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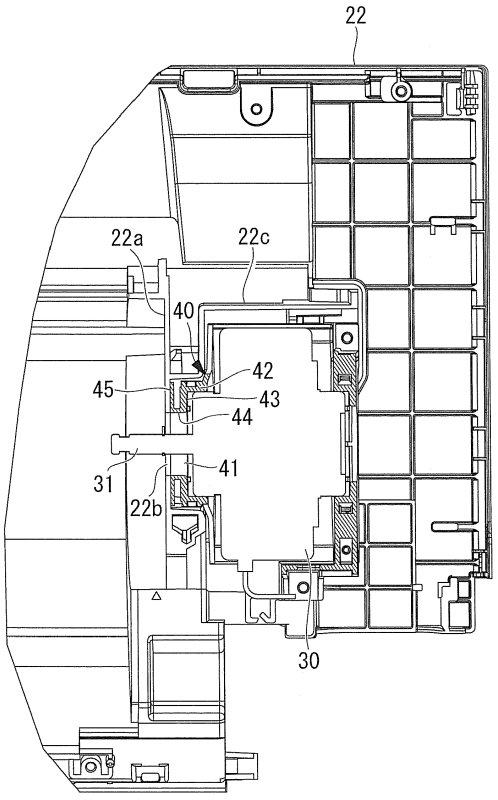
(54) INDOOR UNIT AND AIR CONDITIONER

(57) Provided is an indoor unit having a shaft-part wind shielding structure of a cross flow fan enabling reduction of the number of components and the number of assembly work processes. An indoor unit including a housing; a base body (22) in the housing; a heat exchanger installed in the base body (22); a motor-driven cross flow fan rotatably supported by the base body (22); a motor (30) mounted outside a sidewall (22a) of the base body (22) through a motor bracket (40), and including an output shaft (31) connected to the cross flow fan and penetrating a shaft hole (22b) in the sidewall (22a); and a contact part integrated with the motor bracket (40) to directly contact a whole periphery of a motor-side surface of the sidewall (22a) to surround the shaft hole (22b) at a predetermined motor mounting position.

FIG. 5



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Description

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

[0001] The present invention relates to an indoor unit and an air conditioner, and more particularly to a shaft-part wind shielding structure of a cross flow fan in an indoor unit.

2. DESCRIPTION OF RELATED ART

[0002] An air conditioner is an apparatus that performs air conditioning (cooling, heating, and dehumidification) of indoor space or the like, and generally includes an outdoor unit and an indoor unit as main components.

[0003] The indoor unit includes a cross flow fan driven by a motor inside a housing, in order to introduce air (fresh air) from the inside of a room and to deliver conditioned air passed through a heat exchanger. This cross flow fan is rotatably supported by a base body provided in the housing of the indoor unit. The motor is mounted on one side of the base body through a motor bracket. An output shaft of this motor penetrates a sidewall of the base body, and is connected to the cross flow fan.

[0004] In a shaft part of the cross flow fan in the indoor unit of the air conditioner configured as described above, the fresh air that is not dehumidified is cooled inside the base body to cause dew condensation on the cross flow fan if the fresh air is induced (bypassed) from a clearance between a base of the housing and the motor bracket during cooling operation.

[0005] In the conventional indoor unit, a shaft-part wind shielding structure of the cross flow fan, in which wind shielding components are attached between the base and the motor bracket to block the clearance, is employed in order to prevent the fresh air from being induced. As a material of the conventional wind shielding components, an elastic material such as foamed polystyrene is used.

[0006] Japanese Unexamined Patent Application, Publication No. 2002-48355 (e.g., paragraph [0011]) discloses that a casing 5 that houses therein a motor 4 and a motor cover 6 closely adhere to and are shielded from a partition plate 7 by insulations 12 and 13 attached to a cover component 11 and the like.

BRIEF SUMMARY OF THE INVENTION

[0007] As described above, in the indoor unit of the air conditioner, the shaft-part wind shielding structure, in which the wind shielding components are attached between the base and the motor bracket, is employed in order to prevent dew condensation caused by the fresh air induced from the shaft part of the cross flow fan during the cooling operation.

[0008] However, the conventional shaft-part wind shielding structure or a technology disclosed in Japanese Unexamined Patent Application, Publication No. 2002-48355 is intended to attach the separate wind shielding components between the base and the motor bracket. It is, therefore, desired to improve the shaft-part wind shielding structure to reduce the number of components and the number of assembly work processes.

[0009] The present invention has been made in view of the above problems, and an object of the invention is to provide an indoor unit including a shaft-part wind shielding structure of a cross flow fan, capable of reducing the number of components and the number of assembly work processes, and an air conditioner provided with this indoor unit.

[0010] In order to solve the above problems, the present invention employs the following solutions.

[0011] An indoor unit according to the present invention includes: a housing; a base body provided in the housing; a heat exchanger installed in the base body; a motor-driven cross flow fan that is rotatably supported by the base body, and introduces air from within a room to deliver conditioned air passing through the heat exchanger into the room; a motor mounted outside a sidewall of the base body through a motor bracket, and including an output shaft that is connected to the cross flow fan and that penetrates a shaft hole provided in the sidewall; and a contact part that is integrally provided with the motor bracket, and is in direct contact with a whole periphery of a motor-side surface of the sidewall so as to surround the shaft hole at a predetermined mounting position of the motor.

[0012] According to the present invention, the indoor unit includes the contact part that is integrally provided with the motor bracket, and that is in direct contact with the whole periphery of the motor-side surface of the sidewall so as to surround the shaft hole at the predetermined mounting position of the motor. Therefore, the contact part integrated with the motor bracket comes into contact with the periphery of the shaft hole to form a seal part that separates the cross flow fan side and the motor side across the sidewall from each other. As a result, in the connection part between the cross flow fan and the motor, the air (fresh air) that does not pass through the heat exchanger can be prevented from being induced to the cross flow fan through the shaft hole. Furthermore, such a shaft-part wind shielding structure of the cross flow fan makes it possible to reduce the number of components and the number of work processes during assembly since the contact part is integrated with the motor bracket.

[0013] The above motor bracket may be a component formed out of elastic resin such as polypropylene, and the contact part may be pressed against the surface of the sidewall of the base body to form a seal part.

[0014] In the above invention, the contact part may be a plate-like member that is in surface contact with the surface of the sidewall.

[0015] Consequently, the contact part that is the plate-like member is in surface contact with the whole periphery

of the shaft hole to form the seal part that separates the cross flow fan side and the motor side across the sidewall from each other.

[0016] In this case, the plate-like member may be formed such that a distal end acting as a free end is inclined in a direction of approaching the cross flow fan.

[0017] Consequently, the plate-like member is elastically deformed to be brought into surface contact, so that it is possible to further improve adhesion (seal performance) of the plate-like member to the surface of the sidewall of the base body.

[0018] In the above invention, the contact part may include one or a plurality of ring-shaped projections that are in contact with the surface of the sidewall.

[0019] Consequently, the ring-shaped projections of the contact part come into line contact with the whole periphery of the shaft hole to form a seal part that separates the cross flow fan side and the motor side across the sidewall from each other. In this case, it is possible to form plural-stage seal parts and to improve wind shielding performance if a plurality of ring-shaped projections are provided, namely, ring-shaped projections having different diameters are provided.

