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(54) **AIR CONDITIONER**

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EP 4 328 499 B1

Description

Technical Field

[0001] The present disclosure is related to an air conditioner, more specifically, to an indoor unit of the air conditioner.

Background Art

[0002] An air conditioner is a device that exchanges heat with sucked air and supplies the heat-exchanged air to the indoors.

[0003] The indoor unit of an air conditioner is equipped with a fan and a heat exchanger, which exchange heat by sucking indoor air and supply it to the indoors.

[0004] Some of these indoor units are equipped with a flat front panel, which enhances the aesthetic sensibility by using the front panel as a picture frame.

[0005] The frame-type indoor unit, described above, sucks air through a suction port which is formed at a rear side of the front panel and discharges the sucked air to the indoor space through a lateral side thereof.

[0006] However, in case of the mentioned frame-type indoor unit, as there is the suction port formed in the front thereof and the discharge port formed on the side thereof, there was a problem of the discharged air being reintroduced through the suction port.

[0007] In addition, in case of the frame-type indoor unit, there was a problem with the air being discharged through the lateral side of the indoor unit experiencing losses due to friction with the wall around the indoor unit.

Prior Arts

[0008]

Korean Registered Patent Gazette 10-0714591
Korean Registered Patent Gazette 10-0714592

[0009] CN 104 235 952 B2 presents an air conditioner that comprises: a main body, an air intake port is formed on the front, and side air discharge ports and a lower air discharge port are formed respectively, an intake port panel is arranged on the main body in an advancing and retreating manner, and when advancing, an air intake flow path open to the upper and lower directions is formed with the above-mentioned main body, a lower discharge blade guides the air discharged from the lower air discharge port to move forward in a straight line, and a side discharge blade guides the air discharged from the side air discharge port to bend and reach the side of the above-mentioned intake port panel; it can minimize the phenomenon that the air discharged from the main body to the room directly flows back to the air intake port and is re-inhaled, and at the same time form a three-dimensional mixed airflow of the front airflow and the lower airflow

[0010] EP 1 621 825 B1 presents an indoor unit of air conditioner, comprising: an outer case, a front panel, at least one grill louver installed on the front panel so as to be closed/opened to suck an air of an air-conditioned space inside, louver driving unit opening/closing the at least one grill louver in accordance with an operation status of the air conditioner, and blow units installed at right, left, and lower sides of the outer case, respectively so as to blow the air to the air-conditioned space wherein the air is sucked inside to be heat-exchanged when the at least one grill louver is opened.

Disclosure of Invention

Technical Problem

[0011] The present invention aims to solve above problem and other problems.

[0012] Another objective of the present invention is to provide an indoor unit that a front surface thereof is flat.

[0013] Another objective of the present invention is to discharge air laterally from the indoor unit.

[0014] Another objective of the present invention is to control an angle that an air flow is discharged.

[0015] Another objective of the present invention is to reduce a friction between the discharged air flow and a wall surface.

[0016] Another objective of the present invention is to promote diffusion of the discharged air.

[0017] Another objective of the present invention is to prevent the discharged air from being reintroduced.

[0018] Another objective of the present invention is to enhance a straightness of the discharged air.

[0019] Another objective of the present invention is to minimize formation of the vortex around the indoor unit

[0020] The objectives of the present invention are not limited to the objectives mentioned above, and other objectives not mentioned would be clearly understood from the following description by those who skilled in the art.

Technical Solution

[0021] One or more objects are achieved by the invention set out by the features of the independent claim. The dependent claims define preferred embodiments of the invention.

[0022] To solve above technical problems, an air conditioner according to one aspect of the present invention comprises a case having an inner space.

[0023] The air conditioner comprises a fan disposed inside the case.

[0024] The air conditioner comprises a frame that is coupled to a front portion of the case.

[0025] The air conditioner comprises a front plate that is movably coupled to the frame and that is movable in a front-rear direction

[0026] The front plate forms a suction port between the

front plate and the frame.

[0027] The air conditioner comprises a discharge flow path. Air blown by the fan flows along the discharge flow path. The discharge flow path is spaced rearward from the suction port.

[0028] The air conditioner comprises a discharge grille disposed downstream of the discharge flow path.

[0029] The air conditioner comprises a guide inclined forward as the guide goes away from the discharge flow path, thereby preventing the discharged air from being re-introduced.

[0030] The guide is configured in plural and the plurality of guides may be spaced apart from each other in the front-rear direction.

[0031] The discharge grille may be disposed to be inclined with respect to the front-rear direction.

[0032] The guide comprises a guide body that is positioned inward further than an outer surface of the discharge grille.

[0033] The guide comprises a guide end portion that is positioned outward further than the outer surface of the discharge grille.

[0034] A length of the guide body may be longer than a length of the guide end portion.

[0035] The guide may be inclined along an extending direction of the discharge grille.

[0036] An inclined angle of the guide may range from 22 to 26 degrees.

