major trademarks, not the registered trademark but other trademarks ("LB(E)S Korea", "lbs healing-s", "ERDRM", etc.); (iii) On March 15, 2014, J commenced a clothing retail business under the business name of "LBS", in which J received products (mainly functional shoes) from H and sold them; (iv) April 28, 2014 on which H and J drafted the product supply agreement and the production agreement was only about one month after the time when J commenced its business under the business name of "LBS" as stated above; (v) J posted an official announcement to the effect that "LBS Health Shoes changes its business name into 24 HRS KOREA" on its blog on October 16, 2015 which was about one and a half year after the date on which J commenced its business as stated above or entered into the product supply agreement, etc. (Defendant's Exhibit B11); (vi) On November 9, 2017, J changed its business name from "LBS" to the current "24 Hours", which was about 2 years after the posting of the above official announcement (Defendant's Exhibit A24), and J declared its online marketing business with "24hrs.co.kr" as its domain around the same time. Rather, it can be only inferred that J would have begun to use the registered trademark around October 16, 2015 when J posted the official announcement on the change of business name on the blog in light of the relationship among the plaintiff, H and J; the time when

the plaintiff and H used the registered trademark; and the time when J posted the official announcement on the change of business name on the blog, etc.

④ Plaintiff submitted Plaintiff's Exhibit 37, arguing that it relates to the details of payment of royalty on the registered trademark. Plaintiff's Exhibit 37 contains the details of remittance made by J to LBS Korea from 2015 to 2018. Plaintiff's Exhibit 38 relates to LBS Korea's income statement in 2017 and Shoe Health Korea's income statement in 2018.

Since the income statement of Shoe Health Korea in Plaintiff's Exhibit 38 contains no data to recognize the relevance between LBS Korea and Shoe Health Korea, it cannot be recognized as LBS Korea's income statement.

It is difficult to deem that Plaintiff's Exhibit 37 and 38 could become the ground to recognize that the plaintiff and J used the registered trademark for business purpose before September 2015, in light of the circumstances in which J changed its business name and the following facts: Until recently, J has sold its products with marks of "LBS HEALING-S" or "LB(E)S GABER" (Defendant's Exhibit B20; According to the promotional video that J unloaded on YouTube (Plaintiff's Exhibit 22-3), its title contains the registered trademark. However, its contents were to promote not the registered trademark but "LBS HEALING-S" or "LB(S) GABER" trademark) and; The brochure of 2016 Busan International Shoe Show specifies "CEO H" and "Person in Charge: A, Sales: J, Purchasing: Z" in the business information of 

(주)엘비스코리아 LBS KOREA but contains no statement about the registered trademark (Defendant's Exhibit B27-1 and B27-2).

⑤ Plaintiff's Exhibit 22-1 through Plaintiff's Exhibit 24 relate to the followings: homepage of Internet shopping mall, blog, facebook and twitter in which products to which the registered trademark is affixed and Internet posting, such as promotional video, etc.

(Plaintiff's Exhibit 22-1 through Plaintiff's Exhibit 23) and; the plaintiff's list of products to which the registered trademark is affixed (Plaintiff's Exhibit 24).

However, it is difficult to use the Internet posting stated above as grounds to recognize that the registered trademark was used for business purpose before September 2015, in light of the following facts: As examined above, it is not confirmed when the Internet posting stated above were actually prepared (According to Naver Corporation's reply to this court dated August 16, 2019, the whole of Internet posting for which the defendants specified to provide replies were amended after 2018 or deleted. The dates of deletion are unknown) and; In case of Plaintiff's Exhibit 22-3 (promotional video), while the registered trademark is contained in its title or publisher, the contents are unrelated to the registered trademark when actually played, such as health class or promotion for the plaintiff's other trademarks, such as "LBS Korea", "LBS GABER", etc., not in accordance with the title of posting.

