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(54) Air conditioner

(57) An indoor unit (1) of an air conditioner comprises a main body (20) and a movable panel (30). A second intake port (18b) and a first open part (19a) of a discharge port (19) are formed in a front surface of the main body (20). The movable panel (30) has a front surface panel part (31) and a side surface panel part (32). The front surface panel part (31) is positioned in front of the main body (20). The side surface panel part (32) is formed continuing rearward from both ends of the front surface panel part (31). When operation has stopped, the movable panel (30) assumes an operation-stopped state in which the front surface panel part (31) is disposed so as to cover the second intake port (18b) and the first open part (19a) of the discharge port (19).

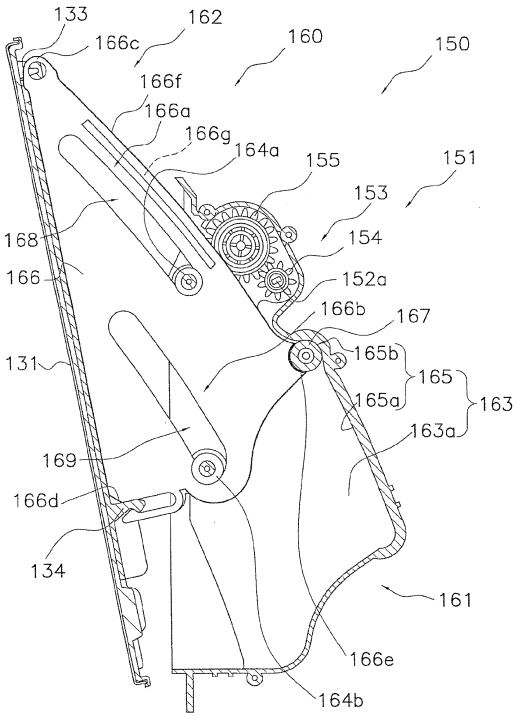

FIG. 22

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Description

TECHNICAL FIELD

[0001] The present invention relates to an air conditioner.

BACKGROUND ART

[0002] In the past, there have been air conditioners which comprise a main body in which an intake port and a discharge port are formed in a front surface. For example, the air conditioner disclosed in Patent Literature 1 (Japanese Utility Model Application No. 4-20923) comprises a conditioner main body (equivalent to the main body) in which an intake port and a discharge port are formed in a forward surface (equivalent to the front surface), and a panel for covering the entire forward surface of the conditioner main body. The panel can move between a close position of closing off the intake port and the discharge port, and an open position of opening up the intake port and the discharge port. Therefore, in this air conditioner, the intake port and the discharge port can be blocked or opened up by moving the panel.

SUMMARY OF INVENTION

<Technical Problem>

[0003] In the air conditioner of Patent Literature 1, only the front surface of the conditioner main body is covered by the panel. Therefore, when the conditioner main body is viewed at an angle while the panel is in the close position, there is a possibility that the joint between the conditioner main body and the panel will stand out, which is not good for the design.

[0004] In view of this, an object of the present invention is to provide an indoor unit of an air conditioner in which the design can be improved.

<Solution to Problem>

[0005] An indoor unit of an air conditioner according to a first aspect comprises a main body and a movable panel. A front surface intake port and a front surface discharge port are formed in a front surface of the main body. The movable panel has a front surface panel part and a side surface panel part. The front surface panel part is positioned in front of the main body. The side surface panel part is formed continuing rearward from both ends of the front surface panel part. When operation has stopped, the movable panel assumes an operation-stopped state of being disposed so that the front surface panel part covers the front surface intake port and the front surface discharge port.

[0006] In the indoor unit of an air conditioner according to the first aspect, the side surface panel part is formed continuing rearward from both ends of the front surface panel part. Therefore, when the movable panel assumes the operation-stopped state, the main body can be covered from the front to the sides of the main body. Consequently, when the main body in which the movable panel has assumed the operation-stopped state is viewed at an angle, it is easier to make the joint between the movable panel and the main body not stand out than in a case of a configuration in which the movable panel covers only the front of the main body, for example.

[0007] The design can thereby be improved.

[0008] An indoor unit of an air conditioner according to a second aspect is the indoor unit of an air conditioner according to the first aspect, further comprising a drive mechanism. The drive mechanism has a drive component for moving the movable panel. The movable panel assumes an operating state of opening up the front surface intake port and the front surface discharge port by moving diagonally upward from the operation-stopped state. When the movable panel has assumed the operating state, the side surface panel part is positioned to the side of the drive component.

[0009] In the indoor unit of an air conditioner according to the second aspect, when the movable panel assumes the operating state, the side surface panel part is positioned to the side of the drive component. Therefore, the quantity of air drawn in from the side can be reduced in comparison with a case in which the side surface panel part is not positioned to the side of the drive component, for example.

[0010] The possibility that dust will adhere to the drive component during operation can thereby be reduced.

[0011] An indoor unit of an air conditioner according to a third aspect is the indoor unit of an air conditioner according to the second aspect, wherein the drive component includes a panel support arm. The panel support arm is connected to the movable panel. The panel support arm can be switched between a first state of being accommodated in the main body and a second state of being separated from the main body. Furthermore, the panel support arm is in the second state when the movable panel has assumed the operating state. When the movable panel has assumed the operating state, the side surface panel part is disposed so as to cover the panel support arm being in the second state in a side view.

[0012] In the indoor unit of an air conditioner according to the third aspect, when the movable panel assumes the operating state, the panel side surface part is disposed so as to cover the panel support arm separated from the main body in a side view. Therefore, the design during operation can be improved.

[0013] An air-conditioning indoor unit according to a fourth aspect comprises a first member, a second member, a drive member, a motor, an indoor unit main body, and a panel. The first member has a first groove and a second groove. The first groove includes a first lower curved part. The second groove includes a second lower curved part and a second higher curved part. The second lower curved part is in a position separated from the first

lower curved part. The second higher curved part extends from a first end part which is an end part of the second lower curved part. The second higher curved part also has a greater curvature than the second lower curved part. The second member has a first sliding member and a second sliding member. The first sliding member moves along the first groove. The second sliding member moves along the second groove. The drive member moves the first member relative to the second member so that the first sliding member slides against the first groove and the second sliding member slides against the second groove. The motor drives the drive member. The indoor unit main body is connected to the second member. The panel is connected with the first member. The panel varies an orientation relative to the indoor unit main body due to the first member moving relative to the second member. Furthermore, the drive member contacts the first member. The first member rotatably moves about the first sliding member as a rotational fulcrum when the second sliding member moves from the second lower curved part to the second higher curved part. A load imposed on the motor when the second sliding member is positioned in a second groove end part which is an end part of the second groove on the side including the second higher curved part is less than a load imposed on the motor when the second sliding member is positioned in the first end part of the second lower curved part.

[0014] In the past, there have been air-conditioning indoor units which comprise a panel as part of the contour of the air-conditioning indoor unit, and a movement mechanism for moving the panel in order to cause the panel to assume the desired orientation. For example, the indoor unit of an air conditioner (equivalent to an air-conditioning indoor unit) disclosed in Japanese Laid-open Patent Application No. 2007-71532 comprises a first support member provided with a first slit and a third slit, a second support member provided with a first support pawl and a second support pawl, and a movement mechanism having a drive motor for moving the first support member. With this movement mechanism, a front surface panel (equivalent to the panel) is made to assume the desired orientation of a second open state by driving the drive motor to move the first support member relative to the second support member. After the panel has been made to assume the desired orientation, a load is imposed on the motor in order to make the panel maintain this orientation.

[0015] In view of this, in the air-conditioning indoor unit according to the fourth aspect, the load imposed on the motor when the second sliding member is positioned in a second groove end part which is an end part of the second groove on the side including the second higher curved part is less than the load imposed on the motor when the second sliding member is positioned in the first end part of the second lower curved part. Therefore, in a case in which the panel assumes the desired orientation when the second sliding member is positioned in the second groove end part of the second groove, for example, the load imposed on the motor can be reduced in comparison with a case in which the panel assumes the desired orientation when the second sliding member is positioned in the first end part of the second lower curved part of the second groove.

[0016] The load imposed on the motor can thereby be reduced.

[0017] The second lower curved part only has to have a smaller curvature than the second higher curved part. Therefore, the first lower curved part and the second lower curved part may have linear shapes, for example, without being curved.

[0018] An air-conditioning indoor unit according to a fifth aspect comprises a first member, a second member, a drive member, a motor, an indoor unit main body, and a panel. The first member has a first groove and a second groove. The first groove includes a first lower curved part. The second groove includes a second lower curved part and a second higher curved part. The second lower curved part is in a position separated from the first lower curved part. The second higher curved part extends from a first end part which is an end part of the second lower curved part. The second higher curved part also has a greater curvature than the second lower curved part. The second member has a first sliding member and a second sliding member. The first sliding member moves along the first groove. The second sliding member moves along the second groove. The drive member moves the second member relative to the first member so that the first sliding member slides against the first groove and the second sliding member slides against the second groove. The motor drives the drive member. The indoor unit main body is connected with the first member. The panel is connected with the second member. The panel varies an orientation relative to the indoor unit main body due to the second member moving relative to the first member. The drive member contacts the second member. The second member rotatably moves about the first sliding member as a rotational fulcrum when the second sliding member moves from the second lower curved part to the second higher curved part. A load imposed on the motor when the second sliding member is positioned in a second groove end part which is an end part of the second groove on the side including the second higher curved part is less than a load imposed on the motor when the second sliding member is positioned in the first end part of the second lower curved part.

[0019] In the air-conditioning indoor unit according to the fifth aspect, the load imposed on the motor when the second sliding member is positioned in a second groove end part which is an end part of the second groove on the side including the second higher curved part is less than the load imposed on the motor when the second sliding member is positioned in the first end part of the second lower curved part. Therefore, in a case in which the panel assumes the desired orientation when the second sliding member is positioned in the second groove

end part of the second groove, for example, the load imposed on the motor can be reduced in comparison with a case in which the panel assumes the desired orientation when the second sliding member is positioned in the first end part of the second lower curved part of the second groove.

[0020] The load imposed on the motor can thereby be reduced.

[0021] The second lower curved part only has to have a smaller curvature than the second higher curved part. Therefore, the first lower curved part and the second lower curved part may have linear shapes, for example, without being curved.

[0022] An air-conditioning indoor unit according to a sixth aspect is the air-conditioning indoor unit according to the fourth aspect, wherein either the indoor unit main body or the second member has a guide part. The guide part includes a third lower curved part and a third higher curved part. The third higher curved part extends from an end part of the third lower curved part. The third higher curved part also has a greater curvature than the third lower curved part. Either the panel or the first member has a third sliding member which moves along the guide part. Furthermore, when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove. In a case in which the load imposed on the motor can be reduced by positioning the third sliding member in the guide part end part, for example, the load of the motor imposed when the second sliding member is positioned in the second groove end part of the second groove can be further reduced in comparison with a case in which the guide part and the third sliding member are not provided.

[0023] The load imposed on the motor can thereby be further reduced.

[0024] An air-conditioning indoor unit according to a seventh aspect is the air-conditioning indoor unit according to the fourth aspect, wherein either the panel or the first member has a guide part. The guide part includes a third lower curved part and a third higher curved part. The third higher curved part extends from an end part of the third lower curved part. The third higher curved part also has a greater curvature than the third lower curved part. Either the indoor unit main body or the second member has a third sliding member which moves along the guide part. Furthermore, when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove. In a case in which the load imposed on the motor can be reduced by positioning the third sliding member in the guide part end part, for example, the load of the motor imposed when the second sliding member is positioned in the second groove end part of the second groove can be further reduced in comparison with a case in which the guide part and the third sliding member are not provided.

[0025] The load imposed on the motor can thereby be further reduced.

[0026] An air-conditioning indoor unit according to an eighth aspect is the air-conditioning indoor unit according to the fifth aspect, wherein either the panel or the second member has a guide part. The guide part includes a third lower curved part and a third higher curved part. The third higher curved part extends from an end part of the third lower curved part. The third higher curved part also has a greater curvature than the third lower curved part. Either the indoor unit main body or the first member has a third sliding member which moves along the guide part. Furthermore, when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove. In a case in which the load imposed on the motor can be reduced by positioning the third sliding member in the guide part end part, for example, the load of the motor imposed when the second sliding member is positioned in the second groove end part of the second groove can be further reduced in comparison with a case in which the guide part and the third sliding member are not provided.

[0027] The load imposed on the motor can thereby be further reduced.

[0028] An air-conditioning indoor unit according to a ninth aspect is the air-conditioning indoor unit according to the fifth aspect, wherein either the indoor unit main body or the first member has a guide part. The guide part includes a third lower curved part and a third higher curved part. The third higher curved part extends from an end part of the third lower curved part. The third higher curved part also has a greater curvature than the third lower curved part. Either the panel or the second member has a third sliding member which moves along the guide part. Furthermore, when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove. In a case in which the load imposed on the motor can be reduced by positioning the third sliding member in the guide part end part, for example, the load of the motor imposed when the second sliding member is positioned in the second groove end part of the second groove can be further reduced in comparison with a case in which the guide part and the third sliding member are not provided.

[0029] The load imposed on the motor can thereby be further reduced.

[0030] An air-conditioning indoor unit according to a tenth aspect is the air-conditioning indoor unit according to any of the fourth through ninth aspects, wherein the panel is capable of assuming a desired first orientation. When the panel assumes the first orientation, the second sliding member is positioned in the second groove end

part of the second groove. In this air-conditioning indoor unit, since the second sliding member is positioned in the second groove end part of the second groove when the panel assumes the desired first orientation, the load imposed on the motor can be reduced in comparison with a case in which the panel assumes the first orientation when the second sliding member is positioned in the first end part of the second lower curved part of the second groove, for example.

[0031] An air-conditioning indoor unit according to an eleventh aspect is the air-conditioning indoor unit according to the tenth aspect, wherein the panel is capable of assuming a second orientation different from the first orientation. When the panel assumes the second orientation, no load is imposed on the motor. Therefore, the panel can be made to assume an orientation which does not impose a load on the motor.

[0032] An air-conditioning indoor unit according to a twelfth aspect is the air-conditioning indoor unit according to the eleventh aspect, wherein the panel assuming the first orientation is disposed at a tilt relative to the indoor unit main body. The panel assuming the second orientation is disposed substantially parallel to the indoor unit main body. Therefore, not only can the panel be moved up and down relative to the indoor unit main body, but the end part of the panel can be moved forward and backward relative to the indoor unit main body as well.

[0033] An air-conditioning indoor unit according to a thirteenth aspect is the air-conditioning indoor unit according to any of the fourth through twelfth aspects, wherein the panel is disposed on a front-surface side of the indoor unit main body. Therefore, the orientation of the panel disposed on the front-surface side of the indoor unit main body can be varied.

[0034] An air-conditioning indoor unit according to a fourteenth aspect is the air-conditioning indoor unit according to any of the fourth through thirteenth aspects, wherein the first sliding member is positioned in proximity to a first groove end part, which is an end part of the first groove, when the second sliding member is moved from the second lower curved part to the second higher curved part. Therefore, in this air-conditioning indoor unit, the first sliding member becomes a rotational fulcrum when positioned in proximity to the first groove end part.

[0035] An air-conditioning indoor unit according to a fifteenth aspect is the air-conditioning indoor unit according to the sixth or seventh aspect, wherein the drive mechanism includes a gear. The first member has a rack which meshes with the gear. Therefore, the first member can be moved relative to the second member due to the gear being in contact with the rack.

[0036] An air-conditioning indoor unit according to a sixteenth aspect is the air-conditioning indoor unit according to the eighth or ninth aspect, wherein the drive mechanism includes a gear. The second member has a rack which meshes with the gear. Therefore, the second member can be moved relative to the first member due to the gear being in contact with the rack.

[0037] An air-conditioning indoor unit according to a seventeenth aspect is the air-conditioning indoor unit according to any of the fourth through sixteenth aspects, wherein the drive member is disposed in proximity to the first sliding member. In this air-conditioning indoor unit, the drive member can be disposed in proximity to the first sliding member.

<Advantageous Effects of Invention>

[0038] In the indoor unit of an air conditioner according to the first aspect, the design can be improved.

[0039] In the indoor unit of an air conditioner according to the second aspect, the possibility that dust will adhere to the drive component during operation can be reduced.

[0040] In the indoor unit of an air conditioner according to the third aspect, the design during operation can be improved.

[0041] In the air-conditioning indoor unit according to the fourth aspect, the load imposed on the motor can be reduced.

[0042] In the air-conditioning indoor unit according to the fifth aspect, the load imposed on the motor can be reduced.

[0043] In the air-conditioning indoor unit according to the sixth aspect, the load imposed on the motor can be further reduced.

[0044] In the air-conditioning indoor unit according to the seventh aspect, the load imposed on the motor can be further reduced.

[0045] In the air-conditioning indoor unit according to the eighth aspect, the load imposed on the motor can be further reduced.

[0046] In the air-conditioning indoor unit according to the ninth aspect, the load imposed on the motor can be further reduced.

[0047] In the air-conditioning indoor unit according to the tenth aspect, the load imposed on the motor when the panel assumes the desired first orientation can be reduced.

[0048] In the air-conditioning indoor unit according to the eleventh aspect, the panel can be made to assume an orientation which does not impose a load on the motor.

[0049] In the air-conditioning indoor unit according to the twelfth aspect, the end part of the panel can be moved forward and backward relative to the indoor unit main body.

[0050] In the air-conditioning indoor unit according to the thirteenth aspect, the orientation of the panel disposed on the front-surface side of the indoor unit main body can be varied.

[0051] In the air-conditioning indoor unit according to the fourteenth aspect, the first sliding member becomes a rotational fulcrum when positioned in proximity to the first groove end part.

[0052] In the air-conditioning indoor unit according to the fifteenth aspect, the first member can be moved relative to the second member due to the gear being in

contact with the rack.

[0053] In the air-conditioning indoor unit according to the sixteenth aspect, the second member can be moved relative to the first member due to the gear being in contact with the rack.

[0054] In the air-conditioning indoor unit according to the seventeenth aspect, the drive member can be disposed in proximity to the first sliding member.

BRIEF DESCRIPTION OF DRAWINGS

[0055]

FIG. 1 is a drawing of the indoor unit when operation has stopped, as seen at an angle from below.
FIG. 2A is a front view of the indoor unit.
FIG. 2B is a front view of the indoor unit.
FIG. 3A is a drawing of the indoor unit as seen at an angle from above.
FIG. 3B is a drawing of the indoor unit as seen at an angle from above.
FIG. 4 is a longitudinal cross-sectional view of the indoor unit.
FIG. 5A is a top view of the indoor unit.
FIG. 5B is a top view of the main body.
FIG. 6 is a front view of the indoor unit with the movable panel removed.
FIG. 7 is a perspective view of the indoor unit with the movable panel and the main body side surface parts removed.
FIG. 8 is a cross-sectional view of the proximity of the right-side end part of the main body (equivalent to a cross section of VIII-VIII in FIG. 6).
FIG. 9 is a side view of the indoor unit.
FIG. 10 is a side view of the drive mechanism.
FIG. 11 is a schematic view showing the trajectory of a first connecting part.
FIG. 12 is a side view of the drive mechanism main body when operation has stopped.
FIG. 13 is a side view of the drive mechanism main body when the working panel is moving.
FIG. 14 is a side view of the drive mechanism main body during operation.
FIG. 15 is a drawing of an air-conditioning indoor unit when operation has stopped, as seen at an angle from below.
FIG. 16 is a drawing of the air-conditioning indoor unit when operation has stopped, as seen at an angle from above.
FIG. 17 is a drawing of the air-conditioning indoor unit during operation, as seen at an angle from above.
FIG. 18 is a front view of the air-conditioning indoor unit (the movable panel is omitted).
FIG. 19 is a perspective view of the air-conditioning indoor unit (the movable panel and the main body side surface parts are omitted).
FIG. 20 is a cross-sectional view of the main body cut in a horizontal direction, and is a partial enlarged view of the proximity of the right-side end part of the main body (equivalent to a cross section of XX-XX in FIG. 18).
FIG. 21 is a side view of the air-conditioning indoor unit, showing the manner in which the movable panel is varied from an operation-stopped orientation to an operating orientation.
FIG. 22 is a side view of the drive mechanism.
FIG. 23 is an exploded perspective view of the drive mechanism.
FIG. 24 is a side view of the first member.
FIG. 25 is a side view of the second member.
FIG. 26 is a right side view of the air-conditioning indoor unit (the movable panel is omitted).
FIG. 27 is a schematic view showing the trajectory of the first connecting part.
FIG. 28 is a side view of the drive mechanism main body when the first member is in the first state.
FIG. 29 is a side view of the drive mechanism main body in a case in which the first member is transitioning from the first state to the second state.
FIG 30 is a side view of the drive mechanism main body when the first member is in the second state.
FIG. 31 contains schematic diagrams showing the relationship between the first members, the second members, the movable panel, and the main body, wherein (a) is a diagram showing the relationship of the members according to the embodiments of the present invention and (b) is a diagram showing the relationship of the members according to Modification D.
FIG. 32 contains schematic diagrams showing the relationship between the first members, the second members, the movable panel, the main body, the rollers, and the guide parts, wherein (a) is a diagram showing the relationship of the members according to the embodiments of the present invention and (b) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the movable panel has rollers.
FIG. 33 contains schematic diagrams showing the relationship between the first members, the second members, the movable panel, the main body, the rollers, and the guide parts, wherein (a) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the main body has guide parts, and (b) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the main body has guide parts and the movable panel has rollers.
FIG. 34 contains schematic diagrams showing the relationship between the first members, the second members, the movable panel, the main body, the rollers, and the guide parts, wherein (a) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which

the second members have rollers and the first members have guide parts, and (b) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the second members have rollers and the movable panel has guide parts.

FIG. 35 contains schematic diagrams showing the relationship between the first members, the second members, the movable panel, the main body, the rollers, and the guide parts, wherein (a) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the main body has rollers and the first members have guide parts, and (b) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the main body has rollers and the movable panel has guide parts.

FIG. 36 contains schematic diagrams showing the relationship between the first members, the second members, the movable panel, the main body, the rollers, and the guide parts, wherein (a) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the first members fixed to the main body have rollers and the second members connected with the movable panel have guide parts, and (b) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the first members fixed to the main body have rollers and the movable panel connected with the second members has guide parts.

FIG. 37 contains schematic diagrams showing the relationship between the first members, the second members, the movable panel, the main body, the rollers, and the guide parts, wherein (a) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the main body to which the first members are fixed has rollers and the second members connected with the movable panel have guide parts, and (b) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the main body to which the first members are fixed has rollers and the movable panel connected with the second members has guide parts.

FIG. 38 contains schematic diagrams showing the relationship between the first members, the second members, the movable panel, the main body, the rollers, and the guide parts, wherein (a) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the first members fixed to the main body have guide parts and the second members connected with the movable panel have rollers, and (b) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the first members fixed to the main body have guide parts and the movable panel connected with the second members has rollers.

FIG. 39 contains schematic diagrams showing the relationship between the first members, the second members, the movable panel, the main body, the rollers, and the guide parts, wherein (a) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the main body to which the first members are fixed has guide parts and the second members connected with the movable panel have rollers, and (b) is a diagram showing the relationship of the members according to Modification (E) and also showing a case in which the main body to which the first members are fixed has guide parts and the movable panel connected with the second members has rollers.

FIG. 40 contains drawings showing a second guide channel provided to an arm, wherein (a) is a drawing showing the shape of the second guide channel according to the embodiments of the present invention and (b) is a drawing showing the shape of the second guide channel according to Modification (F).

DESCRIPTION OF EMBODIMENTS

-First Embodiment-

<Configuration of Indoor Unit of Air Conditioner>

[0056] An indoor unit 1 of an air conditioner according to a first embodiment of the present invention is described hereinbelow with reference to the drawings. The following embodiment is a specific example of the present invention and is not intended to limit the technological scope of the present invention.

<Configuration of Indoor Unit>

[0057] FIG 1 is a drawing of the indoor unit 1 when operation has stopped, as seen at an angle from below. FIG. 2A is a drawing of the indoor unit 1 when operation has stopped, as seen from the front surface. FIG. 2B is a drawing of the indoor unit 1 during operation, as seen from the front surface. FIG. 3A is a drawing of the indoor unit 1 when operation has stopped, as seen at an angle from above. FIG. 3B is a drawing of the indoor unit 1 during operation, as seen at an angle from above.

[0058] The indoor unit 1, which is a wall-mounted indoor unit attached to the wall surface in a room, performs air conditioning such as air-cooling and air-warming of the room. The indoor unit 1 comprises primarily a main body 20, a movable panel 30, and a drive mechanism 50 (see FIG. 10).

<Configuration of Main Body>

[0059] FIG. 4 is a longitudinal cross-sectional view of the indoor unit 1. FIG. 5A is a top view of the indoor unit 1. FIG. 5B is a top view of the main body 20. FIG. 6 is a

front view of the indoor unit 1 with the movable panel 30 removed. FIG. 7 is a perspective view of the indoor unit 1 with the movable panel 30 and main body side surface parts 21, 21 removed. FIG. 8 is a cross-sectional view of the proximity of the right-side end part of the main body 20.

[0060] The main body 20 comprises the casing 10, the main body side surface parts 21, 21, and a flap 25.

[0061] The casing 10 has a substantially rectangular shape whose length runs in a left-right direction in a front view as shown in FIG. 6. An indoor heat exchanger 2, a fan 3, and other components are accommodated in the casing 10 as shown in FIG. 4. Also formed in the casing 10 are a first intake port 18a, a second intake port 18b, and a discharge port 19.

[0062] The first intake port 18a is an opening through which air is taken into the casing 10, and is provided to a casing roof surface 12 as shown in FIGS. 5A and 5B. The first intake port 18a is configured from a plurality of slits extending in a forward-backward direction.

[0063] The second intake port 18b is an opening through which air is taken into the casing 10, and is provided to a casing forward surface 13, i.e., the front surface of the main body 20 as shown in FIG. 6. Specifically, the second intake port 18b is provided in the top part of the casing forward surface 13.

[0064] The discharge port 19 is an opening through which air is discharged into the room, and is provided to the casing forward surface 13 and a casing floor surface 14 as shown in FIG. 3B. Specifically, the discharge port 19 is an opening formed continuously from the bottom part of the casing forward surface 13 up to the forward part of the casing floor surface 14. Hereinbelow, the open portion of the discharge port 19 provided to the casing forward surface 13 is referred to as a first open part 19a, and the open portion of the discharge port 19 provided to the casing floor surface 14 is referred to as a second open part 19b.

[0065] The main body side surface parts 21, 21, disposed so as to cover casing side surfaces 15, 15, constitute the left and right side surfaces of the main body 20 as shown in FIG. 8. Between the main body side surface parts 21,21 and the casing side surfaces 15, 15 is formed an accommodating space S (see FIG. 8) for accommodating the configurational members of the drive mechanism 50 other than a power transmission shaft, described hereinafter. Furthermore, the main body side surface parts 21, 21 are configured from first curved parts 22, 22, second curved parts 23, 23 formed continuous with the first curved parts 22, 22, and side surface cosmetic panels 24, 24 for covering the outer surfaces of the first curved parts 22, 22, as shown in FIGS. 5A, 5B, and 8. The first curved parts 22, 22 have a shape whose horizontal cross section is curved into a substantial S shape. The first curved parts 22, 22 are disposed in front of the casing side surfaces 15, 15, i.e., on the outer sides of the casing side surfaces 15, 15 so as to cover the rear parts of the casing side surfaces 15, 15. The second curved parts 23, 23 have a shape whose horizontal cross section is curved into a convex shape. The second curved parts 23, 23 are disposed in front of the casing side surfaces 15, 15, i.e., on the outer sides of the casing side surfaces 15, 15 so as to cover the forward parts of the casing side surfaces 15, 15. The side surface cosmetic panels 24, 24 have substantially the same shapes as the first curved parts 22, 22, and these panels are disposed on the outer sides of the first curved parts 22, 22. Therefore, the forward parts of the side surfaces of the main body 20 each have a shape curved into a convex shape. Thereby, the longitudinal cross-sectional area of the main body 20 in the left-right direction increases from the rear toward the front, reaches a maximum at the borders between the first curved parts 22, 22 and the second curved parts 23, 23 of the main body side surface parts 21, 21, and decreases from these borders toward the front (see FIG. 5B).

[0066] The flap 25, which is a substantially rectangular plate-shaped member whose length runs in the left-right direction, is provided so as to be capable of opening and closing the second open part 19b of the discharge port 19. The flap 25 is also attached inside the casing 10 so as to be capable of turning in the left-right direction about a rotating shaft 25a. Furthermore, a sub flap 26 is provided in proximity to the second open part 19b of the discharge port 19, farther inside the casing 10 than the flap 25. The sub flap 26 is attached inside the casing 10 so as to be capable of turning in the left-right direction about a parallel rotating shaft 26a. Therefore, by turning about the rotating shafts 25a, 26a, the flap 25 and the sub flap 26 can guide air blown out through the second open part 19b. When the flap 25 has closed the second open part 19b, the flap 25 and the casing floor surface 14 are disposed adjacent to each other in the forward-backward direction. Consequently, when the flap 25 has closed the second open part 19b, the joint between the flap 25 and the casing floor surface 14 can be made to not stand out when the indoor unit 1 is seen from below.

<Movable Panel>

[0067] FIG. 9(a) is a side view of the indoor unit when operation has stopped. FIG. 9(b) is a side view of the indoor unit during operation.

[0068] The movable panel 30 is configured from a front surface panel part 31 having a substantially flat shape, and side surface panel parts 32, 32 formed continuing rearward from both ends of the front surface panel part 31. The movable panel 30 is configured with the front surface panel part 31 and the side surface panel parts 32, 32 formed integrally. The front surface panel part 31 is capable of covering substantially the entire casing forward surface 13, and is disposed in front of the casing forward surface 13, i.e., in front of the main body 20. The side surface panel parts 32, 32 are capable of covering the second curved parts 23, 23 of the main body side surface parts 21, 21, and are disposed on the outer sides

of the second curved parts 23, 23, i.e., to the sides of the main body 20. Therefore, when the movable panel 30 assumes an operation-stopped state, described hereinafter, the contour of the indoor unit 1 is such that the front surface side is configured by the front surface panel part 31 of the movable panel 30, the side surface sides are configured by the side surface panel parts 32, 32 of the movable panel 30 and the side surface cosmetic panels 24, 24, the top side is configured by the casing roof surface 12, and the bottom side is configured by the casing floor surface 14 and the flap 25.

[0069] The side surface panel parts 32, 32 have convexly curved shapes so as to constitute slightly curved surfaces, together with the side surface cosmetic panels 24, 24, when the movable panel 30 assumes the hereinafter-described operation-stopped state. Specifically, the side surface panel parts 32, 32 have substantially the same shapes as the second curved parts 23, 23 of the main body side surface parts 21, 21. Therefore, when the side surface panel parts 32, 32 and the side surface cosmetic panels 24, 24 are disposed adjacent to each other in the forward-backward direction (when the movable panel 30 assumes the hereinafter-described operation-stopped state), slightly convex curved surfaces are configured by the side surface panel parts 32, 32 and the side surface cosmetic panels 24, 24.