[0037] A length of the guide may range from 12mm to 15mm.

[0038] The discharge grille may comprise a rear end portion that is positioned at a rear of the discharge flow path.

[0039] The discharge grille may comprise a rear protruding portion that protrudes outward of the case from the rear end portion and positioned at a rear of the discharge flow path.

[0040] The discharge grille may comprise a front end portion positioned at a front of the discharge flow path.

[0041] The discharge grille may comprise a front protruding portion protruding outward of the case from the front end portion and positioned at a rear of the suction port.

[0042] The discharge grille may comprise a front protruding portion positioned at a rear of a lateral wall of the frame

[0043] The guide may comprise a rear guide connected to the case and positioned at a rear of the discharge flow path.

[0044] The case may comprise a first body forming a boundary of the discharge flow path and arranged along extending directions of the rear guide and the discharge flow path.

[0045] The guide may comprise a front guide connected to the frame and positioned at a front of the discharge flow path.

[0046] The frame may comprise a second body forming a boundary of the discharge flow path and/or arranged along extending directions of the front guide and the discharge flow path.

[0047] The second body may comprise a first body wall facing the discharge flow path.

[0048] The second body may comprise a second body wall bent forward from the first body wall.

[0049] The second body may comprise a third body wall extending to be bent forward from the second body wall.

[0050] The second body may have a groove that the guide is seated.

[0051] The front plate may comprise a front wall disposed to be movable in the front-rear direction from the frame

[0052] The front plate may comprise a lateral wall protruding from the front wall. The suction port is formed between the lateral wall and the frame.

[0053] The discharge grille may comprise a first discharge grille spaced apart from one side of the fan.

[0054] The discharge grille may comprise a second discharge grille spaced apart from the other side of the fan.

[0055] The suction port may comprise a first suction port spaced forward from the first discharge grille; and/or a second suction port spaced forward from the second discharge grille.

[0056] The frame may comprise a first wall disposed between the first discharge grille and the first suction port.

[0057] The frame may comprise a second wall disposed between the second discharge grille and the second sucion port.

[0058] Outer surfaces of the first wall and the second wall are positioned outside an outer end portion of the guide.

[0059] Details of the embodiments and the like are included in the detailed description and drawings.

Advantageous Effects of Invention

[0060] According to at least one embodiment of the present invention, it is possible to control a discharge angle of air by regulating a guide angle of a discharge grille.

[0061] According to at least one embodiment of the present invention, it is possible to reduce friction between the discharged air and the wall by regulating the guide angle of the discharge grille.

[0062] According to at least one embodiment of the present invention, it is possible to prevent the discharged air from being re-introduced into the suction port by inclining the guide away from the suction port.

[0063] According to at least one embodiment of the present invention, it is possible to enhance a straightness of the discharged air by regulating an angle of the guide.

[0064] According to at least one embodiment of the present invention, since the discharged air flows along the guide, it is possible to minimize formation of vortex around the indoor unit.

[0065] The effects of the present invention are not limited to the effects mentioned above, and other effects not mentioned would be clearly understood from the claims by those who skilled in the art.

Brief Description of Drawings

[0066]

FIG. 1 shows a concept of the air conditioner according to an embodiment of the present invention.
FIG. 2 shows a perspective view of an indoor unit according to the embodiment of the present invention.
FIG. 3 shows a perspective view of an indoor unit according to the embodiment of the present invention.
FIG. 4 shows an exploded view of an indoor unit according to the embodiment of the present invention.
FIG. 5 shows a sectional view of the indoor unit according to the embodiment of the present invention.
FIG. 6 shows a portion of a sectional view of the indoor unit according to the embodiment of the present invention.
FIG. 7 shows a portion of a sectional view of the indoor unit according to the embodiment of the present invention.
FIG. 8 shows a portion of a sectional view of the indoor unit according to the embodiment of the present invention.
FIG. 9 is for explaining an effect of the indoor unit according to the embodiment of the present invention.
FIG. 10 shows a portion of a conventional indoor unit.

Mode for the Invention

[0067] Below, a detailed explanation of the exemplary embodiment described in this specification is provided with reference to the attached drawings. Regardless of reference signs, elements that are identical or similar are assigned the same reference numbers, and same descriptions regarding these elements are omitted.

[0068] The suffixes "module" and "part, portion" used for the components in the following explanation are assigned or used interchangeably solely for the convenience of specification drafting and do not inherently indicate distinct meanings or roles.

[0069] Furthermore, if a detailed explanation of related known techniques, which may obscure the essence of the exemplary embodiment described in this specification, is deemed unnecessary, such explanation will be omitted. Additionally, the attached drawings are provided solely to facilitate understanding of the exemplary embodiment described in this specification and should not restrict the technical ideas disclosed herein. It should be understood that the attached drawings encompass all modifications, equivalents, and substitutions, including uniform materials or alternative substances, that may fall within the scope of the present invention as defined in the appended claims.

