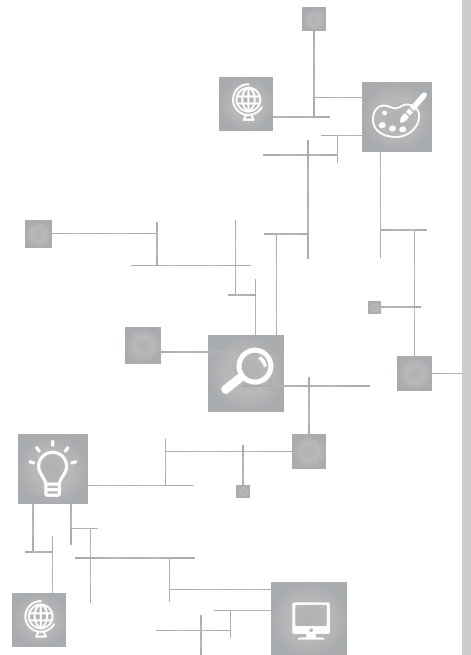


IP LAW JOURNAL

**Patent Court of Korea
International IP Law Research Center**



LETTER FROM THE EDITOR-IN-CHIEF

For international readers, the IP Law Journal introduces English translation of major articles authored by Korean judges who specialize in IP law. The Patent Court has published the annual journal with articles dealing with critical IP issues since 2015. Its publication is now part of the main agenda of the International IP Law Research Center at the court.

The International IP Law Research Center was established to carry out comparative legal research and promote systematic international communication. On its first year alone, the center published the Korean-English/English-Korean IP Law Dictionary and a research paper titled “the Comparative Research on Damages Calculation in Patent Infringement Litigation,” hosted a symposium celebrating its establishment under the theme of “the New Direction of IP Law in the Era of Technological Innovation and Fair Competition,” and signed MOUs with major IP research institutes such as the Seoul National University Law Research Institute. The 2017 Patent Court Decisions and the 2017 IP Law Journal are also important parts of the center’s work.

The 2017 IP Law Journal includes statistical data and major decisions of the court for the year, as well as several articles and commentaries. To introduce the Patent Court’s decisions, Judge Kisu Kim and Judge Jinhee Lee respectively summarized 23 patent decisions and 8 trademark decisions of the year. Other judges wrote about defense strategies in trade secret misappropriation suits, the scope of equivalents excluded by prosecution history estoppel, and statistical analysis on the amount of damages in patent infringement cases. This year’s articles are not only written by the judges at the Patent Court but also those at Seoul Central District Court and the Supreme Court. The journal also includes in-depth commentaries regarding the scope of rights of modified designs as well as the inventiveness of pharmaceutical substance invention. I humbly hope that

the journal will guide you to better understand Korean IP law.

I would like to extend my deepest gratitude to those at the center and everyone involved in publishing the book for their hard work.

December 2017

Daekyeong LEE

Director of the International IP Law Research Center

Chief Judge of the Patent Court of Korea

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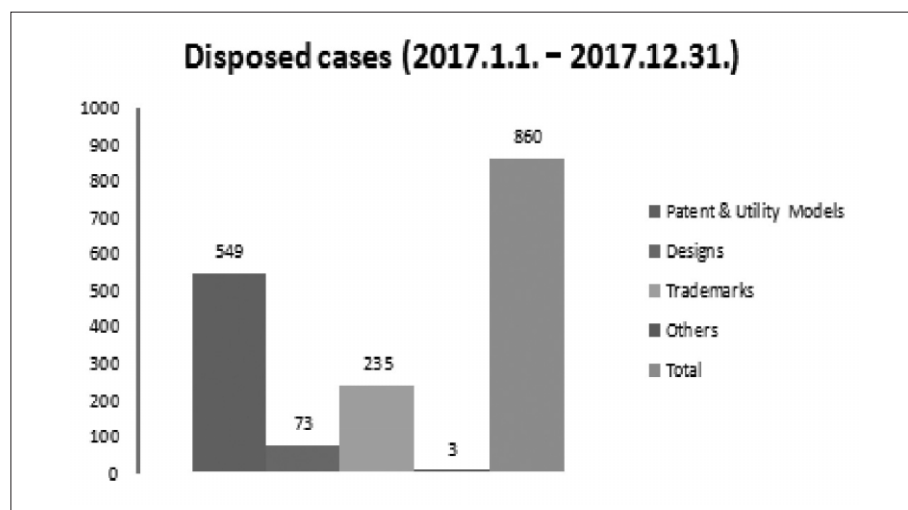
Overview

Statistics of the Patent Court of Korea

■ Revocation Cases (2017. 1. 1. - 2017. 12. 31.)

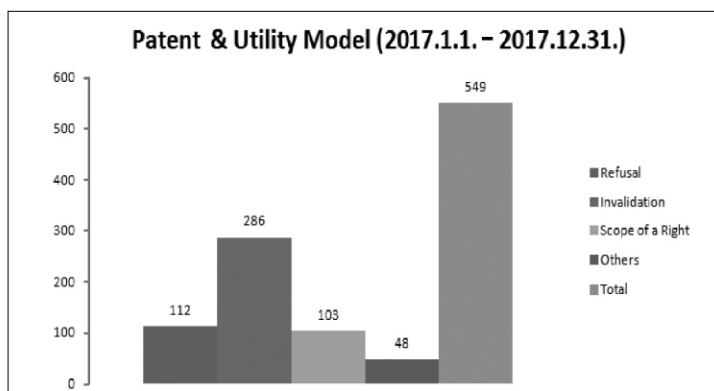
1. Disposed cases (2017. 1. 1. - 2017. 12. 31.)

Patent & Utility Models	Designs	Trademarks	Others	Total
549	73	235	3	860



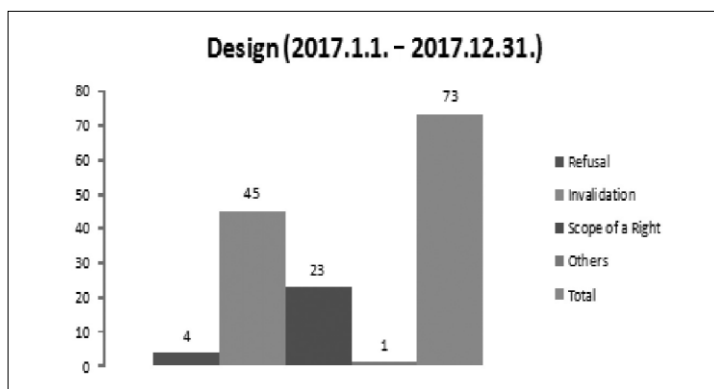
2. Patent & Utility Model (2017. 1. 1. - 2017. 12. 31.)

Rejection	Invalidation	Scope of a Right	Others	Total
112	286	103	48	549



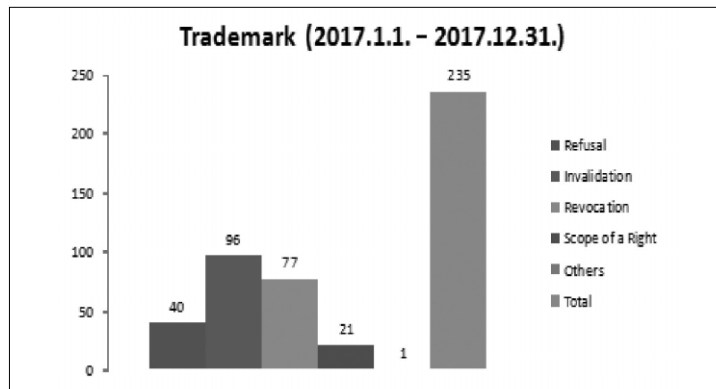
3. Design (2017. 1. 1. - 2017. 12. 31.)

Rejection	Invalidation	Scope of a Right	Others	Total
4	45	23	1	73



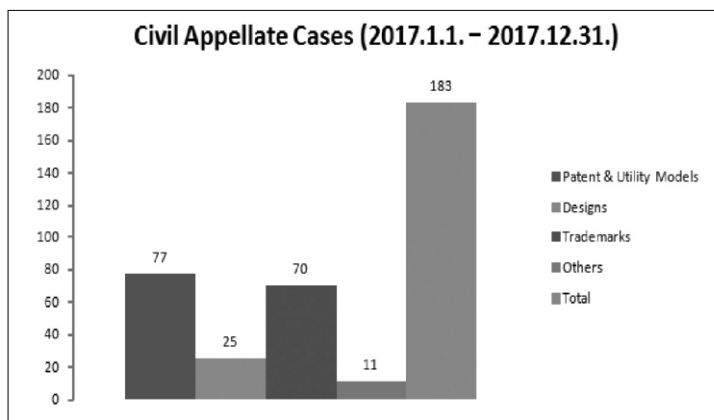
4. Trademark (2017. 1. 1. - 2017. 12. 31.)

Rejection	Invalidation	Revocation	Scope of a Right	Others	Total
40	96	77	21	1	235



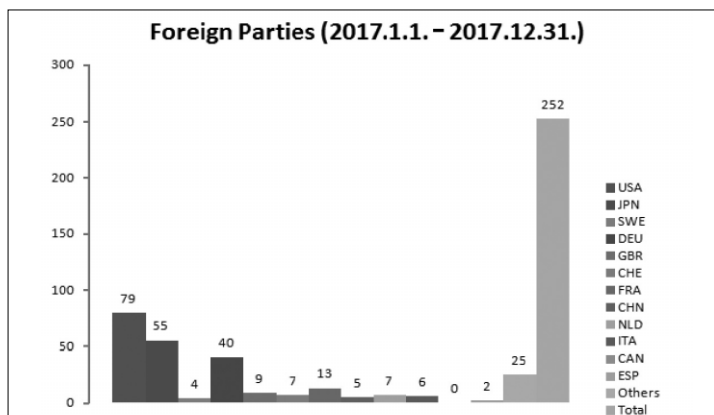
■ Civil Appellate Cases (2017. 1. 1. - 2017. 12. 31.)

Disposed Cases				
Patent & Utility Models	Designs	Trademarks	Others	Total
77	25	70	11	183



■ Foreign Parties (2017. 1. 1. - 2017. 12. 31.)

USA	JPN	SWE	DEU	GBR	CHE	FRA	CHN	NLD	ITA	CAN	ESP	Others	Total
79	55	4	40	9	7	13	5	7	6	0	2	25	252



Decisions

Major Decisions of the Patent Court on Patents and Utility Models in the Recent One Year

Kisu KIM*

[Introduction]

The major decisions of the Patent Court on patents and utility models from October 8, 2016 to October 1, 2017 have been selected and summarized herein.

They include lawsuits and decisions on jointly shared patents (Case 1: 2016Heo 4160, Case 2: 2016Na1486), scope of restoration for invalidated patent after patent transfer agreement (Case 3: 2016Na1295), effects for novelty loss exception (Case 4: 2016Heo7671), different combinational relationship with prior art as new grounds for rejection (Case 5: 2016Heo7695), violation of earlier-filed patent application for invention with divisional application (Case 6: 2017Heo1021), deliberate exclusion of legal principles for doctrine of equivalents (Case 7: 2017Heo776), determination of disclosure when technical composition of invention cannot be determined from exterior appearance (Case 8: 2016Heo7949), critical significance of numerical limitation invention (Case 9: 2017Heo2826), denial of novelty for purity limitation invention (Case 10: 2017Heo1373), denial of inventiveness of formulation invention for fine refinement of sorafenib tosylate (Case 11: 2016Heo4733), inventiveness of excimer lamp (Case 12: 2017Heo2062), inventiveness of product invention with disclosure of its manufacturing process (Case 13: 2016Heo8124), violation of regulation of earlier-filed patent application (Case 14: 2016Heo7015), technology which is obvious and simple change of design to a person with ordinary skills (Case 15: 2016Heo7435), method of determining means to solve problem a problem for an invention by applying the doctrine of equivalents (Case 16: 2017Heo1304), manufacturing process of collagen sheet with hydrochloric acid treated fish scales for wound dressing (Case 17: 2017Heo2277), method for

*Judge, Patent Court of Korea.

determining patent requirements for product invention with its manufacturing process disclosed (Case 18: 2016Heo3334), parameter invention including numerical limitation (Case 19: 2017Heo431), expectation for success in which the logical expectation for success was not found (Case 20: 2016Heo6524), inventiveness of specific administration and administration dosage (Case 21: 2015Heo7889), standards for calculating period of applying for extension patent term (Case 22: 2016Heo21, 45), and scope of effect for patent with its term extended (Case 23: 2016Heo8636, 2016Heo9189).

1. Patent Court Decision 2016Heo4160 decided January 26, 2017 (Rejection) [Final]

Whether joint applicants' revocation action against dismissal of administrative appeal from rejection is an inherently compulsory joint litigation (Negative)

When 2 or more people jointly invent, they share the rights to receive patent (Patent Act Article 33) and the regulation of sharing from the Civil Act applies within the scope of not violating any other regulation within the Patent Act and its essence for the sharing of rights to receive patent applies as well and therefore, even a single person among the joint owners can file for revocation of administrative action in order to prevent the termination of these rights when there is a decision that disturbs the rights to obtain a patent. Even if a single person among the joint patent applicants file for revocation rejection independently, it shall not harm the rights of other joint patent applicants. When this request is accepted through the revocation action, the effect of this revocation affects other joint patent applicants and the case reverts back to trial stage and the trial proceeds for the group which means that the joint patent applicants can now request for joinder and even when the request is dismissed, the administrative rejection is confirmed due to the expiration of period of filing for other joint patent applicants which does not conflict with the request for joinder. On the contrary, if the joint patent applicants must file for revocation of administrative decision as a group and cannot obtain cooperation from other joint patent applicants, the rights to register patent will be terminated and cannot

be relieved.

2. Patent Court Decision 2016Na1486 decided February 7, 2017 (Cancellation of Registration) [Final]

Whether the litigation for ownership transfer registration or registration of invalidation due to termination of title trust for a single person among the joint patent owners is an inherently compulsory joint litigation (Negative)

① Patent Act Article 99(2) provides that each joint owner can transfer ownership share with consent from all other joint owners and even if the request for ownership transfer registration or registration of invalidation due to termination of title trust by a single person among the joint patent owners is accepted, the ownership transfer registration or registration of invalidation for that share of ownership still requires consent from all other joint owners and this does not neglect the purpose of the Patent Act Article 99(2) which restricts the disposition of joint ownership shares, ② the rest of the joint owners under this circumstance are not obliged to give consent to such transfer or invalidation of share of ownership, and thus, uniform disposition is not required for request for indication of consent for ownership transfer registration or registration of invalidation for a single person among the joint owners, and ③ if a lawsuit should be filed against all other joint owners, the joint owners who do not hold any stake in ownership share transfer or those who consent to transfer would have to participate in the lawsuit as defendants, and such circumstance would be irrational. Considering all of the points disclosed above, the litigation to register transfer of ownership or invalidation due to termination of title trust for a single person among the joint patent owners should not be an inherently compulsory joint litigation that requires a lawsuit against all joint owners.

3. Patent Court Decision 2016Na1295 decided March 23, 2017 (Request for Refund of Ownership Transfer Payment) [Appeal dismissed without hearing]

A case where the court held that early payment must be returned as unjust enrichment under the principle of risk allocation when some of the claims are confirmed invalid prior to transfer shares of patent ownership under a transfer agreement

The plaintiff has concluded an ownership transfer agreement with the defendant to receive 5% ownership of the patent in exchange of 500 million won and paid the payment for transfer. However, later the registration of some claims for the patent was deemed invalid prior to ownership transfer registration after conclusion of agreement, and the claims deemed invalid were the most crucial part of the patent. Since the defendant could not fulfill the purpose of agreement with the ownership transfer of remaining claims, and thus, the agreement could not be fulfilled without faults of both parties, the defendant cannot request for benefit in return from the plaintiff according to Civil Act Article 537(1) and must return the payment of 500 million won which no longer has legal grounds to possess due to termination of contractual relationship in this case as it is unjust enrichment. However, the plaintiff executed the invention which became invalid later after contract date, and thus, is obligated to return a significant portion of the profit as royalty which was earned from the contract date until the date the claim was deemed invalid. This royalty should be deducted from the payment which the defendant returns.¹⁾

4. Patent Court Decision 2016Heo7671 decided June 15, 2017 [Invalidation (Patent)] [Final]

1) In the original verdict, the contract was cancelled due to an error in critical part but applied the legal principle of liability for risk by deeming that this part was ambiguous.

Whether the exception of novelty loss for invention that was first publicized among the same inventions that were disclosed multiple times has an effect on rest of the other inventions (Affirmative)

Due to the fact that the Patent Act Article 30 has a regulation of exception for publication, the novelty loss exception for the rest of the other inventions is in effect even if the same inventions were publicized multiple times at the time of patent application and argued for exception of novelty loss for the invention that was first publicized among them if the first publicized invention and the rest of the inventions that were publicized later are confirmed to be identical. However, since the Prior Art 1 was publicized through Naver blogs by the participants of the experience event for the subject invention and it is also the same invention which was revealed through YouTube product introduction video which the defendant argued for exception of publication, the regulation for exception for publication in the Patent Act Article 30 does apply. The Prior Art 2 was a subject invention that was sold through an internet shopping mall and it was revealed by the plaintiff who has no right to receive patent for this subject invention after the defendant has resigned from the company and is publication contrary to the will of the person entitled to a patent and was revealed due to the sale of product same as the product revealed through YouTube product introduction video which the defendant argued for exception of publication thus making the Patent Act Article 30 regulation for exception of publication applicable.

5. Patent Court Decision 2016Heo7695 decided on August 17, 2017 [Rejection (Patent)] [Final]

Whether a prior art introduced as the basis to deny inventiveness in examination or administrative trial constitutes a new ground for rejection when it is raised in different combinational relationship in a revocation action against an administrative rejection of the application (Affirmative in part)

The grounds argued by the Commissioner of the Korean Intellectual Property Office not raised before the revocation action may serve as the ground to determine whether to affirm or reverse the administrative decision only when the grounds merely supplement and are in the same line, in essence, with the grounds of rejection for which the applicant was notified of and had an opportunity to respond in the examination or administrative trial process. In order for the newly argued grounds in the litigation procedures to correspond with the grounds for rejection and primary purpose which were given an opportunity to submit arguments during examination or trial stage, each element of the claimed invention must be identical to the preceding technical documents being suggested based on publication and be consistent throughout the critical parts of the premises necessary for the process of determining inventiveness of claimed invention from the preceding technical documents (level of technology at the time of application, technical knowledge, basic tasks of corresponding field of technology, etc.), elements as key factors of judgement, and details of judgement (problem to be solved, technical method necessary for resolution, purpose/suggestion of combination or obstacles, etc.) as well as congruent with the opinion documents expected from the applicant to resolve the grounds for rejection or the direction for attempted amendment by the applicant which makes it seem that the practical opportunities for submission of opinion documents and amendment were given to the applicant regarding the newly argued grounds. Even if the newly argued grounds in the litigation procedure is a simple argument for difference in combination or relationship of combination with prior art which was suggested as the basis for denial of inventiveness in the examination or trial stage, the premises necessary in the process of determining inventiveness, elements at the key factors of judgement, and details of judgement may change and this change may make the applicant unable to submit opinion documents or make amendments during the examination or trial stage regarding the combination of prior art that was newly suggested which makes it new grounds for rejection that does not correspond with the grounds for rejection and primary purpose given opportunities to submit arguments during examination or trial stage thus making it unpermitted.

The essence of the decision in this case lies in that 'the inventiveness is denied with the elements of prior art 1 and 2 N1-N2=0.08 being combined' and the

defendant argues that the decision of this case is legal under the following grounds: ① inventiveness is denied due to Prior Art 1 (Argument 1), ② inventiveness is denied by the element of prior art 1 of surface angle below 3° being combined with Prior Art 2 (Argument 2). In Defendant's Argument 1, the defendant argues that the elements which are supposed to be the difference and point of conflict between the preceding inventions and the claimed invention are identical to the grounds for rejection which were given opportunity for submission of arguments during examination / trial stage and the factors that are considered in determining inventiveness were also identical but given the fact that the plaintiff has submitted an argument and considering the procedure and the grounds for rejection, the plaintiff had an opportunity to submit an opinion document regarding whether a person with ordinary skills can overcome the difference of Prior Art 1 with Claim 1 or amend Element 3 which was a point of conflict.

However, in Defendant's Argument 2, the defendant claims that the grounds for rejection given opportunity for submission of arguments during examination / trial stage and the elements that serve as the difference and point of conflict between the claimed invention and prior arts inventions all differ as well as the relationship of combination between the prior arts which therefore changes the factors being considered to determine inventiveness. In the light that the applicant attempted to submit an opinion document or to amend in different direction, the grounds above are new grounds for rejection which do not correspond with the grounds for rejection and primary objective which were given opportunities for submission of arguments.

6. Patent Court Decision 2017Heo1021 decided October 12, 2017 [Invalidation (Patent)]

A case where the registration of invention for divisional application should be invalidated due to violation of the former Patent Act Article 36(2) regulation on earlier-field patents

Former Patent Act Article 36(2) states, "Where at least two patent

applications for an identical invention are filed on the same date, only the person agreed upon by all patent applicants may obtain a patent on the invention” Considering that the patent applicant has the exclusive license to a subject invention and intends to eliminate double patenting for a single invention which acknowledges rights to two or more people. Meanwhile, when the patent applicants agree to a single patent application for 2 or more of same inventions, a part of the patent application can be divided within the scope that is disclosed in the specification or drawing initially attached to the patent application and this only applies for when 2 or more patent applications are filed within the same day for the same invention as stated in the former Patent Act Article 36(2). The determination on whether the divisional subject invention and original subject invention are the same should be made by identifying technical composition of both inventions and even if the disclosure for the claim scope is not identical in terms of literal interpretation, both inventions are essentially the same inventions when the difference is due to a mere difference in expression of function, nature, and effect for the same technical composition or due to addition, deletion, alteration to specific method to resolve problem to be solved or well-known and commonly used art or due to simple difference in scope of numerical values which creates little difference that does not generate a new effect.

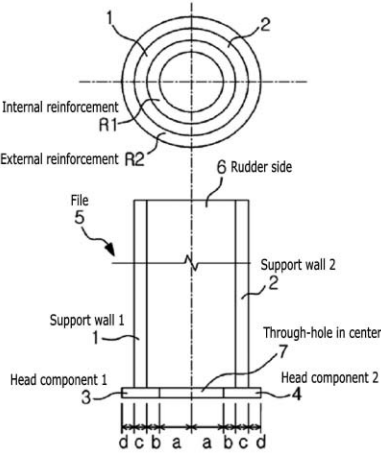
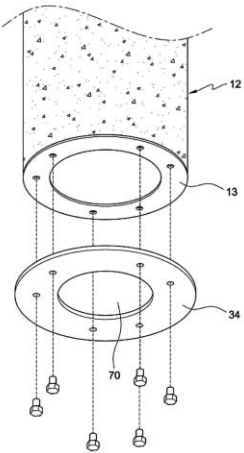
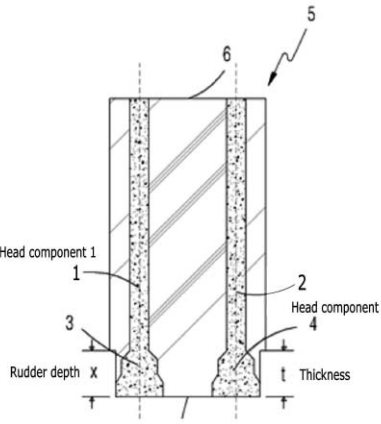
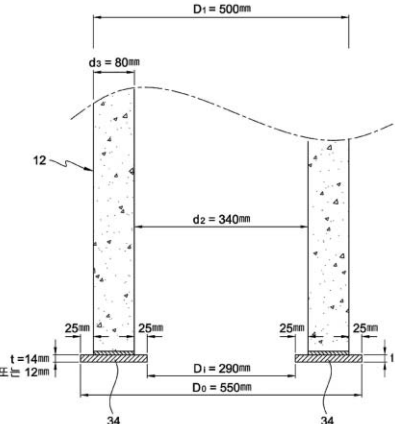
Claim 1 of the Subject invention differed in the fact that “it dissolves drospirenone of 70% purity or above within 30 minutes (under specific requirements)” and “the drospirenone has surface of 10,000 cm²/g”, respectively. The invention in Claim 1 specifies invention regarding its nature and effect and describes that when the active particles of the drospirenone has a surface area greater than 10,000 cm²/g, you can dissolve it in appropriate dissolvent such as methanol or ethyl acetate and disperse it on the surface of inactive carrier particles on its specification. The invention in Claim 1 accelerates elution of drospirenone to increase bioavailability and this is identical to the technical ideology behind the original subject invention and includes the circumstance where the drospirenone has surface area above 10,000 cm²/g which makes it also identical in terms of technical composition with Invention 2 claimed in the original patent and also identical in terms of having the effect of reliably suppressing ovulation or preventing and treating androgen caused disorders with small dosages. Other instances where it is included in the scope of

claim for the invention in Claim 1 is the well-known and commonly used art of choice given by manufacturing the substance with no solubility in form of internal diffusion by a person with ordinary skills and opting for such method does not generate a new effect. Therefore, despite the differences cited above, Invention 1 and the original subject invention in this case are essentially the same invention.

The defendant argued that there is only the new effect of uniform improvement of content in orally administered medicine when the drospirenone is refined as fine powder like the original subject invention but partial overlap in scope of claim cannot deem that both inventions are identical. But the argument of the defendant cannot be recognized by a person with ordinary skills through disclosure on specification and the two inventions cannot be deemed identical if only the scope of the claim is partially overlapping but both inventions are based on identical technical ideology and the difference in specifically selected technical composition is mere difference of expression, changing the scope of incorporation, or a simple addition, deletion, or alteration in well-known and commonly used art which makes it difficult to say that it generates a new effect thus essentially making it a same invention and the two inventions cannot be deemed different just because the scopes of claim are not completely identical.

7. Patent Court Decision 2017Heo776 decided July 14, 2017 [Confirmation of Scope of Rights (Patent)] [On Appeal]

A case where Element 2 of 'a first head portion and a second head portion extended to the left and right in the same length' was included in the claim at the time of application but was later intentionally omitted by the applicant, and thus it was deliberately excluded and not equivalent under the doctrine of equivalents

Subject Invention from the Plaintiff	Challenging Invention from the Defendant
[Figure 1] 	[Figure 1] 
[Figure 6] 	[Figure 4] 

▷ Relevant law

The recognition of intentional exclusion of some element from the scope of claim during the patent application process must be determined by taking not only just the specification of the invention into consideration but also the opinion suggested by the patent examiner from application until patenting as well as the intent of patent applicant and grounds for amendment in

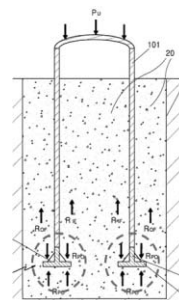
amendment and opinion documents. Therefore, rather than comparing the composition before and after reduction because the scope of claim was reduced during the patent application process and concluding that all composition existing between the two scenarios were intentionally excluded from the scope of claim and combining various circumstances revealed throughout the application process, such exclusion can only be recognized when the intent of exclusion from the scope of claim for some element is clearly exhibited by the applicant. And such legal principle applies the same for when there is an opinion testimony through submission of opinion document and such without any reduction in scope of claim (Refer to Supreme Court Decision 2014Hu638 decided April 26, 2017).

▷ Detailed review

But the patent application for ‘composition of head elements 1 and 2 being extended equally left and right’ among element 2 of the subject invention in this case was disclosed for the scope of claim but later deleted intentionally by the applicant which should be recognized as intentional exclusion from the scope of claim. Therefore, it cannot be said that the ‘extension line featuring length of protrusion on exterior and exterior of main body at 25mm’ of the invention in question with such intentional exclusion of element is equivalent to element 2.

① First, the specification of the subject invention in this case (Defendant’s Exhibit 1) disclosed that there are 2 types of method determining the length of extension for left and right of the head elements 1 and 2 which were either extension of equivalent length from the central axis or extension through internal and external surface area equivalent to sum of internal and external bearing powers (Refer to Identification No. <31>, <79>~<86>). Also, the method of extending in equivalent length left and right from the central axis was disclosed in claims 1 to 4 and the method of extending to have equivalent internal and external surface area and sum of internal and external bearing powers was disclosed in claims 5 to 8 in the scope of claim at the time of patent application in this case (Defendant’s Exhibit 10).

Defendant’s Exhibit 8
[Figure 2a]

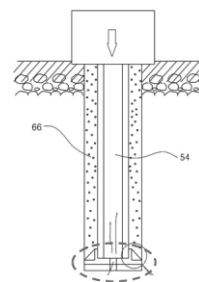


② The patent examiner notified the president of the plaintiff company Song Ki-yong who was the applicant for this subject invention on September 11, 2006 for submission of argument under the grounds of not being able to recognize the inventiveness of the subject invention in this case because the extension through equivalent length left and right and extension left and right to making the sum of bearing powers equivalent throughout claims 1 to 8 which could be easily conceived by a person with ordinary skills from the ‘composition with equivalent length of protrusion from internal and external side for the through-hole plate’ as shown in [Figure 2a] on the right from the specification of prior art (Defendant’s Exhibit 8) disclosed in the Patent Publication No. 2004-48710 published on June 10, 2004.

③ Then the applicant submitted an amendment (Defendant’s Exhibit 4) which added the ‘composition of uniform inclined plane surrounding the upper portion of head elements 1 and 2’ in claims 2, 4, 6, and 8 and deleted all other claims on November 9, 2006 as well as submitting an opinion document (Defendant’s Exhibit 3) which states that the subject invention is composed to have internal and external length equivalent to the sum of bearing powers for head elements 1 and 2 of head extension type file and also uniform with the inclined plane which prevents occurrence of offcenter during pie driving after file burial to secure stable internal force which is the key technical feature.

④ The patent examiner gave final notification on March 7, 2007 for submission of argument on the grounds that denies inventiveness of the subject invention in this case because the composition which features internal and external length equivalent to the sum of bearing powers recited in claims 2, 4, 6, and 8 can still be easily conceived from the ‘head extension type file’ of the specification of prior art which was disclosed in Patent Publication No. 2004-52779 published on June 23, 2004 (Defendant’s Exhibit 9) as shown in [Figure 6] to the right (Defendant’s Exhibit 5).

Defendant’s Exhibit 9
[Figure 6]



⑤ Then the applicant submitted an amendment (Defendant’s Exhibit 7) on May 3, 2007 which added ‘uniform inclined plane surrounding the upper portion of head elements 1 and 2 with sequential lamination’ to claim 6 for the subject invention in this case and deleted the rest of the claims along with an opinion

document (Defendant's Exhibit 6) that stated that the technical feature of the subject invention in this case is the sum of bearing powers for head elements 1 and 2 of head extension type file composed to be equivalent while simultaneously featuring uniform inclined plane and sequential lamination of head elements 1 and 2 which prevents occurrence of offcenter during pile driving after file burial thus securing stable internal force and the subject invention in this case as a result was patented on August 24, 2007 (Plaintiff's Exhibit 2).

⑥ In the light of such application process for the subject invention Subject invention above, the applicant has deliberately excluded the 'composition of extension in equivalent length left and right for head elements 1 and 2' disclosed in claims 1 to 4 at the time of application to avoid the overlap with technology extending the head element at the tip of the file left and right which appeared in the prior arts as suggested by Defendant's Exhibits 8 and 9 from the patent examiner as grounds for denial of inventiveness and added 'uniform inclined plane surrounding the upper portion of head elements 1 and 2 with sequential lamination' in claim 6 which is not exhibited in above preceding inventions to emphasize that this is the key technology of the subject invention in this case in the opinion document submitted on May 3, 2007 for patent registration.

8. Patent Court Decision 2016Heo7947 decided June 16, 2017 [Invalidation (Patent)] [Final]

A case where the invention was deemed to be executed due to the state of recognition of technical composition of invention by unspecified number of people including the transferee with the item being transferred with the technical composition of the invention being easily understood by disassembly or analysis of this item by a person with ordinary skills within the field of technology that corresponds with this invention even when the technical composition of the invention cannot be simply understood through the exterior as the same item as the invention was transferred for the purpose of sale or subcontracting unless there are special circumstances such as obligation of confidentiality for the transferee.

▷ It can be said that the invention was executed due to the state of recognition of

technical composition of invention by unspecified number of people including the transferee with the item being transferred with the technical composition of the invention being easily understood by disassembly or analysis of this item by a person with ordinary skills within the field of technology that corresponds with this invention even when the technical composition of the invention cannot be simply understood from the exterior appearance as the same item as the invention was transferred for the purpose of sale or subcontracting unless there are special circumstances such as obligation of confidentiality for the transferee.

Meanwhile, the burden to argue and prove publicly known or practiced invention under the old Patent Act Article 29(1)(i) is on the party who argues invalidity of the patent, whereas the burden to argue and prove the duty of confidentiality is with the patentee who denies the invention is publicly known or practiced.²⁾

▷ The plaintiff who is the patent owner of the subject invention in this case has installed the window frame identical to the subject invention in this case according to the subcontracting agreement in Restaurant A prior to the filing date of the subject invention in this case and the owner of Restaurant A has received the window frame above which resulted in acquisition of ownership for the window frame and furthermore, there is no special circumstance that warrants obligation for confidentiality for the owner of Restaurant A and its employees. The window frame above features the internal structure of the left, right, upper, and lower frames along with spatial placement and specific combination structure of the upper and lower brackets but its internal structure is difficult to understand easily through the exterior but a person with ordinary skills can use simple tools to easily disassemble the window frame to understand the internal elements and the combination of the elements without much difficulty.

▷ Therefore, the window frame identical to the subject invention in this case without any restrictions such as contract for confidentiality being transferred to Restaurant A has exposed the technical composition of the invention to

2) A legal principle that is introduced for the first time in the court.

unspecified number of people which means that the subject invention in this case was executed publicly prior to its filing date.

9. Patent Court Decision 2017Heo2826 decided September 15, 2017 [Rejection (Patent)] [Final]

A case where inventiveness of Claim 1 was not denied by Prior Art 2 due to being partially different in terms of its problem to be solved compared to Prior Art 2 and having a different effect which cannot be found in Prior Art 2 even without critical significance in composition ratio

Claim 1	Prior Art 2
The total amount of hydrocarbon in Linear C11 and C13 was above 75 mass% and the total amount of hydrocarbon includes a. 55~80 mass% of hydrocarbon in Linear C11 b. 20~45 mass% of hydrocarbon in Linear C11, and the weight ratio of Linear C11 hydrocarbon to Linear C13 hydrocarbon is a mixture of hydrocarbon between 1.5~3.5	The appropriate flammable nonpolar hydrocarbon dissolvent for <u>gel-solid stick composite</u>...(Omitted)... nonpolar hydrocarbon dissolvent in ring-shape, branching form, or chain composition, and the most ideal would be <u>branch-chained hydrocarbon</u>...(Omitted)... <u>Non-restrictive example</u> of another appropriate nonpolar, flammable hydrocarbon dissolvent would include dodecane, octane, decane and their combination along with the paraffin from the Norpar series which can be obtained from the Exxon Chemical Company such as <u>Norpar 12, 13, and 15</u> (Evidence B2, Page 17~18).

▷ The invention in Claim 1 limits the hydrocarbon content ratios of linear C11 and C13 regarding total amount of hydrocarbon in the hydrocarbon mixture along with the hydrocarbon weight ratios of linear C11 and C13 and weight ratios of hydrocarbon in linear C11 to hydrocarbon in linear C13 but the specification of Prior Art 2 discloses Norpar 12 and 13 as one kind from multiple hydrocarbon dissolvents and does not specifically disclose the weight ratio of the hydrocarbon in linear C11 and C13.

- ▷ The hydrocarbon mixture of Claim 1 in this case in this case cannot be determined whether it presents a significant difference in effect before and after the weight ratio is used and does not provide any disclosure or data to be recognized as any critical significance, and thus, it is indicated that there may not be any critical significance of the weight ratio.
- ▷ However, Claim 1 in this case as you can see below features a partially different problem to be solved compared to Prior Art 2 and has a different effect which cannot be found in Prior Art 2. ① Claim 1 in this case and Prior Art 2 are hydrocarbon mixtures that are applied in cosmetics and such which shares the problem to be solved in terms of improving skin texture but there is no task of 'Providing raw material with no ecological or toxicological debate' in Prior Art 2 as Claim 1 in this case. ② The hydrocarbon mixture of Claim 1 in this case has the effect in terms of toxicology by improving eye and skin irritation but such effect is not only recognized in Prior Art 2 but Norpar 12 and 13 disclosed in Prior Art 2 irritate the eye and the skin in terms of toxicology and it can be said that Claim 1 in this case has a different effect in terms of dermal toxicity or toxicity towards the eyes and the skin compared to Prior Art 2.
- ▷ In the end, the hydrocarbon mixture of Claim 1 in this case which includes specific weight ratio for linear hydrocarbon cannot be found specifically disclosed in Prior Art 2 and the numerical value limit of Claim 1 in this case carries different intent as technical method to achieve a different task to that of Prior Art 2 and its effect is also different compared to that of Prior Art 2 which makes Claim 1 in this case to be difficult to invented by a person with ordinary skills from Prior Art 2.

10. Patent Court Decision 2017Heo1373 decided July 14, 2017 [Invalidation (Patent)] [Final]

Whether novelty is denied for invention merely limiting the publicly known purity of substance (Negative in part)

- ▷ The published refinement technology could not yield mixture of purity designated in the subject invention and if this subject invention has disclosed the technology to gain mixture of such purity, then the designation of such mixture purity cannot be deemed as well-known or commonly used art by a person with ordinary skills which does not deny novelty by prior art for this subject invention.
- ▷ This was a case where it was deemed that the refinement method that was published prior to priority claim date of the subject invention in this case could not yield calcobutrol above 99.0% purity designated by claim 3 of the invention in this case and the method disclosed in the specification of the subject invention in this case resulted in yield of calcobutrol of purity mentioned above which means that the designation of 99.0% pure calcobutrol in claim 3 of the invention in this case was not a well-known or commonly used art by a person with ordinary skills (request from plaintiff dismissed).

11. Patent Court Decision 2016Heo4733 decided May 12, 2017 [Invalidation (Patent)] [On appeal]

Whether inventiveness is denied for formulation invention of fine refinement of sorafenib tosylate (Affirmative)
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- ▷ Claim 1 in this case and Prior Art 1 were activators which were common in the fact that they were pharmaceutical compositions to treat overgrowth disorders including cancer which included refined insulin containing sorafenib tosylate acid but they differed in the sense that Claim 1 in this case designated inclusion of at least 55% sorafenib tosylate in terms of weight composition while Prior Art 1 did not designate the content of sorafenib tosylate in 50mg tablet which made it impossible to determine the weight ratio of sorafenib tosylate in the entire composition.
- ▷ But under such circumstances, such designation of value above for Claim 1 in this case can be easily conceived from prior arts by a person with ordinary

skills and the significance of such effect cannot be recognized which denies the inventiveness for Claim 1 in this case (cited from plaintiff's request).

- A person with ordinary skills can understand that the single dosage of sorafenib tosylate for anti-cancer effect is significantly high³⁾ from preceding inventions. Also, the weight of standard tablet considering the convenience in terms of administration for old patients at the time of priority date for the subject invention in this case was widely known to be between 120 and 700mg and a person with ordinary skills can understand that the content of sorafenib tosylate must be manufactured with very fine refinement that takes up about 57% of the total tablet weight for the single sorafenib tosylate dosage of 400mg to be included in the tablet. ⇒ A person with ordinary skills can sufficiently gain motivation to attempt invention of very fine refinement of sorafenib tosylate from preceding inventions at the time of priority date for the subject invention in this case.
- When the combination ratio of drug in a single tablet is high while designing the orally administered medicine for the drug, the moldability and disintegrability of the drug itself are sequentially assessed and if the moldability and disintegrability are satisfactory, the drug is given as basic prescription and if the moldability and disintegrability are unsatisfactory, the drug is prescribed accordingly which is the standard prescription method of tablets in the field of pharmaceutical medicine at the time of priority date for the subject invention in this case and as a person with ordinary skills trying to create a tablet of sorafenib tosylate for oral administration, the person would obviously first assess and confirm the moldability and disintegrability of sorafenib tosylate and manufacture tablets according to the standard prescription method as above based on the results.⁴⁾ The fact that Prior Art 1 administered sorafenib tosylate as a tablet in single phase clinical trials to disclose the fact that the sorafenib tosylate can be made as tablets for oral administration makes this even more so. ⇒ When manufacturing high

3) In Prior Art 1, the total daily dosage through dual phase clinical trial is set at 800mg (It is recommended to be 400mg per administration and the dosage should be between 273 and 549mg for anti-cancer effect starting with Prior Art 2).

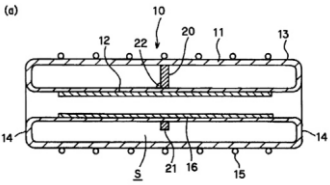
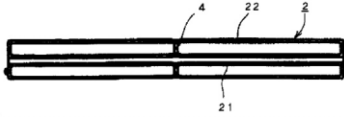
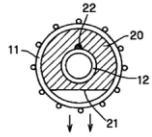
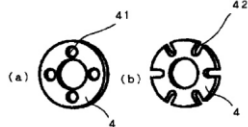
4) This is even more so in the light that in Prior Art 1, the sorafenib tosylate was administered as tablets in single phase clinical trial which exhibited the possibility of oral administration through tablets for the sorafenib tosylate.

dosage tablet, the moldability and such of the drug itself would be assessed and it would be given as basic prescription with minimal mixture of excipient if satisfactory which is the standard process and it cannot be said that work confirming such property requires undue experimentation, cost, or time.

- Numerous high dosage tablets that contain over 55% of active ingredient existed prior to the priority date of the subject invention in this case.
- At the time of priority date for the subject invention in this case, there was no data such as the fact that manufacturing sorafenib tosylate in form of high dosage tablet was inappropriate to suggest that there was any technical obstacle to attempting very fine refinement of sorafenib tosylate by a person with ordinary skills despite such standard prescription method above.
- Claim 1 in this case did not feature any special technical method for manufacturing sorafenib tosylate as high dosage tablet other than designating sorafenib tosylate weight% at above 55%.
- The release, stability, hardness of tablet disclosed in the specification of the subject invention in this case are mere confirmation of appropriate properties (moldability, disintegrability, etc.) for high dosage tablet manufacturing of sorafenib tosylate according to the standard prescription method and there are no circumstances to say that confirming such properties requires excessive effort. Furthermore, there is no basis to say that the faster release is the effect of composition designated by Claim 1 in this case.
- Claim 1 in this case only designates the content ratio of sorafenib tosylate in terms of weight% and does not designate the weight of tablet itself which makes it difficult to say that administration compliance increases just by Claim 1 in this case and even if the administration compliance does increase, it is within the scope that can be predicted by a person with ordinary skills which makes it difficult to say that its effect is significant or different.

12. Patent Court Decision 2017Heo2062 decided August 25, 2017 [Correction of Registration (Patent)] [Appeal dismissed without hearing]

A case where it was deemed that the inventiveness was not denied for the corrected invention in this case compared to the Prior Art by the corrected invention opting for a completely different method for the task even though the Prior Art had the same idea for the same task by having a cut-out being formed in the direction of the light exposure from the support plate of the excimer lamp among the elements of the corrected invention in this case.

Corrected Invention of the Plaintiff	Prior Art 1
There was a support plate in place to support the interior tube between the external and internal tubes of the excimer lamp to treat the surface of treatment subject and the support plate had a cut-out in the direction of light exposure towards the surface the treatment subject on single radial side (Element 3)	The supporting material is installed near the center in the longitudinal direction of the electrical discharge between the external and internal tubes of the excimer lamp and create a hole or a cut-out in the supporting material to form a hole for ventilation (Encroachment corresponding to Element 3)
[Figure 1(a)] 	[Figure 3(a)] 
[Figure 1 (b)] 	[Figure 4(a), (b)] 

▷ Detailed review

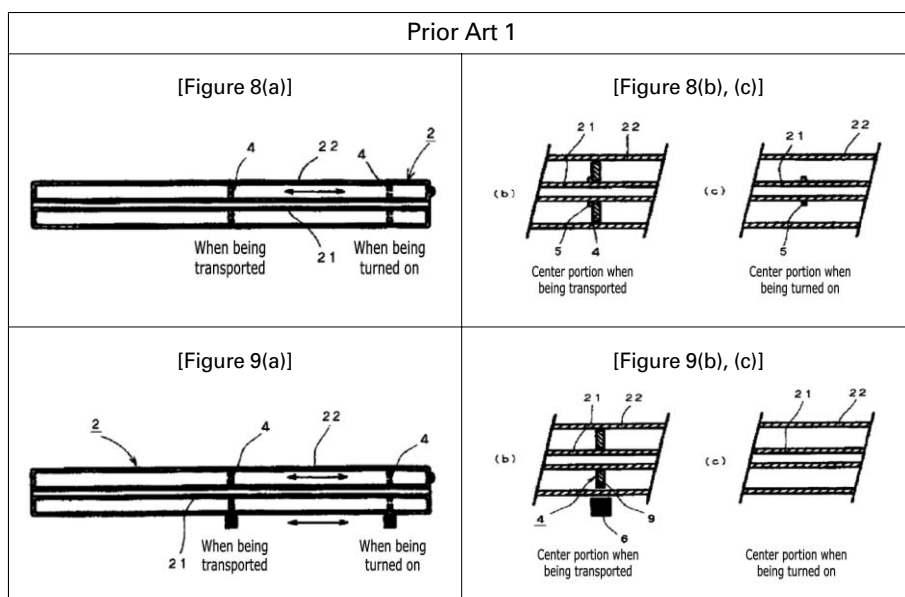
Element 3 of the corrected invention in this case features a support plate that has a cut-out in the direction of light exposure towards the surface of the treatment subject while the corresponding element in Prior Art 1 which is the

support material that does not specify the direction of its hole or cut-out for ventilation.

However, the difference stated above between Element 3 and its corresponding element in Prior Art 1 cannot be said to be easy for a person with ordinary skills to overcome such difference through Prior Art 1 for the following reasons.

- 1) First, the formation of cut-out in the direction of light exposure towards the surface of treatment subject on the support plate in element 3 does not form electrical discharge in the area where the support plate has been placed within the space for discharge as well as to resolve the issue of illumination uniformity resulting from restriction of light from other light emitting parts which lowers the amount of light to the surface of the treatment subject right below the support plate. In other words, it solves the problem stated above by inducing the light to be emitted through the cut-out of the support plate and by ensuring that the light from other light emitting parts is not restricted.
- 2) In contrast, the hole or cut-out formed in the support material of Prior Art 1 does not allow gas flow between the space for discharge on both sides due to the support material being installed between the external and internal tubes to prevent damage during transport of the discharge unit as disclosed in the specification which warrants formation of hole for ventilation to allow gas flow between space for discharge on both sides and to prevent the inconvenience of separate gas sealing process by performing the gas sealing process only once initially. Therefore, Element 3 and the corresponding element of Prior Art have different problems to be solved through their own compositions and their specific functions also differ.
- 3) Furthermore, according to the specification disclosure and drawing of Prior Art 1, the issue of illumination decrease and imbalance due to the support material is being recognized but unlike the corrected invention in this case, it opted to relocate the support material in the end portion from the center portion as the solution as shown in the drawing below. In other words, it suggested the method of having the support material is placed in the center portion during the transport of excimer lamp to prevent damage to discharge

unit and the support material is moved to the end portion while turned on as it specifically suggests the method of using the protuberance within the internal tube at the center portion or utilizing a magnetic material and a magnet for movement of support material and temporary stabilization at the center portion and the end portion.



4) As stated above, Prior Art only suggested the method of moving the support material to solve the issue of illumination decrease and imbalance due to support material and it fails to suggest a technical composition of forming a cut-out in the support material itself in the direction towards the treatment subject as suggested in element 3 of the corrected invention in this case and the motivation or hint of any relation cannot be found anywhere in the specification of Prior Art 1.

5) Also, there are no circumstances to acknowledge that the composition of cut-out towards the surface of the treatment subject in the support material itself by a person with ordinary skills can be easily conceived from Prior Art 1 even with the level of technology and technical knowledge at the time of the priority date of the corrected invention in this case as well as the basic task,

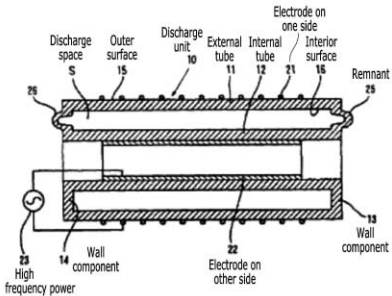
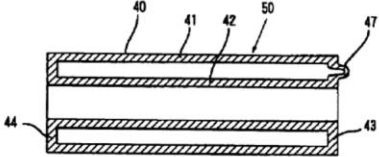
development trend, and demand from corresponding industry within the corresponding field of technology under consideration.

- 6) Therefore, the corrected invention in this case completely offers a different solution to the task compared to that of Prior Art 1 and Prior Art 1 does not offer any clue to overcome such difference as stated above and it is difficult to conceive element 3 of the corrected invention in this case from the corresponding element of Prior Art 1 by a person with ordinary skills.

13. Patent Court Decision 2016Heo8124 decided August 25, 2017 [Invalidation (Patent)] [On Appeal]

This case determined that the inventiveness for the subject invention in this case were objects that had specific structure or nature fallen within the scope of claim rather than being limiting its technical composition to the manufacturing process itself as the manufacturing process of the subject invention in this case was disclosed in the product invention and denied the inventiveness in comparison with the Prior Art.

Subject Invention of the Plaintiff	Prior Art 1
In dielectric barrier discharge lamp, the discharge unit features at least 2 remnants of liquid flow tube that connects through each space of discharge and <u>at least one of the liquid flow tube is used to inject cleaning agent to clean the interior of the discharge unit or as pathway for discharge</u> (Element 4)	In a dielectric barrier discharge lamp, the vent pipe(45) cuts off due to heat which seals the internal space(R) and results in remnants of vent pipe(47) remaining thus the injection of cleaning chemical within the unit material(40A) takes place through the vent pipe(45) prior to the unit material(40A) being filled with gas for discharge within its internal space(R) and the cleaning chemical afterwards is discharged from the inside of the unit material(40A) after cleaning the inside of the unit material(40A) (Composition corresponding to Element 4)

Subject Invention of the Plaintiff	Prior Art 1
[Figure 1] 	[Figure 9] 

▷ Detailed review

Element 4 of the subject invention in this case and the corresponding element of Prior Art 1 are the same in the sense that both utilizes the liquid flow tube (vent pipe) to as a way to inject cleaning agent to clean the interior of the discharge unit(unit material) or as pathway for discharge. However, they differ in the sense that element 4 features at least 1 liquid flow tube out of the 2 being used as a flow path while only one vent pipe exists in Prior Art 1 which is used as a flow path.

However, the difference stated above is related to the manufacturing process of the subject invention in this case for the following reasons and the difference itself cannot be seen as a compositional difference to Prior Art 1 and the dielectric barrier discharge lamp which is the subject invention in this case in terms of structure or property cannot be identified to be different from Prior Art 1.

1) First, the subject invention in this case is product invention related to dielectric barrier discharge lamp and element 4 states that at least 1 of the 2 liquid flow tube is used as pathway for injection and discharge of cleaning agent during the manufacturing process of the discharge lamp above. But the 2 or more liquid flow tubes above are items that no longer exist in the final version of dielectric battery discharge lamp as they were removed and the details of element 4 just states the purpose of liquid flow tube in the cleaning process which is part of the dielectric barrier discharge lamp manufacturing process.

- 2) The scope of claim for the product invention should disclose the composition of the invention in a specific method and even if there is a disclosure regarding the manufacturing process within the scope of claim, this only carries significance as a method to designate the structure or nature of the object which is the final product. Therefore, when determining the patent requirements such as novelty or inventiveness for the product invention with its manufacturing process disclosed, it should not be determined with its technical composition limited to just the manufacturing process but also include the disclosure of the manufacturing process and interpret as any object that has the specific structure or nature disclosed in the scope of claim and be compared to the preceding technology which was published prior to the patent application (Refer to Supreme Court Decision 2011Hu927 decided January 22, 2015).
- 3) Therefore, element 4 of the subject invention in this case should not be just interpreted as practice of wet cleaning by cleaning agent using one of the 2 or more liquid flow tubes during the dielectric barrier discharge lamp but interpreted as all dielectric barrier discharge lamp that has the specific structure or nature included in all disclosures within scope of claim and be compared to Prior Art 1.
- 4) Meanwhile, according to the specification of the subject invention in this case, the final version of the dielectric barrier discharge lamp after wet cleaning mentioned above has improved light emission due to all contaminant and debris being removed from the inside of the discharge material.
- 5) However, the cleaning effect that comes from cleaning the dielectric barrier lamp can vary by various conditions such as number of cleaning and time spent on cleaning as well as by various cleaning methods including wet cleaning and dry cleaning and it is difficult to say that there is difference in cleaning effect between the subject invention in this case and the dielectric barrier discharge lamp of Prior Art 1 which are both produced through wet cleaning. Furthermore, even if the difference in cleaning method disclosed above results in the dielectric barrier discharge lamp of the subject invention in this case yielding more clean and bright light compared to that of Prior Art

1, such effect is well within the scope that can be predicted from Prior Art 1.

6) Furthermore, it can be said that the cleaning work efficiency is superior as the cleaning effect is yielded within shorter amount of time by using at least 1 of the 2 or more liquid flow tubes as the flow path for cleaning agent as described in the subject invention in this case compared to the cleaning work executed using only 1 vent pipe as shown in Prior Art 1 but this is a mere superior effect in manufacturing process and it cannot be deemed as structure of feature of the discharge lamp which is the final product.

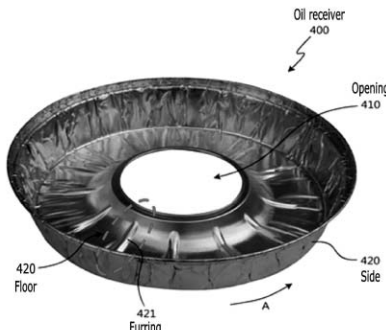
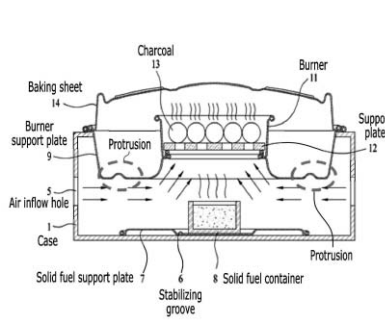
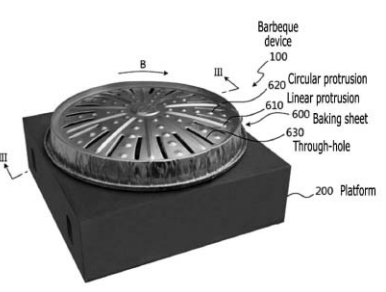
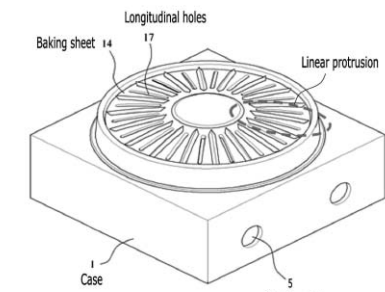
14. Patent Court Decision 2016Heo7015 decided July 3, 2014 [Invalidation (Patent)] [On appeal]

A case that deemed that the two inventions were practically equivalent and in violation of the Patent Act Article 29(3) in relation to the extended first-to-file rule due to only a small difference that does not generate a new effect as the small difference was a mere addition and alteration of the well-known and commonly used art in terms of the specific method to resolve the problem to be solved even though there was a partial difference between the technical composition of the subject invention and the prior art

1) Comparison of the subject invention in this case and the prior art

Element	Subject Invention	Prior Art 1
1	It is a disposable barbecue device for single use and it has a groove(310) in the middle which serves as primary fuel container (300) which contains the primary fuel	- Disposable barbecue device set - Solid fuel receiver(7) to allow insertion of solid fuel container(8) which stores solid fuel by forming a stabilizing groove(6) in the center

Element	Subject Invention	Prior Art 1
2	It is placed on top of the primary fuel container mentioned above and it is an oil receiver(400) which features an opening(410) connected to the floor of the curved surface	- It is assembled by being placed above the solid fuel receiver and the burner support plate(9) with burner insertion hole(10) allows the burner to be placed on top at the internal center
3	It is placed on top of the oil receiver mentioned above to cover the opening mentioned above and it is used as secondary fuel container(500) which contains the secondary fuel	- It is inserted into the burner insertion hole(10) to be stabilized and the support plate with through-hole(12) is inserted and the burner(11) is placed on top with charcoal(13) inside
4	It is a baking sheet(600) that is placed on top of the secondary fuel container mentioned above and makes contact with food to deliver heat to the food above to cook the food	- Baking sheet(14) placed on top of the burner support plate(9) with built-in burner(11) to be assembled
5	The baking sheet(600) above is a circular set of multiple linear protrusions(610) and a circular set of round protrusions(620) that are placed alternating with the linear protrusions	- Baking sheet features teeth in the upper center and the entire exterior surface of the teeth generate linear protrusion spaced out evenly
6	They are placed between the set of multiple linear protrusions and multiple circular protrusions mentioned above and there is a through-hole(630) to discharge the combustion residue into the oil receiver mentioned above	- There are longitudinal holes(17) between the protrusions that are spaced out evenly on the entire exterior of the baking sheet
7	The oil receiver(400) above is a barbecue device which includes multiple linear furring(421) in circular direction	- There are protrusions in circular direction on the bottom surface of the burner support plate

Element	Subject Invention	Prior Art 1
Main drawings	[Figure 4] 	[Figure 3] 
Main drawings	[Figure 1] 	[Figure 2] 

2) Review of differences

- A) Even if there are circular protrusions in addition to the linear protrusions in the subject invention in this case, adding circular protrusions with linear protrusions in Prior Art 1 is a simple addition of well-known and commonly used art for task solution to minimize surface of contact to prevent the food from sticking to the sheet and it cannot be seen as generation of new effect.
- B) The ‘multiple furring in circular direction along the bottom surface of the oil receiver’ of the subject invention in this case is a well-known and commonly used art to form ribs to reinforce the strength of the plate and the technical

composition of forming them in a circular direction also is widely known and the fact that there is no big difference in terms of effect by substitution of 'Multiple furring in circular direction' with 'Protrusions in circular direction' proves that it is practically equivalent to the 'multiple furring in circular direction along the bottom surface of the burner support plate' of Prior Art 1 which is the corresponding element.

C) In conclusion, the subject invention in this case is practically equivalent to Prior Art 1 which is a violation of the extended first-to-file rule stated in Patent Act Article 29(3) and its registration should be invalidated.

15. Patent Court Decision 2016Heo7435 decided April 7, 2017 [Correction of Registration (Patent)] [Final]

A case on whether the element of the subject invention, 'perform load disconnect and convert power during power failure or outage' can be easily conceived from the prior art which discloses 1) perform load disconnect and convert power during power failure 2) reduce arc generation through phased control mechanism during power outage (Affirmative)

Element 5 of the subject invention in this case is about the control which performs 'Load disconnect → Power conversion → Load connect control mechanism' during specific situations which are power failure and outage.

① The conversion mechanism disclosed in Prior Art 1 is summarized as follows.

- Power failure : Load disconnect → Convert from main power to backup power → Load connect and supply power
- Power outage : Convert to prevailing power through program control over phase comparison

The control mechanism during power outage disclosed in prior art 1 may cause electric shock, voltage surge, or arc generation due to difference in phase

between backup power and main power because of immediate conversion to main power after the main power is restored when conversion to backup power has been completed and therefore, prior art 1 does not convert back to main power immediately even after main power is restored and compares the phase between main power and backup power to convert back to main power after a point (T7 of Figure 7B) where the value of difference falls below certain value but it does not clearly state whether the invention performs load disconnect and load connect mechanisms during power failure.

② But the entire control mechanism including load disconnect and power conversion during power failure disclosed in prior art 1 is equivalent to claim 5 or the control mechanism of the corrected invention in this case other than the fact that claim 5 of the corrected invention in this case performs the same mechanism during power outage. In the end, a person with ordinary skills within the field of prior art 1 would not suffer any technical difficulties in opting for composition to perform 'Load disconnect → Power conversion → Load connect control mechanism' which is lower in terms of level of technology instead of more precise and technologically complex 'Control method utilizing phase comparison' during power outage for prior art.

③ As above, prior art 1 utilizes phase comparison during power outage to control but there is no clear disclosure on whether it performs control mechanism such as load disconnect and others. However, 2 control mechanisms above are not technology that cannot be simultaneously executed or technologically contradictory but rather technology that can be selected simultaneously. In other words, control through phase comparison is executed to avoid the issue of phase difference between backup power and main power during power outage while load disconnect is executed simultaneously and composing to convert to main power by control through phase comparison as mentioned above and to reconnect the load would not prove to be much difficult for a person with ordinary skills familiar with prior art 1. Also, this is just a conversion to use an already placed element during power outage in prior art and therefore, it is valid to say that it is a simple change of design to a person with ordinary skills.

16. Patent Court Decision 2017Heo1304 decided August 25, 2017 [Confirmation of the Scope of Rights (Patent)] [Final]

A case on whether the determination of solution principles for the corresponding invention in a situation where the characteristic element that grants inventiveness for the corresponding claim was disclosed very specifically compared to other elements should be based on the corresponding element (Affirmative)

Case on whether the principle of task solution for both inventions are equivalent (Negative)

Combining the following circumstances below, it cannot be said that the solution principles based on the specific means to solve problems disclosed in Claims 1 and 3 of the invention in this case is equivalent to the solution principles of the challenged invention.

① Combing the disclosed details in the specification for the subject invention in this case, the technical tasks achieved by characteristic compositions of claims 1 and 3 of the invention in this case in order for easy and sturdy connection of shock tube to spark detonator which are i) placing a circuit with electrical resistance which functions as safety device within detonator housing of the spark detonator that can trigger a non-electric detonator to discharge the electric charge in the capacitor quickly even when detonation has failed, ii) vise which comes uniform with the housing above that forms a vise rack that serves as incision groove in conical shape for sturdy connection with shock tube, and vise cap which is also in conical shape and tightens the vise rack by being placed over the vise.

However, there is no conflict between the parties involved regarding the fact that there is no practical difference between the content disclosed in Prior Art 1 and the composition of spark detonator circuit (Elements 1-1, 1-2, 3) as shown earlier in Claims 1 and 3 of this case and the technology to discharge electrical charge in the capacitor even when detonation has failed by establishing a firing circuit with electrical resistance to function as safety device within the detonator housing of the spark detonator that triggers non-electrical detonator is a publicly known technology.

② The patent examiner who examined the patent application in this case has

issued rejection on grounds that inventiveness of Claim 1 in this case was denied compared to Prior Art 1 on August 20, 2012 (Plaintiff's Exhibit 6), and claim 1 was disclosed as shown in below (Plaintiff's Exhibit 5).

「A non-electric detonation system utilizing spark detonation device that is equipped with electrical resistance connecting between the 2 leading wires aligned to spark tips which electrically connect each electrode of the spark tips to the detonation circuit and leading wires consisting of detonation circuit equipped with spark tip with 2 electrodes which generates spark by high voltage current is housed inside and generates spark in the spark tip mentioned above by receiving electricity from leading wire of the electrical blasting machine and the non-electric detonation system utilizing spark detonation device that delivers the spark generated from the spark tip mentioned above through signal tube connected to the spark tip to the spark detonation device at the end of the tunnel」

Then the defendant amended the claim above as shown in the following on October 22, 2012 and the main content of amendment was alteration of 'detonation system' into 'detonation device' and addition of elements 1-3 recited in claim 5 as elements as shown in underlined part (Plaintiff's Exhibit 7).

「A non-electrical detonation device utilizing spark detonator that features vice cap that tightens the vise rack which combines the signal tube to the conical shaped vise along with housing equipped with vise separated by vise rack at end-point and spark detonator that is in a conical shape that shrinks in circumference going towards the end-point where the spark tip and the signal tube are inserted to be connected with spark tip of the detonation circuit along with the body surrounding the electrical board equipped with detonation circuit utilizing spark detonation device that is equipped with electrical resistance connecting between the 2 leading wires aligned to spark tips which electrically connect each electrode of the spark tips to the detonation circuit and leading wires consisting of detonation circuit equipped with spark tip with 2 electrodes which generates spark by high voltage current is housed inside and generates spark in the spark tip mentioned above by

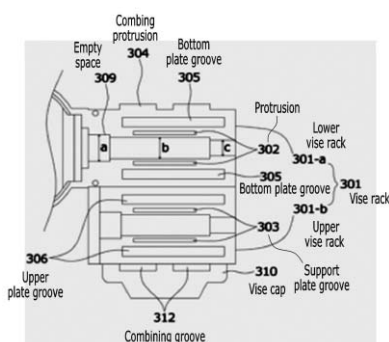
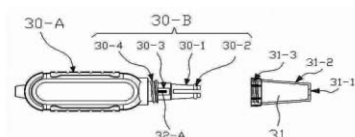
receiving electricity from leading wire of the electrical blasting machine and the non-electric detonation system utilizing spark detonation device that delivers the spark generated from the spark tip mentioned above through signal tube connected to the spark tip to the spark detonation device at the end of the tunnel,

Also, the defendant submitted an opinion document along with the amendment above and testified, 'I have corrected claim 1 by incorporating claim 5 which has its inventiveness acknowledged' (Plaintiff's Exhibit 8). Considering the progress above, elements 1-3 are elements having inventiveness of claims 1 and 3 compared to the prior art are and the defendant must have acknowledged this as well. Therefore, it may be regarded that the principle of task solution based on specific means to solve problem of claims 1 and 3 in this case lies in 'easily and sturdily connecting the shock tube and spark detonator through the connecting part'.

③ However, the connecting part of the challenged invention as well features a structure for easily and sturdily connecting shock tube with spark detonator and this is shared in common with the connecting part of claims 1 and 3 in this case. As shown earlier, the circuit which was practically equivalent to the circuits of claims 1 and 3 in this case was disclosed in prior art 1 and the defendant has included the elements of the connecting part disclosed in claim 5 incorporated in claim 1 to overcome the grounds for rejection of acknowledgement of inventiveness and it can be seen that the composition of this connecting part was very strict as disclosed above. However, if the specific means to solve problem of claims 1 and 3 in this case determines the solution principle as just 'connecting structure to easily and sturdily connect spark detonator with shock tube' regardless of the specifically limited connecting part as shown above, the scope of equivalence despite the amendment of strictly limiting the scope of claim as shown above would result in being a wider scope despite the amendment and reduction of claim which would be unreasonable. Considering this, the principle of task solution based on the specific means to solve problems of claims 1 and 3 in this case should be determined as 'to sturdily maintain the connection even after the shock tube is easily connected to the spark detonator through vise

which forms a vise rack in conical shape in the direction of the length that serves as incision groove and vise cap which features structure where vise rack becomes narrower in width as it covers over the vise' from elements 1-3.

④ However, unlike the connection with shock tube in the challenged invention has the same hollow conical structure as claims 1 and 3 in this case and the vise rack(30-1) formed by vise(30-B) and the vise cap(31) are connected here with the vise rack(30-1) which serves as the incision groove in the ends, it can be seen that it is a structure where the vise racks divided in 2 in lower vise rack(301-1) and the upper vise rack(301-b) combine with spark housing that results in the upper vise rack(301-b) folded on top of lower vise rack(301-a) and the vise cap(310) formed on the lower vise rack is folded and stabilized by the connecting protrusion(304) into the connecting groove(312). Therefore, not only there is no corresponding element in the challenged invention to the conical vise and vise cap of claims 1 and 3 in this case, there is no element that corresponds to the vise rack(30-1) which applies pressure to shock tube by narrowing the width in the connecting process (the width of empty spaces a, b, c where shock tube runs through are already fixed thus not a part of structure that narrows in width to apply pressure in the connecting process) and it cannot be said that the solution principle for the challenged solution is the same as that of claims 1 and 3 in this case.



17. Patent Court Decision 2017Heo2277 decided September 28, 2017 [Rejection (Patent)] [Not final]

A case on that it is difficult to conceive the subject invention in this case from the Not final as the subject invention in this case and the Not final differ in terms of target product, applied technology, composition, and effect even though it was initially

viewed to be easily conceived from the 'manufacturing process for collagen sheet for wound dressing by treating fish scales with hydrochloric acid' of the Not final as 'decellularization' of fish scales were commonly present in both inventions in the decision of rejection from the patent examiner and the decision of IPTAB

1) The comparison between the subject invention in this case and the prior art

Element	Subject Invention	Prior Art
Preamble	Method to manufacture tissue restoration device from fish scales	manufacturing process of collagen sheet for wound dressing from fish scales
1	Phase of accellularization for fish scales to remove some albumin and glycosamino glycan	Treat fish scales with 25% HCl solution for 24 hours at room temperature($34\pm 2^{\circ}\text{C}$)
2	Method that includes phase of grinding of fish scales above into numerous particles as these particles are included in the sponge type matrix and powder mixture	Grind the HCl treated scales into a paste and manufacture into sheet form

2) Common grounds and differences

A) The subject invention and the prior art in this case are similar in wide terms of technical field as they both start from fish scales and related to manufacturing process for bio-friendly bio substances and as shown in element 2 and the corresponding element of the prior art, they are both the same in the sense that there is a phase of grinding after the fish scales go through a certain process.

B) However, the subject invention in this case designates the product as 'tissue restoration device' while the prior art is related to the manufacturing process of sheet for wound dressing which make them differ in specific field of technology.

Also, the subject invention in this case states going through the 'accellularization process to remove some albumin and glycosamino glycan' while the prior art only suggests the collagen sheet manufacturing process

through HCl treatment process without any mention of ‘acellularization’.

3) Review of differences

A person with ordinary skills would not easily conceive claim 1 from the prior art for the following reasons.

A) The subject invention in this case is about a manufacturing process of tissue restoration device used to restore damaged tissue and such while the prior art is about manufacturing process of collagen sheet for wound dressing which is applied on injured area to prevent injury worsening and for speedy recovery which make them differ in terms of product and field of application thus making them differ in terms of technical composition and effect.

B) The tissue restoration device which is the product of the subject invention in this case is used not only for the exterior of the body but also for tissue damage within the body while coming equipped with function of promoting tissue restoration and transfer, hence claim 1 states the phase of accellularization for such purpose.

The prior art on the other hand aims to increase healing rate of injury by creating openings on the collagen sheet to absorb wound exudate and keeping the injured area dry. The prior art suggests manufacturing process of collagen sheet that involves creating a paste through partial decalcification process by 25% HCl solution from fish scales but does not teach any hint or idea related to accellularization.

C) Meanwhile, accellularization is a required process to resolve issues such as immunorejection when applying bio substance from other animals on human body and the possibility of accellularization of fish scales through HCl treatment process of the prior art cannot be ignored completely but it does not seem easy for a person with ordinary skills who has encountered the prior art about dressing sheet for wound dressing instead of tissue restoration tool without any content related to accellularization being disclosed to have a motivation to devise a manufacturing process for tissue restoration device same as the subject invention in this case.

D) Furthermore, the prior art only cares about whether the fish scales turn into paste form after certain level of HCl solution treatment and only reviews which level of concentration among 20%, 25%, and 30% solution can turn fish scales into paste without dissolving them and even under the light of low concentration chloride solutions of 0.1M(0.365%) being used for accellularization in the thesis to prove HCl solution being used as accellularization agent, a person with ordinary skills may not have any motivation for accellularization from the prior art with high concentration chloride solution of 25%.

E) Even in terms of effect for both inventions, the original form of ECM and tertiary structure are maintained after accellularization which only removes some albumin and glycosamino glycan as suggested in the subject invention in this case and this provides structure for the cells to relocate to the inner parts of the tissue restoration device to multiply.

The prior art on the other hand only suggests the effect of creating openings on collagen sheet through partial decalcification with chloride solution and no recognition for utility or technical consideration for overall fish scale structure can be found.

Also, the treatment of fish scales with high concentration chloride solution to turn them into paste as suggested in the prior art, the complete or at least partial destruction of original composition and tertiary structure of fish scales seem unavoidable.

18. Patent Court Decision 2016Heo3334 decided June 15, 2017 [Invalidation (Patent)] [On appeal with a related case, 2016Heo4122 and pending before the Supreme Court]

A case that conceived the common ground and differences by including the manufacturing process as part of elements as it was a necessity to designating the structure or nature of the final product when determining the patent requirements for an product invention disclosed (added with correction) with its manufacturing process

1) [Claim 1] and [Claim 9] Before and After Correction

A) Scope of claim prior to correction

【Claim 1】 It is a manufacturing process of olefin polymerization catalyst that includes silica xerogel with SiO₂ of 90~100 weight% and carries chrome salt, aluminum carboxylate, and boric acid within the pore structure of the mineral supporter substance that is silica xerogel which consists of, i) Phase of providing mineral supporter substance for silica xerogel with SiO₂ of 90~100 weight% with porosity of 0.5~4.0cm³/g, ii) Phase providing solution which includes water, C1~C4 aliphatic alcohol, or their compound solutions which include chrome salt, aluminum carboxylate, and boric acid, iii) Phase where the solution above is deposited on top of the mineral supporter substance, and iv) Phase where catalyst including chrome salt, aluminum carboxylate, and boric acid within the pore structure of the silica xerogel (hereinafter referred to as 'Claim 1 in this case' and the other claims are named in same method).