[0070] Formed on the inner surface of the movable panel 30 are first connecting parts 33, 33 and second connecting parts 34, 34 for connecting with a panel support arm 55, described hereinafter. The first connecting parts 33, 33 are in the top proximity of the movable panel 30 and are provided on the border lines between the front surface panel part 31 and the side surface panel parts 32, 32. The second connecting parts 34, 34 are also provided on the border lines between the front surface panel part 31 and the side surface panel parts 32, 32, below the first connecting parts 33, 33.

[0071] Furthermore, the movable panel 30 is capable of assuming the operation-stopped state and an operating state.

[0072] When the movable panel 30 assumes the operation-stopped state, the movable panel 30 is disposed in an operation-stopped position in which the front surface panel part 31 covers substantially the entire casing forward surface 13, and the side surface panel parts 32, 32 cover the forward parts of the side surfaces of the main body 20 (the sides of the main body 20), as shown in FIGS. 3A and 9(a). Therefore, when the movable panel 30 assumes the operation-stopped state, the front surface panel part 31 is disposed in front of the second intake port 18b and the first open part 19a of the discharge port 19, and the second intake port 18b and the first open part 19a of the discharge port 19 are therefore blocked. As described above, when the movable panel 30 assumes the operation-stopped state, the side surface panel parts 32, 32 and the side surface cosmetic plates are disposed adjacent to each other in the forward-backward direction.

[0073] When the movable panel 30 assumes the operating state, the movable panel 30 is disposed in an operating position wherein the top part of the front surface panel part 31 is separated further from the main body 20 than it is during the operation-stopped state, as shown in FIGS. 3B and 9(b). When the movable panel 30 assumes the operating state, the movable panel 30 is moved diagonally forward and upward from the operation-stopped position. Therefore, when the movable panel 30 assumes the operating state, the movable panel 30 is disposed at a tilt so that a top edge 31 a of the front surface panel part 31 is farther from the casing forward surface 13 than a bottom edge 31b of the front surface panel part 31. Consequently, when the movable panel 30 assumes the operating state, the second intake port 18b provided to the top part of the casing forward surface 13 is opened up. When the movable panel 30 assumes the operating state, the movable panel 30 is disposed so that the bottom edge 31b of the front surface panel part 31 is positioned above the first open part 19a of the discharge port 19. Therefore, when the movable panel 30 assumes the operating state, the first open part 19a of the discharge port 19 is opened up.

[0074] In the present embodiment, when the movable panel 30 assumes the operation-stopped state, the flap 25 is disposed over the open surface of the second open part 19b of the discharge port 19, whereby the second open part 19b is blocked (see FIGS. 1 and 4). In the present embodiment, when the movable panel 30 assumes the operating state, the flap 25 turns about the rotating shaft 25a, whereby the second open part 19b of the discharge port 19 is opened up. Furthermore, in the present embodiment, when the air conditioner stops operating, the movable panel 30 assumes the operation-stopped state. In the present embodiment, when the air conditioner is operating, the movable panel 30 assumes the operating state. Thereby, in this air conditioner, the second intake port 18b and the discharge port 19 are blocked when operation stops, and the second intake port 18b and the discharge port 19 are opened up during operation.

<Configuration of Drive Mechanism>

[0075] FIG. 10 is a side view of the drive mechanism 50. The drawing of FIG. 10 omits a motor 54.

[0076] The drive mechanism 50 is a mechanism that can switch the state of the movable panel 30 by moving the position of the movable panel 30. The drive mechanism 50 has primarily a drive part 50a and drive mechanism main bodies 50b, 50b.

[0077] The drive part 50a comprises one motor 54 and one power transmission shaft (not shown). The motor 54 is a stepping motor and is disposed in the right-side end proximity of the main body 20 as shown in FIG. 7. The motor 54 has a drive shaft 54a rotated by the driving of the motor 54. Attached to the drive shaft 54a is a drive gear 54b rotated by the rotating of the drive shaft 54a. Furthermore, the drive gear 54b is disposed so as to be

capable of rotating a driven gear 52 disposed in the right-side end proximity of the main body 20. The motor 54 is controlled by a controller (not shown) and is rotatably driven. The power transmission shaft is capable of rotating about an axis parallel to the drive shaft 54a, and is a member for distributing and transmitting the drive force of the motor 54 to the drive mechanism main bodies 50b, 50b. The aforementioned driven gear 52 is attached to the right-side end of the power transmission shaft, and a driven gear 52 other than the aforementioned driven gear 52 is attached to the left-side end of the power transmission shaft. Therefore, the power transferred from the drive gear 54b to the driven gear 52 disposed in the right-side end proximity of the main body 20 can be transferred by the power transmission shaft to the driven gear 52 disposed in the left-side end proximity of the main body 20.

[0078] The drive mechanism main bodies 50b, 50b comprise stationary parts 53, 53 and panel support arms 55, 55. The configurations of the drive mechanism main bodies 50b, 50b are identical in bilateral symmetry; therefore, only the configuration of the drive mechanism main body 50b disposed in the right-side end part of the main body 20 is described, and the drive mechanism main body 50b disposed in the left-side end part of the main body 20 is not described.

[0079] The stationary part 53, which is a member disposed in front, i.e., on the outer side of the casing side surface 15, supports the panel support arm 55 to be capable of sliding movement. The stationary part 53 has a stationary plate main body 51, a driven gear 52, a first support member 53a, and a second support member 53b.

[0080] The stationary plate main body 51 includes a plate-shaped main body part 51a having a substantially flat surface, and a guide part 51b standing upright from the rear-side end part of the main body part 51 a. The main body part 51 a has a substantially triangular shape (see FIG. 10). The guide part 51b has a guide wall part 51ba and a concave part 51bb. The concave part 51 bb, which constitutes the top end part of the guide part 51 b, has a shape curved along the external peripheral surface of a roller 56, described hereinafter. The guide wall part 51ba constitutes the rest of the guide part 51b other than the concave part 51bb, and extends in a substantially straight line from the bottom end of the concave part 51bb. The driven gear 52 is rotatably supported on the main body part 51a so as to protrude outward from the surface of the main body part 51a. The first support member 53a, which has a substantially cylindrical shape, is provided to the main body part 51a so as to protrude outward from the surface of the main body part 51a. The second support member 53b, which has a substantially cylindrical shape, is provided to the main body part 51a so as to protrude outward from the surface of the main body part 51a. The second support member 53b is disposed below the first support member 53a.

[0081] The panel support arm 55 is a plate-shaped member having substantially the same shape as the main body part 51a of the stationary part 53, and is connected with the inner surface of the movable panel 30. Specifically, the proximity of an end point 55a positioned at the top part of the panel support arm 55 and the first connecting part 33 of the movable panel 30 are connected, and the proximity of an end point 55b positioned at the forward bottom part of the panel support arm 55 and the second connecting part 34 of the movable panel 30 are connected. The roller 56 is disposed in proximity to an end point 55c positioned at the rearward bottom part of the panel support arm 55. The roller 56 is rotatably supported on the panel support arm 55. In proximity to an edge 55d joining the end point 55a and end point 55c of the panel support arm 55, a rack 57 which meshes with the driven gear 52 is provided substantially parallel with the edge 55d. Furthermore, a first sliding opening 58 and a second sliding opening 59 are formed in the panel support arm 55. The first sliding opening 58 and the second sliding opening 59 are slit-shaped openings, each passing through a surface of the panel support arm 55. The first sliding opening 58 and the second sliding opening 59 have shapes inclined so that their top parts are positioned farther forward than their bottom parts. Specifically, the first sliding opening 58 is formed into a substantially straight line so as to be substantially parallel with the edge 55d of the panel support arm 55. The second sliding opening 59 has a linear part 59a extending substantially parallel with the first sliding opening 58, and a curved part 59b formed continuing from the bottom end of the linear part 59a. The curved part 59b curves diagonally forward and downward from the bottom end of the linear part 59a. Focusing only on the shapes of the first sliding opening 58 and the second sliding opening 59, the first sliding opening 58 has a substantial I shape, and the second sliding opening 59 has a substantial J shape.

[0082] The first support member 53a is inserted into the first sliding opening 58. Consequently, the first support member 53a interlocks with the first sliding opening 58 and supports the panel support arm 55. Furthermore, the second support member 53b is inserted into the second sliding opening 59. Consequently, the second support member 53b interlocks with the second sliding opening 59 and supports the panel support arm 55.

[0083] With such a configuration, in the drive mechanism 50, the driving of the motor 54 causes the racks 57, 57 to drive via the drive gear 54b and the driven gears 52, 52, whereby the positions of the end points 55a, 55a, 55b, 55b of the panel support arms 55, 55 all move. At this time, the positions of the first connecting parts 33, 33 and the second connecting parts 34, 34 are moved along with the movement of the panel support arms 55, 55. Therefore, the movable panel 30 is moved either from the operation-stopped position shown in FIG. 9(a) to the operating position shown in FIG. 9(b), or from the operating position shown in FIG. 9(b) to the operation-stopped position shown in FIG. 9(a). The state of the movable panel 30 is thereby switched either from the operation-

stopped state to the operating state, or from the operating state to the operation-stopped state. When the movable panel 30 is in the operation-stopped state, the panel support arms 55, 55 go into a first state, which is a state of being accommodated in the main body 20. Furthermore, when the movable panel 30 is in the operating state, the panel support arms 55, 55 go into a second state, which is a state in which their top parts protrude from the main body 20.

[0084] In the present embodiment, the drive mechanism 50 excluding the power transmission shaft is accommodated in the accommodating spaces S formed between the casing side surfaces 15, 15 and the main body side surface parts 21, 21 (see FIG. 8). Specifically, a drive mechanism main body 50b, the motor 54, and a drive gear 54b are accommodated in the right-side accommodating space S. A stationary part 53 is disposed in front (to the right) of the right-side casing side surface 15, a panel support arm 55 is disposed in front (to the right) of the stationary part 53, and the motor 54 is disposed in front (to the right) of the panel support arm 55. A drive mechanism main body 50b and a drive gear 54b are accommodated in the left-side accommodating space S. A stationary part 53 is disposed in front (to the left) of the left-side casing side surface 15, and a panel support arm 55 is disposed in front (to the left) of the stationary part 53.

[0085] In the present embodiment, when the panel support arms 55 are in the second state as shown in FIG. 9(b), the side surface panel parts 32, 32 are positioned to the sides of the panel support arms 55. Therefore, the panel support arms 55 in the second state are mostly covered by the side surface panel parts 32, 32 as seen in a side view.

<Action of Movable Panel>

[0086] FIG. 11 is a schematic view showing the trajectory of a first connecting part 33 of the movable panel 30. FIG. 12 is a side view of the drive mechanism main body 50b disposed on the left-side end part of the main body 20, and is a schematic view showing a case in which the panel support arm 55 is in the first state. FIG. 13 is a side view of the drive mechanism main body 50b disposed on the left-side end part of the main body 20, and is a schematic view showing a case in which the panel support arm 55 transitions from the first state to the second state. FIG. 14 is a side view of the drive mechanism main body 50b disposed on the left-side end part of the main body 20, and is a schematic view showing a case in which the panel support arm 55 is in the second state. In FIG. 11, the trajectory of the first connecting part 33 is shown by the single-dashed line.

[0087] Next, the action of the movable panel 30 and the trajectories of the first connecting parts 33, 33 when the state of the movable panel 30 switches are described using FIGS. 11, 12, 13, and 14.

[0088] When the state of the movable panel 30 is the operation-stopped state, the top end of the first sliding opening 58 of the panel support arm 55 and the first support member 53a of the stationary part 53 draw near each other, the top end of the linear part 59a of the second sliding opening 59 of the panel support arm 55 and the second support member 53b of the stationary part 53 draw near each other, and the roller 56 of the panel support arm 55 and the bottom end of the guide wall part 51ba of the stationary part 53 draw near each other, as shown in FIG. 12. At this time, the first connecting parts 33, 33 are disposed in the position P1 shown in FIG. 11.

[0089] When the state of the movable panel 30 switches from the operation-stopped state to the operating state, the panel support arm 55 moves in a direction such that the bottom end of the first sliding opening 58 of the panel support arm 55 and the first support member 53a of the stationary part 53 draw near each other, the bottom end of the linear part 59a of the second sliding opening 59 of the panel support arm 55 and the second support member 53b of the stationary part 53 draw near each other, and the roller 56 of the panel support arm 55 and the top end of the guide wall part 51ba of the stationary part 53 draw near each other, as shown in FIG. 13. At this time, the first sliding opening 58 slides relative to the first support member 53a, and the linear part 59a of the second sliding opening 59 slides relative to the second support member 53b. Therefore, the panel support arm 55 moves parallel, diagonally forward and upward. Consequently, the movable panel 30 moves diagonally forward and upward as shown in FIG. 11. At this time, the first connecting parts 33, 33 are moved diagonally forward and upward from the position P1 shown in FIG. 11.

[0090] When the panel support arm 55 is moved to a position where the bottom end of the linear part 59a of the second sliding opening 59 and the second support member 53b draw near each other, the panel support arm 55 moves so that the curved part 59b of the second sliding opening 59 is interlocked with the second support member 53b and the roller 56 is interlocked with the concave part 51bb. Therefore, the panel support arm 55 rotatably moves about the first support member 53a as a fulcrum. The movable panel 30 thereby rotatably moves so as to lean forward as shown in FIG. 11. At this time, the first connecting parts 33, 33 are moved from the position P2 shown in FIG. 11 to the forward and downward tilted position P3.

<Characteristics>

[0091]

(1)
In the embodiment described above, the front surface panel part 31 and the side surface panel parts 32, 32 are formed continuous with each other. Therefore, when the movable panel 30 assumes the operation-stopped state, the main body 20 can be covered continuously from the front to the sides. Con-

sequently, when the indoor unit 1 is viewed at an angle while the movable panel 30 is assuming the operation-stopped state, the joint between the movable panel 30 and the main body 20 can be made to not stand out.
The design (appearance) can thereby be improved.
(2)
In the embodiment described above, when the panel support arm 55 is in the second state, the side surface panel parts 32, 32 are positioned to the sides of the panel support arm 55. Therefore, the quantity of air drawn into the front surface intake port that reaches the drive components can be reduced. Consequently, the adhesion of dust to the panel support arm 55 during operation can be suppressed. In the second state, the panel support arm 55 is mostly covered by the side surface panel parts 32, 32 as seen in a side view. Therefore, the design during operation can be improved.
(3)
In the embodiment described above, when the panel support arm 55 is in the second state, the panel support arm 55 is positioned such that the curved part 59b of the second sliding opening 59 is interlocked with the second support member 53b and the roller 56 is interlocked with the concave part 51bb. Therefore, the risk of the state of the panel support arm 55 switching to the first state can be reduced. Consequently, it is possible to reduce the load on the motor 54, and to make it easier for the movable panel 30 connected with the panel support arm 55 to maintain the operating state.

-Second Embodiment-

[0092] An air-conditioning indoor unit 100 according to a second embodiment of the present invention is described hereinbelow while referring to the drawings. The following embodiment is a specific example of the present invention and is not intended to limit the technological scope of the present invention.

[0093] FIG. 15 is a drawing of the air-conditioning indoor unit 100 when operation has stopped, as seen at an angle from below. FIG. 16 is a drawing of the air-conditioning indoor unit 100 when operation has stopped, as seen at an angle from above. FIG. 17 is a drawing of the air-conditioning indoor unit 100 during operation, as seen at an angle from above.

[0094] The air-conditioning indoor unit 100, which is a wall-mounted indoor unit attached to a wall surface in a room, performs air conditioning such as air-cooling and air-warming of the room. The air-conditioning indoor unit 100 comprises primarily a main body 120, a movable panel 130, and a drive mechanism 150 (see FIGS. 22 and 23).

<Configuration of Main Body>

[0095] FIG. 18 is a front view of the air-conditioning indoor unit 100 with the movable panel 130 removed. FIG. 19 is a perspective view of the air-conditioning indoor unit 100 with the movable panel 130 and main body side surface parts 121, 121 removed. FIG. 20 is a cross-sectional view of the main body 120 cut in a horizontal direction, and is a drawing showing the proximity of the right-side end part of the main body 120.

[0096] The main body 120 comprises a casing 110, the main body side surface parts 121, 121, and a flap 125.

[0097] The casing 110 has a substantially rectangular shape whose length runs in a left-right direction in a front view as shown in FIG. 18. An indoor heat exchanger (not shown), a fan (not shown), and other components are accommodated in the casing 110. Also formed in the casing 110 are a first intake port 118a, a second intake port 118b, and a discharge port 119.

[0098] The first intake port 118a is an opening through which air is taken into the casing 110, and is provided to a casing roof surface 112 as shown in FIG. 17. The second intake port 118b is an opening through which air is taken into the casing 110, and is provided to a casing forward surface 113, i.e., the front surface of the main body 120 as shown in FIG. 18.

[0099] The discharge port 119 is an opening through which air is discharged into the room, and is provided to the casing forward surface 113 and a casing floor surface 114 as shown in FIG. 17. Specifically, the discharge port 119 is an opening formed continuously from the bottom part of the casing forward surface 113 up to the forward part of the casing floor surface 114. Hereinbelow, the open portion of the discharge port 119 provided to the casing forward surface 113 is referred to as a first open part 119a, and the open portion of the discharge port 119 provided to the casing floor surface 114 is referred to as a second open part 119b.

[0100] The main body side surface parts 121, 121, disposed so as to cover casing side surfaces 115, 115, constitute the left and right side surfaces of the main body 120 (see FIG. 20). Between the main body side surface parts 121, 121 and the casing side surfaces 115, 115 are formed accommodating spaces S, S for accommodating the configurational members of the drive mechanism 150 other than a power transmission shaft, described hereinafter. Furthermore, the main body side surface parts 121, 121 are configured from inner surface parts 123 and side surface cosmetic panels 124, 124 as shown in FIGS. 16, 17, and 20. The inner surface parts 123 have curved shapes. The inner surface parts 123 are also disposed in front of the casing side surfaces 115, 115, i.e., on the outer sides of the casing side surfaces 115, 115 so as to cover the casing side surfaces 115, 115. The side surface cosmetic panels 124, 124 are disposed so as to cover the rear parts of the inner surface parts 123. Therefore, the side surfaces of the main body 120 each have a shape in which the forward part is curved into a convex shape.

[0101] The flap 125, which is a substantially rectangular plate-shaped member whose length runs in the left-right direction, is provided so as to be capable of opening and closing the second open part 119b of the discharge port 119. The flap 125 is also attached inside the casing 110 so as to be capable of turning in the left-right direction about a rotating shaft (not shown). By turning about the rotating shaft, the flap 125 can guide air blown out through the second open part 119b.

<Movable Panel>

[0102] FIG. 21 is a side view of the air-conditioning indoor unit 100, showing the manner in which the movable panel 130 is varied from an operation-stopped orientation to an operating orientation.

[0103] The movable panel 130 is configured from a front surface panel part 131 having a substantially flat shape, and side surface panel parts 132, 132 formed continuing rearward from both ends of the front surface panel part 131. The movable panel 130 is configured with the front surface panel part 131 and the side surface panel parts 132, 132 formed integrally. The front surface panel part 131 is capable of covering substantially the entire casing forward surface 113, and is disposed in front of the main body 120, i.e., on the front surface side of the main body 120. The side surface panel parts 132, 132 are capable of covering the inner surface parts 123 of the main body side surface parts 121, 121. Therefore, when the movable panel 130 assumes the operation-stopped orientation (equivalent to the second orientation), described hereinafter, the contour of the air-conditioning indoor unit 100 is such that the front surface side is configured by the front surface panel part 131 of the movable panel 130, the side surface sides are configured by the side surface panel parts 132, 132 of the movable panel 130 and the side surface cosmetic panels 124, 124, the top side is configured by the casing roof surface 112, and the bottom side is configured by the casing floor surface 114 and the flap 125.

[0104] The side surface panel parts 132, 132 have convexly curved shapes so as to constitute slightly curved surfaces, together with the side surface cosmetic panels 124, 124, when the movable panel 130 assumes the hereinafter-described operation-stopped orientation.

[0105] Furthermore, formed on the inner surface of the movable panel 130 are first connecting parts 133, 133 and second connecting parts 134, 134 for connecting with arms 166, 176, described hereinafter. The first connecting parts 133, 133 are provided above the second connecting parts 134, 134.

[0106] The movable panel 130 is capable of assuming the operation-stopped orientation and the operating orientation (equivalent to the first orientation).

[0107] When the movable panel 130 assumes the operation-stopped orientation, the movable panel 130 is disposed so that the front surface panel part 131 covers substantially the entire casing forward surface 113, and the side surface panel parts 132, 132 cover the forward parts of the side surfaces of the main body 120 (the sides of the main body 120), as shown in FIGS. 16 and 21. Therefore, when the movable panel 130 assumes the operation-stopped orientation, the front surface panel part 131 is disposed in front of the second intake port 118b and the first open part 119a of the discharge port 119, and the second intake port 118b and the first open part 119a of the discharge port 119 are therefore blocked. When the movable panel 130 assumes the operating orientation, the movable panel 130 is disposed so that the top part of the front surface panel part 131 is separated further from the main body 120 than it is during the operation-stopped orientation, as shown in FIGS. 17 and 21. When the movable panel 130 assumes the operating orientation, the movable panel 130 is moved diagonally forward and upward from its position at the time of the operation-stopped orientation. Therefore, when the movable panel 130 assumes the operating orientation, the movable panel 130 is disposed at a tilt so that a top edge 131a of the front surface panel part 131 is farther from the casing forward surface 113 than a bottom edge 131b of the front surface panel part 131. Consequently, when the movable panel 130 assumes the operating orientation, the second intake port 118b provided to the top part of the casing forward surface 113 is opened up. When the movable panel 130 assumes the operating orientation, the movable panel 130 is disposed so that the bottom edge 131b of the front surface panel part 131 is positioned above the first open part 119a of the discharge port 119. Therefore, when the movable panel 130 assumes the operating orientation, the first open part 119a of the discharge port 119 is opened up.

[0108] In the present embodiment, due to the driving of the movable panel 130 and the flap 125, the second intake port 118b and the discharge port 119 are blocked when the air-conditioning indoor unit 100 has stopped operating, and the second intake port 118b and the discharge port 119 are opened up during operation.

<Configuration of Drive Mechanism>

[0109] FIG. 22 is a side view of the drive mechanism 150. FIG. 23 is an exploded perspective view of the drive mechanism 150. FIG. 24 is a side view of a first member 162. FIG. 25 is a side view of a second member 161. FIG. 26 is a right-side view of the air-conditioning indoor unit 100. The drawing of FIG. 26 omits the movable panel 130.

[0110] The drive mechanism 150 is a mechanism for moving the movable panel 130 in order to vary the orientation of the movable panel 130 relative to the main body 120. The drive mechanism 150 has primarily a drive part 151 and drive mechanism main bodies 160, 170 (see FIGS. 22 and 28).

[0111] The drive part 151 comprises one motor 152 and a power transmission part 153.

[0112] The motor 152 is a stepping motor and is dis-

posed in proximity to the right-side end part of the main body 120 as shown in FIG. 18. The motor 152 has a drive shaft 152a and a drive gear 154 as shown in FIG. 22. The drive shaft 152a is rotated by the driving of the motor 152. The drive gear 154 is attached to the drive shaft 152a and is rotated by the rotating of the drive shaft 152a. The motor 152 is controlled by a controller (not shown) and is rotatably driven.

[0113] The power transmission part 153 is a mechanism for distributing and transmitting the drive force of the motor 152 to the drive mechanism main bodies 160, 170. The power transmission part 153 has a transmission shaft (not shown), a first gear 155, and a second gear 156 (see FIG. 28). The transmission shaft is disposed so as to extend in the left-right direction. The first gear 155 is attached to the right-side end part of the transmission shaft. The second gear 156 is attached to the left-side end part of the transmission shaft. Furthermore, the first gear 155 is disposed so as to mesh with the drive gear 154, and is rotated by the rotating of the drive gear 154. The transmission shaft is rotated by the rotating of the first gear 155, and the second gear 156 is rotated by the rotating of the transmission shaft. Thus, in the power transmission part 153, power transferred from the drive gear 154 to the first gear 155 can be transferred to the second gear 156 via the transmission shaft.

[0114] The drive mechanism main bodies 160, 170 comprise first members 162, 172 and second members 161, 171. The configurations of the drive mechanism main bodies 160, 170 are identical in bilateral symmetry; therefore, only the configuration of the drive mechanism main body 160 disposed in the right-side end part of the main body 120 is described, and the drive mechanism main body 170 disposed in the left-side end part of the main body 120 has symbols in the 170s in place of the symbols in the 160s indicating the parts of the drive mechanism main body 160, the parts of the 170s not being described.

[0115] The first member 162 has an arm 166 and a roller 167. In the present embodiment, the first member 162 is configured integrally from combining a plurality of components including the arm 166, the roller 167, and others, but the first member is not limited to this option and may be configured from a single component.

[0116] The arm 166 is a plate-shaped member having a substantially triangular shape, and is connected with the inner surface of the movable panel 130. Specifically, the proximity of an endpoint 166c positioned at the top of the arm 166 and a first connecting part 133 of the movable panel 130 are connected, and the proximity of an endpoint 166d positioned in the forward-side bottom part of the arm 166 and a second connecting part 134 of the movable panel 130 are connected.

[0117] An edge 166f joining the endpoint 166c with an endpoint 166e positioned in the rear-side bottom part of the arm 166 is slightly curved into a convex shape. Furthermore, in proximity to the edge 166f of the arm 166, a rack 166g which meshes with the first gear 155 is provided along the edge 166f. The arm 166 has a first part 166a and a second part 166b. The first part 166a and the second part 166b are disposed so as to be vertically aligned.

[0118] A first guide channel 168 is formed in the first part 166a. The first guide channel 168 is a slit-shaped opening passing through both surfaces of the arm 166. The first guide channel 168 is formed in proximity to the edge 166f of the arm 166. The first guide channel 168 is formed in the arm 166 so as to have an arcuate shape slightly curved into a convex shape along the edge 166f of the arm 166. Therefore, a first lower curved part 168a, which is a space in the first guide channel 168, has an arcuate shape slightly curved into a convex shape along the edge 166f of the arm 166.

[0119] A second guide channel 169 is formed in the second part 166b. The second guide channel 169 is a slit-shaped opening passing through both surfaces of the arm 166. The second guide channel 169 is disposed in a position separated farther from the edge 166f of the arm 166 than the first guide channel 168. The second guide channel 169 is formed in the arm 166 so as to have a portion having an arcuate shape slightly curved into a convex shape similar to the first guide channel 168, and a portion curved forward from an end part of the first portion. Therefore, a second lower curved part 169a, which is a space in the second guide channel 169 and an area in the top part of the second guide channel 169, has an arcuate shape slightly curved into a convex shape. The second lower curved part 169a and the first lower curved part 168a have the same arcuate center in the same virtual plane. Therefore, the second lower curved part 169a in the second guide channel 169 is an area having the same arcuate center but a different radius of curvature in the same virtual plane as the first lower curved part 168a. A bent part 169b, which is a space in the second guide channel 169 and an area in the bottom part of the second guide channel 169, has a greater curvature than the second lower curved part 169a. Therefore, the bent part 169b has an arcuate shape curved into a more convex shape than the second lower curved part 169a. The bottom part of the second lower curved part 169a and the top part of the bent part 169b are continuous. Focusing only on the shapes of the first guide channel 168 and the second guide channel 169 formed in the arm 166, the first guide channel 168 has a substantial I shape, and the second guide channel 169 has a substantial J shape.

[0120] The roller 167 is disposed in proximity to the endpoint 166e of the arm 166. The roller 167 is rotatably supported on the arm 166. Furthermore, the roller 167 moves along a guide wall part 165a of a guide part 165, described hereinafter.

[0121] The first member 162 assumes a first state and a second state. When the first member 162 assumes the first state, the first member 162 is disposed so that the endpoint 166c and the endpoint 166d of the arm 166 are positioned on the same straight line. When the first mem-

ber 162 assumes the second state, the first member 162 is disposed so that the endpoint 166c of the arm 166 is positioned farther forward than the endpoint 166d. In the present embodiment, when the first member 162 assumes the first state, the first member 162 is accommodated in the main body 120. When the first member 162 assumes the second state, the first member 162 is disposed so that the top part of the arm 166 protrudes from the main body 120.

[0122] The second member 161, which is fixed to the outer side of the casing side surface 115, movably supports the first member 162. The second member 161 has a main body part 163, a first sliding member 164a, and a second sliding member 164b. In the present embodiment, the second member 161 is configured integrally from a combination of a plurality of components including the main body part 163, the first sliding member 164a, the second sliding member 164b, and others, but the second member is not limited as such and may be configured from a single component. The main body part 163 has a base part 163a and a guide part 165.

[0123] The base part 163a is a plate-shaped member having a substantially flat surface. The base part 163a has a shape substantially identical to the arm 166 of the first member 162 (see FIGS. 24 and 25). Furthermore, the first gear 155 is disposed in the top part of the base part 163a, and the base part 163a rotatably supports the first gear 155.

[0124] The guide part 165 stands upright from the rear-side end part of the base part 163a. The guide part 165 has the guide wall part 165a and a curved part 165b. The guide wall part 165a constitutes the portion of the guide part 165 other than the curved part 165b, and extends downward from the bottom end of the curved part 165b. The guide wall part 165a has an arcuate shape curved slightly into a convex shape. The guide wall part 165a, the first lower curved part 168a, and the second lower curved part 169a have the same arcuate center in the same virtual plane. Therefore, the guide wall part 165a in the guide part 165 is an area that has the same arcuate center but a different radius of curvature from the first lower curved part 168a and the second lower curved part 169a in the same virtual plane.

[0125] The curved part 165b constitutes the top end part of the guide part 165. The curved part 165b also has a greater curvature than the guide wall part 165a. Therefore, the curved part 165b has an arcuate shape curved into a shape more convex than the guide wall part 165a. Specifically, the curved part 165b has a shape curved along the external peripheral surface of the roller 167 of the first member 162, and the sliding movement of the roller 167 can be restricted by positioning the roller 167 in the curved part 165b.

[0126] The first sliding member 164a, which has a substantially cylindrical shape, is provided to the base part 163a so as to protrude outward from the surface of the base part 163a. The first sliding member 164a is disposed in the top part of the base part 163a. Furthermore, the first sliding member 164a is inserted through the first guide channel 168 so as to slide against the first part 166a. The first sliding member 164a interlocks with the first part 166a so that the first member 162 is allowed to move in the forward-backward direction but is restricted from moving in the right direction. Thus, by interlocking with the first part 166a, the first sliding member 164a supports the first member 162.

[0127] The second sliding member 164b, which has a substantially cylindrical shape, is provided to the base part 163a so as to protrude outward from the surface of the base part 163a. The second sliding member 164b is disposed below the first sliding member 164a in the base part 163a. Furthermore, the second sliding member 164b is inserted through the second guide channel 169 so as to slide against the second part 166b. The second sliding member 164b interlocks with the second part 166b so that the first member 162 is allowed to move in the forward-backward direction but is restricted from moving in the right direction. Thus, by interlocking with the second part 166b, the second sliding member 164b supports the first member 162.

