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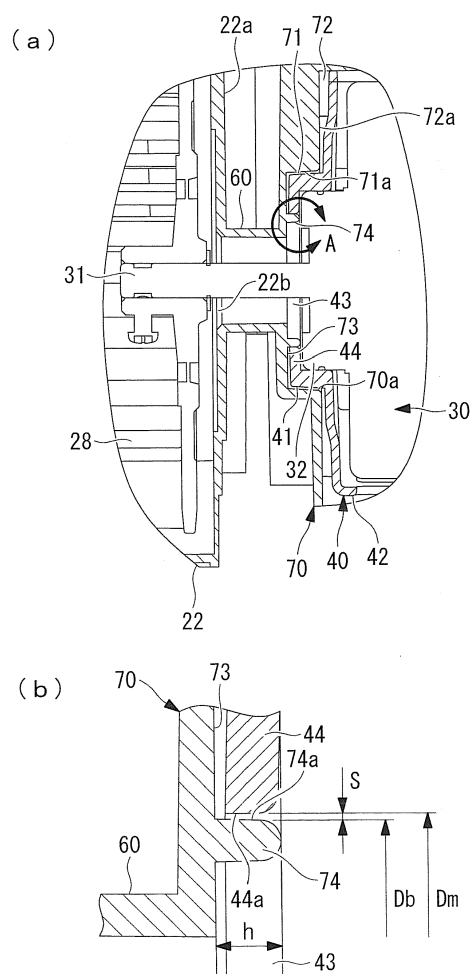
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(54) **INDOOR UNIT AND AIR CONDITIONER**

(57) Provided is an indoor unit (20) that has a shaft-portion air shielding structure of a cross-flow fan which does not adversely affect the vibration-isolating performance of a vibration-isolating member. In an indoor unit, a ring-shaped protruding portion (74) that is provided at a side-wall surface (73) of the motor-installing portion (70) so as to protrude therefrom in a motor-installing direction and a vibration-isolating-member receiving portion (44) in which an end portion of the motor bracket (40) is bent in a direction of a motor-shaft center are provided. Between an outer-circumferential surface (74a) of the ring-shaped protruding portion (74) and a distal-end surface (44a) of the vibration-isolating-member receiving portion (44), a minute gap (S) is formed, and a protruding height (h) of the ring-shaped protruding portion (74) is set so as not to be in contact with a vibration-isolating member (32).

FIG. 1



Description

{Technical Field}

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

{Background Art}

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

[0003] The indoor unit is provided with a cross-flow fan that is driven by a motor in a casing in order to blow out conditioned air, that is, the air (fresh air) that is introduced from the indoor space and that has been conditioned by passing through a heat exchanger. This cross-flow fan is supported, in a rotatable manner, by a base main unit provided in the casing of the indoor unit. Also, the motor is mounted at one side of the base main unit via a motor bracket, and an output shaft of the motor is coupled to the cross-flow fan by passing through a side wall of the base main unit.

[0004] With such an air conditioner indoor unit, at a shaft portion of the cross-flow fan, if fresh air that has not been dehumidified is drawn in (bypassed) from a gap between the base of the casing and the motor bracket during the cooling operation, this fresh air is cooled inside the base main unit and condenses at the cross-flow fan.

[0005] In a conventional indoor unit, in order to prevent the fresh air from being drawn in as described above, a shaft-portion air shielding structure is employed in the cross-flow fan, with which the gap between the base and the motor bracket is closed by attaching an air-shielding component thereto. Note that, as a conventional air-shielding component, for example, an elastic material such as foamed polystyrene has been used.

[0006] In addition, Patent Literature 1, described below, discloses a structure in which a cylindrical vibration-isolating member that is mounted to a casing opening and a motor bearing is mounted so as to abut against the cylindrical casing opening.

{Citation List}

{Patent Literature}

[0007] {PTL 1} Japanese Unexamined Patent Application, Publication No. 2004-144318 ({Fig. 3} etc.)

{Summary of Invention}

{Technical Problem}

[0008] As described above, in order to prevent con-

densation caused by drawing in fresh air from the shaft portion of the cross-flow fan during the cooling operation, the indoor unit of the air conditioner employs the shaft-portion air shielding structure in which the air-shielding component is attached to the gap between the base and the motor bracket. In such a conventional structure, because the air-shielding component, which is a separate piece, is attached between the base and the motor bracket, it is desirable to reduce the number of components and the number of processes in assembly work by improving the shaft-portion air shielding structure.

[0009] On the other hand, with the conventional structure disclosed in Patent Literature 1, because the vibration-isolating member is made to abut against the casing opening, the vibration-isolating performance of the vibration-isolating member which employs rubber or the like may be adversely affected.

[0010] The present invention has been conceived in order to solve the above-described problems, and an object thereof is to provide an indoor unit that has a shaft-portion air shielding structure of a cross-flow fan, with which the number of components and the number of processes in assembly work can be decreased, and which, additionally, does not adversely affect the vibration-isolating performance of a vibration-isolating member, and also to provide an air conditioner provided with this indoor unit.

{Solution to Problem}

[0011] In order to solve the above-described problems, the present invention employs the following solutions.

[0012] An indoor unit according to a first aspect of the present invention includes a casing; a base main unit provided in the casing; a cylindrically-shaped motor-shaft pathway that is provided at a side wall of the base main unit on a motor-installing side thereof so as to protrude therefrom; a heat exchanger that is installed in the base main unit; a motor-driven cross-flow fan that is supported by the base main unit in a rotatable manner, and that blows conditioned air, which is air introduced from an indoor space and made to pass through the heat exchanger, into the indoor space; a motor that is mounted to a motor-installing portion provided in the base main unit via a motor bracket and whose output shaft, which passes through the motor-shaft pathway, is coupled with the cross-flow fan; and a vibration-isolating-member receiving portion in which an end portion of the motor bracket is bent in a direction of a motor-shaft center, wherein, between an outer-circumferential surface of the motor-shaft pathway and a distal-end surface of the vibration-isolating-member receiving portion, a minute gap in which the outer-circumferential surface can be fitted to an inner side of the distal-end surface is formed, and a distal-end surface of the motor-shaft pathway is set so as not to be in contact with a vibration-isolating member of the motor.