[0070] Terms containing ordinal numbers such as "first," "second," etc., can be used to describe various elements, but the aforementioned terms are not limiting the elements. The aforementioned terms are used solely for the purpose of distinguishing one element from another

[0071] When an element is mentioned to be "connected" or "joined" to another element, it should be understood that the element may be directly connected or joined to the other element, but there may also be other elements therebetween. On the other hand, when an element is mentioned to be "directly connected" or "directly joined" to another element, it should be understood that there are no other components therebetween.

[0072] The singular form includes the plural form unless explicitly stated otherwise in the context

[0073] Referring to FIG. 1, an air conditioner 1 is described.

[0074] FIG. 1 conceptually shows a connection between an outdoor unit 2 and an indoor unit 100 of the air conditioner 1.

[0075] The air conditioner 1 may comprise the outdoor unit 2. The outdoor unit 2 may be installed at an outdoor space. The outdoor unit 2 may comprise an outdoor heat exchanger (not shown), an outdoor fan (not shown), a compressor (not shown), and an expansion device (not shown). The description of the general outdoor unit of air conditioner may be applied to the description of the outdoor unit 2.

[0076] The air conditioner 1 may comprise the indoor unit 100. The indoor unit 100 may be installed at an indoor space.

[0077] The indoor unit 100 may comprise a front panel 120. A front surface of the front panel 120 may be flat. The front panel 120 may be used as a picture frame. For example, a picture may be drawn on the front surface of the front panel 120. For example, another picture frame may be installed at the front surface of the front panel 120.

[0078] The air conditioner 1 may comprise a refrigerant pipe 3. The refrigerant pipe 3 may connect the outdoor unit 2 and the indoor unit 100. The refrigerant compressed by the compressor (not shown) inside the outdoor unit 2 may circulate between the outdoor unit 2 and the indoor unit 100 through the refrigerant pipe 3.

[0079] Referring to FIGS. 2 and 3, the indoor unit 100 is described.

[0080] FIG. 2 show a perspective view of the indoor unit 100. FIG. 3 shows a perspective view of the indoor unit 100 that the front plate 129 is moved forward.

[0081] The indoor unit 100 comprises a case 110. The case 110 has a space therein.

[0082] The case 110 may be installed on a wall of the indoor space. A cross section of the case 110 may have a

rectangular shape.

[0083] The indoor unit 100 may comprise the front panel 120. The front panel 120 may be coupled to the case 110. A cross section of the front panel 120 may have a rectangular shape. The front surface of the front panel 120 may be flat. A user may install a picture frame at the front surface of the front panel 120. In addition, a picture may be made on the front surface of the front panel 120. The user may install a picture frame on a front plate 129. A picture may be drawn on a front surface of the front plate 129.

[0084] The indoor unit 100 comprises a discharge grille 200. The discharge grille 200 may be disposed at a lateral side of the case 110. The discharge grille 200 may be disposed at a lower portion of the case 110. Air sucked into the case 110 may be supplied to the indoor space through the discharge grille 200.

[0085] The front panel 120 may move against the case 110 in forward and backward directions. The front panel 120 may be coupled to the case 110 to be movable in the forward and backward directions. The front plate 129 of the front panel 120 is adapted to be moved in the forward and backward directions

[0086] The indoor unit 100 may comprise a connector 150. The connector 150 may connect the case 110 and the front panel 120. A length of the connector 150 may be variable. The connector 150 may connect the front plate 129 and a main body 128 of the front panel 120.

[0087] A main body 128 of the front panel 120 may be named as a frame.

[0088] The connector 150 may comprise a first connector 151 coupled to the front plate 129. The connector 150 may comprise a second connector 152 coupled to the main body 128 of the front panel 120. The connector 150 may comprise a joint 153 connecting the first connector 151 and the second connector 152. The joint 153 may be rotatable. When the front plate 129 moves forward and backward, the first and second connectors 151, 152 can move forward and backward, and the joint 153 can rotate.

[0089] The indoor unit 100 may comprise a filter 121. The filter 121 may be disposed between the front plate 129 and the body 128 of the front panel 120. The filter 121 may remove foreign substances contained in air introduced into the case 110.

[0090] The indoor unit 100 may comprise a suction port 130. The suction port 130 may be between the front plate 129 and the main body 128 of the front panel 120. The filter 121 may be disposed at the suction port 130. An indoor air may be introduced into the case 110 through the suction port 130.

[0091] The front plate 129 may move forward, thereby opening the suction port 130. The front plate 129 may move backward, thereby closing the suction port 130. When the air conditioner 1 operates, the front plate 129 may move forward to open the suction port 130. When the air conditioner 1 is stopped, the front plate 129 may move backward to close the suction port 130. The suction port 130 may mean a space between the main body 128 of the front panel 120 and the front plate 129.

[0092] Referring to FIG. 4, the indoor unit 100 is described.

[0093] FIG. 4 shows an exploded view of the indoor unit 100.