【Claim 9】 Olefin polymerization catalyst that includes silica xerogel with SiO₂ of 90~100 weight% and carries chrome carboxylate, chrome sulfate, chrome chloride, or chrome salt from these compounds within the pore structure of the silica xerogel.

B) Scope of claim after correction (Underlined parts are corrections)

【Claim 1】 It is a manufacturing process of olefin polymerization catalyst that includes silica xerogel with SiO₂ of 90~100 weight% and carries chrome salt, aluminum alkyl carboxylate that contains less than 6 carbon atoms per molecule, and boric acid within the pore structure of the mineral supporter substance which consists of, i) Phase of providing mineral supporter substance for silica xerogel with SiO₂ of 90~100 weight% with porosity of 0.5~4.0cm³/g, ii) Phase providing single solution which includes water, C1~C4 aliphatic alcohol, or their compound solutions which include chrome salt, chrome salt, aluminum alkyl carboxylate that contains less than 6 carbon atoms per molecule, and boric acid, iii) Phase where the said single solution is deposited on top of the mineral supporter substance, and iv) Phase where catalyst including chrome salt, chrome salt, aluminum alkyl carboxylate that contains less than 6 carbon atoms per molecule, and boric acid within the pore structure of the silica xerogel (hereinafter referred to as 'Corrected Claim 1 in this case' and the other claims are named in same method).

【Claim 9】 Olefin polymerization catalyst that includes silica xerogel with SiO₂ of 90~100 weight%(Hereinafter referred to as ‘element 1’) and carries chrome carboxylate, chrome sulfate, chrome chloride, or chrome salt from these compounds along with aluminium alkyl carboxylate and boric acid that contains less than 6 carbon atoms per molecule within the pore structure of the silica xerogel which is ‘manufactured by method of claim 1’ (hereinafter referred to as ‘element 2’).

2) Parts related to the common ground and differences between ‘element 2’ with expression of ‘manufactured by claim 1’ added among the claim 9 of the corrected invention(‘footnote 1’ are key contents)

element	Claim 9 of corrected invention in this case	prior art(technology used for the invention 1)
2	Olefin polymerization catalyst that includes silica xerogel with SiO₂ of 90~100 weight% and carries chrome carboxylate, chrome sulfate, chrome chloride, or chrome salt from these compounds along with aluminium alkyl carboxylate and boric acid that contains less than 6 carbon atoms per molecule within the pore structure of the silica xerogel which is ‘<u>manufactured by method of claim 1</u>’ * <u>Requirement for designation of ‘object’ among the ‘method of claim 1’⁽⁵⁾</u> Single solution which includes water, C1~C4 aliphatic alcohol, or their compound solutions which include chrome salt, chrome salt, aluminium alkyl carboxylate that contains less than 6 carbon atoms per molecule, and boric acid,	carrying silica and such (Page 3 Lines 27~29), and the chrome compound being impregnated is a compound that changes into chrome oxide through chrome oxidation or calcination such as chromic nitrate, chromic sulfate, and chromic acetate(Page 4 Lines 9~13). Aluminum compound may be additionally impregnated and examples for impregnated aluminum compound are acetyl acetate, acetylacetone (Page 4 Lines 17~18). For ideal manufacturing process of the catalyst, the catalyst should be manufactured in 2 phases where in phase 1, chrome compound is impregnated into porous mineral oxides and in phase 2, the product gained from Phase 1 being impregnated into titanium or aluminum compound which would be optional (Page 4 Lines 6~9).

element	Claim 9 of corrected invention in this case	prior art(technology used for the invention 1)
	[Common] element 2 and technology used for the invention 1 are the same in the sense that they both deposit chrome carboxylate (chrome acetate) and aluminum compound in the porous silica xerogel (silica supporter). [Difference 2: Aluminum compound] In terms of specific aluminum compound that is deposited (impregnated) into the catalyst, element 2 uses 'aluminum alkyl carboxylate with less than 6 carbon atoms per molecule' while technology used for the invention 1 uses 'acetyl acetate of the aluminum and acetylacetonate'. [Difference 3: Polar solvent] In terms of solution, element 2 uses polar solvent made of water, C1~C4 aliphatic alcohol, or their compounds while technology used for the invention 1 does not disclose anything regarding the solution. [Difference 4: Boric acid] element 2 incorporated 'boric acid' in its composition while technology used for the invention 1 does not disclose anything regarding it. [Difference 5: One-step impregnation] element 2 deposits 'single solution including chrome salt, aluminum alkyl carboxylate, and boric acid within water or low concentration level alcohol solution' in the supporter while technology used for the invention 1 is composed of 2 phases for impregnation where phase 1 consists of impregnating 'chrome salt such as chrome acetate' and phase 2 consists of impregnating 'aluminum compound such as acetyl acetate of the aluminum and acetylacetonate'.	

*** Reference (From the decision on legality of correction)**

The plaintiff has argues, "Even if the expression of 'being manufactured by method of claim 1' was added into claim 9 of the invention, it still falls under insignificant composition in terms of designating the structure or nature of cursor for olefin polymerization and such correction is not only unable to limit or reduce the scope of cursor for olefin polymerization but also not even applicable as a correction of wrong description or a clarification of ambiguous description".

But by adding the element of 'manufactured by method of claim 1' in the olefin polymerization catalyst of claim 9 of invention in this case, the olefin

5) Claim 9 of the corrected invention in this case is a 'product invention' but as shown before, it is an element adding 'manufactured by method of claim 1' due to correction thus the catalyst precursor manufactured by method limited to composition of 'polar solvent' and 'one-step impregnation by single solution' would just be a product 'without residual organic solvent' and 'without surface lamination of aluminum particles on chrome compound'. Therefore, the compositions above fall under requirements for designating the structure or nature of the final product and therefore, they must be included as elements to determine things in common and differences.

polymerization catalyst would form its specific structure and nature through phases i) through iv) included in the manufacturing process of olefin polymerization catalyst in claim 1 of invention in this case and claim 9 of corrected invention in this case would claim that the matters limited to element of ‘manufactured by method of claim 1’ such as substances that compose the olefin polymerization catalyst but also the structure and nature created by such method would determine the scope of protection for the olefin polymerization catalyst and Correction 8 can be seen as reduction of claim 9 of invention in this case.

And by adding the element of ‘manufactured by method of claim 1’ to claim 9 of invention in this case, it is limited to the composition of depositing ‘single solution including chrome salt, aluminum alkyl carboxylate within water or low concentration alcohol solution’ of claim 1 of invention in this case in the supporter or the composition regarding ‘polar solvent’ and ‘one-step impregnation process’ and the catalyst of claim 9 of corrected invention in this case which was manufactured due to such limitation is a result of using ‘polar solvent’ ‘without residual organic solvent’ from ‘one-step impregnation process’ (by blocking that may exhibit in two-step impregnation process) thus making it a catalyst ‘without surface lamination of aluminum particles on chrome compound’ which makes the element ‘manufactured by method of claim 1’ a requirement for designating the structure or nature of the final product and it cannot be even seen as an insignificant composition as argued by the plaintiff.

Furthermore, such correction was performed within the scope of claims disclosed in the specification of the subject invention in this case and it cannot be even be regarded as practical expansion or alteration in terms of scope of claim for the patent.

Therefore, the argument above from the plaintiff cannot be accepted.

19. Patent Court Decision 2017Heo431 decided June 15, 2017 [Rejection (Patent)] [Appeal dismissed without hearing]

A case that determined that the inventiveness of the claimed invention was denied and ruled on the standards for determining inventiveness for invention of an object using the parameter including numerical limitation

	The invention in Claim 1	Prior Art
Element 1	It is ferrite type stainless steel with superior corrosion resistance and sheet malleability and the ferrite type stainless steel above consists in terms of weight% of :Ratio (Ti+Nb)/(C+N) between 8~40, and Ratio Tieq/Ceq = (Ti + 0.515*Nb + 0.940*V)/(C + 0.858*N) between 6~40	
Element 2	0.003 ~ 0.035% Carbon	C: Below 0.03 molarity
	0.05 ~ 1.0% Silicon	Si: Below 0.70 molarity
	0.1 ~ 0.8% Manganese	Mn: Below 0.50 molarity
	20 ~ 21.5% Chrome	Cr: 20.5 ~ 25 molarity
	0.05 ~ 0.8% Nickel	Ni: Below 1.0 molarity
	0.003 ~ 0.5% Molybdenm	Mo: Below 0.1 molarity
	0.2 ~ 0.8% Copper	Cu: 0.3 ~ 0.8 molarity
	0.003 ~ 0.05% Nitrogen	N: Below 0.03 molarity
	0.05 ~ 0.8% Titanium	Ti: $4 \times (C + N) \sim 0.40$ molarity (0.24 ~ 0.30% in Chart 1)
	0.05 ~ 0.8% Niobium	Nb: Below 0.5 molarity
	0.03 ~ 0.5% Vanadium	V: Below 0.1 molarity
	0% ~ 0.04% Aluminum	Al: 0.02 ~ 0.08 molarity
	C+N below 0.06%	C + N: Below 0.05 molarity
	Iron as residue and unavoidable impurities	Residual iron and P, S, B, Zr added
Element 3	The ferrite type stainless steel above is manufactured using AOD (Argon-Oxygen-Decarburization) technology	After dissolving in the solvent designated, use the widely known refinement method such as vacuum degassing method, VOD method, and AOD method to refine (Paragraph [0035])

A. Legal principles

1) When utilizing a parameter initially created by the inventor of a product

invention such as metal alloy invention to designate an object by a method that limits the parameter within certain range,⁶⁾ there is a high possibility of novelty or inventiveness not being denied just on the grounds that there are no equivalent parameters in the Prior Art. However, the parameter may be just an expression that altered or confirmed the characteristic or nature of publicly known object and in such circumstances, novelty and inventiveness are denied as the invention above which is a product invention includes an object that has already been disclosed in the Prior Art. On the other hand, when the subject invention⁷⁾ is expressed by limiting the scope of elements that a publicly known invention has in terms of numerical value prior to application, inventiveness is denied if the task and effect of the subject invention is a mere extension of publicly known invention only with difference in numerical limitation and without significant difference in effect within that numerical limitation because it is a simple numerical limitation that can be appropriately selected through common and repetitive testing by a person with ordinary skills and the inventiveness of subject invention will not be denied if that numerical limitation has intent as technical method to achieve a task different from publicly known invention and has significant difference in terms of effect even if the numerical limitation is a mere amendment for that subject invention due to other elements that are acknowledged in terms of inventiveness added in that subject invention as well as the compositions of both inventions excluding the numerical limitation are the same (Refer to Supreme Court Decision 2008Hu4998 decided August 19, 2010).

- 2) Therefore, the technical intent behind the ‘parameter including numerical limitation’ must be determined for a product invention that utilizes ‘parameter including numerical limitation’ in order to determine inventiveness.

6) The inventor for the claimed invention of this case has designated the ratio between each composition in element 1 with 2 formulas [$\text{Ratio (Ti+Nb)/(C+N)}$], [$\text{Ratio Tieq/Ceq} = (\text{Ti} + 0.515 \cdot \text{Nb} + 0.940 \cdot \text{V}) / (\text{C} + 0.858 \cdot \text{N})$)] to create 2 parameters. Furthermore, the inventor limited each parameter value to certain range.

7) Below, the word is used to include the meaning of claimed invention and subject invention altogether.

inventiveness would not be denied if the ‘parameter including numerical limitation’ has intent as technical method to achieve a task different from publicly known invention and has significant difference in terms of effect. For the subject invention to be regarded as having intent as technical method to achieve a differing task and a designated effect, the fact that the parameter including numerical limitation’ has intent as technical method to achieve a task differing from the publicly known invention and there is a relationship with this designated effect are disclosed in the specification or such technical intent and relationship could be inferred by a person with ordinary skills.

And when such technical intent is not revealed, inventiveness would be denied without significant difference in effect within that numerical limitation by applying the legal principle of numerical limitation.

B. Discussion

First, Element 2 of the Claim 1 in this case in comparison with the corresponding Element of the Prior Art shares common elements as well as numerical range in terms of composition ratio, and the Claim 1 in this case shares the same technical problem and effect as the Prior Art and the Prior Art also takes on the same principle for the solution principles of Claim 1 in this case.

However, Claim 1 in this case configures relationship of titanium (Ti), niobium (Nb), and vanadium (V) within the composition ratio and designates the scope of this relationship in numerical value [Ratio (Ti+Nb)/(C+N) between 8~40, and Ratio Tieq/Ceq = (Ti + 0.515*Nb + 0.940*V)/(C + 0.858*N)] which shows difference from the Prior Art. However, even after looking at the disclosure in the specification of claimed invention in this case, it is difficult to discover any theoretical basis or example test that shows technical intent of the ‘Parameter including numerical limitation’ to achieve a task differing from that of the preceding relationship or the relationship between the ‘Parameter including numerical limitation’ and the designated effect, and it is also difficult to say that inference of such relationship with the technical intent is possible from the disclosure in the specification by a person with ordinary skills. Also, the specification of the claimed invention in this case does not disclose any significant effect by incorporating the numerical limitation of element 1. Furthermore, 3 examples of the Prior Art all satisfy the conditions of elements 1

and 2 resulting in the 3 examples above being included within the technical scope of the claimed invention in this case.

Therefore, the inventiveness for the claim 1 is denied by the prior art and can not receive patent which it applied for.

20. Patent Court Decision 2016Heo6524 decided October 19, 2017 [Rejection (Patent)] [Not final]

A case where the decision was revoked based on expert testimonials and such as inventiveness for the claimed invention of factor Xa which is 'Activated factor X' was not denied by the prior art of factor X mutation which is one of the blood coagulation factors

The Invention in Claim 1	Prior Art
Factor Xa mutation with Ile at location 16 is substituted with Leu, Phe, Asp or Gly within chymotrypsin numbering system which is a human Xa mutation ⁸⁾ , that controls blood coagulation ('ach mutation in this case').	- Human factor X mutation which controls blood coagulation ('Preceding invention mutation') - Developed human X factor with 1 Ile16Leu mutation and prothrombin propeptide

A. Common grounds and differences of both inventions

Both inventions are the same in the sense that they are mutations of both human blood coagulation factor which controls blood coagulation and that they have substituted amino acid residue at location 16 from Ilu (Isoleucine) to Leu (Leucine) in terms of location of mutation and its specific details.

However, they differ in the sense that such amino acid substitution as above occurred within factor X for the prior art while such substitution occurred within factor Xa which is an activated factor X for the Claim 1 in this case

8) Caused mutation of substitution in parts of residual amino acid which composes blood coagulation factor

B. Questions Presented in Deciding Inventiveness

The technical task of the prior art lies in increase of carboxylation in stage prior to activation of human factor Xa as blood coagulation factor but the technical task for the claimed invention above lies in it is just a determination that was made afterwards with the improvement of plasma half-life as blood coagulation factor. But the technology to activate factor X into factor Xa outside of the body is a well-known and commonly used art.

The point of conflict in this case is to determine whether a person with ordinary skills can easily apply the well-known and commonly used art from the prior art to generate the mutations from the claimed invention above and confirm its effect.

C. Discussion on Inventiveness

1) Disclosure, hint, motivation, etc. from the prior art

The technical ideology of the claimed invention above of each mutation having long plasma half-life as blood coagulation factor in form of factor Xa mutation is disclosed and hinted in the prior art but it is difficult to say that there was motivation to opt for such technical ideology.

2) Possibility of applying the activation technology which is a well-known and commonly used art

Unless a person with ordinary skills has gone through confirmation through specific experiment at the time of the priority date for the claimed invention in this case, it is difficult to predict whether the usual change of factor X would take place after activation of 'prior art mutation' and furthermore, it is even more difficult to predict what kind of activity would be exhibited by the activated form of the blood coagulation factor.⁹⁾ Also, it is difficult to say that there was disclosure or hint of technical ideology of having long plasma half-life as blood coagulation factors when 'prior art mutation' is activated or to say that there was motivation to opt for such technical ideology.

Therefore, it is difficult to assess that there was possibility of simply attempting to invent or reasonable expectation for success beyond simple hope

9) The invention in Claim 1 has also confirmed that it has effect of long plasma half-life through experiments in multiple phases.

for success in this case and the premise that a person with ordinary skills applied well-known and commonly used art on prior art to generate each mutation in this case and confirmed their effects easily is only possible after already knowing the technical intent and effect of Claim 1 in this case thus making it impermissible.

3) Predictability for the effect

The effect of Claim 1 in this case is an effect that cannot be predicted from the prior art.

D. Conclusion

Claim 1 in this case would not be easily drawn from the prior art by a person with ordinary skills unless the person already knows the contents disclosed in the specification of the prior art in this case.

21. Patent Court Decision 2015Heo7889 decided February 3, 2016 [Final]

A case that determined that inventiveness is not denied if a specific administration method or dosage maintains the medicinal effect while minimizing toxicity and side effects yet has advantageous effect that came from the specific administration method or dosage without any special circumstances which is out of scope of predictability that a person with ordinary skills would not conceive from prior art or publicly known inventions as optimizing the dosage, administration cycle, and administration method within the scope of no toxicity and side effect for desirable treatment effect to solve the task of medicinal effect increase and reduction of side effect for publicly known drugs belongs within the scope of creative ability of a person with ordinary skills by principle

A. Procedural History

▷ Icos Corporation has registered a patent (Hereinafter referred to as 'Patent in this case') for designation of total daily dosage of tadalafil (Product name:

Cialis) which is a sexual dysfunction medicine at below 20mg per day and administration method of orally administered tablets which range from 1~20mg in dosage.

- ▷ Domestic pharmaceutical companies has requested for invalidation for the patent in this case as the patent in this case is an invention of drug administration method and dosage and they argued that there is no inventiveness in the patent in this case as there is no significant effect from the patent's administration method and dosage as the administration method and dosage of the patent in this case can be conceived from tadalafil (Product name: Cialis) which is an invention for sexual dysfunction treatment (Hereinafter referred to as 'Prior Art').
- ▷ The patent examiner has decided to grant the invalidation request from the domestic pharmaceutical companies and Icos Corporation which is the patent owner has filed for revocation action of administrative decision.

B. Relevant Law

- ▷ Element for invention of medicine administration method and dosage would express properties that allow the medicine to take its effect smoothly and assign a new meaning for medicine itself and a new patent may be granted for medicine with newly added administration method and dosage that meets patent requirements such as novelty and non-obviousness (Supreme Court Decision 2014Hu768 decided May 21, 2015)
- Meanwhile, medicinal effect of medicinal substance which is publicly known in the field of medicinal invention as finding appropriate administration cycle, administering body part, and administration method while maintaining its medicinal effect as well as increasing convenience of administration and minimizing toxicity and side effects falls under the technical problem that must be solved in the field and the process and method of such finding are well known to people with ordinary skills within this field. Then inventiveness is not denied if a specific administration method or dosage maintains the medicinal effect while minimizing toxicity and side effects yet has advantageous effect that came from the specific

administration method or dosage without any special circumstances which is out of scope of predictability that a person with ordinary skills would not conceive from Prior Art or publicly known inventions as optimizing the dosage, administration cycle, and administration method within the scope of no toxicity and side effect for desirable treatment effect to solve the task of medicinal effect increase and reduction of side effect for publicly known drugs belongs within the scope of creative ability of a person with ordinary skills by principle.

C. Discussion

▷ As a result of determining the validity of the patent in this case according to the standards above, the patent in this case was determined to be invalid for lacking inventiveness for the following reasons and dismissed the revocation action of administrative decision filed by the patent owner Icos Corporation.

① The Prior Art is an invention related to the purpose of treating sexual dysfunction of tadalafil (Product name: Cialis) and the Prior Art discloses the range of 0.5~800mg per day for an average adult patient (70kg) with oral administration of tadalafil and also suggests the manufacturing process for tablet which includes 50mg of tadalafil's active ingredient for oral administration.

② Considering the administration method and dosage disclosed in the Prior Art and technical facts that were already public knowledge, a person with ordinary skills would not suffer much difficulty in deriving the "below 20mg in daily dosage" and "once per day administration method" designated by the patent in this case by going through a clinical trial process that any person with ordinary skills would go through and it can not be said they differ from widely known administration method and dosage determined through clinical trial process.

③ The administration method and dosage of tadalafil designated by the patent in this case does not escape the scope of predictable minimization of toxicity and side effect while maintaining the medicinal effect and it is difficult to say that the effect from the administration method and dosage of tadalafil designated by the patent in this case is significant improvement in terms of

medicinal effect, reduction of side effect, or convenience of administration that would not be predicted by a person with ordinary skills.

④ There is no data to support that a person with ordinary skills could recognize that tadalafil within scope of total dosage for 1 day designated by the patent in this case has no effect or has a lot of side effects.

22. Patent Court Decisions 2016Heo21, 45 decided March 30, 2017 [Final appeal dismissed]

The former Patent Act Article 91(2) excludes the period required due to a cause attributable to patent owner from the period when subject invention could not be executed and the 'period required due to a cause attributable' here refers to actual period of delay for the permit and such under Pharmacy Act and other laws due to the fault of patent owner and this case determined that the fault of patent owner and delay of permits and such due to Pharmacy Act and other laws had a proximate causal relation

A. Discussion regarding 「Argument that only the period related to safety and validity examination should be deemed as period where the invention in this case could not be executed extensively」

To receive permit for medicine import, the medicine must pass all examinations according to former Pharmacy Act Article 31(2), Article 42(1), and former Pharmacy Act Enforcement Regulation Article 24(1) which are: ① safety and validity examination, ② criteria and test method examination, ③ GMP examination, ④ DMF examination. The period consumed for safety and validity examination, criteria and test method examination, GMP examination, and DMF examination during the permit process in this case can serve as the basis for calculating the period when the subject invention could not be executed entirely.

B. Discussion regarding 「Argument that the entire supplementation period regardless of overlap of amendment periods with other departments once the

amendment period being carried out at the request for amendment by an examination department should be excluded from the period when the subject invention could not be executed as the entire amendment period is viewed as a period at fault of patent owner」

Even if amendment period was consumed due to request for amendment from a department, it cannot be said that the permit was delayed at the fault of the patent owner as for the period that overlaps with the period of examination at another department during that amendment period while an examination is in progress at another department and therefore, the period of overlap above cannot be excluded from the period when invention could not be executed extensively.

- C. Discussion regarding 「Argument to calculate the period where subject invention could not be executed by the method of excluding the amendment period consumed at the request for amendment from the examination department which was actually the longest of all examination periods consumed by each examination department」

The argument for calculation method made by the plaintiffs above substitutes the examination and permit process of reality with the most ideal examination and permit process by discarding the structural and procedural issues that exists in reality of internal examination process within Korea Food & Drug Administration to calculate a period that permit was delayed at the fault of patent owner thus invalid.

23. Patent Court Decisions 2016Heo8636, 2016Heo9189 decided June 30, 2017 [On appeal]

The validity of patent with its patent term extended affects not only the medicine designated by the clause for manufacturing and import permit but also the medicine regulated to receive permit for manufacturing and import as they are practically treated as equivalents as well as the medicine which does not require separate permit for manufacturing and import that are practically equivalent to medicine that receive permits for manufacturing and import.

The validity of patent with its patent term extended affects not only the medicine designated by the clause for manufacturing and import permit but also the medicine regulated to receive permit for manufacturing and import as they are practically treated as equivalents as well as the medicine which does not require separate permit for manufacturing and import that are practically equivalent to medicine that receive permits for manufacturing and import.

The case that determined that the challenged invention which features an active ingredient that is equivalent in terms of "solifenacin" but differ in salt with "fumaric acid" or "tartaric acid" instead of "succinic acid" thus requiring separate manufacturing and import permit is not applicable for "subject item to permit, etc." of the former Patent Act Article 95 regarding the scope of effect for extension of term

The Patent Term Extension System of the former Patent Act Article 89 is a system that extends the patent term period within 5 years by the period when the subject invention could not be executed for inventions that require significant period of time for necessary testing, permission process, and such as the invention requires permits and such regulated by the law. According to former Patent Act Article 95, the scope of effect for the extended patent term by principle should affect the "subject item for permits and such" which serves as grounds for registering extension, and "permits and such" refers to manufacturing and import permit designated by the former Pharmacy Act and "subject item" refers to medicine that are subject to manufacturing and import permit designated by the former Pharmacy Act which is clear but the scope of medicine that are "subject" to manufacturing and import permit designated by the former Pharmacy Act and such is the issue.

The manufacturing and import permit by principle according to the former Pharmacy Act and its enforcement regulation and announcements from Korea Food & Drug Administration as well as other relevant regulations is permitted by categories and these categories by format include product name, category number and categorization, effect, and usage method and volume but when the items are treated practically equivalent to be able to receive manufacturing and import permit (package permit (declaration)) or when the item is practically equivalent to medicine which has already been permitted thus requiring no separate permit and not designated as medicine subject to manufacturing and

import permit, it is valid to say that medicine which are permitted for manufacturing and import by the former Pharmacy Act and such that are practically equivalent to “subject items to permit”.

The challenged inventions of the plaintiffs in this case had “solifenacin” in common as active ingredient with the subject invention in this case and their respective salts were altered from “succinic acid” to “fumaric acid” or “tartaric acid” and according to 『Regulation Regarding Safety and Validity Examination for Medicine, etc.』, any medicine of new composition with new category of effect or active ingredient with altered salts were designated as medicine subject to manufacturing and import permit thus making these challenged inventions neither eligible to be treated as practically equivalent items thus making it able to receive manufacturing and import permit nor to be treated as medicine that are already practically equivalent to a medicine that was permitted for manufacturing and import which makes separate permit unnecessary and therefore, these challenged inventions fall under the category of medicine that must receive manufacturing and import permit separate from the subject invention in this case. Therefore, the validity of patent for the subject invention in this case with extended patent term does not affect these challenged inventions.

Meanwhile, even if the equivalence test results were confirmed to be identical and they perform the same medical purpose of treating irritable bladder symptoms, their physical and chemical characteristics such as solubility, and melting point of each salt as well as stability against solubility and humidity differ and absorption rate also differs by type of each salt which affects blood concentration level of the drug over time that affects safety and validity of the drug overall thus making it difficult to say that these challenged inventions and the subject invention in this case are practically equivalent medicine. Also, US Patent Act Article 156 (b) and 156 (f)(2) states that the scope of product that is affected by effect of duration extended patent for medicine includes salt or ester of the active ingredient but laws in Korea does not state such regulation at all and considering that the scope of effect for extended patent may be determined differently by specific circumstances and legislative policies of each country, it is difficult to say that ‘vesicare tablet’ which features ‘solifenacin succinate’ as main ingredient is practically equivalent to the “subject item to permit” and there are no other evidence to support such claim.

Major Decisions of the Patent Court on Trademarks and Designs in the Recent One Year

Jinhee LEE*

[Introduction]

Major decisions related to trademarks and designs issued by the Patent Court from October 1, 2016 to October 7, 2017 are selected and summarized as below.

For trademark rights, a decision (No.1, 2017Heo1564) on whether “**PRIMEWELL**” corresponds to a descriptive mark, a decision (No. 2, 2016Heo8841) using a consumer awareness survey result to determine whether “사리원” is a well-known geographical term, a decision (No. 3, 2016Heo8421) on whether “^{SweetMonster} 스위트몬스터” is identical or similar to “MONSTER ENERGY”, a decision (No. 4, 2016Heo9196) on whether “**GLIATAMIN**” is similar to “**GLIATILIN**”, a decision (No. 5, 2017Heo2109) on whether “**THEZARA**” was filed in bad faith to gain undue profit by riding on the business reputation embodied by the famous Spanish clothing brand “**ZARA**”, and a decision (No. 6, 2016Na1691) on whether an action using “**OUTBACK** DRIVE IN MOTEL” in the business of an automated motel corresponds to an action of diluting the distinctiveness and reputation of “**OUTBACK** STEAKHOUSE” have been made.

Regarding design rights, a decision (No. 7, 2016Heo8223) on whether a registered design “” related to a sink water splash guard is similar to a prior design “”, and a decision (No. 8, 2017Heo3379) regarding the invalidity of a registered design “” of a baby bottle which adopts a

*Judge, Patent Court of Korea.

ceramic material, wherein, although transparency of a product that is eligible for design protection is not one of the shape, pattern, or color of the good, it may be considered to be a factor in determining similarity of a design, have been made.

1. Patent Court Decision, 2017Heo1564 decided May 19, 2017 [Final]

[Main Issues and Holdings]

Whether a subject trademark “**PRIMEWELL**” is admitted as having distinctiveness in connection with the designated goods, such as a tire, or the designated services (affirmative).

[Summary of Decision]

With the following circumstances taken into consideration, since the subject trademark is called or thought of as a whole, the trademark has distinctiveness in connection with the designated goods and the designated services.

- It is appropriate to interpret that, the subject trademark is called or thought of as a whole among ordinary consumers or parties related to transactions, based on the following reasons.

① In terms of appearance, the subject trademark “**PRIMEWELL**” includes nine letters that are continuously written, without a space, with the same font, thickness, and inclination, and thus “PRIME” and “WELL” are not visually separated.

② Considering the English education level in Korea, the subject trademark seems to be called approximately “프라임웰” with four syllables, which is relatively short.

Furthermore, “PRIME” is an English word having various meanings of “main, major, basic, typical, most likely to be selected, most appropriate, at the

peak, mature, heyday, prepared (to be used or operated), etc.”, in addition to the meaning of “best or excellent (quality, etc.)”, and “WELL” is an English word having various meanings of “properly, thoroughly, completely, very, fairly, easily, probably, naturally, healthy, a well, etc.”, in addition to the meaning of “skillfully, good, nice”. Both words do not have distinctiveness in connection with the designated goods and the designated services of the subject trademark.

In addition to the above points, as shown below, considering that “PRIMEWELL” has distinctiveness and it is difficult to form a specific concrete concept as a whole, although ordinary consumers or parties related to transaction tend to remember trademarks by a simple name or concept, it is difficult to consider any one of “PRIME” and “WELL” as constituting an essential part of the subject trademark or the subject trademark as being called or thought of by only one of the two parts. Thus, it is appropriate to consider that “PRIMEWELL” is called or thought of only as a whole.

- Not only does the subject trademark acquired distinctiveness as a whole, but also there is no need to prohibit the sole or exclusive use by a particular person, considering the following grounds.

① “PRIMEWELL” itself is a coined word, not listed in English dictionaries.

② As discussed above, in addition to “PRIME” and “WELL” being English words having various meanings, in a course of trade, when “PRIME” and “WELL” are used together as in the subject trademark, there is no evidence to admit that it is used as an expression to describe the nature of a good or services particularly, rather, considering the English education level of Korea, ordinary consumers may easily recognize that “PRIMEWELL” is an awkward expression that does not follow English grammar. In this connection, the word or phrase “PRIMEWELL” may be admitted as having distinctiveness beyond “PRIME”, “WELL”, or a simple combination thereof, and it is difficult to consider that the subject trademark is instinctively considered to have a concrete concept, particularly the meaning of “very good” or “having excellent quality” as the defendant asserts in connection with the designated goods or the designated services, by ordinary consumers. Even if ordinary consumers may recognize the meaning of “very good” or “having excellent quality” through the subject

trademark, it is appropriate to consider that this indirectly hints or emphasizes the quality or effects of the designated goods or the designated services.

③ According to the evidence submitted by the plaintiff, “PRIMEWELL” is considered to be used as only a mark for indicating the source of a good by the plaintiff.

2. Patent Court Decision, 2016Heo8841 decided May 12, 2017 [Invalidation (trademark)] [On appeal]

[Main Issues and Holdings]

Whether “사리원”, a part of a registered service mark of this case, “사리원면옥”, corresponds to a “well-known geographical term” (negative)

[Summary of Decision]

For the following reasons, “사리원”, a part of the registered service mark of this case, “사리원면옥”, cannot be said to correspond to a well-known geographical term widely known to ordinary consumers or traders in Korea on the registration date of the registered service mark of this case of June 26, 1996. As a result, it is considered that the registered service mark of this case does not correspond to a service mark formed only of a well-known geographical term pursuant to Article 6(1)4 of the old Trademark Act.

① First, whether the registered service mark of this case falls under Article 6(1)4 of the old Trademark Act should be determined based on whether “사리원” was well-known to ordinary consumers or traders in Korea as a geographical term at the time of the registration date of the registered service mark of this case of June 26, 1996. Since the trademark examination guidelines of the KIPO are merely a detailed exemplification of the above determination guidelines provided for convenience in the examination process, whether a specific place name corresponds to a “well-known geographical term” cannot be uniformly determined according to the trademark examination guidelines.

② Although “사리원” is referred to in textbooks of elementary schools, middle schools, and high schools as the provincial capital of North Hwanghae Province, and not a small number of news articles relating to “사리원” can be found, the various issues raised by the plaintiff are merely one of several routes or opportunities for ordinary consumers or traders in Korea to recognize “사리원” to be a place name. Accordingly, based on the above grounds only, it is difficult to conclude that “사리원” was actually widely known to ordinary consumers or traders as a geographical term.

③ Meanwhile, among the results of cognitive surveys conducted and submitted by the plaintiff and the defendant to ascertain the practical degree or level of recognition of “사리원” by ordinary consumers or traders, the first survey by the plaintiff includes inquiries such as “Do you know that “사리원” is a place name?” or “Do you know “사리원” is a place name in North Korea?”. The inquiries hint that “사리원” is a place name, particularly a place name in the area of North Korea. Thus, since the inquiries seem to lack objectivity as a survey for checking whether “사리원” is recognized as a place name, the survey results cannot be believed as they are.

④ Furthermore, the plaintiff's second survey targets people over 40 years, who seem to form major customers, as main subjects of the economical activities around 1996 to which the registration decision date of the registered service mark of this case belongs. The result of the survey also shows that 26.8% of respondents know “사리원” as a place name, and further merely 15.8% of respondents accurately know “사리원” as a place name in Hwanghae province. As such, even according to the results of the survey conducted by the plaintiff, it is confirmed that ordinary consumers have a low level of recognition as described above. Accordingly, it is difficult to consider “사리원” as being widely known as a geographical term, which is clearer considering the results of the plaintiff's first and second surveys showing that the proportion of respondents who recognized “사리원” as a place name as 19.2% and 16.5% respectively.

⑤ Of course, it is difficult to consider the cognitive surveys on the name of “사리원” conducted by the plaintiff and the defendant as reflecting the degree of

recognition of “사리원” by ordinary consumers or traders at the time of the registration decision date of the registered service mark of this case, that is, June 26, 1996, because the surveys were all conducted in 2016. However, it is also true that there are no clear materials showing that the rate of recognition of “사리원” as a geographical term by ordinary consumers or traders around 1996 is higher than the above results.

⑥ Rather, considering that it has recently become easier to access a variety of information in society due to the remarkable development of the Internet, that restaurants having a name of “사리원” operated by the plaintiff and the defendant have been known to some degree in each local area, and that, in the results of the cognitive surveys on the name of “사리원” conducted by the plaintiff and the defendant, the rate of recognition of “사리원” by respondents as being related to food and a restaurant is considerable when compared with the rate of recognition of “사리원” by respondents as being related to a place name, it can be regarded as being appropriate that ordinary consumers or traders around 2016 recognize “사리원”, at a higher rate, compared with ordinary consumers or traders around 1996.

⑦ Furthermore, it is difficult to consider that granting exclusive use of “사리원” to a specific person is against the public interest only because of the issues raised by the plaintiff, for example, that there are lots of restaurants having a name including “사리원” as a part nationwide or there are a considerable number of displaced persons originating from “사리원” and their descendents.

3. Patent Court Decision, 2016Heo8421 decided March 17, 2017 [Invalidation (trademark)] [Appeal dismissed without hearing]¹⁾

1) The trademark similarity is also discussed in connection with whether this case corresponds to the old Trademark Act Article 7(1)11 and 12.

[Main Issues and Holdings]

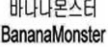
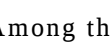
Whether a “몬스터” or “MONSTER” part of a composite trademark can be considered as an essential part (negative), and when the entire composite trademark has no distinctiveness, whether similarity of trademarks is determined based on the whole trademark (affirmative)

[Summary of Decision]

Whether the registered trademark of this case, “^{SweetMonster} 스위트몬스터” is identical or similar to a previously registered trademark “MONSTER ENERGY” or aprior prior-used trademark “”.

MONSTER
ENERGY

The registered trademark of this case, the previously registered trademarks, and prior-used trademarks are all include “몬스터” or “MONSTER” transliterated to be “몬스터”, and commonly are marks combined with other letters or figures, and thus it is confirmed whether the commonly included “몬스터” or “MONSTER” part is an essential part.

Prior to the filing date of the registered trademark of this case, as to the category of goods that are identical or similar to the designated goods, a plurality of trademarks including “몬스터”, “MONSTER” or “Monster”, such as “”, “”, “Shadow Monster”, “”, “PUNCH MONSTER”, “”, “”, “MONSTERS UNIVERSITY”, “”, “”, etc. were registered or published with different trademark owners or applicants. Among them, “”, “PUNCH MONSTER”, and “” were already registered or published prior to the filing date of the previously registered trademarks, and “” and “” were already registered or published prior to the use start date of the prior-used trademarks asserted by the plaintiff. Meanwhile, on October 26, 2010, before the filing of the registered trademark of this case, the plaintiff filed a trademark having a mark of

“MONSTER” only for the designated goods of “vitamin supplement for nutritional supplement”, “non-alcoholic beverages with enhanced vitamins/minerals/nutrients/amino acids/herbs”, etc. However, the KIPO examiner issued a rejection decision on the grounds that, in addition to the previously registered or previously filed trademarks as described above, there are many previously registered or previously filed trademarks (services) such as “MONSTER HOTEL”, “iCE MONSTER”, “Monster Farm”, “monster zym”, “MONSTER MILK”, “MONSTERSTRONG”, “MONSTERSTRENGTH”, “MONSTERPOWER”, etc., and thus the trademark lacks distinctiveness and is not preferable for the public interest, and the decision was finalized without change. Taking all the circumstances and detailed course of trade surrounding a plurality of trademarks including “몬스터” or “MONSTER” into consideration, the “몬스터” or “MONSTER” part that is common to the registered trademark of this case, the previously registered trademarks, and the prior-used trademarks not only appears to have weak distinctiveness in relation to the designated goods or used goods, but also seems inappropriate for exclusive use by a particular person. Thus, in the registered trademark of this case, the previously registered trademarks, and the prior-used trademarks, the “몬스터” or “MONSTER” part cannot be regarded as an essential part that independently exerts distinctiveness.

A. “스위트” or “Sweet” part of the registered trademark of this case is instinctively recognized to be an indication of the taste or nature of chocolate or cocoa products, tea drinks, cookies, etc, which are the designated goods thereof, and thus has no or weak distinctiveness. Furthermore, the “ENERGY” part of “MONSTER ENERGY”, that is a common letter part in the previously registered trademark or the prior-used trademark, is instinctively recognized as being an indication of effects of the designated goods or used goods, and thus has no or weak distinctiveness. Thus, with respect to the letters that are

to be compared, the registered trademark of this case, the constituent parts of the previously registered trademarks, and the previously used trademarks all have no or weak distinctiveness, and thus similarity of a trademark should be determined based on the whole trademark.

4. Patent Court Decision, 2016Heo9196 decided August 18, 2017 [On appeal]²⁾

[Main Issues and Holdings]

According to a survey result, the registered trademark of this case “**GLIATAMIN**” has similar sound to the previously registered trademark 1 “**GLIATILIN**” 글리아티린 and the previously registered trademark 2 “**GLIATILIN**”, and thus they are similar to one another as a whole.

[Summary of Decision]

1) Subject in the determination of similarity

For the following reasons, it is appropriate to consider that the scope of consumers and traders who are subjects in the determination of whether marks of the registered trademark of this case and the previously registered trademarks are similar to each other, includes not only general consumers, but also experts such as medical doctors, pharmacists, etc.

① All of the registered trademark of this case and the previously registered trademarks have “drugs” as their designated goods. The drugs are classified into “general drugs”, which are less misused or abused, can be expected to be safe and effective even if they are used without a doctor’s prescription, and are set forth by the minister of the Ministry of Food and Drugs Safety, and “ethical

2) A decision 2016Heo9202 rendered on the same day has the same purport (registered trademark: **글리아타민**). In this case, the registered trademark of this case is determined to correspond to the old Trademark Act Article 7(1)18.

drugs” that are not the general drugs (Article 2(9) and (10) of the Pharmaceutical Affairs Act). In the meantime, in the case of the registered trademark of this case, ethical drugs such as a “treatment for senile memory impairment” or a “treatment for traumatic degenerative cerebral syndrome”, which is a treatment for brain-related diseases, and general drugs such as “medicines, anti-inflammatory drugs, drugs for digestive”, are all included in the designated goods.

② An advertisement of ethical drugs is prohibited (Article 68(6) of the Pharmaceutical Affairs Act, Article 84 of Enforcement Regulations of the Pharmaceutical Affairs Act³⁾). It is difficult for an ordinary person, not experts such as medical doctors, pharmacists, etc. to obtain information about drugs, and even when general consumers can directly purchase necessary general drugs from the pharmacy, it is a course of trade that pharmacists help choose the appropriate drugs when patients explain their symptoms. Furthermore, since pharmacists are responsible for instructing buyers about medication to help them select necessary drugs (Articles 1(12) and 24(4) of the Pharmaceutical Affairs Act), drugs are bought under the intervention of pharmacists in most cases.

③ Thus, even if actual drugs consumers are general consumers, considering medical doctors, pharmacists, etc. are involved in actual sales and trade relations, when the registered trademark of this case and the previously registered trademarks are used together for identical and similar products, the similarity thereof should be determined not only by general consumers who are the final consumers of drugs, but also by medical doctors, pharmacists, etc., and thus the recognition of medical doctors, pharmacists, etc. should be considered together with that of ordinary consumers or traders.

2) Distinctiveness of a “GLIA” part of both marks

Furthermore, for the following reasons, the “GLIA” part that is a part of the registered trademark of this case and the previously registered trademarks

3) It refers to an article prior to the total revision under Order No. 186 of the Ministry of Health and Welfare.

cannot be seen to have no or weak distinctiveness.

① In general, the English word “GLIA”, or its Korean transliteration “글리아”, means “neuroglia” or “glial cells” having important interactions between neurons as non-neuronal cells other than the vasculature in the central and peripheral nervous system (1-7 of Defendant’s Exhibit No. 1, 1-4 of Defendant’s Exhibit No. 2).

② However, in view of the following survey results, it seems that not only general consumers, but also even experts such as medical doctors, pharmacists, etc., do not easily recognize that the “GLIA” part signifies “neuroglia” or “glial cells”.

A) In other words, Korean Research Center Inc. (hereinafter, referred to as “Korea Research”) requested by the plaintiff conducted a “trademark recognition related research” (1 and 2 of Plaintiff’s Exhibit No. 33) from May 26 to June 2, 2017 with respect to 100 medical doctors, 100 pharmacists, and 100 ordinary people living in Seoul, the Metropolitan Area, Busan, Daegu, Daejeon, and Gwangju.

As a result, in response to the inquiry that “When you see or hear the name (trademark) of the drug “글리아타민” or “GLIATAMIN”, do you know the meaning (term) of any part of the name?”, 57% of the medical doctors, 63% of the pharmacists, and 20% of the ordinary people answered “Yes”. Nonetheless, next to the above question, in response to the inquiry that “Then, what is the part (term) that you know the meaning of (multiple responses available)?”, only 3 cases among the medical doctors, 3 cases among the pharmacists, and 1 case among the ordinary people answered “글리아(GLIA)” based on the multiple responses.

B) Meanwhile, Symfunny Brand Inc. (hereinafter referred to as “Symfunny Brand”) requested by the defendant conducted “Glia trademark survey research” (Defendant’s Exhibit No. 75) from April 24 to May 2, 2017, with respect to 100 medical doctors and 100 pharmacists nationwide. According to the survey results, in response to the inquiry that “Have you heard of the word “Glia”?”, 54% of the medical doctors and 46% of the pharmacists answered

“Have heard”.

On the other hand, even in the survey results requested by the defendant, in response to the inquiry that “Please write any meaning of the word Glia according to what you think”, only 48.3% of the medical doctors and 25.4% of the pharmacists answered that it is related to a brain nerve, and among them, merely 19.6% of the medical doctors and 1.3% of the pharmacists accurately answered “glial cells”, whereas 11.5% of the medical doctors and 22.9% of the pharmacists answered that it relates to diabetes, which is totally different from neuroglia or glial cells.

③ Furthermore, even if “GLIA” signifies neuroglia, the relationship between glial cells themselves and brain dysfunction, such as memory decay syndrome and degenerative cerebral syndrome, does not seem to be widely known, and there are no materials to admit the relationship. Thus, it is difficult to construe that the “GLIA” part of the registered trademark of this case and the previously registered trademarks directly indicates the efficacy and use of a therapeutic agent for brain diseases among the designated goods.

3) Detailed comparison between both marks

Furthermore, for the following reasons, the registered trademark of this case is similar to the previously registered trademarks 1 and 2 in their names such that the marks are regarded as being similar to each other as a whole.

① As discussed above, because the “GLIA” part of the registered trademark of this case and the previously registered trademarks does not seem to directly indicate the efficacy and use of the designated goods, it is difficult to say that the “GLIA” part has no or weak distinctiveness. Considering that both marks include the “GLIA” part and five English letters continue thereafter without a space so as to appear to be one word, similarity of both marks should be observed as a whole.

② In the meantime, both marks are composed of 9 letters of the alphabet, and when read in Korean, both marks have the same number of five syllables identically. Also, the three syllables that are pronounced relatively strongly in light of the emphasis position of the Korean language and have the most

prominent influence on the auditory sense are the same as “글리아”. Furthermore, the initial sound of the fourth syllable of both marks are aspirated sounds pronounced by strongly bursting air out in a “ㄷ(t)” sound, and the middle sound “ㅣ(i)” and the final sound “ㄴ(n)” of the fifth syllable are the same. Accordingly, in spite of the difference in the middle sound of the fourth syllable and the initial sound of the fifth syllable, as both marks will be heard to be similar as a whole, the name is determined to be similar.

③ Meanwhile, for reference, according to the result of the survey research by Korea Research requested by the plaintiff (1 and 2 of Plaintiff’s Exhibit No. 33), in response to the inquiry “Would you consider “글리아타민(or GLIATAMIN)” and “글리아티린(or GLIATLIN)” to be similar to each other if you were to see or hear them at different times and places?”, 73% of the medical doctors, 81% of the pharmacists, and 66% of the ordinary people answered “to be similar”, whereas only 16% of the medical doctors, 10% of the pharmacists, and 15% of the ordinary people answered “not to be similar”.

■ Article 7(1)12 of the old Trademark Act (Trademarks used in bad faith)

5. Patent Court Decision, 2017Heo2109 decided September 21, 2017 [Invalidation (trademark)] [Appeal dismissed without hearing]

[Main Issues and Holdings]

In relation to the prior-used trademark/service mark “ **ZARA** ”(used goods/services: clothing/apparel sales) of the famous Spanish clothing SPA brand, whether the registered service mark of this case “ **THEZARA** ” falls under Article 7(1)12 of the old Trademark Act (affirmative).

[Summary of Decision]

1) The prior-used trademark (service mark) “ **ZARA** ” seems to have been

known to the consumers domestically and internationally as a trademark (service mark) of a particular person at the time of filing of the registered service mark of this case, “**THEZARA**” (August 22, 2012).

As long as the “ZARA” part of the registered service mark of this case is admitted to be an essential part, the registered service mark of this case and the prior-used trademark (service mark) “**ZARA**” are identical in the name and concept. Accordingly, the registered service mark of this case and the prior-used trademark (service mark) should be regarded as being identical marks.

- 2) It is admitted that the registered service mark of this case has been actually indicated to be “THE ZARA” in the form of a space interposed between “THE” and “ZARA” on an outdoor sign of accommodation or on an Internet promotion site, that companies with famous fashion brands have been pursuing business diversification through hotel leisure business by utilizing the trust and quality they have acquired from consumers, that the plaintiff company has expanded its business and started to manufacture and sell bedding and interior goods that can be used in hotels and motels by using the brand name “ZARA HOME” since 2003, that the “ZARA HOME” store was opened around 2008 in Korea as well, and especially that “THE ZARA” was labeled in the bedding of accommodation where the registered service mark of this case has been actually used.

In addition to the above admitted facts, considering altogether that, as discussed above, marks of the registered service mark of this case and the prior-used trademark (service mark) are very similar to each other, that there is overlap between major consumers of accommodation business such as hotel business and motel business that are the designated services of the registered service mark of this case and clothing (apparel sales) which is the used goods (services) of the prior-used trademark (service mark), and that, when the registered service mark of this case is used for the outdoor sign of accommodation or bedding and interior goods, ordinary consumers may confuse the source of the services, it is appropriate to consider that the registered service mark of this case was filed in a bad faith so as to gain undue profit by riding on the business reputation embodied to the prior-used trademark (service mark) that is recognized by domestic and international

consumers as the goods (services) of the plaintiff company.

- 3) As a result, since the registered service mark of this case “**THEZARA**” was filed to gain undue profit by riding on the business reputation embodied by the prior-used trademark (service mark) by copying the prior-used trademark (service mark) “**ZARA**” that has been recognized as a trademark (service mark) indicating goods (services) of a specific person domestically and internationally, the registered service mark of this case falls under Article 7(1)12 of the old Trademark Act.

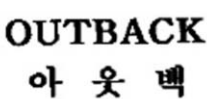
6. Patent Court Decision, 2016Na1691 decided June 29, 2017 [Injunction against trademark infringement injunction, etc.] [Appeal dismissed without hearing]

[Main Issues and Holdings]

A case in which the defendants’ use of the mark “” that is similar to the well-known service mark “”, etc. for automated motel business does not constitute an unfair competition action (business subject confusion action) under Article 2(1)b of the “Unfair Competition Prevention and Trade Secret Protection Act”, but constitutes an unfair competition action (distinctiveness/reputation damaging action) under Article 2(1)c of the same act, thereby resulting in ordering of damages.

[Summary of Decision]

- The plaintiff’s registered service marks (Business marks of this case)

	Business mark 1	Business mark 2	Business mark 3
Mark			
Designated Service	Category No. 43: cafeteria business, restaurant business, etc.	Category No. 43: restaurant business	Category No. 43: restaurant business

- The defendants' infringing marks (Respective infringing marks of this case)⁴⁾

Mark	아웃백, OUTBACK, 
Used service business	automated motel business

[1] Claim based on confusion of business entities

Each of the business marks of this case is a domestically well-known business mark of the plaintiff and has acquired reputation and has strong distinctiveness. Furthermore, each of the infringing marks of this case is identical and similar to each business mark of this case, and the defendants who are copiers are assumed to have intentional bad faith. However, considering that the evidence presented alone does not prove that there is a relationship between both services in terms of business competition and contention by the duplication of a customer base,⁵⁾ that the plaintiff's business size is incomparably larger than the defendants' business size, and that the plaintiff has maintained reputation and credence as a "family-centered and nature-friendly family restaurant" with a strong reputation among consumers, it is very unlikely that ordinary consumers or traders would be confused such that automated accommodation having a negative images

4) Defendants 1 and 2 run two unattended accommodations in partnership, and Defendant 3 runs one unattended accommodation.

5) It is difficult to consider that it is a general business practice or generation consumers typically think that the same business subject runs the plaintiff's family restaurant business and the defendant's unattended accommodation business. Also, with the evidence submitted by the plaintiff only, it is difficult to consider that it is a general tendency for a business subject running a family restaurant business to pursue business diversification through an unattended motel business.

6) As shown below, the defendant's business using the business marks of this case corresponds to reputational damage of damaging a good image and value of the plaintiff's famous business marks of this case. Since it is against a rule of thumb that a business subject identical to the plaintiff or the an individual or a legal entity having an intimate relationship with the capital or organization of the plaintiff performs business damaging the good image and value of the business marks of this case, it is very unlikely that general consumers or traders are confused about the business marks.

believed to be run by the plaintiff directly or by an individual or a legal entity having an intimate relationship with the capital or organization of the plaintiff.⁶⁾

Thus, it is difficult to construe that ordinary consumers or traders are incorrectly made to believe that there is a close relationship in the capital, organization, etc. between the plaintiff who is a subject of each business mark of this case and the defendants who are users of the infringing marks of this case.

[2] Claim due to distinctiveness/reputation damage

A. Whether there is distinctiveness/reputation damage

Considering ① that the plaintiff independently created each business mark of this case and has continuously used the business mark in stores all over the country and thus acquired distinctiveness nationwide through advertisements and so forth, ② that furthermore, the plaintiff has maintained reputation and credence as a family-centered and nature-friendly family restaurant, through store interiors, its homepage, advertising using famous entertainers, social contribution activities, etc., ③ and that, on the other hand, while the defendants have been running automated accommodation having a negative image of being used as a love hotel, the defendants used each business mark of this case, particularly a mark that is very similar to the fourth business mark () of this case that is a typical brand of the plaintiff, by changing a figure of a mountain pattern at the top of the fourth business mark of this case to an obscene shape of a lying naked woman (), it is determined that the defendants have damaged the good image and value of the mark by using the plaintiff's well-known business mark of this case for services having a negative image, and also have damaged a source indication function of the well-known business mark of this case.

Thus, the plaintiff is entitled to a claim for injunction under Article 4 of the “Unfair Competition Prevention and Trade Secret Protection Act” (hereinafter, referred to as the “Unfair Competition Prevention Act”) and a claim for damages under Article 5 of the same act, against the defendants.

B. Duty to compensate for damages

1) Damages equivalent to business profit

The plaintiff claims to have suffered damages equivalent to “an amount of

business profit earned by the defendants” due to the distinctiveness/reputation damage actions made by the defendants.

The above claim seems to be a claim having an effect that the plaintiff has suffered a loss of lost profit equivalent to the above profits.

Article 14-2(2) of the Unfair Competition Prevention Act and Article 5 of the same act as a supplementary regulation to Article 2 are regulations to the effect of alleviating the victim’s burden of proof regarding a business loss equivalent to the lost profit in the claim for damages caused by unfair competition, but are not regulations that presume the generation of a business loss equivalent to the lost profit when there is unfair competition. Thus, in order to be subject to the above regulations, one who claims damages needs to assert and prove an actual generation of a business loss equivalent to the lost profit. However, in light of the effect of the above regulations, in terms of the degree of assertion and proof regarding the generation of a loss as above, it is sufficient to assert and prove existence of concern or possibility of the generation of loss. Accordingly, if one who claims damages proved that he/she performs the same type of business as an infringer, unless there are special circumstances, it may be actually presumed as a fact that a business loss equivalent to the lost profit is generated by unfair competition (Supreme Court Decision, 2006Da22722 decided November 13, 2008).

However, since it is difficult to consider with the evidence submitted by the plaintiff only that the defendants run the same type of business as the plaintiff, the above legal principle that presumes the generation of a business loss equivalent to the lost profit if the fact that the same type of business is performed is proved may not be applied. Furthermore, considering that the plaintiff’s family restaurant business and the defendants’ automated accommodation business have no relationship in terms of business competition and contention by the duplication of a customer base, with the evidence submitted by the plaintiff only, it is difficult to construe that there may be concern or possibility of the generation of lost profit of the plaintiff due to the defendants’ distinctiveness/reputation damage action, and there is no evidence to admit the existence of concern or possibility of the generation of a business loss equivalent to the lost profit.

Thus, the claim for damages equivalent to the amount of business profit is without merit.

2) Intangible damage

Article 751(1) of the Civil Act regulates liability for damages other than property caused by illegal acts. The damages other than property not only mean mental suffering but also may include intangible damage that cannot be quantified but can be financially assessed in societal norms. Any person who damages the reputation or credence of a legal entity shall be liable to the legal entity for damages other than property as well (Supreme Court Decision, 2003Da33868 decided August 16, 2004, and Supreme Court Decision, 2005Da37710 decided November 10, 2005). Intangible damage due to the distinctiveness/reputation damage under the Unfair Competition Prevention Act is also a kind of damage under Article 751(1) of the Civil Code, and it may be included in the “damage caused by infringing business profit by unfair competition” of Article 5 of the Unfair Competition Prevention Act. Meanwhile, since it is difficult to prove a specific amount of the intangible damage from distinctiveness/reputation damage under the Unfair Competition Prevention Act due to the nature of the damage, the court may admit an equivalent amount of damage based on the entire purport of the pleading and the result of examination of evidence under Article 14-2(5) of the Unfair Competition Prevention Act.

Since it is clear according to the rules of thumb that intangible damage will be generated to the plaintiff as the reputation or credence of the plaintiff is damaged by the defendants’ distinctiveness/reputation damage action, the defendants are liable for compensating the plaintiff for the intangible damage.

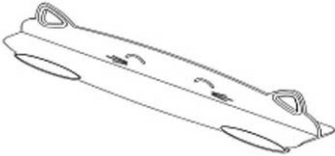
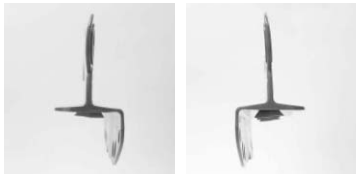
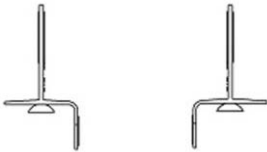
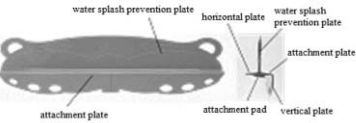
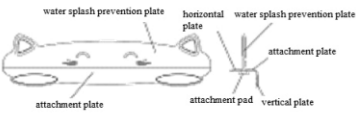
Furthermore, regarding the damages to be compensated by the defendants, considering the entire purpose of the pleading and various conditions according to the result of the examination of evidence including a degree of the plaintiff’s reputation/credence and brand value, the plaintiff’s business size, a degree of distinctiveness/reputation damage, the type and nature of expected damage, a degree of actual damage, a degree of malice, a period of the defendants’ damage action, a business size, a geographical scope of the defendants’ business, etc., the damages to be commonly compensated by the defendants 1 and 2 is determined to be 50,000,000 Won, and the damages to be compensated by the defendant 3 is determined to be 40,000,000 Won.

**7. Patent Court Decision, 2016Heo8223 decided August 17, 2017
[Invalidation (Design)] [Final]**

[Main Issues and Holdings]

A case in which a registered design relating to a sink water splash guard is not identical and similar to a prior filed design relating to a sink water splash guard.

[Summary of Decision]

	Registered Design	Prior Design
Perspective view		
Left and right side views		
Names of Parts		

[1] Common features of both designs

Both designs have common features in: ① a shape of an animal with eyes, ears, whiskers, paws, etc. (



② a face formed in an oval shape that is horizontally elongated and is arranged to face a user, ③ a horizontal plate and an attachment plate dividing the sink water splash guard into an upper portion of eyes, ears, and whisker and a lower portion of paws, ④ an eye in a crescent pattern, ⑤ the ears protruding from the upper left and right sides of the face to be obliquely formed toward the center of the plate, ⑥ the ears each having a through hole therein and having an edge in the same pattern as the through hole (, , ⑦ the whiskers of three strands, ⑧ both paws slightly protruding from both side ends of the lower portion with an oval shape, ⑨ a water splash prevention plate, a horizontal plate, the attachment plate, and a vertical plate having the same structure viewed from the left and right sides (left: , right: , etc.

[2] Differences between both designs

Meanwhile, the registered design of this case is different from the prior design in that: a) the registered design of this case includes teeth, a nose (, and a line between the eyes and the whiskers () that the prior design does not have, b) detailed shapes of the eyes, the ears, the whiskers, etc. of both designs are different from each other, c) the registered design of this case has three oval holes in each of the paws unlike the prior design, d) the shape of the eyes, ears, whiskers, and teeth of the registered design of this case is reminiscent of rodents such as beavers (, whereas the shape of the eyes, ears, and whiskers of the prior design is reminiscent of a cat ().

[3] Determination of the similarity between both designs

Portions related to the respective common features ① to ⑧ seem to be parts that easily attract the eyes and attention of viewers when trading or using the

sink water splash guard.

However, considering each of the conditions below, when the registered design of this case and the prior design are observed, in spite of the common points ① to ⑨, due to the differences a) to d), it is appropriate that both designs provide different aesthetic senses to viewers.

A. The teeth, the nose, the line between the eyes and the whiskers, and the hole in the paw part, which are included only in the registered design of this case, are also parts that easily attract the eyes of viewers when viewing a good and are dominant features.

B. Furthermore, in both designs, the detailed shapes of the eyes, the ears, the whiskers, and the paws are ones of dominant features as parts that easily attract the eyes of viewers when viewing a good and.

C. Due to the above differences in the detailed shape, the registered design of this case is reminiscent of rodents such as beavers, unlike the prior design that is reminiscent of a cat.

D. Although both designs commonly provide a viewer with feelings that the body of an animal having the eyes in a crescent pattern (common point ④), the ears each having a through hole at the upper left and right sides (common points ⑤, ⑥), the whiskers of three strands (common point ⑦), and the paws slightly protruding in an oval shape from both left and right sides of the lower portion (common point ⑧), etc. is formed in a shape close to an oval and horizontally elongated shape (common points ① and ②), due to the differences in the additional shapes such as the teeth and the detailed shape of the eyes, the ears, the whiskers, the paws, etc. as discussed above in item (3), as long as both designs make the viewer sense the feature of the shape of different animals, it may not be said that the differences a) to d) are merely detailed differences that do not affect the sense of aesthetics (In determining similarity of designs, individual features that constitutes the designs separately are not compared, but rather whether an ordinary observer is able to identify different aesthetic features, by comparing and contrasting each design's appearance entirely, is considered. Thus, even if each of the

differences a) to d) is deemed to be a mere detailed difference, it is to be said that the above differences altogether can constitute a dominant feature that makes a difference in the aesthetic sense of both designs).

[4] Conclusion

Thus, the registered design of this case is not identical or similar to “the prior design filed prior to the registered design”.

8. Patent Court Decision, 2017Heo3379 decided September 15, 2017 [Final]

[Main Issues and Holdings]

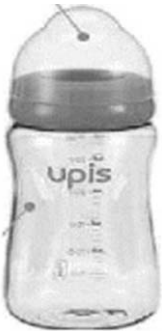
A case in which, in the registered design of this case that first adopts a ceramic material for a feeding bottle, the registered design of this case is not similar to the prior designs 2 and 3, and is not a design that can be easily created by an ordinary designer from the prior designs 2 and 3.

[Summary of Decision]

The transparency of a good that is subject to a design is not included in the shape, pattern, or color of a good, but can be a factor to be considered in the determination of similarity of designs. However, due to remarkable differences resulting from the point that a good that is subject to the registered design of this case is formed of a ceramic and is opaque, there is a considerable difference in the overall aesthetic sense between the registered design of this case and the prior designs. Thus, the registered design of this case is not similar to the prior designs.

Furthermore, feeding bottles should have transparent surfaces for easily measuring the amount of content therein. Accordingly, it is difficult to find a motive of creation for an ordinary designer to make a feeding bottle opaque by using a ceramic material for the feeding bottle. Accordingly, it is difficult to determine that the registered design of this case is a mere commercial / functional

modification of the prior designs or a mere change/combination by a common creative technique or expression method in the field to which the design pertains. Therefore, the registered design of this case is not a design that can be easily created by an ordinary designer from the prior designs.

Registered Design	Prior Design 2	Prior Design 3
		

Articles

Defense Measures in Trade Secret Misappropriation Lawsuits

- Specification of Trade Secret and Reverse Engineering -

Byeongguk Kim*

I. Foreword

In a trade secret misappropriation lawsuit filed by a right holder, an infringer (a defendant or respondent in a civil case, and criminal defendant in a criminal case) may consider various defense strategies.

First of all, the infringer may raise an issue that the respective trade secret is not specified in the plaintiff's demand, cause of action, the facts charged, thus it fails to satisfy the requirement of a lawsuit. He may also argue that it fails to meet the requirements, because the trade secret is not generally known and reasonable efforts shall be made to maintain secrecy, which is necessary to more actively protect the trade secret. These requirements are that the trade secret is not generally known and that reasonable efforts were made to maintain secrecy. Moreover, in a civil case on trade secret misappropriation, the establishment of a trade secret misappropriation requires the infringer to have engaged in an act that falls under any one of the types of acts stipulated in Article 2, subparagraph 3 of the Unfair Competition Prevention and Trade Secret Protection Act (hereinafter referred to as 'the Act'). The infringer may argue that his act does not fall under any of the types of acts stipulated in the sub-paragraphs. In addition, with regards to the right holder's request for an infringement injunction order, the infringer may assert that the respective case is not a case in which an infringement injunction order can be issued, or that the requested period for the infringement injunction order should be shortened. If the infringer is a former employee, he can argue that the job transfer prohibition agreement is null and void or that the subject information at issue is general knowledge or technique. The infringer may also argue that the trade secret he acquired is based on

*Judge, Patent Court of Korea.

legitimate reverse engineering or that he is a bona fide person protected by law. From among the aforementioned defense methods, this paper examines the specification of a trade secret and reverse engineering.

II. Specification of Trade Secrets

1. Significance of Trade Secret Specification

The matter of how detailed a trade secret should be specified in a lawsuit frequently becomes a key issue in practice. The Plaintiff (petitioner or prosecutor) tends to specify the respective trade secret in abstract, broad terms as much as possible due to concerns over secret disclosure or difficulty in specifying the trade secret. On the other hand, the other party (defendant, respondent, or criminal defendant) raises an issue over the lack of detail in the specification of the respective information to guarantee his rights to defend. In a criminal proceeding, a list of trade secrets obtained through mandatory search such as search and seizure is often created and then attached as an appendix to the bill of indictment. In civil procedures as well, there are many cases where this approach is used to specify a trade secret.

In lawsuits, specifying a trade secret means to specify the characteristics of the respective information, in writing, in a complaint or brief, in a civil case, or in a bill of indictment, in a criminal case, so that this can be used as a subject-matter of the court's judgment. Examples are as follows: 'reaction conditions to synthesize Component C by mixing several chemical substances (each substance's component, reaction temperature, pressure, time, etc.),' 'tolerance information on a blueprint of a certain product,' and 'Company A's customer information (contact info, unit price info, transaction volume, etc.).'

A concept that should be distinguished from the matter of specifying a trade secret is the matter of proving a trade secret claim. This means to submit evidence that contains a trade secret in a lawsuit (in general, to submit a storage medium containing documents, drawings, computer files, etc. with a trade secret) to prove the existence and contents of the trade secret. A key issue regarding the matter of proving a trade secret claim is how to maintain the secrecy of the submitted evidence, rather than how detailed the a trade secret is

specified. This subject will be discussed in detail later, but increasing or decreasing the level of specificity of a trade secret is distinguished from increasing or decreasing the level of proving a trade secret. It seems that the two are frequently mixed up.

The following examines how a trade secret should be specified in lawsuits and how detailed it should be by reviewing theories in Korea and practices in major countries, followed by an analysis of decisions in Korea. It also examines, as a different matter, the proving of a trade secret that takes place in the oral argument.

2. Distinctiveness of Specifying Trade Secrets and Examples of Specification in Lawsuits

A. Distinctiveness of Specification

The following states the characteristics of specifying a trade secret in trade secret misappropriation suits, in comparison to patent infringement suits.

First, in patent infringement suits, an issue with specifying the infringed patent rights does not occur. In contrast, in trade secret misappropriation lawsuits, there is an issue with specifying a trade secret when specifying the infringed right. A patent right is established and registered after an evaluation by a public institution. It is sufficient enough to copy down the scope of patent claims of the respective patent right, on a complaint or brief, for specifying the patent right, which is infringed. In contrast, in trade secret misappropriation suits, the subject-matter of the infringement is information. A prior official confirmation process was not implemented for the information's existence or content. For this reason, the matter of how to specify the information and how detailed it should be becomes an issue.

Second, in patent infringement suits, there are many cases where the matter of whether an injunction target (the object of infringement or the act that falls under infringement) is specified becomes an issue. In contrast, in trade secret misappropriation suits, there are many cases where the injunction target is specified by citing the pre-specified trade secret, and therefore, there are only a few cases where this becomes an issue. In patent infringement suits (especially injunction suits), if, for example, an infringement on a product invention – the

subject against which injunction is sought — is at issue, the product needs to be specified in detail, individually and factually, so that an executive organization is able to identify the product, which is the outcome of the infringement act, without any separate decisions. In practice, the major elements of an infringing products are often specified when referring to the drawings and pictures of the infringing product that the plaintiff attached to the complaint as appendices, or if any, to the item numbers or names of the infringing product. In contrast, in suits seeking an injunction against trade secret misappropriation, the act or infringing product for which an injunction is sought is specified, in general, by citing the respective pre-specified trade secret. Examples are ‘the trade secret stated on the list in the appendix should not be used’ and ‘production and transfer of ... products that used the trade secret stated on the list in the appendix are prohibited.’¹⁾ This is because, unlike a patent, a trade secret that is allegedly infringed upon usually ranges from dozens to thousands in its number. For this reason, consideration was made for the fact that it is practically difficult to adequately express, in writing, an infringing product with so many characteristics. Because the specification of the injunction target is eased, there is some degree of difficulty in enforcing the ruling, although an injunction order is issued, in comparison to a patent infringement injunction order. In other words, if, in the process of execution, the defendant disputes that he is no longer using the respective trade secret even though he is actually violating the infringement injunction order, the plaintiff needs to explain, again, how defendant’s act infringes on the respective trade secret, by such means as use of the trade secret, in the process of execution of the aforementioned infringement injunction order in order to reach fulfillment through an injunction. This issue is largely caused by the method of citing a trade secret to specify an act of infringement. This can be deemed as an unavoidable fate of trade secret misappropriation suits. Such issues in the execution stage are not restricted to trade secret misappropriation suits alone, and may arise in patent infringement

1) Depending on the case, specification may take place without citing the trade secret. For example, in case of a product that used a certain trade secret, the product’s characteristics (item number, trade name, major components) can be specified which would be the same as specifying the subject-matter of infringement in patent infringement suits. The establishment of legal principles and regulations does not seem to be required for this method of specification (A contrary point made by: Seong-soo Park, Trade Secret Specification in Legal Procedures, 16, International Norm Status and Outlook: International Norm Research Team’s Report on Research and Participating in International Conferences in 2010, National Court Administration, 2016).

suits as well. For example, if the category of a patented invention is a process or a process invention used to manufacture a product, rather than a product invention itself, the act of using the respective patented invention or the act of using, transferring such a manufactured product would be the subject-matter of the infringement. As such, there is no choice but to specify the subject-matter for which an injunction is sought by citing the patented invention, such as the following: ‘the act of using the respective patented invention or transferring an object that was produced by using the respective patented invention.’ In comparison to a patented invention infringement injunction order for an object, there is a high possibility of a dispute over the objective scope of executory power in the execution stage. For this reason, there is a high possibility of considerable difficulties in the execution stage.

B. Examples of Specification in Lawsuits

- 1) In a trade secret misappropriation suit, the trade secret, infringing product which are the subject-matter of the case should be specified in plaintiff’s demand or the cause of action of the complaint. When writing down the purpose of the claim, it must be accurate to the extent that it can be used in the judgment if the demand is accepted. Whether plaintiff’s demand is specified is a matter of Ex Officio investigation done by the court. In cases where plaintiff’s demand is not specified, the court should issue a correction order based on its authority, irrespective of whether an objection is made by the defendant, and should dismiss the complaint (a suit dismissal ruling if a copy of a complaint was delivered) if the aforementioned correction order is not implemented.
- 2) Civil procedures that are filed on grounds of a trade secret misappropriation can be categorized into different types, including a claim for damages, an infringement injunction or prevention claim, an accompanying incidental claim that seeks disuse of a product established through misappropriation, and a job transfer prohibition claim against an employee who handled trade secrets. Methods used to specify a trade secret are slightly different among these types.

In a claim for damages, compensation for damages that are attributable to a trade secret misappropriation is sought by the right holder. As such, the

respective trade secret is not specified in the purpose of the claim, but is specified fully in the cause of action.

In contrast, in an injunction and other claims as well as incidental claims, the act that is prohibited needs to be specified in the text of a judgment. As such, in the purpose of a claim, a trade secret can be specified by specifying an act that is sought for injunction, disuse against the infringer. Also, in the cause of action, a trade secret can be specified by stating information about the right holder's trade secret. The trade secret is thus specified both in plaintiff's demand and the cause of action. The following explains specification methods that are used in practice.