[0020] In the above invention, the contact part may include a plurality of ring-shaped projections that are in contact with the surface of the sidewall, and projecting heights of the ring-shaped projections may be increased from a distal end acting as a free end toward a proximal part in stages.

[0021] Consequently, at least one of the ring-shaped projections comes into line contact with the sidewall of the base body to closely adhere to the sidewall. It is, therefore, possible to obtain excellent adhesion (seal performance) without inclining the contact part.

[0022] In the above invention, the indoor unit may include a bracket-side cylindrical part connected to a proximal part of the contact part, extending toward the motor.

[0023] Consequently, the contact part and the bracket-side cylindrical part are of bent shapes. Therefore, when the contact part comes into contact with the surface of the sidewall, the contact part is inclined toward the motor bracket from the proximal part of the contact part as a base point, so that the contact part and the surface of the sidewall can be brought into elastic contact with each other.

[0024] In the above invention, a recess may be provided in a whole periphery of a connection part between the contact part and the bracket-side cylindrical part, and a wind shielding member may be installed in the recess.

[0025] Consequently, the wind shielding member disposed in the recess can also exhibit sealing performance, so that it is possible to ensure sealing of circulation of the fresh air.

[0026] An air conditioner according to the present invention includes: the above indoor unit of the present invention; an outdoor unit including a compressor for compressing a refrigerant, and an outdoor heat exchanger for heat exchange between refrigerant and outdoor air; and a refrigerant pipe connecting the indoor unit to the outdoor unit, and circulating the refrigerant between the indoor unit and the outdoor unit.

[0027] According to the present invention, the indoor unit includes the above shaft-part wind shielding structure of the cross flow fan, so that the fresh air can be prevented from being induced. The shaft-part wind shielding structure of the cross flow fan makes it possible to reduce the number of components and the number of work processes during assembly since the contact part is integrated with the motor bracket.

[0028] According to the above indoor unit of the present invention, the contact part integrated with the motor bracket is used in the shaft-part wind shielding structure of the cross flow fan. It is, therefore, possible to reduce the number of components and the number of assembly work processes, and to ensure that the fresh air is prevented from being induced. As a result, it is possible to ensure prevention of dew condensation caused by the induced fresh air, and to achieve remarkable advantages in that the quality of commodity of the indoor unit and the air conditioner provided with the indoor unit can improve.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0029]

FIG. 1A is an enlarged sectional view of a main part showing a shaft-part wind shielding structure of a cross flow fan in an indoor unit and an air conditioner according to an embodiment of the present invention;

FIG. 1B is a view showing inclination provided in a contact part of an indoor unit and an air conditioner according to an embodiment of the present invention;

FIG. 2 is an enlarged sectional view of a main part showing a first modification relating to the shaft-part wind shielding structure of the cross flow fan shown in FIG. 1A;

FIG. 3A is an enlarged sectional view showing a second modification relating to the shaft-part wind shielding structure of the cross flow fan shown in FIG. 1A;

FIG. 3B is a view showing a third modification different in the structure of the contact part from the second modification relating to the shaft-part wind shielding structure of the cross flow fan shown in FIG. 1A;

FIG. 4 is a perspective view showing a configuration example of the air conditioner;

FIG. 5 is a diagram showing a state where a motor is mounted on a base body of the indoor unit;

FIG. 6 is an exploded perspective view as viewed from the base body of FIG. 5;

FIG. 7 is an exploded perspective view as viewed

from the motor of FIG. 5;

FIG. 8 is a sectional view showing a configuration example of a motor bracket including the contact part of FIG. 1A; and

FIG. 9 is a sectional view showing a configuration example of a motor bracket including the contact part of FIG. 3A.

DETAILED DESCRIPTION OF THE INVENTION

[0030] Hereinafter, an embodiment of an indoor unit and an air conditioner according to the present invention is described with reference to the drawings.

[0031] As shown in FIG. 4, an air conditioner 1 that performs air conditioning (cooling, heating, and dehumidification) of indoor space or the like is an apparatus including an outdoor unit 10 and an indoor unit 20 as main components. The outdoor unit 10 and the indoor unit 20 are connected by a refrigerant pipe 50, so that a refrigerant flow passage of a closed circuit is formed. Additionally, the outdoor unit 10 and the indoor unit 20 are also connected by an electrical wire for control and a power source (not shown).

[0032] Reference numeral 60 in FIG. 4 denotes a remote controller for operation manipulation, and this remote controller 60 allows for setting of various operating states of the air conditioner 1.

[0033] The outdoor unit 10 includes a compressor 12 for compressing a refrigerant, an outdoor heat exchanger 13 for heat exchange between the refrigerant and outdoor air, and an outdoor fan 14 for promoting the heat exchange between the refrigerant and the outdoor air in the outdoor heat exchanger 13, inside a substantially rectangular parallelepiped housing 11. Additionally, inside the housing 11, a four-way valve, an electronic expansion valve, a controller, and the like (not shown) are disposed.

[0034] The outdoor heat exchanger 13 is a heat exchanger that functions as a condenser during cooling operation and as an evaporator during heating operation by operating the four-way valve to switch the circulating direction of the refrigerant.

[0035] The indoor unit 20 includes an oblong, substantially rectangular parallelepiped housing 21. This housing 21 is schematically configured by a base body 22, a front cover 23 mounted on the base body 22 so as to cover a front part of the base body 22 from upper and lower surfaces, right and left surfaces, and a front surface of the front cover 23 in a state of being installed on a wall, and a front panel 24 mounted on the front surface of the front cover 23.

[0036] The indoor unit 20 includes, as main components, an air intake grille (air intake port) 25 provided in the front cover 23 in order to take air that is not conditioned yet (hereinafter, referred to as "fresh air") from within a room, an indoor heat exchanger 26 provided in order to cool or heat the fresh air taken from the air intake grille 25, an outlet 27 provided in the front panel 24 in order to return the air subjected to the heat exchange by the indoor heat exchanger 26 (hereinafter, referred to as "conditioned air") into the room, and a cross flow fan 28 provided in order to take the fresh air from the air intake grille 25, and to blow out the conditioned air from the outlet 27 into the room.

[0037] The indoor heat exchanger 26 and the cross flow fan 28 are supported by the base body 22 inside the housing 21.

[0038] Reference numeral 29 in FIG. 4 denotes a filter. The filter 29 is provided in order to remove impurities such as dust and refuse included in the fresh air passing through the air intake grille 25 to be guided to the indoor heat exchanger 26. In the outlet 27, a louver and a flap (not shown) are provided in order to adjust the blowout direction of the conditioned air.

[0039] The indoor heat exchanger 26 is a heat exchanger that functions as an evaporator during cooling operation and as a condenser during heating operation depending on the circulating direction of the refrigerant.

[0040] In the indoor unit 20 having the above configuration, the cross flow fan 28 employing a motor 30 as a driving source is rotatably supported by the base body 22 constituting the housing 21 of the indoor unit 20. This cross flow fan 28 is disposed inside an air flow passage formed in the base body 22 so as to connect the air intake grille 25 to the outlet 27. A connection part between the cross flow fan 28 and the motor 30 forms a wind shielding structure configured as described below.