[0094] The indoor unit 100 may comprise the front panel 120. The front panel 120 may be coupled to a front of the case 110.

[0095] The indoor unit 100 may comprise the filter 121. The filter 121 may be disposed at the front panel 120.

[0096] The indoor unit 100 may copmrise the front plate 129. The front plate 129 may be a part of the front panel 120. The front plate 129 may move against the case 110 in forward and backward directions. The front plate 129 may be disposed at the front panel 120 to be movable in the forward and backward directions. The connector 150 (refer to FIG. 3) may connect the front plate 129 and the body 128 of the front panel 120. The front plate 129 may be a flat plate.

[0097] The indoor unit 100 may comprise a control box 115. The control box 115 may control driving of a fan 160. A PCB (Printed Circuit Board) may be disposed inside the control box 115. The control box 115 may be disposed inside the case 110.

[0098] The indoor unit 100 may comprise a control panel 116. The control panel 116 may be connected to the control box 115. A user may control driving of the fan 160 by controlling the control panel 116.

[0099] The indoor unit 100 may comprise a heat exchanger 170. The heat exchanger 170 may be connected to the refrigerant pipe 3 (see FIG. 1). Air sucked into the case 110 may exchange heat with the heat exchanger 170. The heat exchanger 170 may be disposed inside the case 110.

[0100] The indoor unit 100 may comprise a drain pan 171. The drain pan 171 may be disposed under the heat exchanger 170. Condensed water generated at the heat exchanger 170 may fall to the drain pan 171.

[0101] The indoor unit 100 comprises the fan 160. The fan 160 may be disposed inside the case 110. The fan 160 may suck air outside the case 110. The fan 160 may be a turbo fan

[0102] The indoor unit 100 may comprise a fan motor 161. The fan motor 161 may rotate the fan 160. The fan motor 161 may be fixed to the case 110.

[0103] The indoor unit 100 may comprise a fan housing 162. The fan housing 162 may be coupled to the case 110. The fan 160 may be disposed inside the fan housing 162. The fan housing 162 may be named as an "orifice".

[0104] The indoor unit 100 may comprise discharge grilles 201, 202, and 203. A plurality of discharge grilles 201, 202, and 203 may be disposed.

[0105] The indoor unit 100 comprises a first discharge grille 201. The first discharge grille 201 may be disposed on one side of the indoor unit 100.

[0106] The indoor unit 100 may comprise a second discharge grille 202. The second discharge grille 202

may be disposed on the other side of the indoor unit 100.

[0107] The indoor unit 100 may comprise a third discharge grille 203. The third discharge grille 203 may be disposed below the indoor unit 100.

[0108] Air sucked into the indoor unit 100 by the fan 160 may be discharged to an outside of the indoor unit 100 through the first to third discharge grills 201, 202, and 203. The air sucked in by the fan 160 may be discharged to both lateral sides and to a bottom side of the indoor unit 100.

[0109] Referring to FIG. 5, the indoor unit 100 is described hereinafter.

[0110] FIG. 5 shows a sectional view of the indoor unit that is cut horizontally.

[0111] The indoor unit 100 may be installed on a wall W. The indoor unit 100 may be installed such that it faces inward of the indoor space.

[0112] The fan 160 may blow air introduced through the suction port 130 outward of the indoor unit 100.

[0113] The indoor unit 100 comprises a first discharge flow path 141. The first discharge flow path 141 may be formed between the fan 160 and the first discharged grille 201.

[0114] The indoor unit 100 may comprise a second discharge flow path 142. The second discharge flow path 142 may be formed between the fan 160 and the second discharge grille 202.

[0115] The first discharge flow path 141 and the second discharge flow path 142 may be positioned symmetrically with respect to the fan 160.

[0116] Air blown from the fan 160 may be discharged along the first discharge flow path 141 and the second discharge flow path 142.

[0117] The first discharge flow path 141 and the second discharge flow path 142 may be named as a discharge flow path.

[0118] The first discharge grille 201 may be coupled to the case 110. The first discharge grille 201 may be disposed to face one side of the indoor unit 100. The first discharge grille is disposed outside the first discharge flow path 141.

[0119] The first discharge grille 201 may have an inclination angle θ defined with respect to the front-rear direction. The first discharge grille 201 may be inclined to be away from the fan as it goes forward.

[0120] The indoor unit 100 comprises a first guide 210. The first guide 210 may be disposed on the first discharge grille 201. The first guide 210 may be coupled to the first discharge grille 201 and may be one body.

[0121] The first guide 210 extends outward of the indoor unit 100. A plurality of first guides 210 is disposed to be spaced apart in the front-rear direction. The plurality of first guides 210 are spaced apart in an extending direction of the first discharge grille 201.

[0122] The first guide 210 is inclined with respect to the horizontal direction. The first guide 210 extends to be inclined forward.

[0123] The second discharge grille 202 may be coupled to the case 110. The second discharge grille 202 may be disposed to face one side of the indoor unit. The second discharge grille 202 may be disposed outside the second discharge grille 202.

