PATENT COURT
THE THIRD DEPARTMENT
DECISION

Case No. 2013Heo9324 Invalidation of Registration (Patent)

Plaintiff: Damokecotech Co. Ltd
Counsel for Plaintiff:
Youngik HWANG, Patent attorney

Defendant: Nak Mo LIM
Counsel for Defendant:
Byeongsoon JEONG, Patent attorney

Closure of Hearing: March 27, 2014

Date of Decision: May 9, 2014

Order

1. Portions regarding Claims 1 to 5 of Korean Patent No. 10-0894397 in the decision of the Intellectual Property Tribunal ("IPT") issued on October 29, 2013 in Case No. 2012Dang3008 shall be cancelled.
2. The trial costs shall be borne by Defendant.

Tenor of Claim

It is the same as the order.

Reasoning

1. Background facts

A. Plaintiff's patented invention

1) Title: Automatic open-close device using wind force and gravity

2) Filing date/registration date/registration No.: July 15, 2008/April 14, 2009/894397

3) Patentee: Plaintiff and Yeon-Soo Han

4) Claims

1. An automatic open-close device using wind force and gravity, including an open-close part consisting of rotational plates, rotation parts, rotation weights, and a connection part, the automatic open-close device having: a pair of the rotational plates comprising a first rotational plate and a second rotational plate shaped as a semicircular plate formed symmetrically based on the connection part; a pair of the rotation parts comprising a first rotation part and a second rotation part connecting the rotational plate and the connection part and rotating the rotational plates based on the connection part to an orthogonal direction; a pair of the rotation weights comprising a first weight and a second rotation weight extended from the rotational plate towards the connection part and formed such that gravity is exerted on an extended surface; and the connection part connecting the rotational plate and the rotation part and having a hollow part inside such that the rotation weight can come in and go out when the rotational plates rotate to the orthogonal direction.

2. The automatic open-close device using wind force and gravity of Claim 1, further comprising a drive part, wherein the drive part comprises a propeller, which is a device generating an impellent force

when rotated by a power generator; a motor, which is a power generator connected with a rotation axis of the propeller and generating a power to the propeller; and a motor attachment plate, which attaches the motor to an outside device.

3. The automatic open-close device using wind force and gravity of Claim 2, wherein the propeller varies a pitch angle (blade angle), which is an inclination of a cross-section of a propeller blade to a rotation surface.

4. The automatic open-close device using wind force and gravity of Claim 3, further comprising a housing, which includes the open-close part and the drive part in its inside and shaped as a cylinder.

5. The automatic open-close device using wind force and gravity of Claim 4, wherein the housing further comprises a rotational plate stop part formed in order to prevent collision with the propeller when the rotational plate is positioned to its original position by gravity to the rotation weight after wind force by the drive part to the rotational plate is stopped.

6 and 10. (*cancelled*)

7 to 9. (*descriptions omitted*)

5) Main drawings: [Annex 1] the same as "Plaintiff's patented invention" (hereinafter, Plaintiff's patented invention is referred to as "the Subject Patent," and Claim 1 of the Subject Patent is referred to as "Claim 1" and other claims will be referred to in the same manner).

B. Prior Arts

1) Prior Art 1 (*see* Exhibit No. K-4)
   a) Title of Device: Ventilation device of pig farm
   b) Filing date/Registration date/Publication date/Registration No.: November 25, 2004/February 16, 2005/March 10, 2005/20-0376902

c) Main contents and drawings: the same as described in Section 1 of [Annex 2: Prior Arts]

2) Prior Art 2 (*see* Exhibit No. E-1)

a) Title of Device:Apparatus for capturing insects

b) Filing date/Registration date/Publication date/Registration No.: September 28, 2005/February 2, 2006/February 8, 2006/20-0408283

c) Main contents and drawings: the same as described in Section 2 of [Annex 2: Prior Arts]

C. Procedural history of the IPT decision and action

1) With regard to the Subject Patent, the defendant filed an invalidation action against the patent of patentees, Plaintiff and Yeon-Soo Han, with the IPT on November 22, 2012 under Case No. 2012 Dang 3008 on the grounds that ① Claims 1 to 5 could have been easily conceived by a person having ordinary skill in the art ("PHOSITA") from Prior Art 1, and ② Claims 7 to 9 are not supported by the specification.

2) IPT issued the decision on October 29, 2013 ruling that "since inventive step of Claims 1 to 5 is denied by Prior Art 1, the patent thereon is invalidated, and since Claims 7 to 9 are supported by the specification, Defendant's action is partially dismissed."

3) Consequently, Plaintiff, one of co-appellants, filed a trial against Defendant on November 28, 2013 seeking a cancelation on the portions regarding Claims 1 to 5 from the IPT decision.

[Recognition basis] Exhibit Nos. K-1 to K-4, and E-1 and overall pleadings

2. Summary of Parties' arguments and main issue of the Subject Case

A. Summary of Parties' arguments

1) Plaintiff's ground to cancel the IPT decision

a) The basic structure is different because the device is closed, not by the gravity of the rotational plate, but by the weight of the rotation weight against the gravity of the rotational plate in Claim 1, whereas the device is closed by the downward action of the weight and gravity of a rotational plate in Prior Art 1. Further, they are different because the rotation part of Claim 1 serves as the support of a lever in Claim 1, whereas the coupling part of Prior Art 1 merely serves as a hinge. Moreover, Prior Art 1 does not disclose any feature corresponding to the connection part of Claim 1.

b) Claim 1 provides different and remarkable effects compared to Prior Art 1 in that the device can be easily opened and calmly closed even by weak wind force by using a principle of the lever to the rotational plate, and a rotation of the rotational plate is smoothly operated by not allowing dead insects to be caught in a gap of the rotation weight by means of the connection part.

c) Since Claims 2 to 5 directly or indirectly depend from Claim 1, as far as inventive step of Claim 1 is recognized, inventive step of Claims 2 to 5 should be recognized.

d) Thus, since inventive step of Claims 1 to 5 is not denied, the IPT decision contrary thereto should be cancelled.