[0041] Hereinafter, the shaft-part wind shielding structure in which the cross flow fan 28 is connected to the motor 30 is described in detail with reference to FIGS. 1A and 1B, and FIG. 5 to FIG. 8. Although the cross flow fan 28 is connected to the motor 30 on one side (right side as viewed from the front in the example shown in the figures) of the base body 22, the cross flow fan 28 installed in the base body 22 is not shown in FIG. 5 to FIG. 7.

[0042] The cross flow fan 28 is connected to an output shaft 31 of the motor 30 that penetrates a shaft hole 22b provided in a sidewall 22a of the base body 22.

[0043] The motor 30 is mounted on an outer wall side of the sidewall 22a through a motor bracket 40. This motor bracket 40 is a component formed out of elastic resin such as polypropylene. This motor bracket 40 is formed in a substantially cylindrical shape provided with an opening as appropriate in a wall surface covering the periphery of the motor 30. For example, the motor bracket 40 has a structure in which the motor bracket can be divided into a right half (the front panel 24 side) and a left half (the base body 22 side) with respect to an axial direction of the output shaft 31 of the motor 30.

[0044] On the other hand, a substantially cylindrical motor storage part 22c is provided to protrude from the sidewall 22a of the base body 22 in order to insert the motor 30 stored in the motor bracket 40 into the motor storage part 22c to fix and install the motor 30 therein at a predetermined position. This motor storage part 22c includes a sidewall 22a-side small diameter part to cor-

respond to one of bearings provided on both axial ends of the motor 30, and a large diameter part enlarged to correspond to a body part of the motor 30. The motor bracket 40 and the base body 22 are fixed together by using a bolt (not shown).

[0045] An opening 41 for allowing the output shaft 31 to penetrate the opening 41 is provided in one sidewall surface that is a cross flow fan 28-side surface of the motor bracket 40. This opening 41 is provided with a first cylindrical part 42 that projects outward in an axial direction (direction of the sidewall 22a) of the output shaft 31 along an outer peripheral side end.

[0046] Furthermore, a substantially ring-shaped flat first flange part 43 bent in an axial center direction of the output shaft 31, a second cylindrical part 44 projecting outward in the axial direction of the output shaft 31 from this first flange part 43, and a substantially ring-shaped flat second flange part 45 bent in an opposite direction to (outward from) the axial center direction of the output shaft 31 are provided on the distal end of the first cylindrical part 42.

[0047] The second cylindrical part 44 is a part that projects toward the sidewall 22a in the axial direction of the output shaft 31 along the inner peripheral side end of the first flange part 43, and has an inner diameter allowing at least the output shaft 31 of the motor 30 to pass through.

[0048] The second flange part 45 is a substantially plate-like part formed outward from the distal end of the second cylindrical part 44, and has a function of a contact part that blocks the periphery of the shaft hole 22b by direct contact with the whole periphery of the motor 30-side surface of the sidewall 22a of the above base body 22 so as to surround the shaft hole 22b, in a state where the motor 30 is fixed at the predetermined position.

[0049] That is, this second flange part 45 is a part that forms a seal part for separating the cross flow fan 28 side and the motor 30 side across the sidewall 22a from each other by the direct contact with the sidewall 22a from the outside (the motor 30 side) so as to surround the periphery of the shaft hole 22b at the predetermined mounting position, in the shaft-part wind shielding structure of the cross flow fan 28 in which the cross flow fan 28 is connected to the motor 30 mounted on the outside of the sidewall 22a of the base body 22 through the motor bracket 40 by the output shaft 31 of the motor 30 which penetrates the shaft hole 22b of the sidewall 22a, and is a member provided integrally with the motor bracket 40. In other words, the second flange part 45 is a member that prevents the cross flow fan 28 side and the outside thereof across the sidewall 22a from communicating with each other through the shaft hole 22b of the sidewall 22a.

[0050] FIG. 1A is an enlarged sectional view of a main part showing the above shaft-part wind shielding structure of the cross flow fan 28 in a state where the motor 30 is mounted at the predetermined position to form the seal part.

[0051] In a state shown in FIG. 1A, the second flange part 45 that is the plate-like member serves as the seal part that is in contact with the whole periphery of the motor 30-side surface of the sidewall 22a of the base body 22 so as to surround the shaft hole 22b. Therefore, the flow passage of the fresh air passing through the outside of the motor bracket 40 to communicate with the shaft hole 22b is in a state of being shielded (blocked) by the surface contact of the second flange part 45 with the sidewall 22a. Since the second flange part 45 is the plate-like member provided integrally with the motor bracket 40 and formed out of elastic resin, it is possible to obtain more preferable adhesion (seal performance) by elasticity if the motor 30 is fixed and installed at the position at which the motor 30 is pressed against the surface of the sidewall 22a of the base body 22.

[0052] As shown in FIG. 5, an outer peripheral surface of an axial end of the motor 30 closely adheres to the inner peripheral surface of the first cylindrical part 42, so that a seal part is formed, and this seal part also shields the circulation of the fresh air.

[0053] Thus, the cross flow fan 28 side and the motor 30 side across the sidewall 22a of the base body 22, on which the cross flow fan 28 is installed, are separated from each other by the two seal parts, so that the circulation of the fresh air is shielded. As a result, in the connection part between the cross flow fan 28 and the motor 30, the fresh air can be prevented from passing through the shaft hole 22b to be induced to the cross flow fan 28. Accordingly, the fresh air can be prevented from being induced to the cross flow fan 28 to cause dew condensation. Additionally, the above second flange part 45 of the contact part is integrated with the motor bracket 40. Therefore, there are not only an advantage that the number of components is reduced compared to the conventional separate structure, but also an advantage that the number of work processes during assembly can be reduced since attaching work of a wind shielding component is unnecessary.

[0054] Furthermore, the above second flange part 45 is desirably formed such that the distal end (outer peripheral end) acting as the free end is inclined toward the sidewall 22a by a dimension S (about 1 mm), as shown in FIG. 1B, for example. This dimension S is effective since the elastic resin second flange part 45 absorbs axial allowance (gap) in a state where the motor 30 is mounted and fixed at the predetermined position of the base body 22. That is, the second flange part 45 inclined by the dimension S elastically deforms, like a second flange part 45' indicated by a solid line, from the inclined state indicated by an imaginary line in FIG. 1B. It is, therefore, possible to further ensure the adhesion of the second flange part 45 to the sidewall 22a. The second flange part 45 and the second cylindrical part 44 are of bent shapes. Owing to this, when the second flange part 45 comes into contact with the surface of the sidewall 22a, the second flange part 45 is inclined toward the motor bracket 40 from a proximal part of the second flange part 45 as a base point, so that the second flange part 45 and

the surface of the sidewall 22a can come into elastic contact with each other.