[0124] The second discharge grille 202 may have an inclination angle θ defined with respect to the front-rear direction. The second discharge grille 202 may be inclined to be away from the fan 160 as it goes forward.

[0125] The indoor unit 100 may comprise a second guide 220. The second guide 220 may be disposed on the second discharge grille 202. The second guide 220 may be coupled to the second discharge grille 202 and may form one body with the second discharge grille 202.

[0126] The second guide 220 may extend outward of the indoor unit 100. A plurality of second guides 220 may be disposed to be spaced apart in the front-rear direction. The plurality of second guides 220 may be spaced apart in an extending direction of the second discharge grille 202.

[0127] The second guide 220 may be inclined with respect to the horizontal direction. The second guide 220 may be inclined forward.

[0128] The first discharge grille 201 and the second discharge grille 202 may be positioned symmetrically with respect to the fan 160. Referring to FIG. 5, the first discharge grille 201 may be disposed at a left side and the second discharge grille 202 may be disposed at a right side. The first discharge grille 201 may be inclined leftward as it goes forward. The second discharge grille 202 may be inclined rightward as it goes forward.

[0129] The first guide 210 and the second guide 220 may be positioned symmetrically with respect to the fan 160. Referring to FIG. 5, the first guide 210 may be disposed at a left side and the second guide 220 may be disposed at a right side. The first guide 210 may be inclined leftward as it goes forward. The second guide 220 may be inclined rightward as it goes forward.

[0130] The front plate 129 may open the suction port 130 by moving forward. Air outside the indoor unit 100 may flow to the fan 160 through the suction port 130.

[0131] The front panel 120 may comprise a first wall 123. The first wall 123 may be disposed at a front of the first discharge grille 201. The first discharge grille 201 may be coupled to the first wall 123. The first wall 123 may be fixed to the case 110.

[0132] The front panel 120 may comprise a second wall 124. The second wall 124 may be disposed at a front of the second discharge grille 202. The second discharge grille may be coupled to the second wall 124. The second wall 124 may be fixed to the case 110.

[0133] The first wall 123 and the second wall 124 may be spaced apart in the horizontal direction. The suction port 130 may be formed between the first wall 123 and the second wall 124.

[0134] The front plate 129 may move forward and rearward with respect to the first wall 123 and the second wall 124. The front plate 129 may open the suction port 130 by moving forward from the first wall 123. The front plate 129

may open the suction port 130 by moving forward from the second wall 124.

[0135] The front plate 129 may comprise a front wall 127. The front wall 127 may form a front surface of the indoor unit 100. User may install a picture frame on the front wall 127. A picture may be made on a front surface of the fron wall 127.

[0136] The front wall 127 may open the suction port by moving forward from the main body 128 of the front panel 120. The suction port 130 may be formed between the front wall 127 and the main body 128 of the front panel 120.

[0137] The front plate 129 may comprise a first lateral wall 125. The first lateral wall 125 may extend rearward from the front wall 127. The first lateral wall 125 may be disposed at a front of the first wall 123. The first lateral wall 125 may be coupled to the first wall 123. The first lateral wall 125 may face the first wall 123 in the front-rear direction. The first lateral wall 125 may move in the front-rear direction with respect to the first wall 123.

[0138] The front plate 129 may comprise a second lateral wall 126. The second lateral wall 126 may extend rearward from the front wall 127. The second lateral wall 126 may be disposed at a front of the second wall 124. The second lateral wall 126 may be coupled to the second wall 124. The second lateral wall 126 may face the second wall 124 in the front-rear direction. The second lateral wall 126 may move in the front-rear direction with respect to the second wall 124.

[0139] The indoor unit 100 may comprise a first suction port 131. The first suction port 131 may be a part of the suction port 130. The first lateral wall 125 may be spaced forward from the first wall 123. The first suction port 131 may be formed between the first lateral wall 125 and the first wall 123.

[0140] The indoor unit 100 may comprise a second suction port 132. The second suction port 132 may be a part of the suction port 130. The second lateral wall 126 may be spaced forward from the second wall 124. The second suction port 132 may be formed between the second lateral wall 126 and the second wall 124.

[0141] Air outside the indoor unit 100 may flow to the fan 160 through the suction port 130. A portion of the air introduced into the indoor unit 100 may be introduced into the indoor unit 100 through the first suction port 131 or the second suction port 132.

[0142] The first suction port 131 may be positioned at a front of the first discharge grille 201.

[0143] The second suction port 132 may be positioned at a front of the second discharge grille 202.

[0144] In this case, when the discharge grille is designed to the conventional way, air discharged from the discharge grille can be re-introduced into the suction port.

[0145] Referring to FIG. 6, the indoor unit 100 is described hereinafter.

[0146] FIG. 6 shows an enlarged view of a left portion of a cross-sectional view of the indoor unit 100

[0147] The first discharge grille 201 comprises a plurality of first guides 210. The plurality of first guides 210 are spaced apart in the front-rear direction.