「A. Defendant shall not use the technical information specified in Appendix 1 to manufacture the finished product of the night monocular scope (PVS-04K) specified in Appendix 2, the half-finished product (a product that has the structure of the aforementioned finished product but has not yet reached completion), and parts, participate in a bidding for the aforementioned night monocular scope (PVS-04K), or engage in any other use of the technical information specified in Appendix 1 or disclose it to a third party.

B. Defendant shall discard each blueprint and work operation sheet (including those in computer file form) that it retains and that is specified in Appendix 1 as well as the finished products of the night monocular scope (PVS-04K) specified in Paragraph A. above, the half-finished products, parts, and repair accessories that it has in storage at Defendant's head office, branches, offices, sales offices, plants, and warehouses.²⁾」

In the example above, the trade secret is specified as a 'technical information specified in Appendix 1.' Appendix 1 only states the serial numbers and names of drawings, and does not include any details. The subject-matter for which an misappropriation injunction was sought was specified by stating, 'Manufacturing a night scope using the technical information specified in Appendix 1, participating in bidding, or engaging in any other use, or disclosing the technical information.' In the incidental claim, the subject-matter that should

2) This is a part of the text of the Seoul High Court's 2015Na2009569 Decision decided June 2, 2016. Paragraph A. is the order on the infringement injunction request, and Paragraph B. is the order on the incidental claim.

be discarded was specified as ‘drawings and standard operating sheets specified in the Appendix 1 list and finished products, half-finished products, parts, and repair accessories of the night scope that were manufactured by using the technical information specified in the Appendix 1 list.’

In case of a job transfer injunction claims, a trade secret rarely needs to be specified in plaintiff's demand. If a ruling that accepts the claim is delivered, the text of the ruling is generally in the following form: ‘Defendant shall not work at Company B for ○ years’ or ‘Respondent shall not work in a specific field at Company B until January 1, 2020.’ As such, in job transfer injunction claims, a trade secret is mostly specified in the cause of action. The following is an example of the purpose of a claim.

「Defendant 1 shall not find employment at companies, including Company A, corporate bodies, other groups that engage in the insect pest control business or use other means to engage in insect pest control-related research, development, sales, lectures, as well as advisory and assistance work at the aforementioned companies, corporate bodies, other groups, etc. until January 1, 2020.³⁾」

In case of criminal procedures, the respective trade secret and the act that falls under trade secret infringement need to be specified in the facts charged on a bill of indictment.

3. Adequate Level of Specification

A. Views on the Level of Specification

The matter of how detailed the specification of a trade secret's characteristics or content needs to be in order to view it as an adequate trade secret specification is an issue. In this regard, there are two conflicting views.

The first view is that the level of trade secret specification should be eased if

3) This is a partial revision to the text of the Seoul Eastern District Court Decision, 2013Gahap108097, decided January 22, 2015.

4) Sang Jo Jong, Jun-seok Park, A Comparative Legal Study on Judicial Protection of Trade Secrets, P. 82, July 2009. Center for Law & Technology. Written by Gook-hyeon Kim, Practices related to the Unfair Competition Prevention and Trade Secret Protection Act, 160, Sechang Publishing Company.

possible. Those who have this view argue that the level of trade secret specification in plaintiff's demand or the facts charged should be eased, stating that it is sufficient enough to specify a trade secret by naming it.⁴⁾ They focus on the fact that, if a trade secret needs to be specified with as much detail as possible, the respective trade secret content may be disclosed during the trial process, and that it is practically next to impossible to state the entire content of a trade secret in a complaint, brief, or a bill of indictment (If the entire content of a trade secret in a general trade secret misappropriation lawsuit is stated in plaintiff's demand, the number of pages of plaintiff's demand would reach dozens or even thousands). By specifying the information at issue at an adequate level, in accordance with this view, the owner or prosecutor is relieved from the burden of detailing the content of a trade secret in a complaint, a bill of indictment.

A contrary view is that trade secrets need to be specified with as much detail as possible. Those with this view focus on the fact that, if a trade secret is specified in an excessively broad or abstract way, the objective scope of executory power or claim preclusion in the stages after a judgement becomes unclear, resulting in issues, and that the rights to defend the infringer should be guaranteed. Some with this view point out that if a trial is held without adequately specifying a trade secret, there is a high risk of focusing on whether a defendant or criminal defendant engaged in a culpable act, rather than trade secret requirements.⁵⁾

A compromise between the aforementioned contrasting views would be an adequate level of trade secret specification. The following examines practices in other countries, followed by a review of the required level of specification in Korean decisions.

B. Practices in Major Countries

In the U.S., the level of specification of trade secrets required in the complaints is not high. The legislative system of the US is fundamentally different from that of Korea in that misappropriation lawsuits are managed based on the discovery system, but there is no need to provide a detailed

5) Sang Jo Jong, Jun-seok Park (re-citing pp. 81-83 of the same research paper). Subject of discussion by Presiding Judges Jeong-hee Park and Seong-soo Park at a joint workshop held by the Court Intellectual Property Right Law Community and Center for Law & Technology on July 20, 2009.

description of a trade secret. A trade secret needs to be specified in a complaint only to the extent that enables discovery, with regards to the degree of specifying a trade secret as a requirement of complaints.⁶⁾ According to the California Code of Civil Procedure, if a party claims a trade secret infringement, the party shall identify the trade secret with reasonable particularity subject to orders to maintain secrecy, including a protective order, before commencing discovery.⁷⁾

The degree of specification required by the “reasonable particularity” test can be inferred from some of U.S. cases. In some decisions, if patent infringement is simultaneously at issue, the level of specification required is similar to that of a patent. However, some assess that requiring the same level of specification as that of a patent would be insufficient for trade secret protection.⁸⁾

Among decisions, the following ruling⁹⁾ was delivered: 「A trade secret must be specified in a complaint. It should be described with sufficient particularity to separate it from matters of general knowledge in the trade or of special knowledge of those persons who are skilled in the trade, and to permit defendant to ascertain at least the boundaries within which the secret lies. If the subject matter of the claimed trade secret is a manufacturing process, plaintiff must not only identify the end product manufactured, but also supply sufficient data concerning the end product...to provide reasonable guidance in ascertaining the scope of appropriate discovery」.

Japan shows a similar trend to that of Korea. For example, if the information at issue is a customer list, it is sufficient enough to specify ‘a name, number of pages, storage area of the customer list in the subject-matter of the misappropriation lawsuit.’¹⁰⁾ There was the so-called fully-automatic semiconductor sealer blueprint

6) James Pooley, *TRADE SECRETS*, Law Journal Press, 2004, 10-45.

7) California Code of Civil Procedure 2019.210: Any action alleging the misappropriation of a trade secret under the Uniform Trade Secrets Act, before commencing discovery relating to the trade secret, the party alleging the misappropriation shall identify the trade secret with reasonable particularity subject to any orders that may be appropriate under Section 3426.5 of the Civil Code.

8) Seong-soo Park, *Trade Secret Specification in Legal Procedures*, 9, International Norm Status and Outlook: International Norm Research Team’s Report on Research and Participating in International Conferences in 2010, National Court Administration, 2016.

9) *Diodes, Inc. v. Franzen*, 260 Cal. App. 2nd 244, 252-253 (Cal. App. 1968); James Pooley, *op. cit.* 10-45 fn. 2 re-cited.

10) Nobuo Matsumura, *Practices in Relation to Legal Principles on Unfair Competition Suits*, 4th Edition, 355-359, Civil Law Research Group.

case. In this case, a business manager of Plaintiff Company resigned from the company and established his own company, which scouted a Plaintiff Company employee. The company was sued for illegal use of blueprints that were obtained by the employee. It is said that the level of trade secret specification was eased since both parties were well aware of the contents of the respective trade secret. In Japan, in cases of trade secret misappropriation by former employees, the level of specification is eased because both parties are well aware of the content of the trade secret.¹¹⁾

C. Decisions in Korea

1) Civil case

① 「In requesting an injunction against a trade secret misappropriation, the trade secret should be specified with as much detail as possible to the extent that it does not lose its secrecy so that there is no negative impact on the court hearing and the infringer's exercise of the right to defend. The level of trade secret specification should be determined by considering various circumstances, such as the content and nature of individual information that is alleged to be a trade secret, content of publicly-known information in the relevant field, detailed form of the trade secret misappropriation act and content of the demand for the injunction, and relationship between the party that possesses the trade secret and the infringer. The 'Subject Information' in the previous decision that was claimed to be a trade secret in this case is 'mixed dye's mix ratio, dye's synthesis reaction data, manufacturing method of a granular fluorescent whitening agent, dispersion method of pigment paste for lipstick, and other such production technique information' in relation to 'solvent dye or fluorescent whitening agent products sold by Petitioner' and 'raw material purity inspection method, method for molding condition setting and testing, dye hue test method using CCM, dye-mixing method using mixture process machinery, including the Hensel mixer, dye classification method using an automatic separator, dye metal shaving removal method using a gauss magnet kit, and other quality control technique information (hereinafter referred to as the Subject Technical Information)' as well as 'sales information related to matters on raw material types · suppliers · purchase price · purchase quantity, trends of relevant customers, technical guidance for raw material quality control, etc. (hereinafter referred to as the Subject Sales

11) Seong-soo Park, op. cit., 10.

Information).’ Respondents argued that Petitioner did not produce the dyes, but imported the dyes from China, changed only the packaging, and sold the dyes itself or a mixture of the dyes with other materials that are obtained through simple, repetitive work until a desired color was produced. They asserted that Petitioner does not possess any advanced dye production techniques or quality control techniques in relation to the Subject Technical Information, and argued that the production technique information or quality control technique information that Petitioner has is information that anybody can readily access on the web pages of other companies that produce solvent dye or fluorescent whitening agent products, or is standard information in internationally-recognized standards. They also asserted that the information Petitioner has in relation to the Subject Sales Information is no more than information that anyone can easily obtain from online web pages, and submitted some evidence. Notwithstanding, Petitioner only claimed that it retained the Subject Information at the Petitioner Company in the form of a database, including figures and work manuals. Petitioner did not submit any exhibits that would support the existence of such a database, and did not claim or explain specifically as to how the Subject Information is different from the publicly-known information that Respondents argue. While Respondents claimed that the Subject Information was stated in general, broad, and abstract terms, and therefore was difficult to determine the difference between the Subject Information and publicly-known information, Petitioner did not make claims or specific explanation of the Subject Information in greater detail so that it is distinguishable from publicly-known information. As such, the court cannot determine if the Subject Information constitutes trade secret, and Respondents cannot adequately defend themselves since they cannot know the detailed contents of the trade secret. Thus, it cannot be said that the trade secret was adequately specified in this case. The previous decision, which delivers the same intent, is well grounded. There is no error in the previous decision with regard to violating the rule of thumb, going beyond limitations on the principle of discretion of the court, or misunderstanding legal principles related to trade secret specification.’¹²⁾

② 「If detailed content of a trade secret is specified in the plaintiff’s demand or cause of action, it provides an opportunity for the party that committed the

12) Supreme Court Decision, 2011Ma1624, decided August 22, 2013.

relevant trade secret misappropriation to reconfirm the content of the misappropriated trade secret. Also, specified or unspecified third parties can become aware of the trade secret content by perusing or obtaining the ruling. This leads to concerns over failure to maintain the trade secret as a trade secret, and may cause misappropriation of the trade secrets that are sought to be protected by the Unfair Competition Prevention and Trade Secret Protection Act. It is not required to state, with as much detail the content of the trade secret in the decision plaintiff's demand in a trade secret misappropriation injunction judgement.¹³⁾」

2) Criminal case

① 「The trade secret that a Defendant acquired while working at Bell Metal Co., Ltd. (hereinafter referred to as 'Bell Metal') is specified as "US Besset Company's buyer list, supply price, purchase price for outsourcing, logistics cost, various factors on pricing, materials on Bell Metal's Chinese subcontractors John Woolley and Mister Jong (real name redacted)" (hereinafter referred to as 'the Subject Information'). Of the Subject Information, prices in "various factors on pricing" seem to indicate prices at which goods are supplied to Besset Company or manufacturing costs (subcontract price, logistics cost), and do not seem to signify other prices, considering the facts stated in the criminal complaint. As such, the aforementioned "various factors on pricing" do not indicate independent information but rather refer to a range of data on supply price, purchase price for outsourcing, and logistics cost. Thus we cannot conclude that the "various factors on pricing" are not specifically identified. Also, the facts in the complaint is that Defendant used the Subject Information that he acquired while working as a trade director at Bell Metal to have the Chinese subcontractor 'Mister Jong' produce nail clipper sets and supply them to Besset Company. As such, of the Subject Information, "materials on Bell Metal's Chinese subcontractors John Woolley and Mister Jong (real name redacted)" seems to signify materials related to personal information or contact information of John Woolley or Mister Jong. Thus, among trade secrets stated in the complaint, "various factors on pricing" and "materials on Bell Metal's Chinese subcontractors John Woolley and Mister Jong" can be distinguished from other information, and one can ascertain what

13) Seoul High Court Decision, 95Na14420, decided February 29, 1996.

kind of content the information is about. In addition, it does not seem to have any special impact on criminal defendant's exercise of defense rights.¹⁴⁾

② 「The intent of Article 254, Paragraph 4 of the Criminal Procedure Act, which stipulates that the facts charged should be specified when instituting public prosecution, is to limit the subject-matter of a court judgment so as to enhance the judgment's efficiency and speediness as well as to specify the scope of defense to allow criminal defendant's easy exercise of defense rights. As such, even if an alleged trade secret is not specified in detail in the criminal complaint in a case related to a violation of the Unfair Competition Prevention and Trade Secret Protection Act, where the issue is whether a trade secret was leaked to a third party or used for the purpose of gaining unlawful gains or causing corporate losses, this shall not affect the validity of the institution of public prosecution, provided the following: the information is distinguishable from other information; one can identify the content of the information based on the information as well as other matters stated; and there is no impact on criminal defendant's exercise of defense rights (see Supreme Court's 2006Do8278 Decision decided July 10, 2008). When examining the grounds for the previous decision based on the above legal principles and records, the complaint states “CAD file of blueprints for 160 electric locomotive cars of the Gyeongbu Line” (hereinafter referred to as the “Subject CAD file”) as the trade secret that Defendant 6 leaked and the other Defendants used. The Subject CAD file is distinguishable from other information, and one can sufficiently ascertain what kind of content the information is about. In addition, it does not seem to have an impact on Defendants' exercise of defense rights.¹⁵⁾

D. Analysis

1) Analysis of theories

People who have the view that trade secrets must be specified with as much detail as possible focus on the fact that, if an injunction judgement is delivered or finalized without clearly specifying the respective trade secret, the objective scope of executory power is not clearly defined, resulting in difficulties in actual

14) Supreme Court Decision, 2006Do8278, decided July 10, 2008.

15) Supreme Court Decision, 2006Do7916, decided July 9, 2009.

execution. This would mean that the injunction order would exist in name only.

However, an increased requirement in specifying trade secret would result in higher risks of disclosure of the trade secret content in the opinion. There can ultimately be circumstances in which maintaining a trade secret's secrecy becomes difficult during legal proceedings that are intended for relief from trade secret misappropriation. Moreover, considering that the number of trade secrets that are at issue in a suit is mostly in the dozens to as many as thousands, it is doubtful that increasing the degree of specification would be practically possible.

Even when examining from the perspective of clarity in view of the executory power, it is difficult to agree with the grounds for the aforementioned view. No matter how high the bar is raised for the degree of trade secret specification in the order of a judgment for injunction, disputes over the scope of executory power of the injunction order are inevitable at the execution stage. Let's take an example where of an enhanced requirement for specifying trade secret is applied. Assume that the following injunction order was issued: 'Defendant shall not manufacture or sell a washing machine that has A, B, and C characteristics' (and also assume an extreme case in which the trade secret's content, which is A, B, and C characteristics, is specified in the opinion). Even after the injunction order is issued, defendant may claim that the washing machine he produces does not have A, B, and C characteristics and thus does not violate the injunction order, when it actually does. In this case, a hearing needs to be held at the execution stage to determine whether defendant's act is in violation of the injunction order (whether it be substitutional execution or indirect compulsion, such a claim should be heard at a hearing and a decision needs to be made). In the aforementioned example, whether the defendant's washing machine has A, B, and C characteristics should be examined at the hearing. On the other hand, assume a case where the requirement for specifying a trade secret is relieved, and thus the court orders an injunction as to the washing machine that uses 'tolerance information of a specific area from washing machine pumps.' In this case, the content of the trade secret is ultimately 'A, B, and C characteristics.' For this reason, whether the defendant's washing machine (washing machine's pump) has A, B, and C characteristics should be reviewed. Thus, irrespective of the degree requirements in specifying trade secret in the opinion, if there is a dispute over the scope of executory power of an injunction order at the execution stage, the same issue needs to be reviewed at a hearing. As such, it is not

convincing that increasing the degree of trade secret specification clarifies the scope of executory power, thereby reducing disputes in the execution stage.

The argument that easing the degree of specification leads to concerns over excessive focus on the act of trade secret misappropriation, rather than qualification as trade secret, are also incorrect. Even if the degree of specification is eased for plaintiff's demand, cause of action or for facts charged in a criminal complaint, if the other party disputes the existence of a trade secret or if the court raises a question thereon, plaintiff or prosecutor still has the burden of proof, which involves establishing the existence of the respective trade secret and revealing the detailed content. Moreover, requirement as trade secret and type of misappropriation are separate requirements that need to be established to constitute a trade secret misappropriation. As such, it is difficult to agree with the argument that easing the degree of specification would lead to excessive focus on whether there was an unlawful act of misappropriation.

Considering the above, the view that the degree of specification should be eased but should be at an adequate level is more persuasive than the view that trade secrets should be specified with as much detail as possible. Irrespective of the degree of trade secret specification, the degree of providing trade secret — in other words, the submission of evidence that contains the trade secret and an examination of the evidence — should meet the level that is demanded in each legal procedures.

2) Analysis of decisions

A) Civil Case Decision ① above explains the degree of specifying trade secret. It states that a trade secret needs to be specified with as much detail as possible to the extent that it does not lose its secrecy, and that the degree of trade secret specification should be determined by considering various circumstances, such as the content and nature of the particular information that is alleged to be a trade secret, content of publicly-known information in the relevant field, specific form of the trade secret misappropriation and content of the demand for an injunction, and relationship between the party that possesses the trade secret and the other party. However, the lower court in the Civil Case Decision ①¹⁶⁾

16) Seoul High Court's 2010Ra384 Decision on an objection against injunction decided August 1, 2011.

may have put the issues of trade secret specification and the burden of proof on the same level, although the two are distinct issues in different categories. The previous decision is as follows: “Respondent Park ○ ○, who was formerly a department manager at the Petitioner Company’s technology research institute had access to technical information stated in Paragraphs 1 and 2 in the Appendix 1 Trade Secret List (hereinafter referred to as ‘the Subject Technical Information’), while Respondent Kim ○ ○, who was formerly a sales department manager, had access to the sales information stated in Paragraph 3 of the same list (hereinafter referred to as ‘the Subject Sales Information’), and seems to have had considerable technical skills and know-how in this regard. Also, they engage in functional dye-related work, which is similar to their previous work, at SOLUSYS to which they transferred. As such, somewhat eased standards can be applied when determining the respective trade secret’s acknowledgement and specification. However, when considering the following circumstances, Petitioner’s explanations are not sufficient to acknowledge the Subject Information as a trade secret or to deem that it has been specified as a trade secret, even based on the eased standards. ① Petitioner specifies the technical information in Paragraph 1 of the Appendix 1 Trade Secret List among the Subject Technical Information as only ‘mix ratio, synthesis reaction data, manufacturing method, dispersion method.’ Petitioner does not reveal, in detail, the specific mixing or manufacturing method for specific products in the Appendix 1 Functional Dye or Fluorescent Whitening Agent List. ② Also, Petitioner describes quality control information in Paragraph 2 of the Appendix 1 Trade Secret List among the Subject Technical Information as hue test method using CCM, etc. mixing method using the Hensel mixer, etc., dye classification method using an automatic separator, metal shavings removal method using a gauss magnet kit. However, with regards to the aforementioned quality control equipment (CCM, mixer, separator, magnet kit, etc., which do not seem like equipment that are used only by the Petitioner.), Petitioner does not reveal what methods — other than the usual methods generally disclosed by equipment manufacturers — were used to execute each quality control process. ③ Respondents argue that Petitioner did not produce the dyes, but imported the dyes from China, changed only the packaging, and sold the dyes itself or mixture of the dyes with other material that is obtained through simple, repetitive work until a

desired color was produced. They also assert that Petitioner does not possess any advanced dye production techniques. Petitioner also admits that in case of some single items in the Appendix 1 Functional Dye or Fluorescent Whitening Agent List, Petitioner imports the items, which then undergo an inspection and quality control process and are sold without going through such processes as mixing with other dyes. ④ With regards to the Subject Sales Information as well, Petitioner provides an abstract specification, such as raw material suppliers, types, price, quantity, trends of customers, etc. As indicated before, Petitioner imports from China a large quantity of dye products, rather than raw materials to manufacture dyes. Moreover, there is no evidence that shows that the Subject Sales Information is not publicly-known information and is related to special customer or trade relations that Petitioner accumulated by investing time and financial resources; related to customers' unique information, characteristics that are difficult for competitors to readily ascertain; or related to supplier of Petitioner's unique raw material that is not general or standardized. ⑤ Petitioner claims that it retains the Subject Information at the Petitioner Company in the form of a database, including figures and work manuals. However, Petitioner does not submit titles of documents or file names of materials or manuals that contain the trade secrets and that are in the database because they are trade secrets. Also, Petitioner does not submit any exhibits that would enable acknowledgement of the existence of the database. As a result, Petitioner is not specifying how Respondents obtained, stored, and used the trade secrets. ⑥ In this case, in which Respondents are disputing over qualification of the Subject Information as a trade secret, as well as its very existence, the aforementioned claims and explanations provided by Petitioner on the trade secrets are not sufficient enough to deem that the minimum degree of specification was satisfied to determine whether the party retaining the Subject Information can use the information to gain a competitive edge over competitors, whether considerable costs or efforts are needed to obtain or develop the information, and whether the Subject Information is publicly-known information." To summarize, in the previous decision, eased standards were applied in trade secret qualification and specification, as Respondents worked at the Petitioner Company which retains the trade secrets, and that Respondents handled the trade secrets while working at the Petitioner Company. However, a decision was made that the

trade secrets were not ‘specified and explained’ on grounds that there were no explanations on how the alleged trade secrets of Petitioner were distinguishable from publicly-known information and that it was not clear if Petitioner actually possessed the alleged trade secrets. The aforementioned Supreme Court decision upheld the previous decision. In the case above, the trade secrets were specified as follows: ‘mix ratio of mixed dyes of functional dyes or fluorescent whitening agents of certain items that are manufactured and sold by the Petitioner Company, the method used to inspect the purity of raw materials, such as visible ray absorbance measurement, in relation to the aforementioned products, raw material types, suppliers, purchase price, purchase quantity in relation to the aforementioned products.’ It should have been deemed that this degree of specification is adequate since the specified trade secrets are distinguishable from other information and since one can identify the content (whether or not such content actually exists is a different matter). However, the request should have been dismissed due to the lack of evidence on requirements that need to be satisfied for trade secret protection – especially the lack of explanations regarding Petitioner’s actual possession of the trade secrets and the fact that the information is not generally known – as indicated by the previous decision.¹⁷⁾

B) In the Civil Case Decision ② above as well, it is explained that, because a trade secret’s secrecy should not be lost through a ruling or legal proceedings, it is not adequate to specify the content of the information in the opinion to the extent that the content can be known.

C) In the criminal case, three standards that are more detailed than the Civil Case Decisions are presented: ① The information shall be distinguishable from other information; ② One shall be able to identify what content the information is about based on descriptions provided with the information; ③ There shall be no impact on the defendant’s exercise of its defending rights. According to these standards, a trade secret at issue can be specified by indicating its general content or usage, and assigning a name to the information so that it is distinguishable from other information, rather than

17) The previous decision rejected the petition, rather than dismiss it, due to the reasons stated above.

providing detailed content. Requirement ③ above is somewhat abstract. In cases where requirements ① and ② are satisfied, requirement ③ would generally be met. However, there may be cases in which this does not apply, depending on the matter.

D) Whether the above standards on the degree of specification adopted in criminal procedure can be applied to civil procedure is an issue. In the aforementioned Civil Case Decisions, only theoretical explanations are provided, stating that a trade secret should be specified in detail to the extent that its secrecy is not lost, but that several circumstances in the relevant matter should be considered. No detailed standards are provided. It is my personal opinion that there will be no issue with applying the above standards adopted in criminal procedures to civil procedures. The purpose of demanding the abovementioned degree of trade secret specification in a criminal complaint is to clearly define the scope of review in a criminal trial, thereby guaranteeing criminal defendant's exercise of defense rights. This is not different for civil procedures. There is also a need to refer to practice relating to the degree of specification in patent infringement suits. In patent infringement suits, specifying the violated right — in other words, the patented invention — is not an issue. There are many cases where specifying the subject-matter for which an injunction is sought becomes an issue. The following is a decision on specification standards: 'In civil procedures, plaintiff's demand should be specified in detail so that the content and scope can be clearly ascertained. In requesting an injunction against patent infringement, the product or method that is the subject-matter of the request should be specified in detail to the extent that it is distinguishable from others as the subject-matter of the injunction in view of social norms.'¹⁸⁾ The aforementioned standard — 'should be specified in detail to the extent that it is distinguishable from others' — is not much different from the standards on the degree of trade secret specification that were explained in the criminal case decision. Moreover, similar standards are applied to criminal procedures related to patent infringement. A decision ruling states the following: 'With regards to the type of infringing act, the infringed product should be specified to the extent that it is distinguishable from others, such as by stating the product

18) Supreme Court Decision, 2011Da17090, decided September 8, 2011.

name, product number of the infringed product or stating the construction of the infringed product.¹⁹⁾

E. Conclusion

To recap, an adequate degree of specifying trade secret in lawsuits would be a degree that enables one to generally identify what kind of information the trade secret is related to and its usage, and assign a name to the trade secret, instead of providing detailed content of the information, so that it is distinguishable from other information.

4. Proving Trade Secrets

A. Introduction

Even if a trade secret is adequately specified in the subject-matter of a lawsuit or the facts charged, this alone does not mean that the respective trade secret was proven. By a specification of a trade secret, the information that becomes the subject-matter of a decision is broadly identified and the measure a right holder seeks through an infringement injunction is ascertained, but nothing more. As such, for a right holder or prosecutor to obtain a favorable ruling, the right holder or prosecutor needs to prove that the right holder actually possesses the information specified, reveal the detailed content of the information, and prove that the information satisfies the requirements of a trade secret (not generally known, reasonable efforts to maintain secrecy, economic value). To this end, plaintiff or prosecutor must submit evidence as an offensive strategy and thus prove to the degree demanded by the respective suit.²⁰⁾ (An exception is made for cases in which the other party does not dispute the matter.) Only then will the other party be able to exercise his defending rights based on the submitted evidence. Only then will the court be able to judge whether the information actually exists and whether it satisfies trade secret requirements. In Civil Case Decision ②, the written judgement states that a trade secret should not be written in detail. However, its intent is that a detailed written description should not be provided in the written judgment's order or grounds. It should not be

19) Supreme Court Decision, 2015Do17674, decided May 26, 2016.

20) In the same vein, Sang Jo Jong, Jun-seok Park, op. cit., p. 84, fn. 230.

deemed as allowing omission of an examination of the detailed content in the trial stage.

Let's examine the aforementioned example in which the trade secret was specified as 'tolerance information of a specific area of a washing machine pump.' The respective prosecutor or plaintiff may argue that the trade secret owner possesses the aforementioned trade secret, and that defendant or criminal defendant is infringing on the trade secret by obtaining it through unlawful means and using or disclosing it. In response, defendant or criminal defendant may exercise defending rights by disputing the existence of the information, or asserting that the information's detailed content cannot be known and therefore trade secrecy cannot be acknowledged. In this case, plaintiff or prosecutor must prove that the trade secret exists and that it satisfies trade secret requirements by submitting, as evidence, information in which the trade secret is specified, to the court and requesting for an examination of the evidence. Based on the submitted evidence, the other party may dispute that the trade secret requirements are not met, such as by stating that the information is generally known or that reasonable efforts were not made to maintain secrecy. In this case, despite the counterevidence above, plaintiff or prosecutor needs to prove that the information is not widely known and that reasonable efforts were made to maintain secrecy, in order to obtain a favorable ruling.

B. Practices in Foreign Countries

Practice in the US is similar. The dominant principle is that there is no absolute privilege for trade secrets, and therefore, even trade secrets must be presented in the discovery process.²¹⁾

A decision states, 「In a complaint... plaintiff is not and cannot be expected to disclose its trade secrets in detail. ... However, at the summary judgment and trial stages, plaintiff must describe its trade secrets in sufficient detail such that a reasonable jury could find that plaintiff's trade secrets have all of the statutory elements of a trade secret.²²⁾」 In the Spice Cup case²³⁾, a former employee of

21) Seong-soo Park, *op. cit.*, 7.

22) See *IDX System Corp. v. EPIC Systems Corp.*, 165 F. Supp. 2d 812, 816-817 (W.D. Wis. 2001); James Pooley, *op. cit.*, 12-22 fn. 15 re-cited.

23) *New Castle Beverage, Inc. v. Spicy Beer Mix, Inc.* (Cal. Ct. App. 2014), <http://patentlyo.com/patent/2014/07/written-description-secret.html> re-cited.

Plaintiff, which sells the “spicy cup” that creates a unique, spicy taste, sold information on the spicy-mix-cup to a competitor after leaving the Plaintiff Company, allowing the competitor to sell a similar product. Plaintiff claimed that its trade secret was infringed upon, and requested an injunction. Plaintiff specified the trade secret as a ‘process of applying a secret solution to the inner and outer surfaces adjacent the lip of a beverage cup to permit a first mixture of spices to adhere to those surfaces.’ In response to a request from the Appellate Court (Plaintiff lost the first trial and appealed) that Plaintiff needs to reveal the trade secret’s detailed content during the trial, Plaintiff did not submit any evidence and simply claimed the following: ‘Just looking at the device itself should be considered as there having been sufficient disclosure of the trade secret. Had the trial court viewed the device, the boundaries of an injunction would have been easier to fashion.’ Plaintiff did not provide any explanation on how a physical inspection of the device would reveal the detailed nature of the trade secret. The court rejected the claim, issuing the following ruling: ‘Plaintiff merely provided a general allusion to the trade secret. A general allusion does not satisfy the burden of proof (regarding the existence of the trade secret) that is required by California law.’

This is also true for Japan, where trade secrets are specified either in the subject-matter of lawsuits, or as a means of offense and defense. The degree of specification is different between the two.²⁴⁾ This is a somewhat inaccurate description in that specifying a trade secret and proving a trade secret is not distinguished based on the aspect of the degree of specification. They should be understood as being distinguished based on the view that they are different matters that have a different plane of discussion in suits.

Ultimately, if a right holder or prosecutor fails to prove that the respective trade secret exists and that trade secret requirements have been met, it is obvious for a decision to reject the claim or sentence an acquittal. The level of proof is identical to that required by general civil procedures or criminal procedures.

As seen above, specifying a trade secret and proving a trade secret are distinguished matters that are on different planes in lawsuit proceedings. However, in practice, it seems like there are frequent cases in which matters of specification and those of proof are not properly distinguished. An example is

24) Nobuo Matsumura, op. cit., 355-359.

Civil Case Decision ①, in which the court decided on both whether there was specification of the trade secret and whether there was a lack of proof of the requirements thereof at the same time.

C. Maintenance of Secrecy of Submitted Trade Secrets

Laws in Korea have several systems in place so that, even if information that contains a trade secret is submitted as evidence, it is not disclosed through perusal or photocopying of litigation records or examination of the evidence. There is a Confidentiality Order System (Article 14-4 of the Act) in the Unfair Competition Prevention and Trade Secret Protection Act, and a system for restricting perusal of litigation records by third parties (Article 163 of the Civil Procedure Act) (refer to the explanation section of the appropriate provision for details). However, parties who possess trade secrets may not be satisfied with the current systems, as they may regard the systems as not being sufficient enough to maintain confidentiality of respective trade secrets. They would probably hope for an establishment of a measure that allows them to present evidence that contains trade secrets in the trial stage but does not require the information to be kept in litigation records. However, it will be difficult to realize such demands in consideration of the stance of the other party. This is because it is almost impossible for the other party to ascertain, in detail, the information presented by plaintiff and exercise defending rights during the trial stage, which has a time limit. However, there is a need to pay attention to some arguments that are made to improve the system on maintaining confidentiality of trade secrets, such as categorizing trade secrets into different types and adopting a different rule for each type, or amending rules in civil procedure regulations so that, if documentary evidence is submitted during a suit and if the documentary evidence contains a trade secret, submitting a copy of the evidence can be omitted.²⁵⁾

Even without making such improvements to the system, the court's efforts may prevent loss of secrecy to a certain degree. These include designating a hearing process at the last step to prevent disclosure of a trade secret in a trial, or holding a preliminary hearing where only attorneys attend in a closed court, and executing other means to effectively leverage the current system.

25) Seong-soo Park, op. cit., 15.

III. Reverse Engineering

1. Introduction

If a party obtained a different party's trade secret information through reverse engineering, he can actively claim and prove such circumstances as a defending measure. A reverse engineering claim can have significance in several aspects in a suit. Claiming that a trade secret is in a state that allows easy reverse engineering is an argument against the trade secret's not-publicly-known attribute. The period required for reverse engineering becomes a basis for determining the maximum period for an infringement injunction order. Claiming that one obtained information through reverse engineering would be tantamount to arguing that he legitimately obtained the information rather than through infringement.²⁶⁾ There are several issues in this regard, such as what reverse engineering is; what cases could be regarded as legitimate reverse engineering; if a trade secret is in a state that allows reverse engineering, how this influences trade secrets and especially the not-publicly-known attribute, and what the relationship with third parties should be. The following examines these issues.

2. Meaning of Reverse Engineering

There are no regulations in Korea that clearly define the meaning of reverse engineering. Referring to an example in the US, reverse engineering is defined as, 'starting with the known product and working backward to divine the process which aided in its development or manufacture.'²⁷⁾

In case of patents, even if a party obtains information through reverse

26) This should be deemed as a denial rather than a counter-argument in litigation laws. A counter-argument includes a confession of the facts claimed by the other party and should be a claim of compatible, separate facts. In contrast, a reverse engineering claim is based on the premise of disputing the other party's claim, arguing that the process of obtaining the information was not through an act of infringement.

27) *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 476, 94 S.Ct. 1879, 40 L.Ed. 2d 315 (1974). There is not much difference from the definition regulation in Article 1 of the UTSA which embraced this definition.

engineering based on a product that was sold by the patent right holder, using the respective technique for business is prohibited by the exclusive effects of patent rights. On the other hand, in case of trade secrets, the types of acts that are prohibited are limited to specific types of acts that are listed in the Unfair Competition Prevention and Trade Secret Protection Act (each item under Article 2, Subparagraph 3 of the Act)²⁸⁾. Obtaining a trade secret through reverse engineering is not included. As such, if a party uses reverse engineering to identify a trade secret of the party that possesses the trade secret and uses or discloses the trade secret, an infringement is not established. To achieve the goal of enhancing the welfare of the entire nation by developing industrial technologies, there is a need for R&D and the resulting competition, which would lead to active innovation. A key factor of innovation often involves analyzing competitor products to ascertain technologies. For this reason, reverse engineering should be recommended rather than regulated.

Reverse engineering can be categorized into theoretical reverse engineering and actual reverse engineering, depending on whether it was actually conducted. The former means the following: ‘A party did not ascertain a trade secret through actual reverse engineering, but the trade secret was in a state in which it was ascertainable through reverse engineering and the party could have ascertained the trade secret through reverse engineering.’ This is significant in disputing against the not-publicly-known attribute of a trade secret or in determining the injunction period of an injunction order. The latter means that ‘a party ascertained a trade secret by actually implementing reverse engineering.’ It functions as a means of defense against an infringement claim, supporting that the trade secret was obtained through a legitimate process.

To satisfy actual reverse engineering requirements, the starting point – acquiring the publicly-known object – itself should be lawful. An example would be to extract information from an object that is sold in the market or an object that the party that possesses the respective trade secret installed in a public location. Among the US decisions, there are decisions that did not allow cases in which information was collected without receiving access authority to a

28) A, B, and C stipulate such acts as acquisition in connection with criminal conduct, such as theft. D, E, and F stipulate such acts as acquisition in connection with betrayal from non-fulfillment of confidentiality obligations.

computer system or in violation of conditions in a license agreement²⁹⁾. The following is another decision by US courts: if, to discover information in a computer chip, its layers were removed and source code was used for its analysis, the act of removing the layers is appropriate. However, if the aforementioned source code was obtained by deceiving the Copyright Office by stating that the source code was necessary for a lawsuit or by using other such means, the entire reverse engineering process is contaminated and therefore illegitimate.³⁰⁾

3. Relationship Between Reverse Engineering and the Secrecy Requirement

As examined above, claiming that a trade secret is in a state that allows reverse engineering has an attribute of denial, disputing against a trade secret's not-publicly-known factor among the requirements as a trade secret. However, that a trade secret is in a state that allows reverse engineering does not mean that the trade secret loses its not-publicly-known element. This is a matter that should be determined based on how much time and effort is needed for reverse engineering. For example, if a party is able to obtain the relevant information from a product on sale without making special efforts, or by investing only a small amount of time and effort, it is deemed that the 'information is in a state in which it is ascertainable without going through the party that possesses the trade secret,' and therefore the information's not-publicly-known factor will be denied. However, if there is a need for considerable costs and efforts, a trade secret's not-publicly-known factor should be maintained. A case that can be referenced to was related to an alleged trade secret infringement regarding a circuit diagram of a wireless communication repeater. Criminal defendant argued that the trade secret was generally known in that reverse engineering was possible. The court ruled out this claim, stating, 'Third parties cannot know the insides of wireless communication repeaters to which the Subject Circuit Diagram was applied and were installed at designated locations by the plaintiff (the party possessing the

29) *Telerate Systems, Inc. v. Caro*, 689 F.Supp. 221, 233 (S.D.N.Y 1988)(2nd Circuit); *Technicon Data Sys. Corp. v. Curtis 1000, Inc.*, 224 U.S.P.Q.(BNA) 286, 288 (Del. Ch. Aug. 21, 1984).

30) *Atari Games Corp. v. Nintendo of America Inc.*, 975 F.2d 832, 843-844 (Fed. Cir. 1992).

trade secret). Also, even a person related to non-party 2 would find it difficult to disassemble the aforementioned wireless communication repeaters for reverse engineering while in operation. The aforementioned wireless communication repeaters that plaintiff supplied to non-party 3 were products that were delivered based on a contract, making it difficult to legitimately obtain the wireless communication repeaters in the market for the purpose of reverse engineering. Considering the above, it is difficult to access the aforementioned wireless communication repeaters through lawful means for reverse engineering. Even if the configuration is simple, much time and effort is generally needed for reverse engineering of a decipherable circuit diagram from a finished product, unlike machinery. Even if the connection among devices is extracted, considerable time is needed to ascertain each device's functions and roles as well as other operation processes. Such factors were taken into consideration for determining that defendant's claim should be rejected.³¹⁾

If a competitor obtained a trade secret through legitimate reverse engineering, the competitor becomes a new party that possesses the trade secret as long as it maintains secrecy. It can then exercise rights against acts of infringement by third parties. In a case that dealt with trade secrets of a manufacturing process that was obtained through reverse engineering, the court made the following ruling: 「The previous decision acknowledged the following ... The Subject Technical Information is a composition ratio and composition method of chemicals, based on the types, products, and colors of around ten chemicals that are used as raw materials for ink manufacturing. This is one of the most important business elements of writing stationary manufacturers, such as the Plaintiff Company. It was researched and developed by Plaintiff by investing at least two years and at most 32 years as well as considerable personnel and physical facilities. It is used on at least 90% of products that are produced by Plaintiff. As technical information that serves as a key factor in Plaintiff's business, it has independent economic value. Its content is not generally known. In fact, it is in a state where even Plaintiff's research institute employees find it difficult to ascertain the content other

31) Supreme Court's 2007Do9477 Decision decided February 29, 2008. In the abovementioned case, reverse engineering was not part of the counter-argument. Defendant claimed virtual reverse engineering, arguing that the circuit diagram was in a state that allowed reverse engineering, and therefore the Victim's trade secret lost its not-publicly-known factor.

than matters that they themselves researched or managed, pointing to the fact that it has secrecy. Plaintiff established a separate research institute in its factory premises and allowed access only to relevant personnel. Plaintiff obligated all its employees to maintain secrecy, and designated the research institute director as the person in charge of strictly managing the Subject Technical Information. The previous decision acknowledged that reasonable efforts were made to maintain secrecy, and stated that the Subject Technical Information therefore falls under the trade secret specified in the Unfair Competition Prevention and Trade Secret Protection Act. The previous decision also stated that, even if Plaintiff obtained the Subject Technical Information by analyzing foreign ink products, or even if reverse engineering is allowed and obtaining the Subject Technical Information through reverse engineering is possible, these circumstances alone do not hinder the Subject Technical Information from becoming a trade secret. ... The previous decision's acknowledgement of facts and decision are well grounded. There is no err from misunderstanding legal principles on trade secrets.³²⁾ Practice in the US is the same. A comment in Article 1 of the USTA states, 'If reverse engineering is lengthy and expensive, a person who discovers the trade secret through reverse engineering can have a trade secret in the information obtained from reverse engineering.'³³⁾

A difficult issue is this: To what degree do the costs and time required for reverse engineering is needed to deem that the not-publicly-known factor is maintained? In other words, how can the boundary between the domain in which the not-publicly-known factor is maintained and the domain in which the not-publicly-known factor is lost be determined? In the US, a distinction is made between the 'readily ascertainable domain,' in which trade secrets are deemed to have lost their not-publicly-known factor because reverse engineering requires little time and cost, and the 'reverse engineerable domain,' in which the not-publicly-known factor is maintained. Most states in the US adopt Article 1 of the UTSA that provides a definition of trade secrets as follows: 'information that is not generally known, and that is in a state in which it is not readily ascertainable

32) Supreme Court's 96Da16605 Decision decided December 23, 1996.

33) USTA Section 1. Commissioners's Comment : if reverse engineering is lengthy and expensive, a person who discovers the trade secret through reverse engineering can have a trade secret in the information obtained from reverse engineering.

based on proper means, such as reverse engineering,' having lost the not-generally-known factor.³⁴⁾ Korean Supreme Court Decision defines the not-generally-known factor as the following: 'Because the information is not known to unspecified individuals, since it was not published in the media, including publications, it cannot be normally obtained without going through the party that possesses the information.'³⁵⁾ In the decision examined above³⁶⁾, the trade secret that was obtained through reverse engineering by investing considerable costs and time was determined to have maintained its not-publicly-known factor. Similar to the US, it deems that the 'not readily ascertainable state' is in the domain in which the not-publicly-known factor is maintained.

A remaining issue is how to determine the boundary between the two domains. It seems there is no choice but to establish standards, based on cases, for each matter. Decisions in the US that are worth referencing to are as follows: A case where reverse engineering was deemed to require at least 30 hours or almost four months was determined as not being readily ascertainable³⁷⁾; In the case where the trade secrets of a livestock feed ingredient was at issue, the decision was made that the information was readily ascertainable since the composition of the ingredients could be identified by a 20-minute microscope observation and their scientific analysis took four to five days³⁸⁾; The case where reverse engineering could be completed for information (trade secret) in several days by using a camera that is sold or rented in the market without restriction was determined as being readily ascertainable³⁹⁾. In *ILG Industries, Inc. v. Scott*⁴⁰⁾, Defendant claimed that it used a blueprint that it stole from Plaintiff to design the fan part, but that each part's measurements or tolerance were in a state that enabled reverse engineering based on fans that were sold in the market. The

34) Article 1 of UTSA: "Trade secret" means information, including a formula, pattern, compilation, program, device, method, technique, or process, that: (i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

35) Supreme Court Decision, 2006Do7916, decided July 9, 2009.

36) Supreme Court Decision, 96Da16605, decided December 23, 1996.

37) *Kubik, Inc. v. Hull*, 56 Mich. App. 335, 224 N.W. 2d 80, 93 (Mich App. 1974).

38) *Weins v. Sporleder*, 569 N.W. 2d 16, 21 (S.D. 1997).

39) *Wesley-Jessen, Inc. v. Reynolds*, No. 72 C 1677. 182 U.S.P.Q.(BNA) 135, 144-145 (N.D. Ill. 1974).

40) *ILG Indus., Inc. v. Scott*, 49 Ill. 2d 88, 273 N.E.2d 393 (1971).

court did not accept Defendant's argument, making a decision that considerable time would have been required for such reverse engineering. In *Coca-Cola Co. v. Reed Industries, Inc.*⁴¹⁾, the following decision was made: 'Easy reverse engineering would not have been possible for tolerance or material specifications or other such information based on vending machines in the market. As such, Plaintiff's information is a trade secret.'

D. Detailed Defenses

If a party obtained such information as a trade secret through reverse engineering, he can submit, as evidence, the object he began with such as the reverse engineering process. If a party that possesses a trade secret sold or installed the respective object in the market, and this object was in a state that allowed reverse engineering, the other party can use instruments of evidence, such as an appraisal, to prove the time and costs needed for reverse engineering, and thus dispute the not-publicly-known factor or claim for reduction of the injunction period.

IV. Closing

Among the defending strategies that can be used by the other party of trade secret misappropriation suits (civil and criminal), this paper examined the matter of trade secret specification and reverse engineering.

The trade secret system has attributes as a substitute for the patent system. What mainly becomes an issue in practice is technical information, which can also be protected by a patent. The degree of trade secret protection is not a simple matter that is restricted to trade secrets alone, but is a matter that has significant ripple effects on the overall intellectual property right system, including patents. If there is sufficient legal protection against trade secret misappropriation, just like the patent system, there is no reason for a party that achieved technical innovation to disclose his technique through the patent system (if this new technique is maintained as a trade secret, he can avoid the issue of disclosing the technique and the resulting emergence of competitors,

41) *Coca-Cola Co. v. Reed Indus., Inc.*, 21,10 U.S.P.Q. 2d(BNA) 1211, 1217 (N.D.Ga. Feb. 17, 1988).

and can also protect the technique for an unrestricted period). This would be a substantial threat to the patent system, which leads to considerable accomplishments of technical innovation and industrial development through early disclosure and use of techniques.

There are many issues under discussion in trade secret misappropriation suits, including the abovementioned issues. The aforementioned views are suggested to be taken into consideration in the process of adequately resolving these issues.

The Scope of Equivalents Excluded by the Doctrine of Prosecution History Estoppel

Minseung KU*

I. Introduction

1. The Meaning of Prosecution History Estoppel

Prosecution history estoppel is a legal doctrine established under U.S. case law, which applies the general principle of estoppel in the context of patent law to prohibit contradictory assertions. Under the doctrine of prosecution history estoppel, a patentee is precluded from making assertions in a patent infringement lawsuit that contradict the patentee's actions (such as making amendments and arguments in a response, etc.) taken during the prosecution process before the U.S. Patent and Trademark Office.¹⁾

2. The Roles Played by Prosecution History Estoppel

The scope of a patent is defined by its claims, but the inherent limitations of language often make it difficult to accurately capture the desired scope of protection in patent claims. In addition, a patent infringer rarely copies a patented invention outright. Thus, unless patent law prohibits circumvention of patent protection by making insubstantial changes to the patented invention, the patent system would become hollow and useless because inventors would choose to conceal, rather than disclose, inventions.²⁾ This is the essence and

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1) 2 Robert A. Mathews, Annotated Patent Digest § 14:1 (August 2016 Update) (a definition of prosecution history estoppel) (“According to Black’s Law Dictionary, ‘[a]n estoppel arises when one is concluded and forbidden by law to speak against his own act or deed.’ This legal concept has been applied against patentees based on acts done by patent applicants during the prosecution of a patent application in the PTO.”).

2) See *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 US 605, 607 (1950); *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 731-32 (2002).

rationale of the doctrine of equivalents.

However, a broad application of the doctrine of equivalents would provide little foreseeability with respect to the scope of patent claims, and thus discourage additional inventions or investments. Therefore, it is also necessary to limit the application of the doctrine in order to provide foreseeability for the industry to determine whether their acts may constitute an infringement (i.e., to satisfy the public notice function and to clarify the scope of patent protection).³⁾

As a limitation on the doctrine of equivalents, prosecution history estoppel can be an important means to meet those two conflicting demands and address related issues.

3. Grounds for Justification and Need for the Doctrine

Prosecution history estoppel is grounded on the following: (i) prosecution history estoppel ensures that a person having ordinary skill in the art can place at least a general and abstract trust that narrowing amendments and statements made during prosecution reduced the scope of the claimed technical subject matter, although such trust is not at the level of an actual and specific trust that is required by the principle of good faith (principle of estoppel)⁴⁾; (ii) prosecution history estoppel prevents a patentee from secretly bypassing the substantive patent application examination and taking contradictory positions to obtain both a narrow claim interpretation for allowance of the patent application and a broad claim interpretation for the infringement action⁵⁾; and (iii) in case a patentee has proactively amended the claim language, the rationale for the doctrine of equivalents, premised on the limitations of languages, is weakened.⁶⁾

3) See *Festo, Corp. v. Shoketsu Kinzoku Kogyo kabushiki Co., Ltd.*, 535 U.S. 722 (2002), 731-32

4) Yasuyuki Echi, *Elements with Same Effect and the Doctrine of Equivalents for Prosecution History Estoppel and at the Time of Application — with Reference to U.S. Law*, 38 NIPPON KÖGYŌ SHOYŪKENHŌ GAKKAI NENPŌ 98 (2014) [hereinafter “Element with the Same Effect”].

5) See *id.*; *Festo*, 533 U.S. at 743.

6) See *Festo*, 535 U.S. at 734-35.

4. Current Legal Principles of the Supreme Court of Korea

A. Supreme Court Decision, 2001Hu171, Decided September 6, 2002

In order for an accused invention to be within the scope of a patented invention, every element of the patented invention and the organic composite relationship between the elements as found in the patented invention must be present in the accused invention. However, even if there is a substitution or modification of an element of the accused invention, the substituted element of the accused invention is considered equivalent to the corresponding element of the patented invention and the accused instrumentality still falls within the scope of the patented invention if (i) the principles of the technical solutions are the same, (ii) the accused invention achieves the same objective and operates in a substantially same way as the patented invention despite the substitution, and (iii) the substitution is obvious to one skilled in the art, unless there are special circumstances such as (iv) the accused invention being one that was publicly known or easily derivable by one skilled in the art from art that was publicly known at the time of the invention, or (v) the substituted element having been deliberately excluded from the scope of the claims during the prosecution of the application.

If the substituted element of the accused instrumentality was “deliberately excluded from the scope of claims” during the prosecution, the doctrine of equivalents is not applicable to the accused invention. Determining what element was “deliberately excluded from the scope of claim” during the prosecution of the patented invention should be based on not only the specification of the patent, but also the opinions of the examiners and the intent of the applicant reflected in his/her amendments and remarks. If an invention has multiple claims, one must review the prosecution history of each claim to confirm which element was deliberately excluded from the claim scope, unless there are special circumstances.

The Supreme Court of Korea has recognized prosecution history estoppel by setting forth the fifth requirement that claimed equivalents should not have been “deliberately excluded from the claim scope.” The Court provided further guidance that whether or not a patentee has deliberately excluded an equivalent should be determined by considering “the specification of the patent, the opinions of the examiners, and the applicant’s intent as reflected in amendments

and arguments made during the prosecution,” but remained silent on what constitutes deliberate exclusion or how to determine the scope surrendered as a result of such exclusion.

B. Supreme Court Decision, 2005Hu1240, Decided February. 8, 2007 – Burden of Proof

The Court held that “while the [appellant] asserts that (i) the device employing three cables as practiced by the plaintiff is the element deliberately excluded as related art in the patented invention, (ii) the accused device can easily be derived from the challenged invention, which is publicly known, by a person having ordinary skill in the art, and (iii) thus the two elements are not equivalent, the person practicing the invention at issue has the burden of asserting and proving the arguments (i) through (iii), as these are elements for precluding the application of the doctrine of equivalents.”

5. The Nature of Prosecution History

Generally, estoppel applies when an applicant makes a narrowing claim amendment or correction, or argues for a narrow interpretation of the claim scope during prosecution. The view of the Korean Supreme Court appears to be that prosecution history estoppel also applies not only when an amendment is made to overcome prior art⁷⁾ and but also to satisfy other requirements of the Patent Act, such as the written description requirement.⁸⁾

7) Court precedents relating to amendment made during the prosecution are as follows: Supreme Court Decision, 2000Hu2712, decided June 14, 2002; Supreme Court Decision, 2001Hu171, decided September 6, 2002; Supreme Court Decision, 2002Hu2181, decided December 12, 2003; Supreme Court Decision, 2004Da51771, June 30, 2006; Supreme Court Decision, 2005Do4210, decided February 23, 2007. Court precedents relating to amendment made after the patent grant are as follows: Supreme Court Decision, 2002Hu2105, decided November. 26, 2004.

8) Supreme Court Decision, 2005Do4210, decided February 23, 2007 (discussing the case where the amendment was made in response to the Office action stating that “description of the effect as a result of the usage of a single drying room is not sufficient”); Supreme Court Decision, 2006Da35308, decided April 10, 2008 (discussing the case where the applicant made an amendment to limit claims of the original patent application to avoid rejection after receiving an Office action from the Korean Intellectual Property Office’s examiner pointing out lack of written description and lack of inventive step, and also filed a divisional application for part of the original claimed

In *Festo*, the Supreme Court of the United States explicitly ruled that prosecution history estoppel also applies to amendments made to address other patentability issues such as a lack of written description.⁹⁾ The holding seems to stand to this day without much objection.

A post-grant invalidation proceeding or amendment proceeding (i.e., after the grant of a patent) may be somewhat different in nature from prosecution. Nonetheless, an invalidation proceeding is in essence a reexamination of the validity of a patented invention where a substantive examination is carried out for a second time. In this regard, a contradictory assertion made during a post-grant proceeding should be viewed no differently than a contradictory assertion made during the examination of a patent application prior to its issuance, since both amount to double-dipping and secretive bypassing of the substantive examination process.¹⁰⁾

6. Types of Estoppel

A. Amendment-Based Estoppel

Amendment-based estoppel means estoppel resulting from narrowing amendments made during prosecution, and involves the issues of *Festo* presumption and the scope of estoppel as explained below.¹¹⁾

This type of estoppel does not attach to non-narrowing amendments. If an amendment made to address lack of written description is truly cosmetic, then it would not raise an estoppel issue.¹²⁾

invention; holding that the invention for which the divisional application was made shall be deemed to have been deliberately excluded from the scope of the protection of the amended invention, unless there are special circumstances). Tae-il Park, *Limitation in Application of Infringement of Equivalents Under the Principle of Prosecution History Estoppel*, 5(6) L. & Tech. 119 (2009) is also in the same position.

9) See *Festo*, 535 U.S. at 734-35.

10) Yasuyuki Echi, *Legal Grounds and Determination Structure for Prosecution History Estoppel* (4), 157(2) HORITSU RONSO 49 (2005).

11) MATTHEWS, *supra* note 1, §14:6 (2006) (explaining the scope of estoppel in the case of a narrowing amendment under the section “Scope of Estoppel from Amendments”).

12) See *Festo*, 535 U.S. at 736-36. (“Estoppel arises when an amendment is made to secure the patent and the amendment narrows the patent’s scope. If a § 112 amendment is truly cosmetic, it would not narrow the patent’s scope or raise an estoppel. But if a § 112 amendment is necessary and

B. Argument-Based Estoppel

1) Meaning

Argument-based estoppel means estoppel resulting from arguments made by the applicants, such as in responses to office actions, even though no narrowing amendment has been made.¹³⁾

2) United States

In order for a party to assert argument-based estoppel successfully, the party must show that the prosecution history evinces a clear and unmistakable surrender of particular subject matter. To determine if the particular subject matter has been surrendered, an objective test is applied inquiring “whether a competitor would reasonably believe that the applicant had surrendered the relevant subject matter.”¹⁴⁾

The *Festo* presumption, discussed below, does not apply to argument-based estoppel. Argument-based estoppel attaches to the patentee’s argument regardless of whether the patent examiner relied on the patentee’s argument to grant the patent....¹⁵⁾ The rationale for such treatment of the patentee’s argument may be found in the public notice function of patents (prosecution history is a

narrows the patent’s scope – even if only for better description – estoppel may apply”).

13) See MATTHEWS, *supra* note 1, § 14:57; Dong-joon Kim, *Doctrine of Equivalents and Prosecution History Estoppel*, 10 TEUKBYEOLBEOBYEONGU 357 (2012) [hereinafter Kim, *Prosecution History Estoppel*].

14) *AquaTex Indus., Inc. v. Techniche Sols.*, 419 F.3d 1374, 1382 (Fed. Cir. 2005), (“Doctrine of prosecution history estoppel limits doctrine of equivalents when patent applicant makes narrowing amendment for purposes of patentability, or clearly and unmistakably surrenders subject matter by arguments made to examiner. See *Festo*, 535 U.S. at 736 (narrowing amendment for purposes of patentability); see also *AquaTex Industries*, 419 F.3d at 1382. While at least one claim limitation was added here to overcome an anticipation rejection during the prosecution of the patent, Techniche does not allege amendment-based estoppel. Instead it asserts argument-based estoppel. To invoke argument-based estoppel, the prosecution history must evince a clear and unmistakable surrender of subject matter. To determine if subject matter has been relinquished, an objective test is applied, inquiring whether a competitor would reasonably believe that the applicant had surrendered the relevant subject matter.”)

15) *Laitram Corp. v. Morehouse Industries, Inc.*, 143 F.3d 1456, 1462 (Fed. Cir. 1998) (“The fact that an examiner placed no reliance on an applicant’s statement distinguishing prior art does not mean that the statement is inconsequential for purposes of claim construction”); *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1438 (Fed. Cir. 1988) (“Regardless of the examiner’s

public record of the patentee's representations concerning the scope and the meaning of the claims).¹⁶⁾

Also, there is no requirement that the patentee's argument should have been made in response to an office action for argument-base estoppel to apply.¹⁷⁾ Prosecution history estoppel can attach even to arguments that were made after the claims have been granted,¹⁸⁾ but statements not made of record in the prosecution history (e.g., statements made under a contract between a patentee and a supplier of the patented goods¹⁹⁾) do not trigger prosecution history estoppel.

However, the commentaries to the "ball spline bearing" decision²⁰⁾ of the Supreme Court of Japan²⁰⁾ take a different position from the above. That is, these commentaries explain that "if the patentee has represented to the defendant that the defendant's product was not within the technical scope of the patented invention, it can be interpreted that the special circumstances exception as set

motives, arguments made during prosecution shed light on what the applicant mean by its various terms").

16) *Springs Window Fashions LP v. Novo Industries, L.P.*, 323 F.3d 989, 996 (Fed. Cir. 2003) ("The public notice function of a patent and its prosecution history requires that a patentee be held to what he declares during the prosecution of his patent. A patentee may not state during prosecution that the claims do not cover a particular device and then change position and later sue a party who makes that same device for infringement. 'The prosecution history constitutes a public record of the patentee's representations concerning the scope and the meaning of the claims, and competitors are entitled to rely on those representations when ascertaining the degree of lawful conduct. ... Were we to accept [the patentee's] position, we would undercut the public's reliance on a statement that was in the public record and upon which reasonable competitors formed their business strategies'").

17) See MATTHEWS, *supra* note 1, § 14:68 (citing *Wang Laboratories, Inc. v. America Online, Inc.*, 197 F.3d 1377 (Fed. Cir. 1999) as an example).

18) See MATTHEWS, *supra* note 1, § 14:70 (citing *Hormone Research Foundation, Inc. v. Genetech, Inc.*, 904 F.2d 1558, 1564 n.9 (Fed. Cir. 1990) (rejecting argument that because statements were made after claims were allowed file wrapper estoppel was "automatically" precluded)).

19) *Middleton, Inc. v. Minnesota Mining and Manufacturing Co.*, 311 F.3d 1384, 1389 (Fed. Cir. 2002) ("The meaning of a patent term, however, is not subject to revision or alteration by subsequent contract between the patentee and its suppliers. The meaning of patent terms depends on the usage of those terms in context by one of skill in the art at the time of application. Patent terms are not subject to later revision by a supply contract.").

20) Saikō Saibansho [Sup. Ct.] Feb. 24, 1998, Hei 6 (oh) no. 1083, 52(1) SAIKŌ SAIBANSHO MINJI HANREISHŪ [MINSHŪ] 113.

forth in the fifth requirement for equivalents are present.”²¹⁾ The foregoing circumstance is not part of prosecution history and thus cannot be viewed as applying “prosecution history” estoppel, but may arguably satisfy the “special circumstances” exception as set forth in the fifth requirement for equivalents established under the Korean court precedents.

3) Korea

The Korean Supreme Court did not go beyond stating “during the prosecution of the application” for the fifth requirement,²²⁾ and did not make a distinction between amendment-based estoppel and argument-based estoppel. Judging from the Court’s above holding on the determination of the patentee’s deliberate exclusion, there seems to be no reason to exclude the argument-based estoppel.

7. Scope (Effect) of Estoppel

What is contested in practice is the scope of the estoppel. If a court finds that estoppel applies, the next issue is the extent of what was surrendered by the patentee.

In particular, this may be presented as a question of whether a patentee is completely barred from invoking the doctrine of equivalents (i.e., a complete bar), or whether there remains some room to find equivalents for the elements narrowed through amendment (i.e., a flexible bar).

This paper will look into the views of U.S. courts first, since Germany²³⁾ and the United Kingdom do not consider prosecution history in determining the

21) Ryoichi Mimura, Explanation on Japanese Supreme court’s Civil Cases 1998 (1) 157-58 (2001); Nobuyuki Matsunaga, *Essay on the Fifth Requirement for Infringement of Equivalents – Circumstances That Do Not Fall under Special Circumstances*, 66(13) PATENT 80 (2013).

22) E.g., Supreme Court Decision, 2001Hu171, decided on September. 6, 2002.

23) See Atsushi Kawada, *New Movements of the Doctrine of Equivalents in Germany – in Particular, regarding likely consideration of examination procedures, etc.*, 38 NIPPON KŌGYŌ SHOYŪKENHŌ GAKKAI NENPŌ 138 (2014) (citing Bundesgerichtshof [BGH] [Federal Court of Justice] Mar. 12, 2002, Gewerblicher Rechtsschutz und Urheberrecht [GRUR] 511, 2002 (Ger.) (The Kunststoffrohrteil Case) (holding that to the effect that the definition of the scope of protection is based only on claims, specifications and drawings, but not on prosecution history)). Yasuyuki

scope of patent protection.²⁴⁾

II. Legal Principles of Prosecution History Estoppel in the U.S.

1. Elements for Applying the *Festo* Presumption (Amendment-Based Estoppel)

The U.S. Supreme Court opinions in the 1997 *Warner-Jenkinson* case²⁵⁾ and the 2002 *Festo* case²⁶⁾ largely settled the inconsistencies and uncertainties in how U.S. courts had been applying the elements and the scope of prosecution history estoppel. The legal principles established through *Warner-Jenkinson* and *Festo* are

Echi, *Legal Grounds and Determination Structure for Prosecution History Estoppel* (1), 155(6) HORITSU RONSO 7, 7-8 (2005) (citing Bundesgerichtshof [BGH] [Federal Court of Justice] April 29, 1986, Gewerblicher Rechtsschutz und Urheberrecht [GRUR] 803, 1986 (Ger.) (The Formstein Case) (holding that although Germany does not utilize the file wrapper estoppel as the means to prohibit assertions against the narrowing act in the examination, (i) the principle of narrowing the scope of protection is established when a “surrender” or “limitation” is stated in the specification, and (ii) if the narrowing amendment is made to resolve the reason for rejection due to the existence of prior art as a typical example of file wrapper estoppel and the counterparty’s element is the prior art, infringement of equivalents is denied by defense of freely exploited invention)) [hereinafter Echi, *Legal Grounds and Determination Structure*]

24) See Kim, *Prosecution History Estoppel*, *supra* note 13, at 383.

25) *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17 (1997).

The fact of the *Warner-Jenkinson* case can be summarized as follows: This case dealt with a patent relating to a dye purification process. The statement “about pH6.0~9.0” in the claims was added by amendment, clearly with the intention to avoid the prior art which disclosed the upper limit as pH9.0 or more. However, the patentee did not clearly explain the statement that the lower limit of pH was stated as 6.0. The defendant’s invention related to a process performed at pH5.0.

The CAFC held that the portion surrendered by amendment was only the scope beyond pH9, but no disturbances are caused in asserting equivalents with respect to the scope below pH6. However, the US Supreme Court remanded the case to the effect that the reason for adding the lower limit of pH by the amendment is not clear in the record and thus additional hearing is needed. On remand, the CAFC remanded the case to the first instance court to the effect that a hearing should be conducted regarding whether the presumption that the reason for amendment substantially relates to patent requirements can be reversed. *Hilton Davis Chemical Co. v. Warner-Jenkinson Co.*, 114 F.3d 1161 (Fed. Cir. 1997). The district court’s decision could not be found.

26) *Festo*, 535 U.S. 722.

discussed below.²⁷⁾ The *Festo* decision includes the decision of the Court of Appeals for the Federal Circuit (“CAFC”) before remand (complete bar),²⁸⁾ the U.S. Supreme Court decision (presumptive bar), and the CAFC decision after remand,²⁹⁾ as will be distinguished and indicated below. The two requirements for estoppel that the U.S. Supreme Court’s *Festo* decision are as follows.

1) Narrowing Amendment of Claims

If an amendment does not constitute a narrowing amendment, then it would not give rise to an estoppel.³⁰⁾ On remand, the CAFC found that a “voluntary amendment” may also give rise to estoppel,³¹⁾ adding that the Supreme Court did not expressly hold otherwise.³²⁾

2) Reasons for Amendment Should Directly Relate to Patentability

If the prosecution history record does not reveal the reasons for the narrowing amendment, the court is to presume that the amendment was made for a substantial reason related to patentability. This is called the *Warner-Jenkins* presumption.

In order to rebut this presumption, the patentee must prove that the reasons for the amendment do not relate to patentability regardless of whether the amendment was made to avoid the prior art or to satisfy the written description requirement.^{33), 34)}

On remand, the CAFC held that the patentee’s rebuttal evidence to overcome

27) See *Warner-Jenkinson Co.*, 520 U.S. 17; *Hilton Davis Chemical Co.*, 114 F.3d 1161; *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 344 F.3d 1359 (Fed. Cir. 2003).

28) *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558 (Fed. Cir. 2000).

29) *Festo*, 344 F.3d 1359.

30) *Festo*, 535 U.S. at 736 (“We agree with the Court of Appeals that a narrowing amendment made to satisfy any requirement of the Patent Act may give rise to an estoppel.”).

31) With respect to this, Judge Newman made dissenting opinion comments in the CAFC decision before remand. *Festo*, 234 F.3d at 630 (Newman, J., dissenting).

32) *Festo*, 344 F.3d at 1366.

33) *Festo*, 535 U.S. at 736-37 (“A patentee who narrows a claim as a condition for obtaining a patent disavows his claim to the broader subject matter, whether the amendment was made to avoid the prior art or to comply with § 112.”).

34) With respect to this, Judge Newman made dissenting opinion comments in the CAFC decision before remand. *Festo*, 234 F.3d at 630 (Newman, J., dissenting).

the *Warner-Jenkinson* presumption is restricted to the evidence in the prosecution history record, so as not to undermine the public notice function served by that record.³⁵⁾ Judge Newman dissented to the CAFC decision before remand, stating that “[T]he rebuttable presumption concerning the reason for an amendment, which presumption arises when the prosecution record is silent as to the reason for the amendment, cannot be rebutted with evidence outside of the prosecution record. The rebuttable presumption thereby becomes irrebuttable, because the prosecution record is necessarily silent in order for the presumption to arise at all.”³⁶⁾

Prosecution is a process of obtaining a patent. If the reasons for amendment are not clearly specified, it appears almost impossible to overcome the presumption by proving that the reasons for the amendment are unrelated to patentability (as there is no reason in principle to make an amendment that is not related to the grant of a patent). In this respect, this requirement does not appear to be significant, and there seems to be no meaningful discussions in the Korean patent law practice.

2. Effect of the *Festo* Presumption – Surrendered Scope

A. *Presumption of Surrendered Scope (Festo Presumption)*

Estoppel applies if (1) a narrowing amendment was made, and (2) it is substantially related to patentability. Then the scope surrendered by the narrowing amendment must be determined. In accordance with the *Festo* presumption, a patentee’s decision to narrow his claims through amendment may be presumed to be a general disclaimer of the territory between the original claim and the amended claim.³⁷⁾ Whereas the *Warner-Jenkinson* holding relates to a patentee’s burden of proof to show that estoppel should not apply, the *Festo* holding relates to a patentee’s burden of showing (upon finding that estoppel applies) that the amendment did not surrender an equivalent feature in question.³⁸⁾

35) *Festo*, 344 F.3d at 1367.

36) *Festo*, 234 F.3d at 632.

37) *Festo*, 535 U.S. at 740.

38) *Id.* (“Just as *Warner-Jenkinson* held that the patentee bears the burden of proving that an amendment was not made for a reason that would give rise to estoppel, we hold here that the

B. Rebuttal of the Festo Presumption

In order to rebut this presumption, the patentee must prove that its case falls within one of the following three criteria:

Criterion (1): The alleged equivalent would have been unforeseeable at the time of the narrowing amendment.³⁹⁾

- **Timing:** While the U.S. Supreme Court stated “at the time of the application” on page 740 of *Festo*, 535 U.S. 722, it also stated “at the time of the amendment” on page 741.⁴⁰⁾ The expression “at the time of the amendment” seems more appropriate as the CAFC held after remand.⁴¹⁾

Criterion (2): The rationale underlying the amendment bore no more than a tangential⁴²⁾ relation to the equivalent in question.

Criterion (3): There was “some other reason” suggesting that the patentee could not reasonably have been expected to have described the alleged equivalent.

C. Explanation by the CAFC after Remand

1) Concerning the Rebuttal of the Presumption under Criterion (1)

“This criterion presents an objective inquiry, asking whether the alleged

patentee should bear the burden of showing that the amendment does not surrender the particular equivalent in question.”).

39) *Id.* (“The patentee, as the author of the claim language, may be expected to draft claims encompassing readily known equivalents.”). This means that already (easily) known equivalents are foreseeable.

40) *Id.* at 741 (“The patentee must show that at the time of the amendment one skilled in the art could not reasonably be expected to have drafted a claim that would have literally encompassed the alleged equivalent.”).

41) *Festo*, 344 F.3d at 1365, n.2 (“The time when the narrowing amendment was made ...is the relevant time for evaluating unforeseeability, for that is when the patentee presumptively surrendered the subject matter in question and it is at that time that foreseeability is relevant.”).

42) Daum English-English Dictionary, DAUM, [http:// dic.daum.net / index.do?dic=ee](http://dic.daum.net/index.do?dic=ee) (search “tangential”) (“of superficial relevant if any”).

The American Heritage College Dictionary 1385 (3d ed. 1997) (defining “tangential” as “[m]erely touching or slightly connected” or “[o]nly superficially relevant; divergent”); 2 The New Shorter Oxford English Dictionary 3215-16 (1993) (defining “tangential” as “merely touch[ing] a subject or matter; peripheral”); *Festo*, 344 F.3d at 1367.

equivalent would have been unforeseeable to one of ordinary skill in the art at the time of the amendment.”⁴³⁾ If the alleged equivalent represents a later-developed technology (at the time of the amendment) (e.g., transistors in relation to vacuum tubes, or Velcro® in relation to fasteners) or a technology unknown to the relevant technical field, such technology would have been unforeseeable. On the other hand, old technology would likely have been foreseeable.⁴⁴⁾

Objective unforeseeability depends on underlying factual issues relating to, for example, the state of the art and the understanding of a hypothetical person of ordinary skill in the art at the time of the amendment. Thus, a court should hear expert testimony and the prosecution history, as well as other extrinsic evidence in analyzing the underlying factual issues.⁴⁵⁾

2) Concerning the Rebuttal of the Presumption under Criterion (2)

Although the examples of mere tangentialness cannot be enumerated, an amendment made to avoid prior art that contains the equivalent in question is not tangential, and thus it is relevant (which is deemed as a surrender), as it is critical to allowance of the claim.⁴⁶⁾

“[M]uch like the inquiry into whether a patentee can rebut the *Warner-Jenkinson* presumption that a narrowing amendment was made for a reason of patentability, the inquiry into whether a patentee can rebut the *Festo* presumption under the ‘tangential’ criterion focuses on the patentee’s objectively apparent reason for the narrowing amendment.”⁴⁷⁾ Therefore, as with the *Warner-Jenkinson* presumption, a court should be able to determine the reason for the

43) *Festo*, 344 F.3d at 1369.