2) Summary of Defendant's argument

a) Claim 1 is substantially identical to a ventilation device wherein two semicircular shutter plates are hinge-connected in a discharge pipe to have a V-shape and a weight is provided in each shutter plate so as to be opened and closed by wind

force. Further, the connection part of Claim 1 is no more than a mere addition or change of a hollow part to a coupling part for connecting the shutter plates (one hinge connection) in Prior Art 1 such that incoming and outgoing rotation weight is possible for a smooth operation of the rotational plate. Thus, the connection part of Claim 1 could have been easily derived by PHOSITA from the corresponding feature of Prior Art 1.

b) The effect of Claim 1 that "the opening and closing is automatically possible without any power connection" is identical to or could be sufficiently expected from the corresponding feature of Prior Art 1.

c) Features added to Claims 2 to 5 are identical to or no more than a mere application of well-known techniques to Prior Arts 1 and 2. Thus, Claims 2 to 5 could have been easily conceived by PHOSITA from Prior Arts 1 and 2.

d) Therefore, since inventive step of Claims 1 to 5 is denied and registration thereof should be cancelled, the IPT decision is reasonable.

B. Main issue of the Subject Case

The main issue of the Subject Case summarized by the parties' arguments resides in whether inventive step of Claims 1 to 5 is denied by Prior Arts 1 and 2.

3. Whether inventive step of Claims 1 to 5 is denied

A. Comparison in technical field (common comparison)

1) The present invention relates to the automatic open-close device, and more specifically, the automatic open-close device using wind force and gravity (see Paragraph No [1] at Page 3 of Exhibit No. K-2). Meanwhile, Prior Art 1 relates to a ventilation device for

discharging air inside the pig farm, comprising a discharge induction pipe for inducing air discharged from the pig farm to an upstream portion and coupled to a ventilator, and the device is to prevent contaminations such as dusts or ammonia gas (see lines 1 and 2 of "Techniques to which the device belongs and prior arts" and lines 3 and 4 Technical objective to be achieved by the device at Page 2 of Exhibit No. K-4), and Prior Art 2 relates to an apparatus for capturing insects, and more specifically, an apparatus for capturing the insects by using a drive unit such as a motor and a light source (see lines 1 and 2 of "Techniques to which the device belongs and prior arts" at Page 2 of Exhibit No. E-1).

Upon reviewing the above, Prior Art 1 shares substantially the same technical field as the Subject Patent in view of the automatic open-close device for opening and closing a passage by using the wind force (the ventilator) and Prior Art 2 shares substantially the same technical field as the Subject Patent in view of the apparatus for capturing the insects in the field where the automatic open-close device of the Subject Patent is used.

2) In this respect, Plaintiff argued that the technical fields are different since the uses are different in that the Subject Patent relates to an automatic open-close device for opening and closing an insect capturing apparatus, whereas Prior Art 1 relates to an open-close device for opening and closing a stench discharge pipe of a pig farm. However, the specification of the Subject Patent merely describes "an automatic open-close device using wind force and gravity" but does not define a use thereof. Thus, the Plaintiff's argument above is groundless.

B. Comparison in objective (common comparison)

1) The Subject Patent provides a non-powered non-disposable automatic open-close device using wind force and gravity, wherein an automatic switch for inflow of air is opened by using wind force of a

propeller or wind and automatically closed by using gravity (a center of gravity) when the wind force or wind is blocked (*see* Paragraph No. [6] at Page 5 of Exhibit No. K-2).

Meanwhile, Prior Art 1 prevents environmental pollution by allowing air discharged from the pig farm to be discharged toward the upstream portion (*see* lines 1 and 2 "Technical objective to be achieved by the device" at Page 2 of Exhibit No. K-4), and Prior Art 2 provides an apparatus for capturing insects with minimal noise and simplifying a structure thereof while capturing the insects by means of a drive unit such as a motor and a light source that are harmless to the human body and animals and do not cause smell (*see* lines 1 and 2 "Technical objective to be achieved by the device" at Page 2 of Exhibit No. E-1).

2) Upon reviewing the above, the Subject Patent and Prior Art 2 share a common objective in providing an apparatus for capturing insects. Further, the Subject Patent prevents the escape of insects by blocking the passage using an automatic switch provided in the cylindrical housing, and Prior Art 1 allows the air discharged from the pig farm to the upstream portion via the ventilator but blocks the air inside the pig farm so as not to escape to the outside when a shutter plate, which is provided in the cylindrical discharge pipe, is closed. Thus, both inventions have substantially the same technical objective in that the rotational plate (the shutter plate) provided in the cylindrical housing (the discharge pipe or discharge induction pipe) is opened by the wind and automatically closed by using gravity (the center of gravity) when there is no wind force from the propeller (the ventilator), thereby blocking the inside/outside passages.

3) In this regard, Plaintiff argued that the Subject Patent is for capturing the insects in a capturing net by opening and closing the rotational plate and to prevent escape of the insects, whereas Prior Art 1 is for discharging harmful gas and to block the inflow of outside air by opening and closing the shutter plate; thus, both inventions are

different in objective. However, the specification of the Subject Patent describes that the technical objective to be achieved by the Subject Patent is to provide a non-powered, non-disposable automatic open-close device using wind force and gravity, wherein the automatic switch for inflow of air is opened by using the wind force of the propeller or the wind and automatically closed using gravity (the center of gravity), when the wind force or wind is blocked (see Paragraph No. [6] at Page 5 of Exhibit No. K-2) and the Subject Patent is used not only in capturing the insects for pest control but also in a greenhouse installation and may be used as an industrial ventilation facilities (see Paragraph Nos. [15] and 16 at the same page). Thus, the use thereof is not deemed to be limited to the capturing of insects. Further, it is obvious to PHOSITA that the Subject Patent may be used for blocking the harmful gas in the greenhouse installation or ventilation facilities. Therefore, since it is difficult to view that the Subject Patent has uniqueness in objective compared to Prior Art 1, Plaintiff's argument is groundless.