[0148] The first discharge grille 201 may comprise a first rear guide 211. The first rear guide 211 may be one of the plurality of first guides 210.

[0149] The first rear guide 211 may extend outward of the case 110. The first rear guide 211 may be inclined with respect to the front-rear direction.

[0150] The case 110 may comprise a first body 118. The first body 118 may be disposed at a rear side of the case 110. The first body 118 may be disposed at a rear of the discharge flow path 141. The first discharge grille 201 may be coupled to the first body 118.

[0151] The first rear guide 211 may be aligned with the first body 118 in the horizontal direction. The first rear guide 211 may form an inclination angle with respect to a front surface of the firs body 118. The first rear guide 211 may extend to be inclined forward with respect to the front surface of the first body 118. The first rear guide 211 and the front surface of the first body 118 may form a continuous surface.

[0152] The first discharge grille 201 may comprise a first rear end portion 213. The first rear end portion 213 may extend rearward from the first rear guide 211. The first rear end portion 213 may be disposed at one side of the first body 118. The first rear end portion 213 may be coupled to the first body 118. The first rear end portion 213 may extend to be bent as it goes forward.

[0153] The first discharge grille 201 may comprise a first rear protruding portion 215. The first rear protruding portion 215 may protrude outward of the indoor unit 100 from the first rear end portion 213. The first rear protruding portion 215 may be spaced rearward from the first rear guide 211. The first rear protruding portion 215 may be positioned at a rear of the discharge flow path 141. The first rear protruding portion 215 may be adjacent more to the wall W than the discharge flow path 141. In this case, the first rear protruding portion 215 may prevent the air discharged through the discharge flow path 141 from directing toward the wall W.

[0154] The first discharge grille 201 may comprise a first front guide 212. The first front guide 212 may be one of the plurality of first guides 210.

[0155] The first front guide 212 may extend toward an outside of the case 110. The first front guide 212 may be inclined with respect to the front-rear direction.

[0156] The front panel 120 may comprise a second body 128. The second body 128 may be a part of the front panel 120. The second body 128 may be disposed at a front of the discharge flow path 141. The first discharge grille 201 may be coupled to the second body 128. The discharge flow path 141 may be formed between the first body 118 and the second body 128.

[0157] The first front guide 212 may be aligned with the second body 128 in the horizontal direction. The first front guide 212 may form an inclination angle with respect to a rear surface of the second body 128. The first front guide 212 may extend to be inclined forward with respect to the

rear surface of the second body 128. The first front guide 212 and the rear surface of the second body 128 may form a continuous surface.

[0158] The first discharge grille 201 may comprise a first front end portion 214. The first front end portion 214 may extend forward from the first front guide 211. The first front end portion 214 may be disposed at one side of the second body 128. The first front end portion 214 may be coupled to the second body 128. The first front end portion 214 may extend to be bent as it goes forward.

[0159] The first discharge grille 201 may comprise a first front protruding portion 216. The first front protruding portion 216 may protrude toward the outside of the indoor unit 100 from the first front end portion 214. The first front protruding portion 216 may be spaced forward from the first front guide 212. The first front protruding portion 216 may be positioned at a front of the discharge flow path 141. The first front protruding portion 216 may be adjacent further to the suction port 130 (Refer to FIG. 5) than the discharge flow path 141. In this case, the first front protruding portion 216 may prevent the air discharged through the discharge flow path 141 from flowing toward the suction port 130.

[0160] The first wall 123 may be positioned at a front of the first front guide 212 and may be positioned at a front of the first protruding portion 216. The first front guide 212 and the first front protruding portion 216 may be positioned at a rear of the first suction port 131(Refer to FIG. 5).

[0161] The second body 128 may form an inner space. The control box 115 may be disposed inside the second body 128.

[0162] The second body 128 may comprise a first body wall 128a. The first body wall 128a may extend in the horizontal direction. The first body wall 128a may face the discharge flow path 141.

[0163] The second body 128 may comprise a second body wall 128b. The second body wall 128b may be bent forward from the first body wall 128a. the second body wall 128b may extend to be inclined toward the first front guide 212. The second body wall 128b may face the discharge flow path 141.

[0164] The first front guide 212 and the second body wall 128b may be aligned. The first front guide 212 and the second body wall 128b may be positioned on a same line C1. The first front guide 212 and the second body wall 128b may form a continuous surface. Inclination angles of the first front guide 212 and the second body wall 128b may be identical.

[0165] The second body 128 may comprise a third body wall 128c. The third body wall 128c may extend to be bent forward from the second body wall 128b. The third body wall 128c may be inserted into a front side of the first front guide 212. The third body wall 128c may be positioned at a front of the first front guide 212. The third body wall 128c may be coupled to the first front end portion 214. The first front guide 212 may be hooked to the third body wall 128c.