[0055] As in a first modification shown in FIG. 2, a recess 46 may be provided in the whole periphery of a connection part between the second flange part 45 acting as the contact part and the second cylindrical part 44, and a wind shielding member 51 may be installed in the recess 46 so as to bury space of the recess 46. As a material of the wind shielding member 51 used herein, an elastic material such as foamed polystyrene is desirable. The distal end of the second flange part 45 acting as the free end may be formed in such a shape that the inclination of the dimension S is provided, as shown in FIG. 1B.

[0056] With such a structure, the wind shielding member 51 disposed in the recess 46 can exhibit sealing performance in addition to the seal structure by the surface contact of the above second flange part 45. It is, therefore, possible to further ensure that the two-stage seal structures can seal the circulation of the fresh air.

[0057] A contact part of a second modification shown in FIG. 3A and FIG. 9 is different from the surface contact of the above second flange part 45, and has a sealing structure in which the distal end of ring-shaped projection 47 is brought into line contact with the sidewall 22a. That is, a second flange part 45A of the second modification includes one or a plurality of ring-shaped projections 47 that are in contact with the surface of the sidewall 22a, on a surface facing the sidewall 22a. The ring-shaped projections 47 are round projecting parts provided on the whole outer peripheral of the second cylindrical part 44. In a case where the ring-shaped projections 47 are provided at a plurality of places, the ring-shaped projections 47 are disposed so as to draw concentric circles.

[0058] The second flange part 45A of the second modification has substantially the same structure as the above second flange part 45 except that the second flange part 45A includes the ring-shaped projections 47.

[0059] The second flange part 45A including the ring-shaped projections 47 comes into line contact with the whole periphery of the sidewall 22a on parts in the vicinity of the distal ends of the ring-shaped projections 47 to form a seal part that separates the cross flow fan 28 and the motor 30 side across the sidewall 22a of the base body 22, on the outer peripheral side of the shaft hole 22b. The second flange part 45A, therefore, acts as a contact part having a similar seal function to that of the second flange part 45 that is in surface contact with the motor 30-side surface of the sidewall 22a.

[0060] If a plurality of ring-shaped projections 47 same in projecting height but different in diameter are provided, it is possible to form plural-stage seal parts, and it is, therefore, possible to increase reliability of the seal function.

[0061] In a second flange part 45B of a third modification shown in FIG. 3B, the projecting heights of the ring-shaped projections 47 increase from the distal end acting as the free end toward the proximal part in stages. In the configuration example shown in the figure, the three ring-shaped projections 47 are concentrically provided, and the projecting heights of the ring-shaped projections 47 increase in stages from a ring-shaped projection 47a near the distal end toward a ring-shaped projection 47c near the proximal part.

[0062] Therefore, at least one of the ring-shaped projections 47 closely adheres to the surface of a sidewall 22a, so that it is possible to obtain excellent seal performance.

[0063] As described so far, according to each of the embodiment and the modifications thereof, in the shaft-part wind shielding structure of the cross flow fan 28 of the indoor unit 20, the cross flow fan 28 is connected to the motor 30 mounted outside the sidewall 22a of the base body 22 through the motor bracket 40 by the output shaft 31 of the motor 30 which penetrates the shaft hole 22b provided in the sidewall 22a, the motor bracket 40 used herein includes the second flange part 45, 45A or 45B integrated with the motor bracket 40, as the contact part that is in direct contact with the whole periphery of the motor 30-side surface of the sidewall 22a at the predetermined mounting position of the motor 30 so as to surround the shaft hole 22b. It is, therefore, possible to reduce the number of components and the number of assembly work processes, and ensure that the fresh air from the shaft hole 22b is prevented from being induced.

[0064] As a result, in the cross flow fan 28, it is possible to ensure that the fresh air induced during the cooling operation is prevented from being cooled to cause the dew condensation, and it is, therefore, possible to prevent dew condensation water drops from scattering along with conditioned air into the room. Accordingly, the air conditioner 1 including the outdoor unit 10 and the indoor unit 20 can achieve reduction in the number of components and the number of assembly work processes, and improvement in the reliability and quality of commodity.

[0065] The present invention is not limited to the above embodiment, and can be appropriately modified without departing from the scope of the present invention.

REFERENCE SIGNS LIST

[0066]

1	Air conditioner
10	Outdoor unit
11, 21	Housing
12	Compressor
13	Outdoor heat exchanger
14	Outdoor fan
20	Indoor unit
22	Base body
22a	Sidewall
22b	Shaft hole
22c	Motor storage part
23	Front cover
24	Front panel

25	Air intake grille (air intake port)
26	Indoor heat exchanger
27	Outlet
28	Cross flow fan
30	Motor
31	Output shaft
40	Motor bracket
41	Opening
42	First cylindrical part
43	First flange part
44	Second cylindrical part
45, 45A, 45B	Second flange part
46	Recess
47	Ring-shaped projection
51	Wind shielding member

Claims

1. An indoor unit (20) comprising:

a housing (21);
a base body (22) provided in the housing (21);
a heat exchanger (26) installed in the base body (22);
a motor-driven cross flow fan (28) that is rotatably supported by the base body (22), and configure to introduce air from within a room into the heat exchanger (26)and to deliver conditioned air passing through the heat exchanger (26) into the room;
a motor (30) mounted outside a sidewall (22a) of the base body (22) through a motor bracket(40), and including an output shaft (31) that is connected to the cross flow fan (28) and that penetrates a shaft hole (22b) provided in the sidewall (22a); and
a contact part that is integrally provided with the motor bracket (40), and that is in direct contact with a whole periphery of a motor-side surface of the sidewall (22a) of the base body (22) so as to surround the shaft hole (22b) at a predetermined mounting position of the motor (30).

2. The indoor unit (20) according to claim 1, wherein the contact part is a plate-like member that is in surface contact with the surface of the sidewall (22a).

3. The indoor unit (20) according to claim 2, wherein the plate-like member is formed such that a distal end that acts as a free end is inclined in a direction of approaching the cross flow fan (28).

4. The indoor unit (20) according to claim 1, wherein the contact part includes one or a plurality of ring-shaped projections (47) that are in contact with the surface of the sidewall (22a).

5. The indoor unit (20) according to claim 1, wherein the contact part includes a plurality of ring-shaped projections (47) that are in contact with the surface of the sidewall, and
projecting heights of the ring-shaped projections (47) increase from a distal end acting as a free end toward a proximal part in stages.

6. The indoor unit (20) according to any one of claims 1 to 5, comprising
a bracket-side cylindrical part connected to a proximal part of the contact part, and extending toward the motor.

7. The indoor unit (20) according to claim 6, wherein a recess (46) is provided in a whole periphery of a connection part between the contact part and the bracket-side cylindrical part, and a wind shielding member (51) is installed in the recess.

8. An air conditioner (1) comprising:

the indoor unit (20) according to any one of claims 1 to 7;
an outdoor unit (10) including a compressor (12) for compressing a refrigerant, and an outdoor heat exchanger (13) for heat exchange between refrigerant and outdoor air; and
a refrigerant pipe (50) connecting the indoor unit (20) to the outdoor unit (10), and configured to circulate the refrigerant between the indoor unit (20) and the outdoor unit (10).

