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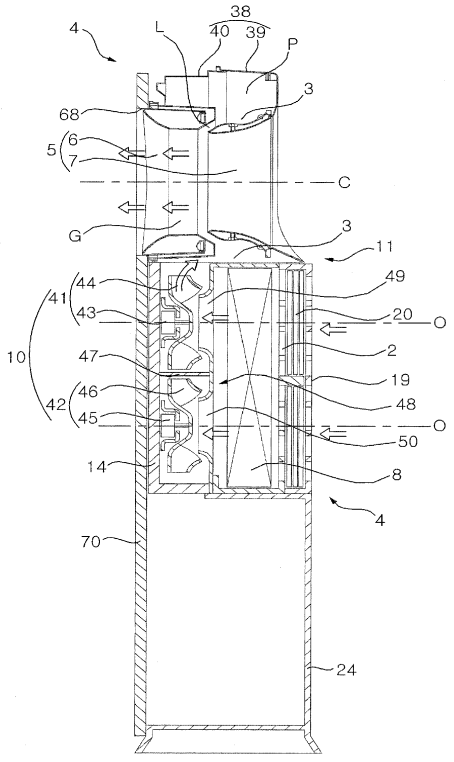
(54) Air conditioner

(57) The present invention provides an air conditioner including: a main body (4) having intake ports (2) and a space (3); and a discharge body (5) disposed in the space (3), in which the discharge body (5) includes an opening (G) having a discharge space, and an air discharge port (L) disposed around the opening (G) and guiding the air to the discharge space, such that the discharge body can be simple seen and the discharge space can keep clean.

Fig. 1



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Description

[0001] The present invention relates to an air conditioner, and more particularly, to an air conditioner with an air discharge port.

[0002] In general, air conditioners can change a room into a pleasant condition by sucking air through an air intake port, changing the temperature, humidity, cleanliness or the like, and then discharging the air into the room through an air discharge port.

[0003] A heat exchanger where a refrigerant and air exchange heat, and a blower that sucks air and blows the air to be discharged outside through the heat exchanger may be installed in air conditioners.

[0004] Air conditioners can form various air flows in a room, depending on the shapes of the air intake port and the air discharge port or the direction of the number of the openings.

[0005] Recently, it is the tendency to discharge air through as large area as possible while exposing the air intake port and the air discharge port to the outside as less as possible for safety and quality enhancement.

[0006] It is an object of the present invention to provide an air conditioner that can widely disperse and discharge air and keep a discharge body clean.

[0007] The above objects of the present invention are achieved by the inventions defined in the claims.

[0008] The present invention provides an air conditioner comprising: a main body having a space for accommodating a discharge body; a discharge body rotatably disposed in the space, wherein the discharge body includes an opening formed therein as an air discharge space, and an air discharge port disposed around the opening to guide air to the discharge space.

[0009] Preferably, an air discharge port is arranged along the periphery of the opening to allow air to be discharged to the opening.

[0010] Further, the opening may be open at both front and rear of the air conditioner.

[0011] Furthermore, the discharge body may comprise a plurality of air intake ports which introduce heat exchanged air from the main body to the discharge body.

[0012] Moreover, the plurality of air intake ports may be an upper air intake port and a lower air intake port which are respectively formed at the upper and lower portions and of the discharge body.

[0013] An air guide flow path for supplying heat exchanged air to the plurality of air intake ports may be provided between the main body and the discharge body.

[0014] Preferably, the discharge body includes air guides formed at the plurality of intake ports, for guiding air to an air dispersion flow path inside the discharge body. Further, the air dispersion flow path may deliver air to the air discharge port. Furthermore, the air guides may have dispersion ribs for dispersing air.

[0015] Moreover, a line connecting the plurality of intake ports may form a rotational axis of the discharge body.

[0016] In addition, the air conditioner may further comprise a rotating mechanism that rotates the discharge body about its rotational axis.

[0017] Preferably, the rotating mechanism includes a motor for generating driving force, a pinion installed at the motor to deliver the driving force, and a rack formed at the discharge body to engage with the pinion.

[0018] Further, the main body may further include a heat exchanger for exchanging heat with air introduced from outside, and a blowing unit for transmitting air toward the discharge body via the heat exchanger.

[0019] Furthermore, the discharge body may be disposed above the heat exchanger and the blowing unit.

[0020] Moreover, the air conditioner may further comprise an air discharge port at the same vertical level with the blowing unit for discharging the heat exchanged air.

[0021] In addition, the blowing unit may include at least two units disposed at different vertical levels, the upper blowing unit transmitting the heat exchanged air mainly toward the discharge body and the lower blowing unit transmitting the heat exchanged air mainly toward the air discharge port.

[0022] Preferably, a central axis of the opening along which the air is discharged and a rotational axis of the blowing unit are both arranged in a horizontal direction.

[0023] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:

FIG. 1 is a longitudinal cross-sectional view of an air conditioner according to a first exemplary embodiment of the present invention;

FIG. 2 is a perspective view showing when a discharge body is separated from a main body of the air conditioner according to the first exemplary embodiment of the present invention;

FIG. 3 is a front view of the air conditioner according to the first exemplary embodiment of the present invention;

FIG. 4 is an exploded perspective view of the air conditioner according to the first exemplary embodiment of the present invention;

FIG. 5 is a transverse cross-sectional view of the air conditioner according to the first exemplary embodiment of the present invention;

FIG. 6 is a perspective view showing an air discharge unit of the air conditioner according to the first exemplary embodiment of the present invention;

FIG. 7 is an exploded perspective view of the air discharge unit shown in FIG. 6;

FIG. 8 is a longitudinal cross-sectional view of the air discharge unit shown in FIG. 6;

FIG. 9 is a partial-cut perspective view of the air discharge unit shown in FIG. 6;

FIG. 10 is an exploded longitudinal cross-sectional

view of a light emitting mechanism of the air conditioner according to the first exemplary embodiment of the present invention;

FIG. 11 is a front view of the light emitting mechanism of the air conditioner according to the first exemplary embodiment of the present invention;

FIG. 12 is a perspective view showing when a discharge body of an air conditioner according to a second exemplary embodiment of the present invention discharges air forward;

FIG. 13 is a perspective view showing when the discharge body of the air conditioner according to the second exemplary embodiment of the present invention discharges air forward to the right;

FIG. 14 is a perspective view showing when the discharge body of the air conditioner according to the second exemplary embodiment of the present invention discharges air forward to the left;

FIG. 15 is an exploded perspective view of the air discharge unit shown in FIG. 12;

FIG. 16 is a longitudinal cross-sectional view of the air discharge unit shown in FIG. 12;

FIG. 17 is a partial-cut perspective view of the air discharge unit shown in FIG. 12;

FIG. 18 is a front cross-sectional view of the air discharge unit shown in FIG. 12;

FIG. 19 is a bottom view of the air discharge unit shown in FIG. 12; and

FIG. 20 is a plan view showing when the discharge body shown in FIGS. 12 to 14 is rotated.

[0024] Exemplary embodiments of the present invention will be described hereafter in detail with reference to the accompanying drawings.

[0025] FIG. 1 is a longitudinal cross-sectional view of an air conditioner according to a first exemplary embodiment of the present invention, FIG. 2 is a perspective view showing when a discharge body is separated from a main body of the air conditioner according to the first exemplary embodiment of the present invention, FIG. 3 is a front view of the air conditioner according to the first exemplary embodiment of the present invention, FIG. 4 is an exploded perspective view of the air conditioner according to the first exemplary embodiment of the present invention, and FIG. 5 is a transverse cross-sectional view of the air conditioner according to the first exemplary embodiment of the present invention.

[0026] An air conditioner of the present invention includes a main body 4 having air intake ports 2 and a space 3, and a discharge body 5 disposed in the space 3. Air may be sucked into the air intake ports 2 and may pass through the main body 4, and then may be discharge outside through the discharge body 5.

[0027] The space 3 may be formed through the main body 4. The space 3 may be formed in the front-rear direction through the main body 4. At least one of the front and the rear of the space 3 may be closed. The space 3 may be open at the front and closed at the rear. The space 3 may be closed at the front and open at the rear. The space 3 may be open at the front and the rear. The space 3 may receive a discharge body receiving space where the discharge body 5 is received, and may function as an air guide flow path that guides air to the discharge body 5.

[0028] The main body 4 may form the external appearance of the air conditioner and may protect the discharge body 5. The main body 4 may guide air to the discharge body 5. The main body 4 may be formed in a rectangular parallelepiped shape that is long in the up-down direction.

[0029] The discharge body 5 has an opening G where a discharge space is formed, and an air discharge port L that guides and discharge air into the discharge space. The air discharge port L may discharge air into between the front end and the rear end of the opening G and may be formed substantially at the center position of the opening G. The air discharge port L may be formed such that the front end can be seen through the opening G. The discharge body 5 may be installed at the main body 4 such that the position is fixed, or may be rotatably or movably installed at the main body 4. The opening G may be a passage through which the air discharged from the air discharge port L passes, and may be formed through the discharge body 5. The opening G may be open in the front-rear direction through the air discharge body 5. At least one of the front and the rear of the opening G may be open. When the front and the rear of the opening G are open, the air discharged into the opening G through the air discharge port L may be discharged at least in one direction, forward or rearward, from the opening G. When the opening G is open at the front and closed at the rear, the air discharged into the opening G through the air discharge port L may be discharged forward from the opening G. When the opening G is open at the rear and closed at the front, the air discharged into the opening G through the air discharge port L may be discharged rearward from the opening G. The opening G may be formed in a hollow cylindrical shape. The opening G may be formed in a hollow cylindrical shape that is open in the front-rear direction. The central axis C of the opening G may be horizontally arranged. The air discharge port L, which is an air discharge flow path that guides air discharged into the opening G, may be formed at a predetermined angle with respect to the opening G. The air discharge port L may have a straight section in the flow direction of the air. The air discharge port L may be open in a direction that makes an acute inclination angle with the open direction of the opening G. The air discharge port L may be formed generally in a conical shape. The air discharge port L may be formed such that the cross-section has a closed-loop shape. The air discharge port L may be formed such that the cross-section has a circular closed-loop shape, a rectangular closed-loop shape, or an elliptical closed-loop shape, and a portion of the closed-loop shape may have a rounded section and a straight section. The discharge body 5 may determine forward-discharging and rearward-discharge in ac-

cordance with the open direction of the air discharge port L. When the air discharge port L gradually decreases in size forward, the air discharged into the opening G through the air discharge port L may be discharged forward from the opening G. When the air discharge port L gradually decreases in size rearward, the air discharged into the opening G through the air discharge port L may be discharged rearward from the opening G. The air in the space 3 may flow into the opening G by being guided along the air discharge port L and then may be discharged outside the opening G through the opening G. The air discharge port L may be formed such that the front end can be seen through the opening G.

[0030] The discharge body 5 may include a first body 6 where a discharge space is formed and a second body 7 that forms the air discharge port L. The first body 6 and the second body 7 may form together the opening G and the air discharge port L may be formed between the first body 6 and the second body 7.

[0031] The first body 6 may be exposed to the outside of the air conditioner. The second body 7 may guide the air blown from the main body 4 to be dispersed to the air discharge port L. In the discharge body 5, the first body 6 may be positioned ahead of the second body 7. The second body 7 may guide the air discharged into the discharge space, behind the first body 6. The discharge space of the first body 6 may be open at the front and the rear. The first body 6 may be open in the front-rear direction at between the front end and the rear end. The front end of the second body 7 may be inserted in the discharge space. Hereinafter, the fist body 6 is referred to as a front body 6 and the second body 7 is referred to as a rear body 7.

[0032] The main body 4 may include a heat exchanger 8 that heats or cools the air sucked through the air intake ports 2 and a blower 10 that sucks and blows air to the space 3. The blower 10 may sucks air through the air intake ports 2 and blow the air to the space 3 through the heat exchanger 8. The main body 4 may include a casing 11 that forms the external appearance. The air intake ports 2 may be formed at the casing 11. The heat exchanger 8 and the blower 10 may be installed in the casing 11. The casing 11 may protect the discharge body 5.

[0033] Air outside the main body 4 may be sucked into the main body 4 through the air intake ports 2. The air intake ports 2 may be formed at the rear portion of the casing 11. The air outside the main body 4 may be sucked into the casing 11 through the air intake ports 2 from the area behind the casing 11. The main body 4 may have main body discharge ports 12 through which the air in the casing 11 can be discharged separately from the air discharge port L. The main body discharge ports 12 may be formed at the casing 11. Some of the air sucked through the air intake ports 2 may be discharged outside the discharge body 5 after flowing into the air discharge port 5 from the inside of the main body 4. The other of the air sucked through the air intake ports 2 may be discharged outside the main body 4 through the main body discharge ports 12 from the inside of the main body 4.

[0034] The main body 4 may include a rear panel 13 and a front panel 14 installed ahead of the rear panel 13. The heat exchanger 8 may be installed between the rear panel 13 and the front panel 14 and the blower 10 may be installed between the heat exchanger 8 and the front panel 14. The blower 10 may blow the air passing through the heat exchanger 8, into the space 3.

[0035] The rear panel 13 may be an intake panel with the air intake ports 2. The rear hole 13 may be open at the top. The rear panel 13 may have a rear plate 15, a left plate 16 formed at the left of the rear plate 15, and a right plate 17 formed at the right of the rear plate 15. Air intake ports 2 may be formed to be open in the front-rear direction through the rear plate 15 of the rear panel 13. The rear panel 13 may have a heat exchanger-receiving space where the heat exchanger 8 is received, between the left plate 16 and the right plate 17. The rear panel 13 may further have a bottom plate 18 where the heat exchanger 8 is placed. A refining unit that refines the air sucked through the air intake ports 2 may be installed at the rear panel 13. The refining unit may include an intake grill 19 disposed on the rear side of the rear panel 13 and at least one filter 20 disposed in the intake grill 19.

[0036] The front panel 14 may be a discharge panel with the main body discharge ports 12. The front panel 14 may be open at the top. The front panel 14 may have a front plate 21, a left plate 22 formed at the left of the front plate 21, and a right plate 23 formed at the right of the front plate 21. The bottom of the front plate 14 may be closed. Air discharge ports 12 may be formed through at least one of the left plate 22 and the right plate 23 of the front panel 14. It is preferable that the main body discharge ports 12 are formed at both of the left plate 22 and the right plate 23 of the front panel 14. The main body discharge ports 12 may be formed to be long in the up-down direction at the front panel 14.

[0037] The air conditioner may be a stand type air conditioner. The main body 4 may further include a base 24 where the rear panel 13 and the front panel 14 are placed. The rear panel 13 may be installed above the rear portion of the base 24. The front panel 14 may be installed above the front portion of the base 24. The front of the base 24 may be open.

[0038] The heat exchanger 8 may be installed ahead of the air intake ports 2. The heat exchanger 8 may be placed on the bottom plate 18 of the rear panel 13 and may be vertically positioned between the left plate 16 and the right plate 17 of the rear panel 13.

[0039] The main body 4 may include a discharge body housing 38 that protects the discharge body 5. The discharge body housing 38 may constitute an air discharge unit together with the discharge body 5. The discharge body housing 38 may have the space 3 therein and the discharge body 5 may be positioned in the space 3 of the discharge body housing 38. The discharge body housing 38 may be disposed to surround the discharge body 5. The discharge body housing 38 may be disposed

to surround a portion of the discharge body 5. The discharge body housing 38 may be disposed to surround the left, right, and to of the discharge body 5. The discharge body housing 38 may form an air guide flow path P together with the discharge body 5, when the discharge body 5 is disposed in the space 3. The discharge body housing 38 may be installed above the rear panel 13 and the front panel 14. The discharge body housing 38 may have an intake port 30 at the bottom. The air blown upward from the blower 10 may flow into the space 3 of the discharge body housing through the intake port 30. The discharge body 5 may be fixed to the discharge body housing 38. The front body 6 may be fixed to the front portion of the discharge body housing 38 and the rear body 7 may be fixed to the rear portion of the discharge body housing 38. The discharge body housing 38 may be formed in a hexahedral shape with the intake port 30 at the bottom. The discharge body housing 38 may include a rear housing 39 and a front housing 40 disposed ahead of the rear housing 39. The rear housing 39 may be installed to be positioned above the rear panel 13. The front housing 40 may be installed to be positioned above the front panel 14.