⑥ Since Plaintiff's Exhibit 27 (picture of Gwangjang-dong shop) and Plaintiff's Exhibit 28 (picture of Bucheon shop) do not specify the date on which the pictures were taken, they cannot be the grounds for the use of the registered trademark before September 2015.

⑦ Rather, an article dated March 3, 2008 published in a magazine titled "Fashion Insight" introduced the plaintiff's "Gongdeok-dong shop." However, the article only described that "the 'GABER' which is a brand for functional shoes and the 'ZAC POSEN' which is a brand for women's clothing are used in the (plaintiff's) Gongdeok-dong shop" but does not have any statement regarding the registered trademark (Defendant's Exhibit B13).

⑧ Plaintiff' Exhibit 31-1 through Plaintiff's Exhibit 31-8 (J's credit card sales statement from 2015 to 2018) describe J's total credit sales statement (including those for a period before September

2010). However, it may not be deemed that it can be known from the credit sales statement shown above whether J used the registered trademark. Also, it is not true that each statement stated above contains the details of sales with the registered trademark can be identified (It seems that J amended the "name of franchisee" and the "name of business owner" to "24 Hours" in each credit card sales statement from 2015 to 2018 after J changed its business name from "LBS" to "24 Hours" (Defendant's Exhibit A24)).

⑨ Plaintiff's Exhibits 52 and 53 relate to the followings: the details of transaction for products which contained the registered trademark between J and LBS Korea from May 3, 2014 to December 31, 2018; unstoring status; transaction statement (from May 3, 2014 to November 28, 2017) and; electronic tax invoice (from December 27, 2017 to November 30, 2018). It is difficult to recognize, with Plaintiff's Exhibits 52 and 53, that the registered trademark was used for business purpose before September 2015, in light of the followings: J had a close business relationship with LBS Korea as examined above and; there are electronic tax invoice, etc. which can objectively prove the fact that the products which contained the registered trademark were provided before September 2015.

(B) Summary

After all, it cannot be viewed that the plaintiff used the registered trademark before September 2015 for business purpose.

(3) Whether the registered trademark was used after September 2015 to create an artificial appearance of doing business

(A) Established facts

① On September 4, 2015, LBS Korea's employee in charge sent, through email, to "Art D&P" which is a printing company a tag file in which the registered trademark was indicated (Plaintiff's

Exhibit 17).

② SDP Korea received, from LBS Korea, an order to manufacture and deliver golf wear, shoes, etc. on which the registered trademark was indicated. Accordingly, SDP Korea delivered to LBS Korea four times from October 30, 2015 to December 31, 2015 golf wear, shoes, etc., equivalent to KRW 17,710,000 (including VAT) on which the registered trademark was indicated (Plaintiff's Exhibits 3-1 and 3-2).

③ Around October 16, 2015, J uploaded, on its promotion blog, a posting titled "LBS Health Shoes changes its name to 24HRS" (Defendant's Exhibit B11).

④ Around July 2017, J opened its store in Bucheon (Undisputed facts. See paragraph 3 on p. 14 in the Defendants' Brief dated June 18, 2019). It seems that many marks similar or identical to the registered trademark were used in outside sign, etc. of the store, such as 

(Plaintiff's Exhibit 28).

⑤ On November 9, 2017, J changed its business name from "LBS" to "24 Hours" (Defendant's Exhibit A24) and around November 17, 2017, J declared an online marketing business with "24hrs.co.kr" as its domain (Defendant's Exhibit A21).

⑥ Since October 2015, the plaintiff and J has sold, through Internet shopping mall, shoes, hats, clothing, etc. on which the registered trademark was indicated (Plaintiff's Exhibits 26-1 through 26-8).

(B) Discussion

In light of the established facts above, it seems that the plaintiff began to use the registered trademark only around September 2015 when the defendants began to use the registered trademark. However, it looks like a part of actual business activities to use in earnest, through J, etc., the registered trademark on shoes, such as sneakers, etc. which are the designated goods. Thus, it is difficult to state

categorically that the plaintiff used the registered trademark to create an artificial appearance of doing business with the intent to exercise a trademark right against the defendants.