C. Judgment on inventive step of Claim 1

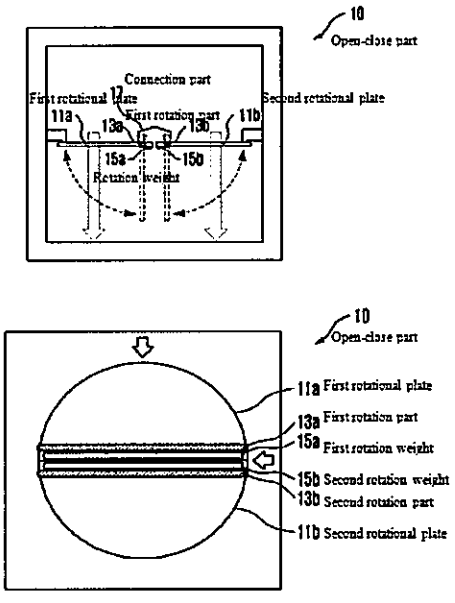
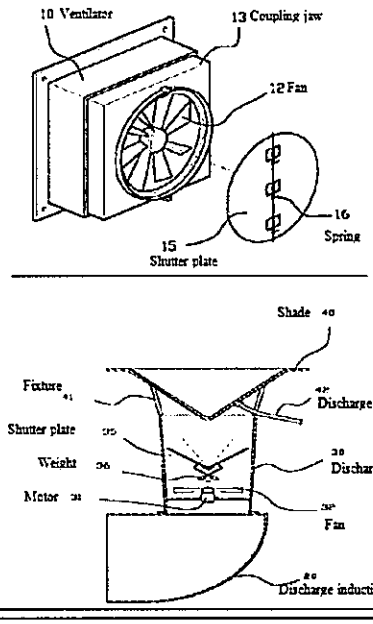
1) Analysis on constitutional elements

Claim 1 is directed to "an automatic open-close device using wind force and gravity, including an open-close part consisting of rotational plates, rotation parts, rotation weights, and a connection part (Feature 1), the automatic open-close device having: a pair of the rotational plates comprising a first rotational plate and a second rotational plate shaped as a semicircular plate formed symmetrically based on the connection part (Feature 2); a pair of the rotation parts comprising a first rotation part and a second rotation part connecting the rotational plate and the connection part and rotating the rotational plates based on the connection part to an orthogonal direction (Feature 3); a pair of the rotation weights comprising a first weight and a second rotation weight extended from the rotational plate towards the connection part

and formed such that gravity is exerted on an extended surface (Feature 4); and the connection part connecting the rotational plate and the rotation part and having a hollow part inside such that the rotation weight can come in and go out when the rotational plates rotate to the orthogonal direction (Feature 5)."

2) Comparison in Feature 1

Feature 1 is an automatic open-close device including the open-close part comprising the rotational plates, the rotation parts, the rotation weights, and the connection part. However, said feature corresponds to Prior Art 1 wherein the shutter plates (35) provided in a discharge pipe (30) are formed semi-circularly to have a V-shape and a weight (36) is provided in each shutter plate (35) so that the shutter plate (35) blocks a discharge pipe (30) by means of usual weight of the weight (36) (see Figs. 1 and 5 of Section 1 in [Annex 2]).

Claim 1 (Figs 1a and 1b)	Cited Reference 1 (Figs. 1 and 5)[1]
	

1) Fig. 1 of Prior Art 1 shows an embodiment where the shutter plate (15) is provided vertically, and Fig. 5 of Prior Art 1 shows an embodiment

Upon reviewing the above, Feature 1 and the corresponding feature of Prior Art 1 are identical in that the open-close device of blocking the passage by rotating the rotational plate (the shutter plate) based on the rotation part by the center of gravity and the gravity by using the rotation weight (the weight) if there is no external factor. However, Prior Art 1 does not disclose any feature corresponding to the connection part (17) in Feature 1, and Fig. 1 of Prior Art 1 merely shows three coupling parts 돌출부("hinges") for connecting two shutter plates, of which specific comparison will be reviewed in "6) Comparison in Feature 5" below.

3) Comparison in Feature 2

Feature 2 is a pair of rotational plates comprising a first rotational plate and a second rotational plate shaped as a semicircular plate formed symmetrically based on the connection part. However, said feature corresponds to the semicircular shutter plates (15, 35) provided to have the V-shape in Prior Art 1 (see Figs. 1 and 5 of Section 1 in [Annex 2]). According to the embodiment of Prior Art 1 where the shutter plate is provided vertically, the pair of shutter plates (15) are connected to each other by three hinges and a fixing hole is shown in the uppermost and lower most portions of an engagement jaw of a circular frame where the shutter plate (15) is provided, wherein the fixing hole projects such that the upper and lower hinge axes of the shutter plate can be fixed (see Fig. 1 above).

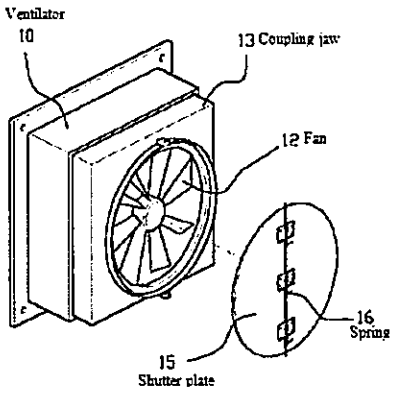


Fig. 1 of Cited Reference 1

where the shutter plate (35) is provided horizontally; thus, the drawings will be used separately.