44) *Id.* (“Usually, if the alleged equivalent represents later-developed technology (e.g. transistors in relation to vacuum tubes, or Velcro® in relation to fasteners) or technology that was not known in the relevant art, then it would not have been foreseeable. In contrast, old technology, while not always foreseeable, would more likely have been foreseeable.”).

45) *Id.* (“By its very nature, objective unforeseeability depends on underlying factual issues relating to, for example, the state of the art and the understanding of a hypothetical person of ordinary skill in the art at the time of the amendment. Therefore, in determining whether an alleged equivalent would have been unforeseeable, a district court may hear expert testimony and consider other extrinsic evidence relating to the relevant factual inquiries.”).

46) *Id.* (“Although we cannot anticipate the instances of mere tangentialness that may arise, we can say that an amendment made to avoid prior art that contains the equivalent in question is not tangential; it is central to allowance of the claim.”).

47) *Id.*

amendment from the prosecution history record, without introducing other extrinsic evidence, except the testimony of a person having ordinary skill in the art regarding the interpretation of the prosecution history.⁴⁸⁾

3) Concerning the Rebuttal of the Presumption under Criterion (3)

This criterion should be narrowly interpreted despite the vague language. The purpose of this criterion is to show that overcoming the presumption by reasons other than Criteria (1) and (2) is not completely barred. Thus, Criterion (3) can be viewed as a supplemental criterion.⁴⁹⁾ This criterion may be viewed as addressing shortcomings of language, for example.

When at all possible, determination of this criterion should be limited to the prosecution history records.⁵⁰⁾ The following CAFC case illustrates an example of such treatment:

In *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 457 F.3d 1293, 1316 (Fed. Cir. 2006), the court found that where “the patentee knew of the 165- amino acid sequence at the time of the amendment, but chose to limit the claims to the 166- amino acid sequence, whether the patentee, the examiner, or a person of skill in the art may have thought the claims encompassed EPO with 165-amino acids does not excuse the patentee’s failure to claim the equivalent.” The court further found that “there were no shortcomings of language that might have prevented the patentee from claiming EPO having 165 amino acids.” Based on the foregoing, the court concluded that Amgen has not rebutted the Festo presumption.

48) *Id.* (“As we have held in the *Warner-Jenkinson* context, that reason should be discernible from the prosecution history record, if the public notice function of a patent and its prosecution history is to have significance... Thus, whether the patentee has established a merely tangential reason for a narrowing amendment is for the court to determine from the prosecution history record without the introduction of additional evidence except, when necessary, testimony from those skilled in the art as to the interpretation of that record.”).

49) *Id.* at 1370 (“This category, while vague, must be a narrow one; it is available in order not to totally foreclose a patentee from relying on reasons, other than unforeseeability and tangentialness, to show that it did not surrender the alleged equivalent.”).

50) *Id.* (“When at all possible, determination of the third rebuttal criterion should also be limited to the prosecution history record.”).

D. Related Issues

1) Subject of Foreseeability for the Rebuttal of the Presumption under Criterion (1) (i.e., whether it is enough that the existence of the substitute is foreseeable or whether it should also be foreseeable that the substitute is the equivalent)

The CAFC after remand found that the plaintiff failed to rebut the *Festo* presumption under criteria (2) and (3), but remanded the case to the district court to decide whether the plaintiff had successfully rebutted the presumption under criterion (1). The district court⁵¹⁾ decided that the plaintiff also failed to rebut the presumption under criterion (1).⁵²⁾

On appeal,⁵³⁾ the plaintiff *Festo* argued that foreseeability is established when the defendant's contested element satisfies the equivalence test at the time of amendment. However, the CAFC ruled that foreseeability is not established even if the equivalence was not known, in case a person having ordinary skill in the art could have known of the existence of the defendant's element at the time of amendment (i.e., if the existence of the defendant's elements was known to a person having ordinary skill in the art). The CAFC provided the following grounds for its determination:

(1) The function / way / result ("FWR")⁵⁴⁾ or insubstantial differences⁵⁵⁾ test acts as a basis for determining equivalence or non-equivalence, and not for determining applicability of estoppel.⁵⁶⁾

51) *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, No. Civ.A. 88-1814-PBS, 2005 WL 1398528, at *1 (D. Mass. June 10, 2005).

52) *Id.*; *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, No. Civ.A. 88-1814-PBS, 2006 WL 47695, at *1 (D. Mass. Jan. 10, 2006).

53) *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 493 F.3d 1368 (Fed. Cir. 2007), and cert. denied, 553 U.S. 1093 (2008).

54) *Graver Tank v. Linde Air Product Co.*, 339 U.S. 605 (1950) (holding that a patentee may invoke doctrine of equivalents to proceed against producer of a device if it performs substantially the same function in substantially the same way to obtain same result as patentee's device). It can be viewed that the "function" and the "result" correspond to substitutability (substantially same effect) requirement and the "way" corresponds to the requirement for the means to solve problems in Korea.

55) *Warner-Jenkinson Co.*, 520 U.S. 17 (holding that more proper criteria rather than a single criterion may be utilized on a case by case and allowed the CAFC to establish a specific method for testing the doctrine of equivalents).

56) *Festo*, 493 F.3d at 1380 ("First, the function / way / result or insubstantial differences test is designed

(2) If the plaintiff Festo's argument was to be accepted, prosecution history estoppel becomes meaningless. It is rare for an applicant to have made a narrowing amendment while being aware that the equivalent would be an equivalent to the claimed feature as defined by the amended claim, and even rarer to have failed to claim the equivalent while being aware of such an alternative.⁵⁷⁾

(3) If the plaintiff's argument was to be accepted, it would lead to an odd situation where the patentee would end up making contradictory assertions, arguing that the FWR test is satisfied for purposes of infringement and that it is not satisfied for purposes of prosecution history estoppel.⁵⁸⁾

(4) An equivalent that is foreseeable as an alternative to the broader claimed feature does not become unforeseeable simply because the claimed feature is narrowed. For example, for a claim directed broadly to a metal bulb filament but was later amended to avoid prior art and to specify metal A for its longevity, the equivalent metal B is not unforeseeable if it was known in the prior art to function as a bulb filament even when its longevity was unknown.⁵⁹⁾

With respect to the foregoing opinion of the CAFC, there are criticisms as follows.

(i) Judge Newman's Dissent

to determine whether the alternative is sufficiently close to the claimed feature that the patentee should be able to capture the equivalent and bar its use by a competitor.”)

57) *Id.* at 1380-81 (“Second, accepting Festo's view of foreseeability would likely eliminate file wrapper estoppel as a restriction on the doctrine of equivalents in most cases. Prosecution history estoppel would apply only if the applicant in adopting the narrowing amendment was aware or should have been aware that the equivalent would be an equivalent to the claimed feature for purposes of the invention as defined by the amended claim. This in itself would be rare, and it would be rarer still that the applicant, aware of such an alternative, would have failed to claim it in the first instance.”).

58) *Id.* at 1381 (“For purposes of infringement, the patentee would assert that it was clear beyond question that the unclaimed feature served the identical function in the same way and achieved the same result as the claimed feature, and the accused infringer would argue the opposite. The roles would then be reversed on the issue of prosecution history estoppel with the patentee arguing that no one skilled in the art could possibly have foreseen the alternative as equivalent, and the accused infringer arguing that it was clear at the time of amendment that the equivalent satisfied the function / way / result test.”).

Since the evidence of foreseeability should be limited by prior art rather than by future art, the defendants' (SMC's) later use of an equivalent element cannot be viewed as having been foreseeable at the time of application (or at the time of amendment).^{60), 61)} Judge Newman further urged that the U.S. Supreme Court's guidance to "readily known equivalents" in its *Festo* decision should be followed, and that only those equivalents that were foreseeable at the time of application (or at the time of amendment) were barred.⁶²⁾

(ii) Opinions in Japan

Even if the existence of a material having an identical effect itself is known to a person having ordinary skill in the art, if it is not obvious for a person having ordinary skill in the art to actually substitute the material with identical effect for a claim element and to make the substituted equivalent work in the same way, it would place an excessive burden on the applicant, who is also a person having ordinary skill in the art, to require the material with identical effect be specified in the claims.⁶³⁾ That is, substitutability and obviousness of substitution are determined at the time of application as well as at the time of infringement.⁶⁴⁾

59) *Id.* ("In other words, an equivalent that is foreseeable as an alternative to the broader claimed feature does not become unforeseeable simply because the claimed feature is narrowed. For example, if a claim before amendment broadly claimed a metal filament for a light bulb but was later amended to avoid prior art and to specify metal A because of its longevity, the equivalent metal B, known in the prior art to function as a bulb filament, is not unforeseeable even though its longevity was unknown at the time of amendment.").

60) *Id.* at 1385, n.2 ("In using these words, the Court did not distinguish among the time of filing, amendment, or grant; such distinction need not be resolved on the facts of this case.").

61) *Id.* at 1385 ("Evidence of foreseeability must be limited to prior art, not future art. It is not the correct interpretation of foreseeability, to rely on SMC's later equivalent use of an aluminum alloy sleeve to prove that the non-magnetizable aluminum alloy was a foreseeable equivalent of a magnetizable metal, "at the time of the application" for the [Stoll patent].").

62) *Id.* at 1386 ("The fact of whether technologic equivalency was known cannot be irrelevant to foreseeability, for the foreseeability bar is directed to subject matter that was foreseeably equivalent at the time of filing and amendment. This is evident from *Festo* VIII's guidance to 'readily known equivalents.'"); *Festo*, 535 U.S. at 740 ("The patentee, as the author of the claim language, may be expected to draft claims encompassing readily known equivalents"). It means that the readily known equivalents are foreseeable.

63) Echi, *Element with the Same Effect*, *supra* note 4 at 105.

64) Although the Korean Supreme Court has not made any explicit ruling regard, it, the Japanese and U.S. Supreme Courts deem "at the time of infringement" as the base time.

However, it should be noted that substitutability and obviousness of substitution at the time of application would not be inquired into until and unless the accused infringer raises a defense under the fifth requirement for doctrine of equivalents.⁶⁵⁾ This is the theory of “material with identical effect at the time of application” in Japan, which will be explained in detail below.

2) Whether the Presumption Can Be Rebutted under Criteria (1) or (3) if the Amendment Was Impermissible as Introducing New Matter

Reference is made to *Glaxo Wellcome, Inc. v. Impax Labs., Inc.*, 356 F.3d 1348 (Fed. Cir. 2004). In that case, the plaintiff Glaxo argued that the *Festo* presumption should be rebutted since the “new matter doctrine”⁶⁶⁾ prohibited the applicant from making an amendment to add the defendant’s element (HPC) that was not disclosed in the specification as filed. The CAFC rejected Glaxo’s argument, since (i) the new matter doctrine does not relate to the rebuttal of the *Festo* presumption,⁶⁷⁾ and (ii) the applicant should have foreseen the equivalent at issue at the time of filing or amending the application or at the time of amendment (i.e., the *Festo* presumption cannot be rebutted).⁶⁸⁾

65) Echi, *Element with the Same Effect*, *supra* note 4 at 105.

66) 35 U.S.C. § 132(a) (2012) (“Whenever, on examination, any claim for a patent is rejected, or any objection or requirement made, the Director shall notify the applicant thereof, stating the reasons for such rejection, or objection or requirement, together with such information and references as may be useful in judging of the propriety of continuing the prosecution of his application; and if after receiving such notice, the applicant persists in his claim for a patent, with or without amendment, the application shall be reexamined. No amendment shall introduce new matter into the disclosure of the invention.”). This is similar to Teukeobeob [Patent Act], Act No. 238, April 13, 1952, *amended by* Act No. 14691, Sept. 2017, art. 47(2) (S. Kor.) (The amendment of specifications or drawings under paragraph (1) above shall be within the scope of the matters stated in the specification or drawing that was initially attached at the time of application.”).

67) *Glaxo Wellcome, Inc. v. Impax Labs., Inc.*, 356 F.3d 1348, 1354 (Fed. Cir. 2004) (“In the first place, new matter prohibitions are not directly germane to the doctrine of equivalents or the patentee’s proof to overcome the *Festo* presumption. ... In fact, the quintessential example of an enforceable equivalent, after-arising technology, would always be unclaimable new matter. In that sense, the doctrine of equivalents compensates for the patentee’s inability to claim unforeseeable new matter.”).

68) *Id.* (“The Supreme Court ties foreseeability to whether the applicant would have been expected to know of, and thus properly claim, the proposed equivalent at the time of amendment. The Supreme Court’s passage addresses the time of amendment only and does not address the instance where the applicant could not properly claim a known equivalent because it had

There is a differing view that prosecution history estoppel should not apply to limit the application of the doctrine of equivalents if the applicant did not deliberately leave out the known substitute but rather was prohibited from amending the claim to include the substitute due to the new matter doctrine.⁶⁹⁾

E. Summary

Although the U.S. Supreme Court's presumptive bar is not technically a complete bar, the presumptive bar is in practice close to a complete bar because the entire scope of equivalents between pre- and post-amendment is presumed to have been surrendered if the reason for the amendment is not evident. The CAFC's subsequent position made the rebuttal of such presumption almost impossible.

According to 2 Annotated Patent Digest §§ 14:47 and 48, among the CAFC decisions rendered after the *Festo* decision by the U.S. Supreme Court, there have been 10 decisions that found that the presumption was not rebutted under criterion (1). There is no CAFC decision that found the presumption was rebutted under the criterion; only one district court found that the presumption was rebutted.⁷⁰⁾ No CAFC decision held that the presumption was rebutted under criterion (3).⁷¹⁾ Most of the cases where the rebuttal of the

purposely left that known substitute out of its disclosure at the time of filing. In such an instance, the applicant should have foreseen and included the proposed equivalent in its claims at the time of filing. The Supreme Court states clearly in *Festo*: 'The patentee, as the author of the claim language, may be expected to draft claims encompassing readily known equivalents.' 535 U.S. at 740. The Supreme Court excuses an applicant from failure to claim a proposed equivalent in the event "[t]he equivalent may have been unforeseeable at the time of application," *id.*, or, as this court has explained, at the time of the amendment. *Festo* IX, 344 F.3d at 1365 n.2 ('[T]he time when the narrowing amendment was made...is the relevant time for evaluating unforeseeability, for that is when the patentee presumptively surrendered the subject matter in question and it is at that time that foreseeability is relevant'). In any event, read in context, the Supreme Court in *Festo* neither excuses an applicant from failing to claim "readily known equivalents" at the time of application nor allows a patentee to rebut the *Festo* presumption by invoking its own failure to include a known equivalent in its original disclosure. Instead, the critical inquiry is whether Glaxo could have foreseen sustained release agents for bupropion other than HPMC at the time of filing or amendment.").

69) Echi, *Element with the Same Effect*, *supra* note 4 at 104.

70) *Sprint Communications Co. L.P. v. Vonage Holdings Corp.*, 518 F. Supp. 2d 1306 (D. Kan. 2007).

71) See MATTHEWS, *supra* note 1, §§ 14:55, 14:56 (citing the CAFC decisions, such as *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 457 F.3d 1293 (Fed. Cir. 2006), cert. denied, 550 U.S. 953 (2007); *Biagro*

presumption was acknowledged related to criterion (2), which will be discussed later.

3. Scope of Equivalents Excluded by Estoppel⁷²⁾

With respect to the scope of equivalents excluded by the doctrine of estoppel, at the beginning of the establishment of the CAFC, the court was split⁷³⁾ between a flexible bar⁷⁴⁾ and a complete bar.⁷⁵⁾ However, from 1984 to 1997 when the *Warner-Jenkinson* decision was issued, it is said that every panel of the CAFC took the flexible bar approach.⁷⁶⁾

A. Flexible or Spectrum Approach⁷⁷⁾

The flexible or spectrum approach takes the position that amendments do not trigger a broad application of estoppel. The representative court decision would be *Hughes Aircraft Co. v. U.S.*, 717 F.2d 1351 (Fed. Cir. 1983). In that decision, the court held that “depending on the nature or purpose of an amendment, it may have a limiting effect within a spectrum ranging from great to small to zero. ... [The amendment] is not fatal to application of the doctrine itself.”⁷⁸⁾ In particular, the

Western Sales, Inc. v. Grow More, Inc., 423 F.3d 1296 (Fed. Cir. 2005); and *Talbert Fuel Systems Patents Co. v. Unocal Corp.*, 347 F.3d 1355 (Fed. Cir. 2003), (holding that a patentee failed to rebut the *Festo* presumption under criterion ③, and explaining that two decisions seem to have found that a patentee overcame the *Festo* presumption under criterion ③).

72) This section will focus on summarizing the majority opinion (complete bar) and the dissenting opinion (flexible bar) of *Festo*, 234 F.3d 558.

73) *Festo*, 234 F.3d at 572 (explaining that prior to creation of the Federal Circuit, some regional circuits had followed a flexible bar approach, whereas others had applied a strict rule of complete surrender); but see *Festo*, 234 F.3d at 610-11 (Michel, J., Rader J., dissenting) (explaining that the *Kinzenbaw* case “simply found that the surrender covered the accused subject matter.”).

74) *Hughes Aircraft Co. v. U.S.*, 717 F.2d 1351 (Fed. Cir. 1983).

75) *Kinzenbaw v. Deere & Co.*, 741 F.2d 383 (Fed. Cir. 1984).

76) Donald S. Chisum, *Chisum on Patents* 5A, at §§18.05[3][b][i], 18-497 (1998); *Festo*, 234 F.3d at 573-74.

77) Ki-moon Sung, *Consideration of File wrapper estoppel in Patent Litigation*, 43 SABEOMNONJIP 709 (explaining that the expression “partial recapture rule” can also be used to mean that equivalents may still apply to the matters which are not acknowledged to have been surrendered out of the portion narrowed by amendment).

78) *Hughes*, 717 F.2d at 1363.

CAFC criticized the “wooden application of estoppel”⁷⁹⁾ by other circuit courts that held that an amendment made to the claim triggers estoppel to entirely preclude the application of the doctrine of equivalents, stating that such application of estoppel would leave no room for infringement by equivalents, and patentees would be limited to the strict literal terms of the claims in asserting infringement.⁸⁰⁾

Following the *Warner-Jenkinson* decision, there are other decisions that took a similar position such as *Litton Systems, Inc. v. Honeywell, Inc.* decision (“[E]stoppel only bars recapture of that subject matter actually surrendered during prosecution. ... [A]mending a claim during prosecution does not necessarily surrender all subject matter beyond the literal scope of the amended claim limitation”)⁸¹⁾ and *Merck & Co., Inc. v. Mylan Pharmaceuticals, Inc.* decision (the extent of prosecution history estoppel “must be determined from what was relinquished, in light of the prior art”).⁸²⁾

B. Absolute or Complete Bar

However, the flexible approach discussed above was discarded by the 2000 CAFC decision before remand,⁸³⁾ and the CAFC instead adopted a complete bar, which completely precluded the application of the doctrine of equivalents with respect to amended claim limitations. The basis of the complete bar is certainty and predictability, which are helpful in addressing difficulties with regard to confirming the scope of protection of a patented invention.

For example, if a claim specifying a value of 20 or less was narrowed to 5 or less due to the prior art disclosing 15, the patent’s scope is unclear from the

79) *Nationwide Chemical Corp. v. Wright*, 584 F.2d 714, 718-19 (5th Cir. 1978); *Ecko Products Co. v. Chicago Metallic Manufacturing Co.*, 347 F.2d 453, 455 (7th Cir. 1965).

80) *Hughes*, 717 F.2d at 1362.

81) *Litton Systems, Inc. v. Honeywell, Inc.*, 140 F.3d 1449, 1455 (Fed. Cir. 1998) (“This court determines in this opinion that the Supreme Court did not in fact effect such a sweeping change. Instead the Supreme Court adhered to the longstanding doctrine that an estoppel only bars recapture of that subject matter actually surrendered during prosecution. The common practice of amending a claim during prosecution, even amending to overcome prior art, does not necessarily surrender all subject matter beyond the literal scope of the amended claim limitation.”).

82) *Merck & Co. v. Mylan Pharmaceuticals, Inc.*, 190 F.3d 1335, 1341 (Fed. Cir. 1999) (“Prosecution history estoppel is not automatic as to everything beyond the literal scope of the claim; its extent must be determined from what was relinquished, in light of the prior art.”).

83) *Festo*, 234 F.3d 558.

perspective of the flexible position (i.e., whether the scope is close to 5 or 15, or whether equivalents can be asserted if the scope is 15 or less).⁸⁴⁾

In the case of the flexible bar, the conclusion may vary depending on the court and thus patentees would argue equivalence “in the hope that one panel might find equivalence where another would not.”⁸⁵⁾ There is also an opinion that the complete bar can be deemed to grant a patentee incentives to prepare complete and comprehensive patent application documents,⁸⁶⁾ and has an advantage of allowing competitors to participate in technology development without fear of infringement lawsuits and liabilities.⁸⁷⁾ Although the dissenting opinion (supporting a flexible bar) stated that the complete bar may drastically limit the scope of protection for biotechnology patents, the concurring opinion provided additional grounds for argument by pointing out that “even under the past rule of flexible bar, no courts has rendered a decision holding infringement only under the doctrine of equivalents.”⁸⁸⁾

C. Presumptive Bar

As explained above, the 2002 *Festo* decision by the U.S. Supreme Court discarded the CAFC’s complete bar approach and adopted the presumptive bar approach. This approach is a sort of a flexible bar approach, taking a de facto presumption in determining whether there was a surrender of an equivalent. Nonetheless, the presumptive bar will herein be treated as a separate position from the foregoing two approaches.

4. CAFC Decisions Which Denied Application of Estoppel (Acknowledged Equivalents) Following the *Festo*⁸⁹⁾

84) *Festo*, 234 F.3d at 577.

85) *Festo*, 234 F.3d at 596 (Lourie, J., concurring).

86) See R. Polk Wagner, *Reconsidering Estoppel: Patent Administration and the Failure of Festo*, 151 U. PA. L. REV. 159, 217 (2002).

87) *Festo*, 234 F.3d at 597 (Lourie, J., concurring).

88) *Festo*, 234 F.3d at 598 (Lourie, J., concurring).

89) This is based on the discussion on amendment-based estoppel cases of the CAFC cases following the US Supreme Court decision regarding the *Festo* case under Chapter 14. Prosecution History Estoppel, VII. Case Examples on Prosecution History Estoppel (Amendment-Based and Argument-Based), B. Refusing to Apply an Estoppel of MATTHEWS, *supra* note 1, § 14:95.

Given that the presumption of a surrender is a strong one, cases where parties have overcome the presumptive bar are few in numbers.⁹⁰⁾ The followings are a few of such rare cases.

1) *Instituorm Technologies, Inc. v. CAT Contracting, Inc.*, 385 F.3d 1360 (Fed. Cir. 2004)

	Amendment	Before Amendment
	Territory Presumed to be surrendered	
Short distance, a single cup		Long distance, plural cups

This case can be viewed as one which needed an inquiry into whether the relation between the amendment and the infringing equivalent was tangential, since the defendant’s infringing equivalent belonged to the territory presumed to be surrendered (a plurality of cups).

Claims 1 to 4 before amendment did not specify the location of the vacuum source, and Claim 4 before amendment specified that there was a “single” vacuum cup.⁹¹⁾ The reason for rejection was that the prior art included a vacuum source that was located in an opposite far end of a resin source.

The applicant amended Claim 1 to incorporate the elements of Claims 2 to 4, and argued that Claim 1 was not-obvious over the prior art because the proximity of the vacuum source to the resin source avoided the need to use a large compressor.⁹²⁾

The court held that the narrowing amendment in this case has a tangential relation with the number of the vacuum cups, and thus the defendant’s infringing equivalent using a plurality of cups is not limited by estoppel (the prosecution history record does not indicate any relation between the narrowing amendment and the plural cups which are the elements of the accused product).⁹³⁾

90) See MATTHEWS, *supra* note 1, §14:37
91) *Instituorm Technologies, Inc. v. CAT Contracting, Inc.*, 385 F.3d 1360, 1369 (Fed. Cir. 2005).
92) *Id.*
93) *Id.* at 1370.

2) *Primos, Inc. v. Hunter's Specialties, Inc.*, 451 F.3d 841 (Fed. Cir. 2006)

	Amendment	Before Amendment
		Territory presumed to be surrendered
Differential space		Non-differential space

This case relates to a diaphragm mouth call that hunters use to simulate animal sounds, and the defendant's product had a dome extending above the membrane, instead of a shelf or a plate, as claimed in the plaintiff's patent.⁹⁴⁾ During the prosecution process, in order to avoid the prior art having a structure positioned on top of the membrane 22 without any spacing, the applicant amended the claims by adding (1) a plate having a length and (2) that the plate was "differentially spaced" above the membrane. The CAFC held that although the claims were narrowed by limitation (2) above, the subject matter surrendered by that amendment involved "objects that are not differentially spaced above the membrane." Because the accused product contained a dome that was spaced above the membrane, the court found that the dome of the accused products had a tangential relation with the aforementioned amendment. Therefore, the CAFC affirmed the district court's decision which held that the application of the doctrine of equivalents was not precluded by estoppel.⁹⁵⁾

It is the opinion of the author of this article that it was unnecessary to even consider whether there is any tangential relation, given that the defendant's element also had the differential space and thus did not fall within the surrendered area (i.e., non-differential space).

3) *Regents of University of Cal. v. Dakocytomation Cal., Inc.*, 517 F.3d 1364 (Fed. Cir. 2008)

	Amendment	Before Amendment
		Territory presumed to be surrendered
Blocking nucleic acid which is DNA or RNA		Non-blocking nucleic acid or blocking nucleic acid which is not DNA or RNA

This case relates to a method of identifying and classifying chromosomes to

94) *Primos, Inc. v. Hunter's Specialties, Inc.*, 451 F.3d at 843-44.

95) *Id.* at 849.

detect chromosomal abnormalities.

The applicant amended the claims to use a “blocking nucleic acid” and stipulated that this means a DNA or RNA, whereas the prior art did not use the expression “blocking” or mention any specific nucleic acid with a blocking function.

The defendant’s accused equivalent is a blocking nucleic acid as a synthetic PNA (which is not human DNA or RNA) and falls within the territory presumed to be surrendered. In this respect, the issue was whether the amendment was only tangential to the accused equivalent. The court held that the distinguishing feature from the prior art was the use of the method “blocking,” and the use of either PNA or DNA was irrelevant to the determination of the scope of the surrendered territory.

4) *Intervet Inc. v. Merial Ltd.*, 617 F.3d 1282 (Fed. Cir. 2010)

	Amendment	Before Amendment
		Territory presumed to be surrendered
PCV-2		Non-porcine or PCV-1

A disease called PMWS occurs in pigs and relates to a porcine circovirus (“PCV”). The nonpathogenic virus (type PCV-1) was known prior to the patent application at issue by the patentee (Merial), and the patentee discovered another type of a pathogenic pig virus (type PCV-2) for which a patent application was filed.⁹⁶⁾

The claims as filed included (1) non-porcine open reading frames (ORFs⁹⁷⁾), (2) PCV-1 ORFs, and (3) PCV-2 ORFs, but were amended to include only the PCV-2 ORFs. The reason for rejection was that the original independent Claim 9 ORFs were assumed to be derived from porcine circovirus, but as written, the claims could encompass ORFs from any organism, such as PK1/5 which was a known to belong to PCV-1.⁹⁸⁾

96) *Intervet Inc. v. Merial Ltd.*, 617 F.3d 1282, 1284-85 (Fed. Cir. 2015).
97) It seems sufficient to understand the term ORF simply as a term used in molecular genetics in order to understand the case. *Id.* at 1285 (“‘ORF’ is a commonly used term in molecular genetics that has a standard textbook meaning. An ORF is a portion of a gene that contains a sequence of nucleotide bases that may be translated into a protein.”).
98) *Id.* at 1291.

The CAFC held that estoppel applies to equivalents to non-porcine ORFs and PCV-1 ORFs, but does not apply to PCV-2 ORFs.⁹⁹⁾ The CAFC further affirmed infringement of equivalents of Intervet’s PCV-2 including a nucleotide sequence¹⁰⁰⁾ that was 99.7% homologous to one of the deposited sequences relating to Merial’s patent. The CAFC vacated the district court’s decision because the rationale for the amendment was to narrow the claimed universe of ORFs to ORFs of PCV-2 and “bore only a tangential relation to the question of which DNA sequences are and are not properly characterized as PCV-2.”¹⁰¹⁾

Like the case 2) discussed above, the defendant’s accused equivalent is PCV-2 that does not belong to the territory presumed to be surrendered, and therefore the author is of the opinion that there was no need to even consider the issue a tangential relation. Nonetheless, the court cited a tangential relation as a basis for its holding.

5) *Funai Elec. Co., Ltd. v. Daewoo Electronics Corp.*, 616 F.3d 1357 (Fed. Cir. 2010) – Insulating Material Relating to Video Cassette Player

	Amendment	Before Amendment
		Territory presumed to be surrendered
Bearing holder with an insulating material		Bearing holder with a non-insulating material

Claim 1 (independent claim) of the original claims (‘210 Patent)¹⁰²⁾ specified that “a motor is ‘electrically insulated’ from a deck chassis,” while Claim 4 (dependent claim) specified that “a bearing holder is added, and the bearing holder is made of an insulating material and the said direct motor is mounted through said bearing holder on the deck chassis to be insulated from the deck chassis.”

The electrically insulated motor in Claim 1 was rejected for the reason that it was disclosed by the prior art, and Claim 4 was allowed.¹⁰³⁾

99) *Id.* at 1292.

100) *Id.* at 1286.

101) *Id.* at 1292.

102) *Id.* at 1368.

103) *Funai Elec. Co., Ltd. v. Daewoo Electronics Corp.*, 616 F.3d 1357, 1369 (Fed. Cir. 2012).

The applicant canceled the original Claim 1 and amended the original claim 4 into independent form, and thereafter the patent was granted.

Defendant Daewoo argued that since the entire scope between Claim 1 and Claim 4 is presumed to have been surrendered, and thus equivalence may not be asserted against the material of the bearing holder added to Claim 1.¹⁰⁴⁾

The court decided that the Defendant’s bearing holder does not literally infringe “insulating material” as the bearing holder employs polycarbonate resin with 8% carbon fiber, a conductive material.¹⁰⁵⁾ Also, the court found that it is clear that the “insulating material” was not the limitation that led to the allowance of Claim 4 and was not contested during the prosecution process, and therefore the “insulating material” falls within the category of a “tangential relation” with prosecution history under the Festo decision.¹⁰⁶⁾

6) *Textron Innovations Inc. v. Am. Eurocopter Corp.*, 498 F. App’x 23 (Fed. Cir. 2012)

	Amendment	Before Amendment
	Territory presumed to be surrendered	
Imperforate strap		Perforated strap

The patented invention relates to helicopter landing gear assemblies which included a strap to minimize a movement of a bracket. The element in the accused device that corresponded to the strap was a rubber gasket and two stop pieces.

The patentee (Textron) amended its claims to have an imperforate strap to avoid the prior art which had fastener holes on it.¹⁰⁷⁾

The district court denied infringement by equivalents without explaining specific reasons and granted summary judgment.¹⁰⁸⁾ The CAFC vacated the

104) *Id.*

105) *Id.* at 1367.

106) *Id.* at 1369.

107) *Textron Innovations Inc. v. American Eurocopter Corp.*, 498 F. App’x 23, 29, 32 (S.D.N.Y. 2014).

108) The court may grant summary judgment if the movant shows that there is no genuine dispute as to any material fact. In the United States, it is a question of facts whether the accused device is the same in kind. However, the application of prosecution history estoppel is a question of law and thus needs to be determined by the court. *See Warner-Jenkinson*, 520 U.S. at 39.

district court’s decision and remanded for further proceedings, finding that prosecution history estoppel did not apply in this case (a question of law) and instructing the district court to address the question of facts relating to the applicability of the doctrine of equivalents.

Since the accused product appears to include an imperforate strap (i.e., a rubber gasket and two stop pieces), it is unlikely that the accused product falls within the territory presumed to be surrendered.

5. Review of the Warner-Jenkinson Case and the Festo Case

A. Review of Warner-Jenkinson Case

Amendment	Before Amendment
	Territory presumed to be surrendered
pH 6-9	Below pH 6 or over pH9 pH5 ← Defendant’s element

In short, since none of the accused equivalents in the foregoing cases 2), 4) and 6) fall within the territory presumed to be surrendered, there appears to be no need to discuss the issues of overcoming the presumption. Moreover, it seems that estoppel is inapplicable in the cases 2), 4) and 6).

The *Instituform* case in 1) and Regents of University case in 3) above will be hereinafter compared with the *Warner-Jenkinson* case.

Referring to facts, the *Instituform* case related to a dye purification process, where the term “about pH 6.0~9.0” in the issued claims was added by amendment and it was clear that the upper limit was intended to avoid the prior art which disclosed pH 9.0 or more. However, the patentee did not clearly explain why the lower limit of pH was stated as 6.0. The accused product related to a process performed at pH 5.0.

The CAFC, before remand, held that the portion surrendered by the amendment was only a scope beyond pH 9 and thus a patentee was allowed to assert equivalent of to the scope below pH 6. However, the US Supreme Court vacated and remanded the case for further proceedings to determine the reasons for the amendment, as the reasons for adding the lower limit of pH was not clear from the record. On remand, the CAFC (114 F.3d 1161) also remanded the case

for further proceeding to determine whether a patentee can overcome the presumption that the amendments were made for a substantial reason related to patentability (the district court’s decision after remand could not be found).

In the cases 1) and 3), the presumption of a surrender was deemed to have been rebutted, as there were multiple narrowing amendments ((1): short distance, a single cup; (3) blocking nucleic acid, DNA or RNA) and the accused products ((1): plural vacuum cups; (3) PNA) did not relate to the reason for amendment ((1) avoidance of a long distance; (3) avoidance of non-blocking).

If the presumption under criterion (2) of the Festo case can be rebutted in the cases 1) and 3), the presumption should likely be rebutted for the accused equivalent of “below pH 6,” as it has a tangential relation with the reason for amendment (avoidance of over pH 9).¹⁰⁹⁾

B. Review of Festo Case

Amendment	Before Amendment
	Territory presumed to be surrendered
1) Stoll patent Addition of a magnetizable sleeve; clarification of plural sealing rings	Non-sleeve or non-magnetizable sleeve or all of sealing means other than ‘two rings’
2) Carrol patent Addition of a pair of sealing rings	A single sealing ring Defendant’s element: non-magnetizable sleeve and a single sealing ring

1) Facts in the Festo Decision

109) This is in line with Judge Rader’s concurring opinion after remand. *Festo*, 344 F.3d at 1376 n.7 (Rader, J., concurring) (“The tangentiality and ‘some other reason’ grounds for rebutting the complete surrender presumption are also important ways to acknowledge the drafter’s expectations when applying an estoppel. Tangentiality, in particular, should permit courts to honor the objective intent of amendments when seeking the scope of the surrender of subject matter. In the facts of the *Warner-Jenkinson* case, for example, the applicant amended the claim to escape prior art on the top end of the claimed pH range. The alleged infringer sought to use prosecution history estoppel to foreclose use of the doctrine of equivalents to capture its product that used a pH below the claimed range. In that case, the amendment’s surrender of subject matter above the claimed range may diverge from or only bear a peripheral relation to an equivalent beneath the claimed range.”).

Plaintiff Festo owned two patents (Stoll patent — “Patent ‘125”; Carroll patent — “Patent ‘401”) relating to magnetically coupled rodless cylinders.

(1) The Stoll Patent

The contested Claim 1 as filed did not contain the sleeve element and only recited “a piston having sealing means at each end.” In the dependent Claim 8, the driven means was limited to include a sleeve having a magnetizable material¹¹⁰⁾ and the dependent Claim 4 recited that the sealing means of the piston comprises “sealing rings.”¹¹¹⁾

The examiner notified the reason for rejection to the effect that Claim 1 did not clearly specify the exact method of operation (lack of written description).¹¹²⁾ Then, the applicant amended claims as follows: canceled Claims 4 and 8; added “a sleeve made of a magnetizable material” to Claim 1; and limited the piston having “sealing means at each end” to “first sealing rings” and “second sealing rings.”¹¹³⁾ The reason for amendment relating to the “sleeve” was not revealed in the prosecution history record, and the applicant stated in its responses to the Office action that the prior art did not contain the sealing ring.¹¹⁴⁾

(2) The Carroll Patent

The original Claim 1 did not recite a sealing ring. However, during reexamination, the patentee added Claim 9 that amended the claim to “a pair of elastic sealing rings.” Although the prior art also had a plurality of sealing rings, the applicant argued that several elements were coupled to the pair of sealing rings,¹¹⁵⁾ thereby attempting to distinguish the claims from the prior art.¹¹⁶⁾

110) *Festo*, 234 F.3d at 582-83 (“the driven assembly is provided with a sleeve made of a magnetizable material”).

111) *Id.* (“the sealing means of the piston comprise sealing rings”).

112) *Id.* at 583 (“Claims 1-12 were rejected under 35 U.S.C. §112, ¶ 1, because the ‘exact method of operation is unclear. Is [the] device a true motor or magnetic clutch?’”).

113) *Id.* 583.

114) *Id.* 583.

115) *Id.* at 584 (explaining a plurality of magnets and the location thereof, elastic member, and cushion materials being combined to an end of a piston) (“During reexamination, Carroll canceled claim 1 and added claim 9, which explicitly recites ‘a pair of resilient sealing rings situated near opposite axial ends of the central mounting member and engaging the cylinder to effect a fluid-tight seal therewith.’ In the remarks accompanying the amendment, Carroll argued that the

(3) Elements of the Accused Product Practiced by the Defendant

The accused product has a “single two-way sealing rings.” The sleeves of the accused product are made of an aluminum alloy, which is a non-magnetizable material.¹¹⁷⁾

2) Conclusion in the *Festo* Decision

The U.S. Supreme Court vacated the lower court’s decision, which had adopted a complete bar rule. Although the Court found that the sealing ring and the composition of the sleeve were clearly shown in the prosecution history record, and thus the defendant was likely to prevail, the Court nonetheless remanded the case ordering the lower court to hold additional hearings regarding the rebuttal of the presumption.¹¹⁸⁾

On remand,¹¹⁹⁾ the CAFC determined that the plaintiff failed to overcome the *Festo* presumptions under criteria (2) and (3), but remanded the case to the district court to determine whether the plaintiff has successfully overcome the *Festo* presumptions under criterion (1). The district court¹²⁰⁾ determined that the plaintiff also failed to overcome the presumption under criterion (1).¹²¹⁾

On appeal,¹²²⁾ the plaintiff *Festo* asserted that the accused equivalent is foreseeable only when the contested element meets the requirements under the

now-amended claims ‘more clearly and more specifically’ define the ‘features of the patentee’s invention that distinguish over the art of record, including’ the German patent cited in the request for reexamination. Carroll also noted that the structure now described in claim 9 was not disclosed in the art of record. Carroll further stated that ‘the particular structure of the inner piston and outer body now specifically set forth in new claim 9 is not taught or suggested by the German patent,’ particularly noting the recitation of the placement and plurality of magnets for both the piston and outer body and the recitation of resilient materials and cushion materials on the ends of the piston.”).

116) *Festo*, 344 F.3d at 1373.

117) *Festo*, 234 F.3d at 582.

118) *Festo*, 535 U.S. at 741-42 (“On these questions, SMC may well prevail, for the sealing rings and the composition of the sleeve both were noted expressly in the prosecution history. These matters, however, should be determined the first instance by further proceedings in the Court of Appeals or the District Court.”).

119) *Festo*, 344 F.3d 1359.

120) *Festo*, 2005 WL 1398528, at *1.

121) *Id.*; *Festo*, 2006 WL 47695, at *1; *Festo*, 493 F.3d 1368, and cert. denied, 553 U.S. 1093 (2008). .

122) *Festo*, 493 F.3d 1368.

doctrine of equivalent at the time of amendment. However, the CAFC decided that if one skilled in the art would have known that the accused equivalent (i.e., an alternative) existed in the field of art, one cannot argue that the accused equivalent was unforeseeable even if the fact it met the equivalence requirements was unknown. The dissent to this CAFC decision is as introduced above.

Since the plaintiff failed to overcome the presumption, the doctrine of equivalent was not applicable. Accordingly, the court held that the defendant did not infringe the patent at issue.

3) Review

(1) Regarding the Stoll Patent

(i) Regarding the Magnetizable Sleeve

After remand, the CAFC found that the patentee failed to prove the reason for the amendment had a merely tangential relation with the element of the accused product since the reason for adding the magnetizable sleeve was not shown in the prosecution history.^{123), 124)}

In the cases 1) and 3) above, the prosecution history revealed the reason for only one of the two amendments; the reason for the other amendment was not shown. The equivalent at issue [1): plural vacuum cups, 3): PNA] did not relate to the revealed reason [1): avoidance of the long distance, 3): avoidance of non-blocking], but related to the reason that was not revealed [1): a single vacuum cup, 3): DNA or RNA].

123) *Festo*, 344 F.3d at 1372 (“Festo argues that the original claims in the Stoll patent were rewritten as a single independent claim in response to a §112, ¶ 1 rejection, in which the examiner questioned whether the invention was a motor or a clutch, and that the ‘magnetizable’ limitation was unnecessary to answer that question. ... Because the prosecution history reveals no reason for the ‘magnetizable’ amendment, and because Festo still identifies no such reason, Festo has not shown that the rationale for the ‘magnetizable’ amendment was only tangential to the accused equivalent.”).

124) In relation to the third rebuttal criterion, the plaintiff Festo asserted that it may not be expected that the patentee would draft a claim to cover what was thought to be an inferior. On remand, the CAFC rejected the foregoing assertion since the patentee could have described an aluminum sleeve but chose not to do so. *Festo*, 344 F.3d at 1372 (“Festo argues that it can satisfy the third rebuttal criterion by showing that Stoll could not reasonably have been expected to have drafted a claim to cover what was thought to be an inferior and unacceptable design. ... [I]ndeed, it suggests that Stoll could have described an aluminum sleeve but chose not to do so because that ‘inferior’ element was not a part of his invention.”).

The amendment to recite “magnetizable sleeve” in the *Festo* case is different from the cases 1) and 3) in that the prosecution history was completely silent regarding the reason for the amendment, but is similar to the limitation “number of vacuum cups” in the case 1) and the argument regarding “DNA or RNA” in the case 3), in that the reason for the amendments of those elements is not revealed.

In such cases where the reason for the amendment is not shown, it is difficult to predict the outcome. Also, with respect to the *Warner-Jenkinson* presumption, it seems unreasonable to simply assume that the amendment¹²⁵⁾ unrelated to the reason for rejection (unclear operation method) was made to meet the patentability when the reason for amendment was not shown.

(ii) Regarding the Sealing Ring

It is questionable whether a single sealing ring should be presumed to have been surrendered.

On remand, the CAFC decided that all of the sealing means except “two sealing rings” were presumed to have been surrendered.¹²⁶⁾ However, since the term “a position which has sealing means at each end” in the original claims should be interpreted as having two sealing means, (a) it seems difficult to conclude that the amendment was a narrowing amendment. Moreover, (b) regardless of the amendment, since there were initially two sealing means (if there was initially one sealing means and later it was amended to two sealing means, it is reasonable to presume that one sealing ring has been surrendered) and the “ring” among the sealing means was not surrendered, it seems difficult to conclude that “one ring” was surrendered (according to the reasoning of *Festo*, the “single ring,” i.e., the element of the accused product, should bear no more than a tangential relation to the rationale underlying the amendment, i.e., addressing the written description requirement or overcoming the prior art not having the sealing ring).

125) The CAFC decision before remand also held that such amendment did not correspond to the reason for rejection. *Festo*, 234 F.3d at 588 (“the amendment itself was not responsive to any of the rejection set forth in the Office Action.”).

126) *Festo*, 344 F.3d at 1372 (“It must therefore be presumed that Stoll surrendered all ‘sealing means’ other than two-ring structures.”).

(2) Regarding the Carrol Patent

On remand, the CAFC decided that even if the prior art disclosed a plurality of sealing rings, the patentee distinguished the prior art by combining various elements including a pair of sealing rings, and thus the patentee failed to prove that the single ring (i.e., the element of the accused product) has a tangential relation with the reason for amendment.¹²⁷⁾ However, because (i) no sealing ring was recited in the claims before the amendment and (ii) the prior art disclosed a plurality of sealing rings, the amendment does not appear to have been made to avoid the prior art. It appears that the number of the sealing rings has a tangential relation with the reason for amendment.

6. Legal Principles Similar to Estoppel

A. Disclaimers of Equivalents

If an applicant criticizes certain prior art alternatives in the specification and excludes such alternatives from the literal scope of the claims, such disclaimer of equivalents precludes the applicant from later asserting that those alternatives are included within the scope of the claims.¹²⁸⁾ While disclaimer of equivalents is similar to prosecution history estoppel in that an applicant deliberately excluded (or surrendered) the alternatives, it is different from prosecution history estoppel as the surrender of the alternatives is found in the specification rather than the prosecution history.

Even in Germany, where prosecution history is not given much consideration in practice, there is an established theory that if an applicant expressly “surrenders” a certain technology from the subject matter or “limits” the claim scope in the specification or drawings, it leads to the reduction of the scope of the claims.¹²⁹⁾

In the case of Korean legal principles, “whether or not the element was purposefully excluded from the claims shall be determined by considering (i) the specification of the invention, (ii) Office actions that the applicant received from

127) *Festo*, 344 F.3d at 1373.

128) *Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1307 (Fed. Cir. 2011) (“It is well settled that ‘when a specification excludes certain prior art alternatives from the literal scope of the claims and criticizes those prior art alternatives, the patentee cannot then use the doctrine of equivalents to capture those alternatives.’”).

129) Echi, *Legal Grounds and Determination Structure*, *supra* note 23, at 7.

the filing of an application to the grant of a patent, and (iii) the applicant's intent reflected in his/her amendments and responses submitted during the prosecution process." Therefore, it may be reasonable to state that disclaimer of equivalents falls within prosecution history estoppel.

It appears that, although the description in the specification is not part of the prosecution process, alleged equivalents disclaimed in the specification should be deemed non-equivalent. In this regard, disclaimer of equivalents does not appear to be substantially different from prosecution history estoppel.

B. Disclosure – Dedication Rule

Under the dedication rule, if an applicant discloses a certain subject matter in the detailed description of invention but does not include the subject matter as an element in the claims, the application of the doctrine of equivalents is limited.¹³⁰⁾ This principle is also adopted by German¹³¹⁾ and Japanese precedents.¹³²⁾

C. Claim Vitiating Doctrine

1) Concept

The claim vitiating doctrine precludes the application of the doctrine of equivalents if the application renders a claim element inconsequential and meaningless. This doctrine derives from the *Warner-Jenkinson* decision discussed above.¹³³⁾

For example, if a patented invention relates to "mounting" and the element of the accused product relates to "non-mounting," and if the accused product is

130) *Johnson & Johnson Associates Inc. v. R.E. Serv. Co.*, 285 F.3d 1046, 1054 (Fed. Cir. 2002) ("As stated in Maxwell, when a patent drafter discloses but declines to claim subject matter, as in this case, this action dedicates that unclaimed subject matter to the public. Application of the doctrine of equivalents to recapture subject matter deliberately left unclaimed would 'conflict with the primacy of the claims in defining the scope of the patentee's exclusive right.'").

131) Kawada, *supra* note 23, at 146 (citing Bundesgerichtshof [BGH] [Federal Court of Justice] May 10, 2011, Gewerblicher Rechtsschutz und Urheberrecht [GRUR] 701, 703, 2011 (Ger.) (The Okklusionsvorrichtung Case)).

132) Chiteki Zaisan Kōtō Saibansho [Intellectual Prop. High Ct.] Mar. 25, 2016, Hei 27 (Ne) no. 10014 (Japan).

133) *Warner-Jenkinson*, 520 U.S. at 39, n.8 ("Thus, under the particular facts of a case, if file wrapper estoppel would apply or if a theory of equivalence would entirely vitiate a particular claim element, partial or complete judgment should be rendered by the court, as there would be no further material issue for the jury to resolve").

deemed an equivalent of the patented invention, the element “mounting” is vitiated.¹³⁴⁾

There is a criticism that the claim vitiation doctrine is not clear since (i) it is unclear as to where and when the doctrine applies, (ii) the application of the doctrine depends on the claim construction, the process of which determines the meaning of the claim elements, (iii) the concept “vitiation” itself is not the matter that can be easily determined, and (iv) the definition and the application of the doctrine vary depending on judges.¹³⁵⁾

However, it is said that many cases have denied to apply the doctrine of equivalents based on the claim vitiation doctrine.¹³⁶⁾

2) *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349 (Fed. Cir. 2012)

The main holdings of the above-referenced decision are as follows:

The “vitiation” doctrine requires the court to] refuse to apply the doctrine of equivalents “where the accused device contain[s] the antithesis of the claimed structure.”¹³⁷⁾ “Vitiation” is not an exception to the doctrine of equivalents, but instead a legal determination that “the evidence is such that no reasonable jury could determine two elements to be equivalent.”¹³⁸⁾ Courts should be cautious not to shortcut this inquiry by identifying a “binary” choice in which an element is either present or “not present.” Stated otherwise, the vitiation test cannot be satisfied by simply noting that an element is missing from the claimed structure or process because the

134) *Asyst Techs., Inc. v. Emtrak, Inc.*, 402 F.3d 1188 (Fed. Cir. 2005).

135) Ryuta Hirashima, *Current Situation Surrounding the Interpretation of Claims under U. S. Law and Future of Doctrine of Equivalents*, 38 NIPPON KŌGYŌ SHOYŪKENHŌ GAKKAI NENPŌ 121 (2014).

136) Daniel H. Shulman, Donald W. Rupert, “*Vitiating*” the *Doctrine of Equivalents: A New Patent Law Doctrine*, 12 FED. CIRCUIT B. J. 457, 484 (2003) (explaining that from 1994 to 2002, among 18 CAFC cases, where the application of the doctrine of claim vitiation was at issue, the CAFC has rejected the application of the doctrine of equivalents in 14 cases due to application of the doctrine of claim vitiation).

137) *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1356 (Fed. Cir. 2012) (“Thus, for example, courts properly reuse to apply the doctrine of equivalents “where the accused device contain[s] the antithesis of the claimed structure.”).

138) *Id.* (“Vitiation” is not an exception to the doctrine of equivalents, but instead a legal determination that “the evidence is such that no reasonable jury could determine two elements to be equivalent.”).

doctrine of equivalents, by definition, recognizes that an element is missing that must be supplied by the equivalent substitute.¹³⁹⁾

...Thus, a court [is required] to examine the fundamental question of whether there is a genuine factual issue that the accused device, while literally omitting a claim element, nonetheless incorporates an equivalent structure.¹⁴⁰⁾

The foregoing decision suggests that the CAFC tends to follow a strict application of the “vitiation” doctrine, and its later issued decisions¹⁴¹⁾ held that “saying that a claim element would be vitiated is akin to saying that there is no equivalent to the claim element” [in the accused device] based on the equivalent tests.”

There is an opinion that these court rulings regarding “vitiation” are similar to the first requirement of the doctrine of equivalents in Japan,¹⁴²⁾ and it seems unnecessary to include “vitiation” in the fifth requirement in Korea as well.

III. Legal Principles of Prosecution History Estoppel in Japan

1. Requirements

The 1998 “ball spline bearing” Japanese Supreme Court decision,¹⁴³⁾ which

139) *Id.* at 1356-57 (“Courts should be cautious not to shortcut this inquiry by identifying a ‘binary’ choice in which an element is either present or ‘not present.’ Stated otherwise, the vitiation test cannot be satisfied by simply noting that an element is missing from the claimed structure or process because the doctrine of equivalents, by definition, recognizes that an element is missing that must be supplied by the *1357 equivalent substitute.”).

140) *Id.* at 1357 (“Thus, preserving the doctrine in its proper narrowed context requires a court to examine the fundamental question of whether there is a genuine factual issue that the accused device, while literally omitting a claim element, nonetheless incorporates an equivalent structure.”).

141) See the following case, where the CAFC holds the same as *Deere & Co.*, 703 F.3d 1349 and additionally states: *Brilliant Instruments, Inc. v. GuideTech, LLC*, 707 F.3d 1342, 1347 (Fed. Cir. 2013) (“In short, saying that a claim element would be vitiated is akin to saying that there is no equivalent to the claim element in the accused device based on the well-established ‘function-way-result’ or ‘insubstantial differences’ tests.”); *Charles Mach. Works, Inc. v. Vermeer Mfg. Co.*, 723 F.3d 1376 (Fed. Cir. 2013).

142) Hirashima, *supra* note 135, at 128.

143) Saikō Saibansho [Sup. Ct.] Feb. 24, 1998, Hei 6 (oh) no. 1083, 52(1) SAIKŌ SAIBANSHO MINJI HANREISHŪ [MINSHŪ] 113.

explicitly listed the requirements for the doctrine of equivalents, specified the fifth requirement as “there shall be no special circumstances that the accused product falls within those that have been deliberately excluded from the scope of claims during the prosecution process for the patented invention.” This position is similar to the Korean Supreme Court decisions.

As to the grounds for the aforementioned decision, the court explained that “if the applicant has deliberately excluded any element of his/her invention from claims, or if the patentee has approved that any element of his/her invention does not belong to the technical scope of the patented invention or has done any act which is interpreted as such in external appearance, the patentee’s contrary assertions made thereafter shall not be permitted in light of the principle of estoppel.”¹⁴⁴⁾

Although the Japanese Supreme Court did not specify thereafter what cases fall under the deliberate exclusion, the foregoing decision has some implications regarding deliberate exclusion.¹⁴⁵⁾

A review of the case by a researcher states that “regardless of whether amendment was made (i) to avoid a rejection due to the existence of the prior art, (ii) to avoid a cancellation by third party observations or by a patent invalidation proceeding, or (iii) to specify the element of a patent, and regardless of whether the amendment was made in response to Office actions or by the applicant himself/herself, if any amendment narrowing the claims was made during the prosecution process, the patentee may not assert equivalence with respect to the narrowed portion. In addition, equivalence is denied regardless of the subjective intent of the applicant at the time of amendment.”¹⁴⁶⁾ This appears to be a complete bar position.

144) Such a case or a holding is not found in Korea.

145) Matsunaga, *supra* note 21, at 81.

146) Mimura, *supra* note 21, at 155 (“In the case of the interpreting the wording in a limited manner beyond the meaning of such wording, deliberate limitation and the application of file wrapper estoppel, and the prohibition of confirmation and interpretation of wording in claims beyond the scope of such wording in determining equivalence, have different roles even in consideration of the same prosecution. In the case of the latter (the determination of equivalence), a finding that the applicant surrendered the right to the portion narrowed by amendment or correction during prosecution is not necessary, and only the existence of the narrowing in external appearance would suffice. In light of the foregoing, there is no reason to distinguish amendments made by implications of the examiner and amendments voluntarily made by the applicant. ... This

2. Scope of Equivalents Excluded by Estoppel

There appears to be no position established by precedents regarding the scope of estoppel (the Japanese Supreme Court has not specified what cases fall within the deliberate exclusion¹⁴⁷⁾). The position of the academia is split between complete bar¹⁴⁸⁾ and flexible bar.¹⁴⁹⁾

A. Lower Courts' Trend Following the Ball Spline Bearing Decision

1) The Case Where Only the Narrowing Amendment Was Made to Avoid a Rejection Is Deemed as Deliberate Exclusion (a type of the Flexible Approach)

(1) *Pen Type Syringe Case* [Osaka High Court, Apr. 19, 2001, Hei 11 (Ne) no. 2198]

decision protects foreseeability of a third party by putting emphasis on the external circumstances shown in prosecution.” The scope of the right holder’s behavior to which estoppel applies differs between literal infringement and infringement by equivalents.

147) Matsunaga, *supra* note 21, at 80.

148) Mimura, *supra* note 21, at 157 (“In the *Festo* case, the CAFC held to the effect that once any element is amended during prosecution, no doctrine of equivalents shall apply thereafter. The decision can be said to be close to the holding regarding the fifth requirement of judgement on the merits. 2011 when this explanation on the Japanese Supreme Court Cases was published was after the CAFC decision before remand was issued and before the CAFC decision before remand was vacated by the US Supreme Court); Dong-joon Kim, *Doctrine of Equivalents in Patents* 390 (2012) (citing Yoshiaki Nishida, *Intellectual Property Related Litigation Law* 203 (Toshiaki Makino et al. 2004)) [hereinafter Kim, *Doctrine of Equivalents*]; Eiji Saegusa, *Regarding “Matters Excluded from Application” of Fifth Requirement for Application of Doctrine of Equivalents* 69 (2002); Tetsu Iwatsubo, *New and Annotated Patent Law* 1106 (Nobuhiro Nakayama et al. 2011).

149) Nobuhiro Nakayama, *Tokkyohō dai ni han* [Patent Law Second Edition] 428 (2012) (citing Kosaku Yoshifuji, *Overview of Patent Law* 496 (13th ed. 2001) Sumio Shinagawa, *Determination on Technical Scope of Patented Invention, Principle of Prosecution Estoppel and deliberate Exclusion and deliberate Limitation*, 31(6) TOKKYO KANRI 659 (1981) in a support of the following explanation: “If deliberate exclusion strictly applies, there is no room for the application of the doctrine of equivalents, which is an unfair result. Therefore, the deliberate exclusion shall apply only when the purport of such deliberate exclusion is clear.”); Hiroshi Yoshida, *Study on Estoppel with Recent Precedents: New Version* 56 (2004) (“Given the notion of the multiple claim system and the limitation of amendment, it would be unfair to say that any amendment shall be subject to estoppel”); Tetsu Iwatsubo, *New and Annotated Patent Law* 1106, n.148 (Nobuhiro Nakayama et al. 2011) (citing Kazuhide Shimasue, *Progress and Prospect of the Doctrine of Equivalents*, 1236 KINYŪ HANREI 62 (2006)).

	Amendment	Before Amendment
		Territory that may be deemed to be surrendered
Vertical and Moving Forward		Non-vertical or non-moving forward Horizontal ← Defendant's element

To avoid rejection regarding inventiveness (an element to block air from being introduced while an injection is prepared is a widely used technique), the applicant (i) amended claims to recite “(1) the method ... while an ampoule is maintained almost perpendicularly with a front end thereof being positioned upward and (2) a rear driving wall member moves forward to the ampoule by a screw tool” and (ii) argued in the response that “the present invention is characterized as ... a rear driving wall member moves forward by a screw tool or by the manipulation of a screw of a tubular member coupled to a holder means by screws to open a communication passage... The element of this cited example does not include the flow adjusting function of the bypass passage and screw tool disclosed in the claims of the present invention.”

As the notice explained, the element “(1) being maintained almost perpendicularly” is disclosed in the prior art, and it is not clear why this element was added.

The court held that because the element “(1) being maintained almost perpendicularly” was not added to avoid rejection and thus cannot be deemed as deliberately excluded.

(2) Mounting Hinge Case [Osaka District Court, May 23, 2000, Hei 7 (Wa) no. 1110]

In relation to estoppel, the patentee received a notice of grounds for rejection (notifying that the patentee's invention could very easily be derived from the cited invention 1 and the cited invention 2) of a claim directed to an embodiment described in the specification of a utility model application as filed. The specification described an embodiment with “a mounting portion 11 extending from the relevant supporting part 10 and holding an abutment joint member 22 in a transverse direction.” Thus, the patentee amended the claim to recite the element C (“A driving member 3 is made of synthetic resin with elastic force, and the mounting portion 11, which is formed in a roughly same width as the

abutment joint member 22, is installed in the driving member 3 to externally fit and support the abutment joint member 22, and the driving member 3 ... is curved in a form of a hook at the opposite ends in a transverse direction”).

The court found infringement under the doctrine of equivalents for the following reasons:

Referring to the amendment above, the amendment was made solely to clarify the element holding the abutment joint member 22 and does not seem to have been made to avoid the publicly known art. Even referring to the response, the court did not find that a holding wall formed in a thickness direction like the accused product has been deliberately excluded and there is no sufficient evidence to acknowledge special circumstances as the fifth requirement for equivalents.

2) Cases That Appear to Take the Complete Bar Approach

(1) *Slow-Release Medicine Case* [Tokyo District Court, Jan. 28, 1999, Hei 8 (Wa) no. 14828]

	Amendment	Before Amendment
		Territory presumed to be surrendered
Three coating materials	Materials other than the three materials ← Defendant’s element	

The invention relates to a method for preparing a slow-release (slowly absorbed in the intestines) medicine by mixing a slow-release material coated with a quick-acting material.

There was no limitation on the coating material initially. After receiving a notice of grounds for rejection that the invention at issue was not patentable in view of the prior art, the applicant amended and limited to three coating materials.

The accused product included a different coating material. The court did not apply equivalents, as the first requirement (i.e., non-essential matter) and the fifth requirement (i.e., absence of circumstances such as deliberate exclusion) were not met. Although it was not clear whether the coating material used in the accused product were excluded by the amendment, the court nonetheless

determined that the applicant deliberately excluded the accused element by the amendment. Thus the court appears to have taken a complete bar approach.

The foregoing decision was criticized that, while it may be reasonable to deny the application of the doctrine of equivalents in view of the first requirement, it is questionable as to whether the fifth requirement provides reasonable grounds to deny the application. In other words, if an particular adopts additional elements to prove inventiveness of the invention and to ultimately overcome the notice of rejection, the applicant may end up changing the essence of the invention, often preventing the application of the doctrine of equivalents based on the first requirement.¹⁵⁰⁾

Indeed, the invention at issue was found to be inventive due to the limitation of the three coating materials, and the coating materials can be considered as an essential part of the invention (a core of the technical idea). Therefore, it seems that there is no need for the court to apply estoppel, as the first requirement is sufficient to deny the application of the doctrine of equivalents.

In summary, if a patent is granted as a result of any portion changed or added by the amendment, such portion is very likely to relate to the core of technical idea. Estoppel is contested when the part of the accused product different from the patented invention correspond to the changed or added portion. This means that many cases can be resolved by the first requirement. The following case is another example where the court can use first requirement to deny the application of the doctrine of equivalents.¹⁵¹⁾

(2) Case Relating to Composition for Treating and Preventing Parasites that May Affect Pets [Tokyo District Court, Sept. 12, 2012, Hei 21 (Wa) no. 45432]

150) Setsuko Asami, *Regarding Amendment and Application of Fifth Requirement for Equivalents*, 38 NIPPON KÖGYÖ SHÖYŪKENHŌ GAKKAI NENPŌ 166 (2014).

151) *Id.* at 170, n.150 (explaining that in addition to the aforementioned cases, Tokyo Kōtō Saibansho [Tokyo High Ct.] July 18, 2003, Hei 14 (Ne) no. 4193 can be also considered). In Tokyo Kōtō Saibansho [Tokyo High Ct.] July 18, 2003, Hei 14 (Ne) no. 4193, there was no limitation in the entire thickness of a surface coating of ceramic material of a doctor blade. After the patent application was rejected for lack of inventiveness, the entire thickness of the surface coating was limited to 0.25mm. In its response, the applicant clarified the difference between its invention and the prior art and asserted that it amended the invention to resolve the issue of securing a good flexibility of the blade. The difference between the applicant's invention and the

	Amendment	Before Amendment
		Territory presumed to be surrendered
Three compounds		Materials other than the three materials ← Defendant's element

The contested element in this case is a crystallization inhibitor. Here, the applicant received a notice of grounds for rejection for lack of novelty and inventiveness, as the prior art already disclosed what was described in the specification, i.e., a number of compounds that can be used as a crystallization inhibitor described in the specification. The applicant amended and selected three compounds as the crystallization inhibitor.

The court denied the application of the doctrine of equivalents based on the rationale that selecting certain compounds as the crystallization inhibitor is one of the essential parts of the patented invention. The court also determined that the accused product (a crystallization inhibitor using materials that were not stated in the specification) was deliberately excluded. The analysis made to the foregoing slow-release medicine case is also applicable here.

B. Recent Stance of the Japanese Intellectual Property High Court

1) Japanese Intellectual Property High Court Decision, Sept. 25, 2006, Hei 17 (Ne) no. 10047) (Chair Type Air Massager Case)

(1) Summary of the Holding

In order to assert that an element of an accused product was deliberately excluded from the scope of the claims during prosecution, either of the followings needs to be shown: (i) the patentee admitted that the element relating to the accused product did not fall under the scope of the claims during prosecution; or (ii) the patentee excluded the element from the scope of the claims by amendment and had a clear understanding of the element, and thus explicitly took an action of excluding the element from the scope of the claims. Regardless of whether the element relating to the accused product can be easily obtained in light of the disclosed technology at the time of application, the fact

defendant's product was only the entire thickness of the surface coating of the ceramic material, and the court affirmed the deliberate exclusion. Here too, equivalence can be denied by the first requirement.

that such an element was not included in the scope of the claims should not be the only ground that the element relating to the subject product was deliberately excluded from the scope of claims.

(2) Issues

Amendment		Before Amendment	
		Territory presumed to be surrendered	
Opposite sides		Non-opposite sides	

In the decision, a “leg placement part” of a massage chair was at issue. “A plurality of air bags” was amended to recite “an air bag holding a user’s legs from opposite sides.”

The grounds for rejection was lack of inventiveness as the prior art disclosed an air bag pressing a user’s legs to one side.

The accused product had an element, one side of which was an air bag and the other side of which was chip urethane.

Since the defendant’s element also related to “opposite sides,” ait was not included in the territory that can be deemed excluded (the chip urethane element may be excluded if the original element was, e.g. a “buffer” and amended to an air bag).

(3) The Court’s Decision

The court held that “even if it was possible to include the element having an air bag on one side and the chip urethane on the other side within the claim scope, it cannot be said that the foregoing element was deliberately excluded from the scope of claims, just because it was possible to include the element. In this case, there is no evidence showing that the patentee had a clear understanding that the purpose or effect of the patented invention can be achieved even with the element having the air bag in one side and the chip urethane in the other side, side and intentionally excluded such an element nevertheless.”

(4) Evaluation

One commentary to the decision stated as follows:

The decision clarifies that deliberate exclusion is shown not merely by

the act of excluding certain element but by knowingly doing so with the intent to exclude the element of the accused product from the scope of the claims through objectively clear acts.¹⁵²⁾ The term “deliberate” exclusion suggests that the intent is at issue, and like in other legal areas, the intent is inferred from the external expression (such as amendment, opinions, assertions and responses).¹⁵³⁾ Deliberate exclusion means that the applicant attempts not to include a known technology in the scope of claims with the purpose of a patent registration or maintenance and by objectively clear acts.¹⁵⁴⁾

The author of this article believes that the foregoing decision is significant in that it required “clear” recognition of the accused element. An example would be a disclosure made in prior art. It means that the act of excluding the accused element despite the applicant’s knowledge of such an element will be not viewed as “deliberate” exclusion. It can be also viewed that the foregoing implies that equivalence may be acknowledged even when the scope of claims is limited by amendment.¹⁵⁵⁾ Such attitude of the court appears to be contrary to the criterion (1) (unforeseeability)¹⁵⁶⁾ of the Festo presumption in the United States. In determining inclusion or non-inclusion, the basic question is as follows: “did the applicant intentionally exclude the element with the clear recognition that the purpose or the effect of the patented invention can be achieved (even if the element is adopted).” On top of that, the existence of an external act is required which can be viewed as “exclud[ing] the element with the clear knowledge that the element was equivalent.” This is “beyond the extent that he/she merely knew the existence of the equivalents.”

The decision is also significant in that it explicitly denied the theory of material with identical effect at the time of application.¹⁵⁷⁾ The theory of material

152) Matsunaga, *supra* note 21, at 81.

153) *Id.*

154) *Id.* at 82.

155) Asami, *supra* note 150, at 172.

156) *Festo*, 493 F.3d 1368 (holding that the court was not able find that unforeseeability was proven even if equivalents were not known in case a person having ordinary skill in the art was able to know the existence of the defendant’s element at the time of amendment (if the existence of the defendant’s element was known to the person having ordinary skill in the art)).

157) Ryuichi Shitara, *Interpretation of Claims and the Doctrine of Equivalents after Introduction of Defense of*

with identical effect at the time of application will be reviewed in the following decision.

2) Japanese Intellectual Property High Court, Mar. 25, 2016, Hei 25 (Ne) no. 10014 (Vitamin D Case)

(1) Summary of the Holding

Even if the elements outside of the claim scope (i) are substantially the same as the element stated in the claims, (ii) could have been easily derived by a person having ordinary skill in the art, and thus (iii) could also have been easily derived by the applicant, unless there are other reasons, the applicant's exclusion of such other elements from the claims does not fall within the "special circumstances" of the fifth requirement.¹⁵⁸⁾

Invalidity, Comparison between the Fifth Requirement in the Japanese Supreme Court Decision Regarding Ball Spline and the US Supreme Court Decision regarding Festo, and Material with the Same Effect at the Time of Application, 38 NIPPON KŌGYŌ SHOYŪKENHŌ GAKKAI NENPŌ 269 (2014).

158) Chiteki Zaisan Kōtō Saibansho [Intellectual Prop. High Ct.] Mar. 25, 2016, Hei 27 (Ne) no. 10014 (Japan) (supporting its holding with the following grounds: Because ① even if the substantial value of a patented invention is elements other than those stated in the scope of claims, if a person having ordinary skill in the art may easily achieve substantially the same technology based on the elements stated in the scope of claims, and such logic is not changed even in respect of technology that can be easily achieved at the time of application. Therefore, if requiring equivalents uniformly for the reason that [the technology] could be easily achieved at the time of application is not permitted, the scope of the substantial value of a patented invention is different from the above. ② The applicant shall state his/her invention in the specification, disclose his/her invention in general, and then specify the scope of the exclusive right of claims. The applicant shall satisfy the requirements for support in Articles 36.5, 36.6.1 of the Patent Act and the requirements for clarification in Article 36.6.2 in respect of the scope of claims, and shall state [the scope of claims] without excess or deficiency within the scope of the invention disclosed in the specification. However, given the fact that the applicant shall prepare claims and the specification and file an application for its invention under time constraints in accordance with the first-to-file system, it seems severe to require the applicant to prepare claims including all of modes of infringement that may arise in the future and the specification supporting the claims within the limited period. In connection with the foregoing, there are many cases where a third party, to whom the invention was disclosed by the specification for patent application, may achieve part of those not included in the literal interpretation of claims from the scope of claims and the statement in the specification without obtaining the essential part of the patented invention during the effective period of the patent. If [any alleged infringer] can easily avoid enforcement of rights by patentees such as injunction by substituting non-essential part of a patented invention, it would discourage creation of invention of the public and would

However, if it is objectively and externally acknowledged that the applicant has recognized that elements other than those stated in claims were to be substituted for other portions of the elements stated in the claims, (e.g. if the applicant can be deemed to have described an invention with such other elements in the specification or if the applicant described an invention with elements other than those recited in the claims in a paper published at the time of application), exclusion of such other elements by the applicant from the claims can be said to fall under the “special circumstances” of the fifth requirement.¹⁵⁹⁾

(2) Issues

The foregoing decision does not relate to a case where the accused method was excluded from the scope of the claims by amendment. The patented invention in this case related to a method for preparing a compound wherein the starting material and intermediate material are cis-form vitamin D structures while the defendant’s product is trans-form vitamin D as a geometrical isomer of the cis-form vitamin D structures.

(3) Theory of Material with Identical effect at the Time of Application

The theory of material with identical effect at the time of application proposes precluding the application of equivalents as having been deliberately excluded (i.e., under the fifth requirement) when the applicant did not, although it would have been easy or possible to do so, provide claims that included material with

contravene social justice and the principle of equity as well as the purpose of the Patent Act to contribute to the development of industry through protection and encouragement of invention, and that is why the doctrine of equivalents is acknowledged. Given the foregoing situation, even if elements other than the scope of claims could be easily achieved at the time of application, it is unreasonable to uniformly exclude [such other elements] from the application of the doctrine of equivalents.)

159) *Id.* (explaining that because in the foregoing case, it can be understood that the patentee has deliberately excluded other elements from the scope of claims when stating the scope of claims, i.e. has approved the other elements to be out of the technical scope of the patented invention or has taken action interpreted as above. Since trust of a third party who understands as above should be protected, the patentee’s subsequent assertions of equivalents to the target product by the other elements may not be allowed in light of the principle of estoppel).

identical effect (i.e., an element having the same effect) existing at the time of application,¹⁶⁰⁾ since such omission would have been due to the patentee's own negligence and should be treated in the same manner as the cases¹⁶¹⁾ in which the material with identical effect was disclosed in the specification but not claimed.

Regardless of whether there was any narrowing amendment, and even when there was no narrowing amendment, equivalence is denied in respect of material with identical effect existing at the time of application.