(In this regard, the defendants argue that the plaintiff manufactured products with basic design and then fabricated business performance by assigning, to the products, item numbers, such as “24HRS-3581”, “ERDEM-4783”, etc. as necessary as the plaintiff continued to go through various trademark disputes. The defendants also argue that the plaintiff only created an artificial “appearance of doing business” by using the registered trademark, such as “24HRS-3581”, etc. to secure evidence for litigation.

As examined above, the plaintiff placed an order to manufacture tag files on which the registered trademark was indicated around September 4, 2015 (Plaintiff’s Exhibit 17) which was slightly earlier than September 11, 2015 on which the defendants began to use the used mark on the record (Plaintiff’s Exhibit 6-2). In light of statements in the Plaintiff’s Exhibits 26-4 through 24-8, Plaintiff’s Exhibit 28, Defendant’s Exhibits A13-1 through A13-6 and purport of the overall argument, even if various products use the registered trademark, as the plaintiff argues in this case, it can be established that products on which the registered trademark was indicated began to be manufactured, in small quantity, from October 30, 2015 and have been sold online or offline thereafter. Thus, even if the plaintiff ran its business in a manner to randomly assign various trademarks to a specific product as the defendants argue, it cannot be stated categorically that the plaintiff used the registered trademark simply to create an “artificial appearance of doing business.”]

C) Summary of discussion

It seems that the plaintiff had never used the registered trademark for a long period of time but began to use the registered trademark only when the defendants used the registered trademark. However, if the plaintiff used the registered trademark in the said manner as a part

of its genuine business activities, it is difficult to view that the plaintiff's exercise of trademark right falls under an abuse of right. Thus, the defendants' arguments in this regard are without merit.

4. Discussion on the Request for Injunction on Infringement and Destruction of Relevant Composition (against Defendant B)

A. Provisions of the Trademark Act

A trademark right holder or an exclusive licensee may seek an injunction requesting the prohibition or prevention of infringement against a person who infringes or is likely to infringe on his/her righ t.[12] Where a trademark right holder or an exclusive licensee makes a request as stated above, he/she may request the destruction of infringing goods, the removal of facilities provided for infringement, or other necessary measures.[13]

B. Discussion

According to statements in Defendant's Exhibits 15-1 and 15-2, defendant B agreed to take, from AE and AF which are retail partners of defendant B, the return of products on which the registered

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12) When considering a period that the defendants infringed (from September 1, 2015 when the plaintiff began to use the registered trademark to December 31, 2016 when the defendants terminated the use of the last used mark), Article 65(1) of the Old Trademark Act (prior to being amended with Act No. 14033, February 29, 2016) or Article 107(1) of the Trademark Act will be applied to each infringement. The details of provisions are identical.

13) See Footnote 12). Article 65(2) of the Former Trademark Act (prior to being amended with Act No. 14033, February 29, 2016) or Article 107(2) of the Trademark Act. The details of provisions are identical.

trademark was indicated and to deduct an amount of return from the next transaction, as a way to refund the amount of return. It was established that the refund of return amount was completed on March 15, 2017 and March 10, 2017.

However, as examined above, it is recognized that defendant B infringed a trademark right in the registered trademark and defendant B affirmatively argues about the infringement on the said trademark right. As long as it is not confirmed whether the products on which the registered trademark was indicated were all destroyed, it is difficult to deem that the need to order to prohibit infringement and destroy compositions. Defendant B shall, under the said provisions of Trademark Act, as stipulated by 1A) of Order, stop using the used mark and, as stipulated by 1B) of Order, destroy finished products, semi-products, prototypes, wrapping, packing containers, advertisement and manufacturing equipment which use the used mark and are stored in office, etc. of defendant B.