Both features are substantially identical in paring two semicircular rotational plates (the shutter plates) to be positioned symmetrically and acting to open or close the circular passage while rotating based on the center portion of the circular passage.

4) Comparison in Feature 3

a) Feature 3 is the pair of rotation parts comprising the first rotation part and the second rotation part connecting the rotational plate and the connection part and rotating the rotational plates based on the connection part to the orthogonal direction. However, said feature corresponds to Prior Art 1 wherein the pair of semicircular shutter plates (15) are connected by three hinges and rotate based on the upper and lower hinge axes and the hinges (see Figs. 1 and 5 of Section 1 in [Annex 2]).

Upon comparing both features, Feature 3 is paired to rotate one rotational plate (the first and second rotational plates) respectively, whereas three hinges and the upper and lower hinge axes in Prior Art 1, which correspond to Feature 3, rotate the pair of shutter plates (15) simultaneously. However, in constituting the device of rotating two semicircular rotational plates (the shutter plates) that block the passage, whether to have one integrated rotation axis or two separated axes could have been appropriately selected by PHOSITA upon considering the radius of rotation of the rotational plate or target of which inflow and outflow is controlled, the material of the rotational plate, the structure of the discharge pipe, etc.

b) Thus, Feature 3 could have been easily derived by PHOSITA from the corresponding feature of Prior Art 1.

5) Comparison in Feature 4

a) Feature 4 is the pair of rotation weights comprising the first rotation weight and the second rotation weight extended from the rotational plate towards the connection part and formed such that gravity is exerted on the extended surface. However, said feature

corresponds to Prior Art 1 wherein the weight (36) is provided in each shutter plate (35) such that the shutter plate (35) blocks the discharge pipe (30) by means of the usual weight of the weight (36) (see Page 3, lines 4-7 of Exhibit No. K-4).

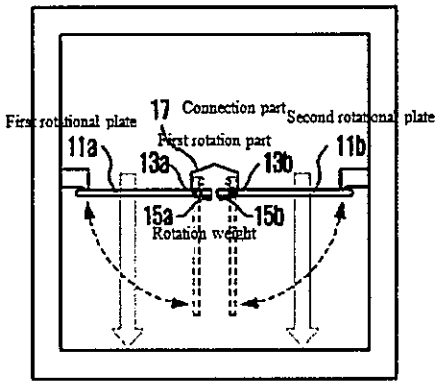
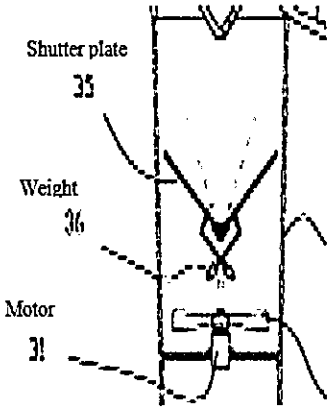


Fig. 3a of the Subject Patent



Expanded view of Fig. 5 of Cited Reference 1

b) Both features are identical in view of the pair of rotation weights (the weight) formed in the extended portion from the rotational plate (the shutter plate) to exert the load to the rotational plate (the shutter plate). However, the rotation weight in Feature 4 is formed on one surface of the rotation part extended beyond each rotation part and provided in a direction opposite to the direction in which the rotational plate moves, thereby moving the rotation part with the lever (that is, the force point and the point of application act in opposite directions), whereas the weight in Prior Art 1 is not extended from the rotation axis but extended to the shutter plate (35) through a rod so that the weight is provided in the same direction as the shutter plate moves (that is, acting in the same direction as the gravity acts). Thus, both features are different in the configuration and position of providing the weight and the operation theory thereof. Further, since the hinge of the shutter plate in Prior Art 1 includes one rotation axis, the position of the weight in Prior Art 1 should be changed when the configuration is

changed to provide the weight in the portion extended beyond the rotation axis or when the propeller is provided in the upper portion as the Subject Patent so that the direction of wind is opposite. However, due to the above difference in the configuration and operation theory, it is difficult to consider that changing how the weight is applied could have been easily or merely selected by PHOSITA. Further, the specification of Prior Art 1 neither discloses nor suggests this feature. Thus, Claim 4 could not have been easily derived by PHOSITA from the corresponding feature of Prior Art 1.

Moreover, Feature 4 provides the functional effects wherein the rotation weight is easily provided in the rotational plate without using the rod, the rotation weight can be provided in various locations since there is no influence on the wind force of the motor, and the cost can be reduced (*see* Paragraph No. [41] at Page 6 of Exhibit No. K-2). Thus, Feature 4 provides different effects compared to Prior Art 1.

6) Comparison in Feature 5

a) Feature 5 is the connection part (17) connecting the rotational plate and the rotation part and having the hollow part inside such that the rotation weight can come in and go out when the rotational plates rotate to the orthogonal direction. However, Prior Art 1 does not disclose this feature.