The above decision may in principle be taking an opposite position than what is proposed by the theory of material with identical effect at the time of application.¹⁶²⁾ Nonetheless, the court would deny equivalence if it is shown that the applicant recognized that the infringing equivalent was available as an alternative to the claimed element, just as the applicant would have recognized the availability of the alternative when the applicant disclosed it in the specification but did not claim it (Disclosure-Dedication Rule in the United States). A recent CAFC decision in the United States has also explicitly opposed the theory of material with identical effect at the time of application.¹⁶³⁾

There is a concern that the theory of material with identical effect at the time of application may limit the application of the doctrine of equivalents only to the

160) This corresponds to the disclosure-dedication rule under the United States legal system.

161) Mimura, *supra* note 21, at 156 (explaining that the patentee should be prevented from asserting equivalents in the case where the applicant is acknowledged to have filed application by limiting the scope of claims as stated therein as well as in the case where amendment is made during prosecution. That is, the failure to file application with the matters which a person having ordinary skill in the art could include in claims initially or by amendment during prosecution constitutes an apparent act of excluding such matters from the technical scope of the patented invention, and the establishment of equivalents is therefore denied) Echi, *Element with the Same Effect*, *supra* note 4, at 105; Ryu Takabayashi, *Standard Patent Law* 154-56 (5th ed. 2014).

162) Yasuyuki Echi, *100 Patent Cases* 145 (4th ed. 2012) (explaining that the dissenting opinion is more prevalent) [hereinafter Echi, *hanrei hyakusen*; See also Shitara, *supra* note 157, at 269-270.

163) *Ring & Pinion Serv. Inc. v. ARB Corp.*, 743 F.3d 831, 834 (Fed. Cir. 2014) ("There is not, nor has there ever been, a foreseeability limitation on the application of the doctrine of equivalents. It has long been clear that known interchangeability weighs in favor of finding infringement under the doctrine of equivalents. ... Excluding equivalents that were foreseeable at the time of patenting would directly conflict with these holdings that "known interchangeability" supports infringement under the doctrine of equivalents. We conclude that the foreseeability of an equivalent at the time of patenting is not a bar to a finding of infringement under the doctrine of equivalents.").

material with identical effect that is developed after the application¹⁶⁴⁾ (although it is noted that the theory of material with identical effect requires substitutability and obviousness of substitution, not merely the existence of the material at the time of application¹⁶⁵⁾). In particular, courts should refrain from interpreting the omission identified in the theory as deliberate exclusion, as such act of omission does not involve an affirmative act (such as narrowing amendments or submission of responses) during prosecution.

(5) Conclusion of the Foregoing Case

In light of the foregoing legal principle, the court determined that the transform vitamin D cannot be deemed as deliberately excluded, citing the circumstances that the vitamin was not even described in the specification.

3) Comparison with the Japanese Intellectual Property High Court, Aug. 25, 2009, Hei 20 (Ne) no. 10068

	Amendment	Before Amendment
	Territory presumed to be surrendered	
Semiconductor wafers	Non-semiconductor wafers ← Defendant’s element: semiconductor packages	

(1) Issues

Claim 1 of the patented invention in this case did not originally specify any item to be cut, while Claim 3, which was originally Claim 4, recited a “semiconductor wafer” as the item to be cut. Claim 1 was rejected in a notice of grounds for grounds stating that Claim 1 can be easily invented from prior art which disclosed a method for cutting “silicon wafers and piezoelectric substrates.”

The applicant filed an administrative appeal against the rejection, canceling the original Claim 1 and renumbering the original Claim 4 to Claim 3. For the reason for the appeal, the applicant stated “the cut item is a square or rectangular

164) See Shitara, *supra* note 157, at 264.
165) Echi, *Element with the Same Effect*, *supra* note 4, at 105.

semiconductor, giving rise to unique effect, and a cut item of an indeterminate shape would have...” The applicant was later granted a patent.

The cut item of the accused product was a “semiconductor package,” and the specification of the patent provided that other workpiece such as a ferrite can be an item to be cut, in addition to semiconductor wafers.

(2) Holding

The court held that the patentee should be regarded as having deliberately excluded cut items other than a semiconductor wafer, given that the patentee acted affirmatively to limit the cut item to a semiconductor wafer and canceled the original Claim 1 which was more generic in that regard, even though it would have been easy for the patentee to provide a more generic claim.

(3) Summary

With respect to the foregoing decision, even the foremost proponent of the theory of material with identical effect holds the views that the decision is a typical prosecution history estoppel case rather than a case affirming the theory of material with identical effect at the time of application, since the court considered not only the patentee’s recognition of the availability of a material with identical effect, but also the fact that the applicant emphasized the differences between the claimed invention and the prior art to avoid rejection.¹⁶⁶⁾

Given that what is clearly excluded from equivalents in this case appears to be “silicon wafers and piezoelectric substrates” disclosed in the prior art and “ferrite” disclosed in the specification, the accused equivalent could not have been deliberately excluded if the flexible bar is applied (although it may be argued that all equivalents including ferrite should be excluded since the specification mentioned “ferrite, etc.”). This case may be understood as finding deliberate exclusion under the Festo presumption or the complete bar.

4) Intellectual Property High Court, Apr. 25, 2009, Hei 24 (Ne) no. 10080 (A Case to Which Estoppel May Apply Even under Flexible Bar)

The court found that the lateral wall portion of the accused device did not satisfy the fifth requirement for equivalents, stating that:

166) Echi hanrei hyakusen, *supra* note 162, at 145.

The appellant (patentee) specified during prosecution that if the lateral wall portion of the present invention is not surrounded by a supporting frame, a portion of a cartridge container would be positioned below the container inlet portion and become flexible to make it difficult to discharge beverage. Accordingly, the appellant deliberately excluded a bellows portion in the lateral wall portion of a plastic bottle made of polyethylene terephthalate (PET) from the scope of the claims, and special circumstances as set forth the fifth requirement for equivalents exists.

Installing the bellows portion in the lateral wall portion of the plastic bottle is disclosed in the cited reference 3. Thus, the narrowing amendment to exclude the bellows portion from the scope of the claims in this case was for the purpose overcoming the grounds for rejection.¹⁶⁷⁾

IV. Analysis of the Relevant Supreme Court Cases¹⁶⁸⁾ and Review of the Excluded Scope of Equivalents

1. Overview

There are ten Korean Supreme Court cases that explicitly dealt with the requirements of the doctrine of equivalents since the 97Hu2200 decision. However, only in the 2001Hu171 case was infringement found under the doctrine of equivalents. The ten Korean Supreme Court cases to be reviewed are provided in the table below, and the symbol “△” in the table identifies decisions that may be viewed as having applied a complete bar.

2. Analysis

167) Matsunaga, *supra* note 21, at 83.

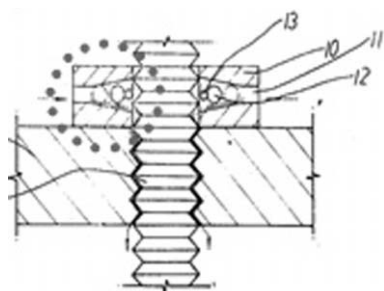
168) See KIM, Doctrine of Equivalents, *supra* note 148, at 312-22; see Ho-joon Yeom, *Method for Determining File Wrapper Estoppel under the Doctrine of Equivalents*, 13 TEUKBYEOLBEOBYEONGU 516-25 (2016).

No.	Decision	Position	Acknowledgement of Equivalents
1	<Material #5-1> Supreme Court, 2000Hu2712, June 14, 2002	△	No
2	<Material #3> Supreme Court, 2001Hu171, Sept. 6, 2002	Flexible	Yes
3	<Material #5-2> Supreme Court, 2002Hu2259, Nov. 13, 2002	Irrelevant	No
4	<Material #5-3> Supreme Court, 2002Hu2181, Dec. 12, 2003	Irrelevant	No
5	<Material #5-4> Supreme Court, 2003Da1564 on Nov. 26, 2004 (<Material #5-5> Supreme Court, 2002Hu2105, Nov. 26, 2004)	△	No
6	<Material #5-6> Supreme Court, Decision 2004Da51771, June 30, 2006	Irrelevant	No
7	<#5-7> Supreme Court, 2005Hu3192, Dec. 7, 2006	△	No
8	<Material #5-8> Supreme Court, 2005Hu1011, Feb. 8, 2007	Irrelevant	No
9	<Material #5-9> Supreme Court, 2005Do4210, Feb. 23, 2007	Irrelevant	No
10	<Material #5-10> Supreme Court, 2006Da35308, Apr. 10, 2008	Irrelevant	No

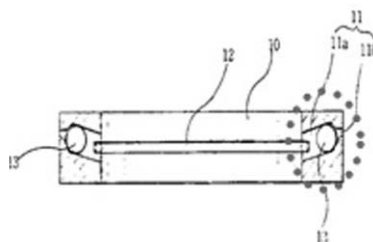
A. Cases That Found Clear Evidence of Deliberate Exclusion

(1) Supreme Court Decision, 2002Hu2259, decide November. 13, 2002 (No. 3 in the Table Above) [Oxygen Supplying Device Using an Automotive Spark Plug]

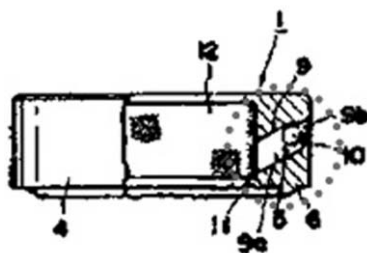
In order to avoid cited art prior art (an air inlet hole having a large aperture portion downwardly inclined and in a predetermined diameter), the air circulation hole 11 whose shape had not been specified was limited to “extending transversely toward an internal circumference of the ring body.” Therefore, it is evident that the corresponding element of the accused invention having the same construction (downward) as the cited prior art was deliberately excluded from the scope of the claims.



Patented Invention at Issue



Accused Invention



Cited Invention

(2) *Supreme Court Decision*, 2002Hu2181, decided December 12, 2003 (No. 4 in the Table Above) [Non-Woven Fabric for Agricultural Use]

After receiving the KIPO's notice of grounds for rejection stating that the "technology of embossing a side or both sides of non-woven fabrics" was already publicly known, the claim was allowed after replacing the term "embossing-processed non-woven fabric" with "element of enabling embossing to be formed in the same location in the opposite sides of the external surface and the internal surface of non-woven fabric."

It is evident that the applicant deliberately excluded the corresponding element (with embossing formed only in a surface) of the accused invention, and it is also likely that the "element with embossing formed on both sides not in the same location" was also deliberately excluded.

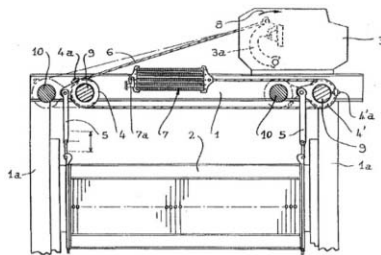
(3) *Supreme Court, Decision*, 2004Da51771, decided June 30, 2006 (No. 6 in the Table Above) [Thin Membrane Buzzer]

The applicant amended the claim to replace the term "buzzer constructed

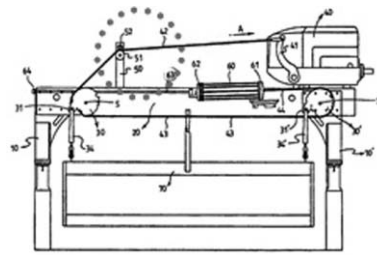
using a magnetized part” with the term “buzzer that is magnetized after construction,” arguing that the claimed buzzer advantageously facilitates magnetization of the buzzer and cannot be found in the cited prior art¹⁶⁹ that disclosed “a buzzer construed using parts provided with magnetism.”

It seems evident that the applicant deliberately excluded a buzzer constructed using a magnetized part from the scope of the claims (the defendant’s buzzer had the same features as the plaintiff’s claimed patent except that the defendant’s buzzer was formed using a magnetized part).

(4) Supreme Court Decision, 2005Hu1011, decided February. 8, 2007 (No. 8 in the Table Above)



Patented Invention at Issue



Accused Invention

The specification of the patent stated that the technical objective of the invention is to “avoid the use of a guide pulley that bends a cable to change the direction of the cable, by employing an element consecutively connecting a locking member (3a), a first lever (4), a second lever (4') and a returning spring set (7) through a single connecting cable (6') (see plaintiff’s exhibit no. 2, page 13).

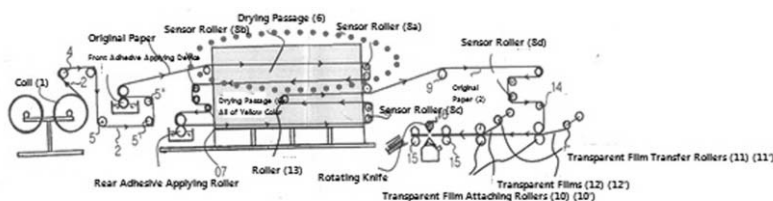
During the opposition proceeding to challenge the rejection of the application, the applicant amended the claim to replace the limitation “the intermediate portion (of the single flexible connecting cable) goes past the first lever (4) and extends to the second lever (4')” with “the intermediate portion (of the single flexible connecting cable) is directly fixed to and guided by the first lever (4) and transversely extends to be fixed to and guided by the second lever

169) Supreme Court Decision, 2004Da51771, decide June 30, 2006 (explaining that the cited prior art completes the buzzer by using the magnetized part (magnet)).

(4')” (see plaintiff’s exhibit no. 5, page 69), thereby evidently excluding the element using the guide pulley from the scope of the claims of the patented invention in this case.

Referring to the drawings of the accused device, the “upper and lower guide rollers (51 and 52)” evidently bend the cable and change the movement direction of the cable. Therefore, the upper and lower guide rollers (51 and 52) of the accused device fall under the elements that were deliberately excluded during the prosecution and opposition processes.

(5) Supreme Court Decision, 2005Do4210, decided February. 23, 2007 (No. 9 in the Table Above) [Consecutive Album Board Manufacturing Device]



Patented Invention at Issue

Originally, the claims did not specify how many times the paper passes through the drying chamber. The application was rejected because “the effect of using a single drying room is not explained sufficiently.” The applicant limited the scope of the claims to a structure (see the portion marked as ) where the paper passes through the drying chamber two times, and added to the detailed description of the invention explaining that the passing of the paper twice achieves the effect of “complete drying of the adhesive and economic efficiency resulting from the reduction of the drying room space.”

Based on the prosecution history, it seems evident that the applicant deliberately excluded the “structure where the paper passes the drying chamber one time” from the scope of the claims. Even in such a case, it is arguable whether the applicant is deemed to have surrendered the “structure where the paper passes the drying chamber more than two times,” although the applicant would be deemed to have surrendered it under the complete bar approach.

(6) *Supreme Court, 2006Da35308, decided February. 10, 2008 (No. 10 in the Table Above) [Aromatic Ester for Marking or Tagging Organic Products]*

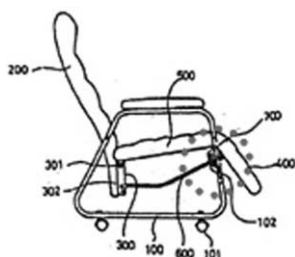
The difference between the patented invention in this case and the defendant's practiced invention is whether the substituent group of an ortho-cresolphthalein compound is C3 alkyl (the patented invention) or C5 alkyl (defendant's practiced invention) (difference in the number of carbons of an alkyl group).

Claim 8 before the amendment included both C3 and C5. After receiving a notice of grounds for rejection for a wide range of reasons such as lack of written description and lack of inventiveness, the applicant submitted a response on August 6, 2002, stating that: "Although the applicant does not believe that claims before the amendment, which were directed to compounds under the chemical formula 1, are not patentable, the applicant narrowed the claims to specific compounds in the examination process for commercial reasons. The applicant filed a divisional application for the remaining claims except for those directed to such specific compounds." On the same day, the applicant revised the application to file a divisional application by deleting Claims 1 to 8 of the patented invention and by specifying Claim 9 as an "ortho-cresolphthalein butyryl ester" compound. As a result, the applicant was granted patent for the patented invention in this case.

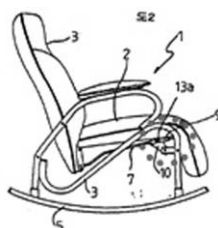
Based on the prosecution history above, it seems evident that the applicant deliberately excluded the "compound whose substituent group is C5 alkyl" from the scope of the claims.

B. Cases That May Be Viewed as Applying a Complete Bar

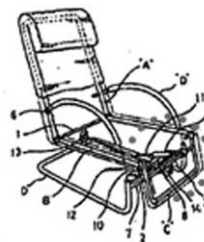
(1) *Supreme court Decision,, 2000Hu2712, decided June 14, 2002 (No. 1 in the Table Above) [Armchair]*



Roller Type



Sliding Type



Sliding Type

In response to the notice of grounds for rejection that a person having ordinary skill in the art may easily derive the applicant's invention from comparable designs, the applicant amended the claims to replace a generic element "guiding portion" (the portion enabling a rod to pass so that the armchair can lie down and get up) with a more specific element of "pair of rollers." The Korean Supreme Court held that "by limiting the guide portion to the 'pair of rollers,' it should be understood that the applicant will not assert infringement against its equivalent elements" There is a view that the Korean Supreme Court in this case took the complete bar approach.¹⁷⁰⁾

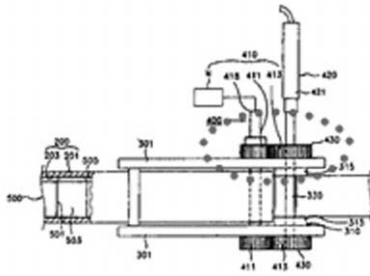
However, what the Korean Supreme Court found was that "by reciting 'a structure configured to enable a guide portion to guide a connection lever that operates through a direct connection of the back and the auxiliary support' in the preamble of the claim, the applicant admitted that this feature was known" and that "by limiting the guide portion to 'a pair of rollers' in the body of the claim, the applicant acknowledge that the applicant would not assert infringement by equivalent features," thereby noting that everything except the "pair of rollers" was admitted as known.

As the sliding mode is seen as the narrowed part directly relevant to the element of the prior art, which is the subject of narrowing in the patented invention, or the reason for amendment (to avoid the prior art), it can be deemed to have been deliberately excluded from the scope of the claims. Therefore, it cannot be concluded that the Korean Supreme Court adopted the complete bar approach in this case.

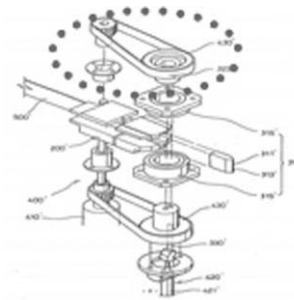
On the other hand, the decision was issued before the decision 2001Hu171 which set forth the legal principles of the doctrine of prosecution history estoppel.

(2) *Supreme Court, 2003Da1564 on Nov. 26, 2004 and Supreme Court, 2002Hu2105, Nov. 26, 2004 (No. 5 in the Table Above) [the bending device of the cutting blade]*

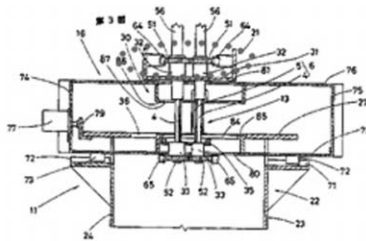
170) Kim, *Prosecution History Estoppel*, *supra* note 13, at 362; Byung-nam Kim, *Consideration on Estoppel Limiting the Doctrine of Equivalents (Second Part)*, 32 CHANGJAKGWA GWOLLI Fig. 32 (2003): same effect as above.



Invention in Claim 1 at Issue



Challenged Invention



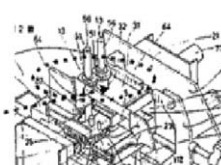
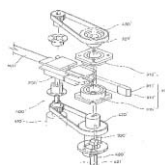
Prior Art Invention

When the prior art invention was submitted in the administrative invalidation trial, the generic element “driving part” was limited specifically to the “driving part to be directly combined with the tooth form part (gear)” by filing a request for a trial for correction (the prior art was a driving part comprising a rack¹⁷¹⁾, a gear and a hydraulic cylinder).

The Korean Supreme Court determined that the “driving part to be combined with the tooth form part by timing belt” was deliberately excluded by the foregoing amendment. As a result, some hold the view that the Korean Supreme Court adopted the complete bar by which anything in the scope of the claims was given up except for the “driving part to be directly combined with the tooth form part” which is the specific concept.¹⁷²⁾

Since the gear and the rack are “directly” combined in the prior art invention,

171)



(cited inventions)

it is not unreasonable to view that it is a complete bar to consider the combination by the belt to be deliberately excluded by the foregoing amendment. If the flexible bar approach was followed, the part which was excluded by the amendment in this case would have been the “driving part comprising a rack, a gear, and a hydraulic cylinder” found in the prior art invention.

However, the Korean Supreme Court never stated that it adopted the complete bar approach, but rather cited the decision 2001Hu171 which can be considered as following the flexible bar approach.

This may be a case in which the Korean Supreme Court simply agreed with the court of first instance that the subject matter was excluded deliberately in view of the overall circumstances of the amendment.

(3) *Supreme Court Decision, 2005Hu3192, decided December. 7, 2006 (No. 7 in the Table Above) [Finish Coating Method with Ultraviolet Ray Hardening-Type Paint*

	Patented invention of this case		Accused Invention	Prior art invention
Materials of transparent resin	Prior to amendment	Transparent resin layer	Acrylic Urethane	Polyester resin Acrylic resin
	After amendment	Material of transparent resin layer is polyester or epoxy polyester		
Application method of hardening- type paint	Prior to amendment	Application	Spray (nebulization) method	Silk screen printing ¹⁷³⁾
	After amendment	Curtain coating method ¹⁷⁴⁾		

172) Kim, *Prosecution History Estoppel*, *supra* note 13, at 362; Ho Yim, Legal Principles of the Doctrine of Equivalents and Estoppel in the Patent Case Annotation of the Korean Supreme Court 2005 JISIKGWA GWOLLI 121.

173) Naver Shopping Glossary, NAVER, <http://terms.naver.com/list.nhn?cid=51399&categoryId=51399> (search “silk screen printing”) (“After a film is formed with a mesh, ink is poured onto the film of mesh and a rubber roller moves across the screen to transfer the ink onto the printing surface.”).

174) A curtain of paint falls onto a substrate, and the substrate is transported for painting.

Claim 1 directed to a generic “transparent resin” and generic “application method of ultraviolet ray hardening type paint” prior to the amendment was narrowed to incorporate the specific features of Claim 2 (materials of transparent resin layer are polyester or epoxy polyester) and Claim 4 (application of ultraviolet ray hardening type paint is curtain coating method).

As the Korean Supreme Court found that other materials of transparent resin and application method of ultraviolet ray hardening-type paint were deliberately excluded from the scope of the claims in the patented invention except for the materials of the transparent resin and the application method of ultraviolet ray hardening-type paint which were specified in Claim 1 after the amendment, some hold the view that the Korean Supreme Court adopted the complete bar approach that denies equivalents by applying estoppel to elements narrowed to a specific concept.¹⁷⁵⁾

Although an “acrylic resin” and “silk screen printing” seemed to be deliberately excluded, there may be different opinions as to whether the “spray method” among other application methods was excluded purposefully. However, this case clearly indicates that the prior art invention is not included in the scope of the claims of the patented invention (it is obvious that leveling compound is not an element comprising the prior art invention), and the asserted patent seems to have been in danger of being invalidated. Also, the plaintiff’s (the applicant’s) remarks to the amendment stated that “while it is formed by curtain coating method so the orange peel phenomenon¹⁷⁶⁾ does not occur on the surface . . .” Therefore, it is reasonable to conclude that any method that could not create such effect was excluded.

This appears to be a case in which the Korean Supreme Court felt there was no reason to find fault with the reasoning of the court of first instance, since it had no effect on the judgment and was not clearly erroneous. Accordingly, it is difficult to conclude that the decision of this case adopted the complete bar approach.

C. The Flexible Bar Approach

(1) Supreme Court Decision, 2001Hu171, decided September 6, 2002 (No. 2 in the Table Above) [production method of EPO]

¹⁷⁵⁾ Kim, *Prosecution History Estoppel*, *supra* note 13, at 362.

¹⁷⁶⁾ The texture of the painted surface with small bumps, resembling that of an orange peel.

The patented invention is a method of producing hyematogenous protein, which is human EPO (Erythropoietin), by using a specific DNA. An amendment was made to the production method claim to specify a DNA sequence, in response to the other party's opposition that the patented invention lacked novelty and inventiveness in view of the cited invention. Although the cited invention had no disclosure directly related to the DNA sequence which was added by the amendment, this amendment specified the DNA sequence.

The Korean Supreme Court held that since the cited art had no disclosure directly related to the DNA sequence which was added by the amendment, it was difficult to conclude that the patentee intended to exclude from the scope of the claims equivalents relative to the added DNA sequence.

The number of DNA sequences in the accused method was 2,400, which was included in the DNA sequences (1 to approximately 3,400) in Claim 1 of the patented invention, and those 2,400 sequences were key DNA sequences that can produce protein.

Here, the Korean Supreme Court seems to have taken the flexible bar approach, in that it recognized equivalence in terms of the elements narrowed by amendment in light of the grounds for amendment.¹⁷⁷⁾ According to the case explanation of the foregoing case, "where the grounds for amendment are not obvious, although the party with the burden of proof changes depending on whether the theory of Japan or the U.S. Supreme Court is applied, the scope of the estoppel should be determined by carefully examining what is the scope of amendment intended by the applicant based on the purpose of amendment or the content of the prior art that the applicant tried to avoid, rather than identifying the amendment superficially, even in the case where the scope of the claims is amended in response to any ground for rejection, etc.," which indicates that the flexible bar approach was adopted.¹⁷⁸⁾

The dissenting opinion of the CAFC *Festo* decision before remand (the flexible bar) states that from the perspective of the complete bar, the protected scope of invention would be excessively narrowed in the area of biotechnology.¹⁷⁹⁾

177) Kim, *Prosecution History Estoppel*, *supra* note 13, at 362.

178) Ki-jung Kang, *Determining Whether a Certain Element is Excluded Deliberately from the Scope of Claims in the Process of Application of Patented Inventions*, 43 PALLYEHAESOL 502.

179) *Festo*, 234 F.3d at 617 (Michel, J., dissenting).

According to the dissent, in inventions involving protein molecule, for example, claims are composed in the order of amino acids consisting of protein, and an amino acid can be substituted with another amino acid (the substitution in the place of an amino acid can produce 3,600 protein analogues) without changing the function. Therefore, if the complete bar approach is adopted, it may lead to an unreasonable result that one can escape infringement of a patent in which the amino acid sequence was amended simply by substituting the amended amino acids with other amino acids.

D. Summary

According to the foregoing analysis, it seems that no Supreme Court precedent clearly adopted the complete bar approach. The Korean Supreme Court appears to have taken the flexible bar approach in 2001Hu171 decision, while there is no trend of adopting the complete bar approach.

3. Review of the Scope of Equivalents Excluded by the Doctrine of Estoppel

A. Opinions in Korea

Opinions are divided with respect to this issue, as some take a flexible approach¹⁸⁰⁾ while others choose to adopt the presumptive bar approach..¹⁸¹⁾

180) Taeck Soo Kwon, *Cases Where the Doctrine of Prosecution History Estoppel is Applied as a Negative Requirement of the Doctrine of Equivalents*, 41 PALLYEHAESEOL 439; Kang, *supra* note 178, at 502; KIM, *DOCTRINE OF EQUIVALENTS*, *supra* note 148, at 407; Sung-joon Choi, 100 Patent Cases of Information Law (I) 71 (2006); Sung, *supra* note 77, at 762 (explaining t“ Korean cases seem to have adopted the flexible bar approach, which is also supported by most legal theories,” seemingly supporting the flexible approach, while not clearly expressed).

181) Jun-seok Park, *Annotated Patent Law (I)* 1180 (Sang Jo Jong ed., 2010) (explaining that in this view, if the amendment is shown to exclude a certain scope, the doctrine of prosecution history estoppel may apply, and the patent holder has to prove that he/she has no intention or surrendering rights as to the scope in order to overcome such de facto presumption, which is in line with the presumptive bar approach adopted by the U.S. court); Ji-won Na, *Review of Legal Principles Restricting Infringement on Equivalents: Practical Implementation of Prosecution History Estoppel* 41 BYEONHOSA 257 (2011); Tae-bok Kwon, *The Scope of Application of Prosecution History Estoppel to Patent Litigations*, 52 CHANGJAKGWA GWOLLI 17, 24 (2008); Yim, *supra* note 172, at 124; Yeom, *supra* note 168, at 531, etc.

B. The Scope of the Equivalents Excluded by the Doctrine of Estoppel – the Flexible Bar

1) Typical cases

Consider the case of a generic concept A and its specific concepts of a1, a2 and a3. If the claim was amended to specify a3 to avoid prior art that disclosed a1, while a2 is the accused invention the flexible bar approach would not regard a2 as having been deliberately excluded, the complete bar approach considers a2 as having been deliberately excluded as well, and the presumptive bar approach presumes a2 was excluded as the amendment was made to meet patentability requirements unless rebutted by the patentee.

2) The existing view in the Korean Supreme Court precedents

As mentioned above, it can be said that the decision 2001Hu171 rendered on September 6, 2002 adopted the flexible bar approach.

3) Regarding the rationales for the doctrine of equivalents and estoppel

One of the rationales for the doctrine of prosecution history estoppel is to prevent unfair double-dipping by the patentee with contradictory positions taken during prosecution and in an infringement action. In this regard, if the patentee's reason for the amendment is not clear, it is difficult to conclude the positions or acts that were contradictory.

For the patentee, there may be nothing more frustrating losing an infringement case for allegedly having allowed infringing equivalents to be practiced even though the patentee never intended to surrender the infringing equivalents from the claim scope.¹⁸²⁾

If the complete bar is applied, an unscrupulous copyist of a patented invention may easily avoid infringement just by making a minor alteration to the amended element after checking the content of amendment while copying all other elements. And this would result in the doctrine of equivalents being practically eviscerated.¹⁸³⁾ The purpose of the doctrine of equivalents is to protect patent rights substantially even if it means sacrificing the clarity of the claim scope to some extent. However, as the complete bar approach only focuses on the "clarity of the

182) See Matsunaga, *supra* note 21, at 79.

183) *Festo*, 234 F.3d at 600-01 (Michel, J., dissenting).

claim scope” with respect to the application of the doctrine of equivalents, such fundamental purpose (strengthening the protection of rights) would be lost.¹⁸⁴⁾

Although a patentee may not always deserve a wide range of equivalents, the patentee should at least be able to assert the claims against a narrowly tailored range of equivalents.¹⁸⁵⁾ An amendment does not cure the limitations of language — a narrowing amendment may demonstrate what is not included in the claim scope, but it still does not precisely define what the claim scope is.¹⁸⁶⁾

Under the complete bar approach, there is an excessive imbalance between amended unamended claims (the same limitations of language exist not only when preparing amending the claims pursuant to the grounds for rejection¹⁸⁷⁾). The difficulty in drafting claims while taking into consideration all modalities of infringement is just the same when drafting a patent application and making amendments. It is problematic to measure amendments against a stricter standard when there is hardly any difference in the difficulty of drafting or amending claims.¹⁸⁸⁾

Considering that a majority of patented inventions are registered after being amended, the complete bar approach clearly serves as an obstacle to application of the doctrine of equivalents.¹⁸⁹⁾

Some commentators suggest that it is the practice of judges addressing the equivalence issue during a pre-trial procedure called “Markman hearing” following the *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996) to construe the claims as a question of law, rather than the expansion of prosecution history estoppel, that led to the demise of the doctrine of equivalents.¹⁹⁰⁾ On the other hand, other commentators believe that the expansion of prosecution history estoppel together with Markman hearings led to the

184) Kim, Doctrine of Equivalents, *supra* note 148, at 397.

185) *Festo*, 234 F.3d at 603 (Michel, J., dissenting) (taking *Goodyear Dental Vulcanite Co. v. Davis*, 102 U.S. 222 (1880) and *Hurlbut v. Schillinger*, 130 U.S. 456, (1889) as an example).

186) *Festo*, 535 U.S. at 738 (“After amendment, as before, language remains an imperfect fit for invention. The narrowing amendment may demonstrate what the claim is not; but it may still fail to capture precisely what the claim is.”).

187) *Festo*, 234 F. 3d at 624 (Linn, J., dissenting).

188) Kim, Doctrine of Equivalents, *supra* note 148, at 397.

189) Kim, Doctrine of Equivalents, *supra* note 148, at 398.

190) See John R. Allison & Mark A. Lemley, *The (Unnoticed) Demise of the Doctrine of Equivalents*, 59 STAN. L. REV. 955, 966-67, 977 (2007).

decline.¹⁹¹⁾

According to U.S. case law, “argument-based estoppel” applies only when there is a clear and unmistakable surrender, as discussed above. While amendments during prosecution are not different in that regard, the U.S. Case law dealing with argument-based estoppel seems to put emphasis here because the intent of the patentee’s arguments are more often unclear than in amendments. Estoppel should apply only when competitors can reasonably understand from the reason for the amendment and other prosecution history what the patentee surrendered (i.e., when the surrendered scope can be objectively determined) so as to prevent recapturing of what was actually surrendered, and not to entirely shut out the doctrine of equivalents.¹⁹²⁾

4) The role of other requirements of the doctrine of equivalents

Although there is a need to restrict equivalents or clarify the claim scope, other requirements for the doctrine of equivalents are at play to restrict equivalents as well. In this regard, the role of estoppel should be limited to precluding equivalents when there is an objective surrender, while the requirements (i) through (iv) of the doctrine handle less certain situations to limit or allow equivalents. There is no reasons to rely solely on estoppel to limit equivalents.

Looking at the hypothetical (a claim specifying a value of 20 or less being narrowed to 5 or less to overcome prior art disclosing the value 15) given by the majority in the pre-remand CAFC *Festo* decision that took the strict complete bar approach, the range from 15 to 20 can be considered to have been clearly surrendered, a value close to 15 may be considered unfringed as a freely practiced invention in view of the prior art that disclosed 15, and a value close to 5 may likely be an infringing equivalent, although the technical effect or solution may also be deemed different depending on the specifics of the case.

If a patent is granted by virtue of an amendment that altered or added a part of claims, that part is likely relevant to the essence of the technological idea. Estoppel

191) Lee Petherbridge, *On the Decline of the Doctrine of Equivalents*, 31 CARDOZO L. REV. 1371, 1391-92, 1404 (2010).

192) Yasuyuki Echi, *Legal Grounds and Determination Structure for Prosecution History Estoppel* (2), 155(6) HORITSU RONSO 50 (2004).

becomes an issue when that added or altered part corresponds to a part that is being contested in the accused device. In that regard, the issue of estoppel can often be dealt with in the first requirement of equivalents. This would be applicable to the “slow-release formulation” case¹⁹³⁾ at the Japanese district court and the recent Korean Supreme Court decision 2014Hu638 rendered on April 26, 2017.

Another view that is in line with the foregoing view is that a careful consideration of the principle of the technical solution as set forth in the first requirement of the doctrine of equivalents would prevent the scope of equivalents from being applied too widely even if a flexible approach to estoppel is taken, since the part added or altered by amendment is usually closely related to the technical solution.¹⁹⁴⁾

As for the fourth requirement, it is not necessary to apply estoppel if, for example, the patented invention comprising elements A+B+C is narrowed to A+B+c3 in an amendment to overcome a notice of grounds for rejection for lack of inventiveness in view of a cited invention 1 having elements A'+b and a cited invention 2 having element c1, and the accused product having elements A+B+c1 would satisfy the fourth requirement (i.e., it constitutes a freely practiced invention in view of the cited invention 1 having elements A'+b and the cited invention 2 having element c1).¹⁹⁵⁾ In the case of Germany where prosecution history is not considered in determining the scope of claims, the role of the prosecution history estoppel is assumed by the defense of freely practice invention, albeit partially.

In addition, there is no need to place too much weight on estoppel in case there are grounds for invalidating the patent and the accused product would thus escape infringement.

5) Jury trial and other policy consideration

In the pre-remand CAFC *Festo* decision, Judge Plager agreed with the complete bar approach but argued that the best solution is to apply the law of equity to the doctrine of equivalents and allow the judge to make a decision,¹⁹⁶⁾

193) *Festo*, 234 F.3d at 620, 629 (Linn, J., dissenting).

194) Tokyo Chihō Saibansho [Tokyo Dist. Ct.] Jan. 28, 1999, Hei 8 (Wa) no. 14828.

195) Kim, *Doctrine of Equivalents*, *supra* note 148, at 399-400.

196) See Kim, *Doctrine of Equivalents*, *supra* note 148, at 401.

adding that the jury's verdict on equivalents, which is affected by an individual's choice, does not ensure foreseeability. While the complete bar approach is an attempt to render such verdict foreseeable, it would encourage applicants to file a patent application with narrow claims instead of filing with broad claims and amending as necessary to address the grounds for the grounds for rejections by the patent office, which defeats the purpose of providing foreseeability to the scope of equivalents.

Under the Korean judicial system where judges, not the jury, give a verdict, there does not appear to be any significant reason to adopt the complete bar approach.

While the complete bar approach puts emphasis on fostering innovation by reducing the risk of infringement, it promotes unscrupulous copying and free-riding through insubstantial changes to the patented inventions rather than technological innovation, which would undercut the return on patentees' investments and disincentivize disclosure of new technology through the patent system.¹⁹⁷⁾

The 1853 decision by the U.S. Supreme Court in *Winans v. Denmead*¹⁹⁸⁾ marked the beginning of the doctrine of equivalents in the U.S., and the doctrine has experienced ebbs and flows in the courts since then.¹⁹⁹⁾ After the establishment of the CAFC in 1982, there had been a tendency to adopt the flexible bar approach regarding prosecution history estoppel to focus on the protection of patentees, but the doctrine of equivalents was on the decline since the 1996 *Markman* decision,²⁰⁰⁾ and that trend has accelerated following the *Festo* decision.²⁰¹⁾

197) *Festo*, 234 F.3d at 591-93 (Palger, J., concurring) (“[T]his opinion is the second best plan for the complete bar approach, and fundamentally, equity should be applied”).

198) *Festo*, 234 F.3d at 627 (Linn, J., dissenting) (“Rather, the majority’s new bright line rule, by constraining limitations amended for a statutory purpose to their literal terms, is likely to encourage insubstantial changes to an established product, rather than investment in break — through technological advancements. Such a rule, therefore, promotes free riding and undercuts the return on a patentee’s investment. ...The Majority’s new rule, which sanctions the behavior of the copyist who avoids the letter of the claims and adds nothing to the technology, is likely to be a disincentive for inventors to bear the commercial risk in developing and disclosing new technology.”).

199) *Winans v. Denmead*, 56 U.S. 330 (1853).

200) Kim, Doctrine of Equivalents, *supra* note 148, at 60 (Before the U.S. Supreme Court issued the *Graver Tank* judgment in 1950, there was a tendency of passively applying the doctrine of equivalents, and some argued that the doctrine of equivalents should be discarded.).

201) Allison & Lemley, *supra* note 190, at 977.

However, some hold the view that there is a sign of change in recent CAFC decisions,²⁰²⁾ such as strictly interpreting the applicability of the doctrine of “vitiation” as a limitation to the doctrine of equivalents²⁰³⁾ or finding that arguing equivalence is not necessarily prohibited when the equivalents were foreseeable at the time of patent application.²⁰⁴⁾

As can be seen from the foregoing, policy consideration exerts a significant influence on the application of the doctrine of equivalents. It has been only 20 years since the Korean courts started recognizing the doctrine of equivalents, and there should be no reason to blindly follow the trend in the U.S. courts that has experienced ebbs and flows over the past 150 years. It is notable that the Korean Supreme Court decision 2001Hu171 that first reviewed the legal principles of prosecution history estoppel consulted, but did not follow, the Festo decision.

6) Foreseeability

Under the presumptive bar approach, an amendment made for reasons of patentability is presumed to trigger estoppel. While the presumption is rebuttable, it is difficult to meet the burden of showing that the presumption is rebutted (i.e., it is difficult to rebut the presumption when the reason for the amendment itself is unclear from the record). As such, the presumptive bar is in practice close to the complete bar.

As noted in the discussions of the U.S. cases above, it is unsettled as to what the subject of foreseeability is or how the new matter doctrine should be handled under criterion (1) of Festo, and it is uncertain how the tangential relationship under criterion (2) of Festo can be shown if the prosecution history is silent regarding the reason for the amendment.

The strongest rationales for the presumptive bar and the complete bar come down to “certainty” and “foreseeability,” but it is doubtful whether the approach taken by the U.S. courts truly provides foreseeability regarding when a presumption would be rebutted.

202) Petherbridge, *supra* note 191, at 1392.

203) See Hirashima, *supra* note 135, at 120-26.

204) *Deere & Co.*, 703 F.3d 1349; *Brilliant Instruments, Inc. v. GuideTech, LLC*, 707 F.3d 1342 (Fed. Cir. 2013); *Charles Mach. Works, Inc.*, 723 F.3d 1376; *Ring & Pinion Serv. Inc. v. ARB Corp.*, 743 F.3d 831 (Fed. Cir. 2014).

Applying estoppel only when there is an objective showing would not impair foreseeability. Since there is no duty for an applicant to reveal the reason for an amendment, there should not be a presumptive bar that is difficult to rebut only because the reason for the amendment is not clear.

V. Supreme Court Decision, 2014Hu638, Decided April 26, 2017

1. The Reasoning of the Court

This decision provided the legal principle that “whether or not the element was deliberately excluded from the claims shall be determined by considering (i) the specification of the invention, (ii) the examiner’s opinion that the applicant received from the filing of an application to the grant of the patent, and (iii) the applicant’s intent reflected in his/her amendments and responses submitted during the prosecution process (see Supreme Court Decision, 2001Hu171, decided September 6, 2002). Accordingly, a lower court should not conclude that the applicant deliberately excluded all features between pre- and post-amendment claims just because the amendment narrowed the claim scope. It should instead find deliberate exclusion only when it determines that the applicant intended to surrender certain features from the claim scope, considering various circumstances reflected in the prosecution history such as an excluding an element in a prior art cited in the notice of grounds for rejection to overcome the prior art. This approach should be followed when arguments and remarks were made during prosecution without a narrowing amendment as well.”

This decision clarified the Court’s position that a flexible bar should apply in determining the scope of excluded equivalents, and recognizing that estoppel may attach to arguments even without a narrowing amendment.

2. Resolution of the Issues Based on the Above Principle

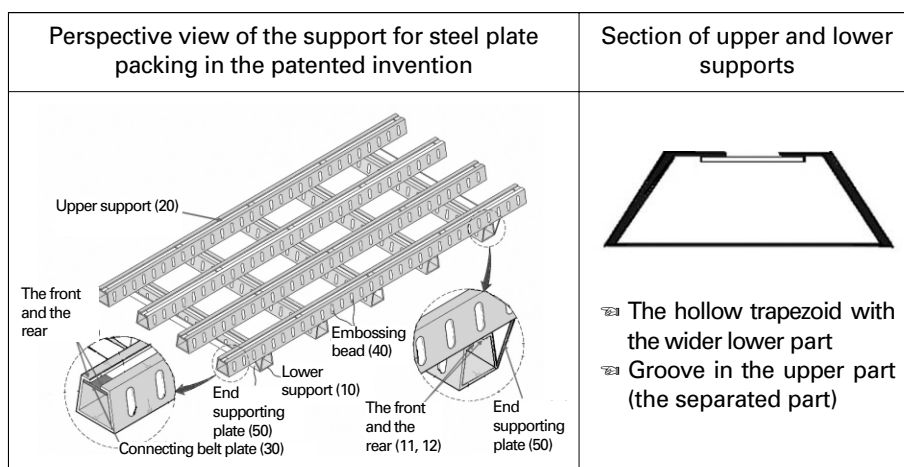
A. Claim 1 Invention at Issue *(the paragraph numbers from the specification are shown in brackets)*

1) Name: Support for Steel Plate Packing

2) Date of Patent Application/Date of Registration/Registration Number:
May 17, 2007/February 18, 2008/No. 806700

3) Summary of the Invention

The invention comprises a hollow trapezoidal support whose lower part is wider than the upper part and a connecting belt, which has advantageous effects such as providing stability[34] and preventing movement of the steel plate and bending / deformation[24, 25] of the trapezoidal support by increasing the contact surface area of the support when lifting or carrying the steel plate, and saving manufacturing and transportation costs[17] by allowing cheaper steel and a lighter support to be used.



4) Scope of the claims (Claim 1, shown below, is the only claim at issue)

[Claim 1] A support for steel plate packing comprising:

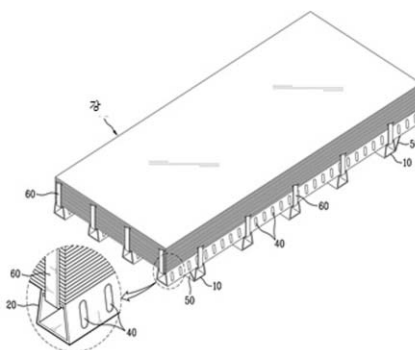
a plurality of lower supports (10) arranged horizontally with spacing therebetween and formed by bending a steel plate to provide a sectional shape of a hollow trapezoid having a lower wider than an upper part, and wherein the front (11) and the rear (12) of the bended part are disposed at the top of the section with spacing therebetween (“Element 1”);

a plurality of upper supports (20) arranged horizontally on the top side of each lower support with spacing for the lower side to intersect with the upper

side of the lower supports, each contact surface with the lower supports fixed by welding, wherein the plurality of upper supports are formed by bending a steel plate to provide a sectional shape of a hollow trapezoid having a lower part wider than an upper part, and wherein the front (21) and the rear (22) of the bent part are disposed at the top of the section with spacing therebetween (“Element 2”);

a plurality of connecting belt plates (30) which partially join the bent front part with the bent rear part in each upper and lower support by welding the front part with the rear part of each lower and upper support with spacing therebetween (“Element”); and

an end supporting plates (50) which are fixed and extended at an inclination towards the outside from the bottom of lower supports, located on the both sides of the lower support, to the bottom of each upper support to reinforce supporting capacity on both sides of each upper support (“Element 4”).

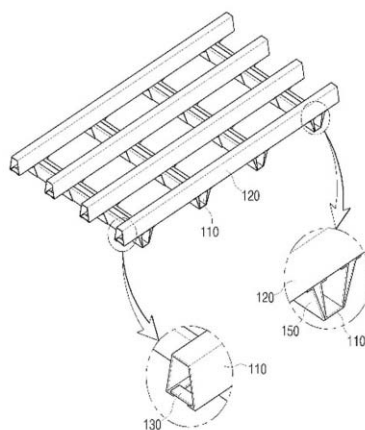


B. Challenged Invention

A steel packing support plate, comprising:

a plurality of lower supports (110) arranged horizontally with spacing therebetween and formed by bending a steel plate to provide a sectional shape of a hollow trapezoid having a lower part wider than an upper part, wherein the front and the rear of the bent part are disposed at the top of the section with spacing therebetween;

a plurality of upper supports (120) arranged horizontally on the top side of each lower support with spacing for the lower side to intersect with the upper side of the lower supports, each contact surface with the lower supports fixed by welding, wherein the plurality of upper supports are formed by



Perspective view of
the challenged invention

bending a steel plate to provide a sectional shape of a hollow trapezoid having a lower part is wider than an upper part, and wherein the front and the rear of the bent part are disposed at the bottom of the section with spacing therebetween;

a plurality of connecting belt plates (130) which partially join the bent front part with the bent rear part from the inside of each upper support and each lower support by welding; and

an end supporting plate (150) which are fixed and extended at an inclination towards the outside from the bottom of each lower support to the bottom of each upper support to reinforce supporting capacity on both sides of each upper support.

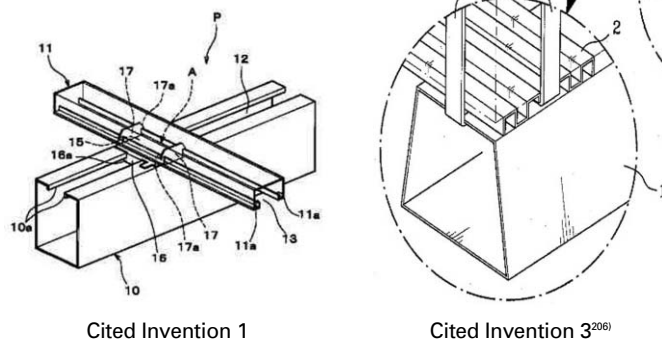
C. Prosecution History

1) The initial scope of claims

Both Element 1 and Element 2 were specified as “the sectional shape of a hollow trapezoidal steel plate” with no limitation as to the trapezoid shape.

2) Notice of submission of opinion by the KIPO examiner

A) Cited inventions (compared inventions)²⁰⁵⁾ (the cited invention 2 is omitted herein as being irrelevant to the issue)



205) *Ring & Pinion Serv. Inc.*, 743 F.3d 831.

206) The term “cited invention” is used for the original text, but “compared invention” is used for the analysis

B) The opinion of the KIPO examiner

“By comparing Claim 1 to Cited Invention 1, the lower and upper supports correspond with Base Frame (10) and Installment Frame (11) in Cited Invention 1... However, unlike Cited Invention 1 and 2 (the author’s comment: rectangular shape), this claim has the trapezoidal section shape of the lower and upper supports, which correspond to the trapezoid support in Cited Invention 3. Accordingly, in this claim the person who has ordinary skill in the art would easily have formed Base Frame and Installation Frame in Cited Invention 1 in the trapezoidal shape shown in the support of Cited Invention 3 and converted the projection member of the framework and the panel in Cited Invention 2 to make the lower and upper supports bolster each other. Therefore, difficulty in composition is not shown.”

3) Response by the applicant

In the response submitted on October 24, 2007, the applicant amended the lower and upper supports described as the “sectional shape of hollow trapezoid” without any limitation of form in Component 1 and 2 to “the sectional shape of hollow trapezoid with its lower part wider than its upper part hereinafter the “Wider Lower Part”, but the applicant failed to provide the reason for such amendment.

As for the difference in location of grooves (relevant to Element 2), “the grooves in Installment Frame of Cited Invention 1 (11) are combined into Base Frame (10) in a downward direction. On the other hand, given the state of combination of the upper support (20) of the present invention with the lower support (10) by welding, the surface of the front and the rear of the bended part are situated on the top of the upper support with certain space apart from each other. Accordingly, when welded with the lower support (10), the upper support (20) of the present invention has a wider bottom surface which strengthens the binding force to improve structural stability.”

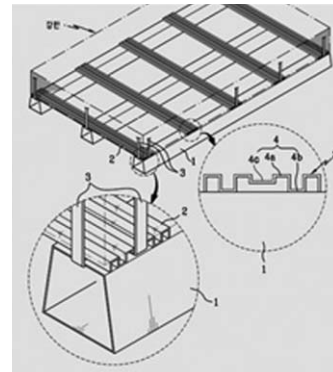
4) Detailed description : remains unamended**A) Related art and its problem**

Hardwood is used for the support, has a rectangular section, the lower and upper parts are fastened by rivets [16] (leads to production cost increase, weight increase, corroded rivet [17]) → Compared Invention 3 (by the same applicant):

has a steel plate and a hollow trapezoid, and fixed by welding [19]. It leads to reduction in the production cost and weight and improved stability with a wider contact surface of the lower support [23].

B) Problem of Compared Invention 3 [24]

The lower support has no bent area (groove), so the sectional shape where the front and rear parts meet may be deformed, and the middle area of the upper support may be deformed when lifted by a crane or a forklift truck.



Compared Invention 3²⁰⁷⁾

C) Technical problem to be solved: to address the two problems mentioned above [25]

D) Effect

As the front and rear parts of the lower support are spaced out, the sectional shape is not deformed [54, 60]; the upper support has the sectional shape of a hollow trapezoid which makes the section higher and significantly increases the bending stress, inhibiting deformation [53, 59]; and the larger contact surface on the bottom side of the lower support improves stability [58].

D. Analysis by the Court

1) The lower support (Element 1)

In response to the grounds for rejection that “the invention in question simply replaces the rectangular section (Compared Invention 1) with the trapezoidal shape in Compared Invention 3,” the applicant has narrowed the scope of claims into the trapezoidal shape with the lower part wider than the upper part shown in the drawing of Compared Invention 3. The sectional shape of the Wider Lower Part in the challenged invention is the element existing in the range between the element before and after the narrowing amendment; but it is

207) The scope of claims in Cited Invention 3 specifies the “hollow trapezoidal column shape,” and the drawing only shows a trapezoid with the lower part wider than the upper part.

not the element disclosed in Compared Invention 1 and 3 under the notice of grounds for rejection. Therefore, it cannot be said that the scope of claims has been narrowed to exclude the elements above with the intention of avoiding the aforementioned Compared Inventions.

However, given that (i) the detailed description of the patent specification states that the sectional shape with the “Wider Lower Part” is able to achieve structural stability by expanding the contact surface of the lower support, and thus the present invention was initially based on the premise of the sectional shape having the wider lower part, and (ii) the amendment of this case limited the claim scope to fit such detailed description of the patented invention, the patentee can be viewed as having excluded the element of the trapezoidal sectional shape with a wider upper part as shown in the challenged invention from the scope of Claim 1 through the amendment.

Furthermore, when analyzed with respect to the first requirement of the doctrine of equivalents, it should be noted that the “Wider Lower Part” can be deemed as one of the technical solutions provided in the specification, although not expressly mentioned as a technical solution but instead explained the benefits of having a wider lower part in the effect of the invention section along with the effect of solving the technical problem. In addition, this technical solution cannot be found in the challenged invention. Therefore, the application of equivalents should be denied as failing to satisfy the first requirement.²⁰⁸⁾

After all, even if the flexible approach is adopted with respect to Element 1, it would be difficult to recognize equivalence.

2) The upper support (Element 2)

The applicant pointed out in the response to the reasons for rejection that in the applicant’s Claim 1, the grooves of the upper support are formed at the upper part, thereby expanding the engagement surface with the lower part to increase the binding force with the lower part. The applicant thus made a statement distinguishing Claim 1 over the Compared Invention 1, but did not make a narrowing amendment. In this regard, “argument-based estoppel” may

208) The court of first instance held that the second requirement (interchangeability, substantial identicalness of effect) is not met without finding whether the first requirement is met.

apply in this case, rather than amendment-based estoppel.

Based on the applicant's statement in the response, it is obvious that the applicant deliberately excluded from the claim scope the feature of having grooves from at the lower part as in the challenged invention, and therefore equivalence should not be found.

VI. Conclusion

Previous decisions like the Korean Supreme Court Decision 2001Hu171 did not clarify the position with respect to the scope of equivalents excluded by estoppel, but held that whether equivalents are deliberately excluded should be decided by taking into account the applicant's intention in prosecution history. This indicates that the Korean Supreme Court in principle adopted the flexible bar approach, which is reinforced by the recent of 2014Hu638 decision.

The legal principle of prosecution history estoppel results in a position unfavorable to the applicant in essence by questioning the applicant's motive. In many cases, the remaining four requirements may be sufficient to determine the applicability of the doctrine of equivalents. As such, it seems that reliance on prosecution history estoppel should be reduced in practice. In this regard, the reasoning provided by the lower court in the Supreme Court's 2014Hu638 decision (Patent Court Decision, 2013Heo9041, decided April 11, 2014) appears particularly strong where it found deliberate exclusion of equivalents under the second requirement for the doctrine of equivalents.

Application of Article 128 of Korean Patent Act in Infringement Cases at the Courts of First Instance¹⁾

- Implications of an Empirical Analysis -

Bowon KWON*

I. Damages Compensation System under Patent Acts

A. Remedies for Patent Infringement

Rights are fundamental elements of law, and are realized eventually by means of remedies awarded by law for infringement of the rights. As such, a patent's exclusive status is protected by remedies artificially²⁾ provided by law against the exercise of the "natural" right to copy.³⁾

The Venetian Patent Statute⁴⁾, which is often referred to as the first patent law, granted a patentee the right to claim damages and to request destruction of infringing device. The damages were set at 100 ducats regardless of the amount

*Judge, Seoul Central District Court

1) This paper, an extension of the presentation at the Patent Court - Seoul Central District Court Joint Seminar (hereinafter referred to as the "Joint Seminar") on May 29, 2017, is focused on the analyses of decisions in patent infringement cases in the first instance from January 1, 2010 to April 30, 2017, and serves as a preliminary work for my thesis provisionally titled "Statistics of Patent Infringement Litigations Over Twenty Years" that is currently under way. I would like to express my deepest gratitude to the participants of the Joint Seminar for their comments and critiques.

2) Michael Lehmann, "The Theory of Property Rights and the Protection of Intellectual and Industrial Property", *IIC-International Review of Intellectual Property and Competition Law*, Vol. 16, No. 5 (1985), 531.

3) William H. Francis, James D. Stevens, Matthew J. Schmidt, Richard W. Hoffmann, *Cases and Materials on Patent Law Including Trade Secrets (7th ed.)* (St. Paul, MIN: Foundation Press, 2017), 3.

4) The Venetian Patent Statute was enacted in Venetian Republic on March 19, 1474 in order to "attract" highly skilled technicians who flowed out of Constantinople after the fall of the Byzantine Empire in 1453. [Patent-like exclusive rights have been authorized even before the Statute. The Republic of Florence granted, on June 19, 1421, Filippo Brunelleschi three-year monopoly rights to the ship (Il Badalone, "the Monster" or "water bird") he designed to carry the marble for the construction of the Duomo of the Cathedral of Santa Maria del Fiore (though the ship failed to sail and eventually sank), which some consider as the first documented patent. Bruce Bugbee, *Genesis of*

of the damage suffered by the patentee (statutory damages).⁵⁾ These remedies

American Patent and Copyright Law (Washington D.C.: Public Affairs Press, 1967), 17-18. Also refer to Edward C. Walterscheid, "The Early Evolution of the United States Patent Law: Antecedents (Part 1)", *Journal of the Patent and Trademark Office Society*, Vol. 76 (1994), 707, for a critical view. Re-cited from F. Scott Kieff, Pauline Newman, Herbert F. Schwartz, Henry F. Smith, *Principles of Patent Law: Cases and Materials* (6th ed.) (St. Paul, MIN: Foundation Press, 2013), 9.]

Thanks to the above Statute, more than 100 patents were awarded (1.3 per year) in Venice from 1474 to 1550, compared to only 13 patents (one in 4.3 years) from 1416 to 1472. Foreign patent applications also became increasingly frequent. Galileo also received a patent for a water pump in 1594. Craig Allen Nard & Andrew P. Morriss, "Constitutionalizing Patents: From Venice to Philadelphia", *Review of Law and Economics*, Vol. 2, No. 2 (2006); Kwon-soon Yoon, "A Study on the Essence of Patent System through Analysis of Venice Patent Law", *Intellectual Property Research*, Vol.1, No.1 (2006); Kwon-soon Yoon, Seung-hyun Lee, *The Logic of Patent Act* (Korea Intellectual Property Institute, 2013), 18-20, 238.

Venetian engineers contributed to spreading identical patent system throughout Europe, including France, Germany, the Netherlands, and England, before 1600. The adoption of the patent system by European nations was in part intended to weaken the conventional guild organization, in turn strengthening the centralized control over industries. Dae-heon Bae, *Infringement of Patent Right and Damages* (Sechang Publishing Co., 1997), 12-15. Some scholars including Sang Jo Jong and Jun-seok Park regard the United Kingdom's 1623 Statute of Monopolies as the pioneer of the modern patent law system, but others saw no particular improvement from the Venetian Patent Statute. Refer to Sang Jo Jong, Jun-seok Park, *the Intellectual Property Law* (3rd edition) (Hongmoonsa, 2013), 49, etc. Kieff (2013), 11-13; Giulio Mandich, "Venetian Patents (1450-1550)", *Journal of the Patent and Trademark Office Society*, Vol. 30 (1948), 177.

Kieff (2013), a well-known textbook first published in 1998, was originally contributed by Professor Donald S. Chisum and Professor Craig Allen Nard as editors until the third edition of 2004. Professor Chisum is the author of *Chisum on Patents: A Treatise on the Law of Patentability, Validity, and Infringement* (NY: LexisNexis), a vast collection of articles published in 53 volumes, which has been published since 1978. He is annually publishing the *Patent Law Digest* (NY: LexisNexis). Professor Nard published textbooks as *The Law of Patents* (4th ed.) (NY: Wolters Kluwer, 2016); Craig Allen Nard, Michael J. Madison, Mark P. McKenna, *The Law of Intellectual Property* (5th ed.) (NY: Wolters Kluwer, 2017).

- 5) For more information on the provisions of the law, see Mandich (1948), 176-177. In the early 15th century, the one-year budget of the city of Venice reached 750,000 to 800,000 Ducats (with its capitalist mercantile network, the Empire, it amounts up to 159 million Ducats), and per capita income is estimated at 50-100 Ducats. Even the lowest estimate of 50 Ducats was 'unbelievably' high by the standard of European nations at the time. The annual budget of Venice alone was similar to those of Spain or Britain, dwarfing other followers, such as Milan, Florence and Genoa, and the budget of the Kingdom of France was only one million Ducats. Fernand Braudel, *Civilization Matérielle, Économie et Capitalisme, XVe-XVIIIe siècle. Tome 3: Le Temps du Monde* (Paris: Armand Colin, 1979) [Translated by Kyung-chul Jou, *Civilization and Capitalism III-1: The Perspective of the World* (Kachi publishing Co., 1997), 161-162]. For reference, the Bank of Korea announced on March 28, 2017 that per capita income of the Republic of Korea in 2016 was \$27,561. The figure

were designed to deter potential infringements as well as to compensate for past infringements.⁶⁾

The Korean Patent Act provides the right to file a claim for injunction (Article 126), damages (Article 128), and reinstatement of business reputation (Article 131) as the remedies for infringement of patent rights and the provisions of criminal penalties (specified in Article 225 and following provisions) are also regarded as means of protection in a broad sense.

B. Property Rule vs. Liability Rule

These remedies can be classified into those based on the “Property Rule” and those based on the “Liability Rule”, depending on how the rights are protected. This distinction is a frame that is frequently used in law and economics, and is credited to the monumental paper co-authored by Professor Douglas Melamed (1945-) and Judge Guido Calabresi (1932-) of the U.S. Court of Appeals for the Second Circuit.⁷⁾

1) The Property Rule

The Property Rule⁸⁾ has been translated differently by various textbooks in

helps to put into context of the size of the statutory damages levied by the Venetian Patent Statute similar to per capita national income of Venice.

6) Mandich (1948:192) classifies the sum of money as a fine.

7) Guido Calabresi & Douglas Melamed, “Property Rules, Liability Rules and Inalienability: One View of the Cathedral”, *Harvard Law Review*, Vol. 85, No. 6 (1972). Judge Calabresi’s study of tort law, with Ronald Coase’s study (1910 ~ 2013, 1991 Nobel Memorial Prize in Economic Sciences) and Gary Becker’s study (1930 ~ 2014, 1992 Nobel Memorial Prize in Economic Sciences), is regarded as a pioneering research study that established the foundation of law and economics in the modern sense. The textbook published soon afterwards in 1972 by Richard Posner (1939-), a former Judge of the U.S. Court of Appeals for the 7th Circuit (who suddenly announced his retirement on September 1, 2017) is the first comprehensive textbook on law and economics and its publication is referred to as one of the monumental moments of law and economics (the ninth edition came out in 2014). See e.g. Herbert Hovenkamp, “Law and Economics in the United States: A Brief Historical Survey”, *Cambridge Journal of Economics*, Vol. 19, No. 2 (1995); Anthony Ogus, *Costs and Cautionary Tales: Economic Insights for the Law* (Oxford: Hart, 2006).

8) Robert Cooter & Thomas Ulen, *Law and Economics* (5th ed.) (Boston: Pearson Addison Wesley, 2008) [Translated by Sunkuh Hahn, *Law and Economics* (5th edition) (Kyungmun Publishing Co, 2009), from the page 116; Jeffrey L. Harrison, *Law and Economics* (3rd ed.) (St. Paul: West Publishing, 2003) [Translated by Soon-koo Myoung, *Law and Economics* (Sechang Publishing Co., 2006)], from the page 83.

Korean, as “principle of protection as real rights,”⁹⁾ “principle of possession,”¹⁰⁾ “agreement rule,”¹¹⁾ “protection framework for granting rights,”¹²⁾ and so on. It is a rule that no one can take or use another person’s right (or a legal entitlement) unless it is agreed by the right holder. A right can only be transferred by the right holder’s voluntarily intent to transact; for example, even if a person discovers an attractive car while walking on the street, s/he cannot simply leave cash matching the car’s market price on the spot and drives it away, which would constitute “efficient infringement.”¹³⁾ That is to say, no matter how much a person is willing to pay, the right or legal entitlement cannot be transferred or enjoyed without the voluntary consent of the right holder.

The property rule is adopted when the transaction cost is low because the

9) Seil Park, *Law and Economics* (Revised Edition) (Pakyoungsa, 2000), 144.

10) Jeungil Oh, Pyoung Keun Song, *Introduction to Law and Economics* (Pakyoungsa, 2014), 33; Dae-hwan Koo, Seong Min Cha, *Science Technology and Patents* (2nd edition) (Pakyoungsa, 2015), 403.

11) “The Law and Economics of Marriage and Divorce,” written by Jinsu Yune, *The Study of Law and Economics*, Vol. 9, No. 1 (2012), 47 [The above article was republished as: Jinsu Yune, *Civil Law Article VII* (Pakyoungsa, 2015), 124-161] suggests that the property rule be translated as the “agreement rule” in that the right holder’s consent is required and the liability rule as the “compensation rule” in that it requires compensation for the right holder, citing that the property rule can be applied not only to a real right but to a claim, such as specific performance, and damages are premised on illegal acts so the former translation examples of “principle of protection as real rights” and “principle of compensation of damages” are not necessarily accurate.

12) The Act on Prevention of Unfair Competition and Protection of Trade Secrets (hereinafter referred to as the “Unfair Competition Prevention Act”), the Constitutional Court Decision 99Hunba77 (en banc) decided September 27, 2001 on trademark law, and subsequent articles on intellectual property law.

13) The notion of “efficient breach” is found in the following statement given by the United States Supreme Court Justice Oliver Wendell Holmes Jr. (1841-1935), a.k.a. “the Great Dissenter.” [(T)he duty to keep a contract at common law means a prediction that you must pay damages if you do not keep it-and nothing else].” Oliver Wendell Holmes, “The Path of the Law”, *Harvard Law Review*, Vol. 10, No. 8 (1897), 462. His argument suggests that if it allows more utility to seek another opportunity by breaching the contract even after compensating for damages, it is (Pareto) efficient to do so. A contract that must be fulfilled should show the will to complete it in such a way as to increase the contract amount (estimated amount of damages). In this case, the contract amount, etc. functions as a kind of signal, which is a criterion to determine whether to fulfill the contract, in other words, the price for the “right to breach.” Justice Holmes’s concept of efficient breach in contrast to a long-standing legal maxim “*Pacta sunt servanda*” is also considered as one of the monumental achievements in law and economics.

small number of parties (candidates) makes it easy to specify the transactional party and of the rights subject to the transaction. In case where both parties can easily agree and transact at a mutually satisfactory market price because there is little disparity in the valuations by the two parties, or where either side may disseize the property sequentially (this is easy to understand when you think of real estate transactions), it is effective to protect the property under the property rule - i.e., to facilitate transactions by demarcating the property rights.

In the Patent Act, the right to seek injunction and a criminal penalty are based on this principle, and possibly the preliminary injunction against infringement as well.

2) The Liability Rule

The term “liability rule”¹⁴⁾ has been translated into Korean as the “principle of compensation for damages,”¹⁵⁾ “compensation rule,”¹⁶⁾ and “behavior-regulated protection approach.”¹⁷⁾ This principle admits the validity of an infringing act committed without first asking the right holder’s intent or even against the person’s will as long as the infringer compensates for damages (i.e., compensation for the transfer or use of the right) based on an objective valuation. In other words, it is the principle of “take now, pay later” that allows an effective infringement.

Protection based on liability rule can be more effective when the transaction cost is too high due to the difficulty in concluding the transaction through voluntary negotiations for the reasons such as: there are an unspecified number of victims (or it is difficult to identify the potential transaction counterparty in advance); or transfer of and compensation for the right, which are socially necessary and desirable, are deterred by patent hold-up,¹⁸⁾ hold-out,¹⁹⁾ or free

14) Jeungil Oh (2014), 33; Dae-hwan Koo (2015), 403; Harrison (2006), 82.

15) Seil Park (2000), 144; Cooter (2009), 116.

16) Jinsu Yune (2012), 47.

17) See e.g. Constitutional Court 99Hunba77, decided September 27, 2001 (panel decision).

18) Michael A. Heller, *The Gridlock Economy: How Too Much Ownership Wrecks Markets, Stops Innovation, and Costs Lives*: Basic Books, 2010) [Translated by Mi-na Yoon, *Counterattack of Ownership, Gridlock* (Woongjin Jisik House, 2009)], a book about the paradox of ownership that fragmented ownership interferes with economic activity and prevents the creation of new productivity. Professor Heller has reversed the concept of the “Tragedy of the Commons” from Garrett Hardin, “The Tragedy of the Commons”, *Science*, Vol. 162, No. 3859 (1968) and come up

with the idea of the “Tragedy of the Anticommons” that Intellectual Property Law (IPR) disrupts technological innovation by fragmenting shared resources. Michael A. Heller, “The Tragedy of the Anticommons: Property in the Transition from Marx to Markets”, *Harvard Law Review*, Vol. 111, No 3 (1998); James Boyle, “The Second Movement and the Construction of the Public Domain”, *Law and Contemporary Problems*, Vol. 66, No. 1 (2003), etc. Academic papers that applied the concept to biological studies go as follows: Michael A. Heller & Rebecca S. Eisenberg, “Can Patents Deter Innovation? The Anticommons in Biomedical Research”, *Science*, Vol. 280, No. 5364 (1998); Michael S. Mireles Jr., “An Examination of Patents, Licensing, Research Tools, and the Tragedy of the Anticommons in Biotechnology Innovation”, *University of Michigan Journal of Law Reform*, Vol. 38, No. 1 (2004) etc. Papers which argue against the concept go as follows: John P. Walsh, “Working Through the Patent Problem”, *Science*, Vol. 299, No. 5609 (2003); Richard A. Epstein & Bruce N. Kuhlik, “Is There a Biomedical Anticommons?”, *Regulation*, Vol. 27, No. 2 (2004), etc. Arguments pointing out that the scientific data that was the public foundation of the research is being privatized: Jerome H. Reichman & Paul F. Uhler, “A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment”, *Law and Contemporary Problems*, Vol. 66, No. 1 (2003). Sometimes patent pools are suggested as an alternative by the following scholars: Robert P. Merges, “Institutions for Intellectual Property Transactions: The Case of Patent Pools”, Rochell Dreyfuss, Diane L. Zimmerman, Harry First (ed.), *Expanding the Boundaries of Intellectual Property: Innovation Policy for the Knowledge Society* (Oxford: Oxford University Press, 2001); Jeanne Clark, Joe Piccolo, Brian Stanton, Karin Tyson, “Patent Pools: A Solution to the Problem of Access in Biotechnology Patents?”, USPTO (2000), etc. Counterarguments against the USPTO’s white paper described in the above are issued by the following experts: Bradley J. Levang, “Evaluating the Use of Patent Pools for Biotechnology: A Refutation to the USPTO White Paper Concerning Biotechnology Patent Pools”, *Santa Clara High Technology Law Journal*, Vol. 19, No. 1 (2002). As a comparative law research report of the World Intellectual Property Organization, “Patent Pools and Antitrust: A Comparative Analysis”, WIPO (2014). Dae-hwan Koo (2015), 401-526 offers cross-licensing and patent platforms in addition to the patent pool as the means of reducing transaction costs, while covering comprehensively aforementioned ideas.

Domestic literature on standard patent issues go as follows: Namhoon Kwon, Dae-sik Hong, “Level of Royalties on Intellectual Property Rights and the Role of Competition Law”; *Information Law*, Vol. 15, No. 2 (2011); Jun-seok Park, “Problems of Standard Patents : Including the Problem of Possibility of the ITC’s Exclusion Order”, *Seoul National University Law*, No. 54 (4) (2013); Jaeseop Song, “Limitations of exercising rights based on standard patents: Centered on the right to claim infringement and the right to claim damages”, *Justice*, Volume 140 (2014); Moon-ji Rhee, “Standards for Estimating the Royalties of Standard Patent FRAND”, “Study on cases on commercial law”, 28, No. 4 (2015); Hwang Lee, “Criteria for Regulations under Fair Trade Act against FRAND Commitment Violations and Patent Threats (Hold-up)”, *Justice*, Vol. 129 (2012); Yon Taek Chong, “A Competitive Legal Review on Standard Patents and Virtual Standards: Centered on Violations of patent disclosure obligations and de facto standards and revision guidelines”, *Judicial Review*, Vol. 61 (2016); Sung Jai Choi, *Competition legal discipline of patent abuse* (Sechang Publishing co., 2010).