[0166] Referring to FIG. 7, the indoor unit 100 is described hereinafter.

[0167] FIG. 7 shows an enlarged view of a right portion of the cross-sectional view of the indoor unit 100.

[0168] The second discharge grille 202 may comprise a plurality of second guides 220. The plurality of second guides 220 may be spaced apart in the front-rear direction.

[0169] The second discharge grille 202 may comprise a second rear guide 221. The second rear guide 221 may be one of the plurality of second guides 220.

[0170] The second rear guide 221 may extend outward of the case 110. The second rear guide 221 may be inclined with respect to the front-rear direction.

[0171] The second discharge grille 202 may be coupled to the first body 118.

[0172] The second rear guide 221 may be aligned with the first body 118 in the horizontal direction. The second rear guide 221 may form an inclination angle with respect to the front surface of the firs body 118. The second rear guide 221 may extend to be inclined forward with respect to the front surface of the first body 118. The second rear guide 221 and the front surface of the first body 118 may form a continuous surface.

[0173] The second discharge grille 202 may comprise a second rear end portion 223. The second rear end portion 223 may extend rearward from the second rear guide 221. The second rear end portion 223 may be disposed at one side of the first body 118. The second rear end portion 223 may be coupled to the first body 118. The second rear end portion 223 may extend to be bent as it goes forward.

[0174] The second discharge grille 202 may comprise a second rear protruding portion 225. The second rear protruding portion 225 may protrude outward of the indoor unit 100 from the second rear end portion 223. The second rear protruding portion 225 may be spaced rearward from the second rear guide 221. The second rear protruding portion 225 may be positioned at a rear of the discharge flow path 142. The second rear protruding portion 225 may be adjacent more to the wall W than the discharge flow path 142. In this case, the second protruding portion 225 may prevent the air discharged through the discharge flow path 142 from directing toward the wall W.

[0175] The second discharge grille 202 may comprise a second front guide 222. The second front guide 222 may be one of the plurality of second guides 220.

[0176] The second front guide 222 may extend toward an outside of the case 110. The second front guide 222 may be inclined with respect to the front-rear direction.

[0177] The second discharge grille 202 may be coupled to the second body 128. The discharge flow path 142 may be formed between the first body 118 and the second body 128.

[0178] The second front guide 222 may be aligned with the second body 128 in the horizontal direction. The second front guide 222 may form an inclination angle

with respect to the rear surface of the second body 128. The second front guide 222 may extend to be inclined forward with respect to the rear surface of the second body 128. The second front guide 222 and the rear surface of the second body 128 may form a continuous surface.

[0179] The second discharge grille 202 may comprise a second front end portion 224. The second front end portion 224 may extend forward from the second front guide 221. The second front end portion 224 may be disposed at one side of the second body 128. The second front end portion 224 may be coupled to the second body 128. The second front end portion 224 may extend to be bent as it goes forward.

[0180] The second discharge grille 202 may comprise a second front protruding portion 226. The second front protruding portion 226 may protrude toward the outside of the indoor unit 100 from the second front end portion 224. The second front protruding portion 226 may be spaced forward from the second front guide 222. The second front protruding portion 226 may be positioned at a front of the discharge flow path 142. The second front protruding portion 226 may be adjacent further to the suction port 130 (Refer to FIG. 5) than the discharge flow path 142. In this case, the second front protruding portion 226 may prevent the air discharged through the discharge flow path 142 from flowing toward the suction port 130.

[0181] The second wall 124 may be positioned at a front of the second front guide 222 and may be positioned at a front of the second protruding portion 226. The second guide 222 and the second front protruding portion 226 may be positioned at a rear of the second suction port 132 (Refer to FIG. 5).

[0182] The first body wall 128a may face the discharge flow path 142.

[0183] The second body wall 128b may extend to be inclined toward the second front guide 222. The second body wall 128b may face the discharge flow path 141.

[0184] The second front guide 222 and the second body wall 128b may be aligned. The second front guide 222 and the second body wall 128b may be positioned on a same line C2. The second front guide 222 and the second body wall 128b may form a continuous surface. Inclination angles of the second front guide 222 and the second body wall 128b may be i denti cal

[0185] The third body wall 128c may be inserted into a front side of the second front guide 222. The third body wall 128c may be positioned at a front of the second front guide 222. The third body wall 128c may be coupled to the second front end portion 224. The second front guide 222 may be hooked to the third body wall 128c.

[0186] Referring to FIG. 8, the indoor unit 100 is described.

[0187] FIG. 8 shows an enlarged view of a part of FIG. 6.

[0188] Hereinafter, the first discharge grille 201 and the first guide 210 are described as one example, and descriptions pertaining to FIG. 8 can be applied equally to the second discharge grille 202 and the second guide 220.

[0189] The first discharge grille 201 comprises an outer surface 201a. The outer surface 201a may face the indoor space.

[0190] The first guide 210 protrudes outwardly further than the outer surface 201a of the first discharge grille 201.