[0040] The blower 10 may be installed ahead of the heat exchanger 8. The blower 10 may have the rotational center O that is parallel with the central axis C of the opening G. The rotational center O of the blower 10 may be horizontally arranged and the central axis C of the opening may be horizontally arranged. The blower 10 may include a motor and a flowing fan and the flowing may include a centrifugal blowing fan that sucks air in the front-rear direction and circumferentially blows the air. The blower 10 is installed at the front panel 14 and may blow air to the main body discharge ports 12 and the space 3. A plurality of blowers 10 may be installed to be spaced from each other.

[0041] Any one of the blowers may be installed closer to the discharge body 5 and the other may be installed further from the discharge body 5. The blower close to the discharge body 5 may be installed to blow air to the main body discharge ports 12 and the space 3 and the blower far from the discharge body 5 may be installed to blow air to the main body discharge ports 12. The blower 10 may include an upper blower 41 close to the discharge body 5 and a lower blower 42 far from the discharge body 5. The upper blower 41 may be positioned under the space 3 and the lower blower 42 may be positioned under the upper blower 41. The upper blower 41 may include an upper motor 43 and an upper centrifugal blowing fan 44 having a rotary shaft connected to the motor 43, and sucking and circumferentially blowing the air at the rear area. The upper motor 43 may be installed at the front panel 14 to be positioned ahead of the upper portion of the heat exchanger 8. The lower blower 42 may include a lower motor 45 installed on the front panel 14 and a lower centrifugal blowing fan 46 having a rotary shaft connected to the lower motor 45 and sucking and circumferentially blowing air at the rear area. The lower motor 45 may be installed ahead of the lower portion of the heat exchanger 8. A separating guide 47 that separates a flow path of the upper blower 41 and a flow path of the lower blower 42 and guides air may be disposed in the main body 4. The separating guide 47 has the top that guides air allowed to flow by the upper blower 41 and the bottom that guides air allowed to flow by the lower blower 42. The separating guide 47 may be formed between the left plate 22 and the right plate 23 of the front panel 14. The blower 10 may include an orifice 48 that guides the air passing through the heat exchanger 8 to the upper centrifugal blowing fan 44 and the lower centrifugal blowing fan 46. The orifice 48 may have an upper guide hole 49 that guides the air passing through the upper portion of the heat exchanger 8 to the upper centrifugal blowing fan 44. The orifice 48 may have a lower guide hole 50 that guides the air passing through the lower portion of the heat exchanger 8 to the lower centrifugal blowing fan 46.

[0042] The air conditioner may include side covers 60 that cover both of the sides of the front panel 14 and the sides of the front portion of the housing 38. The side covers 60 may cover the interface between the sides of the front panel 14 and the sides of the front portion of the discharge body housing 38. The side cover 60 may have air discharge holes 58 at the positions corresponding to the main body discharge ports 12. The side cover 60 may be formed to be long in the up-down direction and may cover the front side of the base 24 in addition to the side of the front panel 14 and the sides of the front portion of the discharge body housing 38. The side cover 60 may include a vertical plate 62 formed to be long in the up-down direction and a horizontal portion 64 bending from the upper portion of the vertical plate 62. The vertical plate 62 may cover all the front side of the base 24, the side of the front panel 14, and the front side of the discharge body housing 38. The horizontal portion 64 may partially cover the top of the discharge body housing 38. The side cover 60 may have the air discharge holes 58 at the positions corresponding to the main body discharge ports 12. A wind direction control member 67 and a wind direction control motor (not shown) may be installed at one of the front panel 14 and the side cover 60. The wind direction control member 67 can control the direction of air discharged to the main body discharge ports 12. The wind direction control member 67 can open/close the main body discharge ports 12. The wind direction control motor can control the direction of air by rotating the wind direction control member 67 and can open/close the main body discharge ports 12.

[0043] The air conditioner may include a front cover 70 that has a hole 68 larger than the air discharge port L of the discharge body 5 and covers both of the front of the front panel 14 and the front of the discharge body housing 38. The front cover 70 may cover the interface between the front of the front panel 14 and the front of the discharge body housing 38. The front cover 70 may be formed to be long in the up-down direction and may cover

the front of the base 24 in addition to the front of the front panel 14 and the front of the discharge body housing 38. The front cover may be installed to cover the portions of the discharge body 5, except for the front end.

[0044] FIG. 6 is a perspective view showing an air discharge unit of the air conditioner according to the first exemplary embodiment of the present invention, FIG. 7 is an exploded perspective view of the air discharge unit shown in FIG. 6, FIG. 8 is a longitudinal cross-sectional view of the air discharge unit shown in FIG. 6, and FIG. 9 is a partial-cut perspective view of the air discharge unit shown in FIG. 6.

[0045] The air conditioner may have a discharge passage through which the air conditioned in the main body 4 is discharged forward from the opening G. The discharge passage may be formed by the air guide flow path P, the air discharge port L, and the space G. The air discharge port L may be formed such the air guide flow path P communicates with the opening G.

[0046] The front body 6 may be connected to the front housing 40 while being received in the front housing 40.

[0047] The rear body 7 may be connected to the rear housing 39 while being received in the rear housing 39. The rear body 7 may be spaced from the front body 6 in the front-rear direction, with the air discharge port L therebetween.

[0048] The discharge body housing 38 may form the air guide flow path P together with the front body 6 and the rear body 7. The air guide flow path P may function as a dispersion passage that disperses the air sucked into the discharge body housing 38 through the intake port 30, between the discharge body 5 and the discharge body housing 38. The discharge body housing 38 may have a receiving portion 80 where the front body 6 is partially inserted and received. The receiving portion 80 may extend rearward from the front plate of the discharge body housing 38. The receiving portion 80 may have cylindrical portion 82 extending rearward from the front plate of the discharge body housing 38 and a circular plate portion 84 formed at the rear end of the cylindrical portion 82. The circular plate portion 84 may be formed perpendicular to the rear end of the cylindrical portion 82. The receiving portion 80 may have a front hole 86 formed at the circular plate portion 84. The front hole 86 may be open in the front-rear direction. The front hole 86 may be formed larger than the front end 131 of the rear body 7.

[0049] The front body 6 is described hereafter.

[0050] The front body 6 may be inserted in the receiving portion 80 formed at the discharge body housing 38. The front body 6 may be connected to the receiving portion 80. The rear end of the front body 6 may be connected to the receiving portion 80. The front end of the front body 6 may protrude forward further than the front of the discharge body housing 38.

[0051] The front body 6 may include a front discharge body 103 forming the air discharge port L together with the rear body 7 and a front cover 104 connected to the front discharge body 103.

[0052] The front discharge body 103 may include a front cylindrical portion 105 and a front circular plate portion 106 formed at the rear end of the front cylindrical portion 105. The front cylindrical portion 105 may be formed smaller than the cylindrical portion 82 of the receiving portion 80. The front circular plate portion 106 may be formed smaller than the circular plate portion 84 of the receiving portion 80. The front circular plate portion 106 may be formed perpendicular to the rear end of the front cylindrical portion 105.

[0053] The front body 6 may have a rear expanding portion 107 that increases in open area toward the rear portion. The rear expanding portion 107 may be formed at the front discharge body 103. The rear expanding portion 107 may be a hollow cylindrical portion with the rear end formed larger than the front end. The rear expanding portion 107 may be formed to decrease in diameter toward the front portion and increase in diameter toward the rear portion. The rear end of the rear expanding portion 107 may be connected to the circular plate portion 84 of the receiving portion 80. The rear expanding portion 107 may function as an air discharge flow path portion of which the inner side forms the air discharge port L together with the rear body 7.

[0054] The front body 6 may include a front extending portion 108 positioned ahead of the air discharge port L. The inner diameter D1 of the front extending portion 108 may be larger than the diameter D2 of the front end 131 of the rear body 7. The front extending portion 108 may be a hollow cylindrical portion that is open in the front-rear direction and the air passing through the air discharge port L may be discharged forward through the inside of the front extending portion 108. The rear end of the front extending portion 108 may be connected to the rear expanding portion 107. The front extending portion 108 may be connected with the rear expanding portion 107 to make an obtuse angle θ with the rear expanding portion 107. The rear end of the front extending portion 108 may be in contact with the rear expanding portion 107. The rear end of the front extending portion 108 may be fitted or bonded to the front end the rear expanding portion 107.

[0055] The front body 6 may have a front expanding portion 109, which increases in open area toward the front portion, at the front end of the front extending portion 108. The front expanding portion 109 may be a hollow cylindrical portion with the front end formed larger than the rear end. The front expanding portion 109 may be formed to increase in diameter toward the front portion and decrease in diameter toward the rear portion. The rear end of the front expanding portion 109 may bend from the front end of the front extending portion 108. The front of the front expanding portion 109 may be implemented by a curved surface. The front end of the front expanding portion 109 may be formed smaller than the hole 68 of the front cover 70 shown in FIG. 1.

[0056] In the front body 6, the front extending portion 108 and the front expanding portion 109 may constitute

the front cover 104. In the front body 6, the rear expanding portion 107 may constitute the front discharge body 103 together with the front cylindrical portion 105 and the front circular plate portion 106.

[0057] Front body fastening portions 110A and 110B that allow the front body 6 to be fastened to the discharge body housing 38 by fasteners, such as screws, may be formed at the front body 6 and discharge body housing 38, respectively. The fasteners, such as screws, are inserted through the front body fastening portions 110A formed at at least one of the front discharge body 103 and the front cover 104 and then fitted into the front inner body fastening portions 110B formed at the front housing 40, such that the front body 6 can be fastened to the discharge body housing 38.

[0058] Front body coupling portions 111A and 111B that allow the front discharge body 103 and the front cover 104 to be fastened to the front discharge body 103 and the front cover 104 by fasteners, such as screws, may be formed at the front discharge body 103 and the front cover 104, respectively. Fasteners, such as screws, are inserted through the front body coupling portions 111A formed at the front cover 104 and then fitted into the front body coupling portions 111B formed at the front discharge body 103, such that the front cover 104 and the front discharge body 103 can be coupled.

[0059] The air conditioner may include a light emitting mechanism 112. The light emitting mechanism 112 may radiate light to the discharge body 5. The light emitting mechanism 112 may be positioned around the edge of the opening G. The light emitting mechanism 112 may emit light corresponding to the air discharge port L. The light emitting mechanism 112 may emit light in the same shape as the shape of the cross-section of the air discharge port L. The light emitting mechanism 112 may emit light in the same shape as the shape of the front end of the air discharge port L. The light emitting mechanism 112 may emit light in a close-loop shape. The light emitting mechanism 112 may emit light in a circular closed-loop shape, in a rectangular closed-loop shape, or a elliptical closed-loop shape. The light emitting mechanism 112 may emit both light in a rounded shape and straight light. The light emitting mechanism 112 may emit light the same in shape as and larger in size than the front end of the light discharge port L. The light emitting mechanism 112 may be installed at the front body 6. The front body 6 may have a light emitting space V between the front discharge body 103 and the front cover 104. The light emitting space V may be formed in a hollow cylindrical shape or a closed-loop shape between the front discharge body 103 and the front cover 104. The light emitting space V may be separated from the discharge space formed in the opening G. The light emitting space V may be positioned to surround the opening G, around outside the edge of the opening G. The light emitting mechanism 112 may be disposed in closed-loop shape in the light emitting space V. The light emitting mechanism 112 may be installed in the light emitting space V. The light emitting mechanism 112 can be protected by the front discharge body 103 and the front cover 104. The light emitting mechanism 112 may radiate light forward from the discharge body 5. The light emitting mechanism 112 may radiate light to the front cover 104. The light emitting mechanism 112 may be installed at the front discharge body 103. The front cover 104 may be formed to be transparent or translucent to transmit light from a light emitting mechanism 112. The front cover 104 may include a diffusion layer through which light from the light emitting mechanism 112 can be diffused. When the light emitting mechanism 112 is turned on, the light emitted from the light emitting mechanism 112 is radiated to the front cover, such that the front cover 104 may brightened and the room may be lighted. Light may be shown on the front cover 104 in the same in shape as and larger in size than the air discharge port L. In the discharge body 5, the portion around the discharge space of the opening G may looks bright or colored and the discharge of the air through the opening G may be visualized. The front cover 104 may function as a light guide that guide light while protect the light emitting mechanism 112 or may function as a diffusion plate that diffuses light.

[0060] The rear body 7 is described hereafter.

[0061] The outer circumference of the rear body 7 may form the air guide flow path P together with the discharge body housing 38. The rear body 7 may have a rear space therein which communicates with the discharge space of the front body 6 in the front-rear direction. In the air discharge body 5, the discharge space of the front body 6 and the rear space of the rear body 7 may constitute the opening G. The front end 131 of the rear body 7 may be inserted in the discharge space of the front body 6. The diameter D2 of the front end 131 of the rear body 7 may be smaller than the diameter D1 of the front extending portion 108 of the front body 6 and the front end of the air discharge port L may be seen through the opening G. The rear end 132 of the rear body 7 may be connected to discharge body housing 38. The portion opposite the rear expanding portion 107 of the front body 6 in the rear body 7 may function as an air discharge flow path portion that forms the air discharge port L together with the rear body 7.

[0062] The rear body 7 may include rear air guides 133 and 134 and a rear inner cover 135.

[0063] The rear air guides 133 and 134 may form the air discharge port L together with the front body 6 and may guide the air in the air guide flow path P to the air discharge port L.

[0064] The rear air guides 133 and 134 can form the air discharge port L together with the front body 6, with the front portions opposite the front body 6. The rear air guides 133 and 134 may be installed with the front ends positioned in the discharge space of the front body 6. The rear portions of the rear air guides 133 and 134 can form the air guide flow path P together with the rear housing 39. The rear air guides 133 and 134 may include a left rear air guide 133 disposed on the left outer circum-

ference of the rear inner cover 135 and a right rear air guide 134 disposed on the right circumference of the rear inner cover 135. In the rear air guides 133 and 134, when the left rear air guide 133 and the right rear air guide 134 are installed on the rear inner cover 135, the outer circumferences may face the discharge body housing 38 and the inner circumferences may face the rear inner cover 135.

[0065] The rear inner cover 135 may be combined with the rear air guides 133 and 134 and the rear air guides 133 and 134 may be installed at the rear inner cover 135. The rear inner cover 135 may be connected to the discharge body housing 38. The rear end of the rear inner cover 135 may be connected to the rear housing 39. The rear space may be formed inside the rear inner cover 135. The rear inner cover 135 may be formed in a cylindrical shape.

[0066] In the rear body 7, the inner circumference of the rear inner cover 135 may be seen through the rear space of the rear inner cover 135 when seen from the outside. The rear inner cover 135 may function as a rear cover that prevents the rear air guides 133 and 134 from being seen from the outside. The rear inner cover 135 may function as a sealing member that prevents the air in the air guide flow path P from leaking through the gap between the rear air guides 133 and 134 and the discharge body housing 38. Since the rear air guides 133 and 134 guide the air in the air guide flow path P, the shapes may be complicated in consideration of the air flow. On the contrary, since the rear inner cover 135 does not directly guide the air in the air guide flow path P, the shape can be simplified more than those of the rear air guides 133 and 134. In the rear body 7, the rear air guides 133 and 134 may not be exposed to the outside by the rear inner cover 135 and quality enhancement may be possible.