Upon reviewing the above, for the connection part, Claim 1 describes "the pair of rotational plates is shaped as the semicircular plate formed symmetrically based on the connection part," "the pair of rotation parts connects between the rotational plate and the connection part," and "the pair of rotation weights is extended from the rotational plate towards the connection part." Thus, according to said descriptions and Figs. 1a, 2a, 2b, 3a, and 3b in [Annex 1] of the Subject Patent, it could be understood that the connection part is formed at a portion where the rotation parts of two semicircular plates, which form one circle, meet and is connected to the rotation part by the rotational plate, the surfaces extended from two rotational plates are formed on

an upper surface of the connection part, and the rotation weight is provided in the extended surface. Further, the connection part has the hollow part inside such that the rotation weight can come in and go out when the rotational plates rotate to the orthogonal direction. Thus, it could be understood that the inside thereof includes a body part corresponding to a body which defines a certain space where two extended surfaces of the rotational plates, to which the rotation weights are attached, can rotate. Moreover, it could be understood that since the rotation weight is formed such that the gravity is exerted on the extended surface (Feature 4), the rotation direction of the extended surface moves from the approximately vertical state of the rotational plate to the horizontal state. Upon synthesizing the foregoing, the connection part in Feature 5 is formed from the center of two rotational plates towards the upper direction based on the horizontal state of the rotational plate and has the predetermined body with the hollow part inside wherein both ends of the rotation part are connected to the connection part and the connection part contacts with other portions of the rotation part but is substantially separated therefrom such that the rotational plate and the extended surface are not hindered from rotating based on the rotation part. The corresponding feature of Prior Art 1 does not disclose any feature corresponding to the connection

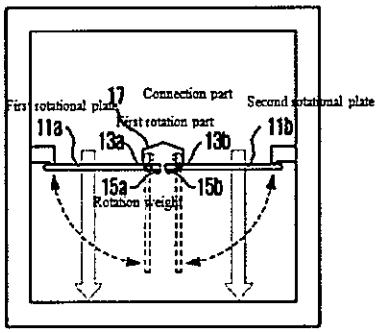


Fig. 1a of the Subject Patent

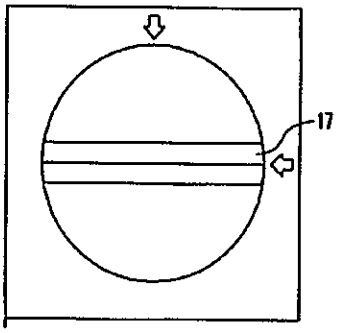


Fig. 2b of the Subject Patent

part in Feature 5, and the specification of Prior Art 1 neither discloses nor suggests the connection part. Thus, Feature 5 could not have been easily derived by PHOSITA from Prior Art 1.

b) Meanwhile, the specification of the Subject Patent describes "since the structure of the conventional automatic switch, which can block the automatic open-close part, includes a distance spaced from the circular body and a gap formed in the propeller (the induction fan) by impurities, escape of small insects cannot be prevented (*see* Paragraph No. [2] at Page 3 of Exhibit No. K-2)," "in the case of the greenhouse installation, the semi-automatic open-close device is provided utilizing the method of discharging to the outside by the operation of the ventilator; however, when the operation of the ventilator stops, inflow of contaminants or insects through the gap cannot be prevented and there is a problem in maintaining the temperature (*see* Paragraph No. [3] at the same page)," and "in the case of the switch using the motor, there is a problem of the increase of cost for having facilities for the malfunction of the motor or impurities (*see* Paragraph No. [4] at the same page)." As such, the Subject Patent acknowledged the problems that the conventional automatic switch cannot prevent the escape of small insects due to the gap in the propeller (the induction fan) caused by the impurities and cannot prevent the inflow of the impurities or contaminant or insects through the gap of the open-close device. Further, the specification of the Subject Patent describes "the effect is provided that the present invention is used in the greenhouse installation so that the inflow of contaminant or insects that may flow in when the ventilation is not operated is automatically prevented without any power connection, thereby preventing secondary infection of crops and damage caused by the insects and preventing the temperature change (*see* Paragraph No. [15] at Page 4 of Exhibit No. K-2)" and "in the case of industrial ventilation facilities, since the inflow of impurities can be prevented, the infrastructure can be protected (see Paragraph No. [16] at the same page)." As such, it is obvious to PHOSITA that since two semicircular

rotational plates rotate by each rotation part in the Subject Patent, even though two rotational plates contact each other closely, the gap through which small insects or impurities can flow in may be formed. Thus, the Subject Patent solves the above acknowledged problems by closing the gap between the circular passage, which is the discharge passage, and the rotational plate, which is the open-close device, by means of a first and second rotational plate stop parts (31a, 31b) in order to prevent the inflow of the small insects or impurities when blocking the open-close device (*see* Fig. 3a in [Annex 1]), and by closing the gap in the center portion where two semicircular rotational plates meet by means of the connection part formed in the upper portion. Therefore, the connection part in Feature 5 provides the effects of preventing the inflow of the small insects or impurities by closing the gap between the rotational plates, and preventing the escape of insects by not allowing the light of an attraction lamp to escape through the gap between two rotational plates when being used as an insect capturing device. Further, the connection part provides the effects of covering the gap between the rotational plates so as to prevent the improper open-close operation of the open-close part since the insects or impurities are caught between the gap when there is no connection part, and inducing the wind towards the rotational plate by blocking the extended surface of the rotational plate so as not to hinder the opening of the rotational plate since a part of the wind force directly hits the extended surface of the rotation weight when the wind force acts. Thus, these effects are different and remarkable compared to Prior Art 1 and could not be easily expected by PHOSITA.

c) Therefore, Feature 5 could not have been easily derived by PHOSITA from Prior Art 1.

7) Summary of Comparison Results

Thus, Claim 1 shares substantially the same technical field as Prior Art 1 and lacks uniqueness in objective compared to Prior Art 1, and

Features 2 and 3 of Claim 1 are substantially identical to or could have been easily derived from the corresponding features of Prior Art 1. However, Features 1 and 4 of Claim 1 are different from the corresponding features of Prior Art 1; Prior Art 1 does not disclose any feature corresponding to Feature 5 of Claim 1, and it is difficult to consider that Feature 1, 4, and 5 could have been easily derived by PHOSITA from Prior Art 1 and functional effects therefrom are different or remarkable compared to Prior Art 1. Therefore, inventive step of Claim 1 is not denied by Prior Art 1.