[0013] With the above-described first aspect, the

minute gap in which the outer-circumferential surface can be fitted to the inner side of the distal-end surface is formed between the outer-circumferential surface of the motor-shaft pathway and the distal-end surface of the vibration-isolating-member receiving portion, and, also, the distal-end surface of the motor-shaft pathway is set so as not to be in contact with the vibration-isolating member of the motor. Therefore, it is possible to decrease the number of components and the number of processes in assembly work by changing the shapes of the existing components. Specifically, because the shaft-portion air shielding structure of the cross-flow fan is formed by the motor-shaft pathway and the vibration-isolating-member receiving portion that are formed as a single piece by changing the shapes of or by extending the existing components of the base main unit and the motor bracket, the number of components and the number of processes in assembly work will not be increased. Moreover, because the distal-end surface is not in contact with the vibration-isolating member, the vibration-isolating performance thereof will not be adversely affected.

[0014] An indoor unit according to a second aspect of the present invention includes a casing; a base main unit provided in the casing; a cylindrically-shaped motor-shaft pathway that is provided at a side wall of the base main unit on a motor-installing side thereof so as to protrude therefrom; a motor-installing portion that is provided at a motor-side end portion of the motor-shaft pathway; a heat exchanger that is installed in the base main unit; a motor-driven cross-flow fan that is supported by the base main unit in a rotatable manner, and that blows conditioned air, which is air introduced from an indoor space and made to pass through the heat exchanger, into the indoor space; a motor that is mounted to the motor-installing portion via a motor bracket and whose output shaft that passes through the motor-shaft pathway is coupled with the cross-flow fan; a ring-shaped protruding portion that is provided so as to protrude from a side-wall surface of the motor-installing portion in a motor-installing direction; and a vibration-isolating-member receiving portion in which an end portion of the motor bracket on a base-main-unit side is bent in a direction of a motor-shaft center, wherein, between an outer-circumferential surface of the ring-shaped protruding portion and a distal-end surface of the vibration-isolating-member receiving portion, a minute gap in which the outer-circumferential surface can be fitted to an inner side of the distal-end surface is formed, and a protruding height of the ring-shaped protruding portion is set so as not to be in contact with a vibration-isolating member of the motor.

[0015] With the above-described second aspect, the minute gap in which the outer-circumferential surface can be fitted to the inner side of the distal-end surface is formed between the outer-circumferential surface of the ring-shaped protruding portion and the distal-end surface of the vibration-isolating-member receiving portion, and, also, the protruding height of the ring-shaped protruding portion is set so as not to be in contact with the vibration-

isolating member of the motor. Therefore, it is possible to decrease the number of components and the number of processes in assembly work by changing the shapes of the existing components. Specifically, because the shaft-portion air shielding structure of the cross-flow fan is formed by the ring-shaped protruding portion and the vibration-isolating-member receiving portion that are formed as a single piece by changing the shapes of the existing components of the base main unit and the motor bracket, the number of components and the number of processes in assembly work will not be increased. Moreover, because the distal-end surface is not in contact with the vibration-isolating member, the vibration-isolating performance thereof will not be adversely affected.

[0016] In the above-described second aspect, it is preferable that the motor-installing portion have a concave shape that forms a step portion in which the side-wall surface forms a bottom surface thereof. By doing so, it is possible to enhance the air shielding performance of the shaft portion by increasing the channel resistance.

[0017] An air conditioner according to a third aspect of the present invention includes any one of the above-described indoor units; an outdoor unit that has a compressor for compressing refrigerant and an outdoor heat exchanger that performs heat exchange between the refrigerant and outdoor air; and a refrigerant pipe that connects the indoor unit and the outdoor unit and that circulates the refrigerant between the indoor unit and the outdoor unit.

[0018] With the above-described aspect, the indoor unit has the shaft-portion air shielding structure of the cross-flow fan that is formed by the ring-shaped protruding portion and the vibration-isolating-member receiving portion that are formed as a single piece by changing the shapes of the existing components of the base main unit and the motor bracket. Therefore, it is possible to prevent the fresh air from being drawn in while decreasing the number of components and the number of processes during assembly. In addition, because the ring-shaped protruding portion is not in contact with the vibration-isolating member of the motor, the vibration-isolating performance of the vibration-isolating member will not be adversely affected.

{Advantageous Effects of Invention}

[0019] With the above-described indoor unit of the present invention, the shaft-portion air shielding structure of the cross-flow fan is formed of a ring-shaped protruding portion and a vibration-isolating-member receiving portion that are formed as a single piece by changing the shapes of existing components. Therefore, it is possible to reliably prevent fresh air from being drawn in while decreasing the number of components and the number of processes in assembly work, and, additionally, the vibration-isolating performance of the vibration-isolating member will not be adversely affected. As a result, because it is possible to reliably prevent condensation in

the cross-flow fan caused by drawing in fresh air, there is a notable advantage in that the market appeal of the indoor unit is enhanced.

{Brief Description of Drawings}

[0020]

{Fig. 1} Fig. 1 is a diagram showing an embodiment of an indoor unit and an air conditioner of the present invention, in which (a) is an enlarged sectional view of relevant portions, showing a first aspect related to a shaft-portion air shielding structure of a cross-flow fan and (b) is a diagram showing, in enlargement, a portion A in (a).

{Fig. 2} Fig. 2 is a diagram showing a state in which a motor is attached to a base main unit of the indoor unit.

{Fig. 3} Fig. 3 is a side view showing the base main unit viewed from the motor-attaching direction.

{Fig. 4} Fig. 4 is a diagram showing another embodiment (second aspect) related to the shaft-portion air shielding structure of the cross-flow fan shown in Fig. 1(b).

{Fig. 5} Fig. 5 is a perspective view showing an example configuration of the air conditioner.

{Description of Embodiments}

[0021] Embodiments of an indoor unit and an air conditioner according to the present invention will be described below based on the drawings.