[0128] With such a configuration, in the drive mechanism 150, the first gear 155 and the second gear 156 are rotated by the driving of the motor 152, via the drive gear 154. Due to the rotating of the first gear 155, the rack 166g meshed with the first gear 155 is driven, and the first member 162 moves relative to the second member 161. At this time, the positions of the endpoints 166c, 166d, 166e of the arm 166 move respectively along the first guide channel 168, the second guide channel 169, and the guide wall part 165a. Therefore, the trajectories followed by the endpoints 166c, 166d, 166e of the arm 166 are slightly curved into convex shapes. Due to the rotating of the second gear 156, a rack 176g meshed with the second gear 156 is driven, and a first member 172 moves relative to a second member 171. At this time, the positions of endpoints 176c, 176d, 176e of an arm 176 move respectively along a first guide channel 178, a second guide channel 179, and a guide wall part 175a. Therefore, the trajectories followed by the endpoints 176c, 176d, 176e of the arm 176 are slightly curved into convex shapes.

[0129] In the present embodiment, as described above, the drive mechanism 150 excluding the transmission shaft is accommodated in the accommodating spaces S, S formed between the casing side surfaces 115, 115 and the main body side surface parts 121, 121. Specifically, the drive mechanism main body 160, the motor 152, the drive gear 154, and the first gear 155 are accommodated in the right-side accommodating space S. More specifically, the second member 161 is disposed in front (to the right) of the casing side surface 115, the first member 162 is disposed in front (to the right) of the second member 161, and the motor 152 is disposed in front (to the right) of the first member 162. The drive mechanism main body 170 and the second gear 156 are accommodated in the left-side accommodating space S.

Specifically, the second member 171 is disposed in front (to the left) of the casing side surface 115, and the first member 172 is disposed in front (to the left) of the second member 171.

<Action of Movable Panel>

[0130] FIG. 27 is a schematic view showing the trajectory of the first connecting part 133 of the movable panel 130. FIG. 28 is a side view of the drive mechanism main body 170, and is a schematic view showing a case in which the first member 172 is in the first state. FIG. 29 is a side view of the drive mechanism main body 170, and is a schematic view showing a case in which the first member 172 is transitioning from the first state to the second state. FIG. 30 is a side view of the drive mechanism main body 170, and is a schematic view showing a case in which the first member 172 is in the second state. In FIG. 27, the trajectory of the first connecting part 133 is shown by a single-dash line.

[0131] Next, FIGS. 27, 28, 29, and 30 are used to describe the action of the movable panel 130 and the trajectories of the first connecting parts 133, 133 in a case in which the orientation of the movable panel 130 switches.

[0132] When the movable panel 130 assumes the operation-stopped orientation, the first member 172 assumes the first state as shown in FIG. 28. Specifically, when the movable panel 130 assumes the operation-stopped orientation, the first member 172 is disposed relative to the second member 171 so that a first sliding member 174a is positioned in a top end part 178x of the first guide channel 178, i.e., a top end part 178ax of a first lower curved part 178a, a second sliding member 174b is positioned in a top end part 179x of the second guide channel 179, i.e., a top end part 179ax of a second lower curved part 179a, and a roller 177 is positioned in a bottom end part 175aa of the guide wall part 175a. When the movable panel 130 assumes the operation-stopped orientation, the first member 162 is disposed relative to the second member 161 so that the first sliding member 164a is positioned in a top end part 168x of the first guide channel 168, i.e., a top end part 168ax of the first lower curved part 168a, the second sliding member 164b is positioned in a top end part 169x of the second guide channel 169, i.e., a top end part 169ax of the second lower curved part 169a, and the roller 167 is positioned in a bottom end part 165aa of the guide wall part 165a. The first connecting parts 133, 133 are thereby disposed in the position P1 shown in FIG. 27.

[0133] When the orientation of the movable panel 130 switches from the operation-stopped orientation to the operating orientation, the first member 172 moves relative to the second member 171 in a direction such that a bottom end part 178y of the first guide channel 178 draws near the first sliding member 174a, a bottom end part 179ay of the second lower curved part 179a of the second guide channel 179 draws near the second sliding member 174b, and the roller 177 draws near the top end part of the guide wall part 175a, as shown in FIG. 29. When the orientation of the movable panel 130 switches from the operation-stopped orientation to the operating orientation, the first member 162 moves relative to the second member 161 in a direction such that a bottom end part 168y of the first guide channel 168 draws near the first sliding member 164a, a bottom end part 169ay of the second lower curved part 169a of the second guide channel 169 draws near the second sliding member 164b, and the roller 167 draws near the top end part of the guide wall part 165a. At this time, the portions in the first parts 166a, 176a that define the first lower curved parts 168a, 178a slide relative to the first sliding members 164a, 174a, the portions in the second parts 166b, 176b that define the second lower curved parts 169a, 179a slide relative to the second sliding members 164b, 174b, and the rollers 167, 177 slide relative to the guide wall parts 165a, 175a. Therefore, the arms 166, 176 slidably move diagonally forward and upward along the first lower curved parts 168a, 178a, the second lower curved parts 169a, 179a, and the guide wall parts 165a, 175a. Since the first connecting parts 133, 133 move integrally with the arms 166, 176, the arms slidably move diagonally forward and upward from the position P1 shown in FIG. 27. Consequently, the movable panel 130 slidably moves diagonally forward and upward relative to the main body 120, as shown in FIG. 27.

[0134] When the first members 162, 172 move relative to the second members 161, 171 up to the positions where the second sliding members 164b, 174b draw near with the border portions between the second lower curved parts 169a, 179a and the bent parts 169b, 179b of the second guide channels 169, 179, the first members 162, 172 slidably move while rotating relative to the second members 161, 171. Specifically, when the positions of the second sliding members 164b, 174b move from top end parts 169bx, 179bx to bottom end parts 169by, 179by of the bent parts 169b, 179b and the rollers 167, 177 move from the guide wall parts 165a, 175a to the curved parts 165b, 175b, the first members 162, 172 rotate by predetermined angles relative to the second members 161, 171 about the first sliding members 164a, 174a as rotational fulcra. At this time, the first sliding member 164a is positioned in proximity to the bottom end parts 168y, 178y of the first guide channels 168, 178. The first members 162, 172 then move relative to the second members 161, 171 so that the first sliding members 164a, 174a are positioned in the bottom end parts 168y, 178y of the first guide channels 168, 178, the second sliding members 164b, 174b are positioned in bottom end parts 169y, 179y of the second guide channels 169, 179, i.e., the bottom end parts 169by, 179by of the bent parts 169b, 179b, and the rollers 167, 177 are positioned in the curved parts 165b, 175b. Thereby, the portions in the first parts 166a, 176a that define the bottom end parts 168y, 178y of the first guide channels 168, 178 are interlocked with the first sliding member 174a, the portions in

the second parts 166b, 176b that define the bottom end parts 169y, 179y of the second guide channels 169, 179, i.e., the bottom end parts 169by, 179by of the bent parts 169b, 179b are interlocked with the second sliding members 164b, 174b, and the rollers 167, 177 are interlocked with the curved parts 165b, 175b. The first members 162, 172 thereby assume the second state as shown in FIGS. 22 and 30. The first connecting parts 133, 133 move to the position P3 diagonally forward and downward from the position P2 shown in FIG. 25. Consequently, the movable panel 130 moves diagonally forward and downward relative to the main body 120, as shown in FIG. 27. The orientation of the movable panel 130 thereby switches from the operation-stopped orientation to the operating orientation. Since the bottom end parts 169by, 179by of the bent parts 169b, 179b and the curved parts 165b, 175b have large curvatures, the second sliding members 164b, 174b and the rollers 167, 177 have readily interlocking structures. Due to the second sliding members 164b, 174b being positioned in the bottom end parts 169by, 179by of the bent parts 169b, 179b and the rollers 167, 177 being positioned in the curved parts 165b, 175b, the second sliding members 164b, 174b do not readily move from the bent parts 169b, 179b to the second lower curved parts 169a, 179a, and the rollers 167, 177 do not readily move from the curved parts 165b, 175b to the guide wall parts 165a, 175a.

[0135] In the present embodiment, when the movable panel 130 assumes the operating orientation, the motor 152 is driven and a load is therefore imposed on the motor 152. When the movable panel 130 assumes the operation-stopped orientation, the motor 152 is not driven and a load is therefore not imposed on the motor 152.

<Characteristics>

[0136]

(1)

In the present embodiment, the first members 162, 172 move relative to the second members 161, 171. The movable panel 130 is connected with the first members 162, 172, and the second members 161, 171 are fixed in place on the main body 120. Furthermore, when the movable panel 130 assumes the operating orientation, the second sliding members 164b, 174b are positioned in the bottom end parts 169by, 179by of the bent parts 169b, 179b, whereby the first members 162, 172 are supported so that the movement of the arms 166, 176 is restricted. Specifically, when the movable panel 130 assumes the operating orientation, support of the movable panel 130 and the first members 162, 172 can be divided among the second sliding members 164b, 174b and the first gear 155. Therefore, in comparison with an arm in which the bottom end part of the second guide channel is not bent, the bottom end part of the first guide channel bends forward, and the first sliding member interlocks with the portion that defines the bottom end part of the first guide channel, for example; there is greater distance from the portions where the first gear 155 and the second gear 156 contact the arms 166, 176 and support the arms 166, 176 to the second sliding members 164b, 174b which are sliding members supporting the arms, and the load imposed on the motor 152 in order to maintain the orientation of the movable panel 130 can therefore be reduced. The load imposed on the motor 152 can also be reduced in comparison with a case in which the arms 166, 176 are supported by only the first gear 155 and the second gear 156. When the second sliding members 164b, 174b are positioned in the bottom end parts 169by, 179by of the bent parts 169b, 179b, the load imposed on the motor 152 can be reduced in comparison with a case in which the second sliding members 164b, 174b are positioned in the bottom end part 179y of the second lower curved part 179a of the second guide channel 179, for example, before the second sliding members 164b, 174b are positioned in the bottom end parts 169by, 179by of the bent parts 169b, 179b. The center of gravity of the movable panel 130 is positioned farther forward from the main body 120 than the positions of the second sliding members 164b, 174b. Furthermore, in the present embodiment, since the first members 162, 172 rotate relative to the second members 161, 171 about the first sliding members 164a, 174a as rotational fulcra, the first sliding members 164a, 174a being positioned in proximity to the motor 152 and the first gear 155 or the second gear 156, the load imposed on the motor 152 when the first members 162, 172 rotate can be reduced in comparison with a case in which the first members rotate relative to the second members about the second sliding members as rotational fulcra, for example.

(2)

In the present embodiment, when the movable panel 130 assumes the operation-stopped orientation, the first members 162, 172 are disposed relative to the second members 161, 171 so that the first sliding members 164a, 174a are positioned in the top end parts 168x, 178x of the first guide channels 168, 178, the second sliding members 164b, 174b are positioned in the top end parts 169x, 179x of the second guide channels 169, 179, and the rollers 167, 177 are positioned in the bottom end parts 165aa, 175aa of the guide wall parts 165a, 175a. Due to the first sliding members 164a, 174a being positioned in the top end parts 168x, 178x of the first guide channels 168, 178, the first sliding members 164a, 174a interlock with the first parts 166a, 176a that define the top end parts 168x, 178x of the first guide channels 168, 178, and the movement of the arms 166, 176 in the direction of gravity is restricted. Due to the second sliding members 164b, 174b being positioned in the top end parts 169x, 179x of the second

guide channels 169, 179, the second sliding members 164b, 174b interlock with the second parts 166b, 176b that define the top end parts 169x, 179x of the second guide channels 169, 179, and the movement of the arms 166, 176 in the direction of gravity is restricted. The movement in the direction of gravity of the movable panel 130 connected with the first members 162, 172 is thereby restricted. Consequently, by driving the motor 152 and rotating the first gear 155 and the second gear 156, the movement of the movable panel 130 in the direction of gravity can be restricted even if the arms 166, 176 are not supported. The movable panel can thereby be made to assume an orientation that does not impose a load on the motor 152.

(3)

In the present embodiment, the movable panel 130 is disposed on the front-surface side of the main body 120. When the movable panel 130 assumes the operating orientation, the movable panel 130 is disposed at a tilt relative to the main body 120, whereby the second intake port 118b formed in the casing forward surface 113 of the main body 120 can be opened up. When the movable panel 130 assumes the operation-stopped orientation, the movable panel 130 is disposed substantially parallel to the main body 120, whereby the second intake port 118b formed in the casing forward surface 113 of the main body 120 and the first open part 119a of the discharge port 119 can be blocked.

(4)

In the present embodiment, the first members 162, 172 have the rollers 167, 177. The second members 161, 171 have the guide parts 165, 175. When the rollers 167, 177 are positioned in the curved parts 165b, 175b of the guide parts 165, 175, the second sliding members 164b, 174b are positioned in the bottom end parts 169by, 179by of the bent parts 169b, 179b. Since the movement of the arms 166, 176 is restricted due to the rollers 167, 177 being positioned in the curved parts 165b, 175b, when the movable panel 130 assumes the operating orientation, the arms 166, 176 can be supported by the first gear 155, the second gear 156, the second sliding members 164b, 174b, and the curved parts 165b, 175b.

The load imposed on the motor 152 when the movable panel 130 is made to assume the operating orientation as the desired orientation can thereby be further reduced.

<Modifications>

[0137]

(A)

In the embodiments described above, the first guide channel 168 and the second lower curved parts 169a of the second guide channel 169 formed in the arm 166 have arcuate shapes slightly curved into convex shapes.

Instead of this, the second lower curved parts of the first guide channel and the second guide channel need not have arcuate shapes. For example, the first guide channel may have a linear shape, and the second lower curved part of the second guide channel may be formed in the arm so as to have a linear shape parallel to the first guide channel.

(B)

In the embodiments described above, the first gear 155 and the second gear 156 are driven by a single motor 152. Instead of this, the first gear and the second gear may be driven by respective separate motors. Thereby, there is no need to install a transmission shaft.

(C)

In the embodiments described above, the first guide channel 168 and the second guide channel 169 are slit-shaped openings passing through both surfaces of the arm 166.

Instead of this, as long as the first sliding member or the second sliding member is capable of sliding, the first guide channel and the second guide channel need not be openings. For example, the first guide channel and the second guide channel may be groove-shaped concavities provided in the arm.

(D) In the embodiments described above, the first members 162, 172 are moved relative to the second members 161, 171 by the drive part 151. The first members 162, 172 are connected with the movable panel 130, and the second members 161, 171 are fixed to the casing side surface 115 that has the main body 120 (see FIG. 31(a)). Therefore, due to the first members 162, 172 moving relative to the second members 161, 171, the movable panel 130 connected with the first members 162, 172 moves relative to the main body 120 to which the second members 161, 171 are fixed. The orientation of the movable panel 130 relative to the main body 120 is thereby varied.

Instead of this, as long as the orientation of the movable panel 130 relative to the main body 120 can be varied, the drive part may be a mechanism for moving second members 261, 271, which have a first sliding member and a second sliding member, relative to first members 262, 272, in which a first guide channel and a second guide channel are formed. When the second members 261, 271 are moved relative to the first members 262, 272, the second guide channel is formed in the first members 262, 272 so as to have a shape with a bent top part, i.e., so that a top part of a second lower curved part and a bottom part of a bent part are continuous. The first sliding member and the second sliding member of the second members 261, 271 are respectively disposed so that when the movable panel 130 assumes the op-

eration-stopped orientation, the first sliding member is positioned in the bottom end part of the first guide channel of the second members 261, 271, and the second sliding member is positioned in the bottom end part of the second guide channel of the second members 261, 271.

When the second members 261, 271 move relative to the first members 262, 272, the first members 262, 272 are fixed to the main body 120, and the second members 261, 271 are connected with the movable panel 130 (see FIG. 31(b)). In this case, the second members 261, 271 are moved relative to the first members 262, 272 by the drive part, whereby the movable panel 130 fixed to the second members 261, 271 moves integrally with the second members 261, 271, and the movable panel 130 can therefore be moved relative to the main body 120. The orientation of the movable panel 130 relative to the main body 120 can thereby be varied.

When the movable panel 130 assumes the operating orientation, the second members 261, 271 are restricted from moving due to the second sliding member being interlocked with the portion that defines the top end part of the curved part. Therefore, compared with a case in which the top end part of the second guide channel is not bent, the top end part of the first guide channel is bent forward, and the first sliding member is interlocked with the portion that defines the top end part of the first guide channel, for example; there is a greater distance from the portion where the first gear and the second gear contact the second members 261, 271 and support the second members 261, 271 to the portion defining the bent part of the second guide channel supporting the second members 261, 271, and the load imposed on the motor in order to maintain the orientation of the movable panel 130 can be reduced. The load imposed on the motor can also be reduced in comparison with a case in which the second members 261, 271 are supported by only the first gear and the second gear.

(E)

In the embodiments described above, the first members 162, 172 are moved relative to the second members 161, 171. The first members 162, 172 are connected to the movable panel 130, and the second members 161, 171 are fixed to the main body 120. Furthermore, the first members 162, 172 have the rollers 167, 177, and the second members 161, 171 have the guide parts 165, 175 (see FIG. 32(a)).

Instead of this, in a case in which the first members 162, 172 move relative to the second members 161, 171, that is, in a case in which the first members 162, 172 are connected to the movable panel 130 and the second members 161, 171 are fixed to the main body 120, the movable panel 130 may have rollers 167, 177 which move along the guide parts 165, 175 of the second members 161, 171, as shown in FIG. 32(b).

In a case in which the first members 162, 172 move relative to the second members 161, 171, that is, in a case in which the first members 162, 172 are connected to the movable panel 130 and the second members 161, 171 are fixed to the main body 120, the main body 120 may have guide parts 165, 175 for guiding the rollers 167, 177 of the first members 162, 172, as shown in FIG. 33(a). Furthermore, in a case in which the first members 162, 172 move relative to the second members 161, 171, that is, in a case in which the first members 162, 172 are connected to the movable panel 130 and the second members 161, 171 are fixed to the main body 120, the main body 120 may have guide parts 165, 175 and the movable panel 130 may have rollers 167, 177, as shown in FIG. 33(b).

In a case in which the first members 162, 172 move relative to the second members 161, 171, that is, in a case in which the first members 162, 172 are connected to the movable panel 130 and the second members 161, 171 are fixed to the main body 120, the second members 161, 171 may have rollers 267, 277 and the first members 162, 172 may have guide parts 265, 275, as shown in FIG. 34(a). In a case in which the movable panel 130 and the members connected with the movable panel 130 (the first members 162, 172 in FIG. 34(a)) are on the movable side and the main body 120 and the members connected to the main body 120 (the second members 161, 171 in FIG. 34(a)) are on the stationary side, that is, in a case in which the components on the movable side (the movable panel 130 and the first members 162, 172 in FIG. 34(a)) have guide parts, the guide parts 265, 275 are configured so that guide wall parts are disposed in the top parts of the guide parts 265, 275 and curved parts are disposed in the bottom end parts of the guide parts 265, 275. In a case in which the components on the stationary side (the main body 120 and the second members 161, 171 in FIG. 34(a)) have rollers, the rollers 267, 277 are disposed so as to be positioned in the top end parts of the guide wall parts of the guide parts 265, 275 when the movable panel 130 assumes the operation-stopped orientation, and to be positioned in the curved parts of the guide parts when the movable panel 130 assumes the operating orientation. Furthermore, in a case in which the first members 162, 172 move relative to the second members 161, 171, that is, in a case in which the first members 162, 172 are connected to the movable panel 130 and the second members 161, 171 are fixed to the main body 120, the rollers 267, 277 of the second members 161, 171 may move along the guide parts 265, 275 of the movable panel 130, as shown in FIG. 34(b).

In a case in which the first members 162, 172 move relative to the second members 161, 171, that is, in a case in which the first members 162, 172 are con-

nected to the movable panel 130 and the second members 161, 171 are fixed to the main body 120, the main body 120 may have rollers 267, 277 and the first members 162, 172 may have guide parts 265, 275, as shown in FIG. 35(a). Furthermore, in a case in which the first members 162, 172 move relative to the second members 161, 171, that is, in a case in which the first members 162, 172 are connected to the movable panel 130 and the second members 161, 171 are fixed to the main body 120, the rollers 267, 277 of the main body 120 may move along the guide parts 265, 275 of the movable panel 130, as shown in FIG. 35(b).

Thus, in a case in which the second members 161, 171 are fixed to the main body 120 on the stationary side and the first members 162, 172 are connected to the movable panel 130 on the movable side, that is, in a case in which either the main body 120 or the second members 161, 171 have the guide parts 165, 175 and either the movable panel 130 or the first members 162, 172 have the rollers 167, 177, the movement of the arms 166, 176 is restricted due to the rollers 167, 177 being positioned in the curved parts 165b, 175b of the guide parts 165, 175. In a case in which the second members 161, 171 are fixed to the main body 120 on the stationary side and the first members 162, 172 are connected to the movable panel 130 on the movable side, that is, in a case in which either the main body 120 or the second members 161, 171 have the rollers 267, 277 and either the movable panel 130 or the first members 162, 172 have the guide parts 265, 275, the movement of the arms 166, 176 is restricted due to the rollers 267, 277 being positioned in the curved parts of the guide parts 265, 275. Therefore, when the movable panel 130 assumes the operating orientation, the first members 162, 172 can be supported by the first gear 155, the second gear 156, the second sliding members 164b, 174b, and either the curved parts 165b, 175b or the rollers 267, 277.

The load imposed on the motor 152 when the movable panel 130 assumes the operating orientation, which is the desired orientation, can thereby be further reduced.

In a case such as Modification (D) in which the second members 261, 271, which have the first sliding member and the second sliding member, move relative to the first members 262, 272, in which the first guide channel and the second guide channel are formed; that is, in a case in which the first members 262, 272 are fixed to the main body 120 and the second members 261, 271 are fixed to the movable panel 130; the first members 262, 272 may have the rollers 267, 277 and the second members 261, 271 may have the guide parts 265, 275, as shown in FIG. 36(a). Furthermore, in a case in which the second members 261, 271 move relative to the first members 262, 272, that is, in a case in which the first members 262, 272 are fixed to the main body 120 and the second members 261, 271 are fixed to the movable panel 130, the rollers 267, 277 of the first members 262, 272 may move along the guide parts 265, 275 of the movable panel 130, as shown in FIG. 36(b).

In a case in which the second members 261, 271 move relative to the first members 262, 272, that is, in a case in which the first members 262, 272 are fixed to the main body 120 and the second members 261, 271 are fixed to the movable panel 130, the main body 120 may have rollers 267, 277 and the second members 261, 271 may have guide parts 265, 275, as shown in FIG. 37(a). Furthermore, in a case in which the second members 261, 271 move relative to the first members 262, 272, that is, in a case in which the first members 262, 272 are fixed to the main body 120 and the second members 261, 271 are fixed to the movable panel 130, the rollers 267, 277 of the main body 120 may move along the guide parts 265, 275 of the movable panel 130, as shown in FIG. 37(b).

In a case in which the second members 261, 271 move relative to the first members 262,272, that is, in a case in which the first members 262, 272 are fixed to the main body 120 and the second members 261, 271 are fixed to the movable panel 130, the first members 262, 272 may have guide parts 165, 175 and the second members 261, 271 may have rollers 167, 177, as shown in FIG. 38(a). Furthermore, in a case in which the second members 261, 271 move relative to the first members 262, 272, that is, in a case in which the first members 262, 272 are fixed to the main body 120 and the second members 261, 271 are fixed to the movable panel 130, the movable panel 130 may have rollers 167, 177 which move along the guide parts 165, 175 of the first members 262, 272, as shown in FIG. 38(b).

In a case in which the second members 261, 271 move relative to the first members 262, 272, that is, in a case in which the first members 262, 272 are fixed to the main body 120 and the second members 261, 271 are fixed to the movable panel 130, the main body 120 may have guide parts 165, 175 for guiding the rollers 167, 177 of the second members 261, 271, as shown in FIG. 39(a). Furthermore, in a case in which the second members 261, 271 move relative to the first members 262, 272, that is, in a case in which the first members 262, 272 are fixed to the main body 120 and the second members 261, 271 are fixed to the movable panel 130, the main body 120 may have guide parts 165, 175 and the movable panel 130 may have rollers 167, 177, as shown in FIG. 39(b).

Thus, in a case in which the first members 262, 272 are fixed to the main body 120 on the stationary side and the second members 261, 271 are connected to the movable panel 130 on the movable side, that

is, in a case in which either the main body 120 or the first members 262, 272 have the guide parts 165, 175 and either the movable panel 130 or the second members 261, 271 have the rollers 167, 177, the movement of the second members 261, 271 is restricted due to the rollers 167, 177 being positioned in the curved parts 165b, 175b of the guide parts 165, 175. In a case in which the first members 262, 272 are fixed to the main body 120 on the stationary side and the second members 261, 271 are connected to the movable panel 130 on the movable side, that is, in a case in which either the main body 120 or the first members 262, 272 have the rollers 267, 277 and either the movable panel 130 or the second members 261, 271 have the guide parts 265, 275, the movement of the second members 261, 271 is restricted due to the rollers 267, 277 being positioned in the curved parts of the guide parts 265, 275. Therefore, when the movable panel 130 assumes the operating orientation, the second members 261, 271 can be supported by the first gear 155, the second gear 156, the portions in the second parts of the second guide channels that define the curved parts, and either the curved parts 165b, 175b or the rollers 267, 277.

It is thereby possible to further reduce the load imposed on the motor 152 when the movable panel 130 assumes the operating orientation, which is the desired orientation.

(F)

In the embodiments described above, the bottom end part 169y of the second guide channel 169 and the bottom end part 169by of the bent part 169b are substantially the same (see FIG. 40(a)). When the movable panel 130 assumes the operating orientation, the second sliding member 164b is positioned in the bottom end part 169y of the second guide channel 169.

[0138] Instead of this, a second guide channel 369 may extend further from a bottom end part 369by of a bent part 369b, as shown in FIG. 40(b). In a case in which the second guide channel 369 is formed in the arm 166, the movable panel 130 assumes the operating orientation when the second sliding member 164b is positioned in the bottom end part 369y of the second guide channel 369. Even with the second guide channel 369 having such a shape, the arm 166 can be supported due to the second sliding member 164b interlocking with the portion in a second part 366b that defines the bottom end part 369y of the second guide channel 369. It is thereby possible to reduce the load imposed on the motor 152 when the movable panel 130 assumes the operating orientation.

[0139] Thus, the air-conditioning indoor unit according to the second embodiment of the present invention can be applied as an air-conditioning indoor unit in which the orientation of the panel relative to the main body is varied, because the load imposed on the motor when the panel maintains the desired orientation can be reduced.

INDUSTRIAL APPLICABILITY

[0140] The present invention is capable of improving the design of an indoor unit and it is therefore beneficial to apply the present invention to an indoor unit of an air conditioner.

REFERENCE SIGNS LIST

[0141]

1	Indoor unit
18b	Second intake port (front surface intake port)
19a	First open part (front surface discharge port)
20	Main body
30	Movable panel
31	Front surface panel part
32	Side surface panel part
50	Drive mechanism
55	Panel support arm (drive component)
100	Air-conditioning indoor unit
120	Main body (indoor unit main body)
130	Movable panel (panel)
152	Motor
155	First gear (drive member)
164a	First sliding member
164b	Second sliding member
165a	Guide wall part (third lower curved part)
165b	Curved part (third higher curved part)
166g	Rack
168	First guide channel (first groove)
168a	First lower curved part
168y	Bottom end part (first groove end part)
169	Second guide channel (second groove)
169a	Second lower curved part
169ay	Bottom end part (first end part)
169b	Bent part (second higher curved part)
169y	Bottom end part (second groove end part)
161,261	Second members
162, 262	First members
165,265	Guide parts
167,267	Rollers (third sliding members)

CITATION LIST

PATENT LITERATURE

[0142]

<Patent Literature 1> Japanese Utility Model Application No. 4-20923

Further disclosure is given in the numbered paragraphs below:

1. An indoor unit (1) of an air conditioner comprising:

a main body (20) in a front surface of which are formed a front surface intake port (18b) and a front surface discharge port (19a); and
a movable panel (30) having a front surface panel part (31) positioned in front of the main body and a side surface panel part (32) formed continuing rearward from both ends of the front surface panel part; wherein
when operation has stopped, the movable panel assumes an operation-stopped state of being disposed so that the front surface panel part covers the front surface intake port and the front surface discharge port.

2. The indoor unit of an air conditioner according to para. 1, further comprising:

a drive mechanism (50) having a drive component (55) for moving the movable panel; wherein
the movable panel assumes an operating state of opening up the front surface intake port and the front surface discharge port by moving diagonally upward from the operation-stopped state; and
when the movable panel has assumed the operating state, the side surface panel part is positioned to the side of the drive component.

3. The indoor unit of an air conditioner according to para. 2, wherein
the drive component has a panel support arm (55) connected to the movable panel and capable of being switched between a first state of being accommodated in the main body and a second state of being separated from the main body;
the panel support arm is in the second state when the movable panel has assumed the operating state; and
when the movable panel has assumed the operating state, the side surface panel part is disposed so as to cover the panel support arm being in the second state in a side view.

4. An air-conditioning indoor unit (100) comprising:

a first member (162) having a first groove (168) including a first lower curved part (168a), and a second groove (169) including a second lower curved part (169a) in a position separated from the first lower curved part and a second higher curved part (169b) extending from a first end part (169ay), which is an end part of the second lower curved part, and having a greater curvature than the second lower curved part;
a second member (161) having a first sliding member (164a) which moves along the first groove and a second sliding member (164b) which moves along the second groove; a drive member (155) for moving the first member relative to the second member so that the first sliding member slides against the first groove and the second sliding member slides against the second groove; a motor (152) for driving the drive member;
an indoor unit main body (120) connected with the second member; and
a panel (130) for varying an orientation relative to the indoor unit main body due to the first member moving relative to the second member, the panel being connected to the first member; wherein
the drive member contacts the first member;
the first member rotatably moves about the first sliding member as a rotational fulcrum when the second sliding member moves from the second lower curved part to the second higher curved part; and
a load imposed on the motor when the second sliding member is positioned in a second groove end part (169y) which is an end part of the second groove on the side including the second higher curved part is less than a load imposed on the motor when the second sliding member is positioned in the first end part of the second lower curved part.

5. An air-conditioning indoor unit (100) comprising:

a first member (262) having a first groove (168) including a first lower curved part (168a), and a second groove (169) including a second lower curved part (169a) in a position separated from the first lower curved part and a second higher curved part (169b) extending from a first end part (169ay), which is an end part of the second lower curved part, and having a greater curvature than the second lower curved part;
a second member (261) having a first sliding member (164a) which moves along the first groove and a second sliding member (164b) which moves along the second groove; a drive member (155) for moving the second member relative to the first member so that the first sliding member slides against the first groove and the second sliding member slides against the second groove;
a motor (152) for driving the drive member; an indoor unit main body (120) connected with the first member; and
a panel (130) for varying an orientation relative to the indoor unit main body due to the second member moving relative to the first member, the panel being connected with the second member; wherein

the drive member contacts the second member; the second member rotatably moves about the first sliding member as a rotational fulcrum when the second sliding member moves from the second lower curved part to the second higher curved part; and

a load imposed on the motor when the second sliding member is positioned in a second groove end part (169y) which is an end part of the second groove on the side including the second higher curved part is less than a load imposed on the motor when the second sliding member is positioned in the first end part of the second lower curved part.

6. The air-conditioning indoor unit according to para. 4, wherein

either the indoor unit main body or the second member has a guide part (165) including a third lower curved part (165a) and a third higher curved part (165b) extending from an end part of the third lower curved part and having a greater curvature than the third lower curved part;

either the panel or the first member has a third sliding member (167) which moves along the guide part; and

when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove.