D. Judgment on inventive step of Claims 2 to 5

Claims 2 to 5 directly or indirectly depend from Claim 1. Thus, as far as inventive step of Claim 1 is not denied as above, inventive step of Claims 2 to 5, which limitedly or additionally specify Claim 1, is not denied either.

E. Sub-conclusion

Consequently, inventive step of Claims 1 to 5 is not denied.

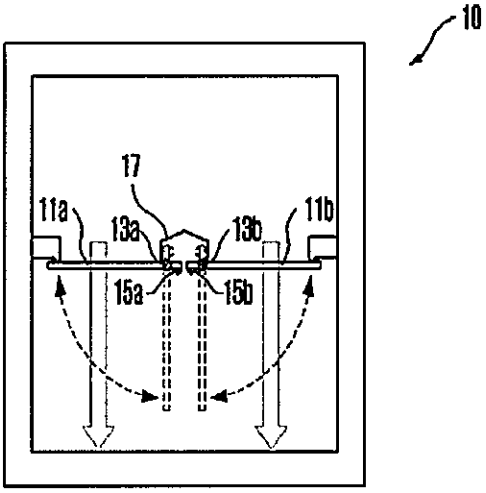
4. Conclusion

Therefore, since the registration of Claims 1 to 5 shall not be invalidated, the portion in the IPT decision contrary thereto is unlawful and Plaintiff's claim seeking a cancellation thereof is reasonable. Thus, upon referring to the above, the Court issues the decision stated in the Order.

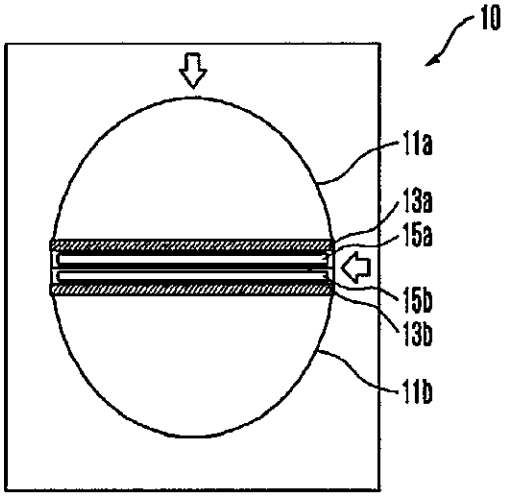
Presiding Judge Juneyoung JEONG
Judge Shin KIM
Judge Cheonwoo SON

[Annex 1]

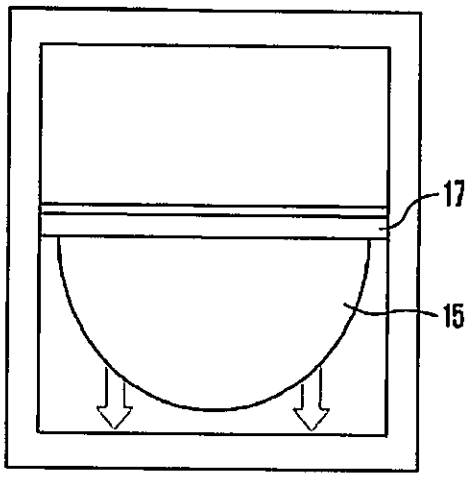
Plaintiff's Patented Invention

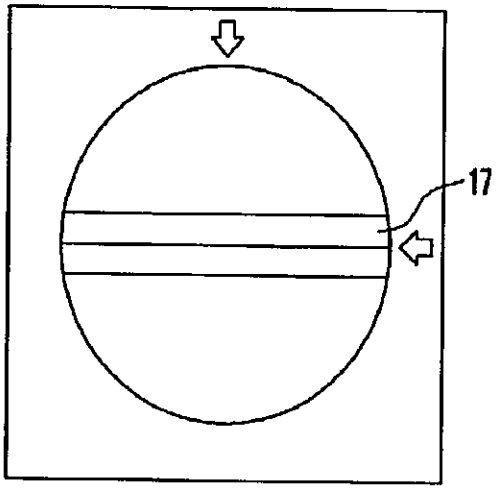


[Fig. 1a] shows a state where the open-close part is closed in the automatic open-close device using the wind force and gravity according to an embodiment of the invention.

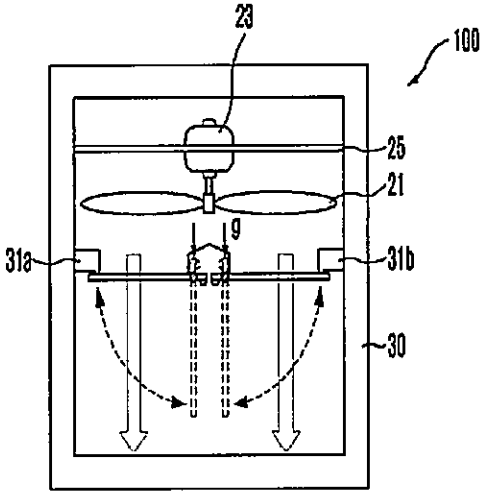


[Fig. 1b] shows a state where the open-close part is closed in the automatic open-close device using the wind force and gravity according to an embodiment of the invention.