[0022] As shown in Fig. 5, an air conditioner 1 that performs air conditioning (cooling, heating, and dehumidifying) of an indoor space or the like includes 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, thus forming a closed-circuit refrigerant channel. In addition, the outdoor unit 10 and the indoor unit 20 are also connected by electrical wires (not shown) for a power source and for performing control.

[0023] Note that a remote controller 51 for operation control is configured so as to set various operating states of the air conditioner 1.

[0024] The outdoor unit 10 is provided with, inside a casing 11 having a substantially rectangular shape, a compressor 12 for compressing refrigerant, an outdoor heat exchanger 13 that performs heat exchange between the refrigerant and the outdoor air, and an outdoor fan 14 that promotes heat exchange between the refrigerant and the outdoor air at the outdoor heat exchanger 13. In addition, a four-way valve, an electronic expansion valve, a control unit, and so forth (not shown) are also disposed inside the casing 11.

[0025] The outdoor heat exchanger 13 is a heat exchanger that, by switching the direction in which the refrigerant is circulated by manipulating the four-way valve, serves as a condenser during the cooling operation and

serves as an evaporator during the heating operation.

[0026] The indoor unit 20 is provided with a casing 21 that has a laterally elongated, substantially rectangular shape. In outline, the configuration of this casing 21 includes a base main unit 22, a front cover 23 that is attached to the base main unit 22 in a wall-mounted state so as to cover the front portion thereof from the top, bottom, left, right, and front sides, and a front panel 24 that is attached to the front side of the front cover 23.

[0027] The indoor unit 20 includes, as main components, an intake grill (intake port) 25 provided in the front cover 23 to take in unconditioned air (hereinafter, referred to as "fresh air") from the indoor space, an indoor heat exchanger 26 provided to cool or heat the fresh air taken in from the intake grill 25, a vent 27 provided in the front panel 24 to return the air that has undergone heat exchange at the indoor heat exchanger 26 (hereinafter, referred to as a "conditioned air") to the indoor space, and a cross-flow fan 28 provided to take in the fresh air from the intake grill 25 and, also, to blow out the conditioned air into the indoor space from the vent 27.

[0028] The indoor heat exchanger 26 and the cross-flow fan 28 are supported by the base main unit 22 inside the casing 21.

[0029] A filter 29 removes impurities, such as dust, dirt, or the like, included in the fresh air that passes through the intake grill 25 to be guided to the indoor heat exchanger 26. The vent 27 is provided with louvers and flaps (not shown) for adjusting the directions in which the conditioned air is blown out.

[0030] The indoor heat exchanger 26 serves as an evaporator during the cooling operation or serves as a condenser during the heating operation, depending on the direction in which the refrigerant is circulated.

[0031] With the indoor unit 20 having the above-described configuration, for example, as shown in Figs. 1 and 2, the cross-flow fan 28 that employs a motor 30 as a driving source is supported by the base main unit 22, which forms the casing 21 of the indoor unit 20, in a rotatable manner. This cross-flow fan 28 is disposed in an air channel formed in the base main unit 22 so as to connect the intake grill 25 and the vent 27. Thus, a portion connecting the cross-flow fan 28 and the motor 30 has an air shielding structure configured as described below.

[0032] An embodiment (first aspect) of a shaft-portion air shielding structure in which the cross-flow fan 28 and the motor 30 are coupled will be described in detail below based on Figs. 1 to 3. Note that the cross-flow fan 28 is coupled with the motor 30 at one side of the base main unit 22 (on the right side when viewed from the front in the illustrated example).

[0033] The cross-flow fan 28 is coupled with an output shaft 31 of the motor 30, which passes through a shaft hole 22b provided in a side wall 22a of the base main unit 22. At the side wall 22a, which is on the motor installing side of the base main unit 22, the output shaft 31 passes through a cylindrically-shaped motor-shaft pathway 60 that is provided so as to protrude from an outer

circumferential portion of the shaft hole 22b in the direction in which the motor 30 is installed. The motor-shaft pathway 60 is a portion that forms a portion of the base main unit 22.

[0034] A motor-installing portion 70 at which the motor 30 is mounted via a motor bracket 40 is provided at the motor-side end portion of the motor-shaft pathway 60 so as to form a single piece therewith. Because the motor-installing portion 70 accommodates a motor small-diameter portion, which is an end portion of the motor 30 having a smaller diameter than the motor main-unit portion, via a vibration-isolating member 32 made of rubber, plastic, or the like, the motor-installing portion 70 is provided with a motor-end-portion accommodating portion 71. The motor-end-portion accommodating portion 71 has a cylindrical shape that is concentric with the shaft hole 22b and the motor-shaft pathway 60.

[0035] The motor-end-portion accommodating portion 71 is a space that accommodates one of the motor small-diameter portions (the one on the cross-flow-fan 28 side) that correspond to bearings provided at both ends of the motor 30 in the shaft direction thereof. In addition, the motor-installing portion 70 is provided with a motor-center accommodating portion 72. The motor-center accommodating portion 72 is continuous with the motor-end-portion accommodating portion 71 and accommodates the motor main-unit portion, which is a large-diameter portion of the motor 30. Specifically, the motor-installing portion 70 of this embodiment has a bottomed substantially cylindrically-shaped concave portion in which a side-wall surface 73 that is connected to the end portion of the motor-shaft pathway 60 forms the bottom surface thereof and that is formed so as to extend from this side-wall surface 73 toward the motor 30. Note that the side-wall surface 73 is a surface that substantially perpendicularly intersects the motor-shaft pathway 60 through which the output shaft 31 passes.

[0036] Thus, the illustrated motor-installing portion 70 is formed of a cylindrical-portion inner wall surface 71a of the motor-end-portion accommodating portion 71 and a bottom-surface portion 72a of the motor-center accommodating portion 72, which faces the motor 30. In addition, the motor-installing portion 70 has a step portion 70a that forms a wall surface from the side-wall surface 73 to the bottom-surface portion 72a via the cylindrical-portion inner wall surface 71a, such that the cross-sectional shape thereof is bent in a step shape. However, the shaft-portion air shielding structure of this embodiment is not limited to a structure in which the motor-installing portion 70 has such a step portion 70a. Note that, in the illustrated example configuration, although the side-wall surface 73 and the bottom-surface portion 73a are parallel to each other, it is not particularly limited thereto.