7. The air-conditioning indoor unit according to para. 4, wherein

either the panel or the first member has a guide part (265) including a third lower curved part and a third higher curved part extending from an end part of the third lower curved part and having a greater curvature than the third lower curved part; either the indoor unit main body or the second member has a third sliding member (267) which moves along the guide part; and

when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove.

8. The air-conditioning indoor unit according to para. 5, wherein

either the panel or the second member has a guide part (265) including a third lower curved part and a third higher curved part extending from an end part of the third lower curved part and having a greater curvature than the third lower curved part;

either the indoor unit main body or the first member has a third sliding member (267) which moves along the guide part; and

when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove.

9. The air-conditioning indoor unit according to para. 5, wherein

either the indoor unit main body or the first member has a guide part (165) including a third lower curved part (165a) and a third higher curved part (165b) extending from an end part of the third lower curved part and having a greater curvature than the third lower curved part;

either the panel or the second member has a third sliding member (167) which moves along the guide part; and

when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove.

10. The air-conditioning indoor unit according to any of paras. 4 through 9, wherein

the panel is capable of assuming a desired first orientation; and

when the panel assumes the first orientation, the second sliding member is positioned in the second groove end part of the second groove.

11. The air-conditioning indoor unit according to para. 10, wherein

the panel is capable of assuming a second orientation different from the first orientation; and

when the panel assumes the second orientation, no load is imposed on the motor.

12. The air-conditioning indoor unit according to para. 11, wherein

the panel assuming the first orientation is disposed at a tilt relative to the indoor unit main body; and

the panel assuming the second orientation is disposed substantially parallel to the indoor unit main body.

13. The air-conditioning indoor unit according to any of paras. 4 through 12, wherein

the panel is disposed on a front-surface side of the indoor unit main body.

14. The air-conditioning indoor unit according to any of paras. 4 through 13, wherein

the first sliding member is positioned in proximity to a first groove end part (168y) which is an end part of the first groove when the second sliding member is moved from the second lower curved part to the second higher curved part.

15. The air-conditioning indoor unit according to para. 6 or 7, wherein
the drive mechanism includes a gear; and
the first member has a rack (166g) which meshes with the gear.

16. The air-conditioning indoor unit according to para. 8 or 9, wherein
the drive mechanism includes a gear; and
the second member has a rack (166g) which meshes with the gear.

17. The air-conditioning indoor unit according to any of paras. 4 through 16, wherein
the drive member is disposed in proximity to the first sliding member.

Claims

1. An air-conditioning indoor unit (100) comprising:

a first member (162) having a first groove (168) including a first lower curved part (168a), and a second groove (169) including a second lower curved part (169a) in a position separated from the first lower curved part and a second higher curved part (169b) extending from a first end part (169ay), which is an end part of the second lower curved part, and having a greater curvature than the second lower curved part;
a second member (161) having a first sliding member (164a) which moves along the first groove and a second sliding member (164b) which moves along the second groove;
a drive member (155) for moving the first member relative to the second member so that the first sliding member slides against the first groove and the second sliding member slides against the second groove;
a motor (152) for driving the drive member;
an indoor unit main body (120) connected with the second member; and
a panel (130) for varying an orientation relative to the indoor unit main body due to the first member moving relative to the second member, the panel being connected to the first member; wherein
the drive member contacts the first member;
the first member rotatably moves about the first sliding member as a rotational fulcrum when the second sliding member moves from the second lower curved part to the second higher curved part; and
a load imposed on the motor when the second sliding member is positioned in a second groove end part (169y) which is an end part of the second groove on the side including the second higher curved part is less than a load imposed on the motor when the second sliding member is positioned in the first end part of the second lower curved part.

2. An air-conditioning indoor unit (100) comprising:

a first member (262) having a first groove (168) including a first lower curved part (168a), and a second groove (169) including a second lower curved part (169a) in a position separated from the first lower curved part and a second higher curved part (169b) extending from a first end part (169ay), which is an end part of the second lower curved part, and having a greater curvature than the second lower curved part;
a second member (261) having a first sliding member (164a) which moves along the first groove and a second sliding member (164b) which moves along the second groove;
a drive member (155) for moving the second member relative to the first member so that the first sliding member slides against the first groove and the second sliding member slides against the second groove;
a motor (152) for driving the drive member;
an indoor unit main body (120) connected with the first member; and
a panel (130) for varying an orientation relative to the indoor unit main body due to the second member moving relative to the first member, the panel being connected with the second member; wherein
the drive member contacts the second member;
the second member rotatably moves about the first sliding member as a rotational fulcrum when the second sliding member moves from the second lower curved part to the second higher curved part; and
a load imposed on the motor when the second sliding member is positioned in a second groove end part (169y) which is an end part of the second groove on the side including the second higher curved part is less than a load imposed on the motor when the second sliding member is positioned in the first end part of the second lower curved part.

3. The air-conditioning indoor unit according to claim 1, wherein
either the indoor unit main body or the second member has a guide part (165) including a third lower curved part (165a) and a third higher curved part (165b) extending from an end part of the third lower curved part and having a greater curvature than the third lower curved part;
either the panel or the first member has a third sliding member (167) which moves along the guide part;

and
when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove.

4. The air-conditioning indoor unit according to claim 1, wherein
either the panel or the first member has a guide part (265) including a third lower curved part and a third higher curved part extending from an end part of the third lower curved part and having a greater curvature than the third lower curved part; either the indoor unit main body or the second member has a third sliding member (267) which moves along the guide part; and
when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove.

5. The air-conditioning indoor unit according to claim 2, wherein
either the panel or the second member has a guide part (265) including a third lower curved part and a third higher curved part extending from an end part of the third lower curved part and having a greater curvature than the third lower curved part;
either the indoor unit main body or the first member has a third sliding member (267) which moves along the guide part; and
when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove.

6. The air-conditioning indoor unit according to claim 2, wherein
either the indoor unit main body or the first member has a guide part (165) including a third lower curved part (165a) and a third higher curved part (165b) extending from an end part of the third lower curved part and having a greater curvature than the third lower curved part;
either the panel or the second member has a third sliding member (167) which moves along the guide part; and
when the third sliding member is positioned in a guide part end part which is an end part of the guide part on the side including the third higher curved part, the second sliding member is positioned in the second groove end part of the second groove.

7. The air-conditioning indoor unit according to any of claims 1 through 6, wherein
the panel is capable of assuming a desired first orientation; and
when the panel assumes the first orientation, the second sliding member is positioned in the second groove end part of the second groove.

8. The air-conditioning indoor unit according to claim 7, wherein
the panel is capable of assuming a second orientation different from the first orientation; and
when the panel assumes the second orientation, no load is imposed on the motor.

9. The air-conditioning indoor unit according to claim 8, wherein
the panel assuming the first orientation is disposed at a tilt relative to the indoor unit main body; and
the panel assuming the second orientation is disposed substantially parallel to the indoor unit main body.

10. The air-conditioning indoor unit according to any of claims 1 through 9, wherein
the panel is disposed on a front-surface side of the indoor unit main body.

11. The air-conditioning indoor unit according to any of claims 1 through 10, wherein
the first sliding member is positioned in proximity to a first groove end part (168y) which is an end part of the first groove when the second sliding member is moved from the second lower curved part to the second higher curved part.

12. The air-conditioning indoor unit according to claim 3 or 4, wherein
the drive mechanism includes a gear; and
the first member has a rack (166g) which meshes with the gear.

13. The air-conditioning indoor unit according to claim 5 or 6, wherein
the drive mechanism includes a gear; and
the second member has a rack (166g) which meshes with the gear.

14. The air-conditioning indoor unit according to any of claims 1 through 13, wherein
the drive member is disposed in proximity to the first sliding member.