5. Discussion on the Request for Damages (against the Defendants)

A. Relevant Law

As Article 67(1) of the Old Trademark Act, Article 67(2)[14] and Article 67(5)[15] of the same Act are provisions to relieve a victim's burden of argument and proof on the damages in the claim for damages caused by torts. However, an infringer is not under the liability for damages in cases where a victim does not suffer the damages. A trademark right holder who seeks the compensation of business damages under the provisions stated above on the grounds that its business interest is infringed by the infringement of trademark

14) Substantially the same as Article 110(3) of the Trademark Act.

15) Substantially the same as Article 110(6) of the Trademark Act.

right shall argue and prove that he/she uses the registered trademark for business purpose (See, e.g., Supreme Court Decision 96Da43119, decided September 12, 1997; Supreme Court Decision 2003Da62910, decided July 22, 2004).

B. Discussion

1) Establishment of the liability for damages

According to facts established above, defendant B infringed trademark right of the registered trademark by manufacturing the product on which the used mark identical or similar to the registered trademark is marked and the defendants both infringed the trademark rights by selling or advertising the product. Thus, negligence of the defendants is presumed for the infringement (See Supreme Court Decision 2013Da21666, decided July 25, 2013).

Thus, unless there are special circumstances, defendant B shall be liable for the damages that the plaintiff suffered due to the said manufacturing and sales (including advertising) and the defendant company shall be liable for the damages, jointly with defendant B, that the plaintiff suffered due to the said sales (including advertising)(The plaintiff seeks several liability for the respective infringing acts. However, in light of the facts established above, it would be reasonable to view that the defendant company's act to provide defendant B with a store to sell the product and indicate, display or publicize the used mark on advertisement and price tag falls under joint tort as the sales or advertising that the defendant company performed jointly with the defendant B. Thus, the defendants shall be jointly liable for the damages).

2) Calculation of damages

A) The plaintiff argues the followings: (i) Primarily, defendant B shall pay KRW 15,000,000 under the plaintiff's partial claims within

KRW 165,842,126 calculated by multiplying the plaintiff's product profit ratio (0.59) with the total sales (KRW 202,383,611) related to the defendant company from January 1, 2015 to June 30, 2017 and the defendant company shall pay KRW 15,000,000 under the plaintiff's partial claims within KRW 78,704,738 (profit margin of 0.29) equivalent to the margin profits collected from defendant B. (ii) Secondarily, the defendants shall each pay KRW 15,000,000 under the plaintiff's partial claims within KRW 90,000,000 (KRW 30,000,000 per year) equivalent to the trademark royalty for 3 years of infringement, which plaintiff can ordinarily receive for granting use of the registered trademark.

B) As to the primary arguments

According to the statement in Plaintiff's Exhibit 29, it is found that defendant B in relation to the defendant company generated sales equivalent to a total of KRW 202,383,611 from January 1, 2015 to June 30, 2017.

However, in light of the period of use of the used mark by the defendants or the fact that the used mark was used for defendant B's products for F/W season in 2015, it cannot be deemed that the whole of defendant B's sales for the said period were generated from the use of the used mark. Also, there is no objective evidence to prove the profit ratio of the plaintiff's products (0.59) and the profit ratio of the defendant company (0.29).

Thus, the plaintiff's primary argument is without merit.

C) As to the secondary arguments

According to the statements in Plaintiff's Exhibit 4 and 34, the following facts are found: There is an agreement to the effect that, on May 20, 2012, the plaintiff allows H (LBS Korea) to use the registered trademark and H to authorize a third party to use the registered trademark and receives from H the "Trademark Use Profits and Royalty" stipulated as KRW 30,000,000 a year and KRW 5,000 per 1 pis and; LBS Korea transferred to the plaintiff an irregular

amount (KRW 300,000 through KRW 2,300,000 at a time and a total of KRW 37,590,800) for a period from May 14, 2012 to November 27, 2012 on an irregular basis (3 through 5 times a month and a total of 29 times).