[0037] In addition, the motor 30 that is accommodated in the motor-end-portion accommodating portion 71 is provided with the vibration-isolating member 32 that is interposed between the motor 30 and the motor bracket

40 and that is disposed at an outer circumference or the like of the motor small-diameter portion.

[0038] The motor 30 is mounted to the motor-installing portion 70 on the outer wall side of the side wall 22a via the motor bracket 40. This motor bracket 40 is, for example, a molded plastic component having elasticity, such as polypropylene. The motor bracket 40 has a substantially cylindrical shape in which an opening is appropriately provided at a wall surface that covers the area surrounding the motor 30. The motor bracket 40 has, for example, a structure that can be divided into a left half and a right half with respect to the shaft direction of the output shaft 31 of the motor 30.

[0039] Also, in the illustrated embodiment, this motor bracket 40 is also provided with a bracket small-diameter portion 41 that corresponds to one of the motor small-diameter portions in the vicinity of the bearings provided at the both ends of the motor 30 in the shaft direction and a bracket large-diameter portion 42 whose diameter is increased in correspondence with that of the main-unit portion of the motor 30. Note that the motor bracket 40 and the base main unit 22 are secured to each other by means of bolts (not shown).

[0040] In addition, a circular opening 43 through which the output shaft 31 passes is provided at a side-wall surface on the cross-flow-fan 28 side of the motor bracket 40. The bracket small-diameter portion 41 is one end portion (base-main-unit 22 side) of the motor bracket 40. The distal-end portion of the bracket small-diameter portion 41 is bent in the direction of the motor-shaft center, thus forming a flange-like vibration-isolating-member receiving portion 44 that is substantially parallel to the side wall 22a. The opening 43 is formed by a distal-end surface 44a of the vibration-isolating-member receiving portion 44. Specifically, the vibration-isolating-member receiving portion 44 is a portion in which the opening 43, through which the output shaft 31 passes, is formed by extending the bracket small-diameter portion 41 that serves as a holding member of the vibration-isolating member 32 and by bending it in the direction of the motor-shaft center. In this case, the distal-end surface 44a of the vibration-isolating-member receiving portion 44 is a surface that is parallel to the outer-circumferential surface of the output shaft 31 of the motor 30.

[0041] Note that, although the vibration-isolating member 32 comes into close contact with the inner surface of the bracket small-diameter portion 41, a small gap is provided between the vibration-isolating-member receiving portion 44 and the vibration-isolating member 32 so as not to bring them into contact with each other.

[0042] On the other hand, at the side-wall surface 73 of the motor-installing portion 70, that is, at the side-wall surface 73 that forms the bottom surface of the motor-end-portion accommodating portion 71, a ring-shaped protruding portion 74 that protrudes in the motor installing direction (shaft direction of the output shaft 31) is provided coaxially with the motor-shaft pathway 60.

[0043] Although the illustrated example configuration

employs the ring-shaped protruding portion 74 having a larger diameter than the motor-shaft pathway 60, the ring-shaped protruding portion 74 may have the same diameter as the motor-shaft pathway 60. In this case, although the ring-shaped protruding portion 74 provided at the side-wall surface 73 so as to protrude therefrom may be employed, a motor-shaft pathway 60A having a structure that extends toward the motor 30 may be employed as in another embodiment (second aspect) shown in Fig. 4. Note that the other embodiment shown in Fig. 4 employs a structure in which a motor-installing portion 70 (not shown) is provided so as to be connected with the base main unit 22 at an appropriate location thereof.

[0044] In addition, so long as the output shaft 31 can be made to pass therethrough, the diameter of the ring-shaped protruding portion 74 can be made smaller than that of the motor-shaft pathway 60.

[0045] Also, between the outer-circumferential surface 74a of the ring-shaped protruding portion 74 and the distal-end surface 44a of the vibration-isolating-member receiving portion 44, the size setting is such that a minute gap S in which the outer-circumferential surface 74a can be fitted to the inner side of the distal-end surface 44a is formed.

[0046] Specifically, as shown in Fig. 1(a), assuming that the outer diameter of the ring-shaped protruding portion 74 is D_b , the diameter D_m of the opening 43 formed by the distal-end surface 44a of the vibration-isolating-member receiving portion 44 takes a slightly larger value than the outer diameter D_b ($D_b < D_m$), and the difference between the outer diameter D_b and the diameter D_m becomes $2S$ ($D_m - D_b = 2S$).

[0047] Note that, although the structure of the first aspect will be described below, with regard to a structure of a second aspect shown in Fig. 4, the ring-shaped protruding portion 74 should be replaced with a motor-shaft pathway 60A, the outer-circumferential surface 74a of the ring-shaped protruding portion 74 should be replaced with an outer surface 60a of the motor-shaft pathway 60A, and the D_b should be replaced with an outer diameter of the motor-shaft pathway 60A.

[0048] The minute gap S is formed, as described above, in order to allow the motor bracket 40 to be mounted to the motor-installing portion 70 of the base main unit 22, in other words, the purpose thereof is to ensure a large enough size difference that allows assembly by fitting the distal-end surface 44a of the vibration-isolating-member receiving portion 44 to the outer-circumferential surface 74a of the ring-shaped protruding portion 74. Therefore, although the size of the minute gap S is such that complete elimination thereof is not possible, that is, it cannot be set to zero, it is desirable to set the minute gap S to a size that is as close to zero as possible.

[0049] The above-described minute gap S can easily be set by appropriately adjusting the diameter D_m of the opening 43 and outer diameter D_b .

[0050] In addition, a protruding height h of the ring-shaped protruding portion 74 is set so as to prevent con-

tact thereof with the vibration-isolating member 32 of the motor 30. The protruding height h is set in this way so as to prevent an adverse effect that would deteriorate the vibration-isolating performance caused by allowing the ring-shaped protruding portion 74 to come into contact with the vibration-isolating member 32.