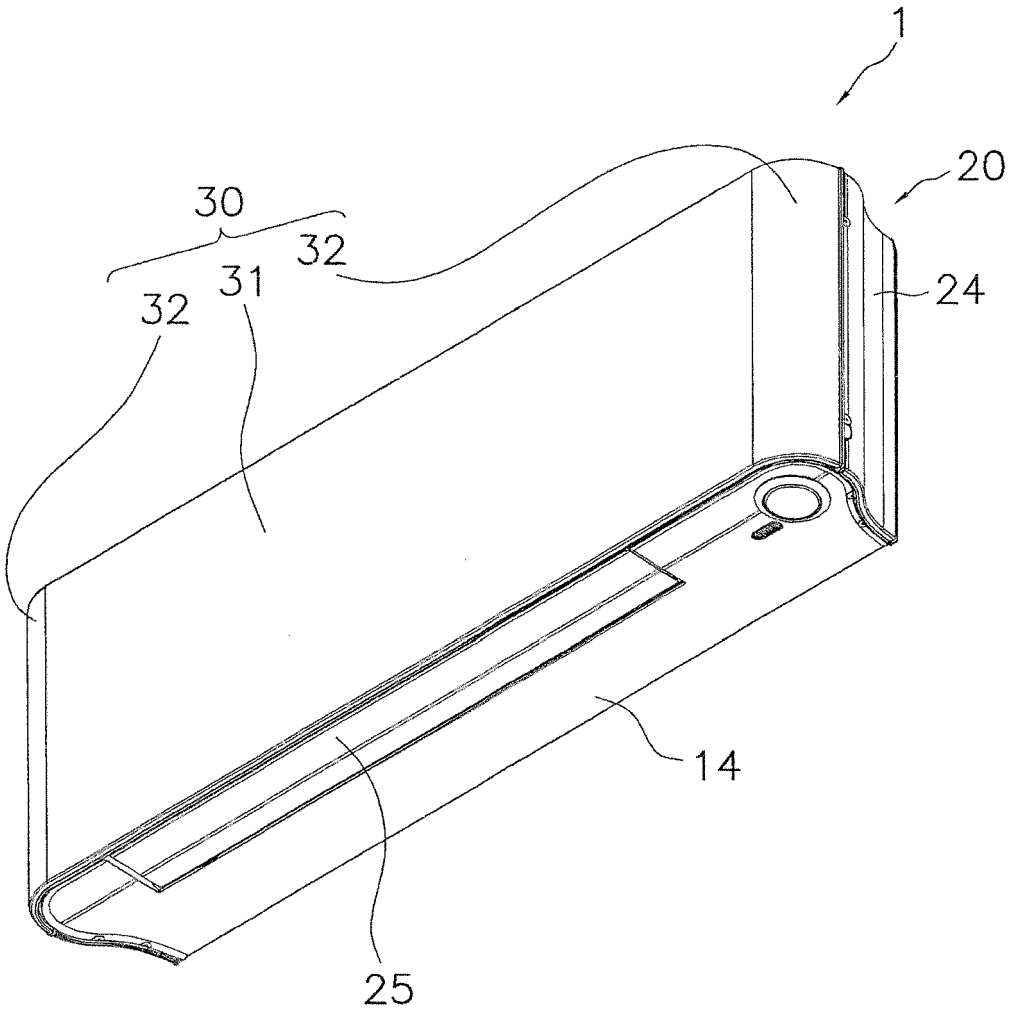


FIG. 1

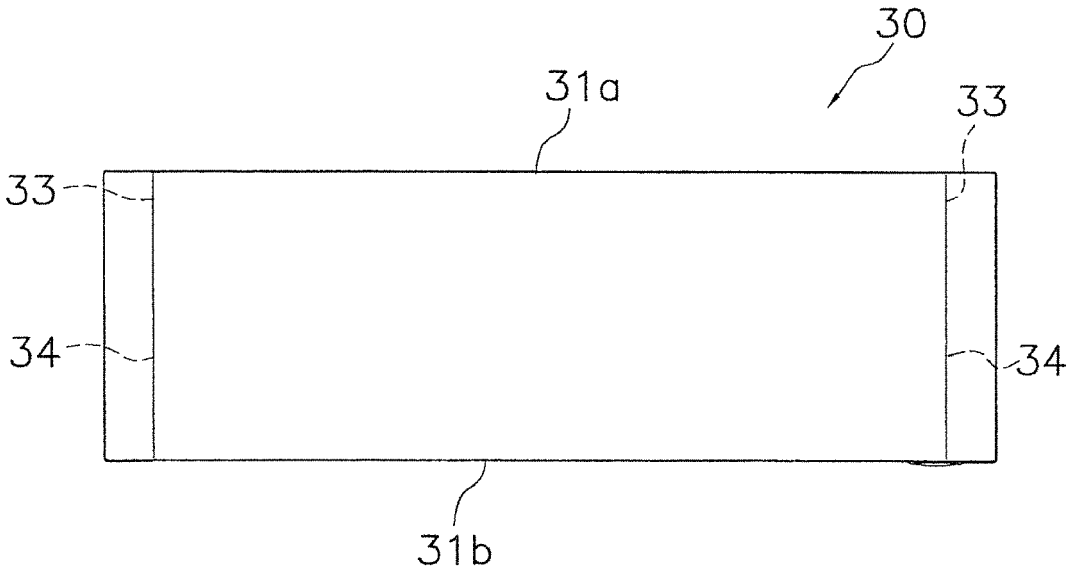


FIG. 2A

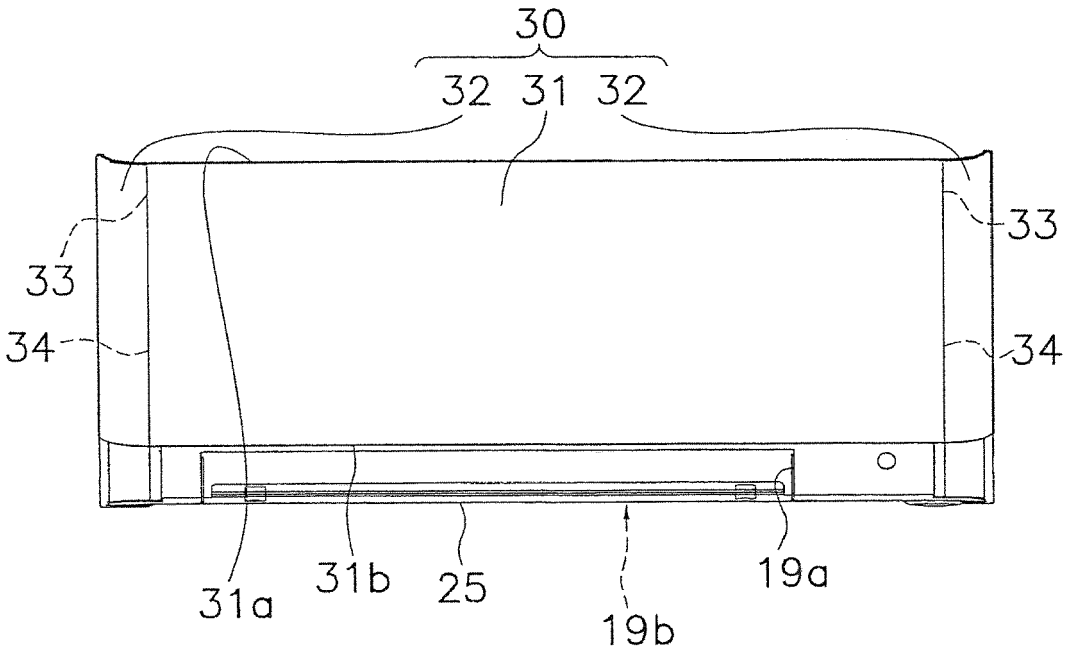


FIG. 2B

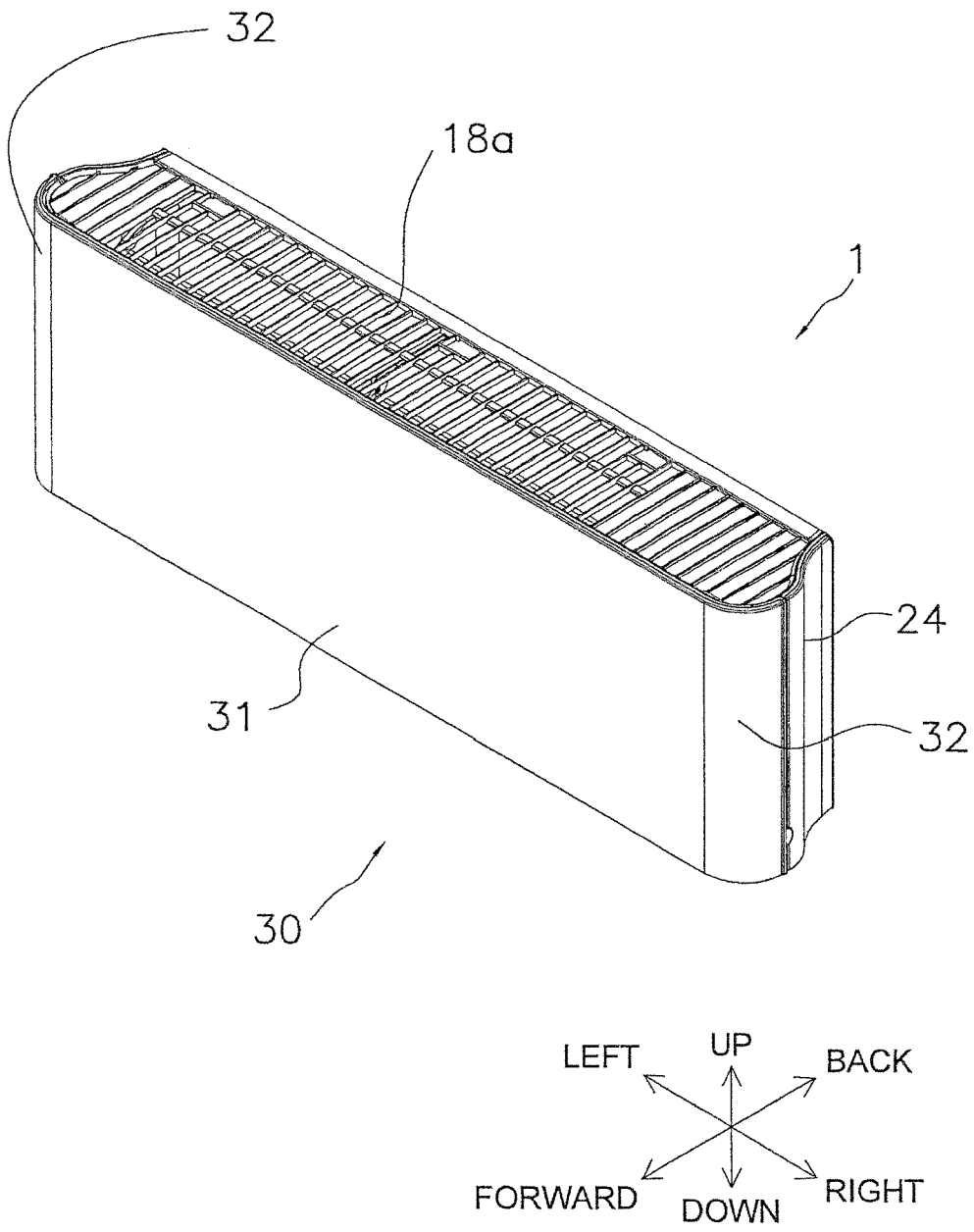


FIG. 3A

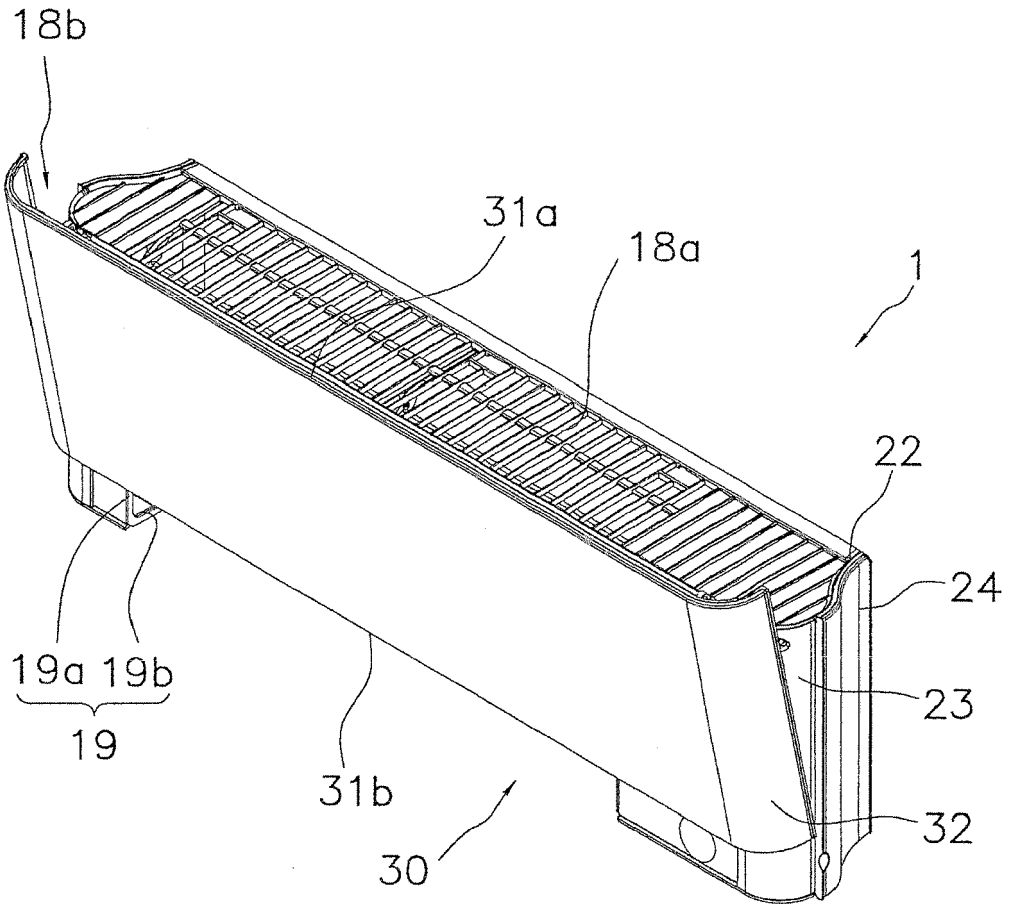


FIG. 3B

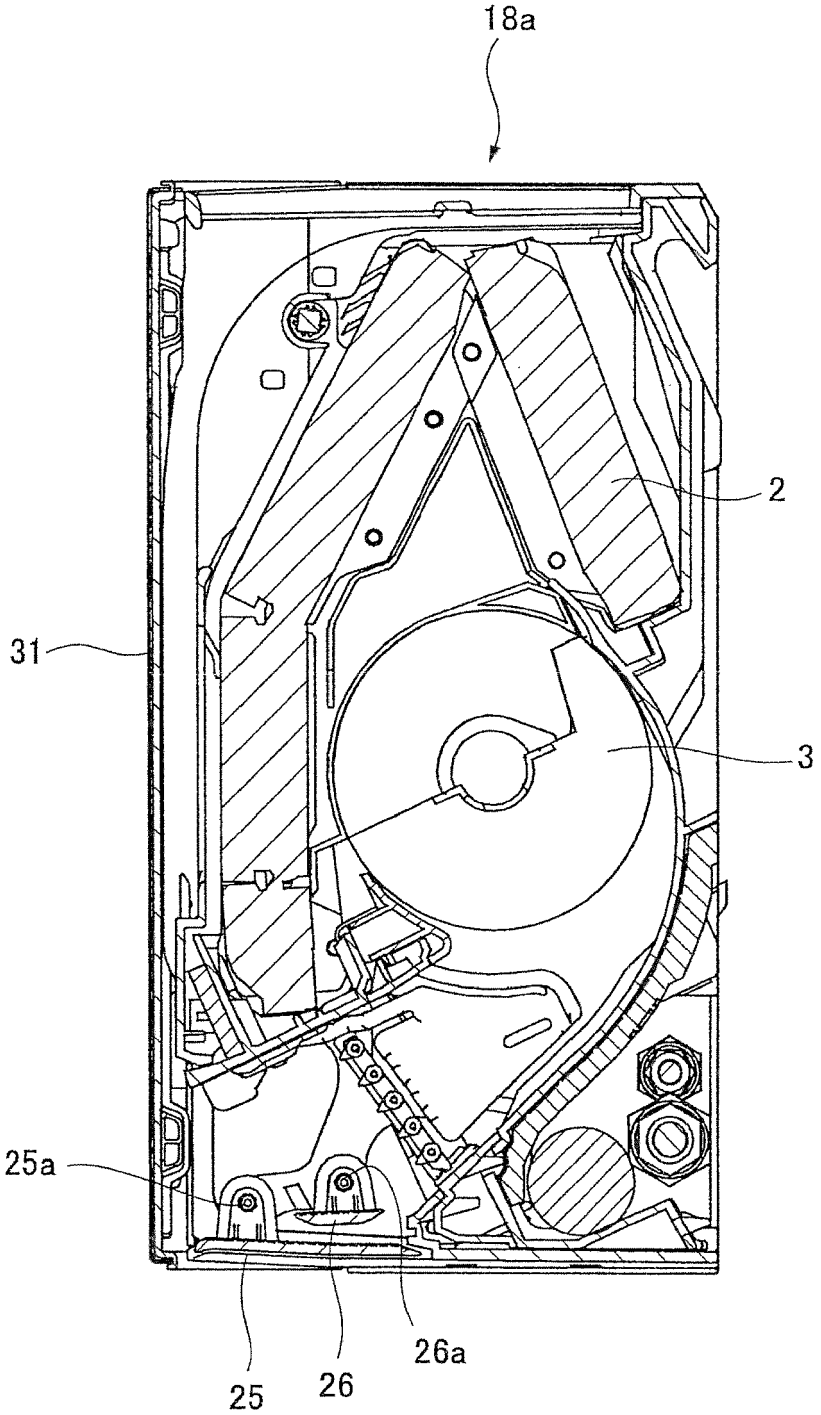


FIG. 4

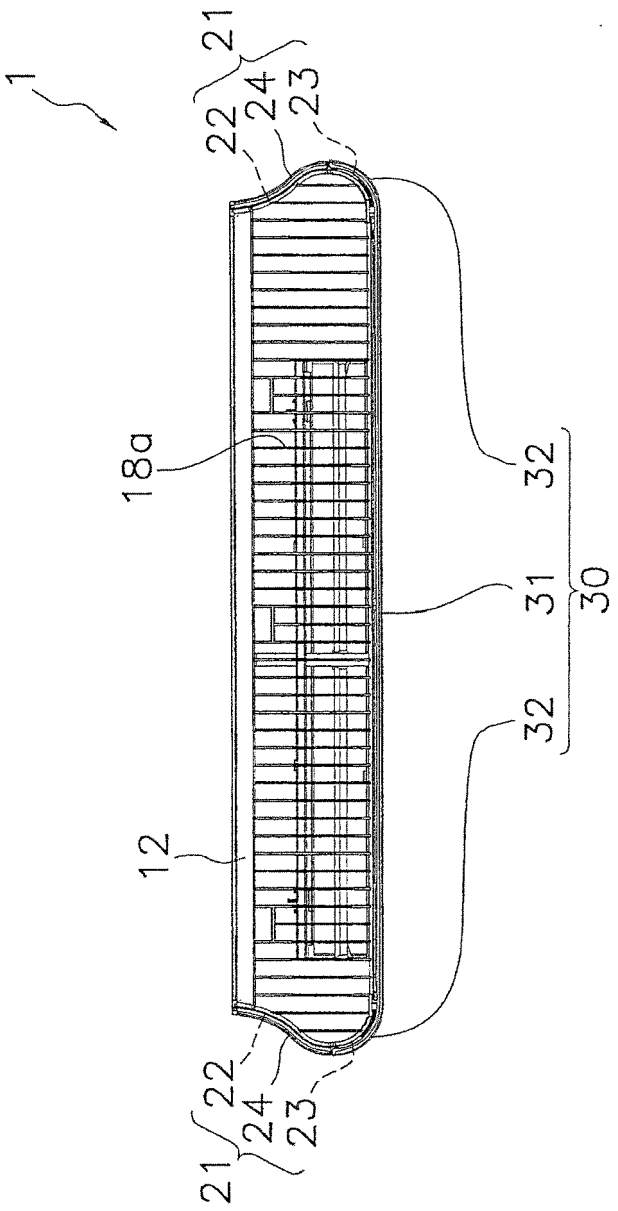


FIG. 5A

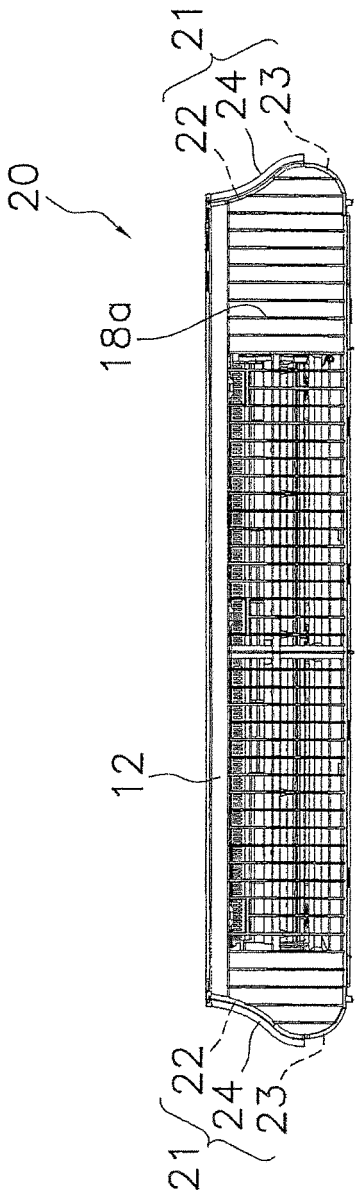


FIG. 5B

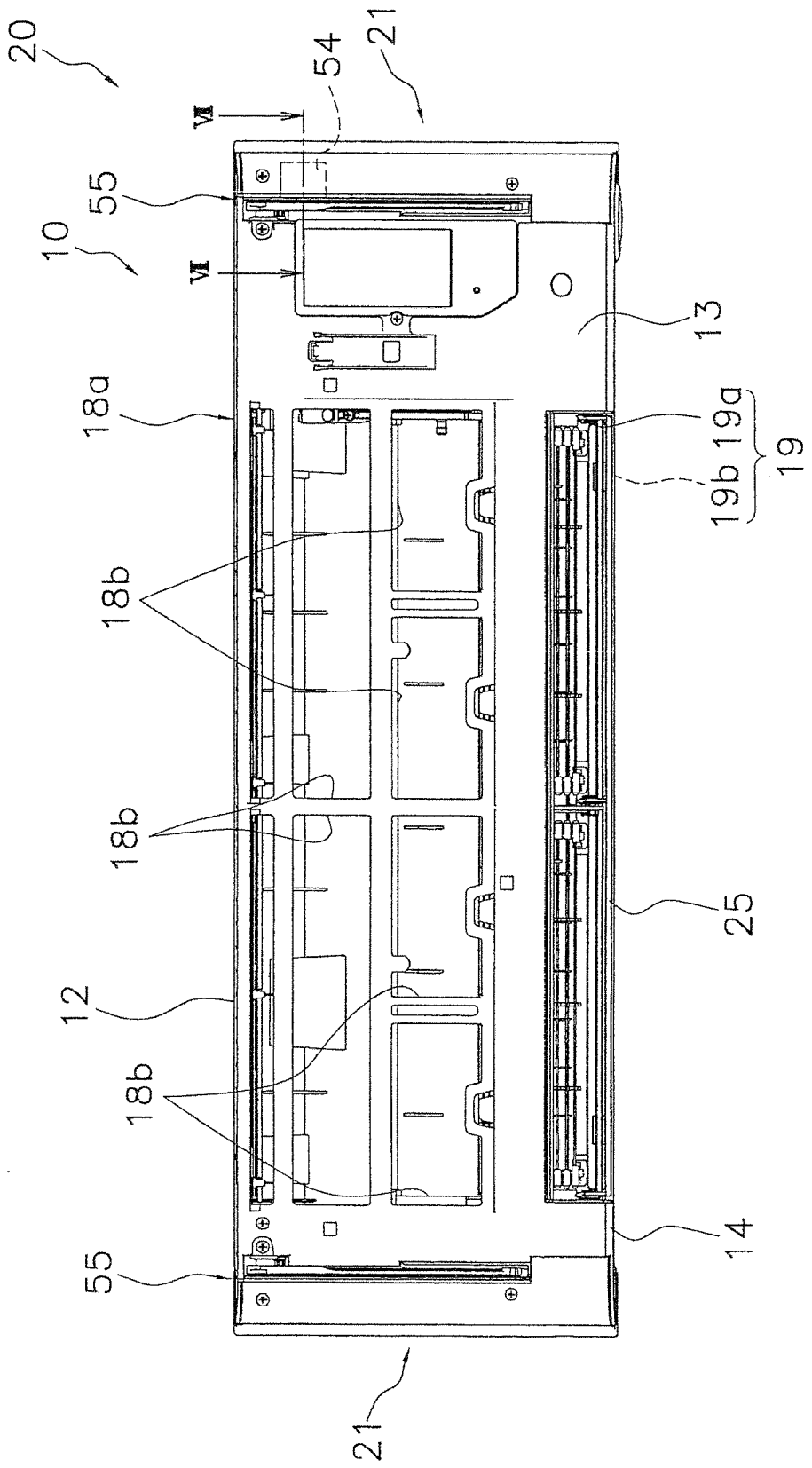


FIG. 6

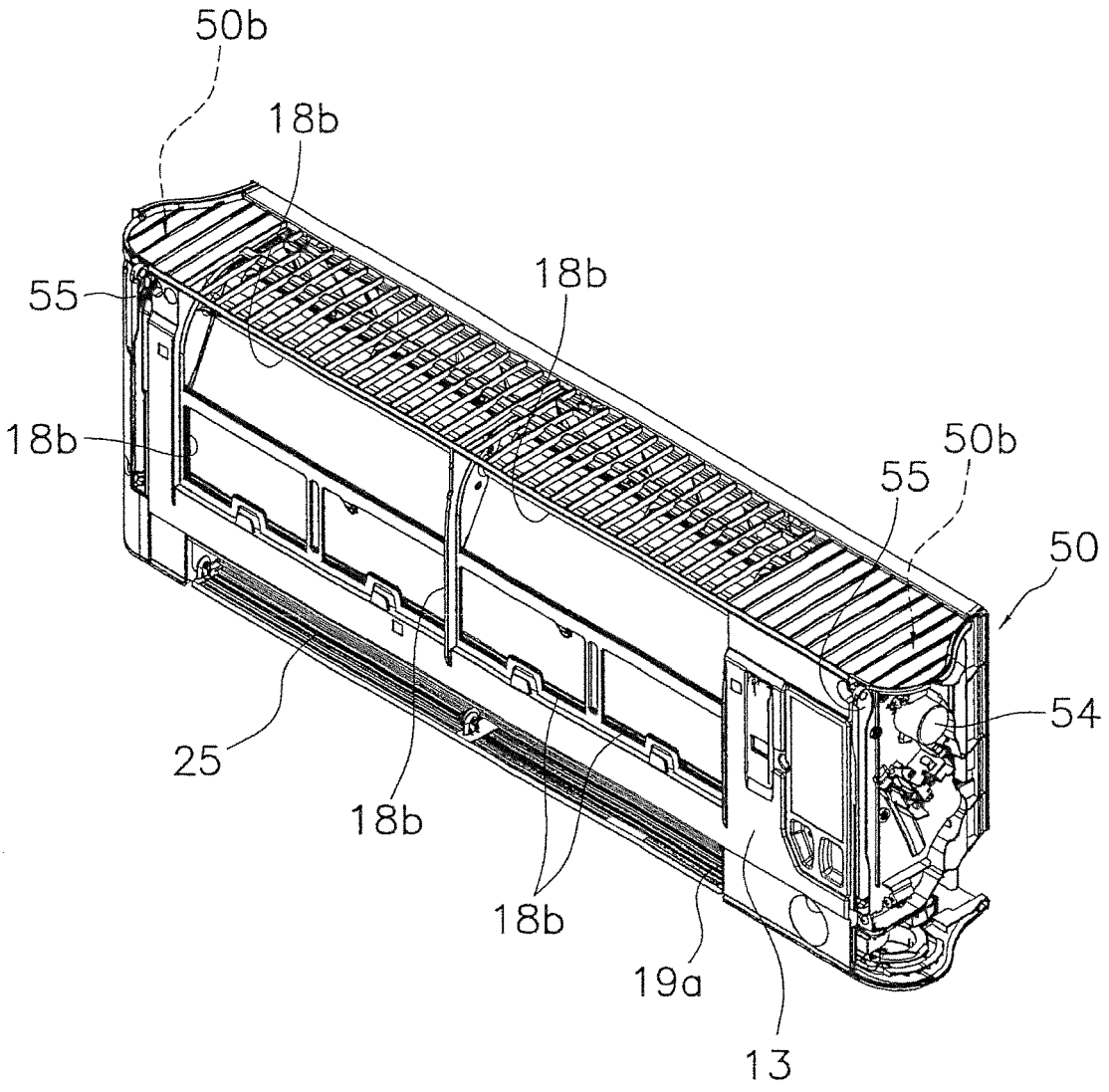


FIG. 7

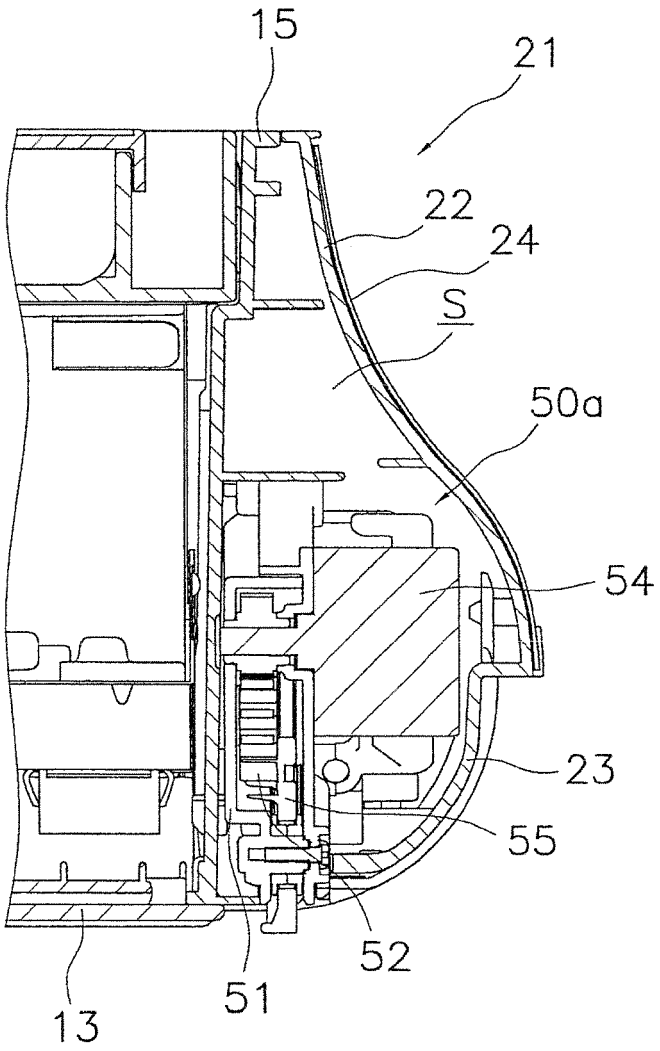


FIG. 8

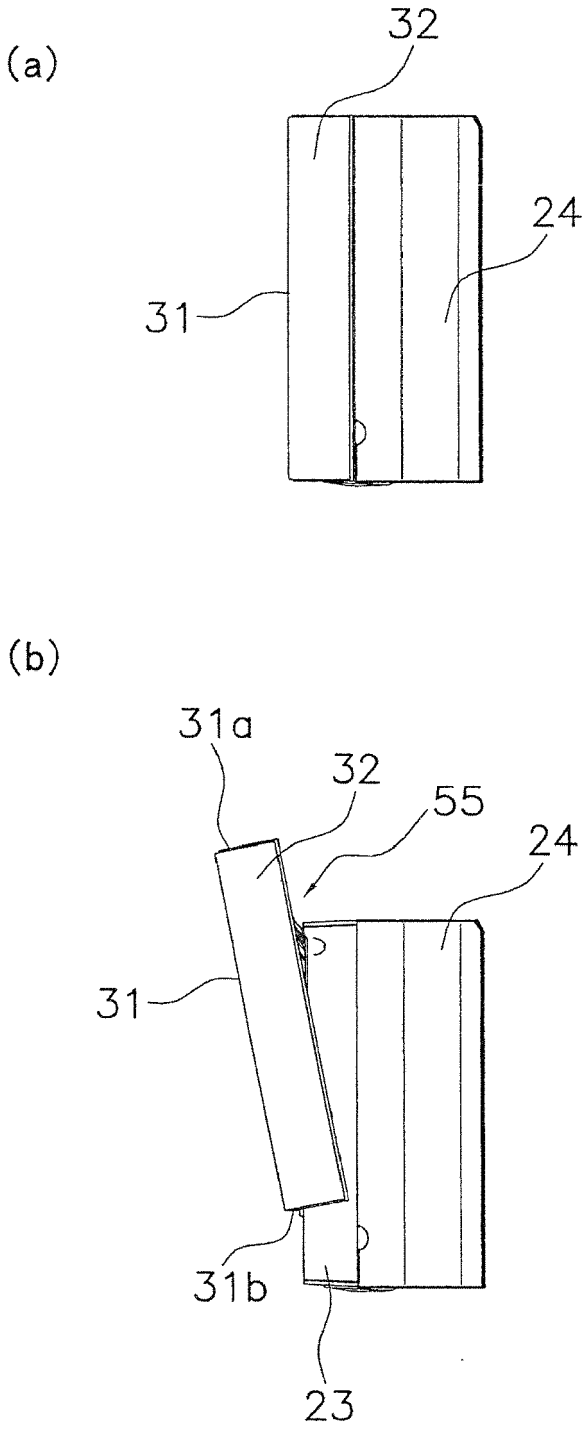


FIG. 9

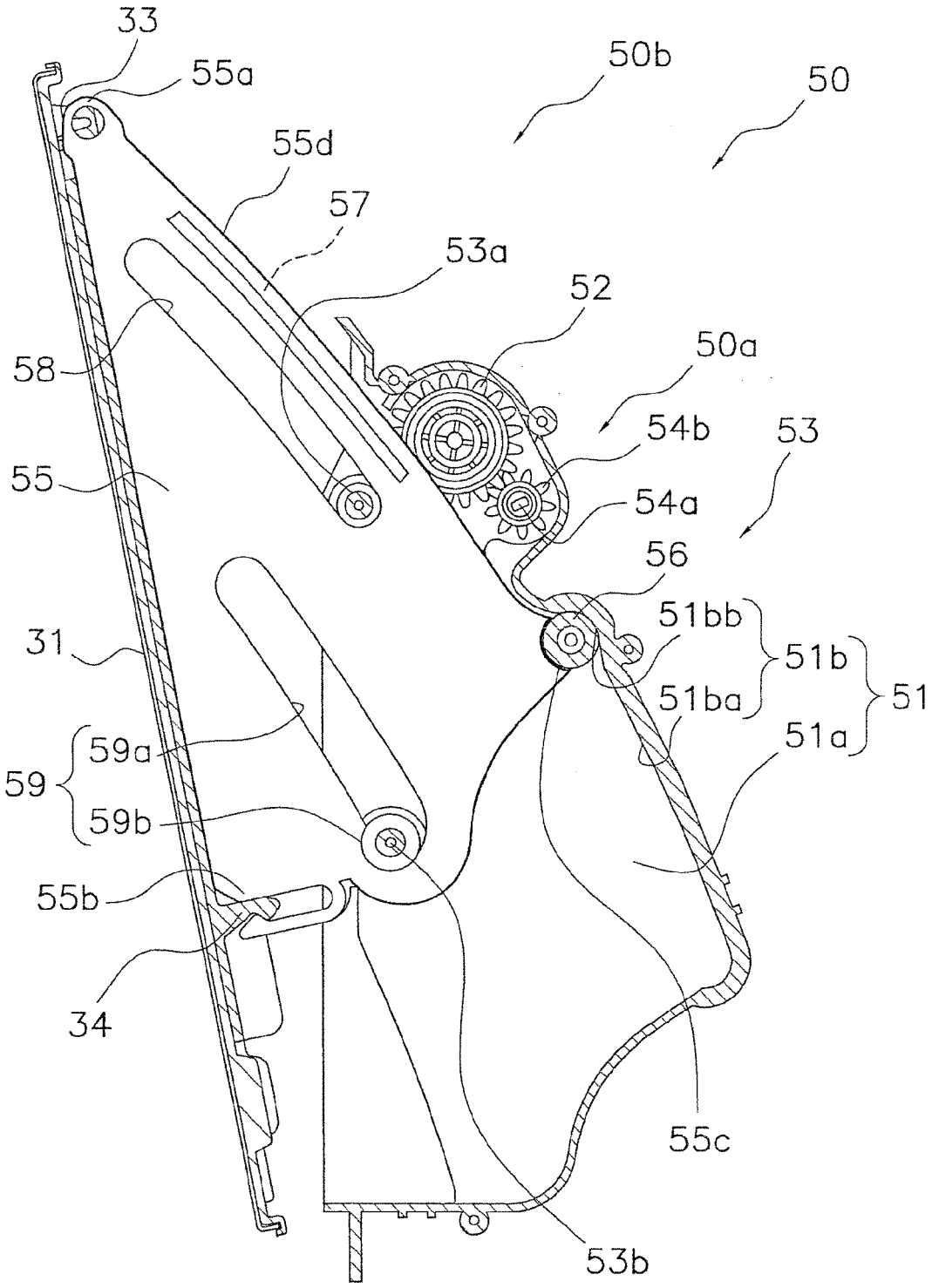

33
55a
50b
50
55d
57
53a
52
58
50a
54b
53
55
54a
56
51bb
31
51b
51ba
51
51a
59
59a
59b
55b
34
55c
53b