As references for estimating the cost of dispute where Non-Practicing Entities(NPE) was directly involved, see James E. Bessen & Michael J. Meurer, “The Direct Costs from NPE Disputes”, *Cornell*

ride,²⁰⁾ or it is difficult or impossible to assess the value of a right due to a huge discrepancy in valuation among people. (In this case, as the “price” is set by the court *ex post facto*²¹⁾, the court plays a crucial role in reaching the level of efficiency of a free market where the price is determined by the law of supply and demand.)²²⁾

In the Patent Act, the right to seek damages is based on this principle, and the right to seek credit restoration and the right to file for restitution of unjust enrichment gained by the infringer, although rarely used in practice, may also be other examples.²³⁾

C. The Purpose of the Patent Act and the Role of Damages System

1) Current Practices

The effectiveness of either the property rule or the liability rule in protection of a right may vary depending on specific circumstances such as the

Law Review, Vol. 99, No. 2 (2014). Also as reference, see David L. Schwartz & Jay P. Kesan, “Analyzing the Role of Non-Practicing Entities in the Patent System”, *Cornell Law Review*, Vol. 99, No. 2 (2014), etc., which contain a refutation of the methodology.

19) A paper which deals with the practice of “hold-out” in real estate development projects such as redevelopment and reconstruction: Byung-koo Cho, “Low economic review on so-called ‘holdout’”, *Cheongyeon Academic Journal*, Vol. 9 (2012). See a paper focusing on the reverse hold-up (or hold-out) issue of standard patents: Soojin Lee “Study on Unwilling Licensee and Reverse Holdup of Standard Patent”, *Industrial Property Rights*, No. 44 (2014).

20) For more information on the development of the “Misappropriation Doctrine” in the United States, see Sang Hyun Lee, “Protection of intellectual creations under tort law”, *Seoul National University Graduate School*, doctoral dissertation (2015), 63-93.

21) The statutory royalty and damages may be the examples of the price set by the legislature.

22) To Adam Smith, law and order were “visible hand.” However, is the court’s function of calculating the amount of compensation “a visible hand or an invisible hand?” See Seil Park, “For a unifying look into Adam Smith’s moral philosophy-the internal relations of theology, ethics, law, and economics, Soon Cho et al, See Adam Smith Study (Minumsa, 1989).

23) However, as long as Article 128 (4) of the Patent Act is applied with the spirit of Article 748 (2) of the Civil Act fully considered, the claim for return of unjust enrichment due to patent infringement is only effective in case that a person who has used a patented invention of another person without permission can rebut the presumption of fault under Article 130 of the Patent Act by claiming and proving that the lack of knowledge of the patent right or the belief that the technology s/he uses does not fall within the scope of the patent right is justified. (See Supreme Court Decision No. 2003Da15006 decided April 27, 2006).

characteristics of the right.²⁴⁾ The two aforementioned rules are the sources of

24) “From the character of the right of the patentee we may judge of his remedies.” *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 430 (1908).

25) For example, Professor Richard Epstein, a strong advocate of the invention promotion role of intellectual property rights claims that the method of injunction under the property rule is more effective than the method of compensation based on the liability rule in the field of intellectual property law. See Richard Epstein, “The Disintegration of Intellectual Property: A Classical Liberal Response to a Premature Obituary”, *Stanford Law Review*, Vol. 62, No. 2 (2009); “A Clear View of the Cathedral: The Dominance of Property Rules”, *Yale Law Journal*, Vol. 106, No. 7 (1997). Robert P. Merges, “Of Property Rules, Coase, and Intellectual Property”, *Columbia Law Review*, Vol. 94, No. 8 (1994); F. Scott Kieff, “Property Rights and Property Rules for Commercializing Inventions”, *Minnesota Law Review*, Vol. 85, No. 3 (2000), etc.

Others advocate the liability rule. See e.g., Julie S. Turner, “The Nonmanufacturing Patent Owner”, *California Law Review*, Vol. 86, No. 1 (1998)(arguing that only damages may be granted, but not the injunction, for patentees who do not intend to use the patent); Ian Ayres & Paul Klemperer, “Limiting Patentees’ Market Power without Reducing Innovation Incentives: The Perverse Benefits of Uncertainty and Non-Injunctive Remedies”, *Michigan Law Review*, Vol. 97, No. 4 (1999)(arguing that efficient infringement be allowed); Mark A. Lemley & Philip J. Weiser, “Should Property or Liability Rules Govern Information?”, *Texas Law Review*, Vol. 85, No. 4 (2007) (arguing that the injunction is not a sophisticated tool).

Meanwhile, others such as Daniel A. Crane take a compromising position. Daniel A. Crane, “Intellectual Liability”, *Texas Law Review*, Vol. 88, No. 2 (2009) See also Henry E. Smith, “Intellectual Property as Property: Delineating Entitlements in Information”, *Yale Law Journal*, Vol. 116, No. 8 (2007) (arguing that from the perspective of “information cost”, the patent act is more dependent on property rule while the copyright law is more dependent on liability rule.) For an analysis of the situation in Germany (Europe), see Daniel Krauspenhaar, *Liability Rules in Patent Law: A Legal and Economic Analysis* (Berlin: Springer, 2016).

26) Professor Epstein, mentioned in the previous footnote, is teaching at the University of Chicago and the New York University Law School. In Professor Shapiro’s 2000 paper, Professor Epstein was identified as “the 12th-most cited legal scholar of the 20th century.” [Fred R. Shapiro, “The Most-Cited Legal Scholars”, *The Journal of Legal Studies*, Vol. 29, No. S1 (2000). In the above paper, Judge Posner is the overwhelming number one, legal philosopher Ronald Dworkin ranked second, Oliver Wendell Holmes Jr. ranked third, and Judge Guido Calabresi is in 10th place]. In a 2008 poll conducted by Legal Affairs, he was voted as one of the 20 most influential legal thinkers in modern history. [“Who Are the Top 20 Legal Thinkers in America?”, *Legal Affairs*, January/February Issue (2008). In academics, Akhil Reed Amar, Erwin Chemerinsky, Alan M. Dershowitz, Richard Epstein, Lawrence Lessig, Cass R. Sunstein, Lawrence H. Tribe, Eugene Volokh were selected; as judges, Frank Easterbrook, Ruth Bader Ginsburg, Alex Kozinski, Sandra Day O’Connor, Richard A. Posner, William Rehnquist, Antonin Scalia, Clarence Thomas were selected; and Paul Gigot, Dahlia Lithwick, Glenn Harlan Reynolds, Nina Totenberg were chosen as commentators. In a study limited to legal literature published between 2009 and 2013, Professor Epstein was the third most cited jurist after Cass Sunstein, who co-authored the book “Nudge,” and Erwin Chemerinsky, constitutionalist. [Brien Leiter, “The Top Ten Law Faculty (by area) in

heated debates^{25), 26)} in the United States regarding which is more effective in the field of intellectual property law; because the right to claim for damages is a remedy in common law while injunction is an equitable remedy.²⁷⁾

Scholarly Impact, 2009-2013", (June 4, 2014)) http://www.leiterrankings.com/faculty/2014_scholarlyimpact.shtml (confirmed, on May 20, 2017)]. Leiter Ranking also offers the ranking of each of 11 subdivisions of law [Commercial Law, Contracts, Bankruptcy/Corporate Law, Securities Regulation/Criminal Law & Procedure/IP & Cyber Law/International Law/Law & Economics/Law & Philosophy/Law & Social Science (excl. economics)/Legal History/Public Law Areas (incl. Constitutional Law & Legislation)/Tax]. For our reference, the ranking of IP sector is given as follows. Professor Epstein is a member of the American Academy of Arts and Sciences and has a fan page where the blogger admires him as a genius. <http://richardallenepstein.blogspot.kr/> (confirmed, on May 20, 2017)

<Table 1> Scholarly Impact Ranking of Law Faculties from 2009 through 2013

INTELLECTUAL PROPERTY & CYBERLAW

Rank	Name	Institution	Total citations	Age in 2013
1	Mark Lemley	Stanford University	2360	47
2	Robert merges	University of California, Berkeley	1050	54
3	Dan Burk	University of California, Irvine	760	51
4	Pamela Samuelson	University of California, Berkeley	750	65
5	Rochelle Dreyfuss	New York University	720	66
6	John Duffy	University of Virginia	640	49
7	Yochai Benkler	Harvard University	640	49
	Julie Cohen	Georgetown University	640	49
9	jane Ginsburg	Columbia University	630	58
	Timothy Wu	Columbia University	360	41
	Highly cited scholars who work partly in IP/cyberlaw			
	Lawrence Lessig	Harvard University	1750	52
	Jack Balkin	Yale University	1620	56
	Daniel Solove	George Washington University	900	41
	Margaret Jane Radin	University of Michigan	720	72
	Gideon Parchomovsky	University of Pennsylvania (part-time)	660	45

27) The "infringer's profit" damage, which was introduced in 1922 and then repealed in 1946, is regarded as an equitable remedy. The same goes for England. For more information, See Dae-heon Bae (1997), 39-44. About trademark law, Jong Khab Na, "Formation of trademark law under common law: Centered on England", Intellectual Property Research, 10, No. 3 (2015), 77-89.

However, in Korea's intellectual property litigation practices, "interchangeability" or "complementarity" of the right to seek injunction and the right to seek damages have not been given their due consideration. This is partly because Korea's legal system has had a tradition of viewing the damages compensation system only as a vehicle for the recovery of damages, and has rarely considered it as a means of preventing or deterring²⁸⁾ illegal acts.²⁹⁾ Once patent infringement is recognized, a claim for injunction and a claim for damages are automatically upheld in many cases.³⁰⁾

28) According to Judge Guido Calabresi, tort law is aimed at reducing accidents. To be more specific, the tort law system has its purpose in minimizing the total social cost incurred by an accident; here, the total cost means expenses from an accident and expenses from an accident avoidance combined. Guido Calabresi, "Some Thoughts on Risk Distribution and the Law of Torts", Yale Law Journal, Vol. 70, No. 4 (1961); *The Cost of Accidents: A Legal and Economic Analysis* (New Haven, Conn. : Yale University Press, 1970).

Richard Posner, *Tort Law: Cases and Economics Analysis* (Boston: Little, Brown, 1982); William M. Landes & Richard Posner, *The Economic Structure of Tort Law* (Cambridge, MA: Harvard University Press, 1987); Steven Shavell, *Economics Analysis of Accident Law* (Cambridge, MA: Harvard University Press, 1987). These books are written along the same line. The 1982 book of Judge Posner above is an excellent case in point in which he asserts that the legal principles of tort law were designed to serve as a vehicle for enhanced efficiency in distributing economic resources; the book is a product of great labor which he had written after ransacking approximately 1,500 judicial precedents from the mid-19th century to the early 20th century.

29) Kieff explains that compensation for past infringement is fulfilled by money damages including interest and prevention of future infringement is accomplished by injunctions, punitive damages, and attorney fees (2013: 1195).

30) Sang Hyun Lee (2015) argues that the court should reconsider current practices of automatically upholding a claim for prohibition on every occasion of the court's approval of an infringement. In *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006) the court stated that according to well-established principles of equity, a plaintiff seeking a permanent injunction must satisfy a four-factor test before a court may grant such relief. A plaintiff must demonstrate : ① that it has suffered an irreparable injury; ② that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; ③ that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and ④ that the public interest would be disserved by a permanent injunction. An Annotated Korean Patent Act coedited by Sang Jo Jong and Seong-soo Park (Pakyoungsa 2010: 10-20) (section written by Presiding Judge Kiyoun Kim), *The U.S. Patent Law* (Bobmunsa 2011: 361-365) written by Sung Jai Choi. For criticisms on the above ruling, see Richard Epstein, "The Property Rights Movement and Intellectual Property", *Regulation: The Cato Review of Business and Government* (2008).

The propensity to obtain the desired results via provisional attachments, preliminary injunctions, and criminal actions may be among the characteristics of the Korean legal culture. These schemes

2) The Purpose of the Patent Act

The choice of remedy should be considered in line with the purpose of the Patent Act. Article 1 of the Patent Act states, “The purpose of this act is to promote the development of technologies and to contribute to industrial development by protecting and supporting inventions and promoting the use of inventions.” The purpose of the Patent Act, in essence, is to promote “technological innovation.”³¹⁾

that have their foundation in property rule are often abused in “rent seeking” mainly due to inefficiency of liability rule i.e. the damages compensation system in Korea.

Issuance of a conservation measure is often enacted only with an exculpation on the ground that a case of conservation measure needs speedy legal proceedings due to the temporary nature of conservation of execution (refer to paragraph 2 of Article 279, Article 301 Civil Execution Act). However, albeit an executive creditor loses litigation on the merits, the won debtor should additionally spend time and expenses filing a claim against the creditor for damages incurred by executing a conservative measure. The court’s decision does not guarantee that it will uphold the amount of damages large enough to completely bear the expenses for the damage and proceedings incurred by preservative measures in a litigation case for damages (Supreme Court Decision, 2012Da34764, decided August 23, 2012). In other words, since it is not likely that one party would take on the “full” responsibility even after the court decision, the party who has an upper hand tentatively by securing preservative measures and turns the tides to his or her favor might demand higher remuneration than actual (opportunity) cost.

In addition, it is somewhat true that Korea’s criminal code leaves it open to incriminate an assortment of trivial acts, and criminal case practices sometimes focus more on the presumption of guilt than on a strict application of strict liability rule. In a society where criminal punishment is easily mobilized, it is more likely that criminal proceedings are abused. Of course, the plaintiff runs a risk of being held liable for libel or damages (see e.g. Supreme Court Decision, 95Da45897, decided May 10, 1996), but once the defendant is demoted to a poor position, the risk is uncertain or relatively meager at best as opposed to an excess of benefits anticipated.

It is not an exaggeration to say that overcriminalization, criminalization of civil cases, and administrative omnipotence that are very common in our legal community stems from inefficiency of the damages system, which is responsible for profit adjustment based on corrective justice. We are increasingly relying on less fundamental and straightforward means with insufficient compensation for damages. See “*Are Joint Penal Provisions Imposing Fines on Firms Effective Measures to Deter Corporate Misconducts?: An Empirical Analysis on Implementation of Joint Penal Provisions*” Bowon Kwon, Seoul National University Graduate School, Master’s thesis (2017b), 93, 134, 197, etc.

- 31) Robert Solow (1924-, 1987 Nobel Memorial Prize in Economic Sciences) is the most widely accepted economic growth theorist. In his economic growth model, “continuous technological progress” plays a major role in economic growth in addition to capital accumulation (increase in the savings rate), population growth rate (labor force) growth. Robert M. Solow, “A Contribution to the Theory of Economic Growth”, *The Quarterly Journal of Economics*, Vol. 70, No. 1 (1956); *Growth Theory: An Exposition* (Oxford: Clarendon Press, 1970). As an easy explanation for the

Meanwhile, technological innovation must be considered in terms of both technological development (“protecting and supporting of inventions”) and technological applicability (“use of inventions”). The patent system is designed and applied to find the optimal combination of providing incentives for technological development by protecting the rights of technology developers and expanding the applicable realm of technology by ensuring proper access to the public. The former belongs to the domain of property law aimed at the optimal allocation of economic resources³²⁾, while the latter belongs to the realm of contract law and tort law seeking minimization of transaction costs. They can be respectively labeled as a static and dynamic protection of knowledge and technology, and their territories overlap.

From the perspective of law and economics, the law contributes to efficient allocation of resources³³⁾ in the sense that it promotes a voluntary transaction through the market by lowering the transaction cost (property rule), and at the same time it imitates the market mechanism by imposing a reasonable price on a behavior (liability rule) in case that a transaction cost is too high for smooth distribution of resources. The economic approach based on transaction cost, a core pillar of law and economics, may provide us integrated and comprehensive

Solow model, see David N. Weil, *Economic Growth* (3rd ed.) (Boston: Pearson Addison-Wesley, 2013) [Translated by Woong-ki Baek and Min Seong Kim, *Economic Growth Theory* (3rd Edition) (Sigma Press, 2013), 225-265]; Okazaki Tetsuji, *Core Text Economics* (revised edition) (Shinsei Corporation, 2016) [Translated by Changmin Lee, *Economic History of Institutions and Organizations: New Theories, New Concepts* (Revised Edition) (Hanul Academy, 2017), 50-71].

32) From the perspective of efficiency, the property law is aimed at preventing “tragedy of commons” – that is, over-exploitation – the challenge of patent law is to prevent excessive investment in rent-seeking behavior through information disclosure, similar to the Public Domain jurisprudence. William M. Landes & Richard A. Posner, *The Economic Structure of Intellectual Property Law* (Cambridge, MA: Harvard University Press, 2003) [translated by Gapju Jung, Byoungseok Jung, Kihwa Jung, *Economic Structure of the Intellectual Property Law* (Ilchokak, 2011), 7-51, 439-494]; Richard A. Posner, *The Economic Analysis of Law* (9th ed.) (New York: Aspen Publishers, 2014)[translated by Kihwa Jung, *Legal Economics* (the first volume) (Center for Free Enterprise, 2004), 59-80.

33) Landmark papers that are regarded as a pioneer of transaction cost economics go as follows: Ronald Coase, “The Problem of Social Cost”, *The Journal of Law and Economics*, Vol. 56, No. 4 (1960); Oliver E. Williamson, “Transaction-Cost Economics: The Governance of Contractual Relations”, *The Journal of Law and Economics*, Vol. 22, No. 2 (1979), etc. Williamson also won the 2009 Nobel Memorial Prize in Economic Sciences.

insight into the dual goals of the Patent Act.³⁴⁾

3) Overview of the Functions of Damages Compensation under the Patent Act from the Perspective of Law and Economics

Based on what has been discussed so far, now consider what role the damages system under the Patent Act should assume.

First and foremost, the patent law systems should not encourage infringement. Infringement of a patent constitutes a tort prescribed by Article 750 of the Civil Act (mainstream view). If a person, who plans to practice a patented invention, finds it always more profitable to infringe first and later reimburse the patentee with a low court-imposed fee than to negotiate with the patentee and sign a license agreement in advance, infringement would naturally be the reasonable and efficient choice.³⁵⁾ In this case, the patent law systems and the court's damages award practice may implicitly acquiesce or abet patent infringement. Therefore, in order to deter infringement, the amount of damages must be at least equal to or higher than the cost (royalties, etc.) to be borne by the person seeking to use the patent when signing the contract with the right holder (the "floor").³⁶⁾

34) A very useful collection of papers in four-volume set containing 89 papers published from 1934 to 1999: Ruth Towse & Rudi Holzhauser (ed.), *The Economics of Intellectual Property* (Cheltenham: Edward Elgar, 2002). See also Robert P. Merges (ed.), *Economics of Intellectual Property* (Cheltenham: Edward Elgar, 2007) in two volumes. The World Intellectual Property Organization also has a branch of economics and statistics, holding various seminars on the economic analysis of intellectual property rights, and is constantly publishing research reports such as Andrés López et al., *The Economics of Intellectual Property: Suggestions for Further Research in Developing Countries and Countries with Economies in Transition*, WIPO (February, 2009). <http://www.wipo.int/publications/en/details.jsp?id=289> (confirmed on May 20, 2017). See also Roger D. Blair & Thomas E. Cotter, *Intellectual Property: Economic and Legal Dimensions of Rights and Remedies* (Cambridge: Cambridge University Press, 2005); Stanley M. Besen & Leo J. Raskind, "An Introduction to the Law and Economics of Intellectual Property", *The Journal of Economic Perspectives*, Vol. 5, No. 1 (1991); Tom G. Palmer, "Intellectual Property: A Non-Posnerian Law and Economics Approach", *Hamline Law Review*, Vol. 12, No. 2 (1989), etc. Palmer's paper is also included in the above book, Towse (2002) (confirmed on May 20, 2017).

35) The utility of the two options under the assumption that transaction cost is zero or there is no difference in transaction costs between reaching a license contract and patent infringement (the latter's transaction cost will be mainly the cost of litigation) is theoretically indifferent. Apart from damage to honor and trust in the business, both can be said to be neutral in terms of economics.

36) 35 U.S.C. §284, allowing the patentee to recover either its own lost profits or no less than a

At the same time, the system must not make an infringed person hesitate to file a suit and end up tolerating the damages incurred from the infringement. Korean legal theories and judicial precedents view that the liability for torts as “compensation for damages inflicted on the infringed person” under “the rule of fair and equitable sharing of the damages”³⁷⁾ (Supreme Court Decision No. 2006Da6713 rendered on February 1, 2008).³⁸⁾ Based on the assessment above, the legal theories and precedents adopt the “theory of difference” in principle, that the damages caused by illegal acts are equivalent to the losses incurred by the illegal acts, namely, the gap between the state of property that would have been expected but for the illegal acts and the current state of property (Supreme Court Decision No. 1991Da33070 *en banc*, rendered on June 23, 1992 and others). In other words, it follows that the amount of damages suffered by the infringed person means the “ceiling” of damages to be compensated. As full compensation for the infringed person’s damages is the essence of the damages system, it is good that this may inspire the infringed person to file a suit³⁹⁾ while preventing

reasonable royalty (to be described later), can be understood from that point of view. Sung Jai Choi, “Estimation of patent infringement and damages in the US case: Focusing on two Microsoft cases”, *Creation and Rights*, No. 62 (2011), 44. However, in Korea, the risk of incrimination is more effective as a practical deterrent to torts than damages, and criminal punishment is also easily mobilized in the field of intellectual property law (There are many summary cases. In addition, among single-judge or panel decisions, over the period of 2010 to 2016, more than 600 cases of violation of the trademark law; more than 400 cases of violations of copyright law in a year; and about 10 cases of violation of patent law in a year are sentenced).

37) Aristotle said that “the judges (dikastēs) are bisectors” (dichastēs). Aristoteles, translated by Changwoo Lee, Jaehong Kim, and SangJin Kang, *Nicomachean Ethics* (EJ Books, 2007), 168-181.

38) In the reflective consideration of the “theory of difference”, “theory of evaluation” based on the concept of ‘normative damages’ (See Supreme Court decision No. 90Daka21022 decided November 23, 1990) was introduced, and the theory supporting “normative supplement of the theory of difference(normative ergänzung der Differenzhypothese)” also appeared. The theory of the concept of damages under civil law and patent act, see Seong-soo Park, *Estimation of damages due to patent infringement* (Kyungin Publishing Co., 2007), 167-190. On page 167, it is stated that “German Civil Law has not defined the concept of damage.” However, Article 249 paragraph 1 of the Civil Code of Germany provides that “A person who is liable in damages must restore that would exist if the circumstance obliging him to pay damages had not occurred. (Wer zum Schadensersatz verpflichtet ist, hat den Zustand herzustellen, der bestehen würde, wenn der zum Ersatz verpflichtende Umstand nicht eingetreten wäre).”

39) When I presided over the Asia Session Workshop on the 2nd day of the 2017 International Patent Court Conference held between September 6 and 7 of 2017, I asked a panelist, Dr. Rajeshkumar Acharya of India (second generation representative of HK Acharya & Company, one of the largest

excessive expenses for monitoring by the right holders.⁴⁰⁾ However, the probability of full compensation being awarded and enforced through litigation never reaches one (100%).⁴¹⁾ In other words, under-compensation is inevitable

patent firms in India, which celebrated its 40th anniversary in 2017) about why there were so few litigations in India compared to the number of patent applications [While the number of patent applications in 2015 was 46,904, there are only 143 patent infringement cases filed for a 11-year period from 2005 to 2015 in the large country. For a list of the 143 above, see https://drive.google.com/file/d/0B2Vm6s7_qb2PSUZ2Ym0y_UkhnsVU/view (confirmed on September 28, 2017). Dr. Acharya gave me a very interesting answer. He told me that most people who get their inventions patented do not use their inventions commercially, or most of them as a small manufacturer they just look for short term benefits out of their patents, and that in case a patent is infringed by a small or upcoming company, they would rather wisely refrain from bringing the matter up for litigation unless it poses a significant threat as a competitor, because the cost of litigation far outweighs than that would accrue if the remedy is granted in their favor as a result of the lawsuit.

For more information on the number of intellectual property grants awarded by the Indian Patent and Trademark Office (CGPDTM) see its annual report at <http://www.ipindia.nic.in/annual-reports-ipo.htm> (It has been up to the report from 2002 to 2015 - confirmed on September 28, 2017.) The Patent office of Korea has published the International Intellectual Property Protection Guidebook For Korean Businesses Tapping into Foreign Markets: About India in 2013, Referring to page 47 of the Guidebook, the number of patent cases in India was 7 in 2007, 11 in 2008, 19 in 2009, 13 in 2010, 8 in 2011, and 6 in 2012, respectively.

There is a view that the “statutory damages system” stipulated in various federal laws of the United States seems to encourage litigation because the system guarantees a minimum amount of damages in case that the harm or damage is relatively small. See *Parker v. Time Warner Entertainment Co.*, 331 F.3d 13, 22 (2d Cir. 2003); *Perrone v. General Motors Acceptance Corp.*, 232 F.3d 433, 436 (5th Cir. 2000); *Forman v. Data Transfer, Inc.*, 164 F.R.D. 400, 404 (E.D.Pa. 1995). Recited from Young-jun Bong, “Legal nature of statutory damages under copyright law”, Law and Policy Studies, 14th edition, No. 4, (2014), 2023.

40) Posner (2014), 243-244. If the damages compensation system does not properly compensate for the injured party, the right holders must build up the barrier to prevent any damages. In other words, various defensive costs should be spent by adopting a high-performance security system, and with respect to the invention, the patentee is forced to choose to keep the patent as a trade secret without disclosing it (within the barrier). This obviously hampers innovation.

41) See Sung Jai Choi, “A Study on the Appropriateness of Damage Compensation System under Article 128 of the Patent Act”, Lawyer, 43rd (2013), 337 et seq. However, in the following formula described on page 339 of the paper, “Amount of damages (R)= Total damage in monetary terms (X) × Probability (P)+(1-P)Y”, the notion that it is always economically reasonable to infringe upon a patent (rather than to sign a license contract) if the probability (P) is smaller than 1 cannot be validated without the assumption that the infringer’s damage and the profits of the infringer are exactly identical. This idea is often confused in discussions on the introduction of punitive damages and must clearly be distinguished. The infringer may have little benefits or

from the perspective of the expected value. On top of that, there is a risk that the patent of the infringed person will be invalidated in the course of legal proceedings.⁴²⁾ It is necessary to hammer out a scheme to consider aforementioned risks in estimating damages award and assessing litigation costs.⁴³⁾

Some regards the damages compensation system (liability rule) as a means through which the court, albeit with limited information, can harness the private information to achieve an optimal distribution of resources (efficiency) *ex post facto*.⁴⁴⁾ In other words, when the court raises the amount of damages to a

even if the infringer suffered a loss, the infringer may have to pay even greater damages. Or the infringer may still enjoy benefits even after compensating for the damage suffered by the victim completely. (Simply put, in the case of NPEs, there is no loss due to decline in sales). The determination of whether or not to commit an infringement is based on cost-benefit analysis of the infringer, not the infringed. This is a problem mostly has nothing to do with whether the victim is fully compensated for the damage or only indirectly relevant depending on the amount of money. (In order to deter an infringement, it is necessary to analyze the infringer's incentive structure, not whether it is fully compensated).

On the other hand, the probabilistic thinking about the aforementioned "enforcement error" is the premise of many classic theories of law and economics. The expected punishment cost of a crime is calculated by multiplying the severity of punishment by the probability of being caught (arrest/prosecution/conviction/punishment). It is presumed that if you put the punitive multiple as the reciprocal of the execution error ($\delta = \frac{1}{e}$) in determining punitive damages, you can offset the execution error (which weakens the deterring effect). See Gary Becker, "Crime and Punishment: An Economic Approach", *Journal of Political Economy*, Vol. 76, No. 2 (1968); Cooter(2009), 467-468; Mitchell Polinsky & Steven Shavell, "Punitive Damages: An Economic Analysis", *Harvard Law Review*, Vol. 111, No. 4 (1998), etc.

42) Of course, the so-called "weak patent" or "bad patent" should be removed as soon as possible to secure free and fair competition and promote technological innovation. Mark A. Lemley & Carl Shapiro, "Patent Holdup and Royalty Stacking", *Texas Law Review*, Vol. 85, No. 7 (2007); Kurt Rohde & Matthew Sag, "Patent Reform and Differential Impact", *Minnesota Journal of Law, Science and Technology*, Vol. 8, No. 1 (2007); Ilhee Park, "Priority decision model for patent reform task", *Law & Technology*, Vol. 4, No. 5 (2008), etc.

43) Seong-soo Park (2007:96) describes "Article 128 of the Patent Act is not a regulation for calculating the patentee's damages accurately based on a rigorous theory of difference, but a regulation that expects the effect of deterring patent infringement by presuming the damage of the patentee to some degree regardless of the theory."

44) Madeline Morris, "The Structure of Entitlements", *Cornell Law Review*, Vol. 78, No. 5 (1993); Louis Kaplow & Steven Shavell, "Property Rules v. Liability Rules", *Harvard Law Review*, Vol. 109, No. 4 (1996); Ian Ayres, *Optional Law: The Structure of Legal Entitlements* (Chicago: University of Chicago Press, 2010), etc. Especially, aforementioned Ayres (2010), on pages 44 and 45 of the same

reasonable level, it may enhance the social utility by preventing an infringer who put a low value on the right from infringing, while providing an efficient infringer who can achieve higher utility exceeding the amount of damages s/he would have to pay with a “call option” to infringe. This is what is called a “harnessing effect.”⁴⁵⁾ By setting damages award well, it is possible to avoid the “hold-up,” thereby promoting voluntary negotiations. This view seems to hold water, particularly when the transaction cost is high.⁴⁶⁾ However, it should be backed by litigation tools such as discovery.⁴⁷⁾

II. Article 128 of the Patent Act and Overview of Assessment of Damages by Countries

A. History of Article 128 of the Patent Act

Article 128 regulates the amount of damages for infringement of a patent (or an exclusive license). Since its amendment in 1990 when the new provision was introduced that presumes damages as equivalent to the infringer’s profits and a

document, asserts it is necessary to give options to the party with higher uncertainty (the value of the option is high when the volatility of the endowment is large) to achieve efficient resource allocation. For an easy explanation on this, see Ok-riol Song, “Option and Law”, *Studies on Civil Cases*, 37th volume (2015: 1218-1225.)

45) It is hard to translate into Korean the English word “harness,” which means “to put a harness on (an animal)” or “to use (something) for a particular purpose.” It is difficult to find a corresponding equivalent word for it. Possible candidates are the phrases meaning “effect of utilization” or “effect of makeshift” in Korean. So far, “effect of mobilization” seems to be another possible alternative.

46) Ben Depoorter, “Property Rules, Liability Rules and Patent Market Failure”, *Erasmus Law Review*, Vol. 1, No. 4 (2008); this paper is in advocacy of the liability rule with a view to overcome the failure of the (patent) market in the same context

47) In order to concentrate more on statistical analysis, which is the focus of this paper, so far I have taken a brief overview of remedies available within the realm of the Patent Act on the basis of the basic theory of law and economics. More detailed (law and) economic analysis of the Patent Act will be followed later in subsequent studies. Paola Maria Valenti, “Economic Approaches to Patent Damages Analysis”, Federico Munari & Raffaele Oriani (ed.), *The Economic Valuation of Patents: Methods and Applications* (Cheltenham: Edward Elgar, 2011); this is a succinct and instrumental paper which provides us with a simple and clear analysis of the principles of economics, which constitute the underpinnings of lost profit, reasonable royalty, and recovery of unjust enrichment.

reasonable royalty,⁴⁸⁾ Article 128 of the Patent Act has undergone revisions as shown in Table 2 below. We will not go into the details of the discussion on the interpretation of each paragraph here, since many research papers have already dealt with them in depth.⁴⁹⁾ As will be shown later, other countries also use similar criteria to calculate the amount of damages. Comprehensive data on the point would enable comparative assessment of practices adopted by different countries.

<Table 2> History of Article 128 of the Patent Act

1990 ⁵⁰⁾	2001 ⁵¹⁾	2014 ⁵²⁾	2016 ⁵³⁾	Method of Damages Assessment
			Paragraph 1	A patentee or exclusive licensee may claim compensation for a loss inflicted by a person who has intentionally or negligently infringed the patent or exclusive license.

48) Article 156 (claim for damages) of the Patent Act just before the amendment in 1990 reads as follows: “①A patentee or exclusive licensee may claim damages against a person who has intentionally or negligently infringed the patent or exclusive license. ② A patentee cannot file a claim for a return of profits or a claim for damages against a person who infringes the patent in good faith and without negligence. However, the patentee may file a complaint to seek injunction against the person.”

49) Sang Jo Jong (2010), 139-295 (the section written by Seong-soo Park); Dae-heon Bae (1997): Hyo-sook Jeon, “Damages caused by patent infringement”, Justice, 30th volume No. 1 (1997); Sunhee Yun, “Estimation of damages in patent infringement: Understanding Article 128 (1) of the Patent Act”, Justice, 37th volume, No. 4 (2004); Wonmo Ahn, Infringement of patent rights and compensation for damages (Sechang Publishing Co., 2005); Chang Soo Yang, “An essay on compensation for damages caused by patent infringement: The purpose and interpretation of the legislation of Article 128 (1) of the Patent Act”, Judicial officers, Serial Number 588 (2006); Seong-soo Park (2007); Cha Ho Chung, Taemi Jang, Damage compensation theory of patent law (Dongbang Publishing, Co., 2016), etc.

50) Law No. 4207, revised on January 13, 1990, enforced on September 1, 1990, Ministry of Commerce and Industry.

51) Law No. 6411, revised on February 3, 2001, enforced on July 1, 2001, Ministry of Commerce, Industry and Energy.

52) Law No. 12753, revised on June 11, 2014, enforced on January 1, 2015, Korean Intellectual Property Office.

53) Law No. 14112, revised on March 29, 2016, enforced on June 30, 2016, Korean Intellectual Property Office.

1990	2001	2014	2016	Method of Damages Assessment
	Paragraph 1	Paragraph 1	Paragraph 2	Where the infringer has assigned the infringing products to third parties, the amount of loss that the patentee or exclusive licensee has sustained may be calculated by multiplying the quantity of products so assigned by the profit per unit of the products that the patentee or the exclusive licensee could have assigned, but for the infringement.
		Paragraph 2	Paragraph 3	The amount of loss referred to in [the above] paragraph shall not exceed the amount calculated by multiplying the quantity of products that the patentee or exclusive licensee could have manufactured, less the quantity of products actually assigned, by the profit per unit: Provided, That the quantity of products that the patentee or exclusive licensee could not assign due to any cause or event other than the infringement shall be subtracted therefrom, if such cause or event, in addition to the infringement, prevented the patentee or exclusive licensee from assigning the products.
Paragraph 1	Paragraph 2	Paragraph 3	Paragraph 4	The profits that a person who has intentionally or negligently infringed the patent or exclusive license has gained due to the infringement, if any, shall be deemed the loss that the patentee or exclusive licensee has sustained.
Paragraph 2	Paragraph 3	Paragraph 4	Paragraph 5	The patentee or exclusive licensee may claim the amount that s/he would usually be entitled to receive for practicing the patented invention as the loss that s/he has sustained.

1990	2001	2014	2016	Method of Damages Assessment
Paragraph 3	Paragraph 4	Paragraph 5	Paragraph 6	Notwithstanding [the above] paragraph, the amount of loss exceeding the amount specified in the same paragraph may also be claimed as damages. In such cases, the court may consider the fact that there was no intentional conduct or gross negligence on the part of the person who infringed the patent or exclusive license in determining the damages.
	Paragraph 5	Paragraph 6	Paragraph 7	If the court finds, in legal proceedings on infringement of a patent or exclusive license, that a loss has been incurred due to the infringement but it is extremely impracticable to verify the facts necessary for evidencing the loss in light of the nature of relevant facts, it may award reasonable damages based on the gist of entire arguments and the results of examination of evidence, notwithstanding [the above] paragraphs.

B. Japanese Patent Act⁵⁴⁾

The introduction of Article 128 of the Korean Patent Act in 1990 was influenced by the Japanese Patent Law of 1959. As shown below, the differences

54) The original text can be found at <http://law.e-gov.go.jp/htmldata/S34/S34HO121.html>. English translation of the text is according to <http://www.japaneselawtranslation.go.jp/law/detail/?id=42&vm=04&re=01> (both confirmed on January 19, 2018).

(損害の額の推定等)

第二百条 特許権者又は専用実施権者が故意又は過失により自己の特許権又は専用実施権を侵害した者に対しその侵害により自己が受けた損害の賠償を請求する場合において、その者がその侵害の行為を組成した物を譲渡したときは、その譲渡した物の数量（以下この項において「譲渡数量」という。）に、特許権者又は専用実施権者がその侵害の行為がなければ販売することができた物の単位数量当たりの利益の額を乗じて得た額を、特許権者又は専用実施権者の実施の能力に応じた額を超えない限度において、特許権者又は専用実施権者が受けた損害の額とすることができる。ただし、譲渡数量の全部又は一部に相当する数量の特許権者又は専用実施権者が販売することができないとする事情があるときは、当該事情に相当する数量に応じた額を控除するものとする。

are insignificant to this day.

Article 102 (Presumption of the Amount of Damages, etc.) ① Where a patentee or an exclusive licensee claims against an infringer compensation for damage sustained as a result of the intentional or negligent infringement of the patent right or exclusive license, and the infringer assigned articles that composed the act of infringement, the amount of damage sustained by the patentee or the exclusive licensee may be presumed to be the amount of profit per unit of articles which would have been sold by the patentee or the exclusive licensee if there had been no such act of infringement, multiplied by the quantity (hereinafter referred to in this paragraph as the “assigned quantity”) of articles assigned by the infringer, the maximum of which shall be the amount attainable by the patentee or the exclusive licensee in light of the capability of the patentee or the exclusive licensee to work such articles; provided, however, that if any circumstances exist under which the patentee or the exclusive licensee would have been unable to sell the assigned quantity in whole or in part, the amount calculated as the number of articles not able to be sold due to such circumstances shall be deducted.

② Where a patentee or an exclusive licensee claims against an

2 特許権者又は専用実施権者が故意又は過失により自己の特許権又は専用実施権を侵害した者に対しその侵害により自己が受けた損害の賠償を請求する場合において、その者がその侵害の行為により利益を受けているときは、その利益の額は、特許権者又は専用実施権者が受けた損害の額と推定する。

3 特許権者又は専用実施権者は、故意又は過失により自己の特許権又は専用実施権を侵害した者に対し、その特許発明の実施に対し受けるべき金銭の額に相当する額の金銭を、自己が受けた損害の額としてその賠償を請求することができる。

4 前項の規定は、同項に規定する金額を超える損害の賠償の請求を妨げない。この場合において、特許権又は専用実施権を侵害した者に故意又は重大な過失がなかったときは、裁判所は、損害の賠償の額を定めるについて、これを参酌することができる。

(相当な損害額の認定)

第百五条の三特許権又は専用実施権の侵害に係る訴訟において、損害が生じたことが認められる場合において、損害額を立証するために必要な事実を立証することが当該事実の性質上極めて困難であるときは、裁判所は、口頭弁論の全趣旨及び証拠調べの結果に基づき、相当な損害額を認定することができる。

infringer compensation for damage sustained as a result of the intentional or negligent infringement of the patent right or exclusive license, and the infringer earned profits from the act of infringement, the amount of profits earned by the infringer shall be presumed to be the amount of damage sustained by the patentee or exclusive licensee.

③ The patentee or the exclusive licensee can claim as damages the amount of money which otherwise would have been earned from licensing his or her patent against a person who infringed upon the patent or the exclusive license intentionally or negligently.

④ A patentee or an exclusive licensee may claim against an infringer compensation for damage sustained as a result of the intentional or negligent infringement of the patent right or exclusive license, by regarding the amount the patentee or exclusive licensee would have been entitled to receive for the working of the patented invention as the amount of damage sustained.

Article 105-3 (Determination of Reasonable Damages)

In litigation concerning the infringement of a patent right or exclusive license, where the court has determined that damage actually arose and where it is extremely difficult for the court, due to the nature of the facts, to prove the facts necessary to determine the amount of damage, the court may determine a reasonable amount of damage based on the entire import of oral argument and the result of the examination of evidence.

C. Patent Law of the People's Republic of China⁵⁵⁾

The following article covers inventions, utility models and designs. Damages

55) The original text can be found at http://www.gov.cn/flfg/2008-12/28/content_1189755.htm. English translation of the text is according to http://english.sipo.gov.cn/laws/lawsregulations/201101/t20110119_566244.html (both confirmed on January 19, 2018).

第六十五条 侵犯专利权的赔偿数额按照权利人因被侵权所受到的实际损失确定；实际损失难以确定的，可以按照侵权人因侵权所获得的利益确定。权利人的损失或者侵权人获得的利益难以确定的，参照该专利许可使用费的倍数合理确定。赔偿数额还应当包括权利人为制止侵权行为所支付的合理开支。权利人的损失、侵权人获得的利益和专利许可使用费均难以确定的，人民法院可以根据专利权的类型、侵权行为的性质和情节等因素，确定给予一万元以上一百万元以下的赔偿。

are asserted and analyzed in the order of the loss incurred to a right holder (lost profits), the profit of an infringer, a multiple of reasonably royalty, and statutory damages.⁵⁶⁾

Article 65 The amount of compensation for patent right infringement shall be determined according to the patentee's actual losses caused by the infringement. If it is hard to determine the actual losses, the amount of compensation may be determined according to the benefits acquired by the infringer through the infringement. If it is hard to determine the losses of the patentee or the benefits acquired by the infringer, the amount of compensation may be determined according to the reasonably multiplied amount of the royalties of that patent. The amount of compensation shall include the reasonable expenses paid by the patentee for putting an end to the infringement.

If the losses of the patentee, benefits of the infringer, or royalties of the patent are all hard to determine, the people's court may, on the basis of the factors such as the type of patent right, nature of the infringement, and seriousness of the case, determine the amount of compensation within the range from 10,000 yuan to 1,000,000 yuan.

D. Taiwanese Patent Act⁵⁷⁾

The clause that stated the right to seek damages due to infringement of business reputation was repealed; and the weighted damages clause was deleted

56) 冯晓青, “《专利法》第三次修改的特点-以提升创新能力与加强专利权保护为视角”, 电子知识产权, 3号 (2009), 19; 单兴山, “如何计算专利侵权赔偿”, 家电科技, 6卷 (2011), 42; re-quoted from Cha Ho Jung (2016: 108).

57) The original text can be found at <http://law.moj.gov.tw/LawClass/LawAll.aspx?PCode=J0070007>. English translation of the text is according to <http://law.moj.gov.tw/Eng/LawClass/LawContent.aspx?PCODE=J0070007> (both confirmed on January 19, 2018).

第九十七條依前條請求損害賠償時，得就下列各款擇一計算其損害：

一、依民法第二百十六條之規定。但不能提供證據方法以證明其損害時，發明專利權人得就其實施專利權通常所可獲得之利益，減除受害後實施同一專利權所得之利益，以其差額為所受損害。

二、依侵害人因侵害行為所得之利益。

三、依授權實施該發明專利所得收取之合理權利金為基礎計算損害。

依前項規定，侵害行為如屬故意，法院得因被害人之請求，依侵害情節，酌定損害額以上之賠償。但不得超過已證明損害額之三倍。

in 2011 but reintroduced in 2013.

Article 97 (Calculation of Damages) The damages claimed pursuant to the preceding article may be calculated according to any of the following methods:

1. the method as set forth in Article 216 of the Civil Code; if no method of proof can be produced to prove the damages suffered, a patentee may claim damages based on the difference between the profit earned through patent exploitation after infringement and the profit normally expected through exploitation of the same patent;
2. the profit earned by the infringer as a result of patent infringement; or
3. the amount calculated on the basis of reasonable royalties that may be collected from exploiting the invention patent being licensed.

Subject to the preceding paragraph, where the infringement is found to be intentionally committed, the court may, upon request and on the basis of the severity of the infringement, award the damages greater than the loss suffered but not exceeding three times of the proven loss.

E. U.S. Patent Act

A patentee is likely to seek lost profit first as it is more favorable, and in case it is difficult to prove, s/he may seek reasonable royalty, which is the floor of damages. The infringer's profit as a basis was deleted with the revision of the Patent Act in 1946. However, it remains in the design patent⁵⁸⁾, copyright⁵⁹⁾, and trademark⁶⁰⁾ laws, as well as in the Uniform Trade Secrets Act.⁶¹⁾

35 U.S.C. §284. Damages

Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.

When the damages are not found by a jury, the court shall assess

58) 35 U.S.C. §289.

59) 35 U.S.C. §289.

60) 15 U.S.C. §1117.

61) UTSA §3426.3.

them. In either event the court may increase the damages up to three times the amount found or assessed. Increased damages under this paragraph shall not apply to provisional rights under section 154(d) of this title.

The court may receive expert testimony as an aid to the determination of damages or of what royalty would be reasonable under the circumstances.

F. German Patent Act [Patentgesetz (PatG)]^{62), 63)}

62) The original text is from <http://www.gesetze-im-internet.de/patg/> (confirmed on July 11, 2017). English translation of the text is according to http://www.gesetze-im-internet.de/englisch_patg/index.html (both confirmed on January 19, 2018).

§ 139 (2) Wer die Handlung vorsätzlich oder fahrlässig vornimmt, ist dem Verletzten zum Ersatz des daraus entstehenden Schadens verpflichtet. Bei der Bemessung des Schadensersatzes kann auch der Gewinn, den der Verletzer durch die Verletzung des Rechts erzielt hat, berücksichtigt werden. Der Schadensersatzanspruch kann auch auf der Grundlage des Betrages berechnet werden, den der Verletzer als angemessene Vergütung hätte entrichten müssen, wenn er die Erlaubnis zur Benutzung der Erfindung eingeholt hätte.

63) For European countries other than Germany, see, “Damages in Intellectual Property Rights”, European Observatory on Counterfeiting and Piracy (2009) http://ec.europa.eu/internal_market/iprenforcement/docs/damages_en.pdf (confirmed on July 11, 2017). See also the following provisions of European Union Intellectual Property Enforcement Directive (IPRED, Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights). The guidelines are minimum standards for the enforcement of intellectual property rights and do not preclude its member countries from taking stronger protection measures.

Article 13 Damages

1. Member States shall ensure that the competent judicial authorities, on application of the injured party, order the infringer who knowingly, or with reasonable grounds to know, engaged in an infringing activity, to pay the right holder damages appropriate to the actual prejudice suffered by him / her as a result of the infringement.

When the judicial authorities set the damages:

- (a) they shall take into account all appropriate aspects, such as the negative economic consequences, including lost profits, which the injured party has suffered, any unfair profits made by the infringer and, in appropriate cases, elements other than economic factors, such as the moral prejudice caused to the right holder by the infringement; or
- (b) as an alternative to (a), they may, in appropriate cases, set the damages as a lump sum on the basis of elements such as at least the amount of royalties or fees which would have been due if the infringer had requested authorization to use the intellectual property right in question.

2. Where the infringer did not knowingly, or with reasonable grounds know, engage in infringing

The provisions on infringer's profits were codified with the amendment of the Patent Act in 2009. (However, they had been already recognized under the precedents based on customary law, restitution of unjust enrichment, application of unauthorized management (*unechte geschäftsführung*) provisions *mutatis mutandis*, and the rule of thumb, etc.)⁶⁴⁾ A right holder can selectively claim for his or her preferred calculation method, but a combination of the calculation methods is not allowed.⁶⁵⁾ There is no provision in the German Patent Act equivalent to Article 128, paragraph 7 of Korean Patent Act, but the same effect is achieved by the general provisions of the Civil Procedure Act (Article 287, paragraph 1).

Article 139 ② Any person who performs the act intentionally or negligently shall be obliged to compensate the aggrieved party for the damage caused. When assessing the compensation, consideration may also be given to the profit which the infringer has obtained by infringing the right. The claim for compensation may also be calculated on the basis of the amount which the infringer would have been required to pay as equitable remuneration if he had obtained permission to use the invention.

III. Data Set of Analysis and Basic Statistics

A. Determining the Data Set of Analysis

This paper has examined all (or almost all) cases in which damages were awarded under Article 128 of the Korea Patent Act at courts of first instance (whether single-judge divisions or panel divisions) of patent or utility model

activity, Member States may lay down that the judicial authorities may order the recovery of profits or the payment of damages, which may be pre-established.

Article 14 Legal Costs

Member States shall ensure that reasonable and proportionate legal costs and other expenses incurred by the successful party shall, as a general rule, be borne by the unsuccessful party, unless equity does not allow this.

64) Dae-heon Bae (1997: 52-53); Wonmo Ahn (2005: 101-104); Seong-soo Park (2007: 66-67).

65) Cha Ho Chung (2016:32).

infringement lawsuits from January 1, 2010 to April 30, 2017.

A total of 201 search results were found⁶⁶⁾ in the Judicial Decision Search System by specifying search conditions as follows: “Keyword: Patent Act Article 128⁶⁷⁾, Case Type: Civil (single, panel),⁶⁸⁾ Decision Date: from January 1, 1997 to April 30, 2017.” Article 30 of the Utility Model Act,⁶⁹⁾ Article 86, paragraph 2 of

66) The lawsuit filed by Samsung Electronics Co., Ltd. against Apple Korea Co., Ltd, Seoul Central District Decision, 2001Gahap39552, decided August 24, 2012 could not be retrieved, probably because the restriction request for reading and copying the document has been accepted and was excluded from the analysis. For reference, in the first instance of the case above, 40 million KRW was upheld on Samsung Electronics’ claim for damages of 100 million KRW (a part of the claims in which the patent infringement was fully upheld based on the provisions covering the infringer’s profit), but on August 6, 2014 while the appeal was ongoing, Samsung Electronics withdrew from the case, making the lawsuit terminated. I do not know how many cases there can be, but if a ruling applied the aforementioned provisions without referring to Article 128 of the Patent Act, the case would have been excluded from the search results. Thus, although the search results above are presumed to cover almost all results, but there may be some omissions.

67) The search results show rulings, which contain both the following terms: “patent act” and “Article 128.” Since the first introduction of Act No.4207 on January 1, 1990, the details for the calculation of damages under the Patent Act have been stipulated in Article 128 consistently, which thankfully helped my research and analysis for this paper. In spite of possible confusion in practice, Article 128 of the Patent Act does not pertain to the requirements to establish damages, but to the method of calculating the amount of damages, therefore, the Act’s current provisions at the time of closing of hearing can be applied (See e.g. Supreme Court Decision, 2006Da10439, decided April 12, 2007; Supreme Court Decision, 2003Da15006, decided April 27, 2007).

68) This search condition is aimed at limiting search results to the cases of first instance. Since there are many cases where an infringement case of intellectual property rights is simply not appealed or closed by settlement, mediation, or dismissal without a final decision, it is presumed that the lower court’s rulings are of particular significance. A detailed analysis of 25 cases decided by panels at the appellate level that applied Article 128 of the Patent Act from January 1, 2007 to February 19, 2017 showed that appellate courts tended to grant higher damages than the courts of first instance. Claims for damages were rejected at the district court but upheld in appellate court in 4 cases; granted in the same amount by both district and appellate courts in 7 cases; increased at the appellate level from the amount granted by the district court in 9 cases; and reduced at the appellate level in 4 cases (There was also one case in which the rulings of both instances were not comparable because the district court decision was not registered). Kisu Kim, “Analysis of Appeals Related to Calculation of Damages Incurred by Patent Infringement.” The sourcebook of “2017 Patent Court-Seoul Central District Court Joint Seminar” (2017).

69) The provisions had been stipulated in Article 31 since January 13, 1990 when the Act No.4209 was entirely revised and in Article 34 since September 23, 1998 when the Act No.5577 was also entirely revised; but has been and is still stipulated in Article 30 since March 3, 2006 when the Act No.7872 was revised.

the old Seed Industry Act (the one before its entire amendment by Act No. 11458 on June 1, 2012), Article 85, paragraph 2 of the Act on the Protection of New Varieties of Plants (Act No. 11457, enacted on June 1, 2012) have (or had) provisions that apply Article 128 of the Patent Act *mutatis mutandis*. Therefore, the aforementioned 201 cases include infringement cases of utility model rights and of plant variety rights. For the purpose of this paper, utility model (also known as “small inventions” or “small patents”)⁷⁰⁾ cases are included for analyses⁷¹⁾ but plant variety rights cases were excluded, as the latter seem to have more discrepancies in assessment criteria compared to the patent rights.⁷²⁾

Search results are displayed in the following order: 6 cases in 2017, 20 cases in 2016, 15 cases in 2015, 16 cases in 2014, 17 cases in 2013, 14 cases in 2012, 13 cases in 2011, 18 cases in 2010, 53 cases for 2009-2005, 24 cases for 2004-2000, and 5 cases for 1999-1900. However, as can be seen from the fact that each category represents longer years as they go back in time, it is difficult to rely on the search results before 2009, particularly considering my experience of conducting similar studies. The aforementioned search results sometimes counted the *Hangul* files (.hwp) and PDF files (.pdf) of the same content as two different cases. In addition, it is not certain that all decisions before 2009 are registered in the

70) Sang Jo Jong (2013), 84-92; Yeongsik Song, Sangjung Lee, Jonghwan Hwang, Daehee Lee, Byungil Kim, Youngkyu Park, Jaeho Shin, Intellectual Property Rights (1st Volume) (Yookbupsa, 2008), 815, etc.

71) There is still room for considering whether to include it in the analysis depending on how utility model system is viewed. However, since the spectrum of patented inventions in the analyzed cases ranges from highly advanced to relatively simple ones, it is not necessary to distinguish between patent and utility model. In addition to Korea, more than 30 countries including Japan, Taiwan, China, Germany, Austria, Finland, France, Italy, and Spain have a Utility Model system, and the U.S. protects utility patents, design patents, and plant patents under the Patent Act. For more information on similar studies conducted from international perspectives, refer to *Stephen P. Ladas, Patents, Trademarks, and Related Rights: National and International Protection, Vol. 2* (Cambridge, MA: Harvard University Press, 1975), 949 et seq. Though it is a snippet version with some pages hidden, the book can be viewed at <https://books.google.co.kr/books?id=kPiZ4TNTpYEC&pg=PP1&hl=ko&pg=PP1#v=onepage&q&f=false> (May 21, 2017.)

72) See e.g. Cheongju District Court Decision, 2016Gadan105343, decided March 16, 2017; Cheongju District Court Decision, 2015Gadan108147, decided February 23, 2017; Gwangju District Court Decision, 2015Gadan504610, decided October 14, 2015; Suwon District Court Decision, 2009Gahap8423, decided August 11, 2011; Seoul District Court Decision, 2008Gahap111782, decided September 30, 2010; Daejeon District Court Decision, 2009Gahap13075, decided August 24, 2010; Suwon District Court Decision, 2009Gahap8799, decided February 4, 2010.

system. Therefore, I have limited the subjects of the analysis to the decisions rendered after January 1, 2010, a total of 119 cases.⁷³⁾

The search results include the cases where infringement is found and damages are awarded as well as the cases where no infringement is found and the claim for damages was dismissed (in its entirety). Since this paper deals with application of Article 128 of the Patent Act, the analysis here is limited to the cases where the claim was upheld, at least in part, and the Article 128 was applied.⁷⁴⁾ Among the above search results, the number of cases in which all claims were rejected is not considered meaningful (comprehensive). Some decisions found no infringement but cited and described Article 128 of the Patent Act to introduce the arguments raised by the parties. However, unless infringement was found, many cases were closed without further examination of the scope of damages (and without mentioning Article 128). These were excluded from the search results. Thus, if one wants to know the approval or dismissal rates compared to the total number of

73) I have also analyzed ‘the status of the joint penal provision’ in criminal cases decided by single judges and panels from 2011 to 2016 for my master’s thesis (2017b) as well. This paper is largely inspired by Jisun Choi, “Statistical Analysis and Its Implications on the Relationship among the Use of Each Paragraph of Article 128 of Korean Patent Act, the Number of its Citations, and Their Influences in Computing the Amount of Patent Infringement Damages”, *Korean Journal of Law and Economics*, Vol.13, No.2 (2016), which analyzed 62 patent and utility model cases from January 1, 2015 to June 30, 2015. Another helpful reference was Min-soo Seoul, “The Reality of the Damages Compensation Calculation in Patent Infringement Litigations, its Intrinsic Causes, and the Improvement Model”, *Supreme Court Law Review*, No.58 (2015: 440-444), which also provides basic statistical data gained from analyzing 43 among 121 civil cases adjudicated by panels, searched under the keywords “patent, damages, 128” in the Judicial Decision Search System from 2009 to 2013. The paper explains the reasons for limiting the objects of analysis to panel decisions as follows: “There may be single-judge cases in which damages are accepted, but given the reality of Korea where injunction is overwhelmingly preferred to compensation as a remedy for damages, the number would likely be insignificant.”

74) On the other hand, there was one case in which the plaintiff sought damages in accordance with the paragraph based on infringer’s profit (paragraph 4, previously paragraph 2 at the time of the infringement), but only part of the loss claimed by the plaintiff (‘lost profit from missing the delivery opportunity’) was calculated based on the general principle of the Civil Act (the theory of difference) without applying the provision above. (Bucheon Branch, Incheon District Court Decision, 2015Gahap104250, decided February 8, 2017). In this case, patent infringement was recognized and the plaintiff insisted on applying Article 128 of the Patent Act in calculating the damages, but the Court did not apply the Act. This case is excluded from the analysis for the purpose of this paper.

patents and utility model infringement cases, a different search is needed.

In addition to the cases in which all claims were rejected, I have excluded the following cases from my analysis based on the nature of the decisions: decisions in cases that involved no oral argument or substantive adjudication,⁷⁵⁾ copyright infringement cases in which the jurisprudence of Article 128 of the Patent Act was analogically applied,⁷⁶⁾ cases where no infringement was found but damages were awarded for breach of duty,⁷⁷⁾ judgment to enforce a foreign court's decision,⁷⁸⁾ and cases in which Article 128 was analogically applied to the breach of the obligation to avoid the use of the plaintiff's original technology.⁷⁹⁾

Multiple rights were claimed as infringed in some of the cases, but in most cases, the damages were calculated altogether. Although there were cases where the amount of damages was separately calculated for each infringed right,⁸⁰⁾ even those simply multiplied the amount of damages under the same legal provisions. Therefore, I have not analyzed such cases by classifying them by each rights since the parties would not have viewed them as separate disputes either. In other words, the extent to which damages were recognized for individual rights where it is claimed the defendant infringed multiple rights was considered as less important for the plaintiff in the context of the overall dispute. In this regard, I have also examined cases that calculated the amount of damages for both patent rights and utility model rights after finding the infringement of both.⁸¹⁾ However, I excluded the cases that dealt with patent and design rights and awarded damages for both in a total sum,⁸²⁾ because the nature of the two rights appears to be quite different (at least in the Korean legal system).⁸³⁾

75) Daegu District Court Decision, 2015Gadan124832, decided March 8, 2016.

76) Seoul District Court Decision, 2014Gahap14356, decided January 22, 2016.

77) Changwon District Court Decision, 2010Gahap5366, decided January 9, 2014.

78) Suwon District Court Decision, 2013Gahap14630, decided November 28, 2013.

79) Seoul District Court Decision, 2012Gahap30095, decided March 29, 2013.

80) Seoul District Court Decision, 2013Gahap520762, decided November 4, 2014 (2 patents); Seoul District Court Decision, 2011Gahap13369, decided August 31, 2012 (3 patents); Daegu District Court Decision, 2011Gahap48275, decided August 30, 2012 (3 Utility Model rights), etc.

81) Daejeon District Court Decision, 2009Gahap5678, decided September 17, 2010

82) Gwangju District Court Decision, 2009Gahap13714, decided January 20, 2011.

83) For more precise analysis, cases where there are more than one right holder, more than one infringed right, or more than one infringer must all be treated differently. For more details, see Wonmo Ahn (2005: 278-331).

After sorting out the objects of analysis through this process, 78 cases were selected as shown in Table 3 (the District Courts appear on the first column of the table even if there is no subject decision while a branch court was marked only when it had such a decision). To make sure once again, the statistics has nothing to do with the current state of the entire patent infringement lawsuits (the number of complaints filed or decisions rendered) because the cases that the claims were rejected, among others, are excluded. However, assuming that there is little difference in dismissal rates by courts, one might be able to infer that more than half of the cases had been filed with the Seoul Central District Court even before concurrent jurisdiction of the Seoul Central District Court was conferred, given the distribution of the number of cases as shown in the Table 3 below.⁸⁴⁾

<Table 3> Number of Cases to which Article 128 of the Korean Patent Act Is Applied (claim upheld) (January 1, 2010 - April 30, 2017)

	2010	2011	2012	2013	2014	2015	2016	2017	Total
Seoul Central District Court	5	4	4	7	5	7	13		45
Seoul Eastern District Court		2							2
Seoul Southern District Court				1					1
Seoul Northern District Court						1	1		2

84) Min-soo Seul (2015: 440-441) also states as follows: “the 43 cases subject to analysis show uneven distribution: 23 cases (53%) with the Seoul Central District Court and 36 cases (84%) in Seoul metropolitan area; the 23 cases where more than 100 million KRW was awarded show more concentrated trend, with 19 cases (82.6%) in the Seoul Central District Court and 21 cases (91.3%) in the Seoul metropolitan area.”

	2010	2011	2012	2013	2014	2015	2016	2017	Total
Seoul Western District Court									0
Uijeongbu District Court									0
Goyang Branch of Uijeongbu District Court			1		1				2
Incheon District Court		1		1					2
Bucheon Branch of Incheon District Court				1	1				2
Suwon District Court	1		1	1		1			4
Seongnam Branch of Suwon District Court	1								1
Anyang Branch of Suwon District Court		1							1
Chuncheon District Court									0
Daejeon District Court	2			1			1		4

	2010	2011	2012	2013	2014	2015	2016	2017	Total
Cheonan District Court					1	1			2
Chungju District Court									0
Daegu District Court	1		2		1			1	5
Sangju Branch of Daegu District Court			1						1
Busan District Court									0
Ulsan District Court									0
Changwon District Court									0
Gwangju District Court		1					1		2
Jeonju District Court							1		1
Gunsan District Court			1						1
Jeju District Court									0
Total	10	9	10	12	9	10	17	1	78

As shown in Table 3 above, a total of 19 cases were filed against infringement of utility model rights. The detailed breakdown goes as follows: a total of 3 cases with Seoul Central District Court in 2016; a total of 3 cases with 1 case each for Bucheon Branch of Incheon District Court, Goyang Branch of Uijeongbu District

Court, and Cheonan Branch of Daejeon District Court in 2014; a total of 3 cases with 1 case each for Suwon District Court, Seoul Central District Court, and Bucheon Branch of Incheon District Court respectively in 2013; a total of 2 cases with 1 case each for Goyang Branch of Uijeongbu District Court and Daegu District Court in 2012; a total of 3 cases with 1 case each for Anyang Branch of Suwon District Court, Incheon District Court, and Seoul Eastern District Court in 2011; a total of 5 cases with 2 cases for Seoul Central District Court and 1 case each for Daegu District Court, Seongnam Branch of Suwon District Court, and Suwon District Court in 2010 (The number goes up to 20 if a 2010 Daejeon District Court case is included, where the court found infringement of both patent and utility model rights).

B. Analysis Tool

SPSS ver. 24.0, a statistical analysis program, was mainly used and Excel 2013 and R ver. 3.3.3 were used as supplementary programs when needed.

C. Basic Statistics

1) Descriptive Statistics

As shown in <Table 4>, amounts claimed by plaintiffs,⁸⁵⁾ amounts awarded by courts, and uphold rates of compensation (in relation to the claimed amount) of 78 target decisions were analyzed.

<Table 4> Amount Claimed by Plaintiffs, Award by the Courts, and Uphold Rates

Classification		Claim Amount	Upheld Amount	Uphold Rate
Number of Cases	Valid	78 Cases	78 Cases	78 Cases
	Missing	0 Cases	0 Cases	0 Cases
Mean		972,319,624 Won	488,467,069 Won	53.27%
Median		126,541,186.5 Won	50,000,000 Won	48.69%
Standard Deviation		3,854,756,896 Won	1,983,455,029 Won	36.77%

85) I sought to limit the analysis to the damages claimed per each infringed right by looking not only to the plaintiff's demand but also the cause of action.

Classification		Claim Amount	Upheld Amount	Uphold Rate
Skewness		6.350	6.171	0.165
Kurtosis		43.730	39.285	-1.610
Minimum		9,426,000 Won	1,800,000 Won	1.80%
Maximum		29,862,428,940 Won	14,500,712,340 Won	100%
Percentile	25	62,245,993.5 Won	18,750,000 Won	16.76%
	50	126,541,186.5 Won	50,000,000 Won	48.69%
	75	494,723,693.8 Won	214,990,928.5 Won	100%

The median of amounts claimed by plaintiffs was 126,541,186.5 Won, the median of amounts upheld by the courts was 50,000,000 Won, and the median of uphold rates of compensation was 48.69% approximately. Based on the mean and the median of the uphold rates of compensation, an amount upheld by a court is about half of an amount expected (or desired) by a plaintiff.⁸⁶⁾ As appears

86) Jisun Choi (2016), 245 showed slightly higher mean and median, that is, 61.61% and 59.30%, respectively. Since the above article is based on an analysis performed for individual “rights” instead of “cases”, it may appear that plaintiff’s claims were upheld relatively more than they think. Such a selection may be more logically tight, but may be more distanced from the reality of a dispute (described below).

Meanwhile, Min-soo Seoul (2015), 441, describes that, although the mean (656,000,000 Won) and the median (166,000,000 Won) of nationwide decisions from 2009 to 2013 seem to have significantly increased (the uphold rate relative to claim amounts was 40.1%) as compared to the average 117,597,000 Won of nationwide decisions from 2000 to 2007 and the mean 235,000,000 Won and the median 55,000,000 Won of nationwide decisions from 2009 to 2011 according to a Korean Intellectual Property Office report, the figures are not significantly different from those of prior research studies with the mean of 267,571,142 Won and the median of 75,000,000 -57,000,000 Won when the “Canon Photosensitive Drum cases” are excluded, as they ranked first, fourth, fifth, ninth, and eleventh in upheld amounts out of all cases. The Korean Intellectual Property Office report quoted by the above article is Sung-tae Jun, Jae-sik Choi, Kwon-soon Yoon, Mi-rang Shim, Yoon-hye Lim, Kew-hwan Yu, Ji-hoon Jo, Yu-heum Ko, & Nam-kyung Kim, A Study on the Legal Framework for Enhancing the Effectiveness of the Intellectual Property System: A Study on the Construction of the Appraisal System for the Infringement of the patent right (Korea Intellectual Property Institute, 2012).

Since the number of sample cases is small, statistics may significantly vary according to the criteria applied to select cases. Furthermore, it is somewhat true that the Canon Photosensitive Drum cases stand out from the small number of sample cases. However, instead of reflecting one’s subjective view to the sample by excluding such outliers (single-judge decisions, Canon

by the skewness values of the amounts claimed and upheld are greater than zero, cases are concentrated at relatively small claimed amounts and upheld amounts overall.⁸⁷⁾

<Table 5> shows statistics for utility model infringement cases only. Not surprisingly, amounts claimed by plaintiffs and amounts upheld by the courts are relatively small and uphold rates of compensation are also somewhat low.⁸⁸⁾ Of course, as shown in the ranges between the minimum and the maximum, standard deviations, skewness, distribution of claim amounts, and upheld amounts, cases are concentrated at relatively small amounts, and differences between the means and the medians are smaller than those in <Table 4>.

<Table 5> Amount Claimed by Plaintiffs, Award by the Courts, and Uphold Rate: Utility Model Cases

Photosensitive Drum cases, etc. The cases that rank second, third, sixth, seventh, eighth, and tenth by the upheld amounts in the above sample remain valid even if the 5 Canon Photosensitive Drum cases are excluded. Furthermore, the criteria for selecting samples should be the same as those for the foreign practices if to be compared. However, it seems common that, even in foreign courts, upheld amounts may not form a normal distribution and sometimes exceptionally high amounts are upheld in some cases.), it may be necessary to secure a widest possible range of samples and supplement with multi-faceted analysis with various statistical techniques (the median is also a statistics to make up for such a blind spot that may appear when calculating an mean).

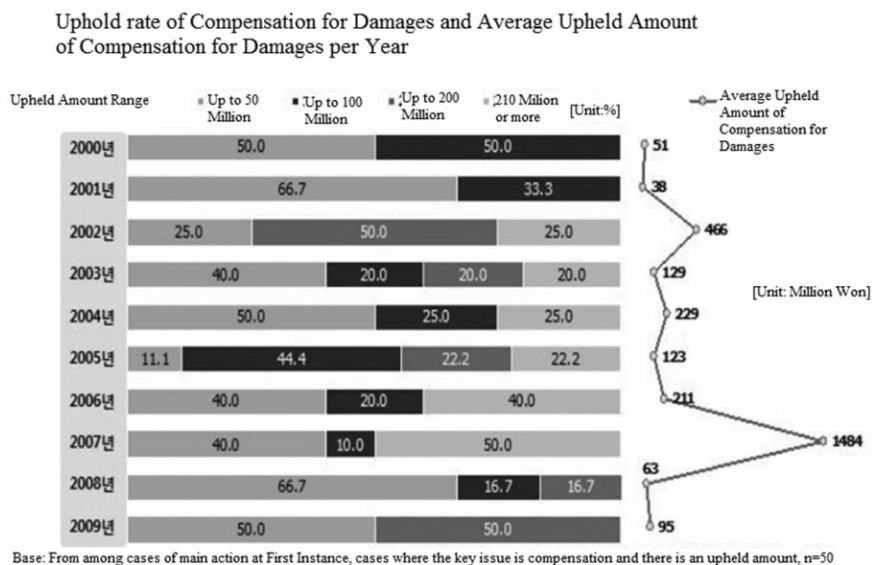
87) “Skewness” is the third standard moment of a random variable X [moment is $E(X^i)$ and indicates important information regarding a population. Here, the second moment is defined as “variance (the second standard moment is 1)”, which is defined as $\sigma^2 = \frac{E(X-\mu)^2}{n} = \frac{E(X^2) - 2\mu E(X) + \mu^2}{n} = \frac{E(X^2) - \mu^2}{n}$. Here, the skewness of a normal distribution and t distribution is 0. However, when skewness < 0 (negative skewness), the peak leans rightward (left-skewed with a long tail extending leftward). When skewness > 0 (positive skewness), the peak leans leftward (right-skewed with a long tail extending rightward).

“Kurtosis” is defined as the fourth standard moment of a random variable X , which is defined as $\text{Kurt}(X) = \frac{E(X-\mu)^4}{\sigma^4} = \frac{E(X^4) - 4\mu E(X^3) + 6\mu^2 E(X^2) - 3\mu^4}{\sigma^4}$. A kurtosis is a value indicating the sharpness of the shape of a distribution. The kurtosis of a normal distribution is 3 and, when the kurtosis of a distribution is greater than 3, the peak of the distribution is higher and the shape of the distribution becomes sharper than that of the normal distribution. It is also referred to as being “leptokurtic”.

88) Is it possible that a utility model right holder tends to overvalue his or her device subjectively or have a high (excessive) expectation on trials in comparison to a patent right holder?

Classification		Claim Amount	Upheld Amount	Uphold rate
Number of Cases	Valid	19 Cases	19 Cases	19 Cases
	Missing	0 Cases	0 Cases	0 Cases
Mean		KRW 251,327,523	KRW 97,428,501	41.19%
Median		KRW 120,000,000	KRW 57,860,984	36.71%
Standard Deviation		KRW 239,086,419	KRW 127,468,457	30.05%
Skewness		.993	2.454	1.066
Kurtosis		-.181	6.676	.075
Minimum		KRW 9,426,000	KRW 1,800,000	12.50%
Maximum		KRW 813,598,629	KRW 522,354,415	100%
Percentile	25	KRW 84,000,000	KRW 15,000,000	15.36%
	50	KRW 120,000,000	KRW 57,860,984	36.71%
	75	KRW 500,000,000	KRW 108,370,324	53.69%

Among prior research studies, an article collected average upheld amount of compensation for infringement of patent and utility model rights at courts of first instance from 2000 to 2009, as shown in <Figure 1>.⁸⁹⁾



89) Sangchul Bae, Kyung Seo, Mikyung Won, Namkyung Kim, & Jieun Jo, "A Study on the Analysis of the Status of Litigation for Advancement of the patent Law System Related to the Infringement Litigation and the Development Plan", Korea Institute of Intellectual Property (2009), 146.