[0067] Rear body fastening portions 136A and 136B that allow the rear body 7 to be fastened to the discharge body housing 38 by fasteners, such as screws, may be formed at the rear body 7 and discharge body housing 38, respectively. The fasteners, such as screws, are inserted through the rear inner body fastening portions 136A formed at at least one of the rear air guides 133 and 134 and the rear inner cover 135 and then fitted into the rear body fastening portions136B formed at the rear housing 39, such that the rear body 7 can be fastened to the discharge body housing 38.

[0068] The rear air guides 133 and 134 may have rear air guide coupling portions 137A and 137B that allow the left rear air guide 133 and the right rear air guide 134 to be fastened by fasteners, such as screws. The fasteners, such as screws, are inserted through the rear air guide coupling portion 137A formed at the left rear air guide 133 and then fitted into the rear air guide coupling portion 137B formed at the right rear air guide 134, such that the left rear air guide 133 and the right rear air guide 134 can be coupled.

[0069] Rear body coupling portions 138A and 138B that allow the rear air guides 133 and 134 and the rear inner cover 135 to be fastened by fasteners, such as screws, may be formed at the rear air guides 133 and 134 and the rear inner cover 135. The fasteners, such as screws, are inserted through the rear body coupling portions 138A formed at the rear air guides 133 and 134 and fitted into the rear body coupling portions 138B formed at the rear inner cover 135, such that the rear air guides 133 and 134 and the rear inner cover 135 can be coupled.

[0070] The discharge body housing 38 is described hereafter.

[0071] In the discharge body housing 38, a rear receiving space that receives the rear body 7 may be formed at the rear housing 39 and a front receiving space that receives the front body 6 may be formed at the front housing 40.

[0072] The rear housing 39 may have a left plate 141, a right plate 142, an upper plate 143, and a rear plate 144. The rear housing 39 may be open at the front. The rear housing 39 may have an intake port 30 at the bottom. In the rear housing 39, the air guide flow path P may be formed respectively between the left plate 141 and the rear body 7, between the right plate 122 and the rear body 7, between the upper plate 123 and the rear body 7, and between the intake port 30 and the rear body 7. A rear hole 145 may be formed through the rear plate 144 of the rear housing 39. The rear hole 145 may be open in the front-rear direction. The rear hole 145 may be formed to communicate with the rear space of the rear body 7 in the front-rear direction.

[0073] The front housing 40 may have a left plate 151, a right plate 152, an upper plate 153, and a front plate 154. The front housing 40 may be open at the rear. The front housing 40 may have an intake port 30 at the bottom. In the front housing 40, the air guide flow path P may be formed respectively between the left plate 151 and the receiving portion 80, between the right plate 152 and the receiving portion 80, between the upper plate 153 and the receiving portion 80, and between the intake port 30 and the receiving portion 80. In the front housing 40, the receiving portion 80 may protrude rearward from the front plate 154. The receiving portion 80 may be formed larger than the front body 6. The front body 6 may be protected by the receiving portion 80.

[0074] FIG. 10 is an exploded longitudinal cross-sectional view of a light emitting mechanism of the air conditioner according to the first exemplary embodiment of the present invention and FIG. 11 is a front view of the light emitting mechanism of the air conditioner according to the first exemplary embodiment of the present invention.

[0075] The light emitting mechanism 112 may include substrates 113 and light sources 114.

[0076] One or a plurality of substrates113 may be disposed in the light emitting space V. The substrate 113 may be formed in a rectangular shape or may be rounded.

[0077] The light sources 114 may be LEDs. The light

source 114 may be one multicolor LED that can selectively emit light of a plurality of colors. The light source 114 may be 3 color LEDs. A plurality of light sources 114 may be installed to be spaced from each other. A plurality of light sources 114 may be installed on one substrate 113. A plurality of light sources 114 may be distributed on a plurality of substrates 113. A plurality of light sources 114 may be disposed to be spaced each other in a closed-loop shape. A plurality of light sources 114 may be circumferentially disposed to be spaced from each other in the light emitting space V. A plurality of light sources 114 may be disposed to be spaced from each other in the circumferential direction of a virtual closed-loop I, such as a circle, on the virtual closed-loop I. When a plurality of light sources 114 emits light together, they may emit light entire in a closed-loop shape. That is, a plurality of light sources 114 may all be disposed in a light generation region having a closed-loop shape. A plurality of light sources 114 may be disposed at regular or irregular intervals in the longitudinal direction of a closed-loop and they can emit light in an entirely closed-loop shape when emitting light together.

[0078] The light emitting mechanism 112 may include a PCB case 115 where the substrates 113 are installed. For the light emitting mechanism 112, one substrate 113 may be installed on one PCB case 115, or a plurality of substrates 113 may be installed on one PCB case 115. The PCB case 115 may be formed in a box shape with the front open and the top, bottom, and rear closed. The PCB case 115 may be formed in a rounded shape.

[0079] A hook 116 protrudes from any one of the PCB case 115 and the front body 6 and a hook hole 117 where the hook 16 is inserted and locked may be formed at the other. The hook 116 may extend rearward from the PCB case 115. The hook hole 117 may be formed to be open in the front and rear direction at the front body 6. The hook hole 117 may be formed at the front discharge body 103. The hook hole 117 may be formed at the front circulate plate portion 106 in the front discharge body 103.

[0080] The light emitting mechanism 112 may include a plurality of light emitting modules. A plurality of light emitting modules 112A, 112B, 112C, and 112D may be disposed to be circumferentially spaced from each other in the light emitting space V. The light emitting modules 112A, 1128, 112C, and 112D may have the same configuration and may share components, and when some of the light emitting modules are damaged, service may be provided only for the damaged light emitting module.

[0081] Each of the light emitting modules 112A, 112B, 112C, and 112D may include a substrate 113 and a plurality of light sources 114. A plurality of light emitting modules 112A, 112B, 112C, and 112D may be installed in the PCB case 115 having a closed-loop shape.

[0082] Each of the light emitting modules 112A, 112B, 112C, and 112D may include a substrate 113, a plurality of light sources 114, and a PCB case 115. The PCB cases 114 may be circumferentially disposed to be spaced from each other in the light emitting space V.

[0083] Any one 112A of the light emitting modules 112A, 112B, 112C, and 112D may be connected with a control unit, which controls the air conditioner, though an electric wire 112E, and the light emitting modules 112A, 112B, 112C, and 112D may be connected with other electric wire modules through electric wires 112F, 112G, and 112H, respectively. For example, when four light emitting modules are installed, the first light emitting module 112A may be connected with the control unit through the first electric wire 112E, the second light emitting module 112B may be connected with the first light emitting module 112A through the second electric wire 112F, the third light emitting module 112C may be connected with the second light emitting module 112B through the third electric wire 112G, and the fourth light emitting module 112D may be connected with the third light emitting module 112C through the fourth electric wire 112H.

[0084] The operation of the air conditioner having the configuration described above is described hereafter.

[0085] First, when the blower 10 is driven, air in a room may be sucked into the air intake ports 2 from the rear area of the air intake ports 2 and then the air is sucked into the main body 4 through the air intake ports 2. The air sucked into the main body 4 exchanges heat with a refrigerant while passing through the heat exchanger 8 in the front-rear direction, and is sucked into the blower 10. The air sucked in the blower 10 is circumferentially blown by the blower 10. Some of the air blown in the circumferential direction of the blower 10 is blown upward between the rear panel 13 and the front panel 14 and sucked into the discharge body housing 38 through the intake port 30. The air sucked in the discharge body housing 38 may be dispersed into the air guide flow path P while widely spreading between the discharge body housing 38 and the discharge body 5. The air passing through the intake port 30 may be dispersed to the left and right of the air guide flow path P while being guided by the outer side of the rear body 7, and the air dispersed into the air guide flow path P is discharged to the opening G through the air discharge port L. The air discharge to the opening G may be discharged forward from the opening G through the discharge space. The other of the air blown in the circumferential direction of the blower 10 is blown to a side of the blower 10 to flow into the main body discharge ports 12 and is discharged outside the main body 4 through the main body discharge ports 12.

[0086] FIG. 12 is a perspective view showing when a discharge body of an air conditioner according to a second exemplary embodiment of the present invention discharges air forward, FIG. 13 is a perspective view showing when the discharge body of the air conditioner according to the second exemplary embodiment of the present invention discharges air forward to the right, and FIG. 14 is a perspective view showing when the discharge body of the air conditioner according to the second exemplary embodiment of the present invention discharges air forward to the left.

[0087] In an air conditioner according to the second

embodiment of the present invention, a discharge body 5 may by rotatably disposed in a space 3 of a main body 4. The discharge body 5 may have an opening G and an air discharge port L, similar to the first embodiment of the present invention. The discharge body 5 may include the front body 6 and the rear body 7 of the first embodiment of the present invention. The discharge body 5 may rotate left and right about a horizontal axis and may rotate up and down about a vertical axis. The discharge body 5 may generate three-dimensional airflows to the left and right while rotating left and right, and may generate three-dimensional airflow up and down while rotating up and down.

[0088] The main body 4 may include a discharge body housing 38 that protects the discharge body 5, similar to the first embodiment of the present invention. The discharge body 5 may be rotatably received in the discharge body housing 38. The discharge body housing 38 may support the discharge body 5 to be rotatable. The discharge body housing 38 may include a rear housing 230 and a front housing 240 disposed ahead of the rear housing 39.

[0089] The air conditioner of the second embodiment may be the same as or similar to those of the first embodiment of the present invention, in other configurations and operations, except for the discharge body 5 and the discharge body housing 38, and the same reference numerals are used and the description is not provided. The air conditioner of the second embodiment may be the same as or similar to the first embodiment of the present invention, in the main body 4 and the light emitting mechanism 112.

[0090] FIG. 15 is an exploded perspective view of the air discharge unit shown in FIG. 12, FIG. 16 is a longitudinal cross-sectional view of the air discharge unit shown in FIG. 12, FIG. 17 is a partial-cut perspective view of the air discharge unit shown in FIG. 12, FIG. 18 is a front cross-sectional view of the air discharge unit shown in FIG. 12, and FIG. 19 is a bottom view of the air discharge unit shown in FIG. 12.

[0091] The discharge body 5 may include an outer body 200 receiving the front body 6 and the rear body 7. The outer body 200 may constitute the outer circumference of the discharge body 5, and the front body 6 and the rear body 7 may constitute the inner circumference of the discharge body 5. That is, the outer body 200 may constitute the discharge body 5, together with the front body 6 and the rear body 7. The outer body 200 may rotate with the front body 6 and the rear body 7. The outer body 200 may constitute a rotary discharge unit together with the front body 6 and the rear body 7.

[0092] The discharge body housing 38 may support the discharge body 5 to be rotatable by supporting the outer body 200 to be rotatable. The discharge body 5 may rotate left and right about a vertical axis V.

[0093] The discharge body 5 may have an air dispersion flow path P2 that communicates with the air discharge port L and air intake ports 202 and 204 through which air flows inside. Air may flow into the discharge body 5 through the air intake ports 202 and 204 and the air flowing in the discharge body 5may be discharged through the opening G after sequentially passing through the air dispersion flow path P2 and the air discharge port L.

[0094] The air dispersion flow path P2 may be formed between the front body 6 and the outer body 200, between the rear body 7 and the outer body 200, between the front body 6 and the outer body 200, and the rear body 7 and the outer body 200. The air dispersion flow path P2 may be formed in a hollow cylindrical shape between the front body 6 and the outer body 200 and between the rear body 7 and the outer body 200, and the cross-section may be formed in a closed-loop shape.

[0095] One or more air intake ports 202 and 204 may be formed at the discharge body 5. The air intake ports 202 and 204 may be formed at the outer body 200. A plurality of air intake ports 202 and 204 may be formed to be spaced from each other. When a plurality of air intake ports 202 and 204 is formed to the spaced from each other in the discharge body 5, the air flowing toward the air discharge port L may be uniformly dispersed up and down, such that the air may be uniformly discharged to the opening G without concentrating on a specific area in the air discharge port L. The air intake ports 202 and 204 may include an upper air intake port 202 formed at the upper portion of the outer circumference of the discharge body 5 and a lower air intake port 204 formed at the lower portion of the outer circumference of the discharge body 5.

[0096] An air guide flow path P1 that guides air to at least one air intake port may be formed between the main body 4 and the discharge body 5. The air guide flow path P1 may be formed between the discharge body housing 38 and the discharge body 5 and may guide air to the upper air intake port 202.

[0097] The front body 6 may be connected to the front portion of the outer body 200. The front end of the front body 6 may protrude forward further than the outer body 200. The front body 6, similar to the first exemplary embodiment of the present invention, may include a front discharge body 103 and a front cover 104. The detailed description of the front discharge body 103 and the front cover 104 is not provided. The front body 6 and the outer body 200 may be combined by fitting any one of them into fitting grooves formed at the other, and may be fastened by fasteners, such as screws.

[0098] The rear body 7 may be connected to the rear portion of the outer body 200. The rear body 7 may form the air dispersion flow path P2 together with the outer body 200. The rear body 7 can form the air discharge port L together with the front body 6. The outer circumference of the rear body 7 may form the air dispersion flow path P2 together with the outer body 200. A rear space may be formed inside the rear body 7. The front end 131 of the rear body 7 may be inserted inside the front body 6. The rear end 132 of the rear body 7 may

be connected to the outer body 200. The rear body 30, similar to the first exemplary embodiment of the present invention, may include rear air guides 133 and 134 and a rear inner cover 135, and the detailed description of the rear air guides 133 and 134 is not provided. The rear air guides 133 and 134 may be installed with the front ends positioned inside the front body 6. The rear portions of the rear air guides 133 and 134 can form the air dispersion flow path P2 together with the outer body 200. When the rear air guides 133 and 134 are installed at the rear inner cover 135, the outer circumferences may face the outer body 200 and the inner circumferences may face the rear inner cover 135. The rear body 7 and the outer body 200 may be combined by fitting any one of them into fitting grooves formed at the other, and may be fastened by fasteners, such as screws.

[0099] The outer body 200 may form the external appearance of the discharge body 5. The outer body 200 may protect the front body 6 and the rear body 7. The outer body 200 may be disposed to surround the circumferences of the front body 6 and the rear body 7 and may protect the front body 6 and the rear body 7. The outer body 200 may be formed generally in a ball shape or a donut shape with the front and the rear open. The upper air intake port 202 may be formed at the upper portion of the outer body such that air flows downward. The lower air intake port 204 may be formed at the lower portion of the outer body such that air flows forward. The outer body 200 may include air guides 206 and 208 that guide air to the air dispersion flow path P2. The air guides 206 and 208 may include an upper air guide 206 where the upper air intake port 202 is formed and a lower air guide 208 where the lower air intake port 204 is formed. The upper air guide 206 and the lower air guide 208 may be implemented by hollow cylinders that are open in the up-down direction to form air intake ports. Dispersion ribs 210 and 212 that disperse air may be formed in the upper air guide 206 and the lower air guide 208, respectively. The outer body 200 may include a left outer body 214 that surrounds the left of the rear body 7 and the left of the front body 6 and a right outer body 126 that surrounds the right of the rear body 7 and the right of the front body 6. The left outer body 214 may be formed to be convex left while connecting the left of the upper air guide 206 with the left of the lower air guide 208. The left outer body 214 may be rounded in the up-down direction and the front-rear direction. The right outer body 216 may be formed to be convex right while connecting the right of the upper air guide 206 with the right of the lower air guide 208. The right outer body 216 may be rounded in the up-down direction and the front-rear direction. In the outer body 200, the left outer body 214, the upper air guide 206, the right outer body 216, and the lower air guide 208 may be sequentially and circumferentially disposed.