[0051] Note that, with the structure of the second aspect shown in Fig. 4, a distal-end surface 60b, on the motor 30 side, of the motor-shaft pathway 60A that is an extension of the motor-shaft pathway 60 is set so as to prevent contact thereof with the vibration-isolating member 32 of the motor 30, as with the protruding height h of the ring-shaped protruding portion 74.

[0052] By employing such a configuration, the minute gap S in which the outer-circumferential surface 74a or the outer surface 60a can be fitted to the inner side of the distal-end surface 44a is formed between the distal-end surface 44a of the vibration-isolating-member receiving portion 44 and the outer-circumferential surface 74a of the ring-shaped protruding portion 74 or the outer surface 60a of the motor-shaft pathway 60. Because of this, the minute gap S always exists in the channel through which the fresh air, which is drawn in from the shaft portion of the cross-flow fan 28, flows during the cooling operation, and therefore, the cross-sectional area of the channel is limited by the minute gap S.

[0053] Consequently, because the amount of fresh air that passes through the minute gap S and reaches the cross-flow fan 28 is considerably decreased, this achieves a shaft-portion air shielding structure, with which it is possible to prevent or suppress condensation caused by the fresh air that is drawn in from the shaft portion of the cross-flow fan 28. In particular, by employing the motor-installing portion 70 that forms the step portion 70a, because the channel through which the fresh air flows has a step-like bent shape, it is possible to further enhance the air shielding performance of the shaft-portion air shielding structure by increasing the channel resistance.

[0054] Because such a shaft-portion air shielding structure can be established, in the case in which the employed base main unit 22 and motor bracket 40 are existing components, by changing the shapes thereof so as to add the ring-shaped protruding portion 74 and the vibration-isolating-member receiving portion 44, or by extending the motor-shaft pathway 60 and by changing the shape thereof so as to add the vibration-isolating-member receiving portion 44, the number of components and the number of processes in assembly work can be decreased as compared with the conventional structure in which an air-shielding component is attached.

[0055] Specifically, because the shaft-portion air shielding structure of the cross-flow fan 28 is formed by the ring-shaped protruding portion 74 and the vibration-isolating-member receiving portion 44 that are formed as a single piece by changing the shapes of the existing components of the base main unit 22 and the motor bracket 40, the number of components and the number

of processes in assembly work will not be increased, and, moreover, because the shaft-portion air shielding structure is not in contact with the vibration-isolating member 32, the vibration-isolating performance of the vibration-isolating member 32 will not be adversely affected.

[0056] Consequently, in the cross-flow fan 28, because it is possible to nearly certainly prevent condensation that occurs when the fresh air drawn in during the cooling operation is cooled, condensed droplets will not be splashed into the indoor space together with the conditioned air. Therefore, with the above-described indoor unit 20 and the air conditioner 1 provided with this indoor unit 20, it is possible to decrease the number of components and the number of processes in assembly work and also to enhance the reliability and the market appeal thereof.

[0057] Note that, the present invention is not limited to the above-described embodiments, and appropriate alterations are possible within a range that does not depart from the scope thereof.

{Reference Signs List}

[0058]

1	air conditioner	
10	outdoor unit	
11, 21	casing	
12	compressor	
13	outdoor heat exchanger	
14	outdoor fan	
20	indoor unit	
22	base main unit	
22a	side wall	
22b	shaft hole	
23	front cover	
24	front panel	
25	intake grill (intake port)	
26	indoor heat exchanger	
27	vent	
28	cross-flow fan	
30	motor	
31	output shaft	
32	vibration-isolating member	
40	motor bracket	
41	bracket small-diameter portion	
42	bracket large-diameter portion	
43	opening	
44	vibration-isolating-member receiving portion	
44a	distal-end surface	
50	refrigerant pipe	
60, 60A	motor-shaft pathway	
60a	outer surface	
60b	distal-end surface	
70	motor-installing portion	
70a	step portion	
71	motor-end-portion accommodating portion	
71a	cylindrical-portion inner wall surface	

72	motor-center accommodating portion
72a	bottom-surface portion
73	side-wall surface
74	ring-shaped protruding portion
5 74a	outer-circumferential surface
S	minute gap
h	protruding height

10 Claims

1. An indoor unit (20) comprising:

- a casing (21);
 a base main unit (22) provided in the casing (21);
 a cylindrically-shaped motor-shaft pathway (60) that is provided at a side wall (22a) of the base main unit (22) on a motor-installing side thereof so as to protrude therefrom;
 a heat exchanger (26) that is installed in the base main unit (22);
 a motor-driven cross-flow fan (28) that is supported by the base main unit (22) in a rotatable manner, and that blows conditioned air, which is air introduced from an indoor space and made to pass through the heat exchanger (26), into the indoor space;
 a motor (30) that is mounted to a motor-installing portion (70) provided in the base main unit (22) via a motor bracket (40) and which comprises an output shaft (31) which passes through the motor-shaft pathway (60), and which is coupled with the cross-flow fan (28); and
 a vibration-isolating-member receiving portion (44) in which an end portion of the motor bracket (40) is bent in a direction of a motor-shaft center, wherein, between an outer-circumferential surface (60a) of the motor-shaft pathway (60) and a distal-end surface (44a) of the vibration-isolating-member receiving portion (44), a minute gap (S) in which the outer-circumferential surface can be fitted to an inner side of the distal-end surface (44a) is formed, and
 a distal-end surface (60b) of the motor-shaft pathway (60) is set so as not be in contact with a vibration-isolating member (32) of the motor (30).