FIG. 1A

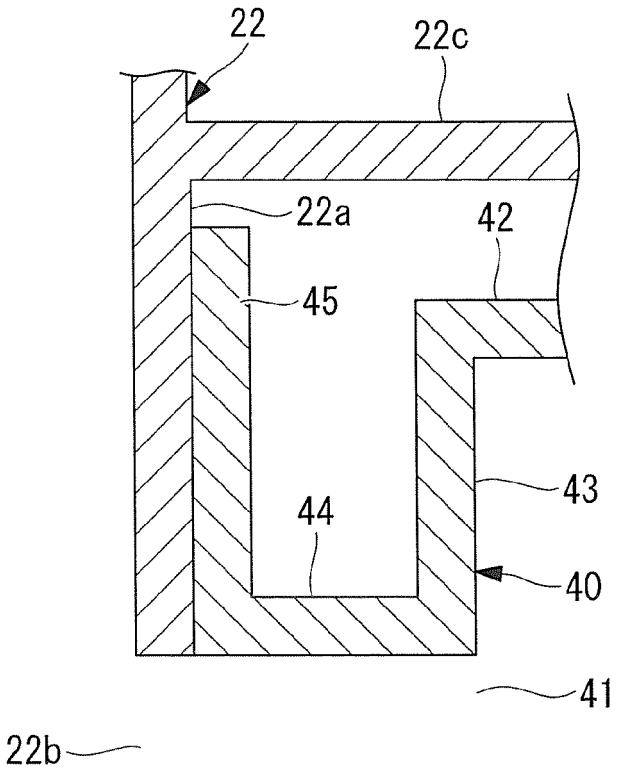


FIG. 1B

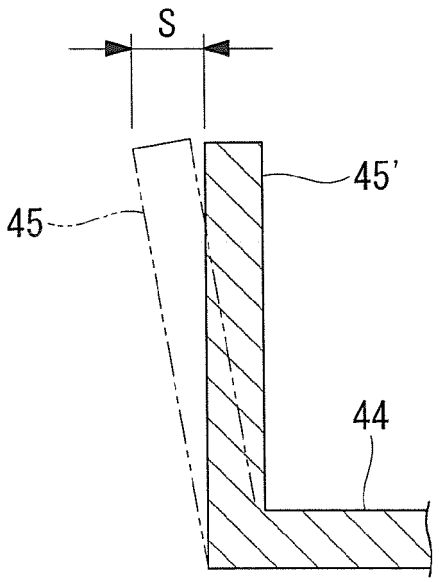


FIG. 2

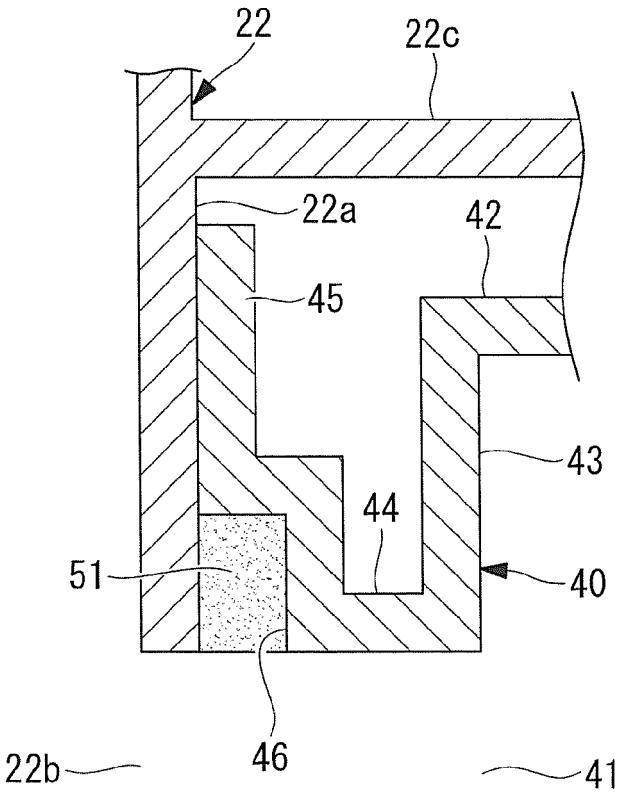


FIG. 3A

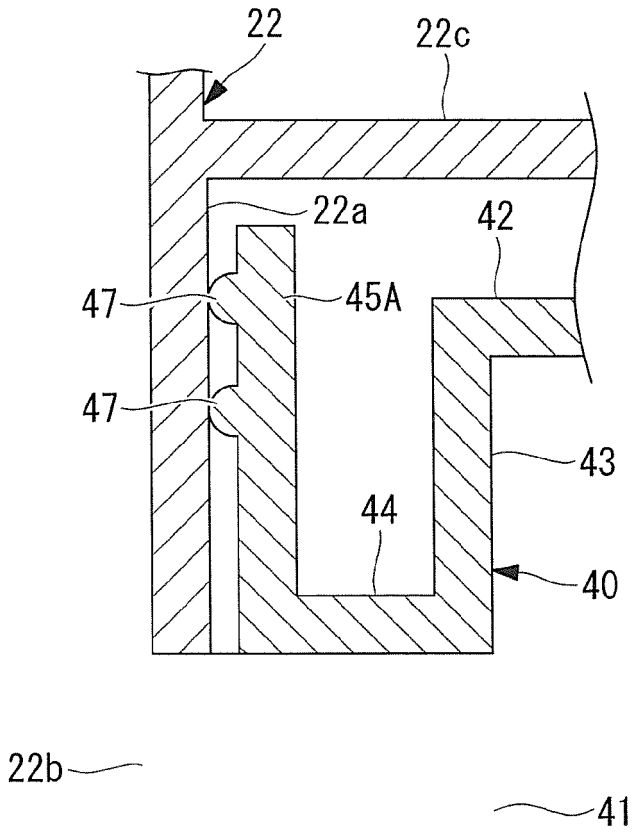