FIG. 10

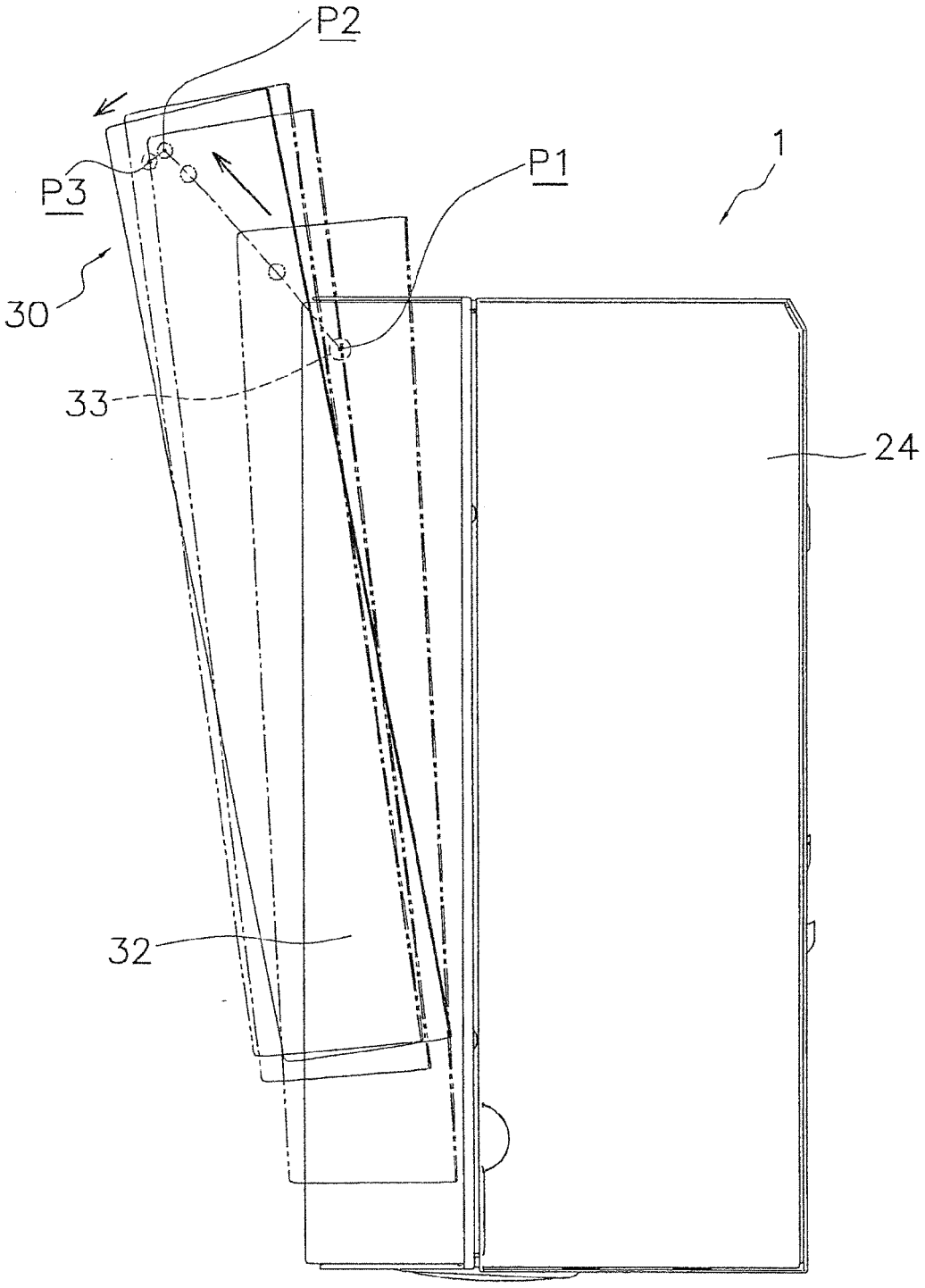


FIG. 11

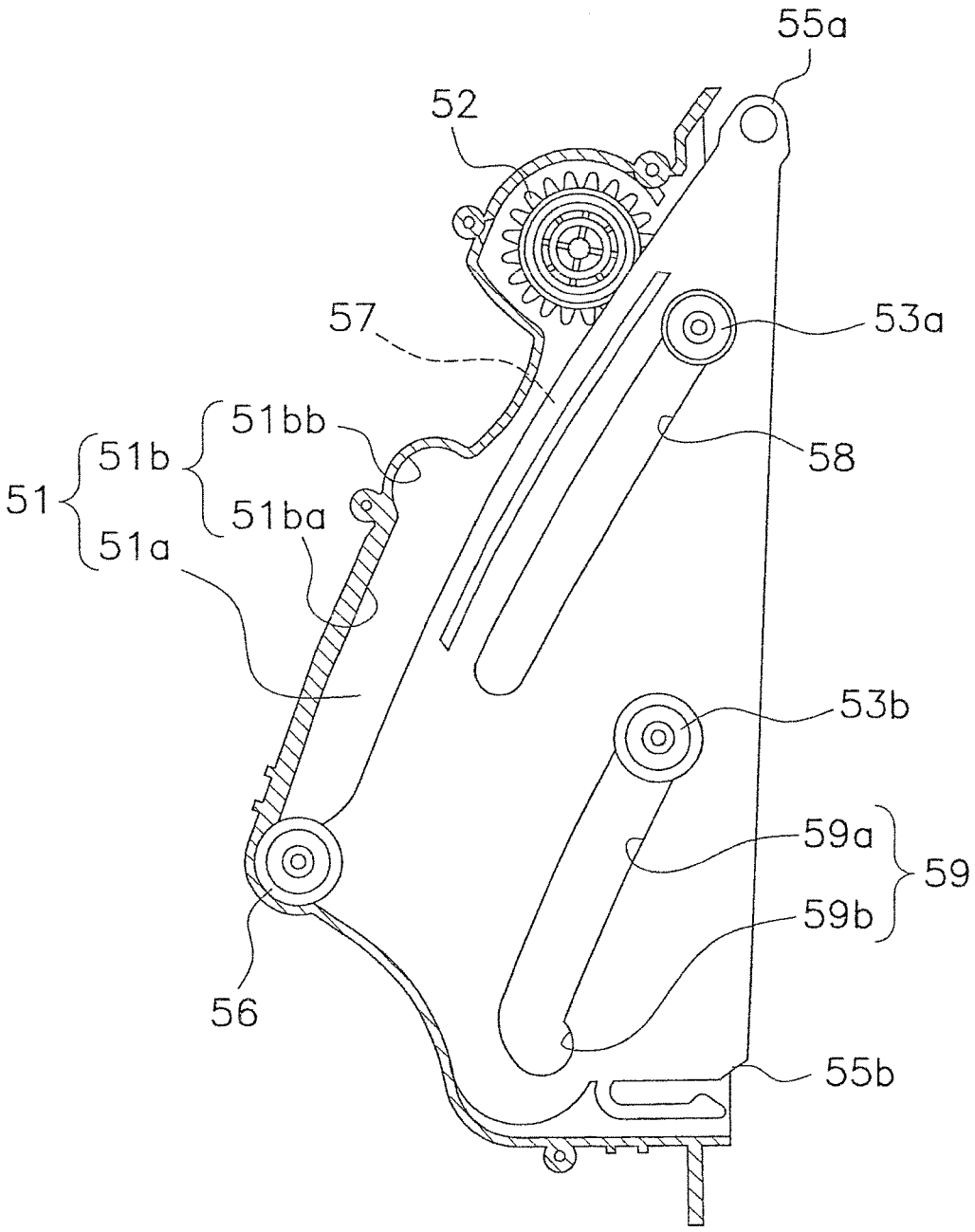


FIG. 12

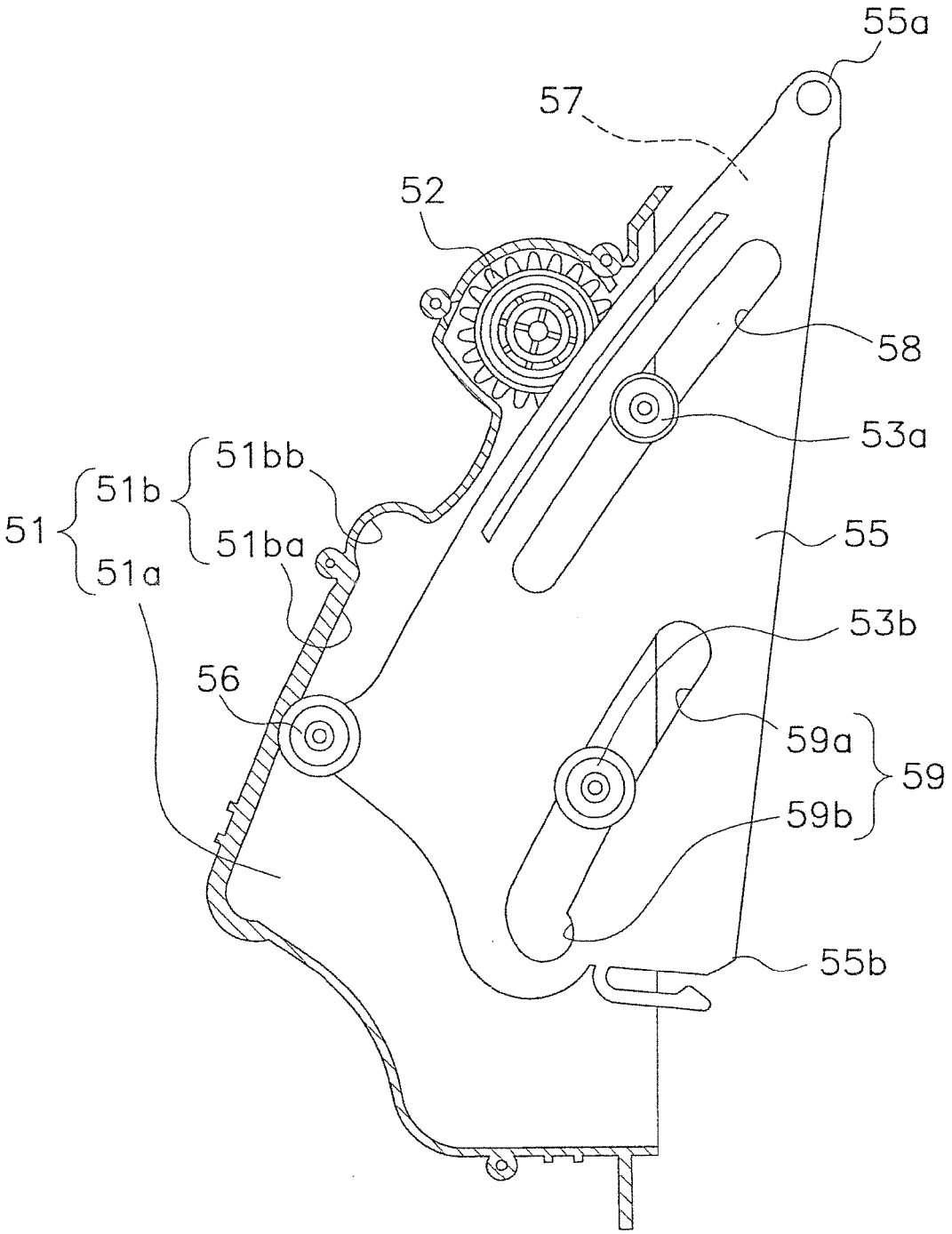


FIG. 13

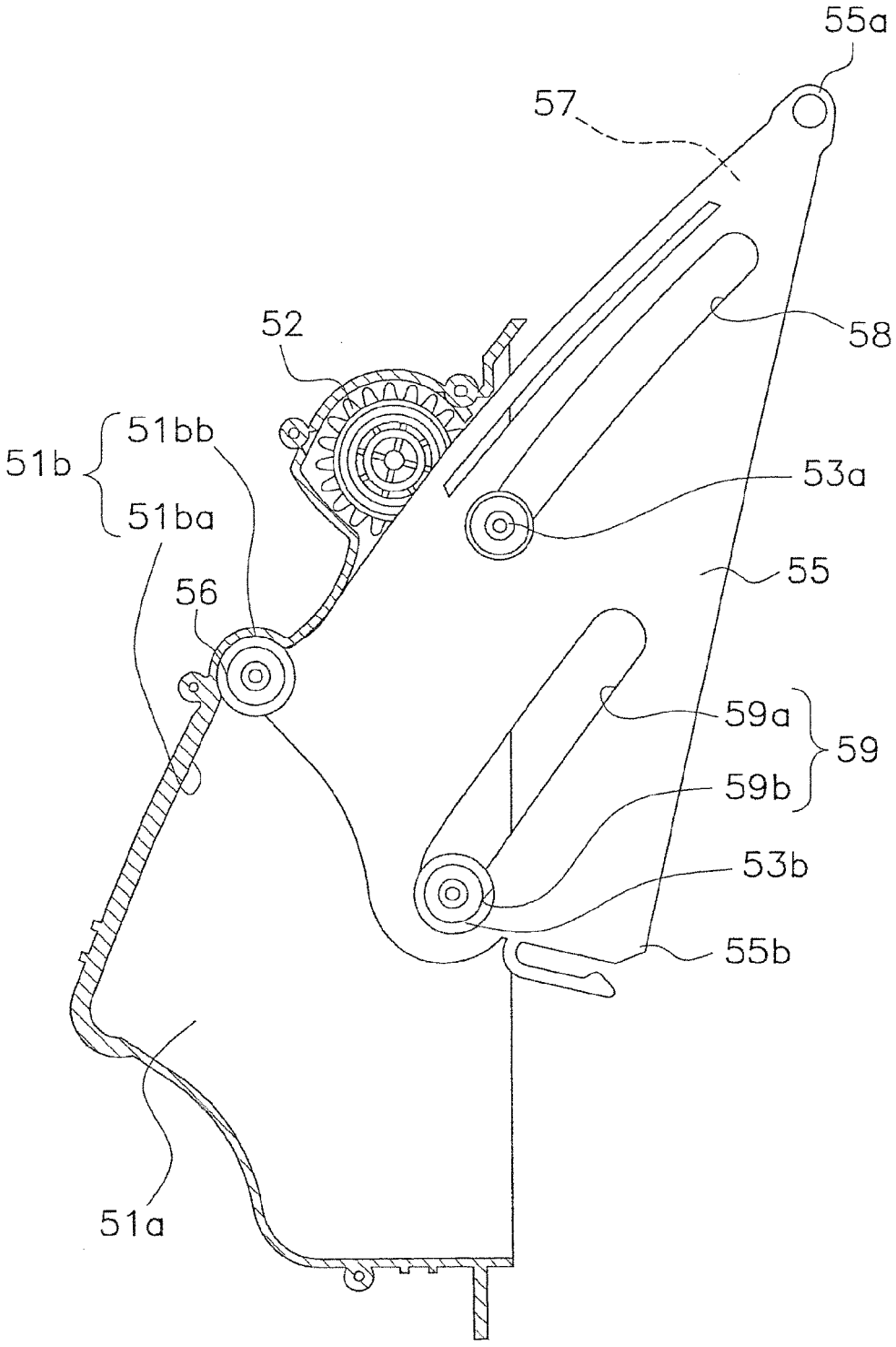


FIG. 14

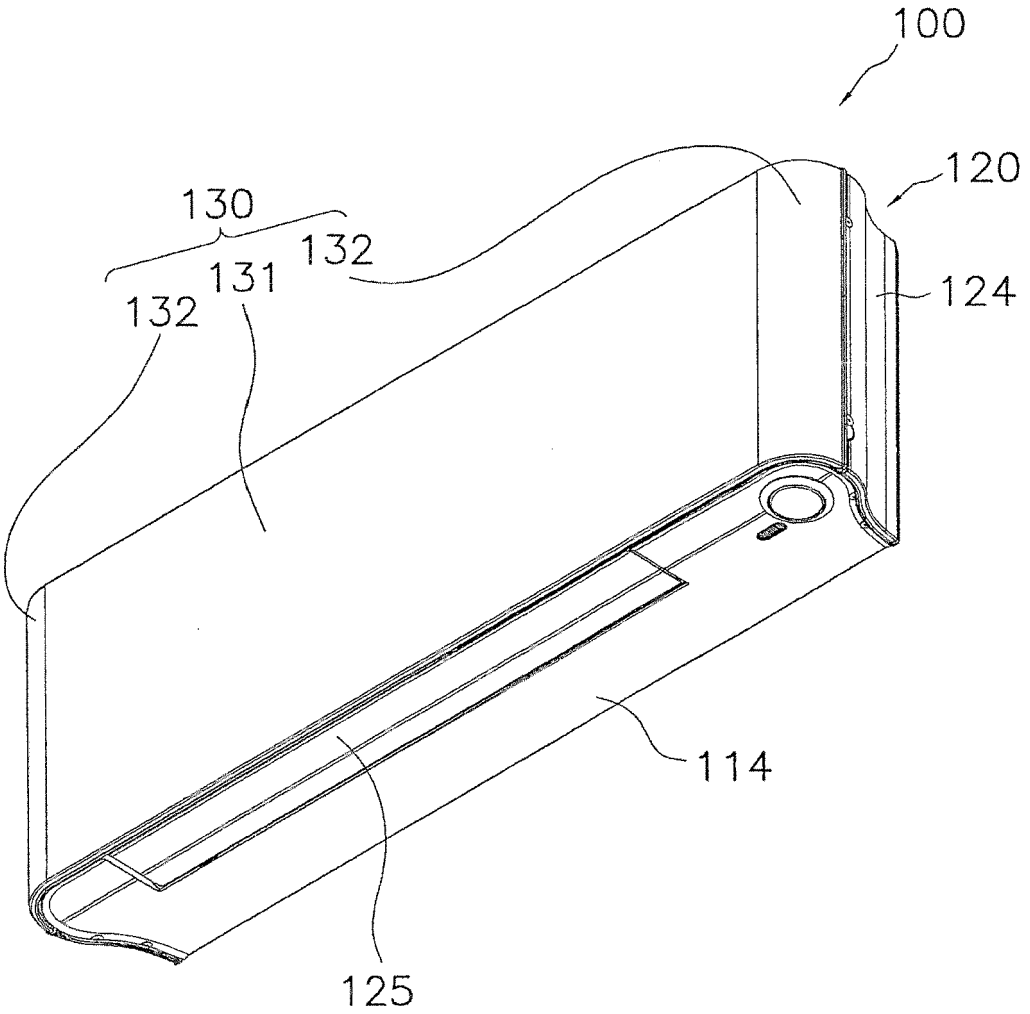


FIG. 15

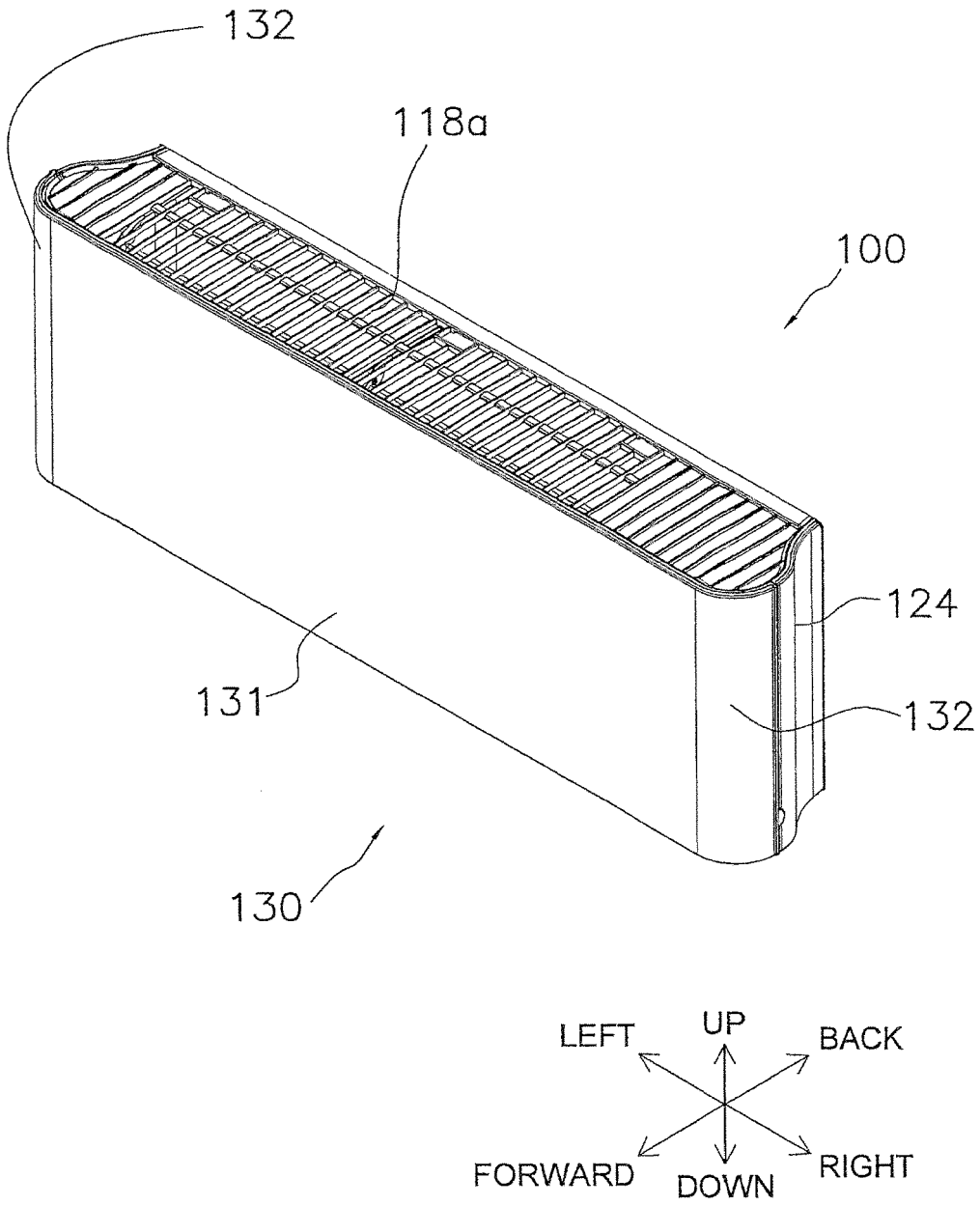


FIG. 16

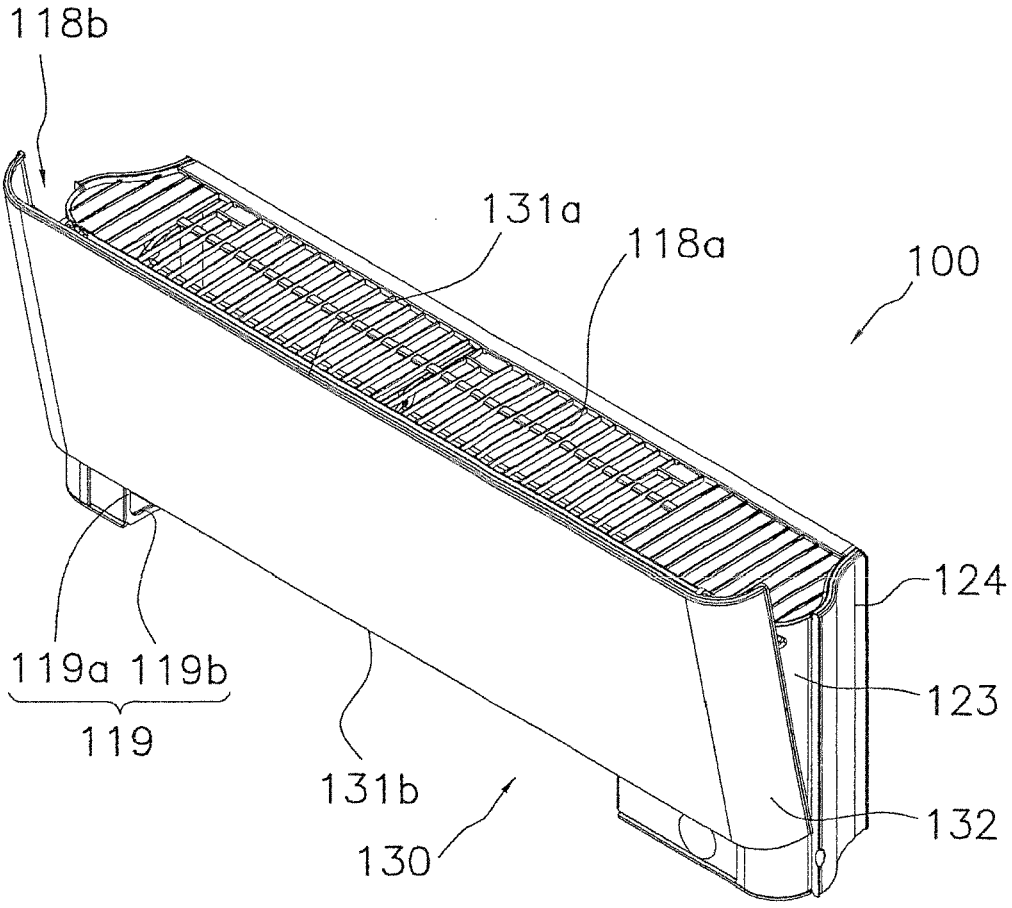
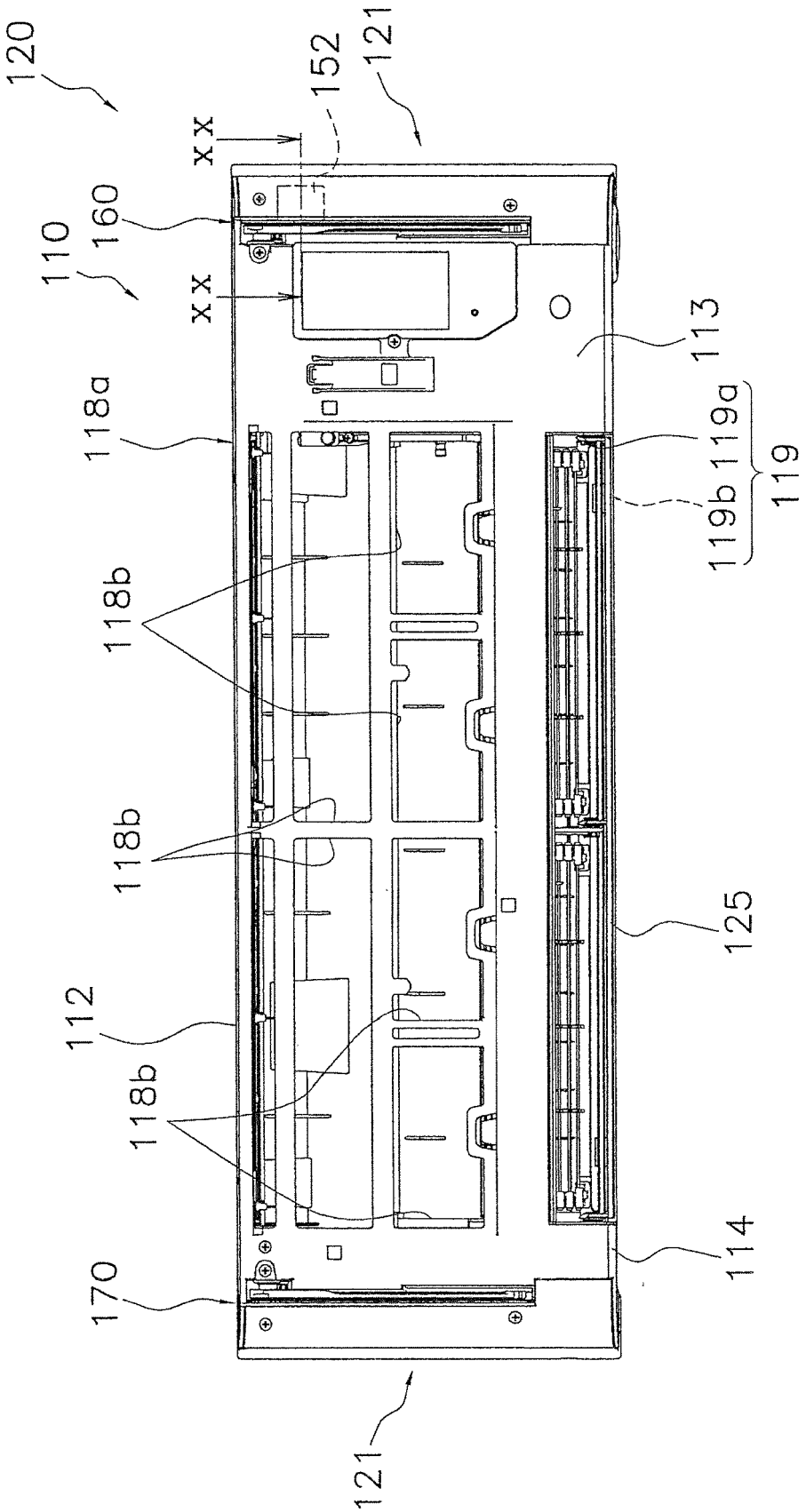


FIG. 17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152
121
x x
110
160
x x
113
118a
119a
119b
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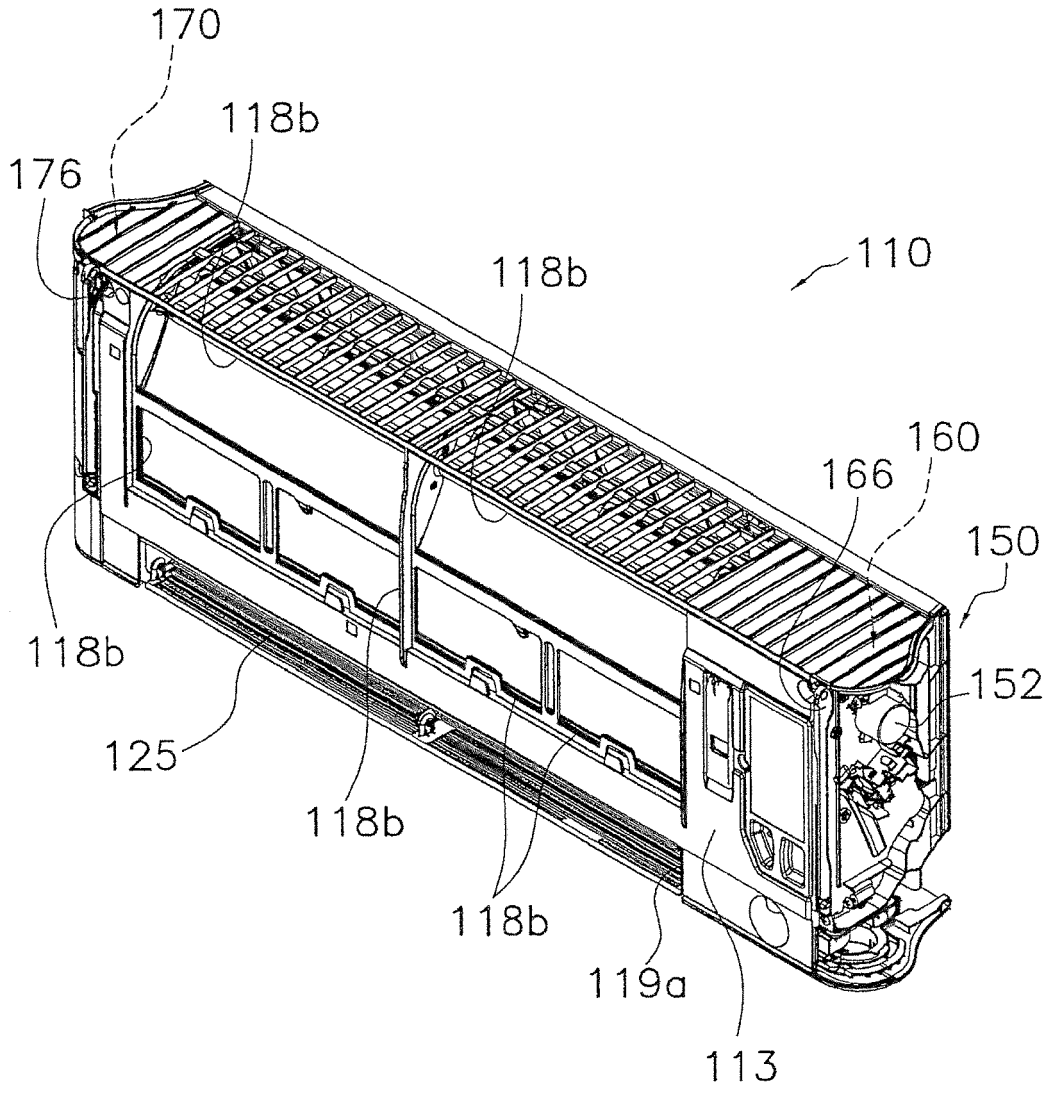
118b
118b
125
112
118b
114
170
121

FIG. 18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118b
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152
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118b
118b
119a
113

FIG. 19

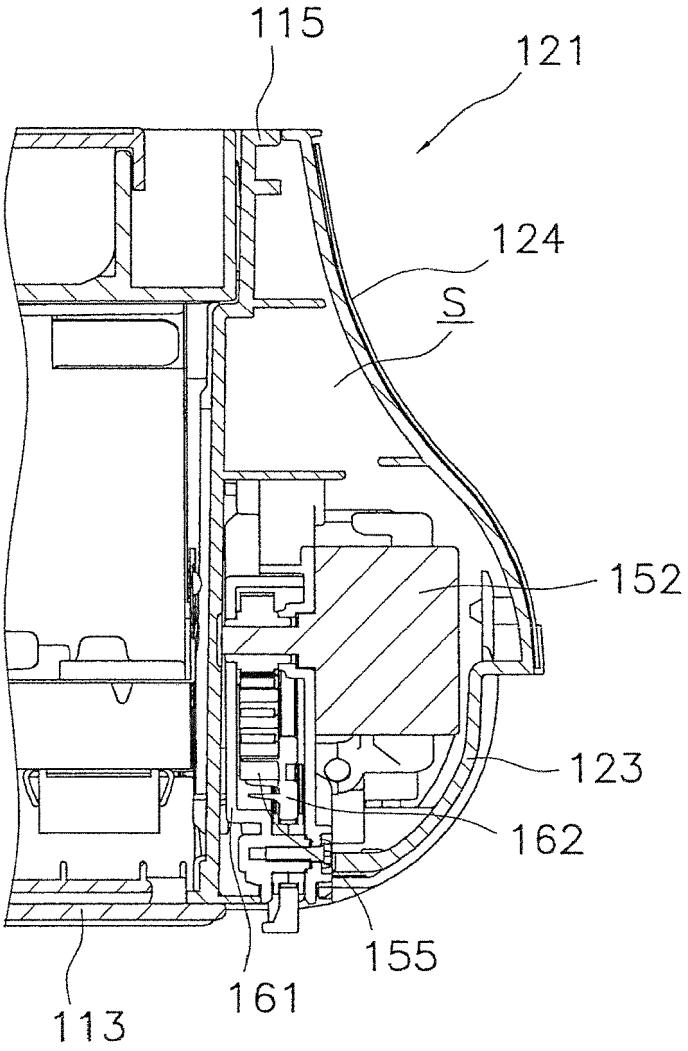


FIG. 20

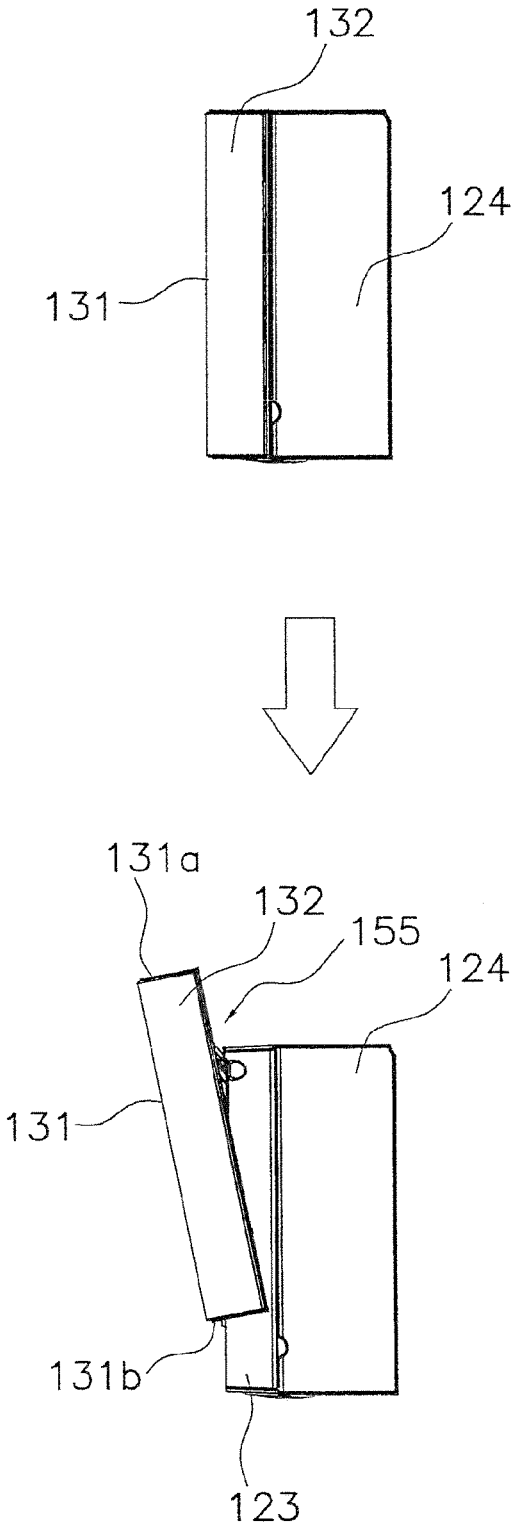
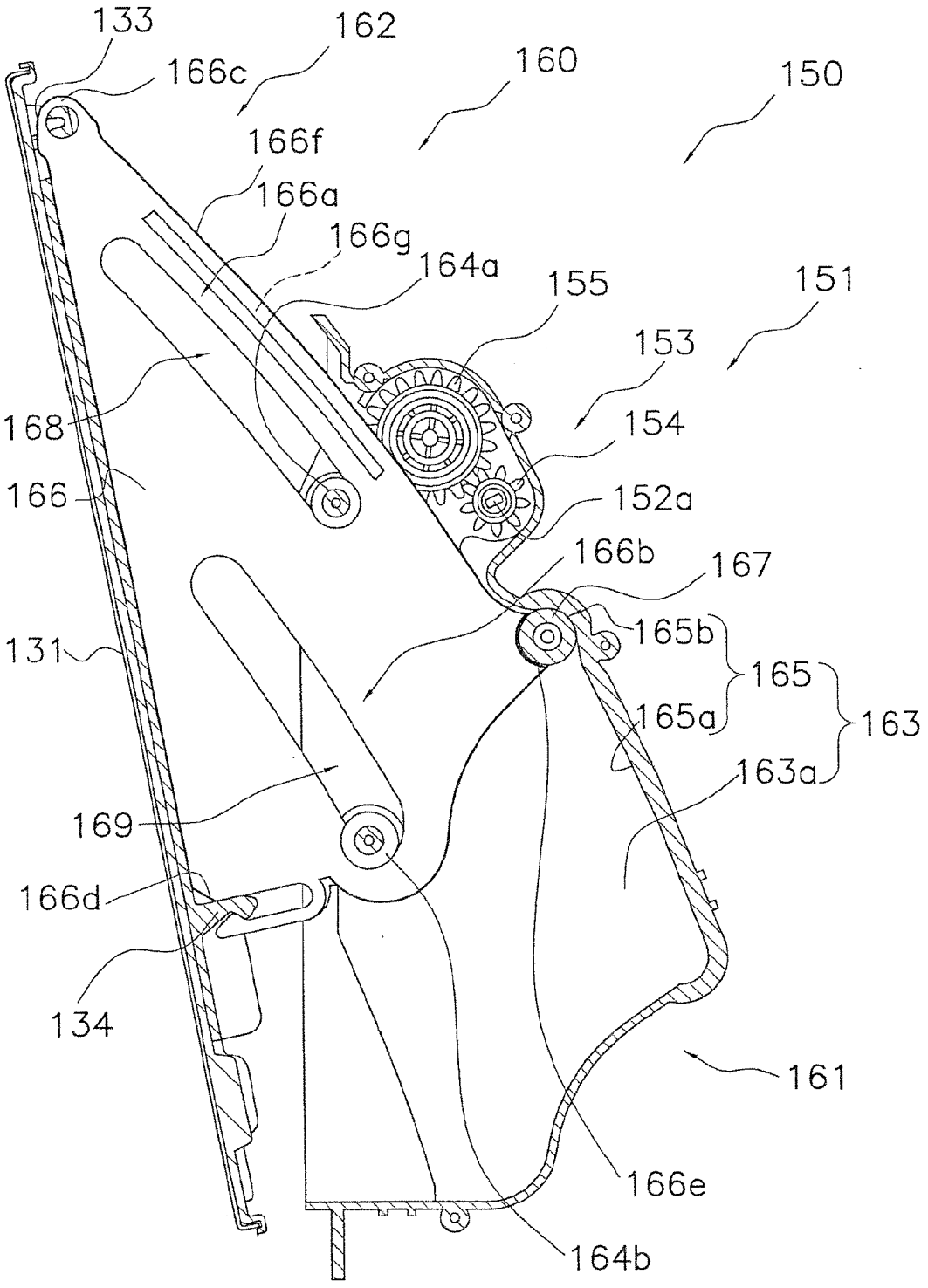


FIG. 21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166a
166g
164a
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165a
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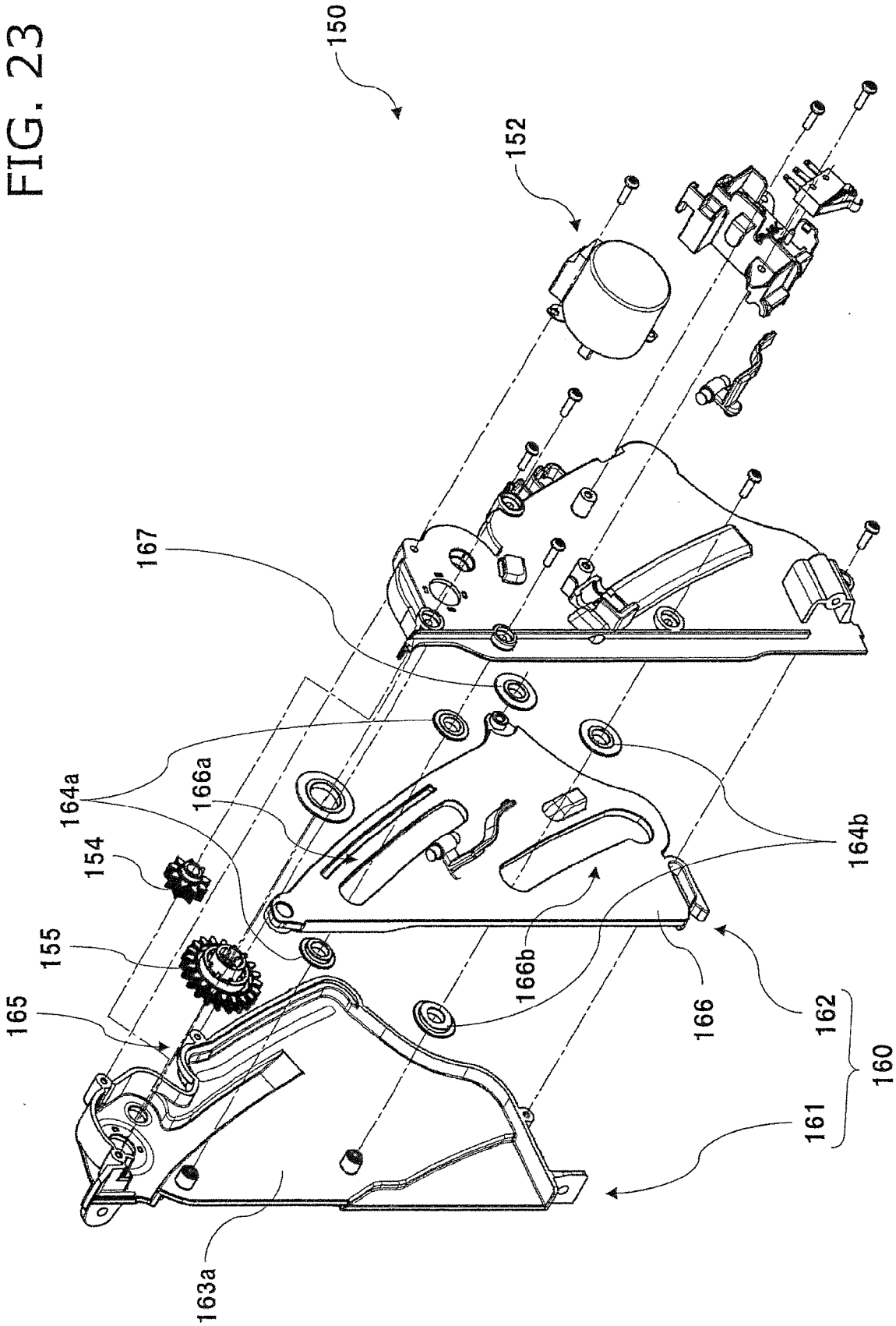
163a
169
166d
134
161
166e
164b

FIG. 22

FIG. 23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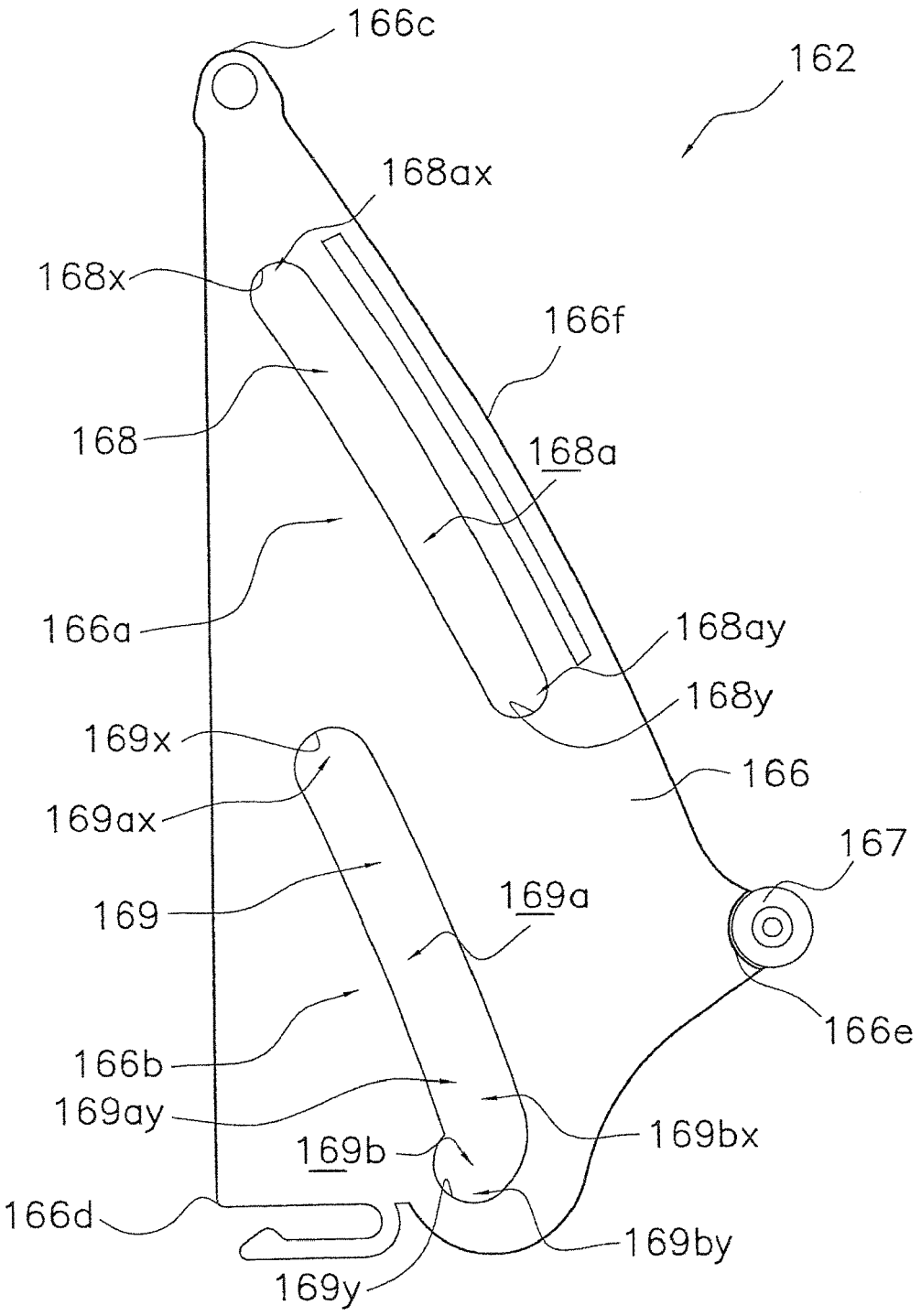
163a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168x
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166a
168ay
168y
169x
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169ax
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169a
166e
166b
169ay
169bx
169b
166d
169by
169y