However, unlike its title, the numbers shown in the above Figure are not the “uphold rates of compensation,” but the ratio of cases by the upheld amount. Furthermore, as indicated by the line graph on the right, an average upheld amount of compensation regarding only 50 samples may vary sensitively even with one or two singular values (outliers), highly distorting the outcome. Therefore, it is common to focus on the median values when compiling these kinds of statistics (particularly, when the number of samples is small and a singular value(s) is included).

Another study shows that the median of the amounts upheld by courts for patent or utility model infringement actions from 2000 to 2009 is 50,000,000 Won and an average of the upheld amounts is only about 100 million Won.⁹⁰⁾ The median here is identical to that of the 78 aforementioned cases, whereas the average has increased by about 5 times from 2010. However, considering the sample includes about 25% of utility model rights infringement cases (with the amounts claimed and awarded being relatively smaller than those of patent infringement cases, although not always so)⁹¹⁾ as shown above, one should not jump to the conclusion only based on the size of mean and median values that the courts are always conservative with the amount of damages.⁹²⁾

90) Re-quoted from Bongseop Kim, “The environment of judicial proceedings in statistics and our task”, KAIST IP Colloquium (Oct. 16, 2010), 44, Seoul National University Industry-Academy Collaboration Foundation (Young-taek Shim), “Measures to Ensure Appropriateness of Damage Estimation in IP Litigation,” 2011 National Intellectual Property Commission Policy Research Project Report (2012). [The former paper could not be found, and the latter may be downloaded from PRISM (<http://www.prism.go.kr>) (confirmed on May 21, 2017)].

91) As shown above, for only 19 utility model right infringement cases out of the 78 cases, the mean and the median of amounts claimed by the plaintiffs are 251,327,523 Won and 120,000,000 Won, the mean and the median of amounts upheld by the courts are 97,428,501 Won and 57,860,984 Won, and the mean and the median of damages award uphold rates are 41.19% and 36.71%. It is necessary to consider that patent rights infringement cases include many patent rights infringement cases under the jurisdiction of single-judges that previously corresponded to value of litigation up to 100 million won (however, as Article 2 of the Regulation on the Subject Matter Jurisdiction in Civil and Family Litigations is revised by the Supreme Court Rule 2584 (January 28, 2015), the criterion for the subject matter jurisdiction of a collegiate court is upgraded to litigations corresponding to values of 200 million or higher from February 13, 2015).

92) Min-soo Seul (2015), 455-460, points out a difference between roles of patents and a difference between technical innovation structures as factors influencing compensations of patent right infringement litigations in Korea that may appear as being underrated (particular, compared to those in the United States). It seems that the analysis is persuasive and complies with the reality of litigations in Korea.

Yet another study states that, “According to references provided by the Korean Intellectual Property Office, the ratio of patent damages awarded by the courts of first instance is about 37% of the amount claimed by the plaintiff. However, the ratio drops to about 8.6 % at the appellate level or the Supreme Court. Although the total amount claimed for 203 confirmed decisions for damages was 244.7 billion Won, the final upheld amount was 20.9 billion Won.”⁹³⁾ However, as shown above, the strength of this argument is mitigated at least in relation to the award ratio of the courts of first instance from 2010.⁹⁴⁾ At

93) Yongsik Cho, “What is the problem with intellectual property litigation”, *Law Times* (July 2, 2009).

94) Yongsik Cho (2009). The above article states that “I have read that, the winning rate of right holders was about 25% before the Court of Appeals for the Federal Circuit (CAFC) was established in 1982, but, after the establishment of the CAFC, the winning rate was increased to about 75% and upheld damages awards also significantly increased.”

Landes (2011), 495-520, analyzed statistics from 1960 to 2001 and confirmed that, a ratio of recognizing validity of patents was 35% immediately after the CAFC was established and reached to a weighted mean of 67% in the first 10 years thereafter, where a regression analysis confirms that the increase of the ratio raised the number of patent applications and the overall level of R&D expenses, thereby contributing to the success ratio of patent registration and stopping reduction of patent approvals. As judicial precedents of the CAFC are accumulated (and uncertainty is reduced), it would not be surprising if the number of patent litigations decreased. However, in reality, it is considered that the accumulation of the judicial precedents of the CAFC contributed to the increase of patent litigations to a certain degree (the authors are somewhat disappointed about the fact that the growth rate of the number of patent litigations is not reduced). However, the statistics analysis also pointed out that, since the United States Patents and Trademark Office and the CAFC are more interested in approval of validity of patents, the increases of patent applications and patent approvals cannot be accepted as reliable proxy variables indicating technical enhancements. The statistics analysis may also be seen in William M. Landes & Richard A. Posner, “An Empirical Analysis of the patent court”, *University of Chicago Law Review*, Vol. 71, No. 1 (2004). There is a research study arguing that the establishment of the CAFC did not have any particular impact on the number of patent lawsuits, based on an analysis of U.S patent litigations from 1971 to 1991; Jon F. MERZ & Nicholas M. Pace, “Trends in patent Litigation: The Apparent Influence of Strengthened patents Attributable to the court of Appeals for the Federal Circuit”, *Journal of the patent and Trademark Office Society*, Vol. 76, No. 8 (1994). However, there is an opinion that, in case of the United States, degrees of protections of patent rights began to be re-adjusted in 2005 and 2006 since there was a concern that strengthening of patent remedies may rather hinder technical innovation. James Farrand, Seth Weisberg, Rickard Killworth, Victoria Shapiro, “‘REFORM’ Arrives in patent Enforcement: The Big Picture”, *IDEA: The Intellectual Property Law Review*, Vol. 51, No. 3 (2011). There was an argument that, due to high litigation expenses and damages awards, there is more to lose than to gain from protection of patent rights;

the same time, that the overall argument of the above-stated article seems to suggest that it deducted the “award ratio” by comparing the total of claimed amounts at the courts of first instance at the initial stage of litigation with the total of finally awarded amounts at the courts where the litigation ended. If so, it still lacks merit because no infringement was found in the first place in case that dismissed the plaintiff’s decision, and the “award rate” is bound to fall at the appellate levels because some parties would choose not to appeal regardless of whether their claim is granted and how much damages is upheld.⁹⁵⁾

James Bessen, Michael J. Meurer, *patent Failure: How Judges, Bureaucrats and Lawyers Put Innovators at Risk* (Princeton, NJ: Princeton University, 2009). It is also necessary to track rise of the U.S. District Court for the Eastern District of Texas (EDTX) and changes after the decision of *TC Heartland LLC v. Kraft Foods Group Brands LLC*, 581 U.S. 1 (2017), which restricted the competent court with jurisdiction for patent infringement litigation to a location at which the defendant corporation is incorporated. For jurisdiction of patent litigations, refer to Brian J. Love & James Yoon, “Predictably Expensive: A Critical Look at patent Litigation in the Eastern District of Texas”, *Stanford Technology Law Review*, Vol. 20, No. 1 (2017); Colleen V. Chien & Michael Risch, “Recalibrating patent Venue”, *Maryland Law Review*, Vol. 77 (2018)/ *Santa Clara University Legal Studies Research Paper* No. 10-1/ *Villanova Law & Public Policy Research Paper* No. 2016-1029 (2016).

Meanwhile, in Japan, cases of applying compensations based on lost profits increased after the 1998 revision. It is said that, since potential capability is included in production capability of a right holder, the magnitude of damages awards increased. Toshiko Takenaka, “Patent Infringement Damages in Japan and the United States: Will Increased patent Infringement Damages Awards Revive the Japanese Economy?”, *Washington University Journal of Law and Policy*, Vol. 2 (2000) and Larry Coury, “C’est What? Saisie! A Comparison of patent Infringement Remedies among the G7 Economic Nations”, *Fordham Intellectual Property, Media and Entertainment Law Journal*, Vol. 13, No. 4 (2003), etc. Larry Coury(2003). The above article compares patent infringement remedies of the United States, England, Canada, Germany, Japan, Italy, and France to one another.

Discussion about appropriateness of patent infringement remedies is a “relative” issue closely related to economic development states of each nation. The demands of the industry should be given due consideration but we must keep in mind that increasing the amount of damages should not be a transhistorical dogma.

95) Seungjae Choi (2013), 341, cited So-young Yook “Possibility of introducing punitive damages in the field of industrial property rights and introduction plan”, Korea Invention Promotion Association (July 2005), 152, to state that “according to prior researches, the total of amounts upheld in domestic patent rights (including utility model rights) infringement compensation litigations rendered from 2000 to the first half of 2009 was 10% of the total of claim amounts.” I was not able to locate Professor Yook’s writing, but a research report under the same title (Sangcheol Bae, “Possibility of introducing punitive damages in the field of industrial property

Based on the review of existing research studies, it seems that the courts have been unduly discredited based on prejudices relying on limited experience and data to some degree (this is not to say that no improvement is needed). Furthermore, it is necessary to consider that a decision of a preliminary injunction, which supplements the damages compensation system, is issued very quickly in Korea, and a wide range of criminal punishment for intellectual property infringement is available.

2) Analysis of Frequency of Uphold Rates

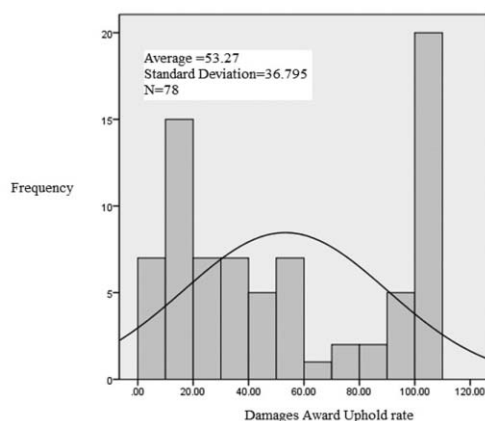
It is specifically noteworthy that, 20 out of 78 cases, or 25.6% of all cases, fully upheld the amounts claimed by the plaintiffs.⁹⁶⁾ Although it may be necessary to separately look into the possibilities of strategic splitting of claims or cases where the winning party is satisfied with the symbolic meaning of victory, these seem to be very rare in tort cases.

As shown in the twin-peak histogram of <Figure 2>, the distribution of uphold rate of damages is bipolarized to a certain degree. The number of cases corresponding to 50% or higher upholding rates is 38 cases, which is about half of all cases.

rights and introduction plan”, Intellectual Property rights Research Center (July 2005) was found on the website of the Korea Institute of Intellectual Property. However, no statement corresponding to the above quote could be found therein.

Kisu Kim (2017). As stated in the above analysis, when limited to appealed cases only, damages amounts tend to increase in the courts of appeals.

96) In case of Jisun Choi (2016), 245, it was 19 out of 62 rights, or 30.6%. Suppose that a case involved two rights for which the same amount of damages is sought and only one of the two was found infringed, and the amount claimed was awarded in full. According to the above article, this increases one more right for which the claimed amount was upheld 100% (all of the other rights are considered dismissed and therefore not subject to the analysis). However, based on the approach taken by this paper, the uphold rate of the above case is 50%. While both of the approaches have their pros and cons, it seemed to me that the latter is closer to the truth. Since a plaintiff does not split claim amounts for respective rights in every case (what is important to the plaintiff must be the total amount) and, even if a plaintiff claims damages awards split for respective rights, a judgment does not always include such details, and therefore data collection like the former is not always possible. Due to the time constraint, this article was bound by the threshold that allowed the analysis herein while inevitably sacrificing some details. Analyzing techniques will be revised through follow-up research works.

<Figure 2> Distribution of Damages Uphold Rates

Since damages award depends on the strength of the arguments made by the parties and their counsels as well as their proof, it seems possible that damages award vary according to the types of attorneys of both parties. A closer look into this issue reveals that plaintiffs were represented by the so-called “large law firms” (6 cases for Kim & Chang,⁹⁷⁾ 1 case for Lee & Ko, 2 cases for Bae, Kim & Lee LLC, 2 cases for Yulchon LLC, 2 cases for Yoon & Yang, and 5 cases for Darae Law & IP⁹⁸⁾ in 18 cases, and the average uphold rate goes up to as high as 73.29%, and the median value about 96.29% (excluding the cases of Darae, the average was 77.98% and the median value reached 100%). Among the 18 cases, defendants were also represented by large firms in 6 cases. Out of the 6 cases, the uphold rate of the damages claimed was only about 3%, but 100% in all of the remaining 5 cases. Claims of some of such cases may have been dismissed as a whole, although this is not a subject for this paper. It may be inferred that large firms relatively tend to wage “all-out wars,” and thus the outcome of the cases between them are often “all or nothing.”⁹⁹⁾

97) The firm represented foreign companies in all of the 6 cases. However, 5 of the 6 cases were so-called ‘Canon Photosensitive Drum cases’ represented for Canon Kabushikikaisha of Japan (claim amounts were fully upheld in 4 of the 5 cases) and 1 of the 6 cases was a case represented for Eli Lilly And Company Limited of England (claim amount was fully upheld).

98) 3 of the 5 cases were represented for The Welding Institute of England. As shown in the number of litigations, the overall law firm ranking does not seem to represent their ranks in the intellectual property field.

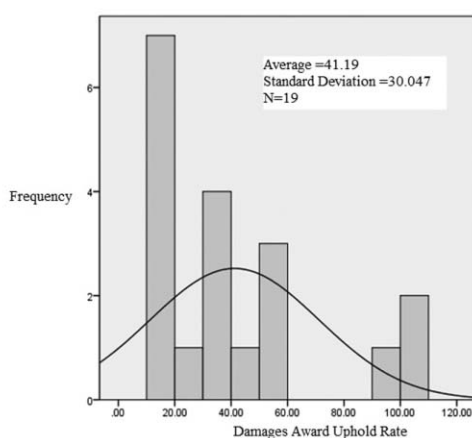
99) In 20 cases out of the 78 cases, one of the interested parties was represented by one of the 6 law

There were 13 cases in which defendants did not have an attorney and, in 2 out of the 13 cases, plaintiffs too were self-represented (in one case, the plaintiff did not have an attorney but the defendant did). The average of the uphold rates in the 13 cases was 43.65%, and the median value was 31.33%. In cases the defendants did not take the effort to hire an attorney, it is possible that the plaintiffs also have been relatively laid back in claiming their rights and proving damages.

However, since the number of the sample cases is small and many of them are cases involving particular foreign companies represented by Kim & Chang and Darae Law & IP, it is difficult to make a concrete conclusion. Since litigation is a two-way street, the outcome of the above cases must have been influenced by various intertwined factors in the litigations.

Meanwhile, the distribution of uphold rates of 19 utility model right infringement cases is as shown in <Figure 3>. There were only two cases where the damages were upheld 100%, whereas in 12 cases out of the 19 (63.2%), less than 50% was upheld. As such, the uphold rates are lower than those of patent infringement cases are.

<Figure 3> Distribution of Damages Uphold Rates of Utility Model Cases



firms. In 14 cases of the 38 cases with 50% or higher damages award uphold rates, one or both of the interested parties is / are represented by one of the 6 law firms. In 5 cases of the 14 cases, each of the interested parties is represented by one of the 6 law firms.

3) Simple Linear Regression Analysis

As the claim amount increases, the upheld amount is also likely to go up. To figure out the authenticity and degree of this hypothesis, an analysis is performed by introducing a simple linear regression model using the claim amounts as an independent variable (x) and the upheld amounts as a dependent variable (y).¹⁰⁰⁾ It comes to my mind that regression analysis may be applied to damages calculation in various manners, e.g., attempting a simple linear regression analysis for measuring the magnitude of the influence of sales reduction of the plaintiff to sales increase of the defendant during patent infringement, but this is a subject for later study. It is said that U.S courts utilize regression analysis for calculating damages excluding variables regarding a third-party competitor when there are other players in the market aside from the patentee and the infringer.¹⁰¹⁾

Analyzing the aforementioned 78 cases first, a regression model equation is estimated as $y=0.303x+194,954,164.5$. Since the F value is 40.302 and the p-value is 0.000 for the equation, the equation seems reliable at a confidence level of 99%. The t value for the claim amount is 6.348, and thus the claim amount inflicts a meaningful influence on the upheld amount. The correlation coefficient of 0.589 shows that there is a clear positive correlation,¹⁰²⁾ and the coefficient of determination of 0.347 shows that 34.7% of the upheld amount is explained by the above regression equation.¹⁰³⁾

100) Regression analysis is a statistical analysis technique for assuming a mathematical model for figuring out functional relationships between variables and estimating the model from data regarding measured variables. The mathematical model showing the relationship between two variables is referred to as a regression equation.

101) “How to calculate damages for US patent infringement” (Presentation) (Ki-jung Kang), 2017 Patent Court - Seoul Central District Court Joint Seminar Book (2017), 9.

102) A correlation coefficient is a statistic for determining a linear relationship between two variables and is a value obtained by standardizing a covariance (a covariance is a measurement of degrees that two variables vary together). It is also referred to as a “Pearson correlation coefficient.” When the correlation coefficient has a positive (+) value, it is determined that two variables tend to vary together. When the correlation coefficient has a negative (-) value, it is determined that two variables vary in directions opposite to each other. When a covariance is 0, there is no linear correlation between two variables. When the correlation coefficient is 1, there is a complete positive linear correlation between two variables. The correlation coefficient is calculated according to an equation as shown below.
$$\text{Corr}(X, Y) = E\left[\frac{X - E(X)}{\sqrt{\text{Var}(X)}} \cdot \frac{Y - E(Y)}{\sqrt{\text{Var}(Y)}}\right] = \frac{\text{Cov}(X, Y)}{\sqrt{\text{Var}(X)} \sqrt{\text{Var}(Y)}}$$

103) A coefficient of determination R^2 is an index indicating how well an estimated regression line explains observed values, where a ratio between variances that may be explained by using a

<Table 6> Regression Analysis of Claim Amount (x) and Upheld Amount (y) of 78 Cases

Model Summary^b

Model	R	R Square	Adjusted R Square	Standard Error of Estimate
1	.589 ^a	.347	.338	1613890332.5658

a. Predictors: (Constant), Claim amount

b. Dependent Variable: Upheld amount

ANOVA^a

	Model	Sum of Squares	Degree of Freedom	Mean Square	F	Significance Probability
1	Regression	1.050E+20	1	1.050E+20	40.302	.000 ^b
	Residual	1.980E+20	76	2.605E+18		
	Total	3.029E+20	77			

a. Dependent Variable: Upheld amount

b. Predictors: (constant), Claim amount

regression and the total variance is calculated according to $R^2 = \frac{SSR}{SST} = 1 - \frac{SSE}{SST}$ (SST denotes the total sum of squares, SSR denotes the sum of squares of regression, and SSE denotes the sum of squares due to error). The coefficient of determination has a value from 0 to 1. The closer the value of the coefficient of determination is to 1, samples are concentrated around a regression line, thus being highly explanative. It is also referred to as a contribution rate of the regression line. Although 30% is considered as a sufficiently high explanation power in social science, since a claim amount and an upheld amount in a civil litigation are variables directly related to each other, explanation powers higher than 30% may be common. A coefficient of determination in a simple regression analysis is a square of a correlation coefficient, that is, $r = \pm \sqrt{R^2}$.

Meanwhile, in a multiple regression model with multiple independent variables, the coefficient of determination always increases when an independent variable is added, and thus the multiple regression model may overfit. Since an adjusted coefficient of determination $R_a^2 = 1 - \frac{SSE/(n-k-1)}{SST/(n-1)} = 1 - \frac{(n-1)}{(n-k-1)}(1-R^2)$ tends to decrease when an independent variable with less explanation power is added, thus being a useful statistic in terms of model selection (n denotes the size of a sample and k denotes the number of independent variables).

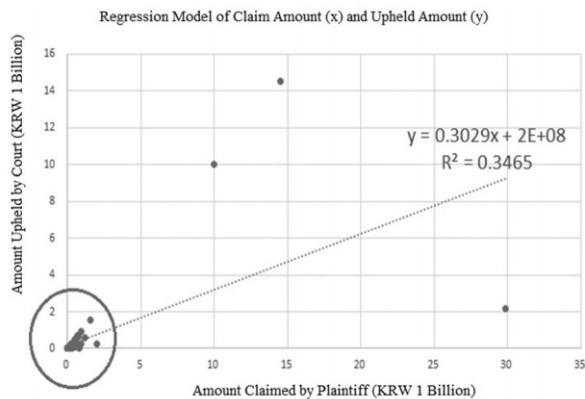
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Significance Probability
		B	Standard Error	Beta		
1	(Constant)	193954165.5	188533923.4		1.029	.307
	Claim Amount	.303	.048	.589	6.348	.000

a. Dependent Variable: Upheld amount

However, as indicated by the scatter plot of <Figure 4>, some data significantly influences the regression equation as so-called “high-leverage points” and “influential data.” It is necessary to exclude the points that are too far from the other data.

<Figure 4> Regression Analysis of Claim Amount (x) and Upheld Amount (y) of 78 Cases



A regression analysis is performed with respect to the 75 cases within the red circle in <Figure 4> (cases with final claim amounts of 2 billion Won or lower) excluding 3 cases in which residuals are the largest “influential observation values” via influence diagnosis (DFBETA, DFFIT). They correspond to the three distinctive dots in the upper right side of <Figure 4>: Seoul Central District Court Decision, 2014Gahap525092, decided February 13, 2015 (Chungho Nais Co., Ltd v. Coway Co., Ltd., 10 billion Won was claimed and fully upheld); Seoul

Central District Court Decision, 2012Gahap68823, decided June 7, 2013 (one of “Canon Photosensitive Drum cases,” Japan Canon Kabushikikaisha v. Baiksan OPC Co., Ltd., about 14.5 billion Won was claimed and fully upheld); and Seoul Central District Court Decision, 2011Gahap13369, decided August 31, 2012 (Hanmi Semiconductor Co., Ltd. v. Secron Co., Ltd., about 29.8 billion Won was claimed and 2.1 billion Won was upheld). The result is as shown in <Table 7>.

<Table 7> Claim Amount (x), Upheld Amount (y), and Regression Analysis of 78 Cases

Model Summary^b

Model	R	R Square	Adjusted R Square	Standard Error of Estimate
1	.715 ^a	.511	.504	178574643.900

a. Predictors: (Constant), Claim amount

b. Dependent Variable: Upheld amount

ANOVA^a

Model		Sum of Squares	Freedom	Mean Square	F	Significance Probability
1	Regression	2.432E+18	1	2.432E+18	40.302	.000 ^b
	Residual	2.328E+18	73	3.189E+16		
	Total	4.760E+18	74			

a. Dependent Variable: Upheld amount

b. Predictors: (constant), Claim amount

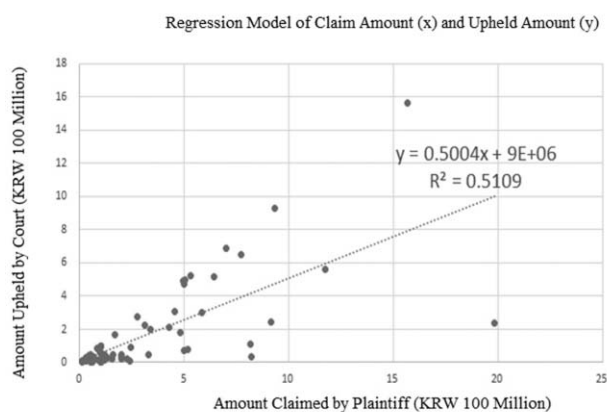
Coefficient^a

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Standard Error	Beta	t	Significance Probability
1	(Constant)	8910151.731	26353408.11		.338	.736
	Claim Amount	.500	.057	.715	8.732	.000

a. Dependent Variable: Upheld amount

A regression equation is drawn as $y=0.5x+8,910,151.731$. The F value is 76.253 and the p-value is 0.000 for the equation, and thus the equation is reliable at the confidence level of 99% (the T value is 8.732). The correlation coefficient of 0.715 shows that there is a strong positive correlation, and the coefficient of determination of 0.511 shows that there is a strong explanatory power.¹⁰⁴⁾ When the values relatively far from the estimated regression model (values with large residuals) are excluded, the correlation coefficient and the coefficient of determination may further increase.

<Figure 5> Regression Analysis of Claim Amount (x) and Upheld Amount (y) of 75 Cases



To roughly interpret the results of the above-stated regression analysis with reference to the statistics regarding uphold rates shown in <Table 4>, it appears that the courts may have been (supposedly) determining the damages award starting from about half of the amount expected by the plaintiff, adjusting it up or down based on the specific facts to consider.¹⁰⁵⁾ The gap between the amounts

104) Jisun Choi, 245. A regression is estimated as $\hat{y} = 0.799x + 123,007,881$, and it appeared that the coefficient of determination (R^2) is about 81%. With the coefficient of determination, it may be said that a claim amount is almost fully upheld, but the difference may have been caused by adding and subtracting some of the cases.

105) It may not have been intended, but using an amount that is about a half of a claimed amount as a “starting point” may be analogous to assuming a uniform distribution (or the Jeffereys’ prior) as a prior distribution in the Bayesian inference when there is no prior information [for example,

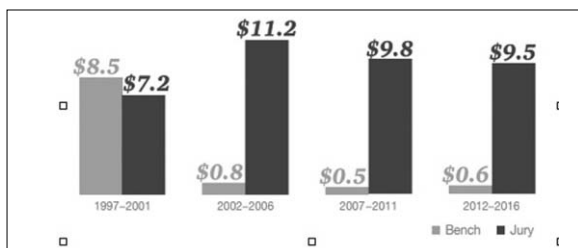
expected by the plaintiff and awarded by the court remains to be significant.¹⁰⁶⁾

Before selective concurrent jurisdiction of the Seoul Central District Court was conferred to enhance jurisdictional exclusivity of patent litigation, cases

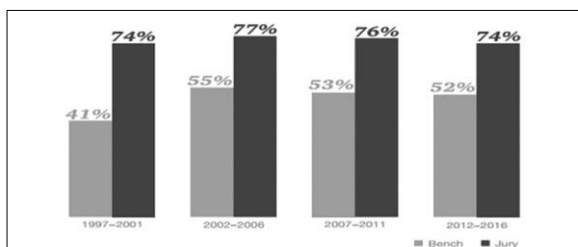
when there are only 2 choices and there is no particular prior information, a prior probability may be set to 0.5, that is, 'half-and-half' and may be updated by reflecting information added thereafter. It is referred to as the "principle of the insufficient reason". In a damages compensation litigation, the maximum of damages award is an amount claimed by the plaintiff (full upholding) and the minimum of the damages award is 0 (claim dismissal), (but when a compensation liability is recognized), the middle between the maximum and the minimum is used as a starting point.] It may be somewhat "safer" this way. See Bowon Kwon, "A Study Note on Probabilistic Findings in Bayesian Statistics", Judicial Research Papers in Advanced Course for Judicial Training in 2016 (Judicial Research and Training Institute, 2017a); 小島寛之, 完全独習ベイズ統計学入門 (ダイヤモンド社, 2015) [Translated by Eunjung Jang, Introduction to the Easiest Bayesian Statistics in the World (Jisangsa, 2017)], etc. It may be explained by "extremeness aversion," a concept of behavioral economics.

- 106) The results of patent infringement litigation in the United States for the past 15 years show that, as shown in <Table 8> below, the median of amounts upheld in jury trials is from 14 to 20 times higher than amounts upheld in bench trials (however, even the amounts upheld in jury trials are gradually decreasing). As shown in <Table 9>, the success rate in jury trials is from about 22% to about 23% higher than the success rate in bench trials. Chris Barry, Ronen Arad, Landan Ansell, Meredith Cartier, Hyeyun Lee, "2017 patent Litigation Study: Change on the Horizon?", PwC (2017) http://www.ipwatchdog.com/wp-content/uploads/2017/05/2017-patent-Litigation-Study_PwC.pdf (confirmed on August 13, 2017)

<Table 8> Median damages award: bench vs. jury decisions (in \$M)



<Table 9> Trial success rates: bench vs. jury



were filed before courts across the country and then distributed to single-judge divisions or panel divisions. It was difficult for the judges dealing with patent cases to continuously accumulate experience and insight for damages award for patent infringement as they saw such cases rather sporadically. Therefore, it was somewhat inevitable that damages were calculated incoherently without agreed criteria (there were some cases with possible misinterpretation of application of Article 128 of the Patent Act).¹⁰⁷⁾ In such circumstances, it is difficult for the parties or their attorneys to anticipate the outcome. As mentioned above, the amounts claimed by the plaintiffs were fully upheld in about 25.6% of all cases. In some of these cases, the amounts calculated by the court according to its own criteria exceeded the amounts claimed by the plaintiffs. In other words, the plaintiffs in such occasions could have claimed (betted) bigger amounts but somehow they decided otherwise (of course, it may have been a business strategy of the plaintiffs, filing the lawsuit only as a symbolic gesture because the plaintiffs could not completely turn their back on the defendants in the long term due to their close cooperative and competitive relationships with the defendants).

In 2017, the Intellectual Property Division of the Seoul Central District Court was reorganized and expanded. With active interactions and cooperative research with the Patent Court, which is a superior court, the practice and the criteria will continue to evolve. In addition, predictability for the industry will be enhanced so that the damages compensation system may function as a signal (information).¹⁰⁸⁾

107) Although not related to damages award in a patent rights infringement litigation, Min-soo Seul, "Issue of Employee Invention Compensation Litigation: Focusing on Calculation Method and Details of Calculation Elements", *Supreme court Law Review*, Vol. 60 (2016), 261, states that, in decisions of lower instance courts, elements for calculating employee invention compensations tend to be determined inconsistently and arbitrarily and raises a question whether the inconsistency and arbitrariness are results of deciding damages award [beforehand] and manipulating elements for calculating the same [afterwards]. In this regard, a behavioral economic analysis may be valuable with respect to the impact of the composition of court panels or the process of agreement within a panel on damages calculation, and more particularly, the trend of undercompensation.

108) The followings are classic papers of information economics. George Akerlof, "The Markets for 'Lemons': Quality Uncertainty and the Market Mechanism", *Quarterly Journal of Economics*, Vol. 84, No. 3 (1970); Michael A. Spence, "Job Marketing Signaling", *Quarterly Journal of Economics*, Vol. 87, No. 3 (1973); Joseph E. Stiglitz, "The Theory of 'Screening', Education, and the

IV. Analysis by Paragraph

A. Application of Article 128 by Paragraph

1) Summary of Damages Calculation Methods

A method of calculating damages award under Article 128 of the Patent Act may be summarized as shown in <Table 10>. As shown in <Table 2> above, Article 128 of the Patent Act has been revised by adding new paragraphs regarding a calculation method without changing existing paragraphs. Therefore, the provisions of the Patent Act revised in 2016 may include all previous laws without any problem. The paragraph numbers referred to herein are those of the current Patent Act.

**<Table 10> Summary of the Methods of Calculating Damages
Award According to Each Paragraph of Article 128 of the Patent Act**

Current Article 128	Summary	Damages Award Calculation Guideline
(Article 750 of Civil Act) ¹⁰⁹⁾	(Lost Profits)	Number of units that could be manufactured and sold by the right holder but for the infringement $\times$ Profit per unit of the right holder
Paragraph 2	Number of Assigned Units (Lost Profits)	(Quantity of assigned products of the infringer) $\times$ (Profit per unit of the right holder)
Paragraph 3		The ceiling is (Production capacity of the right holder – actual number assigned) $\times$ (Profit per unit of the right holder)
Paragraph 4	Infringer's Profit	Profit gained by the infringer due to the infringement
Paragraph 5	Reasonable Royalty	The amount usually be entitled to receive for practicing the patented invention

Distribution of Income”, *American Economic Review*, Vol. 65, No. 3 (1975). The above-stated 3 people have won the Nobel Memorial Prize in Economic Sciences in 2001 for a research on information asymmetry. However, the pioneer of the research is Friedrich Hayek, “The Use of Knowledge in Society”, *American Economic Review*, Vol. 35, No. 4 (1945); George J. Stigler, “The Economics of Information”, *Journal of Political Economy*, Vol. 69, No. 3 (1961).

109) Taek Soo Kwon, *Factual Elements in Patent Law* (Jinwonsa, 2010), 368.

Current Article 128	Summary	Damages Award Calculation Guideline
Paragraph 7	Discretion of the Court	Reasonable damages based as determined by the court based on the gist of entire arguments and the results of examination of evidence

2) Prior Research

In an actual litigation, which of the paragraphs of Article 128 of the Patent Act is/are preferred by the plaintiff and by the court? From among prior research, there is a study that analyzed 22 cases from 2009 to 2011, in which damages award for patent right infringement was calculated as shown in the below table.¹¹⁰⁾

<Table 11> Seoul National University Industry-Academy Collaboration Foundation (2012), Number of Litigations and Damages Award Ratio by Paragraph

	Number of Assigned Units (Paragraph 2)	Infringer's Profit (Paragraph 4)	Reasonable Royalty (Paragraph 5)	Discretion of the Court (Paragraph 7)
Number of Lawsuits	6 cases	5 cases	2 cases	9 cases
Proportion	27.27%	22.73%	9.09%	40.91%
Ratio of Damages Award Against Sales of Infringed Items	36.34%	13.2%	0.52%	23.7%

As shown in the fourth row of <Table 11>, the study focuses on a ratio of damages relative to 'the sales amount of infringing items (of the defendant)'. The study states that the ratios between damages and sales were calculated from 5 cases for paragraph 2, 5 cases for paragraph 4, 1 case for paragraph 5, and 5 cases for paragraph 7 of Article 128, except for the cases that did not provide the 'sales quantities' of infringing goods in the decision. Based on the statement, it seems that the 'sales amount' was calculated according to certain criteria based on the

110) Seoul National University Industry-Academy Collaboration Foundation (2012), 46-47.

sales quantity of infringing goods. However, the accuracy of the sales data is called into doubt, and it further lacks merit as damages award to be paid by the defendant is based on profit, not sales, i.e. lost *profit*,¹¹¹⁾ according to the Korean Patent Act, which is grounded on the so-called the ‘theory of difference’¹¹²⁾. Therefore, the index of the ‘ratio between damages award and the sales amount of infringing goods’ is misleading and unreliable.

Furthermore, while the above research indicates that ‘the ratio between damages award and a sales amount of an infringing unit’ under paragraph 5 of Article 128 (reasonable royalty is based on only one case and is statistically meaningless, it takes self-conflicting position questioning that the ratio is only 1 / 70 of the ratio under paragraph 2 (number of assigned units) at the same time.

The research also points out excessive utilization of paragraph 7 (discretion of

111) In the U.S. too, there were decisions stating that the damages award for patent infringement should be based on “the measure of damages in such case being not what the defendants had gained, but what the plaintiff had lost” in the past, and it is referred to as the “but for” rule (≡ sine qua non). *Birdsall v. Coolidge*, 93 U.S. 64 (1876); *Hurst v. Western and Atlantic Railroad Company*, 93 U.S. 71 (1873); *Coupe v. Royer*, 155 U.S. 565 (1895), etc. The precedent used as a criterion for calculating damages award based on lost profit is *Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F. 2d 1152, 197 USPQ 726 (6th Cir. 1978), which demands concrete proofs of 4 elements including ① demand for the patented product, ② the absence of acceptable non-infringing alternatives, ③ the patentee’s production / marketing capacity to exploit the demand, ④ the total amount of profits the patentee would have made. However, the criteria assumes a case in which a patent right holder exercises a monopoly status in the market and, in reality, the condition ② is not satisfied in many cases. Edward V. Filardi, “The Adequacy of Compensation for patent Infringement: An Analysis of Monetary Relief under 35 USCA §284”, *Fordham Intellectual Property, Media and Entertainment Law Journal*, Vol. 3, No. 1 (1992)

112) Since the plaintiff too would incur costs and expenses to manufacture and sell the patented goods, such costs and expenses do not count toward the profit the plaintiff could have earned and should not be compensated for. It is why profit is calculated under the approaches based on gross profit, net profit (operating profit), marginal profit, standard income rate, or simple (reference) expense rate.

Another related issue is that, since patent infringement is an illegal practice (use) of a patent, a loss therefrom should be considered as a loss of utility value. Patent infringement does not deprive or transfer the patent from the patentee or to the infringer (in other words, the patentee still holds patent rights), and thus the exchange value of the patent right itself is not at issue (while the sale of infringing goods would result in sales reduction and price erosion for the patentee, leading to a fall in revenue, this must be viewed in the context of loss of utility value of the patent). Refer to 紋谷暢男, 無體財産權法概論(第4版)(有斐閣, 1986), 135 [translated by Sunhee Yun, Introduction to Intangible Property Right Act (4th Edition)(Beopkyung, 1991), 141-142]; Hyo-sook Jeon (1997), 32.

the court) that ‘must be applied as a supplementary clause’ given the purpose of the paragraph,¹¹³⁾ but a careful review of detailed data must be preceded before drawing such a conclusion. In addition, an upheld amount is not necessarily small even if the above-stated paragraph is applied.¹¹⁴⁾ The above research also mentions that, in 4 out of 5 cases without infringement amounts specified in decisions, the courts have assessed damages at their own discretion. Contrary to the suggestions of the research paper, it seems to me that the corresponding cases are rather the examples complying with the purpose of the paragraph,¹¹⁵⁾ that is, “when it is difficult to prove damages and the amount of established damages is less than actual damages, the court may award damages based on the principle of equity.”¹¹⁶⁾

113) See Youngsun Cho, “A Review of the Remedy Legal Principles of Trademark Infringement: Focusing on the Accrual Reduction”, Law, Vol. 683 (2013), 51 questioning if court opt for discretion-based damages calculation to its convenience.

114) Jisun Choi (2016), 259 focuses on the fact that, although the absolute scale of an amount upheld according to the paragraph regarding calculation at the discretion of the court (paragraph 7) is significantly smaller than the amounts upheld according to the other paragraphs, damages award uphold rate of the paragraph 7 is similar to those of the other paragraphs, and disagrees with a simple conclusion like “the discretion-based award undercompensates the damages and therefore the application of the paragraph is problematic.” The above article rather argues for a possibility that, unlike the conventional belief, the courts “actively” applied the above-stated paragraph in order to “protect” right holders when litigation capacity of the right holders is insufficient in cases with small claims.

115) Seong-soo Park (2007), 314.

116) Jun-seok Park, “About recognition of ‘Substantial Damages’ in the Case of Difficulty in Proving Damages of Intellectual Property Rights Infringement”, Human rights and Justice, Vol. 438 (2013) is also in the same vein and goes further to argue to expand the role of the discretionary provision in the future.

Meanwhile, Seoul National University Industry-Academy Collaboration Foundation (2012), 190, concludes that, since the median of amounts upheld by Korean courts is hundred and dozens of times smaller than that of U.S. courts, it is necessary to increase damages awards by about 12.9 times, accounting for the difference between GDPs of Korea and the United States. I fully acknowledge the possibility of undercompensation under Korea’s current structure, but do not agree with the conclusion insisting to increase the overall damages award by about 13 times to simply match the median value in proportion to the GDP difference without considering the difference in legal norms encompassing the economic status and the laws including the Patent Act of the two countries in whole (the quality and level of patents at issue in litigations must also be considered). As shown in <Table 8> and <Table 9> above, uncertainty regarding jury trials is also significant.

However, I think that the “guideline principle” (Supreme Court Decision, 2006Da6713, decided

3) Applicability by Paragraph

Returning to our sample, the applicability of each paragraph to cases is as below. If a plaintiff grounds his or her claim based on two paragraphs alternatively, or primarily and secondarily, the respective paragraph of the case was counted as 0.5 each.

<Table 12> Applicability of Paragraphs of Article 128 of the Patent Act

	Claimed by the Plaintiff	Applied by the Court
Number of Assigned Units (paragraph 2)	20 cases ¹¹⁷⁾	8.5 cases ¹¹⁸⁾
Infringer's Profit (paragraph 4)	45 cases ¹¹⁹⁾	11.5 cases

February 1, 2008), which states that damages shall be fairly distributed between the victim and the infringer should be reconsidered. In the Anglo-American law and law and economics, prevention and deterrence of illegal activities are given heavy weight. The provision of the U.S. patent law regarding enhanced damages for willful infringement (35 U.S.C. §284) may be viewed as a deterrent. If all profits illegally gained by a perpetrator can be completely forfeited (it does not have to be more than the profit, because it is a waste of enforcement costs), the perpetrator will no longer have an incentive to engage in the illegal act, theoretically. In other words, if there is any profit that remains after the perpetrator pays for the compensatory damages of the victim, the profit may become an incentive for the perpetrator to take a similar illegal act again. Such an incentive-based structure is used as a reference for calculating damages or designing administrative regulations. In the Anglo-American law, criminal law too focuses on such an incentive structure and tries to find the “optimal punishment.” This allows a comprehensive observation of the overall legal system. My humble paper (2017b); Youngjoon Kwon, “Ideological Foundation of Illegal Acts and Implications,” Justice, Vol. 109 (2009).

Furthermore, various principles of law and economics are based on the thinking that not only non-pecuniary utility, but also values pursued by society, e.g., ideas such as justice, may be expressed (interpreted) by using a single standardized metric of “welfare.” A “total damages” not limited to pecuniary damages can be calculated by the sum of the answers from the representative samples of society to questions such as “how much compensation should be made to you as a result of an illegal act (crime) to restore a utility level same as before?” (so-called “compensating variation”) or “how much are you willing to pay for living in a safe society where such an illegal act (crime) does not occur?” (so-called “equivalent variation”). Iljung Kim, Legal Economics Analysis of Excessive Criminalization: Focusing on Fair Trade (Korea Economic Research Institute, 2013), 260.

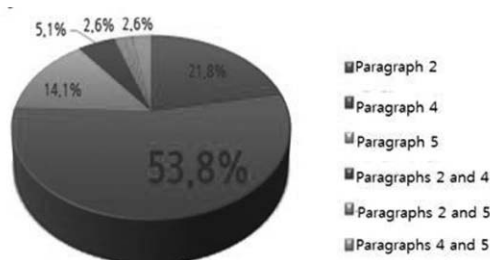
117) The number includes 4 cases that both used paragraph 4, and 2 cases that both used paragraph 5.

118) Paragraph 2 and paragraph 4 were each applied by the Seoul Central District Court Decision, 2014Gahab525092, decided February 13, 2015 for the other aspects of damages.

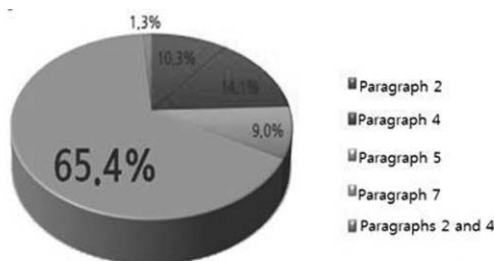
119) 4 cases that both used paragraph 2 and 2 cases that both used paragraph 5 are included.

	Claimed by the Plaintiff	Applied by the Court
Reasonable Royalties (paragraph 5)	13 cases ¹²⁰⁾	7 cases
Discretion of the Court (paragraph 7)		51 cases
Total	78 cases	78 cases

<Figure 6> Applicability of Paragraphs Regarding Plaintiffs' Argument



<Figure 7> Applicability of Paragraphs Regarding Application in Court



As can be expected to a certain extent, plaintiffs prefer the clause on infringer's profit (paragraph 4) which is relatively easier to prove,¹²¹⁾ and courts

120) 2 cases that both used paragraph 2 and 2 cases that both used paragraph 4 are included.

121) Cha Ho Chung (2016), 68 states that by taking into consideration the fact that it is difficult for the patentee to prove lost profits, the infringer's profit clause (paragraph 4) was specially adopted to strengthen protection of patent rights, and that based on the statistics of Seoul National University's Industry-University Cooperation Foundation (2012) (refer to <Table 11>), the clause has not been actively applied compared to the clause on number of assigned articles (paragraph 2), and it is also stated that the "ratio of the damages award over the sales amount of the infringed products" is also low. However, as seen in <Table 12> and <Graph 6>, this is not true.

prefer the “safer” calculation based on discretion (paragraph 7). One possible explanation of this phenomenon is that the clause on the number of assigned articles (paragraph 2) imposes a restriction that the infringed products must be transferable,¹²²⁾ and it is difficult to attain necessary data for calculation of the royalties under paragraph 5 due to the inactiveness of technology market in Korea whereas the paragraph on the infringer’s profits (paragraph 4) does not define the calculation formula in the law and allows various methods to estimate an infringer’s profit, and is helpful to utilize the measures in litigation system such as inquiry of facts, etc.¹²³⁾ This analysis seems credible. In the case of the paragraph on the number of assigned articles (paragraph 2), we could add that an order to submit documents is not enough to secure the evidence to confirm the number of assigned articles.

Notably, many decisions grounded on paragraph 7 take into consideration

122) Free assignment such as distribution of test products is included, opinions vary on whether “leasing” is included. The side that argues inclusion is Wonmo Ahn (2005), 164; Cha Ho Chung (2016), 11-12. The side that argues non-inclusion is Chang Soo Yang (2005), 58; Seong-soo Park (2007), 222. In Japan, the side that argues inclusion is the majority. Seong-soo Park (2007), 222 footnote 18 states that in Japan’s Patent Act Article 102 paragraph 1, the original is 貸渡 but 譲渡 is correct. In Japan’s Patent Act Article 2, paragraph 3, sub-paragraph 1, “Assignment, etc.” means “Assignment and leasing”, (譲渡及び貸渡しをいい), but in the above Article 102 paragraph 1, the phrase “Assignment, etc.” is not used. Even when looking at the English translation provided by the Japanese government, the meaning of “lease” is not included, and rather, it is translated as if restricting it to “sale”. (“Where a patentee or an exclusive licensee claims against an infringer compensation for damage sustained as a result of the intentional or negligent infringement of the patent right or exclusive license, and the infringer assigned articles that composed the act of infringement, the amount of damage sustained by the patentee or the exclusive licensee may be presumed to be the amount of profit per unit of articles which would have been sold by the patentee or the exclusive licensee if there had been no such act of infringement, multiplied by the quantity (hereinafter referred to in this paragraph as the ‘assigned quantity’) of articles assigned by the infringer, the maximum of which shall be the amount attainable by the patentee or the exclusive licensee in light of the capability of the patentee or the exclusive licensee to work such articles; provided, however, that if any circumstances exist under which the patentee or the exclusive licensee would have been unable to sell the assigned quantity in whole or in part, the amount calculated as the number of articles not able to be sold due to such circumstances shall be deducted.” http://www.japaneselawtranslation.go.jp/law/detail/?printID=&ft=1&c_o=01&x=32&y=19&ky=%E7%89%B9%E8%A8%B1%E6%B3%95&page=10&re=02&vm=02&id=42&lvm=01 (Confirmed on May 21, 2017.) It seems that “lease” is not included under Korea’s Patent Act.

123) Jisun Choi (2016), 250-251.

the specific circumstances argued by the plaintiff based on paragraphs 2, 4 or 5. In this regard, paragraph 7 is specified as the underlying ground when the courts consider ‘more’ (even the slightest) for damages than claimed and proven by the plaintiffs. Therefore, courts’ reliance on paragraph 7 does not necessarily mean that the paragraph selected by the plaintiff and the resulting calculation method were not taken into consideration (to be revisited below).¹²⁴⁾ Jisun CHOI (2016), 251 also proposes a hypothesis that there is an incentive to prefer paragraph 7 because damages award under paragraph 7 is less likely to be reversed at a higher level. While there is some sense to the argument, the reversal rates of the decisions based on each paragraph would require a separate examination.

4) Other Countries

In the U.S., the damages award is calculated based only on reasonable royalty¹²⁵⁾ for about 60% of patent damages (while in 15~20% of cases, lost profits

124) Min-soo Seul (2015), 442-443.

125) In the well-known Georgia-Pacific decision, 15 factors for consideration are presented assuming a hypothetical negotiation. (1) The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty. (2) The rates paid by the licensee for the use of other patents comparable to the patent in suit. (3) The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold. (4) The licensor’s established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly. (5) The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promotor. (6) The effect of selling the patented specialty in promoting sales of other products of the licensee; the existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales. (7) The duration of the patent and the term of the license. (8) The established profitability of the product made under the patent; its commercial success; and its current popularity. (9) The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results. (10) The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention. (11) The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use. (12) The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions. (13) The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the

are also taken into consideration).¹²⁶⁾ In Germany, in almost 75% of cases, the damages award is calculated based on the infringer's profit.¹²⁷⁾

In Taiwan, according to the Intellectual Property Rights Court decisions of the first instance from April 1, 2010 to March 31, 2012, cases in which the

manufacturing process, business risks, or significant features or improvements added by the infringer. (14) The opinion testimony of qualified experts. (15) The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license. (Therefore, the preceding factors aim to derive (15)). *Georgia-Pacific Corp. v. United States Plywood Corp.*, 381 F. Supp. 1116, 1120, 166 USPQ 235 (S.D.N.Y. 1970.) modified and aff'd, 446 F.2d 295, 170 USPQ 369 (2d Cir. 1971), cert. denied, 404 U.S. 870 (1971).

126) Thomas F. Cotter, *Comparative Patent Remedies: A Legal and Economic Analysis* (Oxford: Oxford University, 2013), 119; Chris (2017). In the U.S. (at the time of about 2008), each year about 3,000 patent right infringement related lawsuits are raised, and among them, 90% are abandoned or settled, while among the remaining 10% (about 300 cases) 200 cases are adjudicated on summary judgment, while only the remaining approximately 100 cases per year are actually tried. Paul R. Michel (CAFC Chief Judge), "Where Are We Now on Patent System Improvements and How Can We Best Make Further Progress?", FTC Hearing on the Evolving IP Marketplace (Dec. 5, 2008), 2 <http://www.cafc.usCourts.gov/sites/default/files/announcements/2008/FTCspeech.pdf> (confirmed on May 22, 2017).

127) Alexander Harguth & Steven Carlson, *Patents in Germany and Europe: Procurement, Enforcement and Defense* (Alphen aan den Rijn: Kluwer Law International, 2011) 217.

However, on the other hand, Seong-soo Park (2007), 67, 294 quoted Section V of the presentation material for an international symposium regarding to patent infringement litigations (October 9, 2003) sponsored by the Korea Industrial Property Rights Law Society, an incorporated association, written by Peter Meier-Beck, "Damages for Patent Infringement according to German Law: Basic Principles, Assessment and Enforcement," saying that although the method of "returning infringer's profits" has been recognized for several decades in Germany, recently it has not been used to a large extent, the reason being that, according to the detailed description of the act of infringement submitted by the infringer, the profits are shown to be extremely minimal, and there is no method of verifying this. The method of calculating the relevant royalty by making an analogical interpretation of the licensing contract is frequently chosen.

In Germany, the calculation of the damage amount via infringer's profit rose rapidly in frequency since the so-called "indirect cost distribution decision" BGH 02. 11. 2000. | ZR 246/98, and was therefore a recent phenomenon. Sangwook Han, "Legal Principles and Implications regarding Calculation of the Patent Infringement Damage Amount of Major EU Nations including Germany." (presentation material), 2017 *Booklet of Materials for Joint Seminar held by the Patent Court and the Seoul Central District Court* (2017), Slides 26-55.

damages award was calculated as per the infringer's profit took up the most, totaling 26 out of 37 (17 cases regarding operating profit, 9 cases regarding sales¹²⁸⁾), with 5 cases based on the court's discretion, 4 cases based on reasonable royalty, 3 cases based on lost profits, and 1 case based on the patent holder's damages.¹²⁹⁾ During the period of April 1, 2012-March 8, 2013, 9 cases were based on operating profit and 6 cases based on the sales amount, with 1 case based on reasonable royalty and 2 cases based on discretion. From March 9, 2013 to May 15, 2014, 6 cases were based on operating profit, 11 cases were based on sales, and 5 cases were based on discretion. From May 16, 2014 to May 7, 2015, 8 cases were based on operating profit, 2 cases were based on sales, and 1 was case based on discretion. From May 8, 2015 to May 13, 2016, 12 cases were based on operating profit, with 1 case on sales, and 7 cases based on discretion. Overall, damages award in Taiwan is mostly determined based on infringer's profit.¹³⁰⁾

An extensive survey to the point was already performed in Japan, although it was quite some time ago. Japan's 1998 Patent Act revision is directly based on "Response regarding the revision of the Patent Act, etc." dated December 15, 1997 of Patent Office of Japan's Industrial Right Commission. The above response mostly uses the statistical data of the March 1996 report of the IPR Research Center, a corporate foundation. The report analyzed 103 cases where infringement was found, either patents or utility models, during the period from 1959 to the end of 1995. The special provisions regarding calculation of damages award as per Japan's Patent Act were newly enacted in 1959 (as you can see, the number of cases is not very high.) In the above 103 cases, the number of claims

128) In the former Patent Act of Taiwan Article 85, paragraphs 1-2, there is a provision saying that the infringer's total revenue is the infringer's profit amount. However, there was criticism that this was excessive posting, and was deleted with the 2011 revision of the law. 李柏靜, "論專利侵害之損害賠償計算: 從美國、中國大陸與台灣之專利修法談起", 國立政治大學碩士學位論文 (2009), 177; Cha Ho Chung (2016), page 113, requoted. However, as seen later, it has been confirmed that up until 2015 there were decisions pursuant to the principle of basing calculation on the total sales amount, but this was not accurately tracked.

129) This seems to be a case in which the direct damage amount itself was proven.

130) 林志剛, "台灣に於ける特許侵害案件の訴訟対策", 台灣國際專利法律事務所 (August 23, 2016), 136. This seems to be data that is updated each year, and materials for the year of 2016 can be found in <http://www.tiplo.com.tw/Seminar/201608/20160823-litigation.pdf> (confirmed on May 21, 2017). On page 135, there is a record of the number of cases that have been classified according to the quoted price.

that was subjected to judgment was 190, with 27 cases based on lost profits, 73 cases on infringer's profit, and 90 cases on reasonable royalties. When limited to cases where lost profits were sought, the court upheld the claim in its entirety in 5 cases, in part in 5 cases, and dismissed the claim in its entirety in 17 cases.¹³¹⁾

5) Distribution by Type of Combination

Returning to our sample, <Table 13> shows the distribution according to the type of combinations of the paragraphs by the plaintiff's argument and the paragraphs applied by the court.

<Table 13> Distribution by Type of Combinations of Grounds Argued by Plaintiffs Applied by the Court

Claimed by the Plaintiff	Applied by the Court	No. of Cases	Proportion within the Category (by paragraph) (%)	Total Share (%)
Number of Assigned Units	Number of Assigned Units	8	47.1%	10.3%
	Infringer's Profit	1	5.9%	1.3%
	Court Discretion	8	47.1%	10.3%
Total		17 cases	100.0%	21.8%
Infringer's Profit	Infringer's Profit	9	21.4%	11.5%
	Court Discretion	33	78.6%	42.3%
Total		42 cases	100.0%	55.1%
Reasonable Royalty	Reasonable Royalty	5	45.5%	6.4%
	Court Discretion	6	54.5%	7.7%
Total		11 cases	100.0%	14.1%

131) 財團法人知識財産研究所, 知的財産権侵害にかかる民事的救済の適正化に関する調査研究報告書(平成7年度工業所有権制度問題調査報告書) (March 1996); Requoted in Chang Soo Yang (2005), 31-33. At the 2017 International Patent Court Conference held at the Patent Court, upon inquiry, Judge Motoyuki Nakashima of Japan's IPR High Court answered there is no research more recent than the above to his knowledge.

Claimed by the Plaintiff	Applied by the Court	No. of Cases	Proportion within the Category (by paragraph) (%)	Total Share (%)
Quantity & Profits	Quantity & Profits	1	25.0%	1.3%
	Infringer's Profit	1	25.0%	1.3%
	Court Discretion	2	50.0%	2.6%
Total		4 cases	100.0%	5.1%
Quantity & Royalty	Reasonable Royalty	2 cases	100.0%	2.6%
Profit & Royalty	Court Discretion	2 cases	100.0%	2.6%
Grand Total		78 cases		100.0%

The most frequent type is “Infringer’s Profit (claimed) — Court Discretion (applied),” taking up 42.3% of all cases. When we restrict our observation to just the cases in which the plaintiff argued based on infringer’s profit, the courts calculated damages based on its discretion for 78.6% of those cases, while only 21.4% of cases applied infringer’s profit (However, when the plaintiff selected the number of units assigned (paragraph 2) and reasonable royalties (paragraph 5), the court did so for about half of the cases.) This suggests that, rather than completely dismissing the plaintiff’s argument to apply infringer’s profit, the court simply did not accept the amount argued as the infringer’s profits “as is.” Just as infringer’s profit is relatively easier to use for the plaintiff, it is so for the court as well. When we observe the cases in which the damages were calculated according to the court’s discretion, in reality the focus was frequently on the restitution of the infringer’s profit.¹³²⁾

However, it is also true that excessive dependence on the court’s discretion under Article 128(7) provides an ‘impression’ and ‘pretexts’ that raise suspicion in insufficient compensation¹³³⁾ or ungrounded compensations.¹³⁴⁾ Various

132) See also Min-soo Seul (2015), 443. However, this is actually closer to an operation of the damage compensation system based on the “deterrence theory”, and is not really in line with the theory of difference.

133) Min-soo Seul (2015), 454 provides that “To date, based on the cases that were confirmed as winning in the appellate courts via the pure discretion-based calculation method, the maximum

countries around the world have provisions similar to Article 128, and each country has produced statistical data as to the use of the provision. On the surface, Korea seems to predominantly rely on discretion-based award, which does not send a good signal to the market. It may suggest against transparency, even if the provision was “mobilized” to “give more” for the damages (Of course, such aggressive use of paragraph 7 is justified where it is the only viable option in the particular case).

However, as seen previously, the courts take into consideration all situational factors in practice even if damages are calculated based on discretion, including the number of units assigned by the infringer, infringer’s profit, and royalties. In fact, there are many cases that reliance on paragraph 7 would not have been necessary if factual elements of paragraphs 2, 4, and 5 were a bit more “aggressively” interpreted. Here, the culture of Korean courts may have played a role in the conservative interpretation of factual elements. Article 128 of the Patent Act is in itself a special provision of Article 750 of Civil Act, for providing convenience in proving the damage amount, but it seems as if this is applied to increase the plaintiff’s burden. We must be reminded that all damage amounts, whether calculated accurately down to the last won based on the submitted evidence or estimated with less precision based on generally reliable data on several factors, are fundamentally a “fiction,” in spite of the difference in degree.¹³⁵⁾ To come to think of it, a lawsuit in and of itself is a “reconstruction” of

recognized damage amount is KRW 25 million, and the average amount is about KRW 10 million, which means that only for those cases in which it is extremely difficult to estimate the damage amount can the pure discretion-based calculation method be applied.” See *supra* footnote 113.

134) In the U.S., through the decision of *Uniloc USA Inc. v. Microsoft Corp.*, No. 10-1035 (Fed. Cir. 2011), the “(royalties rate) 25% Rule”, the rule of thumb law which is frequently used for calculation of the damages award in patent infringement litigations was abolished. Robert Goldscheider, “The Classic 25% Rule and the Art of Intellectual Property Licensing”, *Duke Law and Technology*, No. 6 (2011); Robert Goldscheider, John Jarosz, Carla Mulhern, “Use of the 25 Per Cent Rule in Valuing IP”, *les Nouvelles* (2002. 12.) <http://docshare01.docshare.tips/files/3558/35581826.pdf> (confirmed on May 21, 2017) and <http://lawexplores.com/use-of-the-twenty-five-percent-rule-in-valuing-intellectual-property/> (confirmed on May 21, 2017); see Roy J. Epstein, “The 25% Rule for Patent Infringement Damages after *Uniloc*”, *Duke Law and Technology*, No. 1 (2012) etc.

135) The commonality is that whether the nature of each provision is seen as a regarding provision or a presuming provision, as long as it is recognized as not being a natural scientific fact, it is just a

past facts.¹³⁶⁾

legal fact (facts for the purpose of litigation), and closer to fiction.

We previously saw that the U.S. case law provides comprehensive 15 factors when introducing a hypothetical license negotiation to derive a reasonable royalty. In Japan as well, according to the value of the invention, they use the royalties of the national patent license contract which applies 4%, 3%, 2% of the sales price as the benchmark: (1) examples of past license approval of the contended patent right, (2) industry price (examples of license approval related to same type inventions), (3) technology description and degree of patent right, (4) existence of alternative products, (5) “infringer’s profit” including the sales price, number of items sold, sales period, (6) situation of the patent holder such as license implementation status, license policy, market development efforts, (7) situation of infringer such as behavior type, etc., and (8) status of parties in the market, etc. are “comprehensively” taken in to account. Recently, there has been an increase in decisions to recognize high sums of royalties in a liberal manner by taking into account “the intention of the entire defense argument”. For detailed sources on the actual practices in Japan, refer to Seong-soo Park (2007), 295-296 and Cha Ho Chung (2016), 165-166. This shows that the method for calculation of the royalties is not that disparate from the discretion-based damage recognition method of South Korea. South Korea’s Article 128 paragraph 5 also prescribes that the amount that is “usually” received is the damage amount, and it is up to the Court to make the judgment on which is the “usual” amount.

In our legal education, which adheres to the Pandekten system, the tort system that is attached to the end of the study of claims in schools (encompassing contracts, management of affairs, unjust enrichment and torts) has often been neglected. This is because it is an extremely practice-oriented norm, and different from legal dogmas that are intricately designed based on the concept of “juristic act”. “Any person who causes losses to or inflicts injuries on another person by an unlawful act, intentionally or negligently, shall be bound to make compensation for damages arising therefrom.” (Civil Law, Article 750) is a very comprehensive provision, and opens up the concept of tort extremely flexibly. The various non-confirmed concepts that are the basis of tort law such as intent, negligence, causality, and damage are also the basis for other legal areas including the patent law, and the laws on torts must be able to function as roots to keep the tort law alive. The intentional blank space that the laws have left is filled by the judge through legal interpretation and specification, and the act of lawmaking is shared. From such a perspective, the laws on tort are also called a “judge-made law” (“Profit amount”, “Amount that can usually be received”, etc. are also non-confirmed concepts). Refer to Youngjun Kwon (2009); Chang Soo Yang, Youngjun Kwon, *Rights Change and Relief* (Pakyoungsa, 2011), 525 and below.

However, our practice is not yet familiar with this process of filling in the blank. Perhaps the combination of meticulousness aiming to seek the perfect “right answer” and excessive workloads has led to a conviction that giving up on finding the right answer is better than submitting a false one. We need a basis that can work to some degree to fill the gap, yet actively accept achievements outside of the science of law, such as economy(etr)ics, accounting, and statistics. This can be considered the “external rationalization” efforts for legal reasoning. Doohyun Gong, “Structure of Legal Reasoning,” *Supreme Court Law Review*, Book 62 (2017), 7-10.

136) My humble paper (2017a), 402.

B. Upheld Amount Regarding Paragraphs of Article 128 of the Patent Act**1) Distribution of Upheld Amount by Combination**

<Table 14> is generated by reorganizing the descriptive statistics related to upheld amounts by combination type in <Type 13>.

<Table 14> Upheld Amounts by Combination Type

Argument	Application	Cases	Mean	Median	Standard Deviation	Minimum	Maximum
Number of Assigned Units	Number of Assigned Units	8	439,711,060	122,792,875	736,418,359	13,420,716	2,183,611,529
	Infringement Profit	1	1,800,000	1,800,000		1,800,000	1,800,000
	Court Discretion	8	94,608,850	34,810,400	164,974,848	10,000,000	497,250,000
Infringer's Profit	Infringement Profit	9	82,060,485	57,860,984	92,061,286	5,740,140	308,191,416
	Court Discretion	33	603,946,350	42,422,468	2,514,941,060	3,000,000	14,500,712,339
Royalty	Royalty	5	339,028,258	274,350,000	246,756,217	50,000,000	688,305,909
	Court Discretion	6	176,772,152	59,836,000	245,169,607	25,000,000	650,000,000
Quantity & Profits	Quantity & Profits	1	10 billion	10 billion		10 billion	10 billion
	Infringement Profit	1	226,404,214	226,404,214		226,404,214	226,404,214
	Court Discretion	2	13,000,000	13,000,000	9,899,495	6,000,000	20,000,000
Quantity & Royalty	Royalty	2	67,659,887	67,659,887	28,373,527	47,596,774	87,723,000
Profit & Royalty	Court Discretion	2	5,900,000	5,900,000	5,798,276	1,800,000	10,000,000
Total	Number of Assigned Units	8	439,711,060	122,792,875	736,418,359	13,420,716	2,183,611,529
	Infringement Profit	11	87,886,234	57,860,984	97,316,888	1,800,000	308,191,416

Argument	Application	Cases	Mean	Median	Standard Deviation	Minimum	Maximum
	Royalty	7	261,494,438	211,186,500	241,371,329	47,596,774	688,305,909
	Court Discretion	51	427,167,319	37,378,919	2,029,182,735	1,800,000	14,500,712,339
	Quantity & Profits	1	10 billion	10 billion		10 billion	10 billion

As you will see below, the rate of upheld amount over the claimed amount tends to be high when the courts apply the royalty provision. The size of the award also appears to be considerably large (Considering the fact that the standard deviation of the uphold rate of the damages award is low, the courts seem to regard the evidence related to the royalties as relatively objective).¹³⁷⁾ A hypothesis that comes to mind is that the paragraph benefits large companies with specific data on royalties. The provision based on infringer's profit was shown to have a smaller extent of award compared to the relative easiness to prove the case. The damage awards based on the court's discretion has a wide distribution from small to large sums, and the standard deviation is large in pursuance of reasonableness in each different case. The paragraph using the number of assigned units also resulted in large amount of awards when the burden of proof was met.

A one-way ANOVA (Analysis of Variance)¹³⁸⁾ was conducted in various

137) On the other hand, there is an analysis that the U.S. Court came to compensate the relevant royalties with the intention of lowering the upheld amount of damage compensation by excluding the Plaintiff's claim of lost profits. Nathaniel C. Love, "Nominal Reasonable Royalties for Patent Infringement", *University of Chicago Law Review*, Vol. 75, No. 4 (2008); Michael Lambe, "Going against Grain?: The 'Maze' of Lost Profits Awards in *Grain Processing v. American Maze-Products Co*", *North Carolina Law Review*, Vol. 79, No. 4 (2001), 1190.

138) This is statistical analysis method that is used when there is 1 factor (independent variable) that has influence on dependent variables, and when the level of factors are at least of 3 groups, it is used to verify if there is a difference in the mean values per group. This is also called a single factor ANOVA. If the variance among (mean values of) groups (thus, the degree in which the mean values of each group fall from the total mean) is larger than the variance within groups (the degree in which each group's estimates are spread far from the mean value as the center) (the former is divided by the latter resulting in value F, which is used for the verification), thus if the further away the mean values of groups are from one another, there is a difference in the mean value per group. Herein, it is identified whether the upheld amount or the uphold rate

ways, but it showed no significant difference in the (average) size of upheld amounts by combination type with the exception of one decision, Seoul Central District Court Decision No. 2014Gahap525092 rendered on February 13, 2015 (Chungho Nais Co. Ltd., vs. Coway Co. Ltd.) in which the plaintiff claimed KRW 10 billion pursuant to the paragraphs using the number of assigned units and the infringer's profit, and in which KRW 10 billion was upheld by the court after applying these paragraphs.

2) Distribution of Damages Uphold Rates by Combination

Let us now look at the uphold rate of damages by combination.

<Table 15> Uphold Rate of Damages by Combination

Argument	Application	Cases	Mean	Median	Standard Deviation	Minimum	Maximum
Number of Assigned Units	Number of Assigned Units	8	49.5	40.7	38.7	7.3	100.0
	Infringement Profit	1	1.8	1.8		1.8	1.8
	Court Discretion	8	47.8	44.0	29.0	12.5	99.0
Infringer's Profit	Infringement Profit	9	54.8	59.4	39.4	9.6	100.0
	Court Discretion	33	50.7	40.0	36.2	3.0	100.0
Royalty	Royalty	5	88.4	98.3	21.9	49.4	100.0
	Court Discretion	6	54.4	51.1	43.2	11.9	100.0

vary depending on the single factor of combination type.

Here, when there are 2 factors, it is called a two way ANOVA, while if there are at least 3 factors, it is called a multi-way ANOVA, and if there are at least 2 dependent variables, this is called a MANOVA.

Argument	Application	Cases	Mean	Median	Standard Deviation	Minimum	Maximum
Quantity & Profits	Quantity & Profits	1	100.0	100.0		100.0	100.0
	Infringement Profit	1	73.2	73.2		73.2	73.2
	Court Discretion	2	8.0	8.0	2.8	6.0	10.0
Quantity & Royalty	Royalty	2	64.9	64.9	49.7	29.7	100.0
Profit & Royalty	Court Discretion	2	59.5	59.5	57.2	19.1	100.0
Total	Number of Assigned Units	8	49.5	40.7	38.7	7.3	100.0
	Infringement Profit	11	51.7	59.4	39.3	1.8	100.0
	Royalty	7	81.7	98.3	29.4	29.7	100.0
	Court Discretion	51	49.4	37.9	35.8	3.0	100.0
	Quantity & Profits	1	100.0	100.0		100.0	100.0

It appears that, when applying the royalty provision, courts upheld the plaintiff's claim amount at a very high rate. The uphold rate was also quite high when the infringer's profit provision was applied, but the rate somewhat fell when application of the provision was rejected. When the plaintiff's argument on the number of units assigned, the infringer's profit, and the relevant royalty amount was not accepted and the damages were calculated based on discretion, naturally the result was a certain fall in the uphold rate.

The result of the one-way ANOVA showed no significant difference in the uphold rate by combination type.

For reference, the four groups (the number of units assigned, infringer's profit, royalty, and court's discretion) showed no significant difference (which means no special advantage or disadvantage), in the claimed amount, awarded amount, and uphold rate not only with the combination of the clauses invoked

by the plaintiff and applied by the courts but also with the clause applied by the courts as the single factor (independent variable) (excluding the above 2014Gahap525092 case) in one-way ANOVA. However, the mean uphold rate was significantly high with a confidence level of 95% and the p-value of 0.027 when only the cases applying reasonable royalties and the cases applying court discretion are compared (the comparison was possible because the result of Levene's F test for equality of variance was that the null hypothesis assuming equal variance was not dismissed), with the mean uphold rate of 81.7% for reasonable royalty cases and 49.4% for cases based on court's discretion (Because there are only two groups, we may use independent sample t-test. See <Table 16>).

<Table 16> Comparing Uphold Rates in Response to Application of Royalty and Discretion Provisions (Independent sample t-test)

Group Statistics

Applied Paragraph		N	Mean	Standard Deviation	Standard Error Mean
Uphold Rates	5	7	81.67545262	29.38773888	11.1075212400
	7	51	49.38587691	35.84594897	5.01943684413

Independent Samples Test

Levene's Test for Equality of Variances				t-test for Equality of Means						
		F	Significance Probability	t	Degree of Freedom	Significance Probability (2-tailed)	Mean Difference	Standard Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Uphold Rates	Equal variances assumed	1.184	.281	2.275	56	.027	32.2896	14.1924	3.85887	60.7203
	Equal variances not assumed			2.649	8.657	.027	32.2896	12.1890	4.54890	60.0302

3) The Claim Amount, Upheld Amount, Uphold Rate by Asserted Paragraphs

Is there a difference depending on which paragraph was selected by the plaintiff? Adding in the amount claimed by the plaintiff to Tables 14 and 15 results in the following:

<Table 17> Claim Amount, Upheld Amount, Uphold Rate by Paragraphs

Argument	Classification	Mean	Median	Standard Deviation	Minimum	Maximum
Number of Assigned Units (17 cases)	Claim amount	1,955,694,387	117,623,936	7,194,262,681	20,000,100	29,862,428,941
	Upheld amount	251,550,546	44,620,800	532,057,142	1,800,000	2,183,611,529
	Uphold rate	45.93%	37.94%	33.95%	1.80%	100%
Infringer's Profit (42 cases)	Claim amount	631,999,813	100,005,050	2,220,790,510	10,000,000	14,500,712,339
	Upheld amount	492,113,665	46,211,234	2,232,746,990	3,000,000	14,500,712,339
	Uphold rate	51.62%	43.32%	36.43%	3.00%	100%
Royalty (11 cases)	Claim amount	470,340,464	274,350,000	562,168,190	31,200,000	1,982,000,000
	Upheld amount	250,524,927	211,186,500	248,172,567	25,000,000	688,305,909
	Uphold rate	69.86%	94.26%	37.95%	11.91%	100%
Quantity & Profits (4 cases)	Claim amount	2,652,309,968	254,619,885	4,899,205,262	100,000,100	10,000,000,000
	Upheld amount	2,563,101,054	123,202,107	4,958,956,437	6,000,000	10,000,000,000
	Uphold rate	47.30%	41.61%	46.71%	6.00%	100%
Quantity & Royalty (2 cases)	Claim amount	123,861,500	123,861,500	51,107,557	87,723,000	160,000,000
	Upheld amount	67,659,887	67,659,887	28,373,527	47,596,774	87,723,000
	Uphold rate	64.87%	64.87%	49.68%	29.75%	100%

Argument	Classification	Mean	Median	Standard Deviation	Minimum	Maximum
Profit & Royalty (2 cases)	Claim amount	9,713,000	9,713,000	405,879	9,426,000	10,000,000
	Upheld amount	5,900,000	5,900,000	5,798,276	1,800,000	10,000,000
	Uphold rate	59.55%	59.55%	57.21%	19.10%	100%

As one can see in the above table, when the plaintiff has argued the application of the paragraphs using the royalties (there will be many cases in which objective data are also submitted), there is a relative tendency in which the courts uphold an amount similar to the amount claimed by the plaintiff. Data related to cases where the claim was based on two paragraphs has only a small number of samples, and thus there is no significance.