[0100] The discharge body housing 38 may protect the outer body 200 of the discharge body 5. Guide surfaces 38 and 224 that can guide the outer surface of the discharge body 5 to be rotatable may be formed in the discharge body housing 38. The discharge body housing 38 may have the intake port 30 at the bottom through which air passes to be sucked into the discharge body housing 38. The discharge body housing 38 may protect the left, right, and top of the discharge body 5. The air blown from the main body 4 may flow into the discharge body housing 38 through the intake port 30 formed through the bottom of the discharge body housing 38. The discharge body housing 38 may be formed in a hexahedral shape with the intake port 30 at the bottom. The space 3 where the outer body 200 is rotatably received may be formed in the body housing 38.

[0101] The rear housing 230 may constitute the rear portion of the discharge body housing 38. The rear housing 230 may be open at the front. The rear housing 230 may have an intake port 30 at the bottom. The rear housing 230 may have a left plate 231, a right plate 232, an upper plate 233, and a rear plate 234. A rear opening 235 may be formed through the rear plate 233 of the rear housing 230. The rear opening 235 may be open in the front-rear direction. The rear opening 235 may be formed to communicate with the rear space of the rear body 7 in the front-rear direction. The rear opening 235 may prevent the rear portion of the discharge body 5 from being restricted to the rear housing 230 when the discharge body 5 rotates. When the discharge body 5 rotates left or right, the rear portion may partially protrude rearward from the rear opening 235.

[0102] The front housing 240 may constitute the front portion of the discharge body housing 38. The front housing 240 may be coupled to the front portion of the rear housing 230 and the rear may be open. The front housing 240 may have an intake port 30 at the bottom. The front housing 240 may have a front guide 222 that guides the outer surface of the outer body 200 and a front supporter 242 at the lower portion which supports the lower air guide 208 to be rotatable. A front opening 245 may be formed through the front of the front housing 240. The front opening 245 may be open in the front-rear direction. The front opening 245 may prevent the front portion of the discharge body 5 from being restricted to the front housing 240 when the discharge body 5 rotates. When the discharge body 5 rotates left or right, the front portion may partially protrude forward from the front opening 245.

[0103] The discharge body housing 38 may further include an outer guide 250 that supports the outer body 200 to be rotatable. The outer guide 250 may be installed inside the rear housing 230. The outer guide 250 may support the outer body 200 to be rotatable, together with the front housing 240.

[0104] The outer guide 250 may have a rear guide surface 224 that guides the outer surface of the outer body 200. The outer guide 250 may have a rear upper supporter 252 at the upper portion which supports the upper air guide 206 to be rotatable. The outer guide 250 may have a rear lower supporter 254 at the lower portion which supports the lower air guide 208 to be rotatable.

[0105] The outer guide 250 may have an inner opening

at the rear portion which communicates with the area opening 235 of the rear housing 230 in the front-rear direction. The inner opening 255 may prevent the rear portion of the discharge body 5 from being restricted to the outer guide 250 when the discharge body 5 rotates. When the discharge body 5 rotates left or right, the rear portion may partially protrude rearward from the inner opening 255.

[0106] The discharge body housing 38 may have an air guide passage P1 where the air flowing into the discharge body housing 38 through the intake port 30 of the discharge body housing 38 is guided. The air guide passage P1 of the discharge body housing 38 may allow the air flowing through the intake port 30 to flow into the air dispersion passage P2. The air guide passage P1 of the discharge body housing 38 may be formed between the rear housing 230 and the outer guide 250.

[0107] The discharge body housing 38 may have a blocking portion 258 that prevents the air flowing in the air guide passage P1 from leaking through a gap between the front housing 240 and the outer body 200. The blocking portion 258 may protrude from the outer guide 250.

[0108] The air conditioner may further include rotating mechanisms 260 and 262 that rotate the discharge body 5. The discharge body 5 may rotate about a plurality of air intake ports 202 and 204, which are the central axis X. The rotating mechanism 260 and 262 may rotate the discharge body about air intake ports 202 and 204, which are the central axis X. The discharge body 5 may rotate about a plurality of air intake ports 202 and 204, which are the rotational axis. The rotating mechanisms 260 and 262 may be installed at the discharge body housing 38. A plurality of rotating mechanisms 260 and 262 may rotate the discharge body 5. The rotating mechanisms 260 and 262 may include an upper rotating mechanism 260 that rotates the upper portion of the discharge body 5 and a lower rotating mechanism 262 that rotates the lower portion of the discharge body 5. The upper portion of the discharge body 5 may be rotated by the upper rotating mechanism 260. The lower portion of the discharge body 5 may be rotated by the lower rotating mechanism 262. Both of the upper and lower portions of the discharge body 5 may stably rotate.

[0109] The rotating mechanisms 260 and 262 may include a motor 264, a pinion 266 that is installed at the motor 264, and a rack 268 that is engaged with the pinion 266. The motor 264 may be installed at the discharge body housing 38. The rack 268 may be formed at the discharge body 5. The rack 268 may be rounded at the outer body 200. The rack 268 may be rounded on the outer circumferences of the air guides 206 and 208 of the outer body 200. The rack 268 of the upper rotating mechanism 260 may be formed on the outer circumference of the upper air guide 206 and the rack 268 of the lower rotating mechanism 262 may be formed on the outer circumference of the lower air guide 208.

[0110] The operation of the air conditioner having the configuration described above is described hereafter.

[0111] First, when the blower 10 is driven, the air in the room may sequentially pass through the air intake port 2 and the heat exchanger 8 and then blown to the discharge body housing 38 by the blower 10. The air blown to the discharge body housing 38 is sucked into the discharge body housing 38 through the intake port 30. Some of the air sucked in the discharge body housing 38 flows to the lower portion in the air dispersion flow path P2 through the lower air intake port 204 of the lower air guide 208 and the other is dispersed to the left and right of the air guide flow path P1 and then flows to the upper portion in the air dispersion flow path P2 through the upper air intake port 202 of the upper air guide 206.

[0112] The air flowing to the lower portion in the air dispersion flow path P2 passes through the lower portion of the air discharge port L while being dispersed left and right, while the air flowing to the upper portion in the air dispersion flow path P2 passes through the upper portion of the air discharge port L while being dispersed left and right. The air passing through the air discharge port L may be discharged forward through the space G.

[0113] Meanwhile, the rotating mechanism 260 and 262 may rotate the discharge body 5 to any one direction of the left and the right and then stop the discharge body 200. The rotating mechanism 260 and 262 may keep the discharge body 5 swinging to the left and right.

[0114] When the motors 264 of the rotating mechanisms 260 and 262 are driven, the pinion 266 is rotated, and the upper air guide 206 with the rack 268 and the lower air guide 208 with the rack 268 rotate together. When the upper air guide 206 and the lower air guide 208 rotate, the left outer body 214 and the right outer body 216 rotate with the upper air guide 206 and the lower air guide 208. Further, the front body 6 and the rear body 7 rotate with the outer body 200. In the discharge body 5, while the front body 6, the rear body 7, and the outer body 200 all rotate, the air is dispersed through the upper air intake port 202 formed at the upper air guide 206 and the lower air intake port 204 formed at the lower air guide 208, and then discharged to the opening G through the air discharge port L from the air dispersion flow path P2. The air discharged to the opening G is discharged in the direction that the opening G is arranged, through the discharge space.

[0115] Meanwhile, in the air conditioner, when the discharge body 5 is rotated by the rotating mechanism 260 and 262, the light emitting mechanism 112 may emit light and radiate the light forward from the discharge body 5 while rotating with the discharge body 5. That is, in the air conditioner, when the discharge body 5 generates three-dimensional airflow in the room, the light radiated on the discharge body 5 rotates with the discharge body 5 and the three-dimensional discharging of the discharge body 5 may be visualized by the light radiated on the discharge body 5.

[0116] FIG. 20 is a plan view showing when the discharge body shown in FIGS. 12 to 14 is rotated.

[0117] When the discharge body 5 rotates, the dis-

charge body 5 may discharge air in the direction in which the front of the discharge space is arranged, while being rotatably supported by the discharge body housing 38.

[0118] FIG. 20A is a plan view showing when the front of the discharge space of the discharge body faces forward, in which the discharge body 5 may discharges air forward from the air conditioner.

[0119] FIG. 20B is a plan view showing when the front of the discharge space of the discharge body faces forward and right, in which the discharge body 5 may discharges air forward and right from the air conditioner.

[0120] FIG. 20C is a plan view showing when the front of the discharge space of the discharge body faces forward and left, in which the discharge body 5 may discharges air forward and left from the air conditioner.

[0121] The discharge body 5 may discharge the air discharged from the discharge body widely forward to the left and right from the discharge body housing 38, such that three-dimensional airflow may be generated in the room.

[0122] Other aspects, features, and advantages will be apparent from the summary above, as well as from the description that follows, including the figures and the claims.

[0123] While the invention has been illustrated and described in detail in the drawings and foregoing description, such illustration and description are to be considered illustrative or exemplary and not restrictive. It will be understood that changes and modifications may be made by those of ordinary skill within the scope of the following claims. In particular, the present invention covers further embodiments with any combination of features from different embodiments described above and below.

[0124] Furthermore, in the claims the word "comprising" does not exclude other elements or steps, and the indefinite article "a" or "an" does not exclude a plurality. A single unit may fulfil the functions of several features recited in the claims. The terms "essentially", "about", "approximately" and the like in connection with an attribute or a value particularly also define exactly the attribute or exactly the value, respectively. Any reference signs in the claims should not be construed as limiting the scope.

Claims

1. An air conditioner comprising:

a main body (4);
a discharge body (5) rotatably accommodated in a space (3) of the main body (4),
wherein the discharge body (5) includes an opening (G) formed therein as an air discharge space, and an air discharge port (L) disposed around the opening (G) to guide air to the discharge space.

2. The air conditioner of claim 1, wherein an air discharge port (L) is arranged along the periphery of the opening (G) to allow air to be discharged to the opening (G).

3. The air conditioner of claim 1 or 2, wherein the opening (G) is open at both front and rear of the air conditioner.

4. The air conditioner of any one of the preceding claims, wherein main body (4) is a single main body (4) accommodating the discharge body (5).

5. The air conditioner accoridng to any one of claims 1 to 3, wherein the main body (4) consists of a bottom body and a separate discharge unit (38) arranged on top of the bottom body, the discharge body (5) being accommodated in the discharge unit (38).

6. The air conditioner of any one of the preceding claims, wherein the discharge body (5) comprises a plurality of air intake ports (202, 204) which introduce heat exchanged air from the main body (4) to the discharge body (5).

7. The air conditioner of claim 6, wherein the plurality of air intake ports (202, 204) are an upper air intake port (202) and a lower air intake port (204) which are respectively formed at the upper and lower portions and of the discharge body (5).

8. The air conditioner of claim 6 or 7, wherein an air guide flow path (P1) for supplying heat exchanged air to the plurality of air intake ports (202, 204) is provided between the main body (4) and the discharge body (5).

9. The air conditioner of any of claims 6 to 8,
wherein the discharge body (5) includes air guides (206, 208) formed at the plurality of intake ports (202, 204), for guiding air to an air dispersion flow path (P2) inside the discharge body (5), the air dispersion flow path (P2) delivering air to the air discharge port (L), and
wherein the air guides (206, 208) have dispersion ribs (210, 212) for dispersing air.

10. The air conditioner of any one of the preceding claims, further comprising a rotating mechanism (260, 262) that rotates the discharge body (5) about its rotational axis.

11. The air conditioner of claim 10, wherein the rotating mechanism (260, 262) includes a motor (264) for generating driving force, a pinion (266) installed at the motor to deliver the driving force, and a rack (268) formed at the discharge body (5) to engage with the pinion.

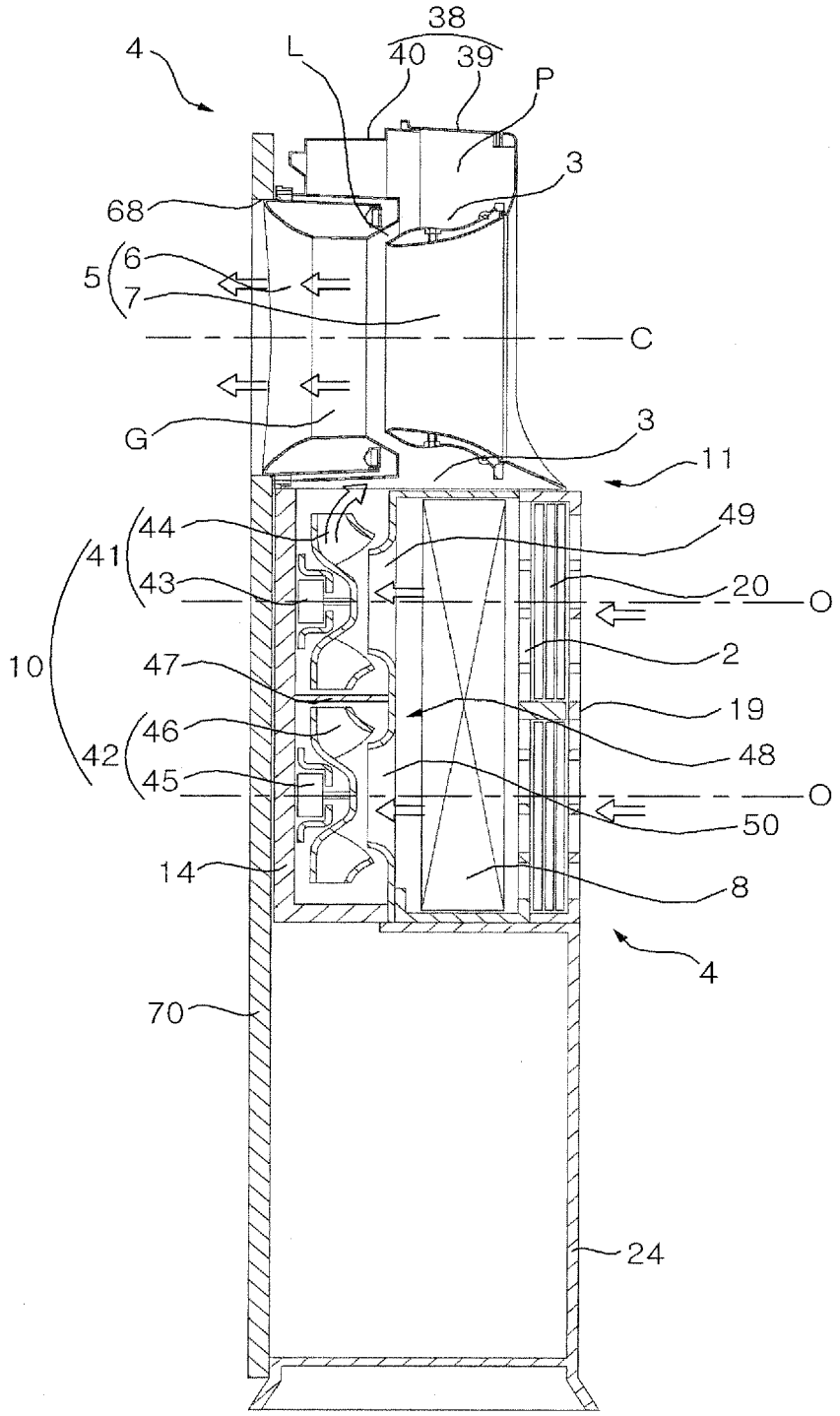
12. The air conditioner of any one of the preceding claims, wherein the main body (4) further includes a heat exchanger (8) for exchanging heat with air introduced from outside, and a blowing unit (10) for transmitting air toward the discharge body (5) via the heat exchanger (8).

13. The air conditioner of claim 12, wherein the discharge body (5) is disposed above the heat exchanger (8) and the blowing unit (10).

14. The air conditioner of claim 12 or 13, further comprising an air discharge port (12) at the same vertical level with the blowing unit (10) for discharging the heat exchanged air.