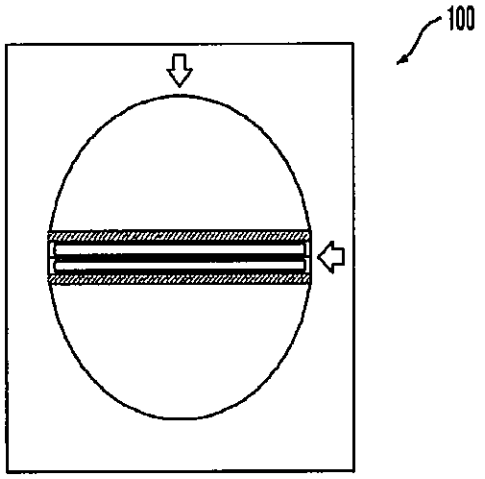




[Fig. 2a] shows a state where the open-close part is opened in the automatic open-close device using the wind force and gravity according to an embodiment of the invention.



[Fig. 3a] shows the automatic open-close device (100) comprising the open-close part according to an embodiment of the invention.



[Fig. 3b] shows the automatic open-close device (100) comprising the open-close part according to an embodiment of the invention.

[Explanations of reference numerals for main parts of the drawings]

10: Open-close part	11a, 11b, 15: Rotational plate
13a, 13b: Rotation part	15a, 15b: Rotation weight
17: Connection part	21: Propeller
23: Motor	25: Motor attachment plate
30: Housing	31a, 31b: Rotational plate stop part

100: Automatic open-close device

[Annex 2]

Prior Arts

1. Prior Art 1 (Exhibit No. K-4)

A. Main contents

The present device relates to a ventilation device of a pig farm for discharging air inside the pig farm, comprising a discharge induction pipe inducing air discharged from the pig farm to an upstream portion and coupled to a ventilator, and a discharge pipe vertically provided in an upper portion of the discharge induction pipe and discharging discharge air to an upper portion, and covering a V-shaped share in a leading end of the discharge pipe, wherein the air discharged from the ventilator horizontal to a ground is discharged to the upstream portion (*see* Page 2, lines 23-26 of Exhibit No. K-4).

The ventilator (10) to which the discharge pipe (20) is coupled is configured to discharge the inside air by rotating a fan (12) by a motor (12), a coupling jaw (13) is formed in one side of the ventilator (10) so that the discharge induction pipe (20) is inserted into the coupling jaw (13) and then fixed by means of a fixing screw, and the ventilator (10) is provided with a semicircular shutter plate (15) that is opened or closed by wind pressure. The shutter plate (15) has a semicircular shape and is elastic-supportedly provided in a spring (16), and when the fan (12) rotates, the shutter plate (15) is opened so that the discharge air can be discharged, and when the fan (12) stops, the shutter plate (15) blocks a discharge port so that inside/outside air does not flow. By doing so, the present device eliminates, without ventilation, a case where outside air flows inside through the ventilator (10). A shutter plate (35) provided in a discharge pipe (30) is formed semi-circularly to have the V-shape and a weight (36) is provided in

each shutter plate (35) so that the shutter plate (35) blocks the discharge pipe (30) by means of the usual weight of the weight (36), and when a fan (32) rotates, the shutter plate (35) is lifted by the wind pressure such that the discharge air can be discharged to outside through the discharge pipe (30) (*see* Page 2, sixth line from the bottom to Page 3, line 7 in Exhibit No. K-4).

B. Main drawings

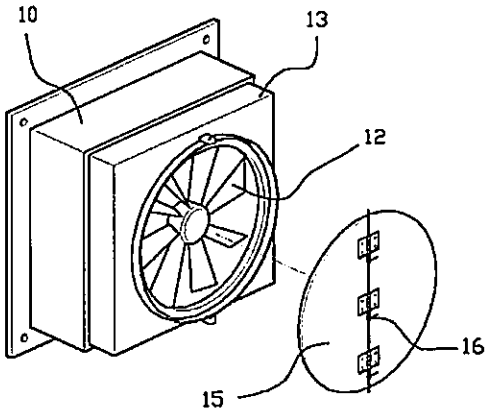


Fig. 1 shows an exploded perspective view of a ventilator according to the present device.

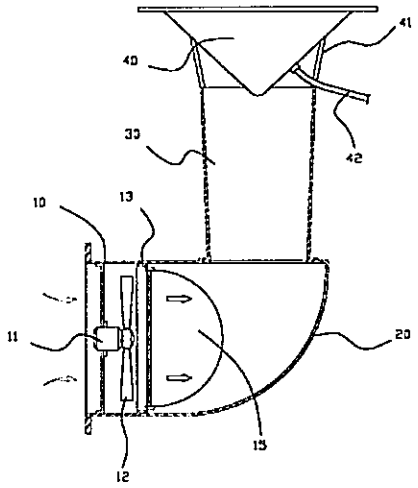


Fig. 3 shows a cross-sectional view of a coupling state of the present device

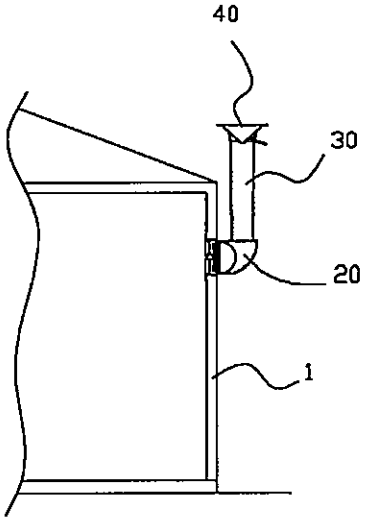


Fig. 4 shows an explanatory view of an installation state of the present device

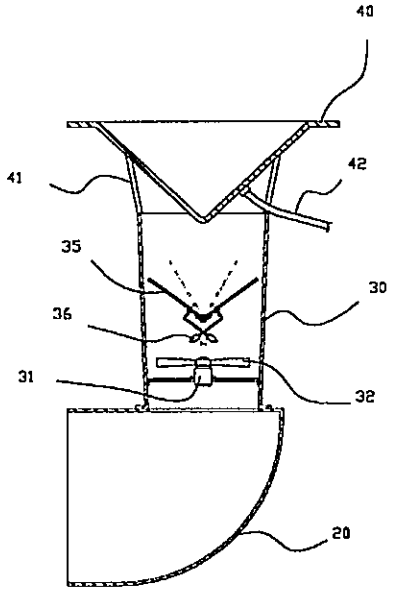


Fig. 5 shows a cross-sectional view according to another embodiment of the present device.