2. An indoor unit (20) comprising:

- a casing (21);
 a base main unit (22) provided in the casing (21);
 a cylindrically-shaped motor-shaft pathway (60) that is provided at a side wall (22a) of the base main unit (22) on a motor-installing side thereof so as to protrude therefrom;
 a motor-installing portion (70) that is provided at a motor-side end portion of the motor-shaft path-

- way (60);
 a heat exchanger (26) that is installed in the base main unit (22);
 a motor-driven cross-flow fan (28) that is supported by the base main unit (22) in a rotatable manner, and that blows conditioned air, which is air introduced from an indoor space and made to pass through the heat exchanger (26), into the indoor space;
 a motor (30) that is mounted to the motor-installing portion (70) via a motor bracket (40) and which comprises an output shaft (31) that passes through the motor-shaft pathway (60) and which is coupled with the cross-flow fan (28);
 a ring-shaped protruding portion (74) that is provided so as to protrude from a side-wall surface (73) of the motor-installing portion (70) in a motor-installing direction; and
 a vibration-isolating-member receiving portion (44) in which an end portion of the motor bracket (40) on a base-main-unit side is bent in a direction of a motor-shaft (31) center,
 wherein, between an outer-circumferential surface (74a) of the ring-shaped protruding portion (74) and a distal-end surface (44a) of the vibration-isolating-member receiving portion (44), a minute gap (S) in which the outer-circumferential surface (74a) can be fitted to an inner side of the distal-end surface (44a) is formed, and a protruding height (h) of the ring-shaped protruding (74) portion is set so as not to be in contact with a vibration-isolating member (32) of the motor (30).
3. An indoor unit (20) according to Claim 2, wherein the motor-installing portion (70) has a concave shape that forms a step portion in which the side-wall surface (73) forms a bottom surface thereof.
4. An air conditioner (1) comprising:
- an indoor unit (20) according to any one of Claims 1 to 3;
 an outdoor unit (10) that has a compressor (12) for compressing refrigerant and an outdoor heat exchanger (13) that performs heat exchange between the refrigerant and outdoor air; and
 a refrigerant pipe (50) that connects the indoor unit (20) and the outdoor unit (10) and that circulates the refrigerant between the indoor unit (20) and the outdoor unit (10).