However, as examined above, the plaintiff and H have been economically very closely related to each other. And it seems that not all monetary transfers between the plaintiff and H were generated by license of the registered trademark. Also, there is no objective evidence for the fact that the registered trademark was actually used before September 2015. It cannot be established, only with the facts established above, that the plaintiff can ordinarily receive up to KRW 30,000,000 a year for the use of the registered trademark. Furthermore, there is no other objective evidence to establish the same. Thus, the plaintiff's secondary argument is also without merit.

D) Calculation of damages at one's discretion

(1) In light of the facts established above, it is recognized that the damages were inflicted in this case. However it would be extremely difficult to establish the facts, from the very nature thereof, required to prove the damages. Thus, the damages that the defendants will compensate shall be calculated on a discretionary basis under Article 67(5) of the Old Trademark Act or Article 110(6) of the Trademark Act.

(2) The plaintiff's damages caused by the manufacturing and sales (including advertising) of the product and the plaintiff's damages caused by the sales (including advertising) shall be calculated as KRW 3,000,000 and KRW 1,000,000, respectively, in light of the followings: the facts established above; the plaintiff's manner of use of the registered trademark that can be known from the facts or circumstances established below; circumstances under which the defendants used the used mark and discontinued the use; purpose, function, etc. of the trademark system; and the fact that a victim's negligence toward generating or expanding the damages, if any, must

be taken into account.

(A) As examined above, each license agreement for the registered trademark and sales-related agreements entered into by and between the plaintiff and H as well as between H and J are not sufficient to establish the fact that the plaintiff used the registered trademark for business purpose before September 2015 when the defendants began to use the used mark.

(B) The plaintiff submitted Plaintiff's Exhibits 18-1 through 18-3 to prove the sales of products on which the registered trademark was used from November 2015. However, it is difficult to rely on the sales on the following grounds:

① The plaintiff submitted Plaintiff's Exhibit 18-1 which relates to the plaintiff's sales approval by card company (2015 and 2016) and includes the sales figures by the plaintiff's trademark including the products to which the registered trademark is affixed. However, it is difficult to find, from its contents, its relevance to the use of the registered trademark.

② Plaintiff's Exhibit 18-2 is the "Store Sales List (Sales of products to which the registered trademark is affixed) from November 19, 2015 to June 30, 2016" and Plaintiff's Exhibit 18-3 is the "Store Sales List (Total sales including products to which the registered trademark is affixed and products to which the plaintiff's other trademark is affixed) from November 10, 2015 to June 30, 2016."

③ However, a substantial portion of descriptions are contradictory, incongruent or inconsistent. Even if the sales of product on which the registered trademark is affixed (Plaintiff's Exhibit 18-2) cannot be larger than the details of approval by card company for the Plaintiff's total sales (Plaintiff's Exhibit 18-1), there are cases where the details of approval of specific card company which falls under the total sales of the Plaintiff's product (Plaintiff's Exhibit 18-1 (p. 5), KRW 80,000 which was

approved by Kookmin Card on January 8, 2016) is larger than the sales of product to which the registered trademark is affixed (Plaintiff's Exhibit 18-2 (p. 2), KRW 90,000 which was a sum of sales by Kookmin Card on January 8, 2016). There are many cases in which the details of sales of product on which the registered trademark is affixed (Plaintiff's Exhibit 18-2) are discrepant from the details of the Plaintiff's total sales that include the said sales (Plaintiff's Exhibit 18-3).[16)]

④ The comparison of "24HRS-5601" T-shirt prices by period specified in Plaintiff's Exhibit 18-2 shows substantial differences in the prices by item, notwithstanding the fact that the same items were sold for a short period of time or on the same date as shown below. Thus, the question arose over the reliability of the described details (In this regard, the plaintiff argued that discounts were applied regularly and irregularly to wholesale customers or volume purchasers. However, in light of the date of sales, quantity, etc. as shown below, the plaintiff's argument is not persuasive).