FIG. 24

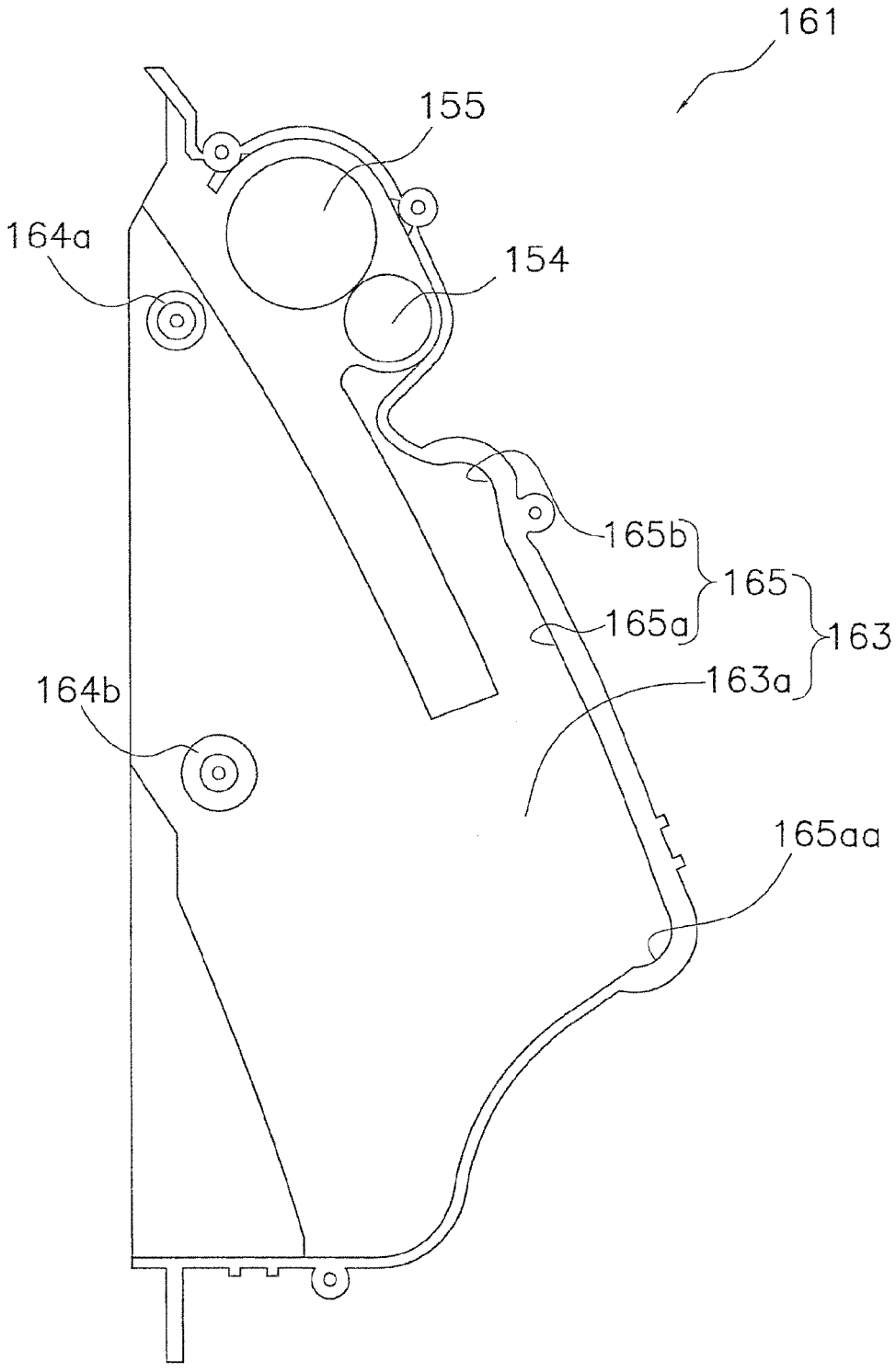


FIG. 25

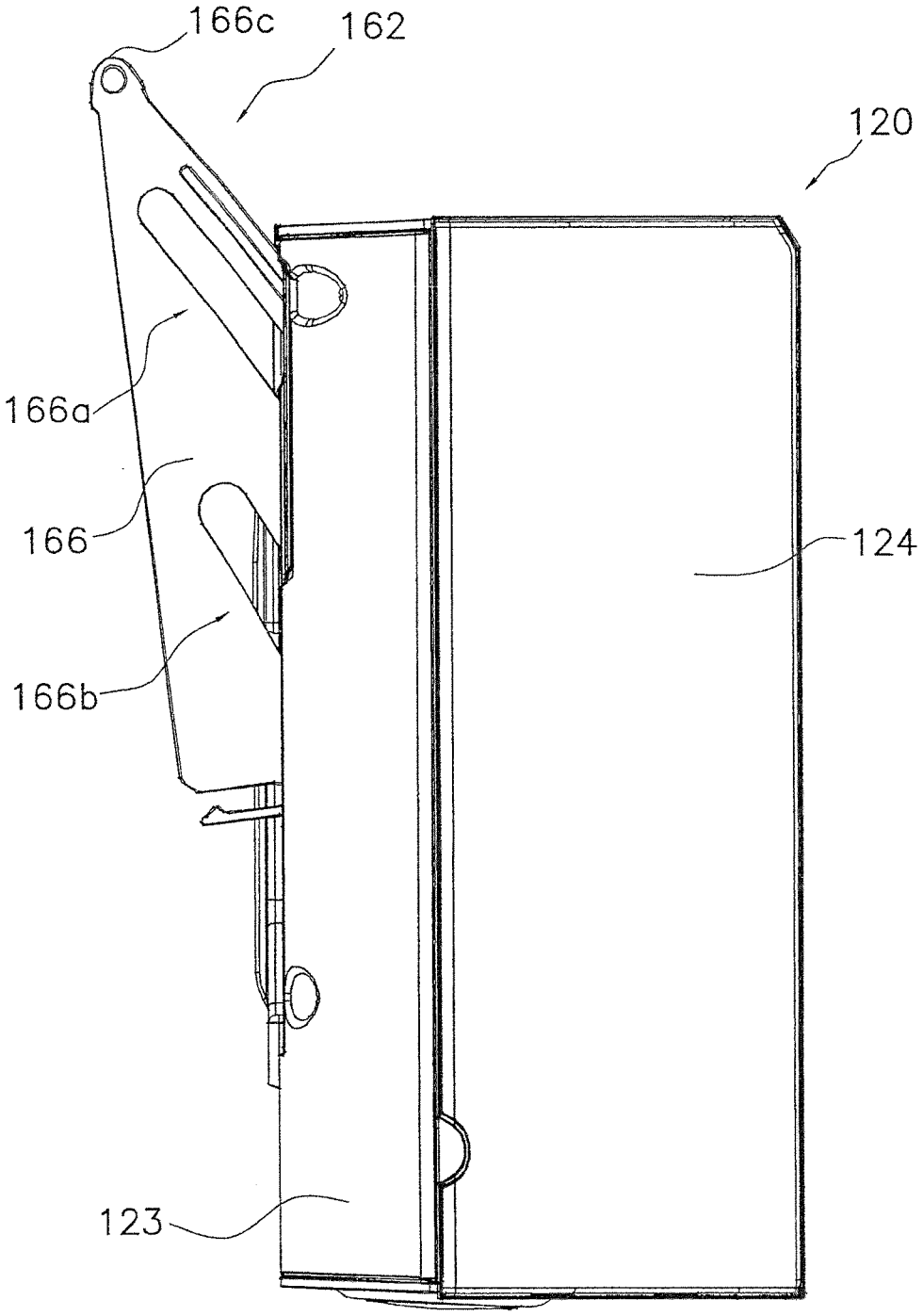


FIG. 26

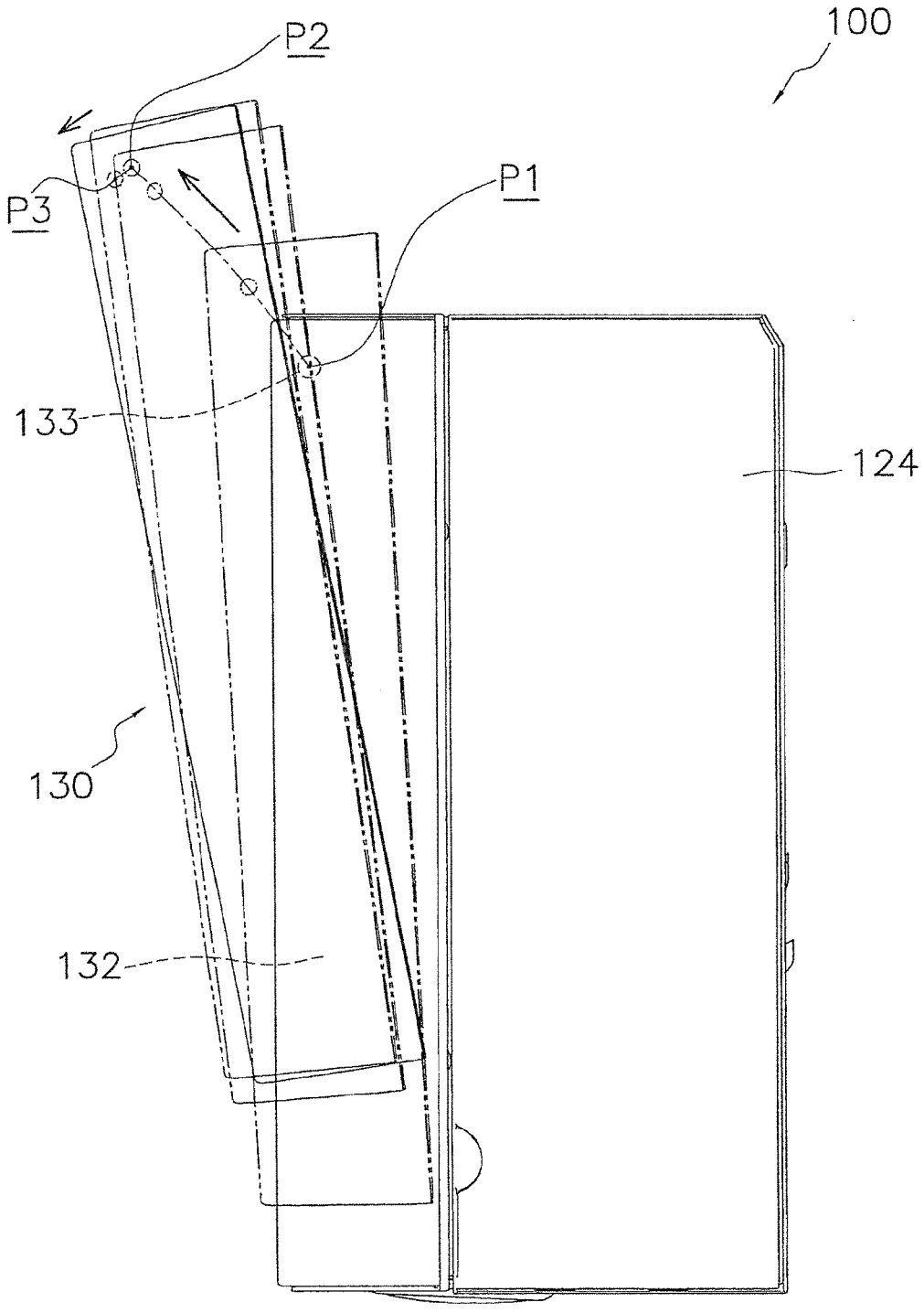
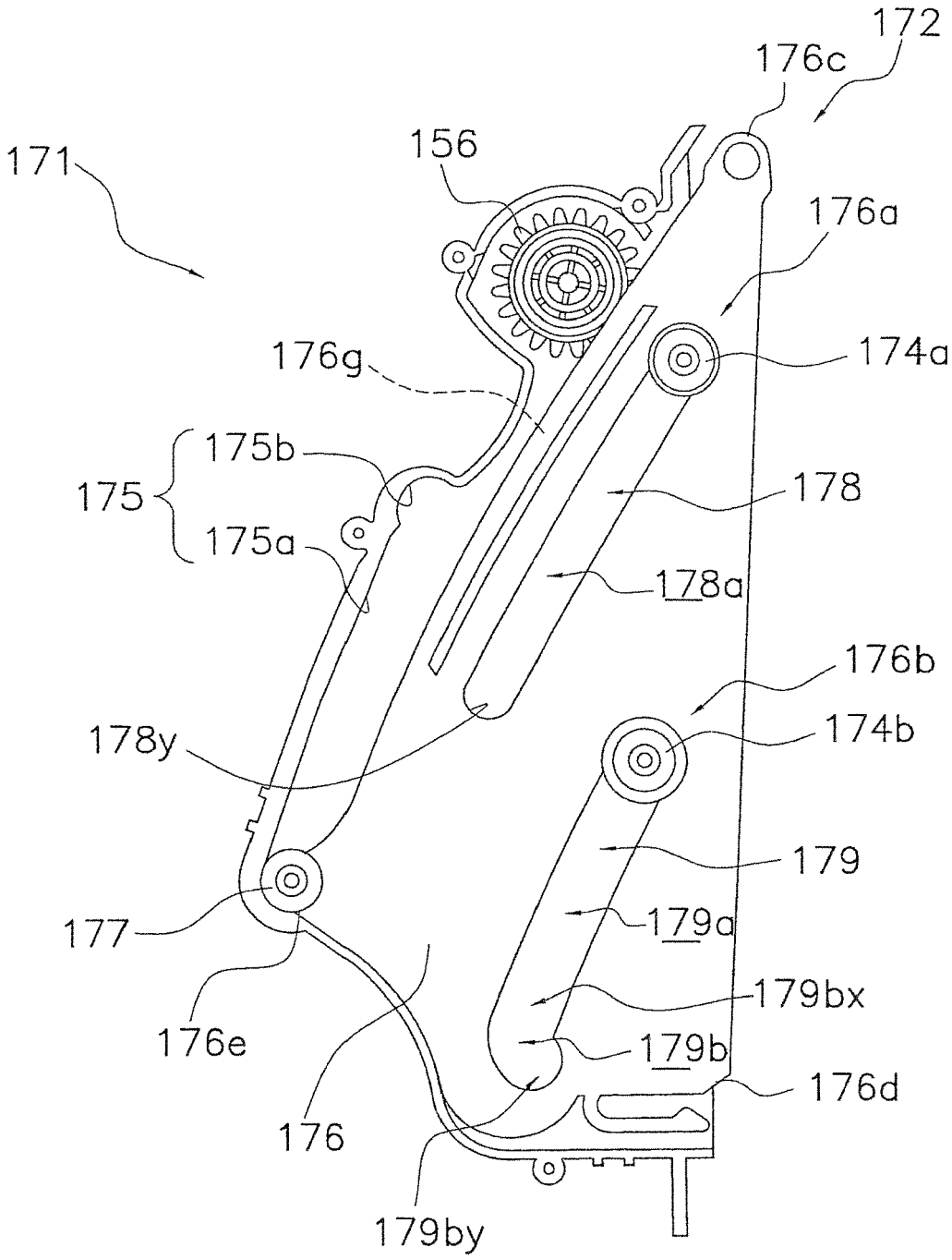


FIG. 27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175b
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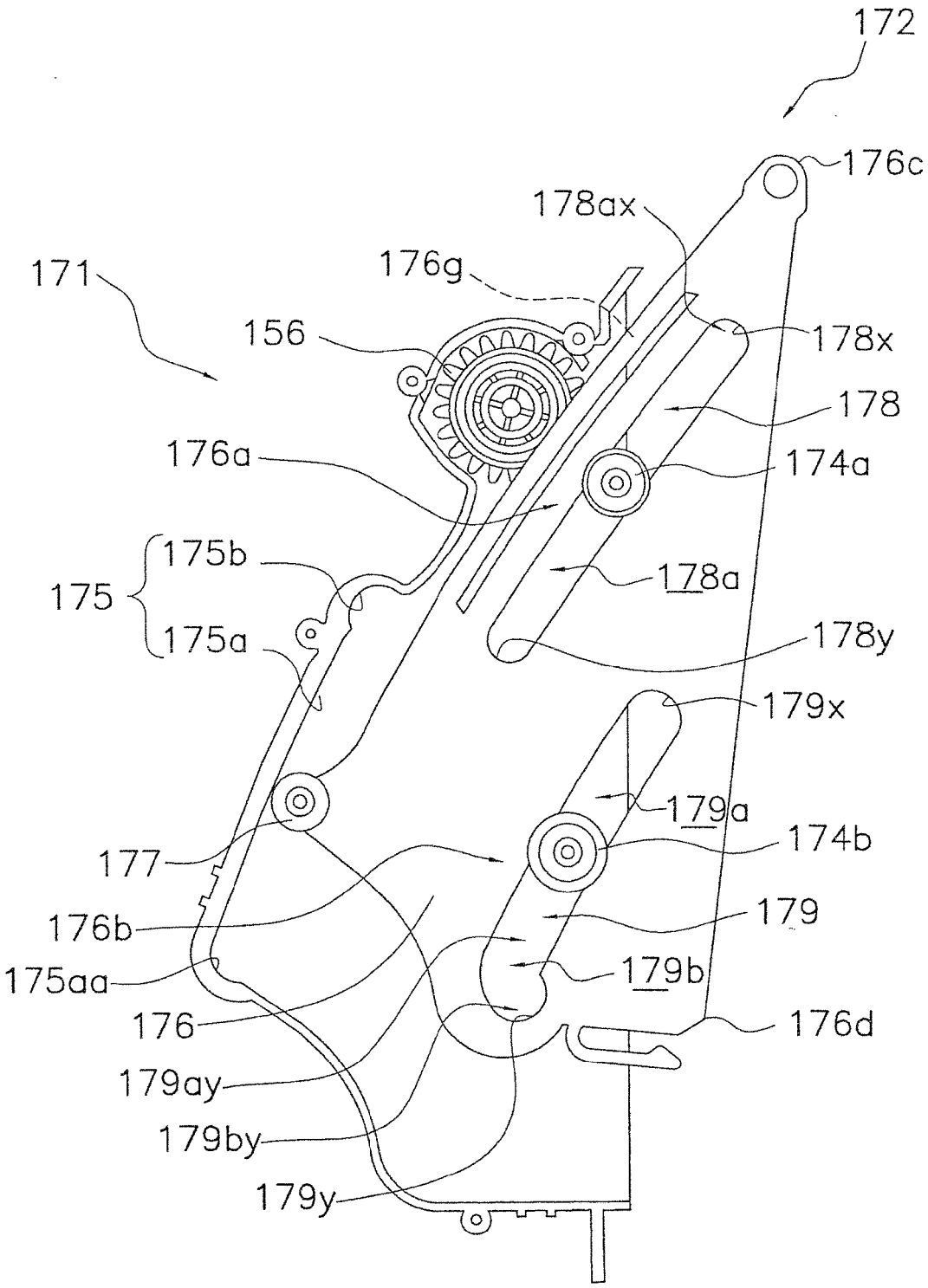
176b
178y
174b
179
177
179a
179bx
176e
179b
176d
176
179by

FIG. 28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176g
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176a
174a
175b
175
175a
178a
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179x
179a
174b
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176b
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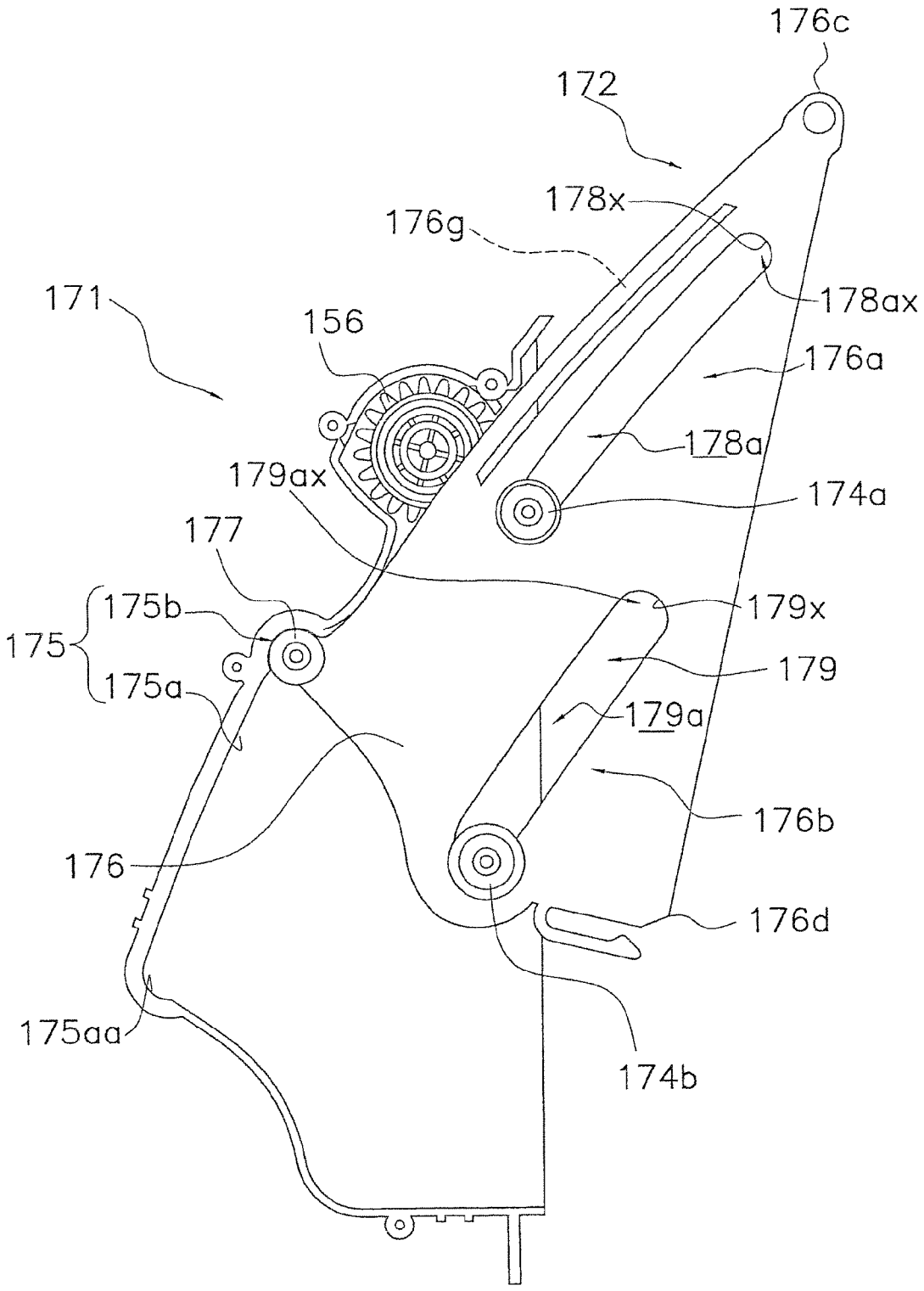
179b
176
176d
179ay
179by
179y

FIG. 29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176a
178a
179ax
174a
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179x
175b
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175a
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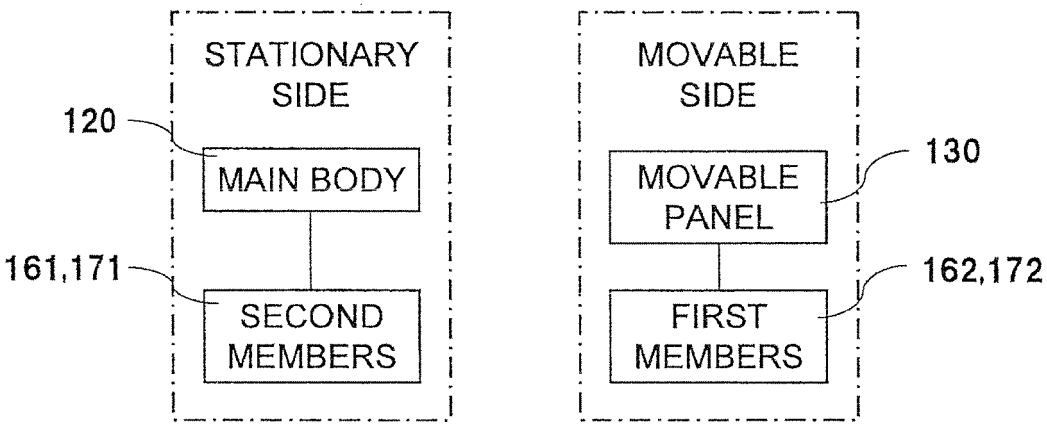
179a
176b
176
176d
175aa
174b

FIG. 30

(a)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MAIN BODY
161,171
SECOND MEMBERS
MOVABLE SIDE
MOVABLE PANEL
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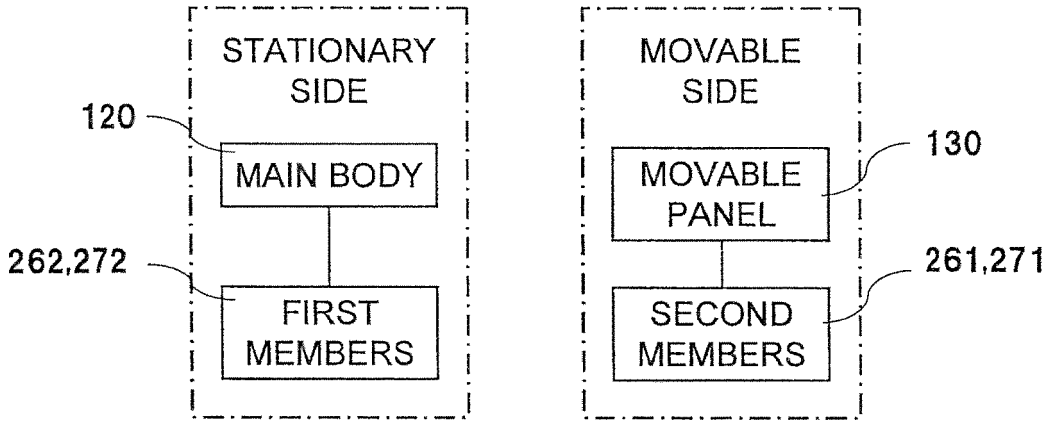
FIRST MEMBERS
162,172

(b)


STATIONARY SIDE
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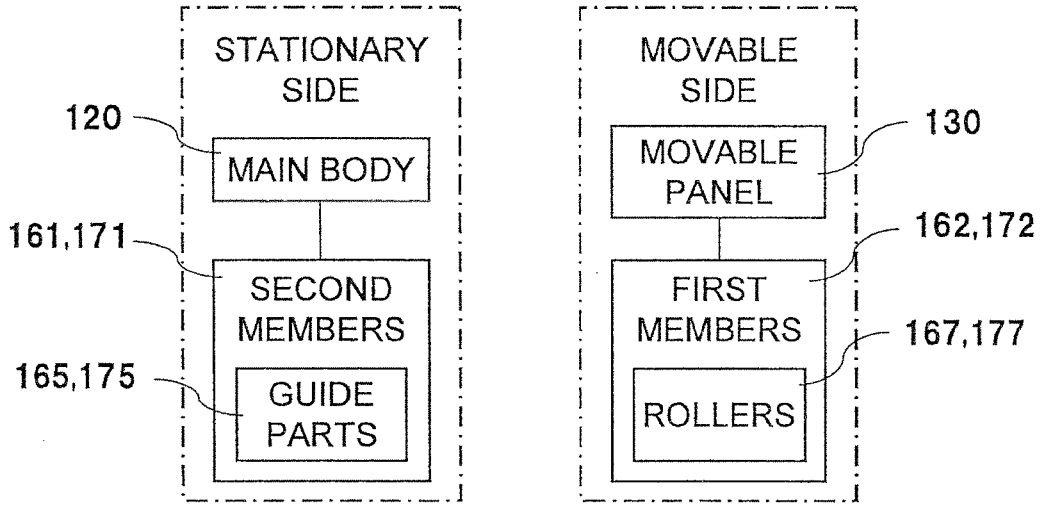
MAIN BODY
262,272
FIRST MEMBERS
MOVABLE SIDE
MOVABLE PANEL
130
SECOND MEMBERS
261,271

FIG. 31

(a)


STATIONARY SIDE
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MAIN BODY
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GUIDE PARTS
MOVABLE SIDE
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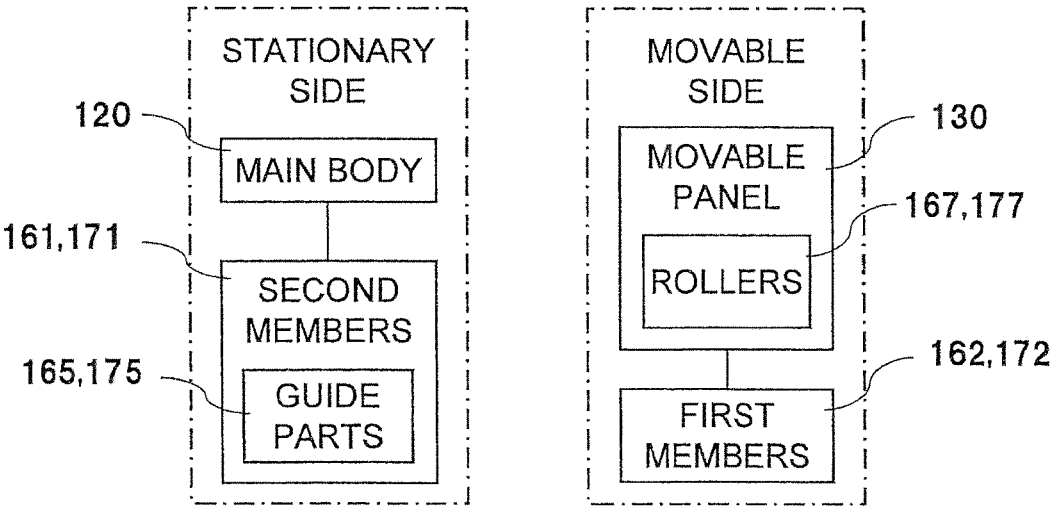
MOVABLE PANEL
162,172
FIRST MEMBERS
167,177
ROLLERS