15. The air conditioner of any one of claims 13 to 14, wherein a central axis of the opening (G) along which the air is discharged and a rotational axis of the blowing unit (10) are both arranged in a horizontal direction.

Fig. 1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P
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C
G
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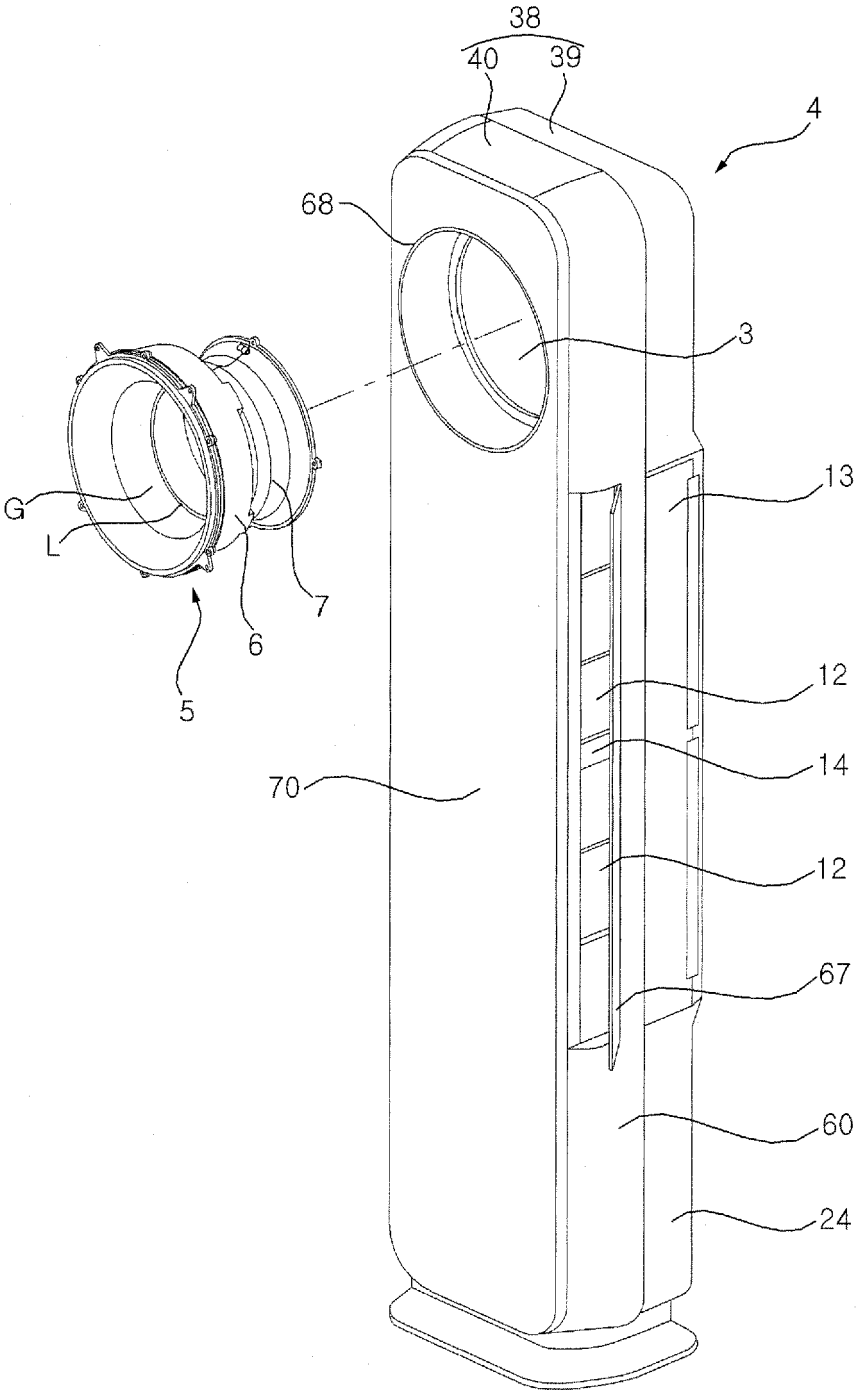
O
50
14
8
4
70
24

Fig. 2



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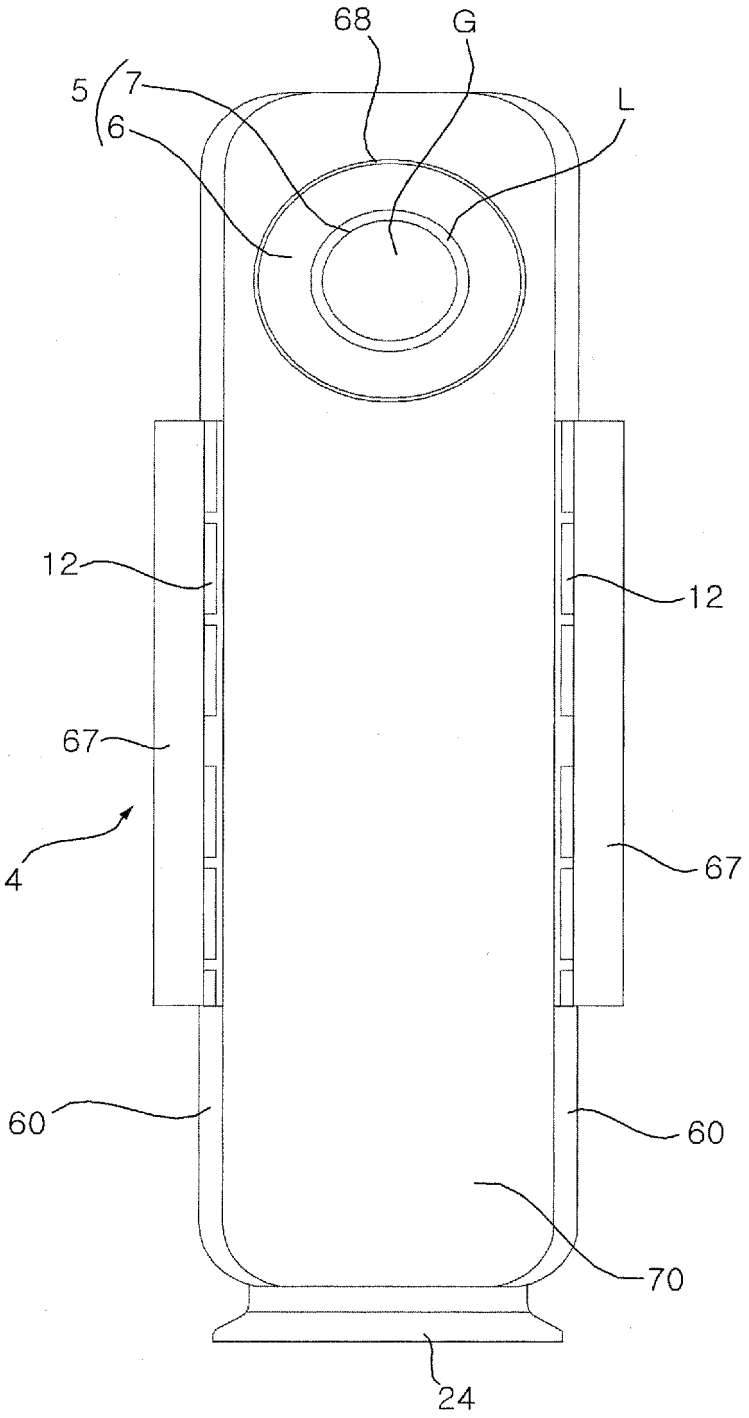
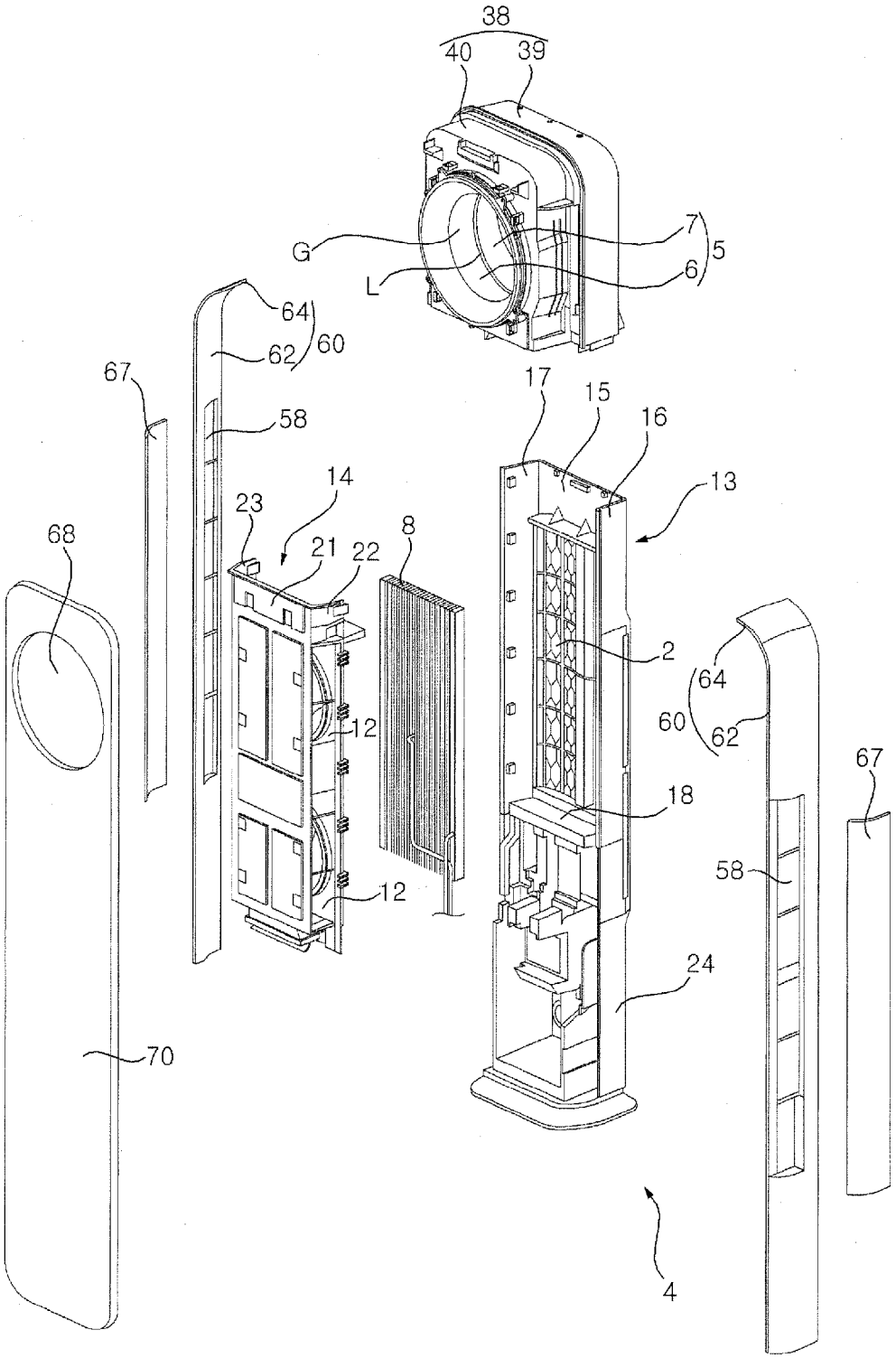