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FIG. 1

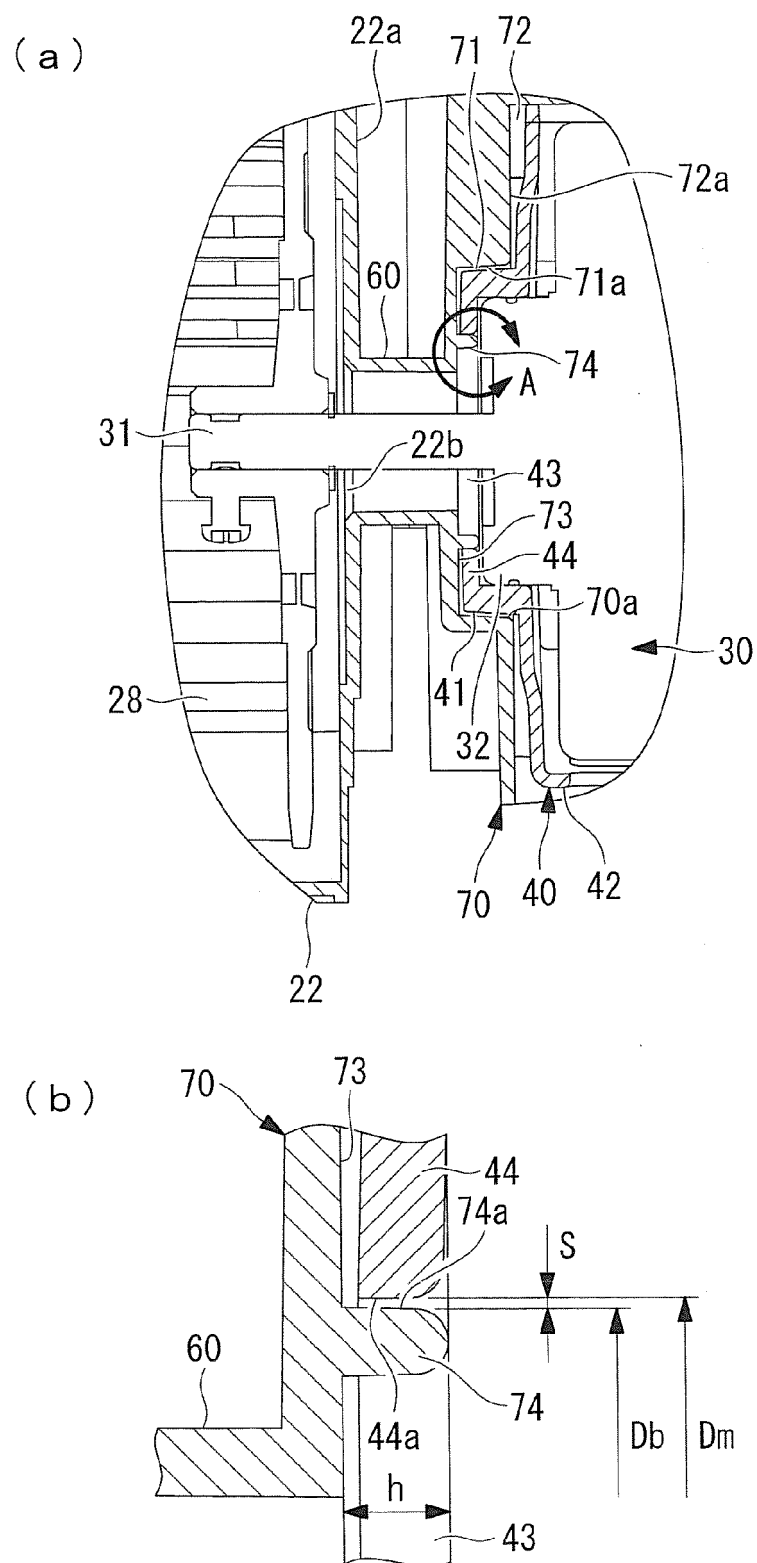


FIG. 2

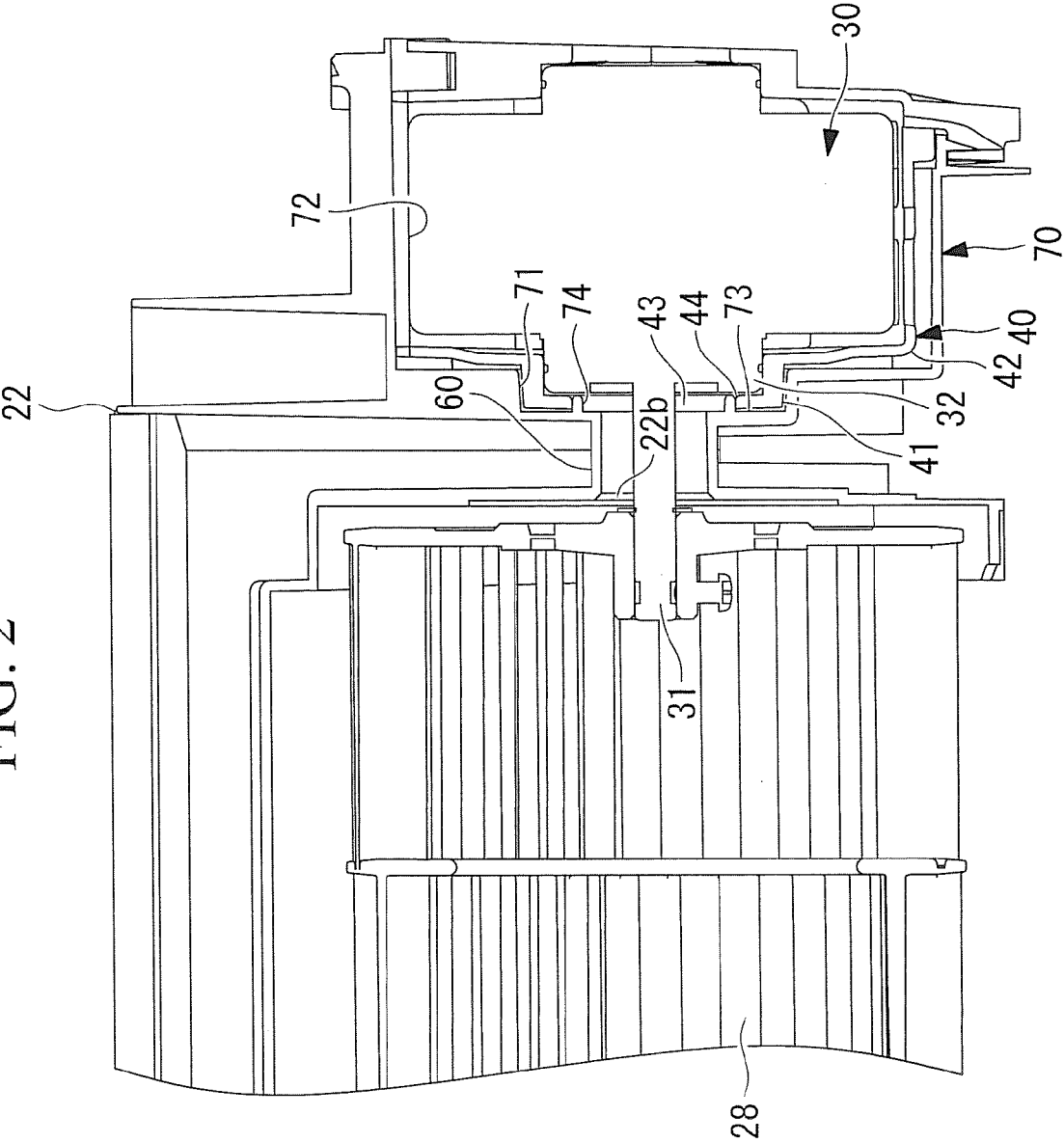


FIG. 3

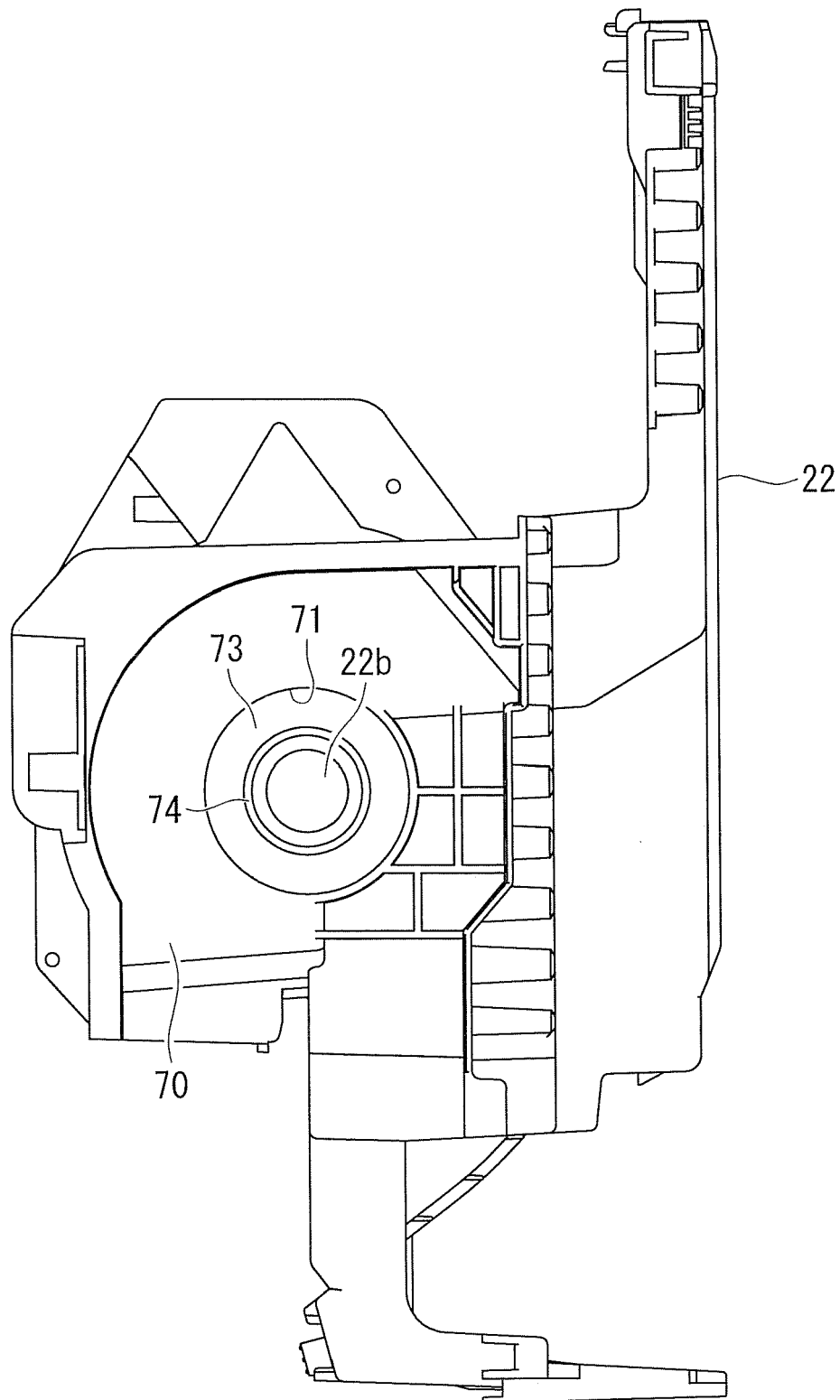