When an one-way ANOVA is conducted, limited to the 70 cases in which the plaintiff base the claim on just one provision, whichever the plaintiff selects, there was no conspicuous difference in the size of the claim amount and the upheld amount (on average), and this was also the case with the uphold rate of the damages award (Even in a multiple comparison according to Scheffe or LSD methods, there were no pairs in which there was a significant difference among the two claimed paragraphs. The analysis table is omitted.) Thus, regardless of which paragraph the plaintiff selected and argued for, there was no special advantage or disadvantage present.

V. Experimental Tests

A. Claim Amount, Upheld Amount, and Uphold Rate of Damages Award for Each International Patent Classification (IPC) Technology Area

The IPC code can be an indicator that reveals the nature of patents. IPC codes are divided into 8 categories: (A) Human Necessities, (B) Performing Operations and Transporting, (C) Chemistry and Metallurgy, (D) Textiles and Paper, (E) Fixed Constructions, (F) Mechanical Engineering, Lighting, Heating, Weapons, and Blasting, (G) Physics, and (H) Electricity. Each section is further broken

down, and classified into 637 codes.¹³⁹⁾ The descriptive statistics per technology area is as follows:

<Table 18> Claim Amount, Upheld Amount, Uphold Rate for Each International Patent Classification (IPC) Technology Area

Argument	Classification	Mean	Median	Standard Deviation	Minimum	Maximum
A Human Necessities (19 cases)	Claim amount	141,158,053	87,723,000	167,705,314	9,426,000	585,217,051
	Upheld amount	62,207,870	28,500,000	82,769,531	1,800,000	303,906,412
	Uphold rate	46.8%	37.6%	33.3%	1.8%	100%
B Performing Operation and Transporting (15 cases)	Claim amount	357,342,603	328,314,255	288,949,949	20,000,100	819,484,200
	Upheld amount	233,421,146	57,860,984	261,037,337	10,000,000	688,305,909
	Uphold rate	58.9%	59.4%	34.2%	4.0%	100%
C Chemistry and Metallurgy (5 cases)	Claim amount	246,465,674	100,000,000	380,399,925	10,000,000	912,328,370
	Upheld amount	82,261,367	50,000,000	96,299,438	10,000,000	241,306,837
	Uphold rate	70.3%	100%	40.7%	25.0%	100%
D Textiles and Paper (7 cases)	Claim amount	475,603,540	200,000,000	677,878,827	100,000,100	1,982,000,000
	Upheld amount	129,172,987	40,000,000	180,967,994	6,000,000	497,250,000
	Uphold rate	28.4%	15.0%	32.7%	6.0%	99.0%
E Fixed Constructions (8 cases)	Claim amount	127,949,472	127,307,050	63,154,670	50,000,000	236,998,983
	Upheld amount	49,588,238	27,500,000	56,118,178	3,000,000	166,109,130
	Uphold rate	42.1%	29.9%	39.2%	3.0%	100%

139) For details, refer to the Patent Office webpage 2017. 01. Version IPC Code http://www.kipo.go.kr/kpo/user.tdf?year=2017&a=user.html.HtmlApp&ver=01&c=40304&catmenu=m06_07_02_07 (confirmed on July 13, 2017).

Argument	Classification	Mean	Median	Standard Deviation	Minimum	Maximum
F Mechanical Engineering and Weapons, etc. (10 cases)	Claim amount	1,151,040,844	158,811,968	3,111,117,622	27,015,000	10,000,000,000
	Upheld amount	1,098,753,762	92,000,000	3,128,984,715	5,740,140	10,000,000,000
	Uphold rate	63.8%	66.2%	35.7%	9.6%	100%
G Physics (8 cases)	Claim amount	2,418,250,465	725,039,535	4,909,337,624	43,200,000	14,500,712,339
	Upheld amount	2,271,302,692	528,289,175	4,969,694,435	15,000,000	14,500,712,339
	Uphold rate	65.7%	75.0%	39.0%	12.5%	100%
H Electricity (6 cases)	Claim amount	5,226,204,595	300,000,000	12,073,200,003	31,200,000	29,862,428,941
	Upheld amount	424,496,976	87,500,000	862,292,566	30,000,000	2,183,611,529
	Uphold rate	55.3%	55.6%	47.7%	7.3%	100%

According to the above table, the uphold rate for the damages award of (C) Chemicals and Metallurgy, and (G) Physics is relatively high, while the uphold rate of (A) Human Necessities, (D) Textiles and Paper, and (E) Fixed Constructions is relatively low. There may be a possibility that technologies that the courts are familiar with tend to be undervalued.

It is also noteworthy that the claim amount and the upheld amount for (G) Physics area are quite large.

In the case of (H) Electricity, there is a considerably large standard deviation for the claim amount, and we can imagine that there is a diverse spectrum in patent invention from simple inventions to complicated ones.

However, when conducting the one-way ANOVA, no significant difference was shown in the eight technology areas among the claim amount, the upheld amount, and the uphold rate of the damages.

B. Upheld Amount and Award Depending on Whether the Plaintiff Claimed for Injunction and Destruction of the Infringing Means

When the plaintiff claims for damages along with injunction and destruction of

the infringing means, will there be differences in the upheld amount and the uphold rate? First, we shall look at the descriptive statistics of 40 cases in which the plaintiff also made claims for injunction and destruction of the infringing means.¹⁴⁰⁾

<Table 19> Claim Amount, Upheld Amount, Uphold Rate Regarding Injunction and Destruction Sought by Plaintiffs

Classification		Claim Amount	Upheld Amount	Uphold Rate
Number of Cases	Valid	40 cases	40 cases	40 cases
	Missing	0 cases	0 cases	0 cases
Mean		KRW 1,650,787,577	KRW 823,294,283	59.79%
Median		KRW 130,005,000	KRW 88,470,000	59.69%
Standard Deviation		KRW 5,319,562,021	KRW 2,735,743,168	36.61%
Skewness		4.491	4.377	-.170
Kurtosis		21.620	19.234	-1.570
Minimum		KRW 10,000,000	KRW 1,800,000	1.80%
Maximum		KRW 29,862,428,940	KRW 14,500,712,340	100%
Percentile	25	KRW 61,157,119	KRW 20,000,000	28.55%
	50	KRW 130,005,000	KRW 88,470,000	59.69%
	75	KRW 498,241,231	KRW 264,752,727	100%

140) There was just one case in which there was a claim for reinstatement of business reputation among the 78 cases. However, other than the fact that the Defendant's act of infringing on utility model rights resulted in the (economic) loss of the Plaintiff, the Court found that it is difficult to acknowledge that the Plaintiff's business reputation has been undermined and there is no other proof to substantiate the claim. As a result, the case was dismissed (Seoul Central District Court Decision, 2016Gahap508343, decided September 30, 2016). In Seoul Southern District Court Decision 2002Gahap9760, decided October 7, 2005, the claim for reinstatement of business reputation was dismissed for the same reason (The case was appealed in Seoul High Court Decision 2005Na107833, but the part on business reputation was withdrawn on appeal.) In short, the provisions in Article 131 on Claim for Reinstatement of Business Reputation is hardly used in practice

In Japan, which has a similar rule as us, as a means of recovering business credit for the Defendant that has infringed upon the Plaintiff's trademark rights, there was a decision in 1984 ordering an advertisement of apology (大阪地裁 Decision, decided April 26, 1984 (判タ536号410)), but other than that, there has not been discovered examples in which claim for credit recovery has been upheld due to patent right infringement. 中山信弘編著, 注解特許法(上)第3版, 青林書院(2000), 1223-1224 (the part written by 青柳玲子; Sang Jo Jong (2010), 324-325 (the part written by Seong-soo Park).

Among them, the claims were granted in 37 cases and dismissed in only 3 cases. The statistics suggest that the two methods that have different nature in practice may be regarded as “dual means” that the right holder may selectively or concurrently rather than as interchangeable and complementary. The upheld amount and the uphold rate are also relatively high.

<Table 20> Claim Amount, Upheld Amount, Award Rate Regarding Granted Injunction and Destruction Order

Classification		Claim Amount	Upheld Amount	Uphold Rate
Number of Cases	Valid	37 cases	37 cases	37 cases
	Missing	0	0	0
Mean		KRW 1,761,628,039	KRW 879,101,927	60.09%
Median		KRW 100,010,000	KRW 86,940,000	60.00%
Standard Deviation		KRW 5,521,292,947	KRW 2,839,857,701	37.88%
Skewness		4.308	4.197	-.187
Kurtosis		19.854	17.606	-1.660
Minimum		KRW 10,000,000	KRW 1,800,000	1.80%
Maximum		KRW 29,862,428,940	KRW 14,500,712,340	100%
Percentile	25	KRW 62,210,138	KRW 17,500,000	21.57%
	50	KRW 100,010,000	KRW 86,940,000	60.00%
	75	KRW 501,044,950	KRW 291,270,708	100%

However, when setting whether the plaintiff sought for injunction and destruction and whether the claims were upheld as dummy variables to conduct a linear regression analysis, there was no significant difference in the claim amount, the upheld amount, and the uphold rate with respect to the two variables.

C. Claim Amount, Upheld Amount and Uphold Rate by the Size of Capital of Parties

Difference in the claim amount, the upheld amount and the uphold rate was observed setting the capital amounts on the registrars of both sides when the hearings were closed as proxy variables when the plaintiff and the defendant were both companies. However, when excluding the 3 influential points which were also excluded in the regression analysis, a significant linearity was not

found for the claim amount, the upheld amount, and the uphold rate pursuant to the capital sizes of the plaintiff and the defendant. (During the presentation at the Joint Seminar, a tentative hypothesis was presented stating that when the plaintiff set the claim amount, the size of the defendant company was taken into minor consideration, and especially for cases in which the claim amount is high, the courts seem to consider the defendant's company size with the plaintiff's claim amount. However, as a result of a second review of the material, I decided that such evidence was weak except for the above 3 cases, and the conclusion was revised accordingly.)

VI. Conclusion and Thoughts for Follow-up Studies

In this paper, several attempts were made at basic analysis to derive ideas based on 78 cases of courts of first instance that applied Article 128 of the Patent Act. Admittedly, the sample is not large to derive a clear statistical trend because of the lack of sufficient examples in practice. (In this regard, I plan to follow up with analyzing the past 20 years' registered decisions.) Due to restrictions in pages and time, some of the questions were not addressed in detail, such as what differences there were in the practices of the Seoul metropolitan area and others before jurisdiction concentration, whether damages (or values of rights) were differently assessed according to the age of the patent or utility model, defined as from the period between filing and ruling, and how disputes developed differently according to the types of plaintiff and defendant (individual, SME/foreign company, large company)¹⁴¹⁾, or characteristics of the attorney, or the size of a claimed amount.¹⁴²⁾ In regard to the direction of follow-up research, I want to mention that the features of a patent, such as its quality and level (of

141) Daejeon District Court Decision No. 2013Gadan203731 decided October 10, 2013, with the Plaintiff being "Boeun-gun"(county).

142) Jisun Choi (2016), 260-271 conducts the cluster analysis by dividing into two groups the cases in which the discretion-based calculation provision was applied as in the following. It set confidence level as 90%, so that with p-value 0.100 or below it viewed there was a significant difference between the two groups.

<Table 21> Jisun Choi (2016), Comparison of influential factors per group when applying the Court discretion-based calculation provision

difficulty),¹⁴³⁾ as well as remaining term,¹⁴⁴⁾ along with fair value¹⁴⁵⁾ are factors that

Influential factors	Group 1	Group 2	P-value (Pearson Chi Square Test)
Plaintiff's legal argument	Fine distribution among provisions regarding number of assigned items, infringer's profit, license fee	Large majority for infringer's profit provision	0.133
Upheld amount	All below KRW 250 mln	2/3 take up more than KRW 250 mln	0.000
Rate of upholding	Less than 50%: 57.5%	Majority: All upheld	0.005
Nature of Plaintiff 1	Individuals, majority of SMEs	Majority: Foreign company	0.000
Nature of Defendant 1	SMEs, majority of individuals	Majority: SME	0.193
Plaintiff / Defendant Combination Type	SME ↔ SME or Individual ↔ Individual / SME	Majority: Foreign company / Large company ↔ SME relationship	0.001
Type of rights	Patent, utility model rights	Large majority: Patent rights	0.087
IPC technology area	High portion regarding living essentials	High share of physics and electrical technology	0.030
Plaintiff's agent	Relatively small portion of 5 major law firms (about 11.5%)	About 41.7% of share of 5 major law firms	0.034

143) For example, Professor Epstein noted that the U.S. Supreme Court frequently committed the error of depriving room for technological development or upstream patent in order to promote downstream inventions, or technology utilization. Richard Epstein, *Intellectual Property for the Technological Age* (Washington D.C.: Manufacturing Institute, 2006) [Translated by Jungho Kim, *Intellectual Property System for the Era of High Technology* (Korean Studies Information, 2010)]. In the same book, 53-69, Professor Epstein said that recognition of patent rights has a dual effect because it moves up the time of the invention, but reduces social value that is generated from the invention. Based on the formula $\text{Year} = \frac{\log \left(\frac{1}{1 - \text{social net loss}} \right)}{\log (1 + \text{discount rate})}$, if the invention can be advanced 3-5 years due to the patent law system, the net social loss due to the reduction in competition pursuant to the exclusivity of patent rights can be offset. This equation is wrongly translated as $\text{Year} = \frac{\log \left(\frac{1}{1 - \text{social net loss}} \right)}{\log (1 + \text{discount rate})}$ in its translation document.

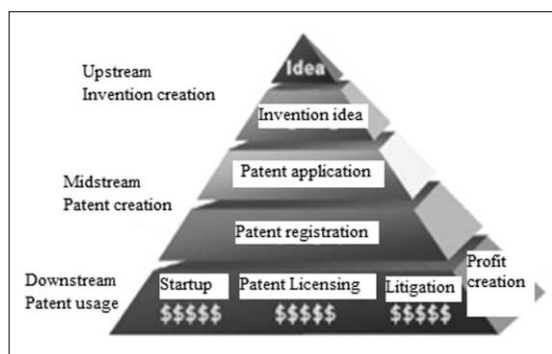
<Table 23> Effects on Promoting Inventions for Legitimizing the Patent Act System

		Social net loss			
		10%	15%	20%	25%
Discount rate (Interest rate)	2%	5.32 yrs	8.20 yrs	11.26 yrs	14.52 yrs
	3%	3.56 yrs	5.49 yrs	7.54 yrs	9.73 yrs
	4%	2.68 yrs	4.14 yrs	5.68 yrs	7.33 yrs
	5%	2.15 yrs	3.33 yrs	4.57 yrs	5.89 yrs

On the other hand, many patents that are set at upstream reduce the technological innovation at the downstream. Dae-hwan Koo (2015), 406.

In regard to the patent ecosystem's upstream (invention creation), midstream (patent creation) and downstream (patent usage), refer to Youngtaek Shim, IP Silk Road 2 (ezpex, 2016), 881-899 (below picture is 887). The term "patent ecosystem" is known to be first used in the testimony of Brian Kahin at the U.S. Federal Trade Commission. Brian Kahin, The Patent Ecosystem in IT: Business Practice and Arbitrage (December 5, 2008) https://www.ftc.gov/sites/default/files/documents/public_events/evolving-ip-marketplace/bkahin.pdf (confirmed on May 20, 2017). BriColleen V. Chien, "From Arms Race to Marketplace: The Complex Patent Ecosystem and its Implications for the Patent System", Hastings Law Journal, Vol. 62 (2010), 300.

<Picture 8> Youngtaek Shim (2016), 887 Patent Ecosystem



144) Rajshree Agarwal & Michael Gort, "First-Mover Advantage and the Speed of Competitive Entry, 1997-1986", *The Journal of Law and Economics*, Vol. 44, No. 1 (2001) tracks the period in which the first market entrant enjoyed benefits without competitors from 1887 to 1986. For example, while it took 33 years for latecomers in the gramophone market in the end of the 1800s to catch up with Thomas Edison, in the 1980s, it took only 3 years for competitors to enter the CD market in the 1980s. The average reduction rate of the time it took for new competitors to enter during the above investigation period was 2.93% per year. Accordingly, technological innovation that was possible through the patent system reduced the monopolistic value of the patent itself when it was actually supposed to be protected by innovation.

Although not about inventions, in scientometrics there is a study of how many years it takes for the knowledge in each area to multiply by two, or how gradually more difficult it gets for a "definitive moment" for the occurrence of an important discovery, and how many years is the life strength of knowledge of each area, etc. (this was raised as an issue to find a method to judge

whether the inundated libraries had materials that could be discarded.)

For example, applied mathematician Derek J. de Solla Price wrote in 1963 in a book titled *Little Science, Big Science* (NY: Columbia University Press, 1963) [Translated by Taewoo Nam, *Science Communication Theory* (Minumsa, 1994)] that it took 10 years for the “knowledge on the known number of small planets” and the “number of U.S. engineers” to multiply by 2, “knowledge on the known number of compounds” and the “number of scientific journals” and the “number of members of scientific research organizations” to multiply by 2 took 15 years (the size of newly discovered small planets is reducing an average of 2.5% per year). According to psychologist Harvey Lehman’s “Exponential Increase of Man’s Cultural Output”, *Social Forces*, Vol. 25, No. 3 (1947), it took 77 years for the academic achievements of the philosophy area to double, while for math it took 63 years, chemistry 35 years, genetics 32 years. Grand opera doubled in 20 years. Economist Tyler Cowen produced a paper stating that in modern medicine, definitive moments amounted to 6 times in the 1940s, 7 times in the 1950s, 6 times in the 1960s. (For your information, the expected life span of the U.S. population is growing 0.4 years each year since the 1960s.). Information scientists call the period it takes for papers in a particular academic area to lose half of its influence as the “half life”. In the case of periodicals physics has a half life of 10 years (among which that of atomic physics is 5.1 years, supersolids is 6 years, plasma physics is 6.4 years.) In medicine urology is 7.1 years, aesthetic surgery is 9.3 years, while in the social sciences, the half life is longer. In the case of books, physics has 13.07 years, economics has 9.38 years, mathematics 9.17 years, psychology 7.15 years, history 7.13 years, theology 8.76 years. According to one interpretation, the reason that the half life of books in the natural sciences is longer is because only research results that withstood the agony of verification (falsification) were quoted in the books. Refer to Samuel Arbesman, *The Half Life of Facts: Why Everything We Know Has an Expiration date* (NY: Current, 2013) [Translated by Changhee Lee, *A Half-life of Knowledge* (reading book Wednesday, 2014)].

On the other hand, there is a theory that human technology develops according to a logistic curve (a series of exponential function type S shaped curves). Gordon Moore, who is famous for the Moore Principle, wrote “Cramming More Components onto Integrated Circuits”, *Electronics Magazine*, Vol. 38, No. 8 (1965), which was quote more than 100,000 times, is a classic in this area. According to Kevin Kelly’s *What Technology Wants* (NY: Viking, 2010) [Translated by Han’eum Lee, *Impact of Technology* (Minumsa, 2011)], technology shows a growth rate that suits the following exponential curve.

<Table 22> Kevin Kelly (2010), Time Taken for the Doubling of Technology

Technology	Doubling period (no. of months)
Wireless communications (bit / second)	10
Digital camera (Pixel / S)	12
Pixel (Per array)	19
Hard drive capacity (GB / S)	20
DNA analysis (No. of analyzed bases / S)	22
Frequency (KB / sec / S)	30

Methodology on technology prediction through statistical analysis was also studied. Sunghae Chun, Sangsung Park, Dongsik Jang, *Patent Analysis and Technology Prediction*: (Kyowoosa, 2014), etc.

must be reflected in the calculation of the damages award.¹⁴⁶⁾

The areas and issues for application of statistical analysis for studying court practices are unlimited.¹⁴⁷⁾ While I pointed out some of the errors and problems in preceding studies, the court should strengthen its own analytical competency, and form a virtuous cycle that reflects the analysis results in practice. This paper rests at applying relatively basic statistical techniques as an experiment and there may be errors, and I plan to refine and develop analysis techniques for future studies. First, a statistical analysis similar to ones performed herein may be attempted regarding other IPR infringement lawsuits, particularly regarding trademark, copyright, or compensation for employee's invention.¹⁴⁸⁾

I hope that this study can make a small contribution to the courts of the Republic of Korea in establishing global standards for IPR litigation.

145) John Schlicher, "Measuring Patent Damages by the Market Value of Inventions Given Available Noninfringing Substitute Technology: The *Grain Processing*, *Rite-Hite* and *Aro* Rules," *Journal of the Patent and Trademark Office Society*, Vol. 82 (2000).

146) Gordon V. Smith & Russell L. Parr, *Intellectual Property: Valuation, Exploitation, and Infringement Damages*, 4th Edition (Hoboken, NJ: John Wiley & Sons, 2004)[Youngki Kim, Chanil Kim, Hwasub Song, Heedong JIN, Youngsoo Choi, *Intellectual property: Valuation, Usage and Damage Compensation* (Kyungmoonsa, 2015)] is a classic in this area. The authors continuously publish Cumulative Supplement to the book, and one was issued in March of 2017. Books dealing with a similar theme are *Munari*(2011); Jeffrey A. Cohen, *Intangible Assets: Valuation and Economic Benefit* (Hoboken, NJ: Wiley, 2013); Robert F. Reilly Jr. & Robert Schweihs, *The Handbook of Business Valuation and Intellectual Property Analysis* (NY: McGraw-Hill, 2004); Weston Anson, Donna P. Suchy, Chaitali Ahya, *Fundamentals of Intellectual Property Valuation: A Primer for Identifying and Determining Value* (Chicago, IL: American Bar Association, Section of Intellectual Property Law, 2005); William Joseph Murphy, John L. Orcutt & Paul C. Remus, *Patent Valuation: Improving Decision Making through Analysis* (Hoboken, NJ: Wiley, 2012); Richard Razgaitis, *Valuation and Pricing of Technology-Based Intellectual Property* (Hoboken, NJ: Wiley, 2008); Larry M. Goldstein, *True Patent Value: Defining Quality in Patents and Patent Portfolios* (True Value Press, 2013).

147) For use of statistics in the study of law, see Myonghwae HUH, "Law and Statistics Study: Education, Application and Research", *Application Statistics Study*, vol. 23, No. 4 (2010).

148) See Gordon V. Smith & Susan M. Richey, *Trademark Valuation: A Tool for Brand Management* (Hoboken, NJ: John Wiley & Sons, 2014) for valuation of trademark. The book is written by the same author referred to in footnote 149.

Case Reviews

Whether a Modified Design Falls under the Scope of Rights of the Registered Design

-Patent Court Decision 2016Heo7503, decided March 23, 2017 (Final)-

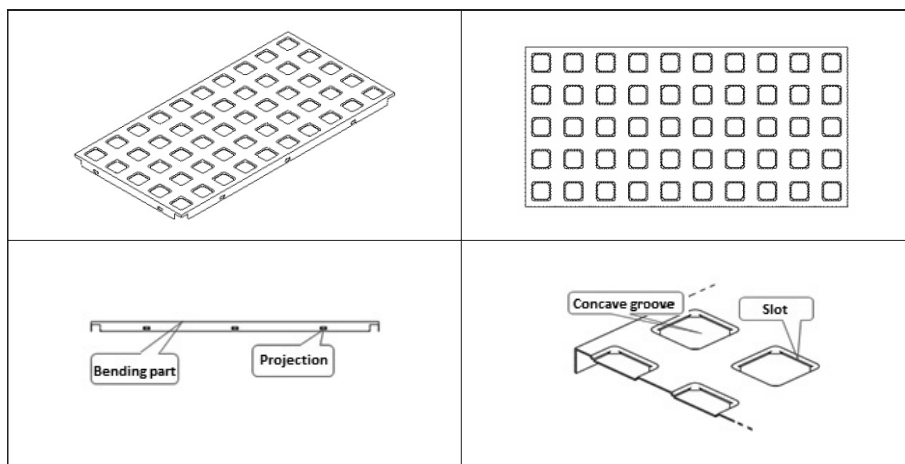
Hyunjin CHANG*

I. Overview

1. Subject Design

A. Registered Design at Issue (“Subject Design”)

The Subject Design is directed to a “finishing material for ceilings,” which was filed by the Plaintiff on March 17, 2009 and registered as Design Registration No. 557155 on March 25, 2010.¹⁾

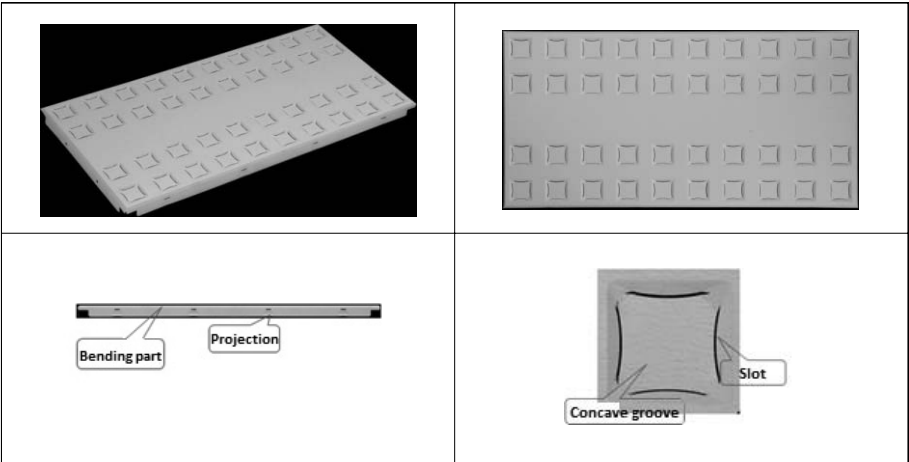


*Judge, Patent Court of Korea.

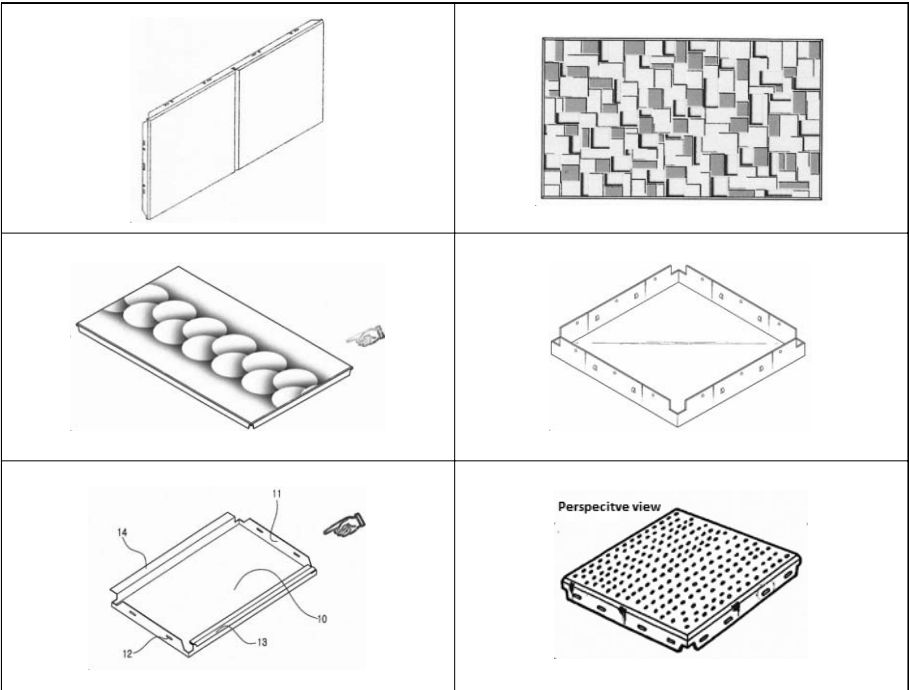
- 1) An explanation of the registered design of the case at issue is as follows: ① The material is metal. ② The Subject Design is used to finish the ceiling of a house or ordinary building. ③ The finishing material for the ceiling of the Subject Design is made by the process of lancing the board and forming a concavo-convex pattern.

B. Challenging Design

The Challenging Design is a design regarding a “finishing material for ceilings,” as shown below, for which the Defendant filed a defensive confirmation action challenging against the Subject Design.



C. Publicly Known Design



2. Procedural History

- A.** The Defendant filed a defensive scope of rights action against the Plaintiff as having a design shown on the right as the Challenging Design. On October 14, 2014, the Patent Court affirmed the IPTAB decision to dismiss the petition filed by the Defendant [Intellectual Property Trial and Appeal Board (“IPTAB”) Decision 2013Dang3856; Patent Court Decision 2014Heo3200].
- 
- B.** The Defendant filed a defensive confirmation action against the Plaintiff again on March 24, 2016 on the ground that the Challenging Design does not fall under the scope of rights of the Subject Design (IPTAB Decision 2014Dang2216).
- C.** On September 7, 2016, the IPTAB approved the aforementioned petition on the following grounds: “Although both designs are common in that incised slots having the same size and shape are formed on four sides of the bottom of each groove, we do not see that the aforementioned feature has a great effect on the overall aesthetic sense, as the feature does not take up a large proportion of the entire design. Further, when the finishing material is used on a ceiling, which is the subject article of the design, an arrangement of concave grooves in the shape of a square located on the flat part of both designs constitutes a dominant feature, since it would easily attract the attention of observers. When the finishing material for ceilings is used in combination, the Subject Design can only express one identical ceiling appearance. In contrast, since the Challenging Design has a space band without a shape in the middle part, it can express different ceiling appearances depending on combination. In this regard, the two designs have different aesthetic senses based on their appearances.” In response thereto, the Plaintiff filed a lawsuit to revoke the IPTAB decision.

II. Holding

The IPTAB Decision is revoked.

The Challenging Design is similar to the Subject Design in the dominant feature (incised slots having the same size and shape are formed on four sides of the bottom of each groove), but is different in the arrangement that may be evaluated as a part to appealing to the eyes of the consumers.

Upon comparing and observing the Subject Design and the Challenging Design as a whole, observers may identify a similar aesthetic sense from both designs due to the similarity of the dominant feature, considering that ① the dominant feature of the Subject Design is a novel design that did not exist before, the scope of similarity should be considered relatively broad, and the importance of the dominant feature should be deemed high in determining the similarity of the two designs; and ② the modification in the Challenging Design is a simple modification such that one line is eliminated from five lines composed of concave grooves in the Subject Design and, therefore, it is difficult to see that a different aesthetic sense is caused by the aforementioned modification in a way that overcomes the common aesthetic sense from the dominant feature.

III. Analysis

1. Introduction

Assessing the similarity of designs is the most important issue in an infringement action or scope of rights confirmation action concerning design rights, since the effect of a design right extends to the designs that are identical or similar to the registered design. Under the Korean design law, the practice in determining the similarity of designs is to compare the components of the designs with each other to extract similarities and differences for evaluation of a relative significance that the similarities and differences have in the entire aesthetic sense of the designs. In case of a design where a part of the registered design is modified, and particularly in a design that includes a main feature of the registered design and at the same time includes a separate characteristic feature due to a modification of some components, such as in this case, it is often

controversial how to evaluate the importance of the similarities and differences to determine the similarity of the designs, and whether the modified design falls under the scope of rights of the registered design. In this commentary, we will briefly review the standard of determining the similarity of designs and a specific standard of evaluating each component of the designs. We will also review how to determine the similarity of designs in relation to the designs where some components are modified.

2. The Criteria to Determine the Similarity of Designs

A. The Subjects of Determination

The followings have been suggested as the criteria to determine the similarity of two designs: the two designs are similar ① if the essential parts of creation in the two designs are identical to each other and the appearance of the articles share common artistic features (creation theory); ② if the two designs create identical or similar aesthetic sense to the eyes of the observer (aesthetic sense theory); and ③ if the two designs are likely to create confusion when observing them (confusion theory).²⁾

In the precedents³⁾, the Supreme Court has adopted the aesthetic sense theory, stating that the similarity of designs is determined based on whether an ordinary observer is able to identify differing aesthetic senses by comparing and contrasting each design's overall appearance.

B. The Standard of Determination

To determine similarity, the viewpoint of ① the designers of ordinary skill, ② the ordinary consumers of the subject article of the two designs, or ③ both the designers of ordinary skill and the ordinary consumers may be adopted.⁴⁾

2) Patent Court Working Group on Intellectual Property Litigation Practice, Intellectual Property Practice (3rd. Ed.) PAKYOUNGSA (2014), 443-444.

3) Supreme Court Decision, 2000Hu3388, decided June 29, 2001; Supreme Court Decision, 2005Hu2274, decided September 8, 2006; Supreme Court Decision, 2007Hu4830, decided January 30, 2009; Supreme Court Decision, 2010Hu722, decided May 27, 2010.

4) Design Protection Act: Practice and Theory of Design Litigation, Tae-Sik Yoon, JINWONSA (2016), 323.

In the precedents⁵⁾, the Supreme Court has taken the approach of the ordinary consumer theory, stating that the similarity must be determined by observing the most discernible features of the designs that attract the attention of an ordinary observer (ordinary consumer) to see whether such features cause any difference in the aesthetic sense to the ordinary consumer.

C. Method of Determination

1) Observation in Entirety and Observation by Essential Parts

The similarity of designs is determined based on whether the designs as a whole provide observers different aesthetic sense from each other. Therefore, one must not separately compare the individual features that comprise the designs, but consider whether an ordinary observer is able to identify differing aesthetic features by comparing and contrasting each design's overall appearance (observation in entirety)⁶⁾. Even in this case, however, the similarity of the designs should be determined based on that the most discernible features of the designs that attract the ordinary observer's attention are to be perceived as an essential part, and the question of similarity depends on whether the comparison of those features provide any aesthetic differences. If the dominant features of the two designs are identical to each other, the two designs are deemed similar to each other even if there is a slight difference in details (supplemental observation by essential parts).⁷⁾

2) Degree of Similarity

As to the range of similarity in determining the similarity of two designs, in the precedents,⁸⁾ the Supreme Court and the Patent Court have stated that the range of similarity should be considered relatively narrow for designs that are

5) Supreme Court Decision, 95Hu1135, decided January 26, 1996; Supreme Court Decision, 2004Hu2277, decided June 29, 2006; Supreme Court Decision, 2005Hu1097, decided January 25, 2007.

6) Supreme Court Decision, 2000Hu3388, decided June 29, 2001; Supreme Court Decision, 2005Hu2915, decided July 28, 2006; Supreme Court Decision, 2005Hu1097, decided January 25, 2007.

7) Supreme Court Decision, 95Hu1135, decided January 26, 1996; Supreme Court Decision, 2005Hu1257, decided January 26, 2006; Supreme Court Decision, 2010Hu913, decided July 22, 2010.

8) In the following precedents among others, the range of similarity is narrowly interpreted : wrist watches (Supreme Court Decision, 95Hu873, decided December 22, 1995; window frames

simple, have been commonly used from the past, or have been conceived in a variety of forms and cannot be significantly changed in terms of their structures and where changes are limited in terms of interests and trends. In contrast, the range of similarity should be considered relatively broad for designs where there are multiple alternative shapes in designs of articles and for novel designs that did not exist before.

3. Determination of Similarity of Designs and Comparison of Components

A. Comparison of components in determining similarity of designs

The term “design” means a shape, pattern, or color of an article or a combination thereof that invokes a sense of beauty through visual perception. Thus, the similarity of designs is determined by comparing a shape, pattern, or color of an article constituting the design and a combination thereof.

Specifically, under the Korean design practices, components (i.e., a shape, pattern, or color of an article) constituting a design and a combination thereof are compared as follows: a shape and pattern in an actual trade and in actual use are considered;⁹⁾ if aesthetic sense is identical or different depending on the direction

(Supreme Court Decision, 96Hu2418, decided October 14, 1997); lids of containers such as bottles (Supreme Court Decision, 95Hu1449, June 28, 1996); rivet bolts (Supreme Court Decision, 2010Do12633, March 24, 2011); quail egg packaging containers (Supreme Court Decision, 2012Hu3794, decided April 11, 2013).

On the other hand, in the following precedents, the range of similarity is viewed broadly in comparison: designs of floor material with a new pattern (Patent Court Decision, 2007Heo8559, decided September 11, 2008); and newly introduced designs such as a leaf shape cover of chandelier (Patent Court Decision, 2006Heo10319, decided May 18, 2007).

9) Supreme Court Decision, 2002Hu1218, decided December 26, 2003 (in the registered design for the post supporter for a garment hanger, although the shape of the spring container of the supporter may not be revealed while used, the supporter is traded as the shape and the pattern of the spring container are externally displayed, and the above-mentioned spring container is the part that constitutes a dominant feature of the registered design); Supreme Court Decision 2013Da202939, decided December 26, 2013 (considering the usage and usage form of a ‘combine,’ which is the subject article of the registered design, and the fact that the threshed rice straw is discharged to the rear part when the combine is operated, so that the rear side as well as the left and right sides are often conspicuous to observers, the shapes viewed from the front, rear, left, and right side is the parts that attracts the attentions of observers); Patent Court Decision, 2008Heo13169, decided April

of viewing articles, the articles should be placed in the direction where the same aesthetic sense is felt;¹⁰⁾ if the shapes of the articles are different depending on the use of the articles, the articles should be compared to each other in the same state;¹¹⁾ and if there is a better view on a particular side of the articles, more weight is given to such view in determining similarity.¹²⁾ On the other hand, colors and materials are not greatly considered unless they affect the aesthetic sense, such as when they constitute a pattern.¹³⁾

10, 2009 (although the registered design differs from the challenging design in the length in the horizontal direction, the 'electrode for electric discharge machine,' which is the subject article of the design, is an article which is usually produced in a long shape and cut by a required length, such that a difference in the length in the horizontal direction is not an essential part of the design).

10) See e.g. Supreme Court Decision, 92Hu490, decided November 10, 1992 (the designs are similar because the registered design has the same corresponding arrangement as the cited design if the registered design is viewed by turning it to the right by 135 degrees); Supreme Court Decision, 2007Hu4830, decided January 30, 2009 (similarity is determined based on the perspective view observed in the direction where the aesthetic sense is equally felt and the overall shape and pattern of the two designs are well represented); Supreme Court Decision, 2010Hu722, decided May 27, 2010.

11) Supreme Court Decision, 2010Da23739, decided September 30, 2010 (the designs for mobile phone packing boxes are similar, since the dominant feature of the registered design is well shown and the shape and pattern of the registered design in the state where only the inner cover is closed are similar to the design being practiced by defendant, even if there is a difference between the two designs in the state where the inner cover and the outer cover are opened). Cf. Supreme Court Decision, 2000Hu3654, decided February 26, 2002 (in the design for furniture such as asink, both designs are similar in the state where the rotational opening and closing plate is closed and are different in the state where it is opened. However, since the shape and pattern shown in the state where the plate is opened are the essential part of the registered design, the designs are different from each other).

12) Supreme Court Decision, 2017Heo73, decided June 23, 2017 (in the design of the parking indicator lamp installed on the ceiling of the parking lot, the shape and pattern of the body part are regarded as an essential part, and thus the designs are deemed similar despite the difference of the lower joint part); Cf. Patent Court Decision, 2015Heo8721, decided May 13, 2016 (the main consumers of the floor boards for buildings will be constructors, landowners, or professional distributors, and they will decide whether to purchase the floor boards by taking into account the appearance of the top plate appearing on the outside after installing the floor boards of the building as well as the aesthetic sense of the spacing bridge where the function or structure of the article itself is expressed; therefore, the overall shape and pattern including the spacing bridge corresponds to an essential part).

13) Supreme Court Decision, 2005Hu3307, decided October 25, 2007 (if both kickball designs are identical to each other in their shape and pattern in that twelve pieces are put together and with respect to their basic coloring compositions, they are similar and do not have a difference in the

B. Evaluation of Components in Determining Similarity

When determining whether two designs have a similar aesthetic sense, the importance of components that constitute a design is evaluated differently depending on the aesthetic value of the aforementioned components in the entire design. The part that is considered important is the most conspicuous part that easily attracts the attention of observers or the part that is considered by consumers in the trade, which is the dominant feature that best represents the aesthetic feature in designs or influences the overall sense of beauty, whereas the part that is not conspicuous or does not provide any aesthetic sense is considered less important.

According to the precedents, an unusual shape,¹⁴⁾ a shape that makes up a large proportion of the entire design and is exposed in a considerable size,¹⁵⁾ a design that is considered by consumers in the trade,¹⁶⁾ and a design of the portion

aesthetic sense, even if there is a difference in that three pieces are painted with red and three pieces are painted with blue in the registered design, while six pieces are painted with dark blue in the subject design); Patent Court Decision, 2017Heo3379, September 15, 2017 (in this decision, the Patent Court held that the registered design first adopted ceramic material in the baby bottle, and the texture and transparency of such material can be an important factor in determining similarity of designs).

- 14) Supreme Court Decision, 2000Hu3388, decided June 29, 2001 (The registered design has a recessed portion comprising a body part where an outlet and a cap are installed, whereas the cited design has two rows of vertical line decoration on each of the four sides of the body part. Such recessed portion and vertical lines are not common shapes in the cylindrical shape, which attracts strong attention of the viewer and creates different aesthetic senses. Thus, the designs are not similar to each other).
- 15) Patent Court Decision, 2015Heo2617, decided October 30, 2015 (The common feature of the registered design and the comparative design occupies a large portion of the entire gas fryer, and is exposed to a considerable size in the front and side, which makes it easy for ordinary consumers and traders to attract their attentions. In contrast, the temperature control unit and the oil discharge lever do not occupy a large portion of the overall design in view of the area or position occupied, and thus they do not correspond to an essential part).
- 16) Supreme Court Decision, 2000Hu129, decided May 15, 2001 (In the case of aggregate for a window frame, consumers would decide whether to purchase it by taking into account the aesthetic sense of the external appearance where the function or structure of the article itself are expressed as well as the exterior appearance shown after the glass is put in the aggregate for the window frame and is installed on the window frame. Therefore, even though the upper part of the aggregate for the window frame is more conspicuous than the bottom and middle parts to observers, it is difficult to consider that only the shape and pattern of the upper part is an essential part. Rather, the whole, i.e., the overall shape and pattern shown in the side or perspective view

where various changes are possible¹⁷⁾ are considered important. In contrast, a known shape and pattern,¹⁸⁾ a design that constitutes parts that the product must contain or relate to the fundamental or functional forms of the article that have been widely used for a long time in the field of the design,¹⁹⁾ a specific feature that can be recognized only upon close inspection,²⁰⁾ and a portion that is merely a commercial and functional modification is considered less important.

are deemed to be an essential part); Patent Court Decision, 2012Heo9921, March 22, 2013 (In view of the function, usage, and storage form of the portable bathtub, not only the front, back and left and right sides of the bathtub but also the flat portion and the bottom portion of the bathtub are the portions that easily attract the attention of a person. Further, ordinary consumers may identify differing aesthetic senses depending on the shape and pattern of the flat portion and the bottom portion. Therefore, customers will decide to purchase the portable bathtub by taking into account the bottom of the bathtub and the shape and pattern of the bottom part, and thus such portions correspond to important parts of the design of the bathtub).

- 17) Patent Court Decision, 2006Heo1636, decided June 22, 2006 (since the body portion of the pedestal or the receiving frame that holds a spoon holder or the like must be in accordance with the shape of the spoon holder, it is a part that cannot greatly change its design structurally, and therefore the range of similarity should be deemed relatively narrow in determining similarity of the registered design); Patent Court Decision, 2016Heo6470, decided March 31, 2017 (there are a variety of selectable alternative shapes for the central part of the hair band, so that a difference in the specific shape of the part may affect the overall aesthetic sense).
- 18) Supreme Court Decision, 2003Hu762, decided August 30, 2004 (if the overall shape and pattern of grass frames of industrial glasses and the front part are known, the similarity should be determined by focusing on the shape and pattern of holders on side and connectors). However, even if it is a known part, if the shape and pattern formed by integrally combining with other components constitute a dominant feature, such part is deemed to be an essential part and is subject to the determination of similarity (Supreme Court Decision, 2005Hu2922, decided July 28, 2006, Patent Court Decision, 2012Heo9990, decided April 19, 2013).
- 19) Supreme Court Decision, 2003Hu1666, decided October 14, 2005 (The shape where the lock wings are formed on the four sides of the food container lid and the container body in the shape of a rectangular parallelepiped and the two lock holes and the lock protrusions are formed on the lock wings is a basic and functional shape of a closed container that has been widely used for a long time. Therefore, even though the aforementioned parts are common, both designs cannot be considered the same.); Patent Court Decision, 2016Heo939, decided June 16, 2016 (The roller part in the cosmetic roller is generally spherical or close to spherical in shape to effectively massage the face or the body, so that such shape is a basic shape of an article or an indispensable shape to secure its function. Therefore, the significance of the aforementioned shape should be deemed low in comparing designs).
- 20) Supreme Court Decision, 2000Hu3388, decided June 29, 2001.

4. Determination of Similarity of Designs Where Some Components Are Modified

A design may be created through “modification” to the degree beyond the scope of similarity of the registered designs by referring to and analyzing known prior designs before creating the new design.²¹⁾ As explained above, in the determination of the similarity of designs, components constituting designs are compared to each other to extract similarities and differences to determine their relative significance in the entire aesthetic sense of the designs. In case of a design where some components of the registered design are modified, there would be similarities in the unmodified components and differences due to the modification of components. The determination of similarity may differ depending on the relative significance of the similarities and differences that accounts for the entire aesthetic sense of the design.

When a new design is created by modifying an essential part of a registered design, it would be difficult to deem that such design is identical to the registered design unless the aforementioned modification is so trivial that it does not affect the aesthetic sense. In contrast, when the new design modifies a component that does not affect the aesthetic sense of the design while including the dominant feature of the registered design, it is highly likely that the new design falls within the scope of rights of the registered design unless such modification results in an entirely new aesthetic sense. Meanwhile, when the modified design includes the dominant feature of the registered design but also has a new visual feature that easily appeal to the eyes of the consumers due to the modification of other components, another issue is present about how to evaluate the effect of such feature on the overall aesthetic sense and determine the similarity of designs.

In the past, the Supreme Court held that, even if creativity of a design is partially recognized, such a design is a mere commercial and functional modification of the known design and thus its creativity cannot be recognized if there is no aesthetic value different from the known design when seen as a whole.²²⁾ However, since the Supreme Court Decision 2005Hu2915 rendered on

21) Ji-Hoon Kim, *Conceptual Understanding of Similarity of Designs, Design and Act*, CHAEUMBOOKS (2017), 367.

22) Supreme Court Decision, 97Hu3586, decided October 8, 1999; Supreme Court Decision, 2000Hu3388, decided June 29, 2001.

July 28, 2006, the Supreme Court has not taken into consideration the “commercial and functional modification” in determining similarity of designs, because whether the design is commercially and functionally modified relates to the easiness of the creation of a design,²³⁾ which is not to be considered in determining similarity of designs.²⁴⁾ However, in lower courts, whether a difference between two designs is a mere commercial and functional modification is still considered as an important factor in determining the similarity of designs.²⁵⁾

Specifically, the following cases are relevant examples on the point: Case (1) Inaregistered design of asleeve pipe to be installed in buildings (“”), the roly-poly shape of the flat part is not a conventional shape and corresponds to a dominant feature that attracts the attention of a person. Therefore, even if the challenging design (“”) differs from the registered design in terms of the body part and the bottom part, as long as it has the similar flat part, it falls within the range of similarity of the registered design, unless such difference is evaluated to overwhelm the dominant aesthetic sense created by the roly-poly shape;²⁶⁾ Case (2) The registered design for a cradle for an infant mobile (“”) is an innovative design where a mobile joint part comprises three circular holes and where the shape and pattern of the mobile joint portion, the column portion, and the bottom support portion being integrally connected with each other appears for the first time, such that the aforementioned design corresponds to the dominant feature. Therefore, even though the challenging design (“”) differs

23) The precedents on the easiness of creation of a design provide that “even if a design's shape, pattern, color, or combinations thereof is imitated or used or is partially changed, if it is a mere commercial and functional modification without any other aesthetic value seen as a whole or is a design of a low creative level, such as designs, etc. that are modified, combined or used pursuant to creative or expressive methods frequently used in such design area, design registration will be denied since a person with ordinary skill in the art to which the design pertains would have easily created them.” See e.g. Supreme Court Decision, 2008Hu2800, decided May 13, 2010; Supreme Court Decision, 2012Hu798, decided April 10, 2014.

24) Interpretation of Design Protection Act, Co-edited by SangJo Jong, Bum-Sik Seol, Ki-Young Kim, Gan-Jin Baek, PAKYOUNGSA (2015), 298 (the part authored by Young-Sun Yu).

25) Patent Court Decision, 2017Heo2246, decided July 6, 2017; Patent Court Decision, 2017Heo73, decided June 23, 2017; Patent Court Decision, 2016Heo2100, decided July 15, 2016 (pending in the Supreme Court); Patent Court Decision, 2016Heo2621, decided August 31, 2016; Patent Court Decision, 2016Heo5248, decided November 4, 2016 (pending in the Supreme Court).

26) Patent Court Decision, 2008Heo12210, decided March 27, 2009.

from the registered design in the shape of the rim of the mobile joint part and the shape and pattern of the column part, such differences are mere commercial and functional modifications that can be easily derived by a designer of ordinary skill. Further, it is difficult to conclude that new aesthetic values are created by such modifications, and even if such modifications are somewhat creative, they hardly overwhelm the dominant feature common to both designs to create an entirely different aesthetic sense. Therefore, the designs are considered similar.²⁷⁾

Whether the aesthetic sense of designs are identical is a question of fact based on visual perception, while at the same time is an issue of normative judgment based on the scope of rights of the registered design. From this perspective, in light of the legislative intent of the Design Protection Act to encourage creation of designs by promoting the protection and usage of designs, it would be desirable to determine the similarity of the overall aesthetic senses as follows: a part where a designer's creativity is focused is important in the aesthetic sense;²⁸⁾ and a difference due to modifications of some components of the registered design that do not go beyond mere modification or combination by methods commonly used to create or express pursuant to commercial or functional demands is of less importance even if such modifications lead to a new visible features appealing to consumers, unless they overwhelm the common aesthetic sense due to a part that is highly creative.

5. Review of the Decision and Its Significance

In the decision at issue, the Patent Court held that the Challenging Design falls under the scope of rights of the Subject Design on the grounds that the Challenging Design is a mere modification of the Subject Design such that one line is eliminated from five lines comprising concave grooves of the registered design and it has a dominant feature similar to that of the Subject Design, which

27) Patent Court Decision, 2017Heo1052, decided July 21, 2017 (pending in the Supreme Court).

28) Patent Court Decision, 2015Heo8721, decided May 13, 2016; Patent Court Decision, 2016Heo439, decided October 28, 2016 (In the design for a hydraulic ring plug, the shape of the body part where the O-ring and O-ring fixing part are combined with each other is a new design, which was not known in conventional hydraulic plugs. Since the body part can easily attract a person's attention and is where the designer's creativity is focused, its importance should be considered high).

enables observers to feel a similar aesthetic sense.

The aforementioned decision is in contrast to the administrative decision holding that the aesthetic sense of the Subject Design differs from that of the Challenging Design by focusing on the difference in objective visual perception such that the appearance at the time of construction of the Challenging Design differs from that of the Subject Design based on the arrangement of concave grooves with modified components.

The Subject Decision is significant in that the Patent Court acknowledged the range of similarity of designs to a somewhat broader extent where a challenging design almost imitated a highly creative and dominant feature of a registered design, while modifying some components, by taking into consideration the significance of a highly creative part in the entire aesthetic sense and the purpose of the Design Protection Act that encourages creation of designs in the case.

A Case Where Inventiveness of Medicinal Substance Invention Is Recognized

Patent Court Decisions, 2015Heo932, 2015Heo956 (combined) and 2015Heo970 (combined), decided May 29, 2015 (final appeal withdrawn)

Jootag YOON*

I. Summary of the Issues

1. Procedural History

The Plaintiffs and twelve Korean pharmaceutical companies filed three requests for invalidation of the Subject Patent with the Intellectual Property Trial and Appeal Board (“IPTAB”), and then IPTAB dismissed those requests on January 8 and January 12, 2015 for the reason that inventiveness of the Subject Patent is not negated (2013Dang997, 2013Dang1541, 2014Dang1556, etc.).

Thus, Plaintiffs filed appeals seeking to revoke the aforementioned decisions to the Patent Court, and the Patent Court rendered decisions on September 10, 2015 that all those appeals shall be dismissed because inventiveness of the Subject Patent was not negated [2015Heo932, 2015Heo956 (combined) and 2015Heo970 (combined)].

One company of the Plaintiffs filed an appeal to the Supreme Court but then withdrew it [2015Hu1836, 2015Hu1843 (combined) and 2015Hu1850 (combined)]. Therefore, the above IPTAB’s decision became final.

2. The Subject Patent of the Defendant

A. Registration

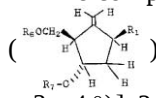
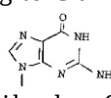
The Subject Patent, which pertains to ‘Hydroxymethyl (methylenecyclopentyl)

*Judge, Patent Court of Korea.

purines and pyrimidines,' was filed on October 17, 1991 (priority date: October 18, 1990), and was registered as Korean Patent No. 160523 on August 19, 1998.

B. Overview of the Subject Patent

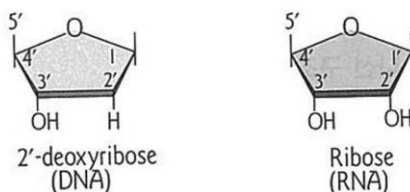
The Subject Patent relates to hydroxymethyl (methylenecyclopentyl) purines and pyrimidines. The compound of formula I and its pharmaceutically acceptable salts exhibit antiviral activation.

The compound according to Claim 15, which is the compound of formula I () wherein R1 is , and R6 and R7 are hydrogen, i.e., '[1S-(1 α ,3 α ,4 β)]-2-amino-1,9-dihydro-9-[4-hydroxy-3-(hydroxymethyl)-2-methylenecyclopentyl]-6H-purin-6-one,' is comprised in the compounds according to Claims 1 to 7 [it is also called 'entecavir'; hereinafter, called 'entecavir']. Table 1 of the specification of the Subject Patent shows the results of antivirus activities of entecavir against HSV-1 (herpes simplex virus type 1), HSV-2 (herpes simplex virus type 2), HCMV (human cytomegalovirus), VZV (varicella zoster virus) and HIV (human immunodeficiency virus).

3. Technological Background

A. Nucleoside

Nucleoside consists of a base in the form of N-glycoside linked to a pentose (as shown below)¹⁾. Bases can be classified into purines and pyrimidines. Purines include adenine and guanine, while pyrimidines include cytosine, thymine and uracil. Meanwhile, sugar can be in two forms: ribose and deoxyribose.



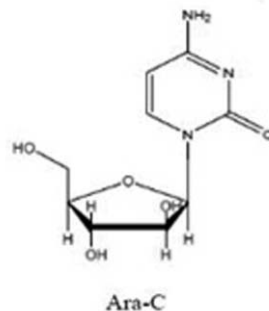
1) Each carbon atom of a pentose is denoted by a number such as 1', 2', 3', 4', or 5' to be distinguishable from that of base, as shown below.

Nucleotide consists of a base and a phosphate group linked to a pentose, and further comprises a phosphate group as compared with the nucleoside. Nucleotides polymerize to form a nucleic acid. If the sugar is deoxyribose, then the nucleic acid is called DNA (deoxyribonucleic acid), while if the sugar is ribose, then the nucleic acid is called RNA (ribonucleic acid).

B. Nucleoside Analogues

Nucleoside analogues are compounds in which the natural nucleoside structure is modified. Nucleoside analogues could be categorized into furanosides, acyclics and carbocyclics, on the basis of their sugar structure around the priority date of the Subject Patent.

Furanosides are nucleoside analogues including furanose²⁾. Cytosine arabinoside (Ara-C) was known before the priority date of the Subject Patent.

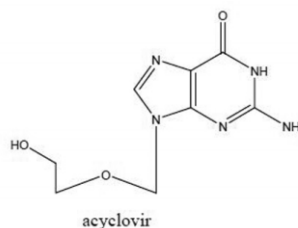


Acyclics are nucleoside analogues having a base linked to a non-cyclic, aliphatic functional group. Acyclovir was known before the priority date of the Subject Patent.

Carbocyclics are nucleoside analogues having a carbocyclic structure³⁾ in which the oxygen atom of furanose is substituted with a carbon atom. Aristeromycin,⁴⁾ 2'-CDG and the like were known before the priority date of the Subject Patent.

C. Antiviral Agent

Virus merely consists of one nucleic acid of DNA or RNA, surrounded by a coat. The antiviral agent has antiviral activation by inhibiting propagation of

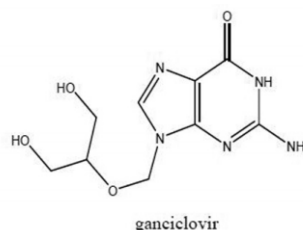


2) It means a carbohydrate having a 5-membered ring consisting of four carbon atoms and one oxygen atom.

3) Each carbon of the carbocyclic structure is denoted by a number such as 1', 2', 3', 4', or 5', as in said pentose. According to this numbering system, the site where the oxygen atom of furanose is substituted with a carbon atom [circle symbol in aristeromycin] is supposed to be marked 6' (it is marked 6' in Prior Art 3). However, hereinafter, this site will be denoted as 5' as indicated by the parties except when referring to the specification of Prior Art 3.

4) See Prior Art 3.

viruses penetrating into a host such as human with the mechanism that interferes with the process of continuously replicating their nucleic acid for the propagation. Among others, the nucleoside analogue in which the structure of a natural nucleoside is modified has been developed as an antiviral agent.



4. Prior Arts

A. Prior Art 1

2'-CDG, which is an analogue of deoxyguanosin, a natural nucleoside, has a structure in which the oxygen of deoxyribose sugar in deoxyguanosin is substituted with carbon (the dotted circle in the table below) and is known to have high antiviral activation against HSV-1, HSV-2 and also to be safe enough not to show toxicity up to 200 times the minimum effective inhibitory concentration.

B. Prior Art 3

Madhavan 30 has a structure in which the 5' carbon of the carbocyclic ring has an exocyclic methylene group (CH₂)⁵⁾ linked thereto (the dotted circle in the table below) as compared with aristeromycin.⁶⁾

C. Comparison: Entecavir, 2'-CDG and Madhavan 30

As seen from the table below, entecavir has a structure in which the 5' carbon of 2'-CDG has an exocyclic methylene group (CH₂) linked thereto (the dotted circle in the table below).

2' -CDG	Madhavan 30	Entecavir

5) It means that the methylene group is present out of the carbocyclic ring.

6) Aristeromycin has a structure in which the oxygen of ribose sugar (the dotted circle in the table below) is substituted with carbon as compared with adenosine () which is a natural nucleoside.

II. Views on the Subject Decision⁷⁾

1. Whether Entecavir Can Be Easily Conceived or Not

A. Possibility that 2'-CDG could be selected as a lead compound for developing entecavir

The Subject Patent seems to provide nucleoside analogues showing activities against viruses such as HSV-1 (herpes simplex virus type 1), HSV-2 (herpes simplex virus type 2) and the like.

Meanwhile, a skilled person in the art developing novel medicinal compounds would design and synthesize structurally similar compounds or derivatives using biologically active compounds that are already known as lead compounds (referred to as 'discovery of lead compounds,') to find compounds having more useful pharmaceutical effects (referred to as 'structural optimization' or 'structural modification').

Based on the descriptions of Prior Art 1 and prior documents around the priority date of the Subject Patent, it is considered that a skilled person attempting to develop nucleoside analogues showing activities against viruses such as HSV-1, HSV-2 and the like would have been highly likely to select 2'-CDG as a lead compound.

B. Whether It Is Easy to Introduce the Exocyclic Methylene Group of Madhavan 30 to 2'-CDG

1) Whether a skilled person would preferentially consider the 5'-position of the carbocyclic ring to modify 2'-CDG

In view of the circumstances acceptable with evidence, given the evidence on the record, it is difficult to recognize any special circumstance to indicate that a skilled person in the art would have preferentially counted the 5' position of the carbocyclic ring as a target to be modified to modify 2'-CDG around the priority date of the Subject Patent.

7) U.S. Delaware District Court issued a holding on February 11, 2013 that Claim 8 covering entecavir is invalid in view of its obviousness, and the U.S. Court of Appeals for the Federal Circuit (CAFC) dismissed the patentee's appeal on June 12, 2014.

2) Whether it is easy to introduce the exocyclic methylene group of Madhavan 30 to modify the 5'-position of the carbocyclic ring in 2'-CDG

In view of the circumstances acceptable with evidence, a variety of substituents had been used in the field of nucleoside analogues around the priority date of the Subject Patent, but it is difficult to figure out the relationship between substituents used and activities. In other words, with regard to the technical problem of providing nucleoside analogues showing activities against viruses such as HSV-1, HSV-2 and the like, it is difficult to specify 'a substituent that correlates with said antiviral activities' as a mean to solve the problem.

Regarding the exocyclic methylene group, it only was used in at most one other nucleoside analogue having a different base, in addition to Madhavan 30.

In Prior Art 3, there are more negative factors than positive factors in determining whether to introduce the exocyclic methylene group or not [Prior Art 3 concludes that Madhavan 30 can strongly inhibit S-adenosylhomocysteine (AdoHcy) hydrolase to effectively inhibit vaccinia virus replication but does not show any significant activation against herpes virus (HSV-1, HSV-2). Further, it discloses that as the compounds become increasingly suppressive to herpes growth they also become more cytotoxic. Moreover, in Prior Art 3, it is highly likely to consider the antiviral mechanism by suppressing S-adenosylhomocysteine (AdoHcy) hydrolase, against which Madhavan 30 can be understood to show a strong suppression capacity, as different from the mechanism of 2'-CDG against HSV-1, HSV-2 and the like].

3) Reasoning

It appears that a skilled person in the art, in the process of designing and synthesizing structurally similar compounds or derivatives with 2'-CDG as a lead compound, would understand the structure-activity relationship to find an essential pharmacophoric moiety that is the molecular form needed for the compounds to show the pharmaceutical action. However, if one fails to find the essential pharmacophoric moiety for the antiviral activities of 2'-CDG or any information about 'the relationship between the specific substituent and the activity,' the structure-activity relationship in the process of developing the nucleoside analogues showing activity against viruses such as HSV-1, HSV-2 and the like seems to be playing a role of merely defining which substituent can be introduced into 2'-CDG by looking up the nucleoside analogues showing

activity against viruses such as HSV-1, HSV-2 and the like among nucleoside analogues. As such, once candidate substituents are decided, it seems that one should design a method for synthesizing compounds by introducing those candidate substituents, and then synthesize the compounds to confirm their properties [In case of chemistry invention which is also called as 'science of experiments', there is a significant lack of predictability or feasibility although it can vary by the description of the invention or the level of technology (Supreme Court Decision 2001hu65, decided November 30, 2001), and thus the witness ○ ○ ○ attested that "When one designs a compound, he or she should work out its synthesis; and prior document needs to be reviewed to see where the synthesis comes from"]. However, in this case, it is difficult to figure out which substituents are showing activities against viruses such as HSV-1, HSV-2 and the like when introduced, what would be the standard by which some substituents are preferentially selected for their synthesis and characterization, then how much priority the exocyclic methylene group of Madhavan 30 among the possible candidates would have, or once a substituent is fixed, how much time and cost would be spent to verify the synthesis and characterization.

Accordingly, it is difficult to conclude that a skilled person in the art would have preferentially considered introducing the exocyclic methylene group into the 5' position of a carbocyclic ring to modify 2'-CDG around the priority date of the Subject Patent, and further, it cannot be acknowledged that a skilled person would have easily introduced the exocyclic methylene group into the 5' position of 2'-CDG under the circumstance that it was not easy to figure out which standard should apply to select one among the potent substituents.

C. Summary: Determination of 'Easy to Derive'

Then, based only on the evidence, it does not appear that the prior art, with respect to where to modify or which substituent to introduce, provides any suggestion or motivation on introducing the exocyclic methylene group to the 5'-position, which is merely one possible combination among the rest. Further, it does not appear that, in light of the level of technology, common technical knowledge, and fundamental problems in the related art, development trend, desire from the related art around the priority date of the Subject Patent, a skilled person would easily reach entecavir via selecting 2'-CDG as a lead compound and introducing the exocyclic methylene group to the 5'-position of

2'-CDG.

2. Whether to Deny Inventiveness

As seen from the above, as long as a skilled person in the art could not easily derive from the Prior Arts entecavir covered by the scope to be protected by Claims 1 to 7 and 15, entecavir of the compound invention is not recognized as lacking inventiveness in view of the Prior Arts.

III. Analysis

1. Issues of the Subject Patent

Entecavir covered by the protection scope of the Subject Patent is a medicinal substance, i.e., an organic compound having antiviral activation against HSV-1 (herpes simplex virus type 1), HSV-2 (herpes simplex virus type 2), and the like. Thus, the Subject Patent represents a medicinal substance invention. Especially, entecavir, after the patent registration, has been used as an active ingredient of the brand name 'Baraclude' which is a commercially available medication used in the treatment of hepatitis B virus infection.

However, with respect to the chemical structure, entecavir can be obtained only by introducing the exocyclic methylene group of Prior Art 3 to the 5'-position carbon of a carbocyclic ring in 2'-CDG of Prior Art 1, and, therefore, there is a high risk of hindsight consideration in determining its inventive step.

2. Inventiveness of Medicinal Substance Invention

A medicinal invention includes a product invention, which is an invention of a substance having a pharmacological activation, and a secondary invention based on novel or known products such as a selection invention, an optical isomer invention, a crystalline invention, a use invention or a formulation invention.

Among others, in case of the medicinal substance invention in the form of an

organic compound, the inventive step is determined according to a similar guideline to that of general organic compounds. An invention of an organic compound, which is essentially to invent useful organic materials, provides a commercially useful organic compound for the purpose and effect of the invention and the organic compound itself comprises the constitution of the invention. Accordingly, the inventiveness of an organic compound invention is determined based on two aspects, i.e., how unique it is in view of ① the chemical structure of the organic compound, and ② the properties or effectiveness of the organic compound. Considering that an invention of an organic compound is essentially ‘to invent useful organic materials’, the inventiveness of the invention should be determined based on said two aspects.⁸⁾

3. Inventiveness of Combination Invention

The subject case seems to have applied the legal principle that, “in order to determine that inventiveness is negated in view of some references, the references must provide an indication or motivation that the combination or blending of those prior technologies could achieve the Subject Patent, or at the least it should be recognized that a skilled person in the art could easily reach such combination in light of the level of technology, technical common knowledge, fundamental problems in the related art, development trend, desire from the related art, etc. around the filing date of the Subject Patent” (Supreme Court Decision 2014Da42110, decided July 23, 2015), to determine whether a skilled person in the art would have easily reached entecavir by combining the exocyclic methylene group of Prior Art 3 with Prior Art 1.

4. Views on the Subject Decision

A. Overview of the Subject Decision

The Subject Decision determined the ease of combination by comprehensively considering the following under the premise that combining the exocyclic

8) Yeong-sun Yu, “Comparison · analysis of patentability requirements by type of medicinal inventions”, Patent Trials Study, Vol. 6 (2013. 5), Patent Court, pages 143-144

methylene group of Prior Art 3 with Prior Art 1 required the following steps.

Select 2'-CDG as a lead compound → Preferentially consider the 5'-position of a carbocyclic ring to modify 2'-CDG → Select the exocyclic methylene group of Prior Art 3 among substituents showing activities against viruses such as HSV-1, HSV-2 and the like

In other words, the ease of combination is determined by comprehensively considering the followings: whether a skilled person in the art was likely to select 2'-CDG as a lead compound; whether the skilled person would have preferentially considered the 5'-position of a carbocyclic ring to modify 2'-CDG; and whether the skilled person would have selected the exocyclic methylene group of Prior Art 3 among other substituents showing activities against viruses such as HSV-1, HSV-2 and the like.

B. Analysis

Conventionally, the difficulty of determining what should be the primary prior art is not of concern in determining inventiveness of the invention. However, this case considered the following conventional research and development process in the technical field of the Subject Patent: a skilled person in the art who is attempting to develop a novel medicinal compound takes an already-known biologically active compound as a lead compound to design and synthesize structurally similar compounds or derivatives and eventually finds compounds having a useful pharmaceutical effect. In view of the foregoing, the possibility of selecting Prior Art 1 as a lead compound was questioned and used as a factor to determine the ease of deriving the invention.

The Subject Decision held that even if the skilled person selected 2'-CDG of Prior Art 1 as a lead compound, it is difficult to conclude that he/she would have preferentially counted introducing a substituent into the 5' position of a carbocyclic ring to modify 2'-CDG around the priority date of the Subject Patent; and further in view of how a variety of substituents were used at many positions in the field of nucleoside analogues, how the exocyclic methylene group was used in the field of nucleoside analogues, any negative factors recognizable from Prior Art 3 for determining whether to introduce the exocyclic methylene group, even if one introduced a substituent into the 5'-position of a carbocyclic ring, it is

different to conclude that one would have preferentially counted introducing the exocyclic methylene group.

In addition, the Subject Decision held that, although the skilled person seemed to determine which substituent to be introduced into 2'-CDG by looking up nucleoside analogues showing activities against viruses such as HSV-1, HSV-2 and the like among nucleoside analogues utilizing the structure-activity relationship and then, considering the properties of chemistry inventions that there is very little predictability or feasibility, seemed to introduce a candidate substitute to design and synthesize a compound and verify its properties, in the Subject Patent, it is difficult to figure out what kind of substituents showed activities against viruses such as HSV-1, HSV-2 and the like when introduced, what was the standard to preferentially choose certain substituents among the rest for their synthesis or characterization, how much priority the exocyclic methylene group of Prior Art 3 had among candidate substituents, and once a substituent was fixed how much time and cost would be spent for the synthesis or characterization, around the priority date of the Subject Patent.

Consequently, the Subject Decision held that it is difficult to conclude that the skilled person would have preferentially counted introducing the exocyclic methylene group into the 5' position of a carbocyclic ring to modify 2'-CDG around the priority date of the Subject Patent, and further that it cannot be concluded that it was easy for the skilled person to introduce the exocyclic methylene group into the 5' position of 2'-CDG, under the circumstance that it was difficult to figure out candidate substituents or the standard for selecting certain substituents.

C. Summary of Analysis

The Subject Decision held that according to the reasoning of the Supreme Court cases for the combination invention, it does not appear that a skilled person in the art would easily select 2'-CDG as a lead compound to introduce the exocyclic methylene group, which is merely one possible substituent among the rest, into the 5'-position which is merely one possible position to be modified, and achieve entecavir, and, as such, as long as entecavir covered by the scope to be protected by Claims 1 to 7 and 15 cannot easily be derived from the Prior Arts, entecavir of the compound invention is not recognized to lack inventiveness.

IV. Conclusion

The Subject Decision decided whether the medicinal substance of the Subject Patent could be easily invented from the Prior Arts, taking into account research methods such as ‘discovery of lead compounds,’ ‘structural optimization,’ or ‘synthesis and characterization,’ which a skilled person in the art developing novel medicinal compounds would perform during his/her research and development process.

Further, the Subject Decision is meaningful because it clarified that Plaintiff of the invalidation trial would have the burden of proof for the indirect facts with which the ease of combination such as “what kind of substituents showed activities against viruses such as HSV-1, HSV-2 and the like when introduced, or what was the standard for preferentially choosing certain substituents among the rest for synthesis or characterization” could be inferred,⁹⁾ when it was difficult to conclude merely with the given evidence that the skilled person would have preferentially considered introducing the exocyclic methylene group into the 5’ position of a carbocyclic ring to modify 2’-CDG around the priority date of the Subject Patent in the process of ‘structural optimization,’ especially when there were more negative factors than positive factors in determining whether to introduce the exocyclic methylene group of Prior Art 3, the secondary prior art, which would be the target to be judged to determine whether it was easy or not to combine it with Prior Art 1, the primary prior art.

Lastly, the Subject Decision is regarded to have judged that as long as the difficulty of constitution in terms of the chemical structure in determining inventiveness of the medicinal compounds is acknowledged, inventiveness is not negated, without regard to their effects.

9) Although the court has ordered the Plaintiffs and the Defendants to prepare clarification materials for such matters, it seems that there has been no substantive reply or evidence submitted to help them to judge such matters.

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