Fig. 4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4

Fig. 5

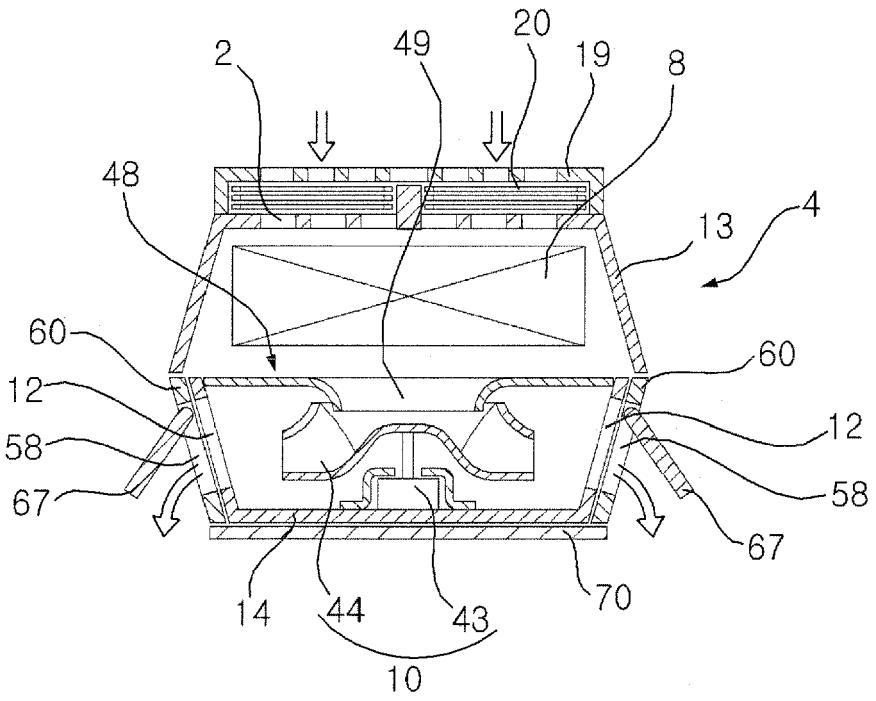

Fig. 6

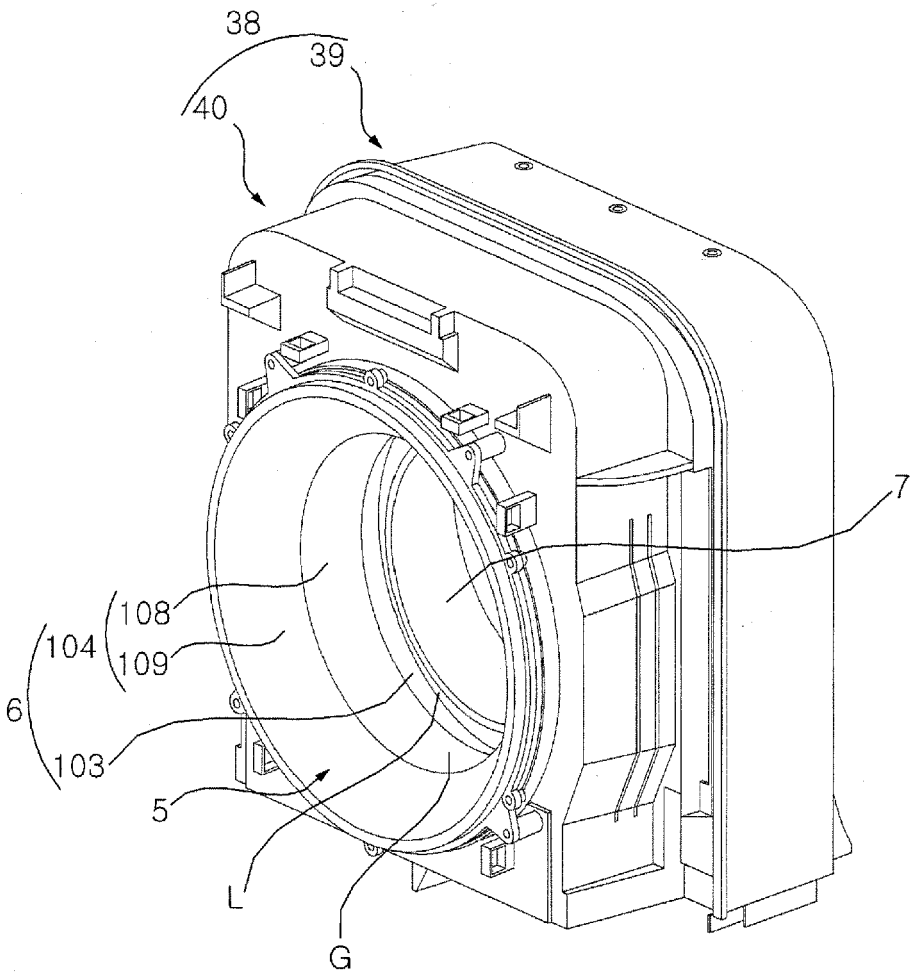

Fig. 7

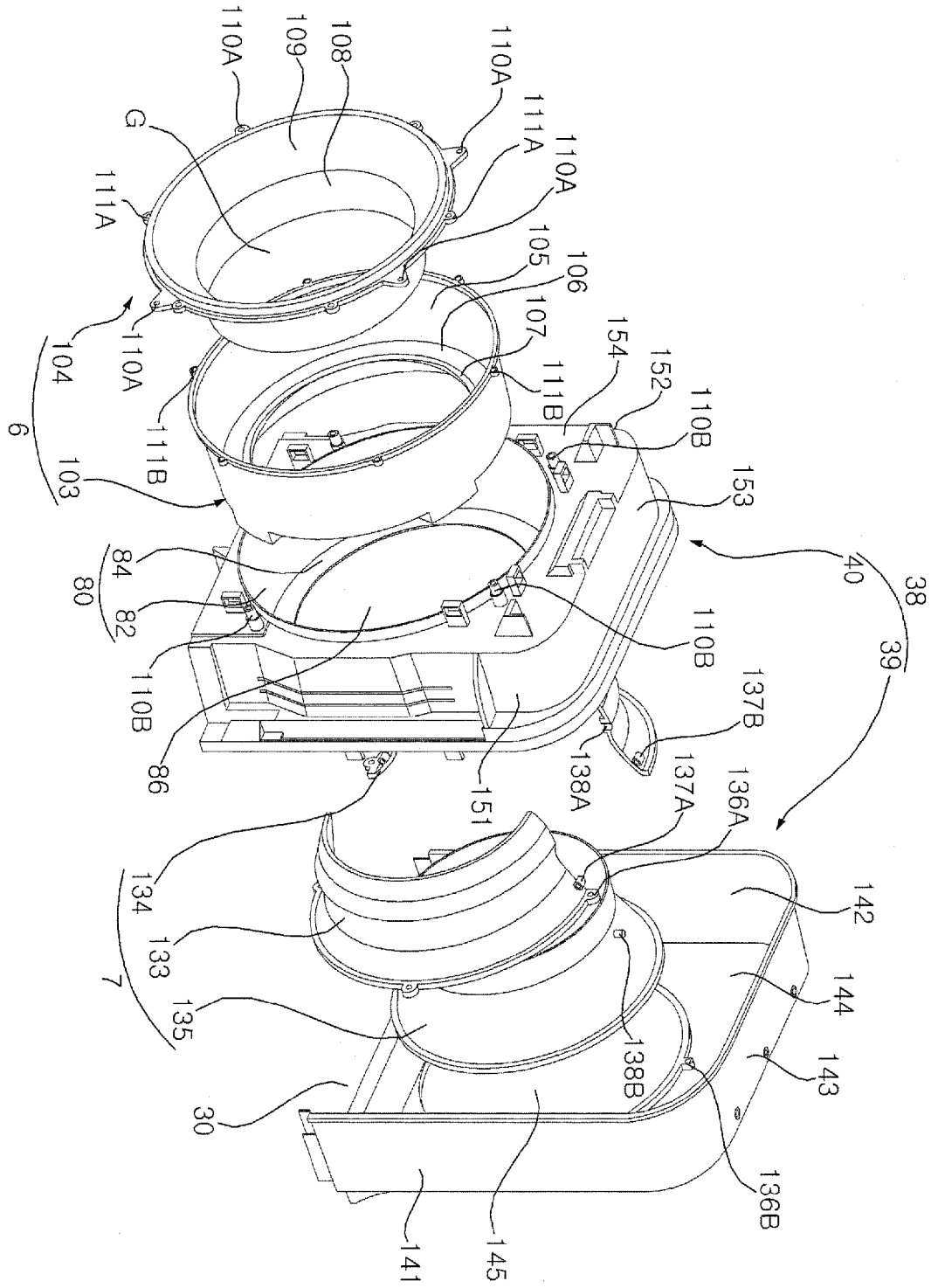
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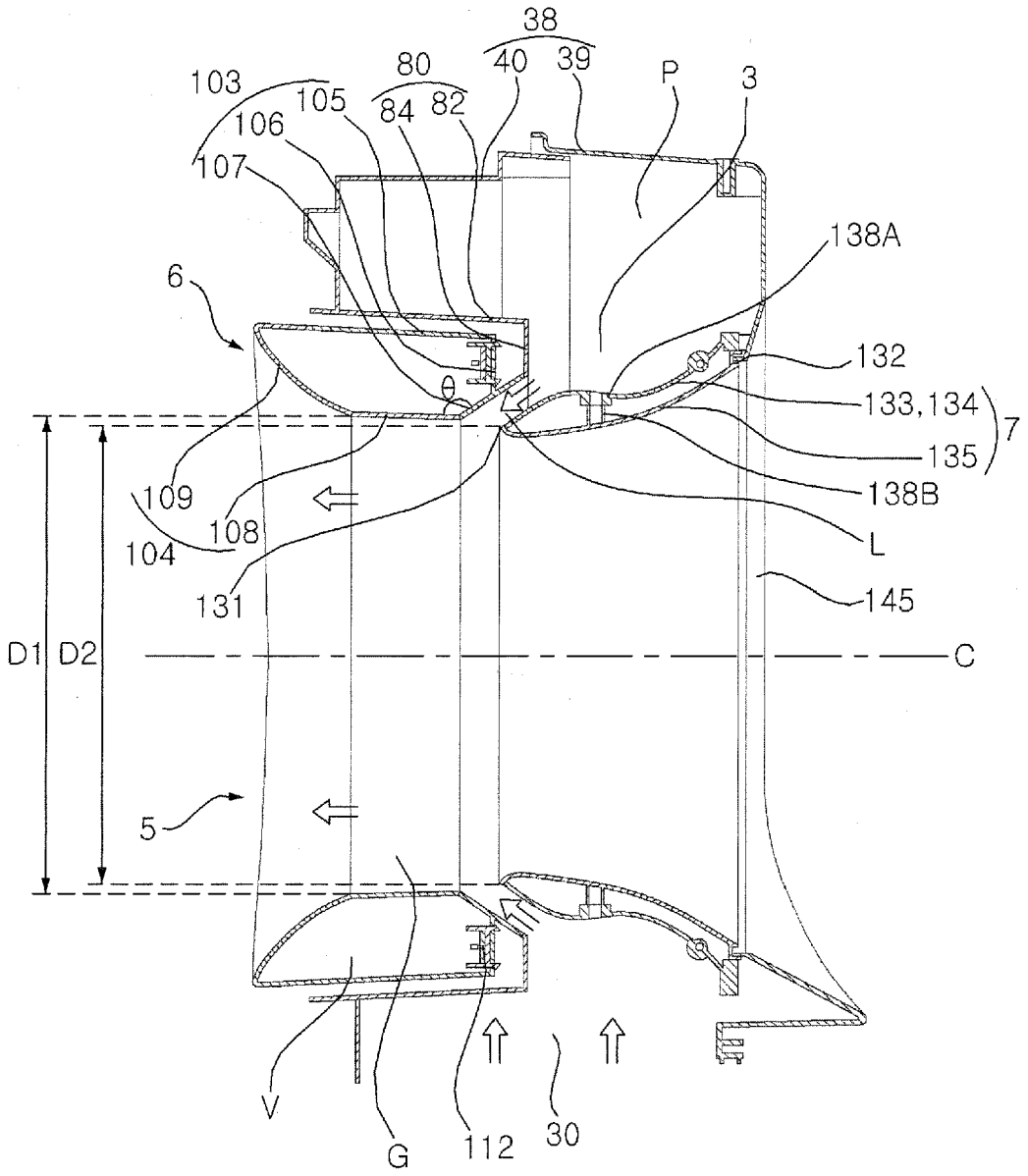
Fig. 8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D1
D2
C
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V
G
112
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Fig. 9

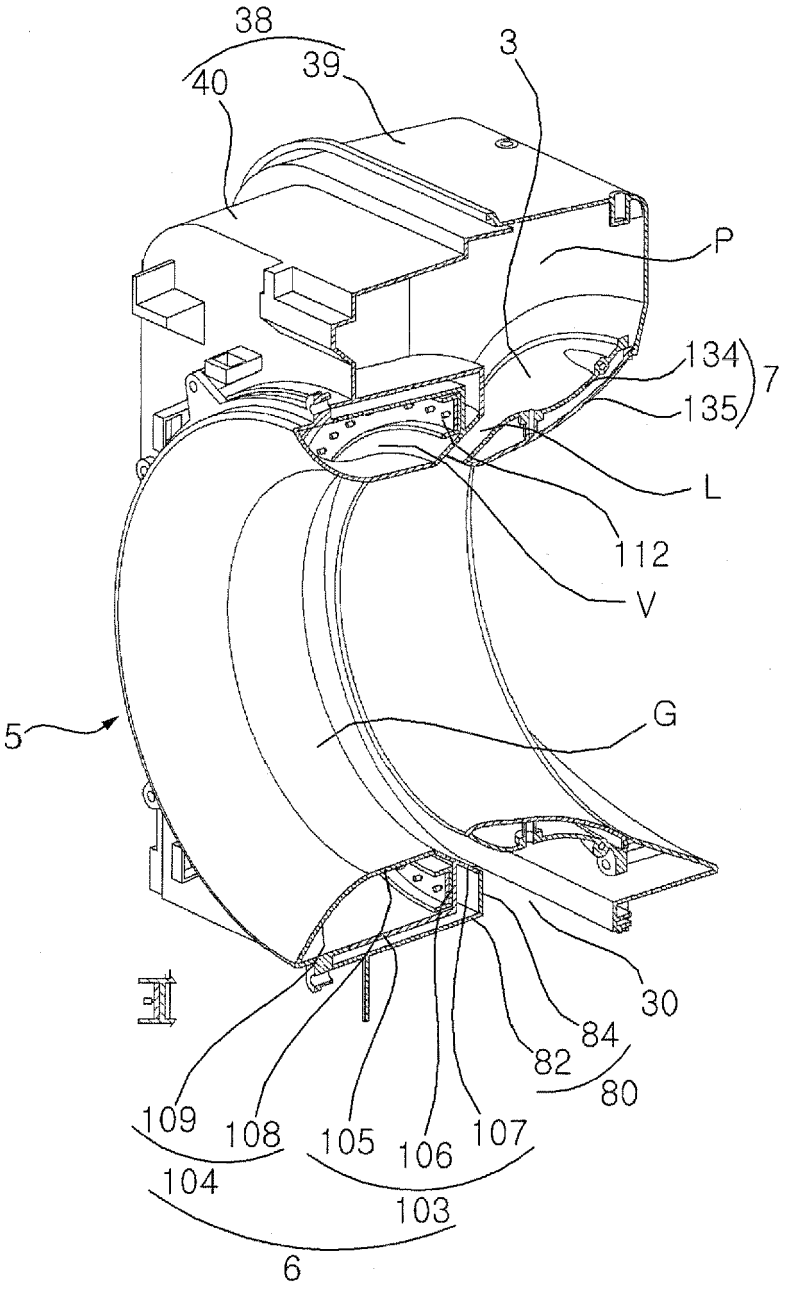
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Fig. 10

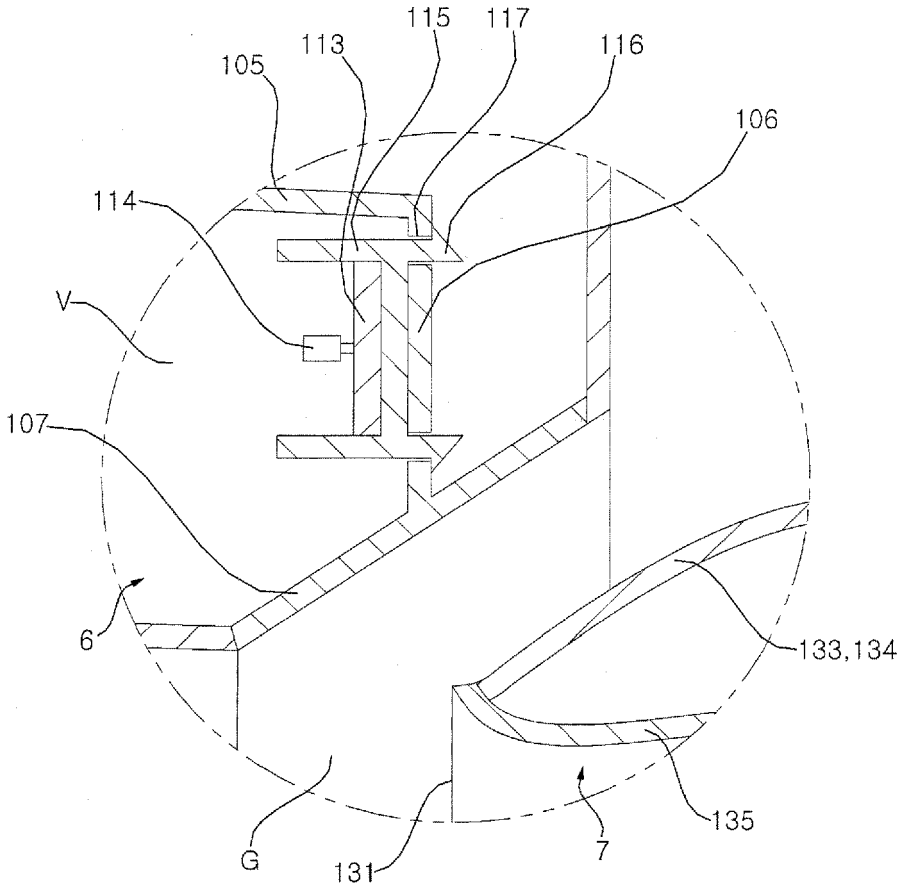

Fig. 11

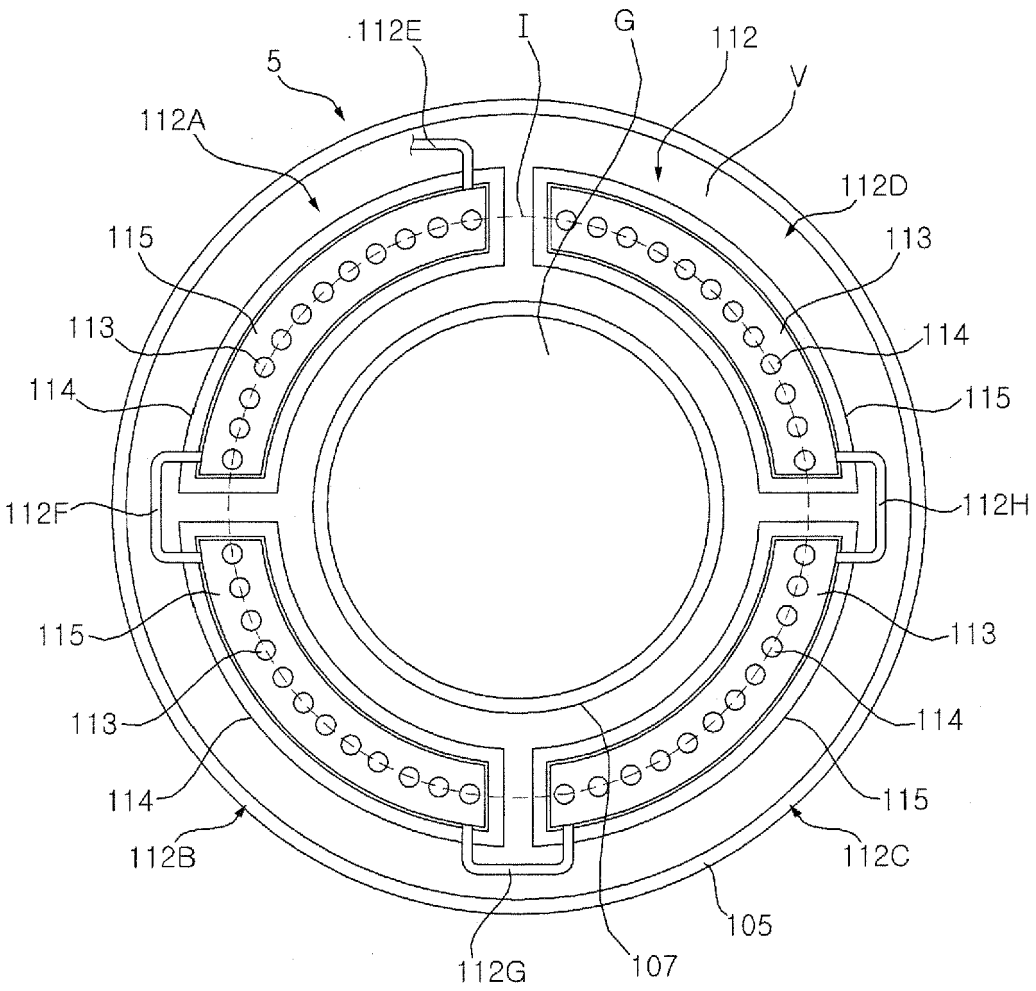
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Fig. 12