판매일자	수량	금액
2015. 11. 10.	1	62000원
2015. 11. 12.	1	64000원
2015. 11. 16.	1	65000원
2015. 12. 9.	2	65000원
2015. 11. 27.	1	68000원
2015. 12. 31.	3	180000원
2016. 1. 8.	1	55000원
2016. 1. 8.	1	170000원
2016. 1. 8.	3	176000원
2016. 1. 30.	1	38300원
2016. 2. 1.	1	125000원

16) See pp. 4-5 in the defendant B's Brief dated January 9, 2018 (The name of purchaser was based on Plaintiff's Exhibit 18-3. If the purchase details are unavailable, Plaintiff's Exhibit 18-2 was referred to. Also, the date was prepared based on Plaintiff's Exhibit 18-2).

판매일자	수량	금액
2016. 2. 6.	2	125000원
2016. 4. 5.	4	125000원
2016. 5. 13.	2	65000원
2016. 5. 21.	1	60000원
2016. 5. 31.	1	60000원

(판매일자: Date of sale, 수량: Quantity, 금액: Amount, 원: KRW)

(C) In light of the manner in which the plaintiff used the trademarks (this means that the plaintiff possessed dozens of registered trademarks and a specific trademark was indicated on the plaintiff's existing product on a random basis. It seems that the plaintiff has continued to use its trademarks in this manner for a substantially long period of time including 2015 through 2016 (Plaintiff's Exhibits 24, 26, Defendant's Exhibits B9, B21, etc.)), it seems that the damage to functions of the plaintiff's trademark, such as function to identify a source, etc., by the defendants' use of the used mark would not be so substantial. This is even more so, in light of the fact that it seems that the plaintiff attempted to sell dozens of its registered trademarks including those that it uses for itself (Defendant's Exhibit B10. See the posting titled "We can design, deliver and sell fashion accessories on our own. Please contact us").

(D) Also, it seems that, around December 1, 2015, the plaintiff used "LBS Korea", "LBS", "ERDEM", etc. as its main trademark (Defendant's Exhibit B9). It seems that these situations lasted for a reasonable time even when the plaintiff perceived the defendants' use of the used mark and did not warn the defendants for the infringement (Defendant's Exhibit B23-1 (The plaintiff's Internet posting titled "Please Visit LBS Export Support Experience Exhibition" dated April 7, 2016), Defendant's Exhibit B23-2 (Capture from promotional video for Gwangjang-dong store), Defendant's Exhibit B23-3 (Picture for plaintiff's "LBS Health Shoes" banner taken in March 2018)).

(E) The plaintiff perceived the defendants' use of the used mark in

September 2015 immediately after the defendants commenced to manufacture the product or at the latest in December 2015 when the plaintiff purchased the product from the defendants (Plaintiff's Exhibit 10, 11). At that time, it seems that the plaintiff recognized the fact that the defendants' used mark was used in 2015 Fall/Winter products. However, the plaintiff sent to defendant B a warning on the trademark infringement only in September 2016 (Undisputed facts).

(F) For a period from September 1, 2015 to December 31, 2016, which it is reasonable to view as the plaintiff's damage calculation period for defendants[17)18)19)], the sales after deducting the defendant company's sales commission that defendant B is refunded from the defendant company shall be KRW 168,778,502 (= KRW 78,378,505 for the second quarter in 2015[20)] + KRW 71,451,182 for the first quarter in 2016 + KRW 18,948,815 for the second quarter in 2016) (Plaintiff's Exhibit 29).

(G) The sales margin rate that the defendant company is paid from

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17) Defendant B shall calculate the damages from September 1, 2015 when defendant began to use the plaintiff's registered trademark. The defendant company shall calculate the damages from the date on which the agreement at issue was concluded (January 29, 2015 for Gyeonggi store and September 10, 2015 for Gangnam store). However, for the convenience, the same damages calculation period was applied for the defendants.