FIG. 3B

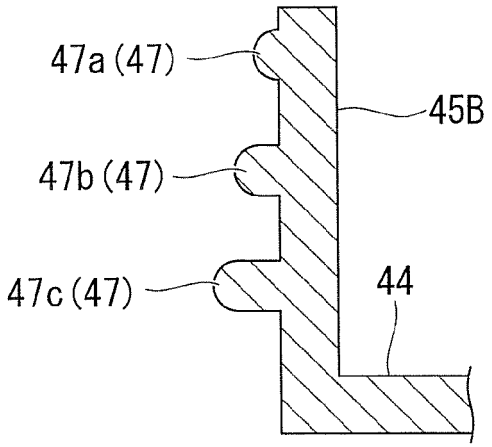


FIG. 4

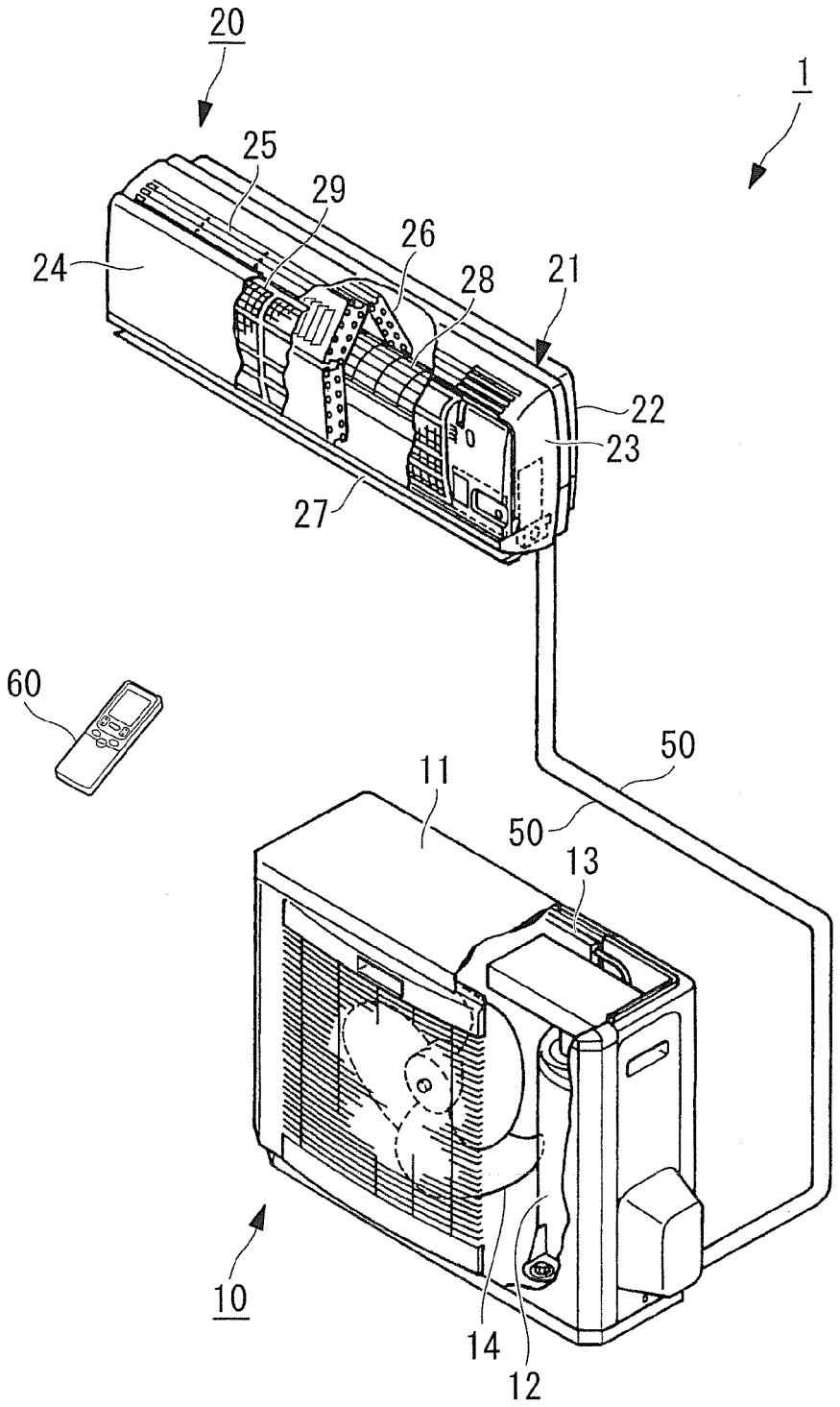


FIG. 5

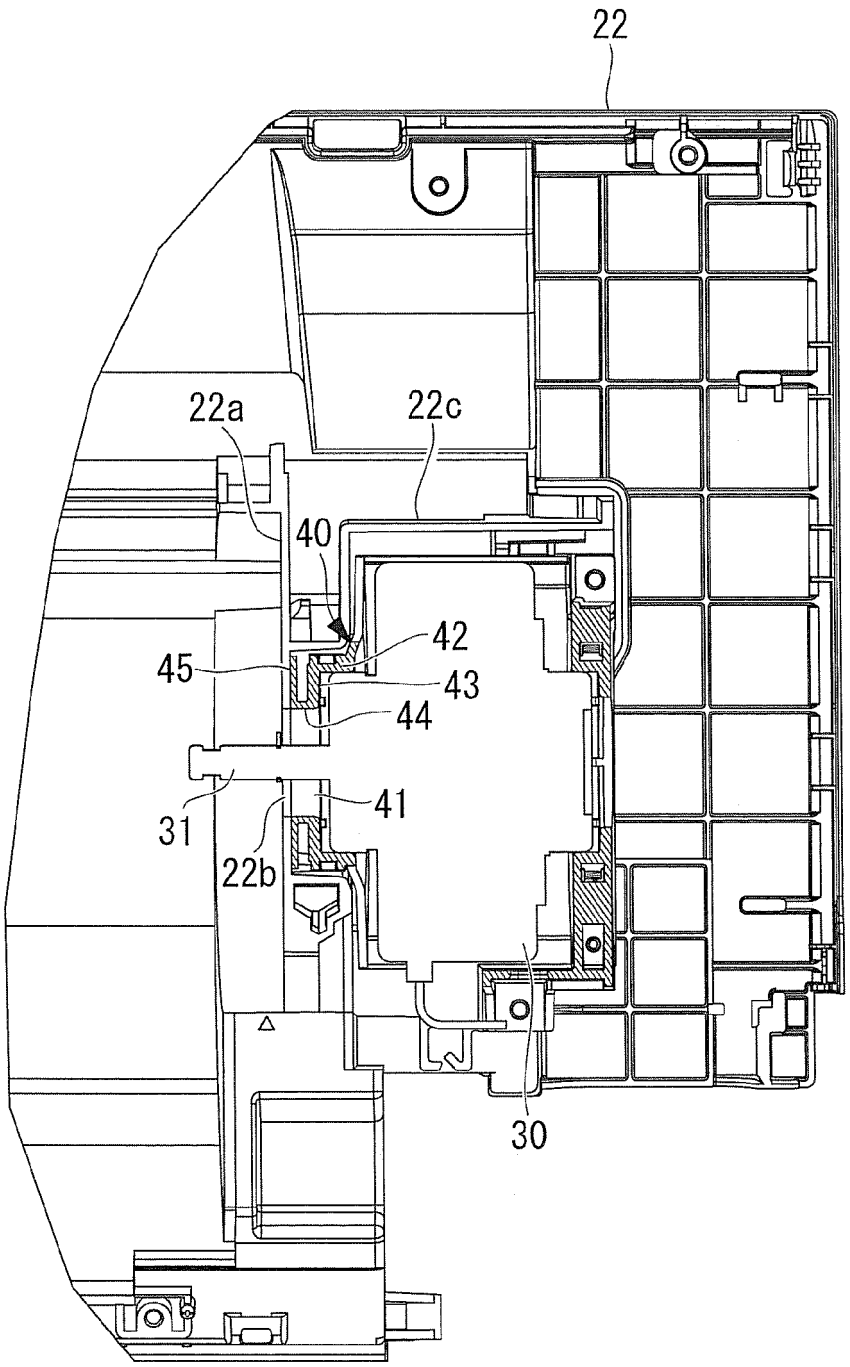


FIG. 6