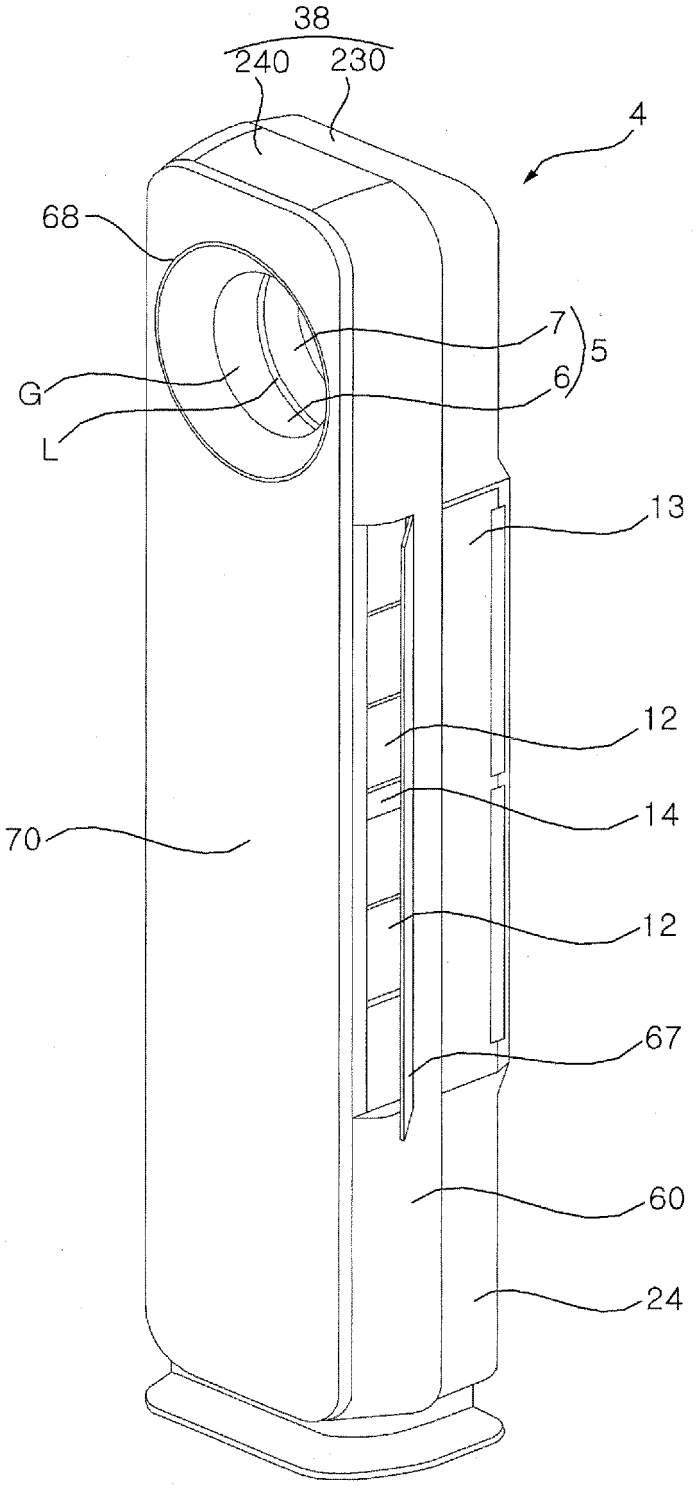

Fig. 13

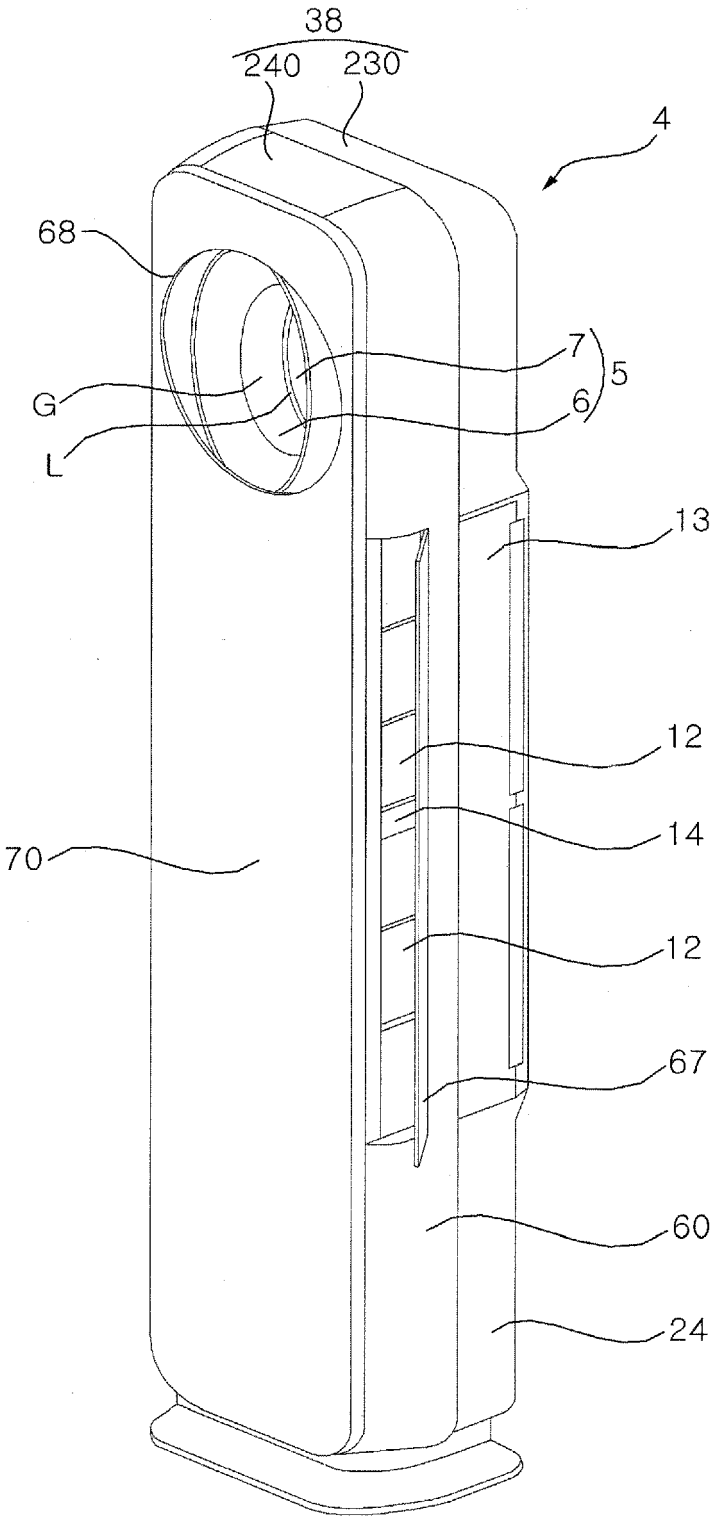

Fig. 14

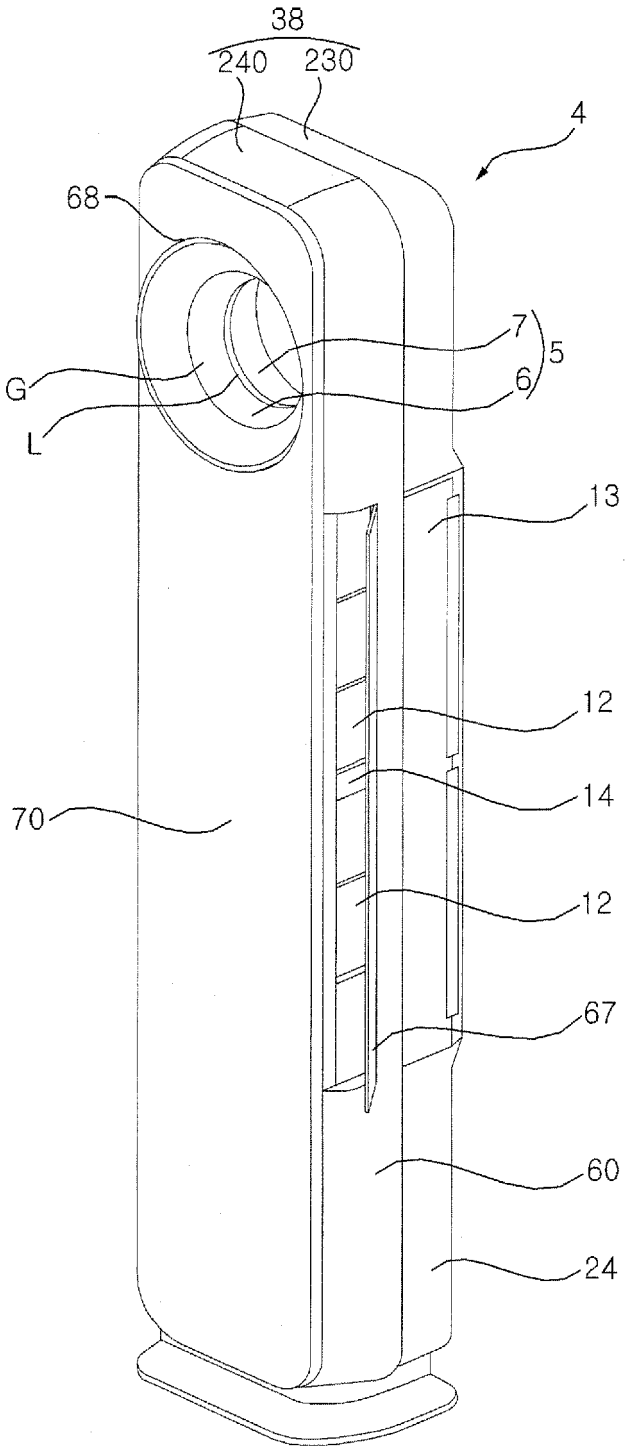

Fig. 15

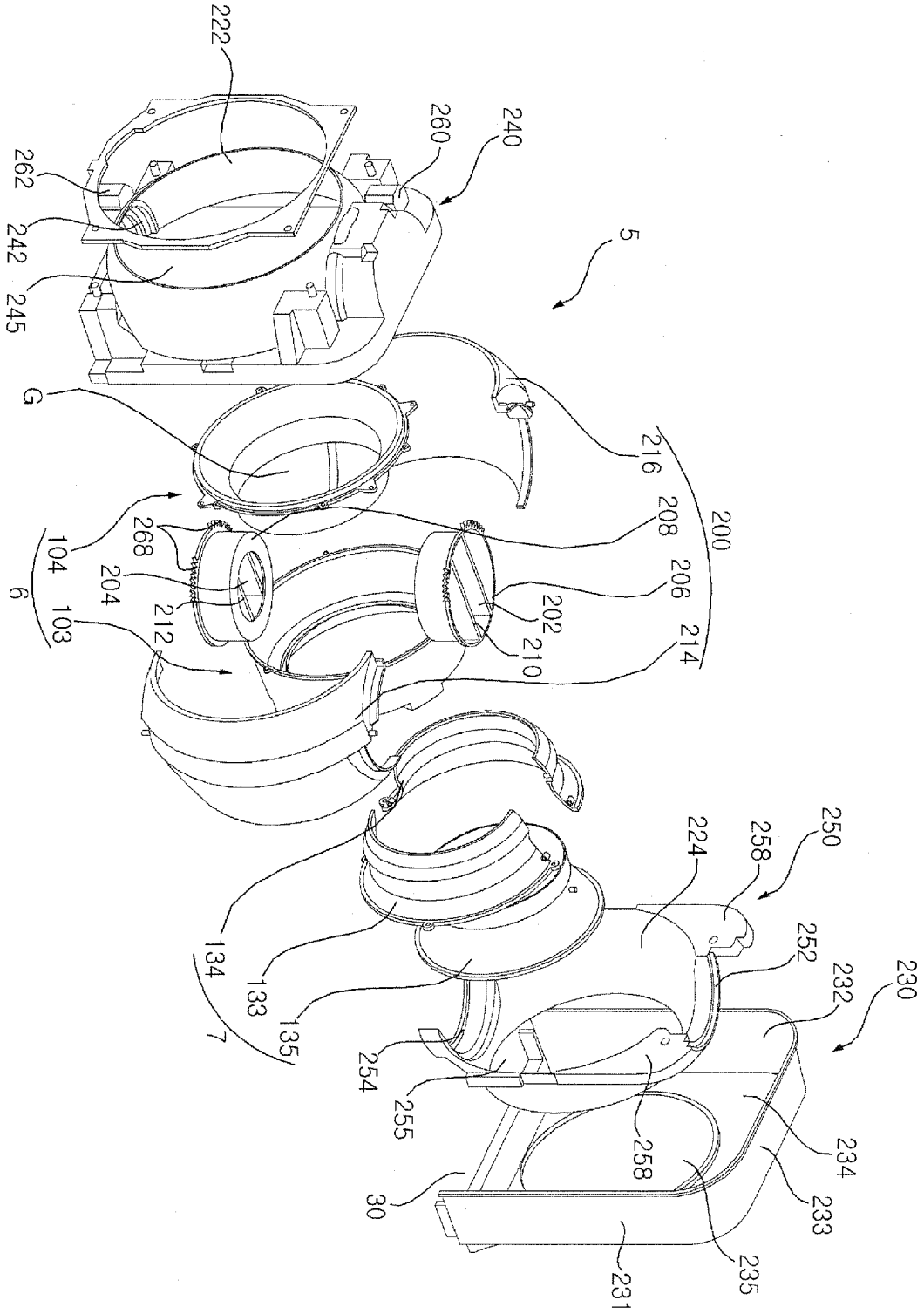
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Fig. 16