18) The time when the plaintiff began to use the registered trademark.

19) In this case, the plaintiff seeks only the damage for the Products at Issue to which the defendants jointly relate (See the Plaintiff's Arguments in 4. B 2) a)). For convenience's sake, the last date of the period to calculate the damages shall be the late of the defendant company's termination dates of the agreement at issue (July 17, 2016 for Gyeonggi store, December 31, 2016 for Gangnam store).

20) In principle, the sales for the second quarter in 2015 are generated from July 1, 2015. However, since the sales before September 1, 2015 among the sales for the second quarter in 2015 are not identified, for the convenience's sake, the whole of the second sales shall be added to the calculation.

the sales generated under the Agreement at Issue is 28% (Defendant's Exhibits B3-1 through B4-4).

(H) In light of the fact that the used mark was used as a mark for 2015 Fall/Winter products, it does not seem that the whole of the defendants' sales generated during the said period were generated by the use of the used mark.

(I) The basic expense rates that the National Tax Service announced in 2017 for the suit manufacturing business, hat manufacturing business, clothing and clothing accessory wholesale business are 90.4%, 94% and 94.3%, respectively.[21)]

3) Summary of discussion

Defendant B shall pay the plaintiff as follows: KRW 3,000,000 as the damages for the manufacturing and sales (including advertising) of the product; an amount calculated for KRW 3,000,000 shown above at an annual interest of 5% stipulated by the Civil Act for a period, as after September 11, 2015 which would be reasonable to be viewed as the date on which the manufacturing and sales (including advertising) of the product was commenced, from April 14, 2017 which is the following day of the date on which the duplicate of defendant B's complaint was served to October 31, 2019 which is the date on which this decision is rendered; and an amount calculated for KRW 3,000,000 shown above at an annual interest of 12% stipulated by the Act on Special Cases concerning Expedition, etc. of Legal Proceedings for a period from November 1, 2019 to the date on which KRW 3,000,000 shown above are fully repaid. Also, The defendant company shall, jointly with defendant B, pay the plaintiff as follows: KRW 1,000,000 as the damages for the sales (including advertising) of the product; an amount calculated for KRW 1,000,000 shown above at an

21) See the "2017 Basic Expense Rate and Simple Expense Rate" in a homepage of the National Tax Service (http://www.nts.go.kr) (Last accessed on October 23, 2019).

annual interest of 5% stipulated by the Civil Act for a period, as after September 11, 2015 which would be reasonable to be viewed as the date on which the sales of the product was commenced, from April 14, 2017 which is the following day of the date on which the duplicate of the defendant company's complaint was served to October 31, 2019 which is the date on which this decision is rendered; and an amount calculated for KRW 1,000,000 shown above at an annual interest of 12% stipulated by the Act on Special Cases concerning Expedition, etc. of Legal Proceedings for a period from November 1, 2019 to the date on which KRW 1,000,000 shown above are fully repaid.

6. Conclusion

Thus, the plaintiff's claim against the defendants is well grounded within each established scope as the above and shall be granted. The remaining claims are not well grounded and shall be dismissed. The district court's decision is inconsistent with the above analysis and thus erroneous. Defendant B shall be ordered to stop the infringement of trademark right and destroy its compositions and the defendants shall be ordered to pay the amounts stated above. Judgment as ordered.

Presiding Judge Kyung Ran KIM
Judge Byeong Guk KIM
Judge Hee Young JEONG

[Appendix]

Goods

Leather jacket, men's suit, women's suit, jeans, double coat, denim trousers, climbing clothes, one-piece dress, T-shirt, short-sleeved shirt, fur coat, skirt, children's wear, swimsuit, sweater, slip, sleepwear, suspenders for clothing, belt for clothing, hat. End.

[Appendix]

Marks that the Defendants Use

[Appendix]

Pictures of the Defendants' Products

1. Clothing

A. Shirts

B. Pants

2. Hats

End.

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