FIG. 4

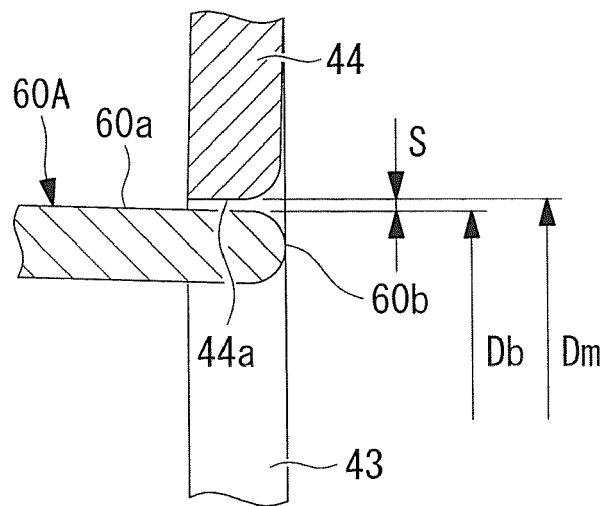
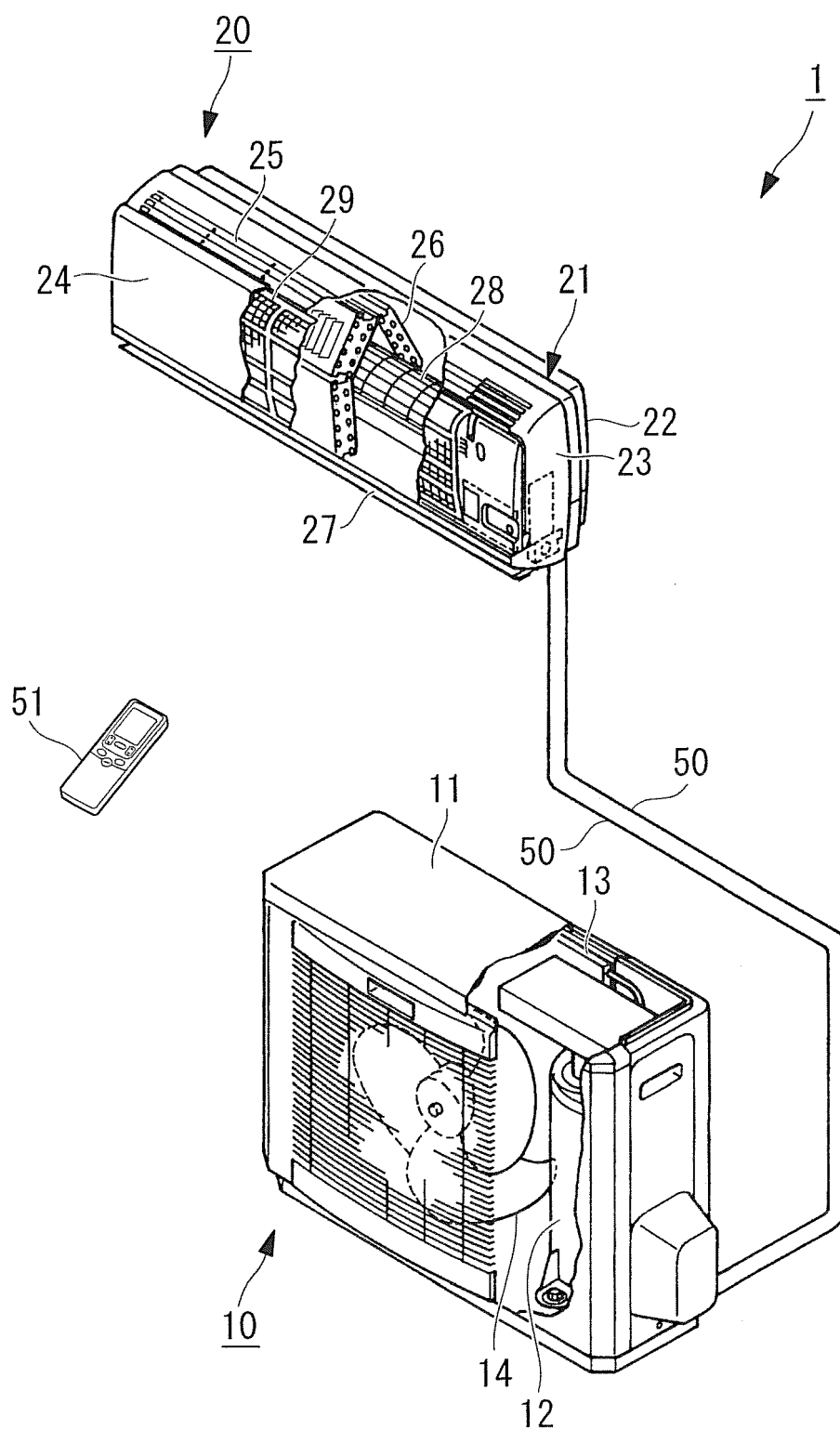


FIG. 5



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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