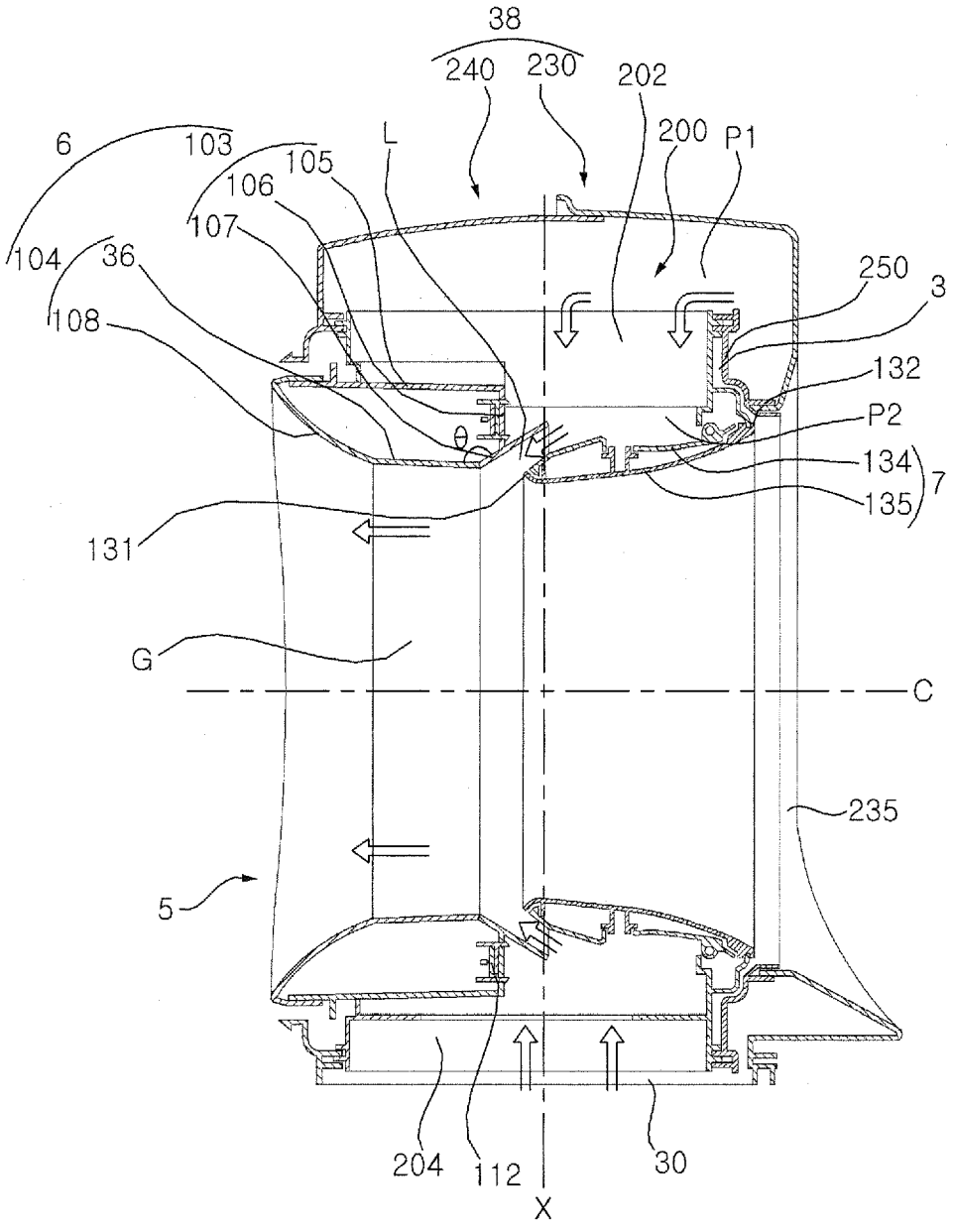
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Fig. 17

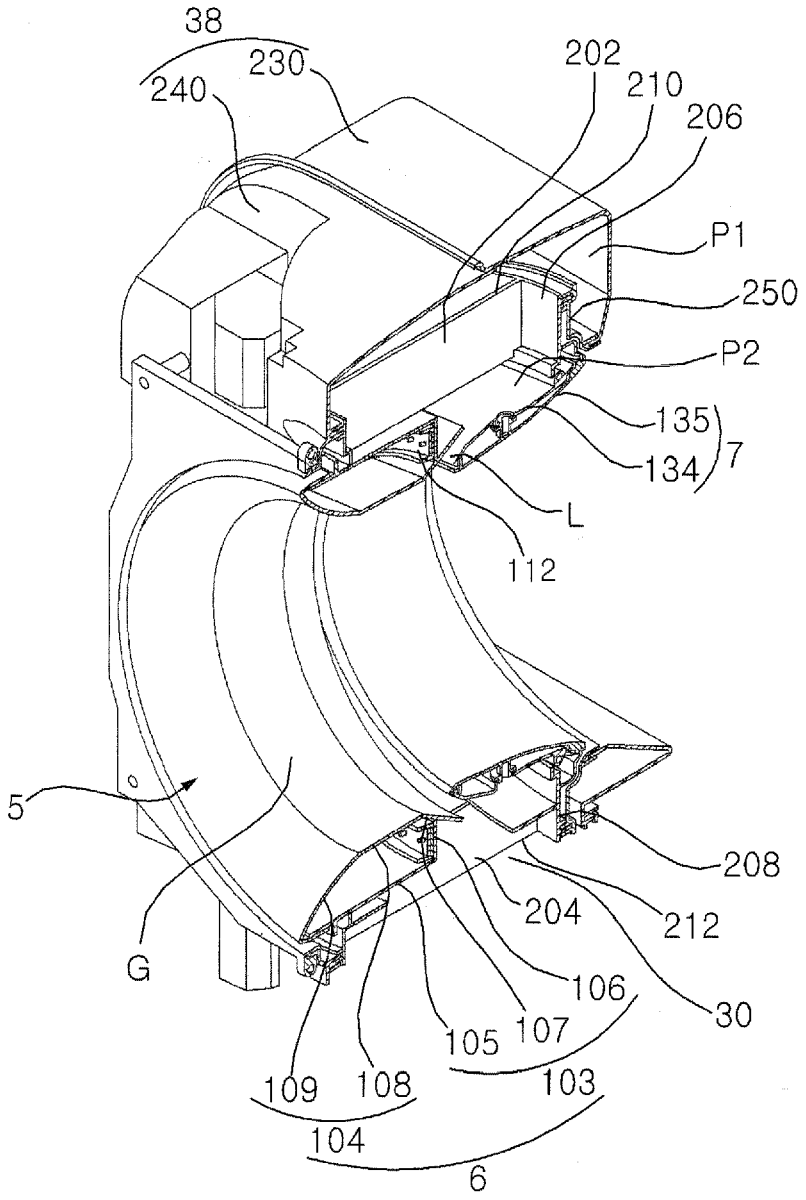
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Fig. 18

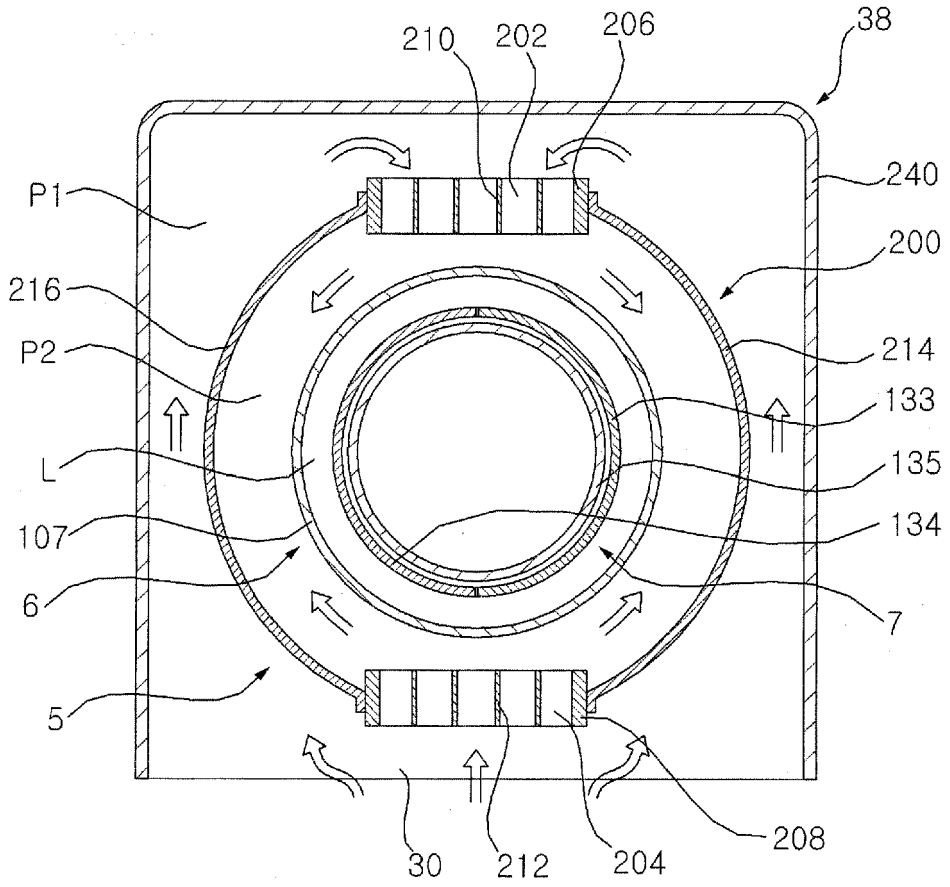
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Fig. 19

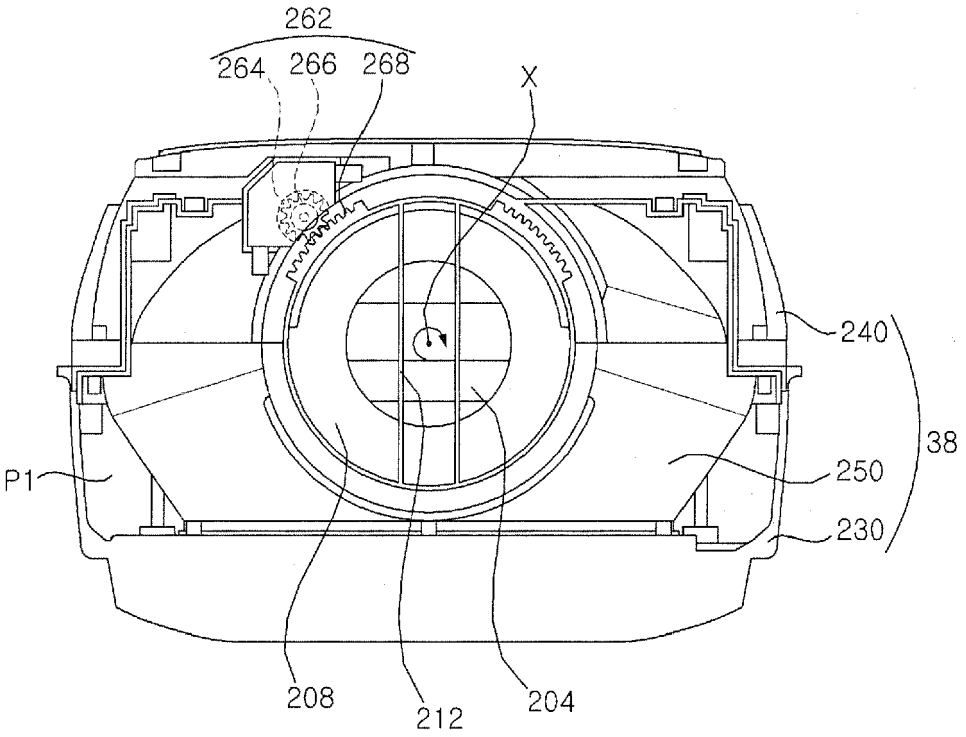
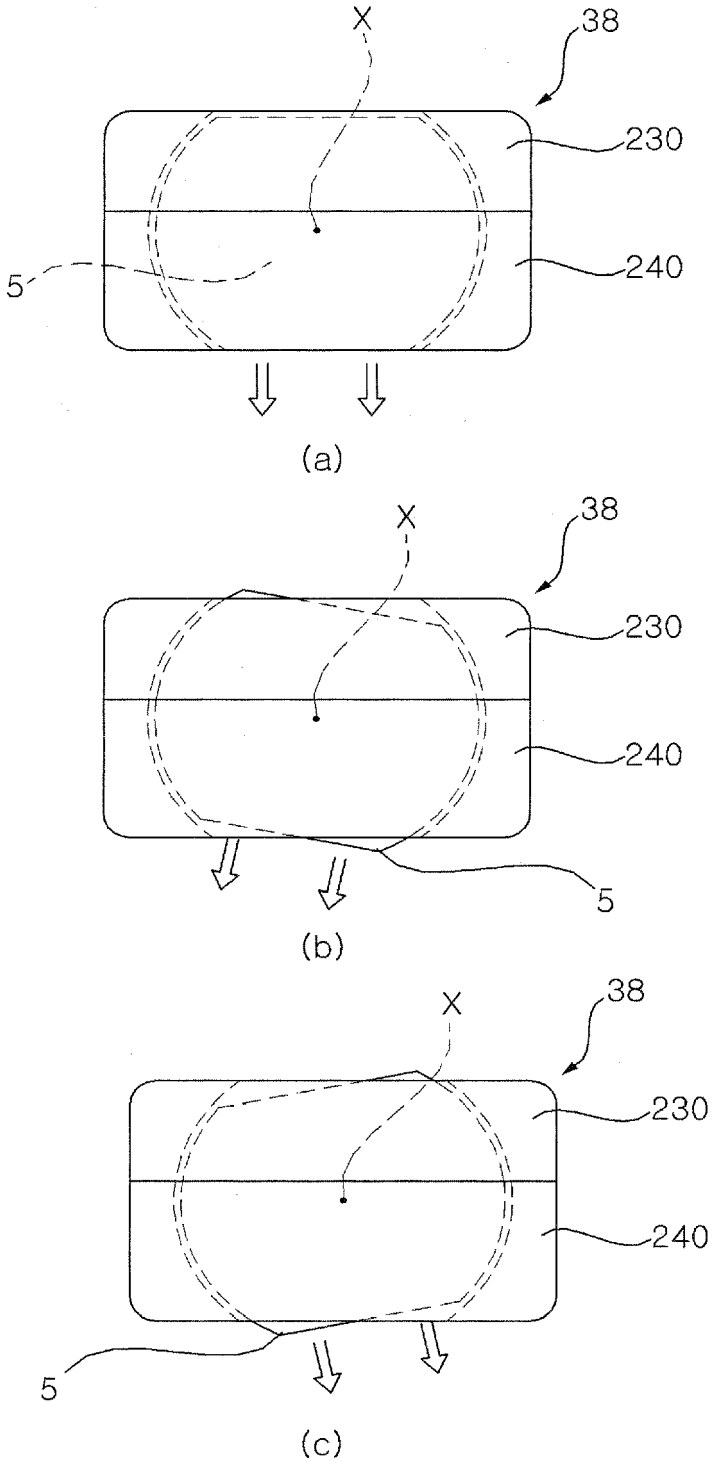


Fig. 20



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EUROPEAN SEARCH REPORT

Application Number
EP 12 19 4257

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X A	US 5 029 451 A (IMAIIDA TSUYOSHI [JP] ET AL) 9 July 1991 (1991-07-09) * column 9, line 64 - column 10, line 38; figure 17 *	1,2,4-15 3	INV. F24F1/00 F24F11/00 F24F13/078 F24F13/26
X	KR 101 039 768 B1 (HUH MAN SEUNG [KR]) 9 June 2011 (2011-06-09) * figures 2,3,4a,5,6 *	1	
X	WO 2011/108814 A2 (SWING AIR CON CO LTD [KR]; HEO MAN JOO [KR]) 9 September 2011 (2011-09-09) * abstract; figures 1b,2b *	1	
X	WO 02/103252 A2 (LG ELECTRONICS INC [KR]; LEE KAM-GYU [KR]; OCK JU-HO [KR]; HWANG SUNG-) 27 December 2002 (2002-12-27) * abstract; figures 4,6 *	1	
X	EP 1 804 004 A2 (LG ELECTRONICS INC [KR]) 4 July 2007 (2007-07-04) * abstract; figures 2,3,4,8,10 *	1	

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F24F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 February 2013	Decking, Oliver

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1

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