[Explanations of reference numerals for main parts of the drawings]

1: Pig farm	10: Ventilator
11, 31: Motor	12, 32: Fan
13: Coupling jaw	15, 35: Shutter plate
16: Spring	20: Discharge induction pipe
30: Discharge pipe	40: Shade

2. Prior Arts 2 (Exhibit No. E-1)

A. Prior Art

The present device relates to an apparatus for capturing insects with minimizing noise and simplifying a structure thereof while capturing the insects by means of a drive unit such as a motor and light source that are harmless to the human body and animals and do not cause smell (see Page 2, seventh and eighth lines from the bottom in Exhibit No. E-1).

The present device provides an apparatus for capturing insects, having a capturing net in which the insects are captured, a light source for inducing the insects, and a drive unit for driving an induction gas such that the insects induced by the light source are captured in the capturing net, the apparatus comprising: a first frame having a shade shape; a second frame having a tubular shape of which both sides are penetrated and one side is coupled with the capturing net; a plurality of first support bars coupling the first frame and the second frame such that the first frame and the second frame are spaced apart from each other by a predetermined distance; a plurality of second support bars extending from an inner wall surface of the second frame to support the drive unit such that the drive unit is spaced apart by a predetermined distance from the inner wall surface of the second frame between the light source in the second frame and the capturing net; and a plurality of third support bars coupling the drive unit and the light source such that the light source is positioned in a spaced spacing between the first frame and the second frame (see Page 2, the fifth line from the bottom to Page 3, line 3 in Exhibit No. E-1).

B. Main drawings

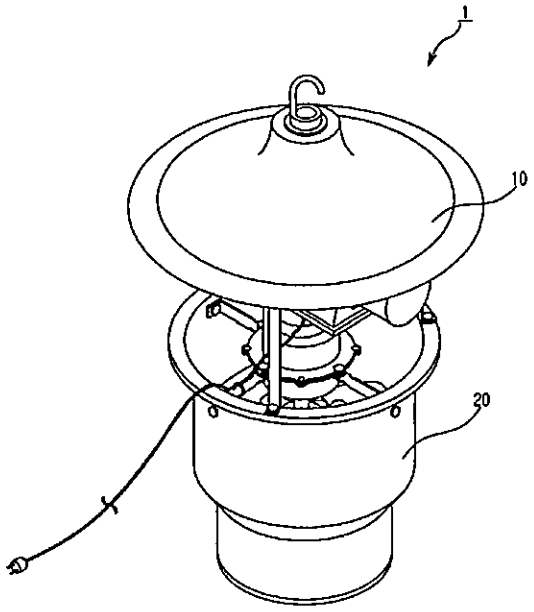


Fig. 1 shows a perspective view of an apparatus for capturing insects.

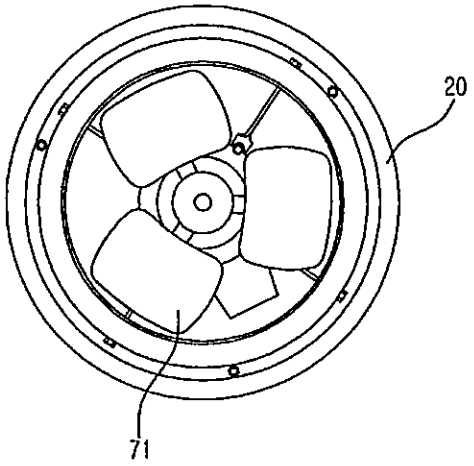


Fig. 3 shows a lower cross-section of Fig. 2.

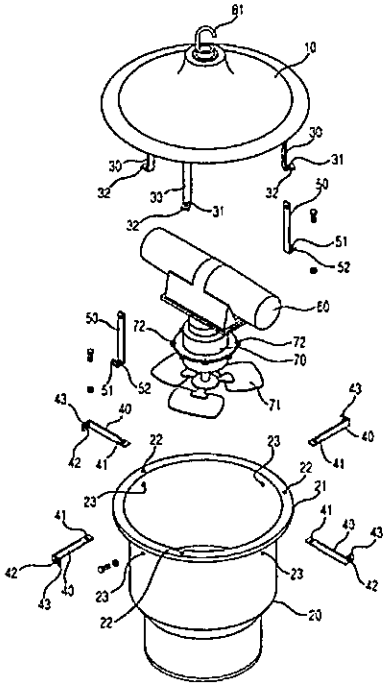


Fig. 2 shows an exploded perspective view of the apparatus for capturing the insects in Fig. 1.

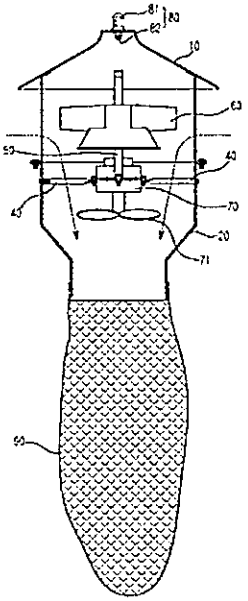


Fig. 4 is to explain a theory on how the insects are captured in the capturing net by the apparatus for capturing the insects according to the present device.

[Explanations of reference numerals for main parts of the drawings]

1: Apparatus for capturing insects 10: First frame

20: Second frame 30: First support bar

40: Second support bar 50: Third support bar

60: Light source 70: Drive unit