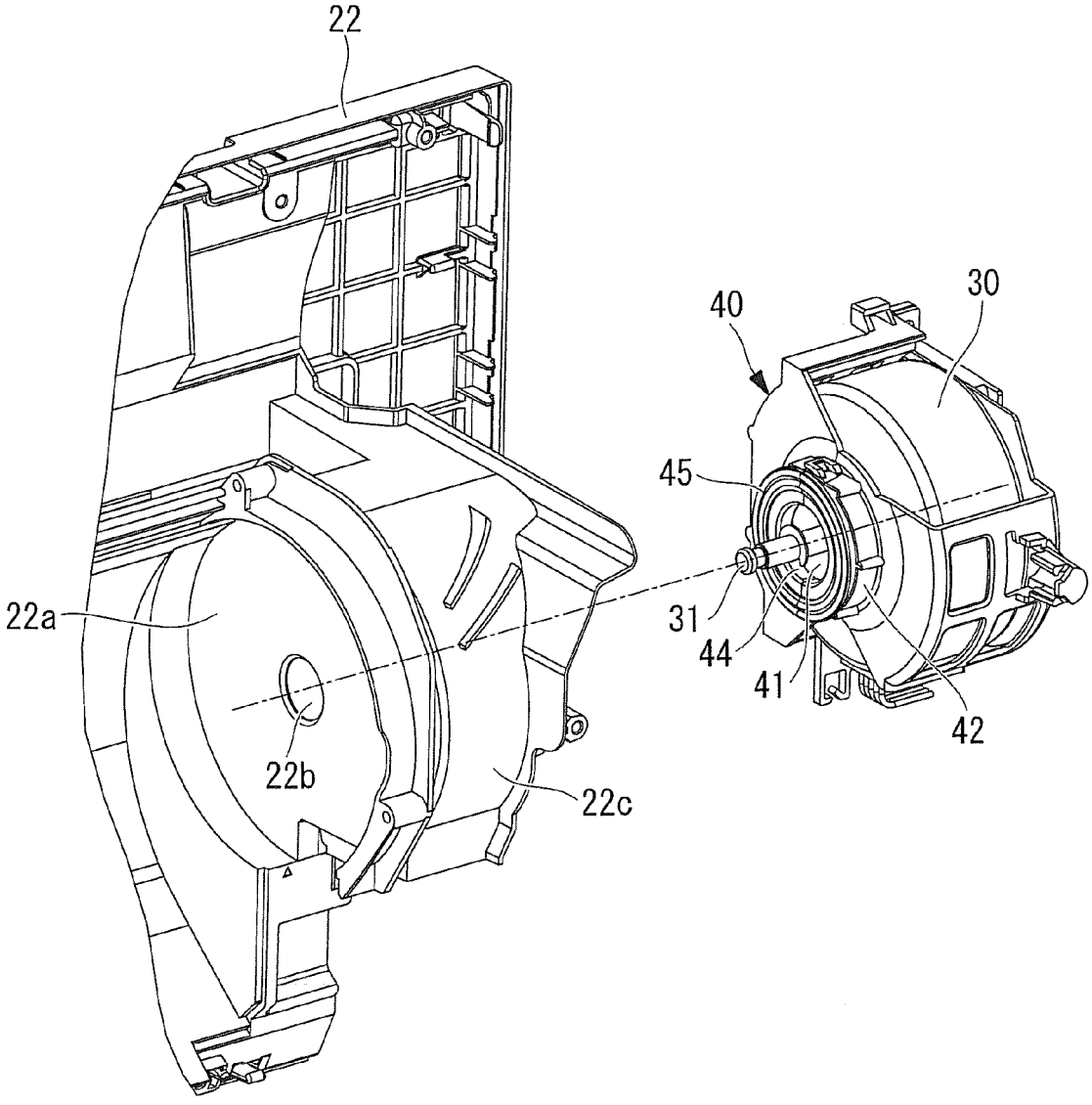


FIG. 7

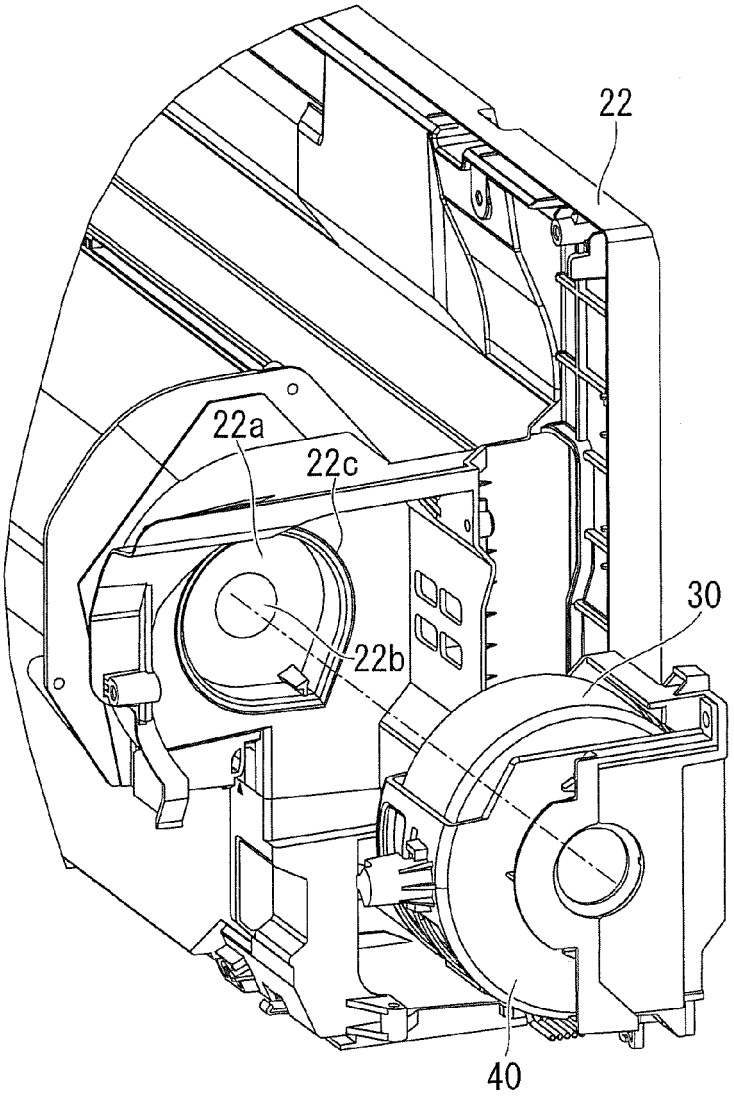


FIG. 8

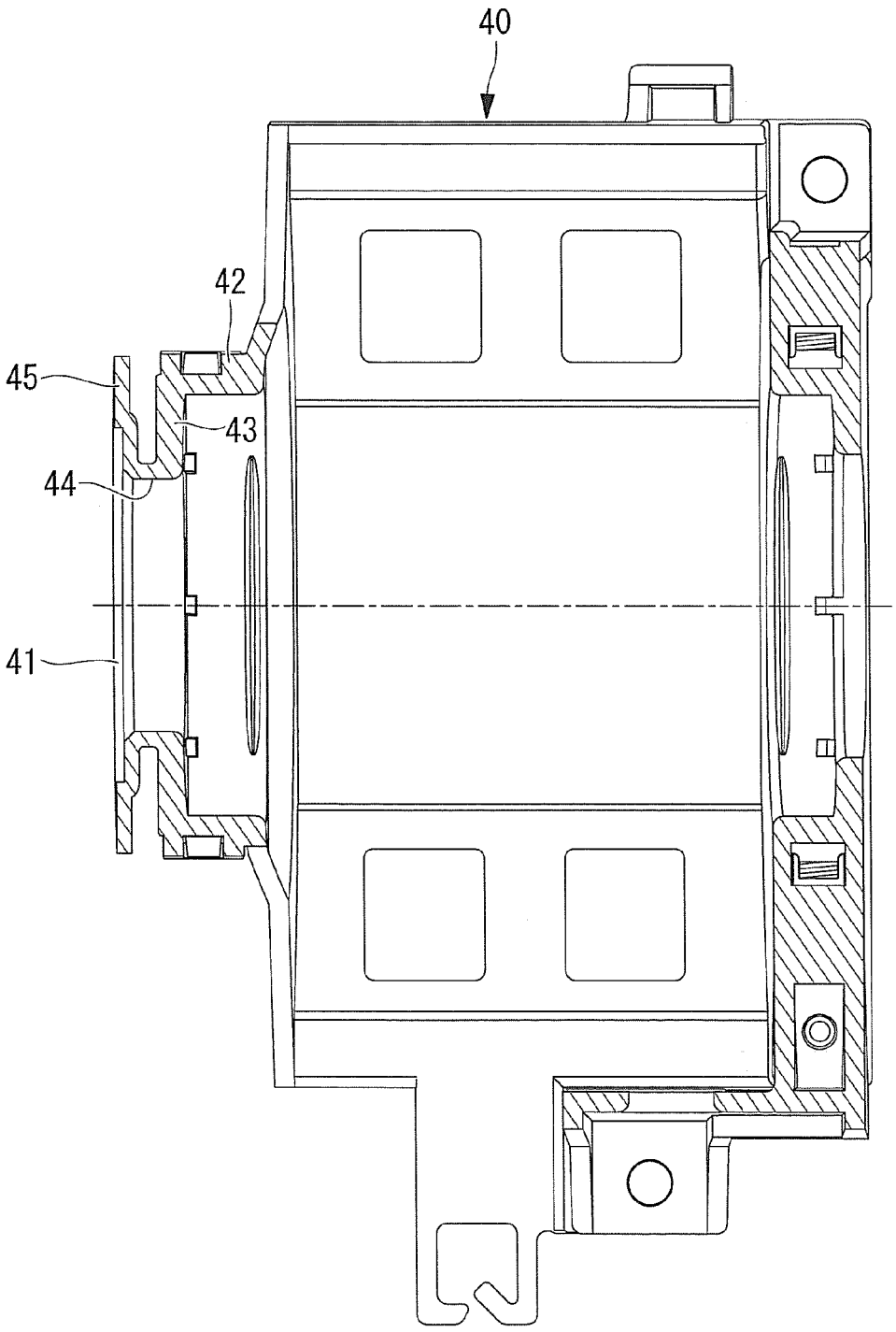
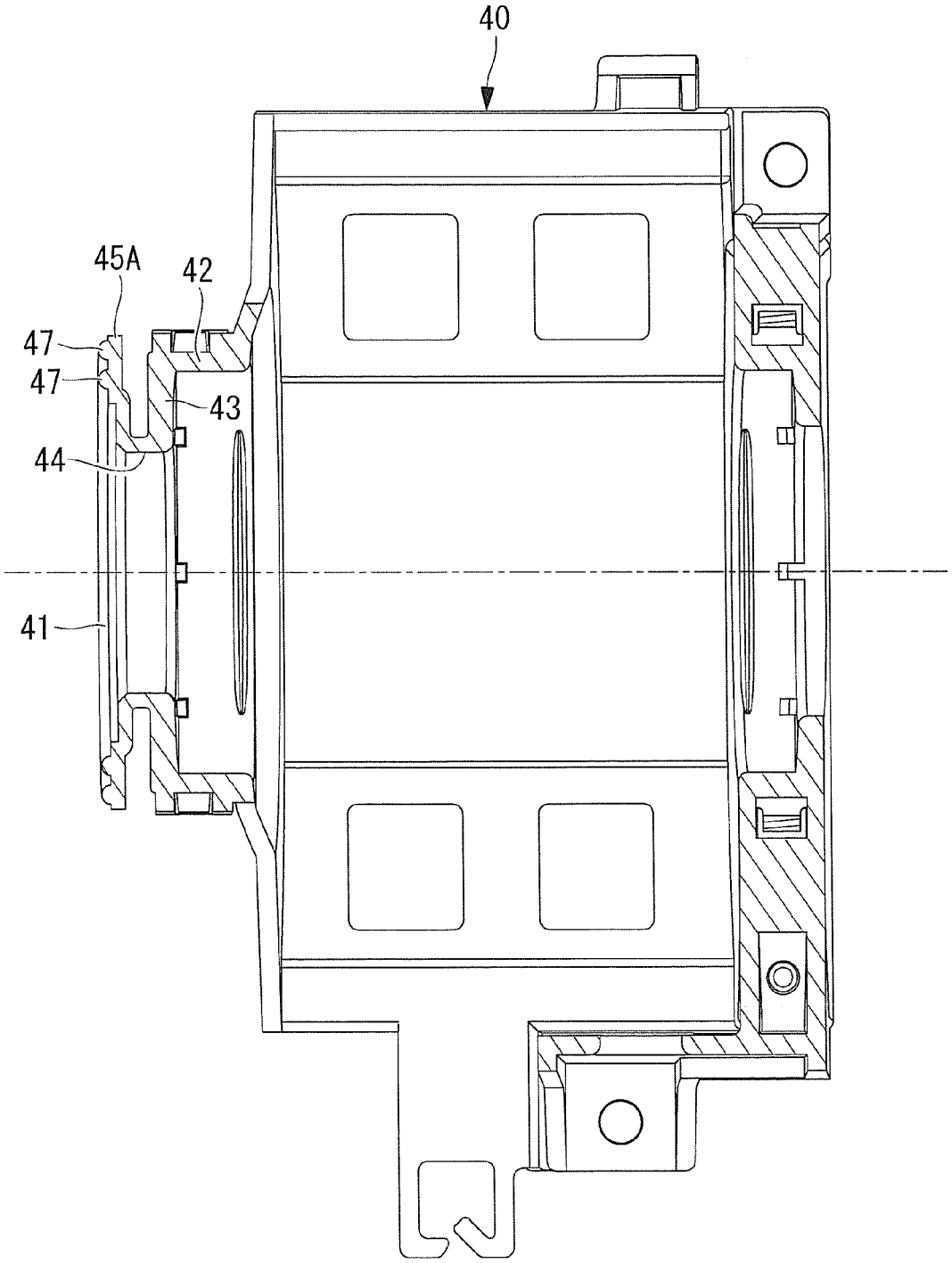


FIG. 9



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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 February 2016	Mattias Grenbäck

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