(b)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MAIN BODY
161,171
SECOND MEMBERS
165,175
GUIDE PARTS
MOVABLE SIDE
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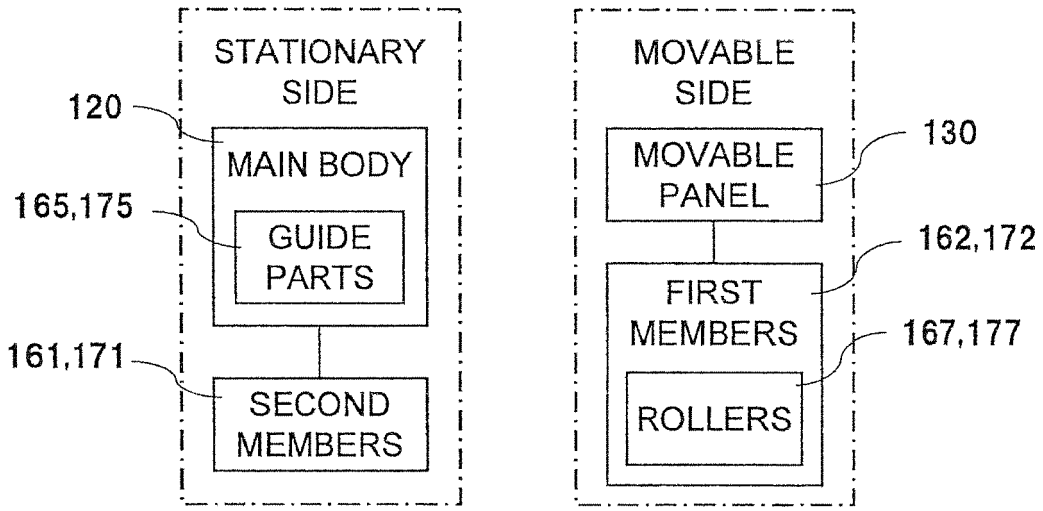
MOVABLE PANEL
167,177
ROLLERS
162,172
FIRST MEMBERS

FIG. 32

(a)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MOVABLE PANEL
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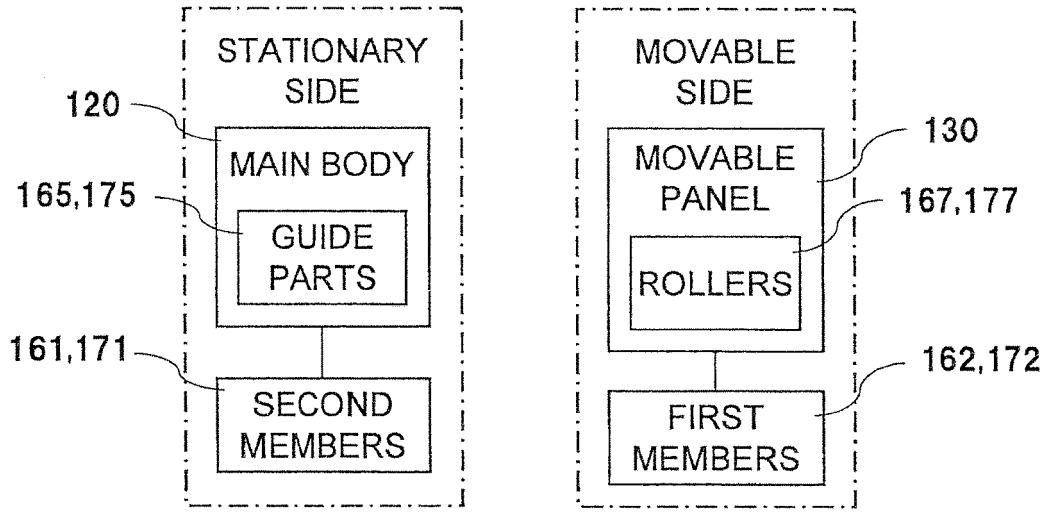
162,172
FIRST MEMBERS
167,177
ROLLERS

(b)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MOVABLE SIDE
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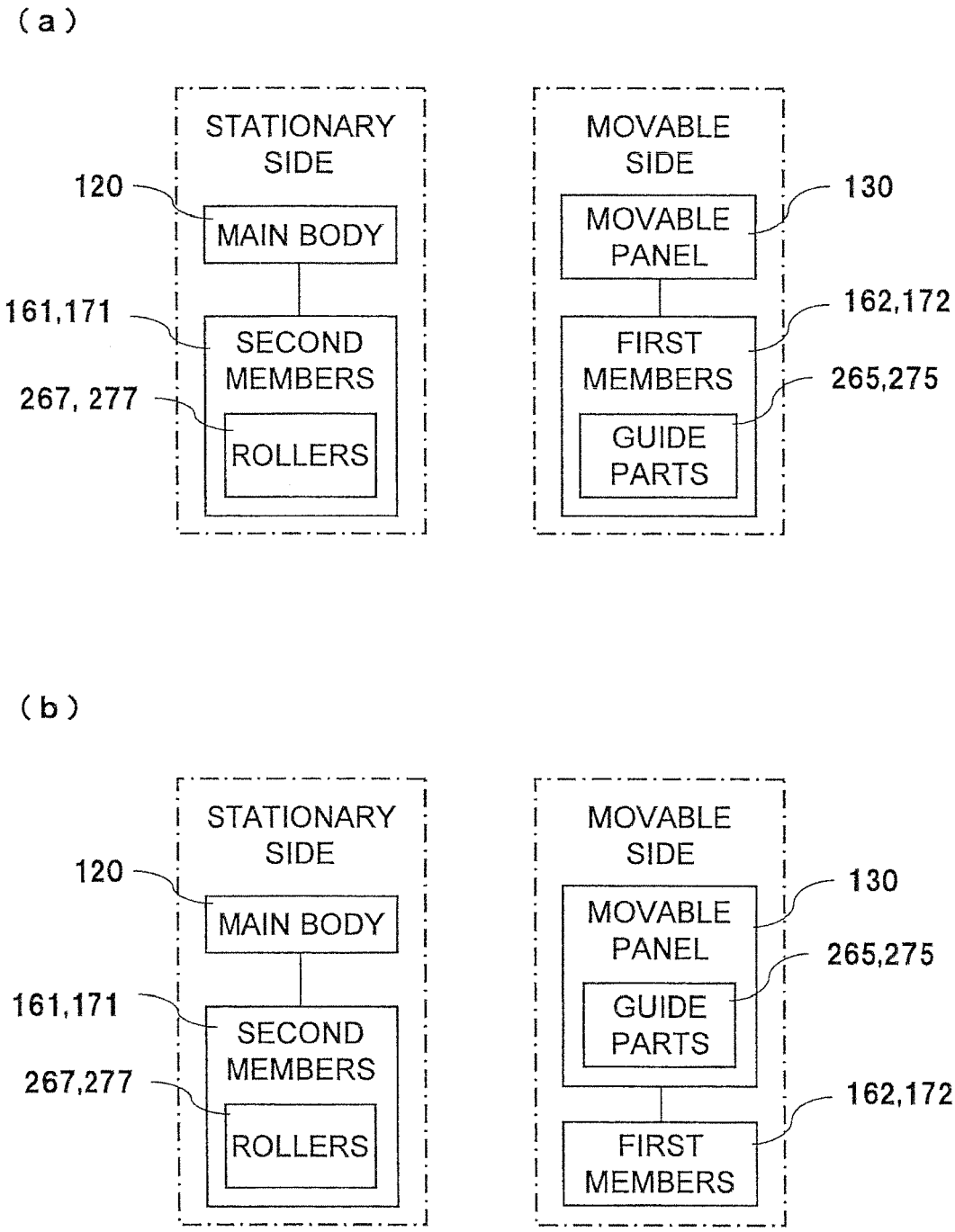
167,177
ROLLERS
162,172
FIRST MEMBERS

FIG. 33


(a)
STATIONARY SIDE
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MAIN BODY
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SECOND MEMBERS
267, 277
ROLLERS
MOVABLE SIDE
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MOVABLE PANEL
162,172
FIRST MEMBERS
265,275
GUIDE PARTS
(b)
STATIONARY SIDE
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MAIN BODY
161,171
SECOND MEMBERS
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ROLLERS
MOVABLE SIDE
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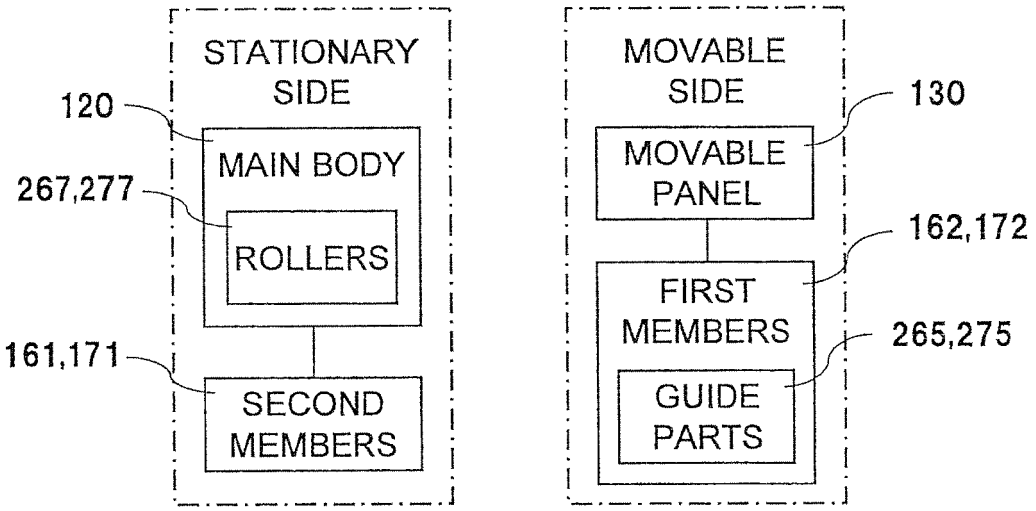
MOVABLE PANEL
265,275
GUIDE PARTS
162,172
FIRST MEMBERS

FIG. 34

(a)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FIRST MEMBERS
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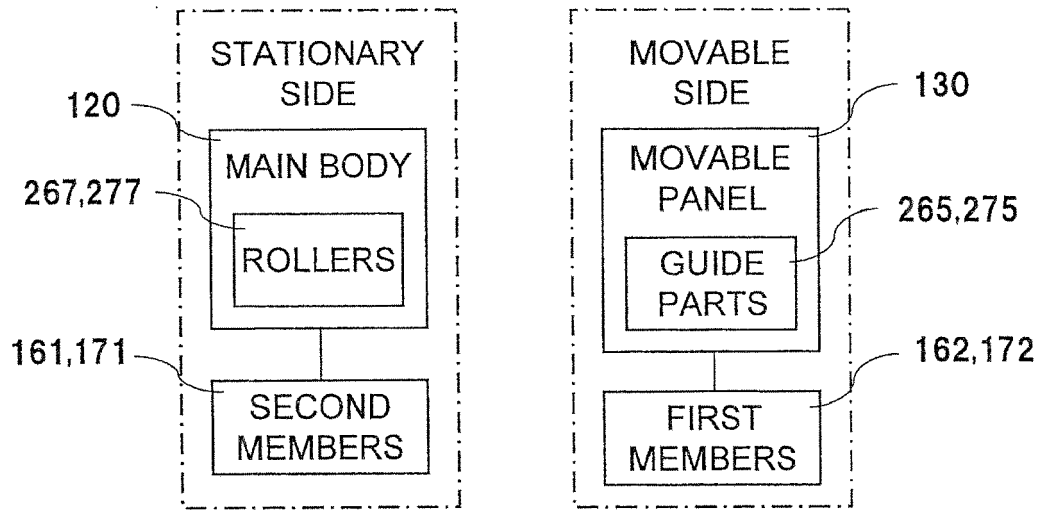
GUIDE PARTS

(b)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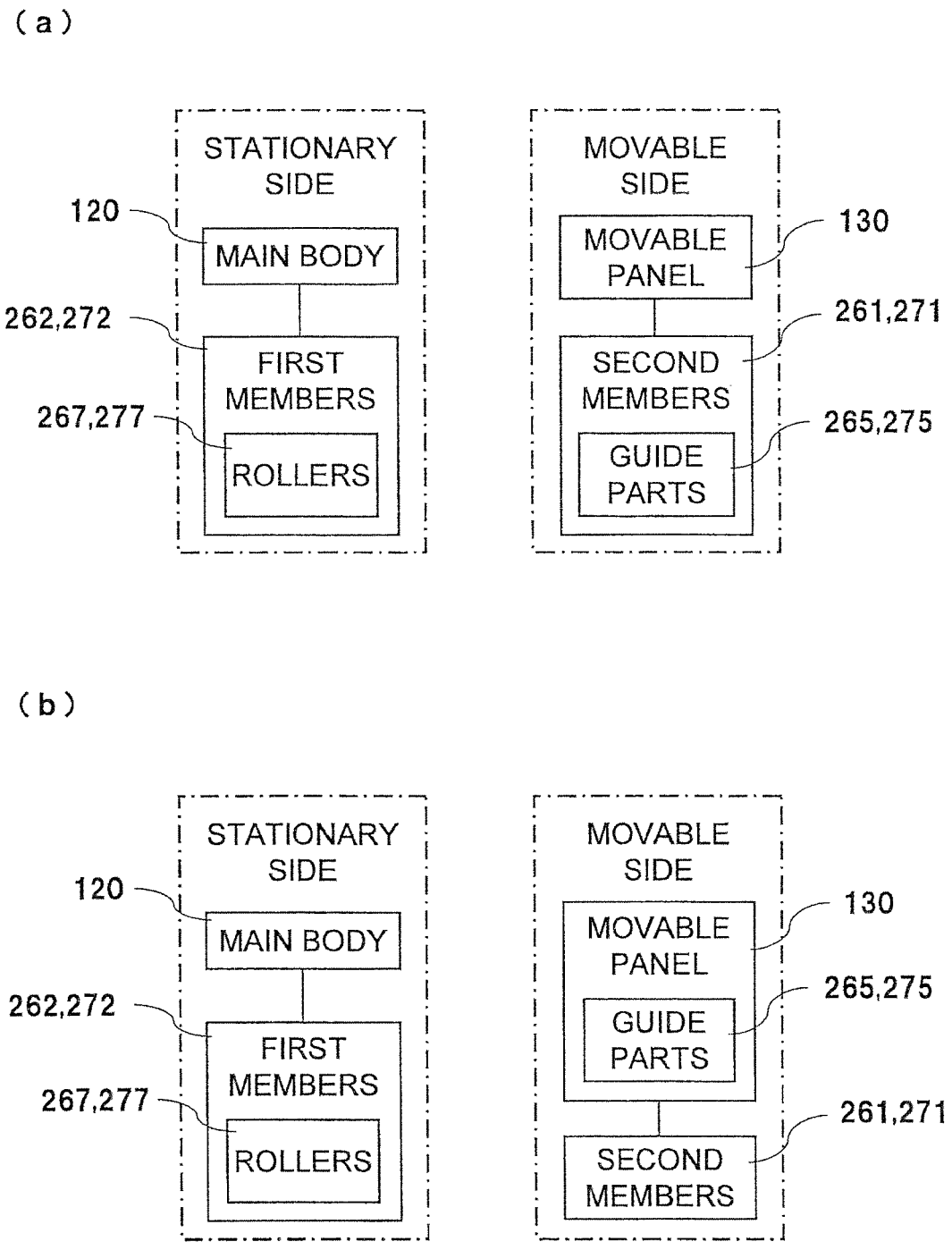
GUIDE PARTS
162,172
FIRST MEMBERS

FIG. 35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SECOND MEMBERS
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GUIDE PARTS
(b)
STATIONARY SIDE
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MOVABLE SIDE
MOVABLE PANEL
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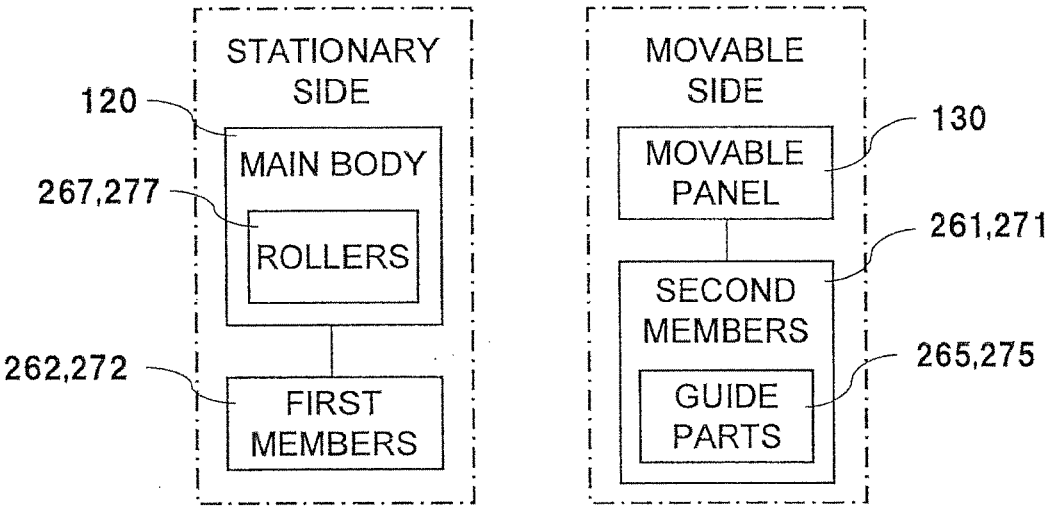
265,275
GUIDE PARTS
261,271
SECOND MEMBERS

FIG. 36

(a)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MOVABLE SIDE
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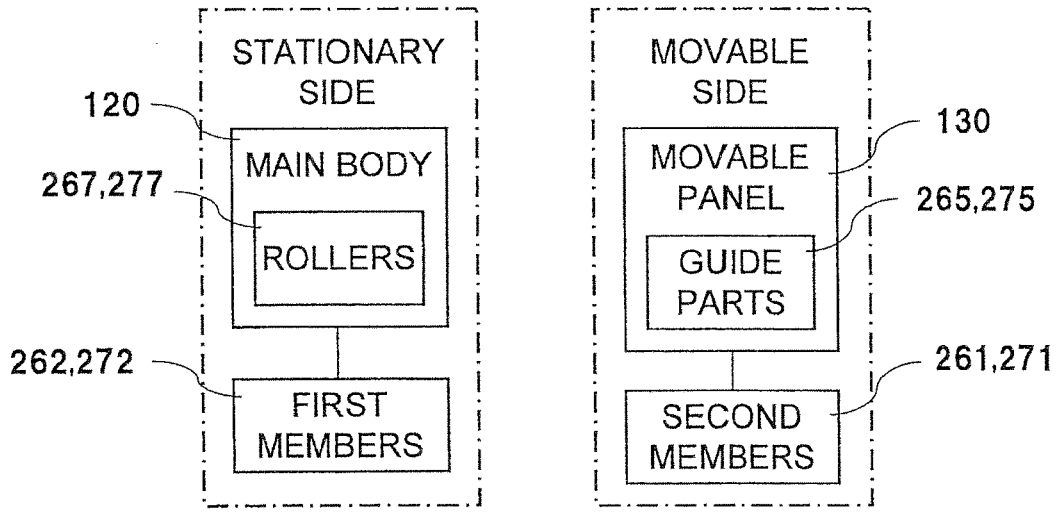
SECOND MEMBERS
265,275
GUIDE PARTS

(b)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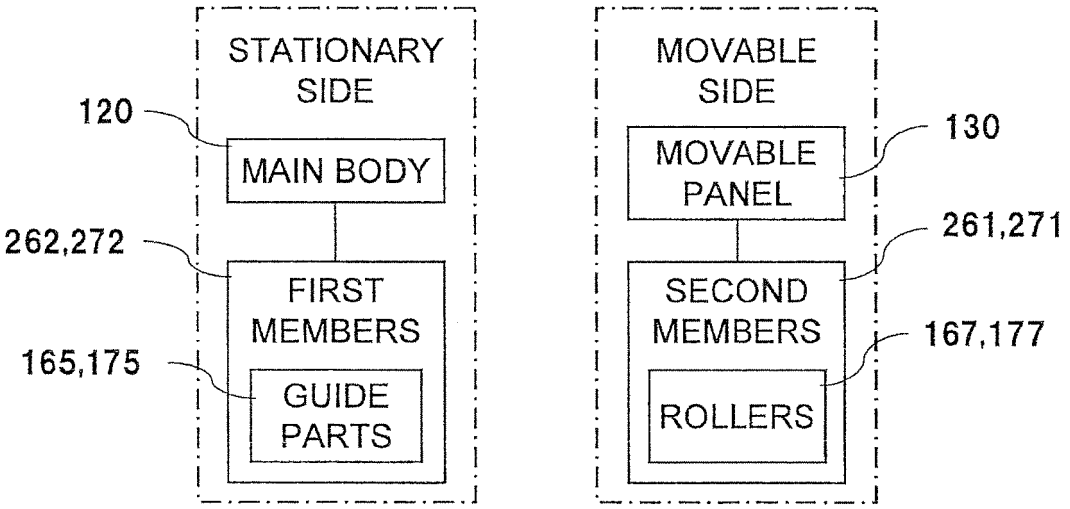
GUIDE PARTS
261,271
SECOND MEMBERS

FIG. 37

(a)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SECOND MEMBERS
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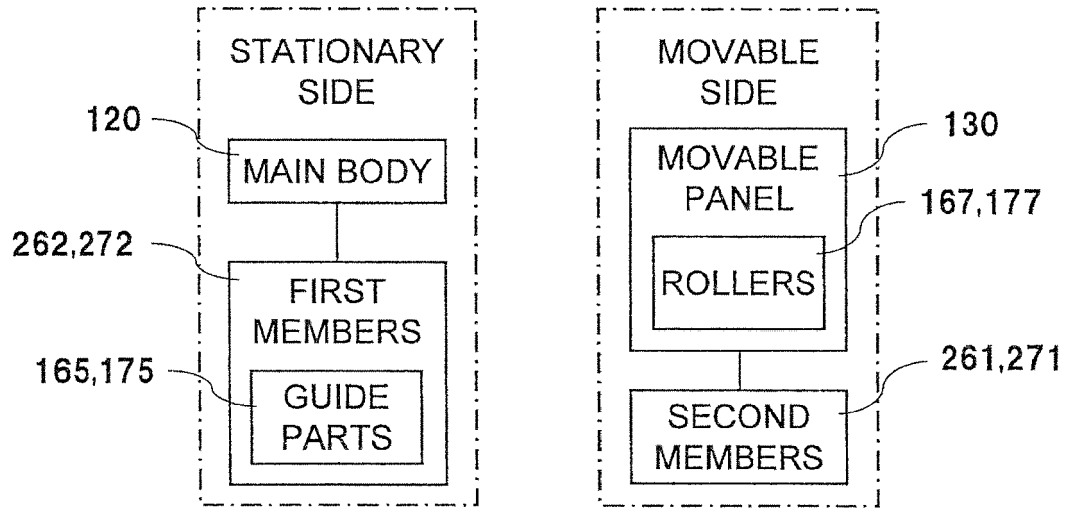
ROLLERS

(b)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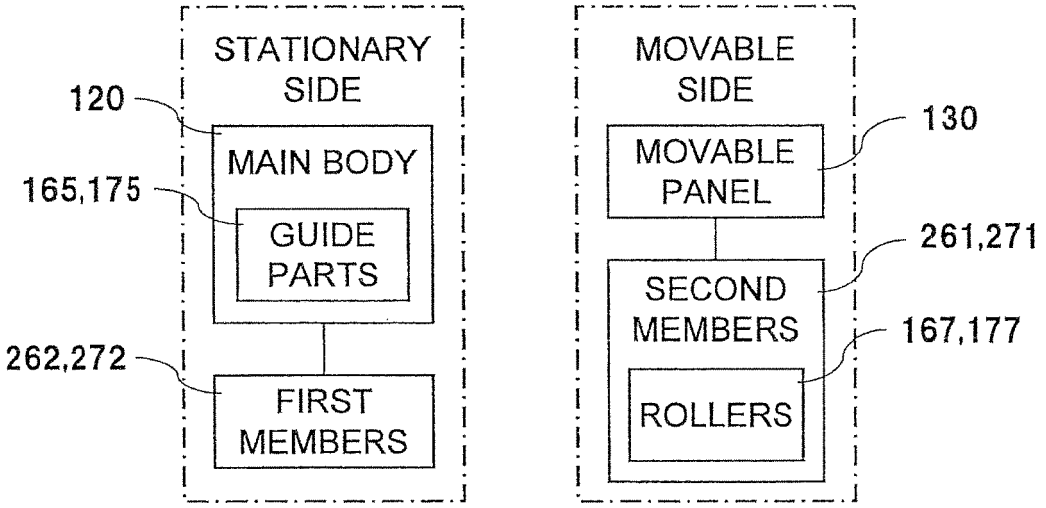
ROLLERS
261,271
SECOND MEMBERS

FIG. 38

(a)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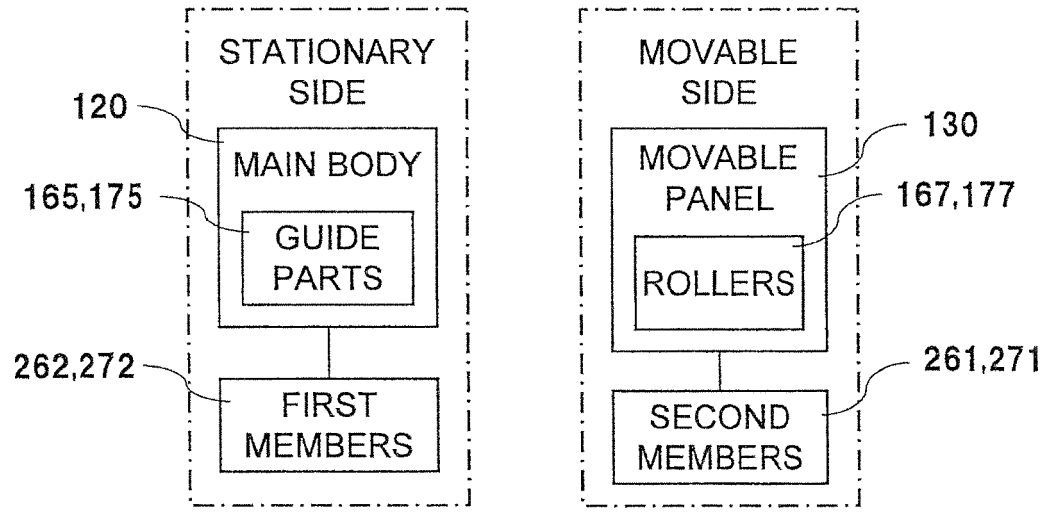
ROLLERS

(b)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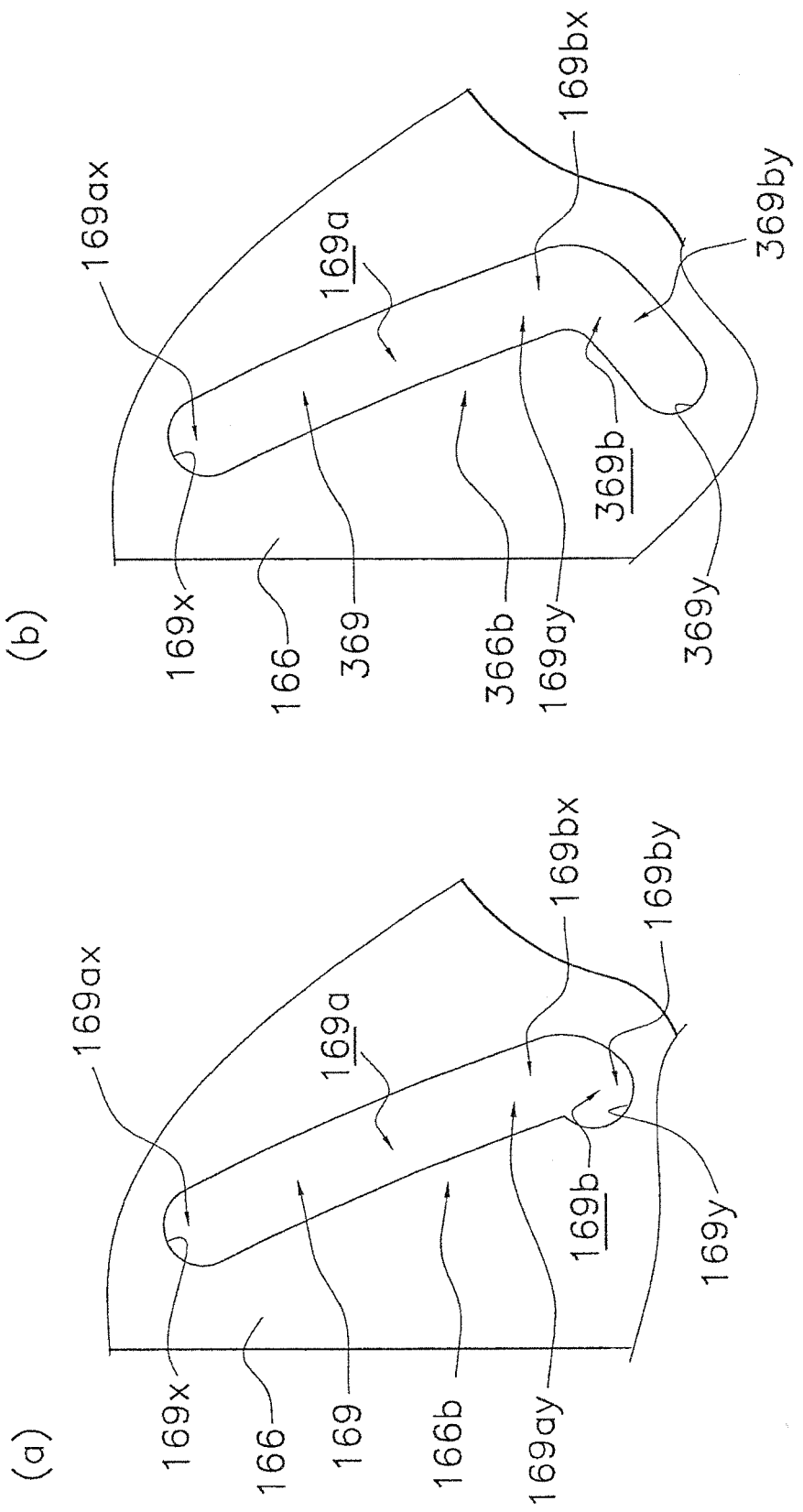
ROLLERS
261,271
SECOND MEMBERS

FIG. 39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(b)
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169bx
369by
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169x
166
369
366b
169ay
369y

FIG. 40

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EUROPEAN SEARCH REPORT

Application Number
EP 14 16 5372

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 2006 064361 A (SANYO ELECTRIC CO) 9 March 2006 (2006-03-09) * abstract; figures 1-6 *	1-14	INV. F24F13/20 F24F1/00
X	JP 2006 064360 A (SANYO ELECTRIC CO) 9 March 2006 (2006-03-09) * abstract; figures 1-6 *	1-10, 12-14	
X	JP 2006 162138 A (TOSHIBA CARRIER KK) 22 June 2006 (2006-06-22) * abstract; figures 1-4 *	1-12	
X	JP H06 174255 A (MATSUSHITA ELECTRIC IND CO LTD) 24 June 1994 (1994-06-24) * abstract; figures 1,3 *	1-14	

TECHNICAL FIELDS SEARCHED (IPC)

F24F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 September 2014	Vuc, Arianda

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22-09-2014

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		JP 2006064361 A	09-03-2006
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- JP 2007071532 A **[0014]**