[0191] The first guide 210 comprises a guide body 210a. The guide body 210a may extend toward an outside of the indoor unit 100.

[0192] The first guide 210 comprises a first guide end portion 210b. The first guide end portion 210b and the guide body 210a may be formed of one body. The first guide end portion 210b is positioned outside the outer surface 201a of the first discharge grille 201.

[0193] The first guide 210 may comprise a second guide end portion 210c. The second guide end portion 210c and the guide body 210a may be formed of one body. The second guide end portion 210c may be positioned inside the outer surface 201a of the first discharge grille 201.

[0194] With respect to the outer surface 201a of the first discharge grille 201, the first guide end portion 210b is positioned outside the outer surface 201a and the second guide end portion 210c may be positioned inside the outer surface 201a.

[0195] The first guide 210 may be inclined rearward as it goes from the first guide end portion 210b to the second guide end portion 210c.

[0196] The first front guide 212 may be seated on the second body 128. The first front guide 212 may be seated on the third body wall 128c of the second body 128.

[0197] The third body wall 128c may comprise a first extending portion 128c1. The first extending portion 128c1 may extend to be bent forward from the second body wall 128b.

[0198] The third body wall 128c may comprise a second extending portion 128c2. The second extending portion 128c2 may extend forward from the first extending portion 128c1.

[0199] The third body wall 128c may have a concave shape toward an inside of the indoor unit 100. The third body wall 128c may comprise a groove 128c3 that is concave toward the inside of the indoor unit 100. The first front guide 212 may be seated on the groove 128c3.

[0200] The second guide end portion 210c of the first front guide 212 may be aligned with the second body wall 128b. The second guide end portion 210c of the first front guide 212 may face to the second body wall 128b.

[0201] The first front guide 212 and the guide body 210a may be disposed at the groove 128c3. The first front guide 212 may be supported by the third body wall 128c.

[0202] The first wall 123 may comprise a wall surface 123a. The wall surface 123a may be an outer surface of the front panel 120.

[0203] The wall surface 123a of the first wall 123 may

be positioned outside the first guide 210. The wall surface 123a of the first wall 123 may be positioned outside the first front guide 212 and the first front protruding portion 216.

[0204] The wall surface 123a of the first wall 123 may be spaced further apart from the discharge flow path 141 than the first guide 210. The wall surface 123a of the first wall 123 may be spaced further apart from the discharge flow path141 than the first guide end portion 210a

[0205] Through a structure of the wall surface 123a of the first wall 123, described above, it is possible to prevent air passing through the discharge flow path 141 and the discharge grille 201 from being reintroduced to the suction port 130 (refer to FIG. 5).

[0206] A distance L1 between the first guide end portion 210b and the outer surface 201a may be shorter than a distance L2 between the second guide end portion 210c and the outer surface 201a. Therefore, it is possible to minimize formation of vortex at an end portion of the first guide 210.

[0207] A length L3 of the first guide 210 may range from 12mm to 15mm. If a length of the first guide 210 is too large, manufacturing costs and flow resistance might increase. If the length of the first guide 210 is too small, a possibility of the discharged air being reintroducec into the suction port 130. Therefore, the length L3 of the first guide 210 may range from 12mm to 15mm to solve the above problem.

[0208] One surface of the first guide end portion 210b may be flat. One surface of the second guide end portion 210c may be curved.

[0209] A rear side of the second guide end portion 210c may have a first radius of curvature. A front side of the second guide end portion 210c may have a second radius of curvature. The first radius of curvature R1 may be smaller than the second radius of curvature R2.

[0210] The first guide 210 may have an inclination angle A with respect to a left-right direction. The first guide 210 may have the inclination angle A with respect to a direction perpendicular to the front-rear direction. The first guide 210 may have the inclination angle A with respect to a direction that the discharge flow path 141 extends.

[0211] The inclination angle A may range from 22 to 26 degrees. If the inclination angle A is too large, a difference of angle between the first guide 210 and a direction of air flow becomes large, leading to a higher air resistance. If the inclination angle A is too small, a possibility of the discharged air being reintroducec into the suction port 130. Therefore, to solve the above problem, the inclination angle A of the first guide 210 may have a range from 22 to 26 degrees.

[0212] Referring to FIG. 9, an effect of the air conditioner of the present invention is described.

[0213] FIG. 9 shows a contour of the air flow discharged from the indoor unit 100 of the present invention.

[0214] The indoor unit 100 of the present invention can prevent air discharged outward from the indoor unit 100 from being reintroduced into the suction port 130 by the discharge grilles 201, 202 described with reference to FIGS. 1 to 8.

[0215] The air discharged outward of the indoor unit 100 may be guided by the discharge grilles 201, 202. An angle of air flow discharged outward of the indoor unit may about 37 degrees.

[0216] Referring to FIG. 10, a conventional indoor unit 100' is described.

(a) of FIG. 10 shows a structure of the conventional indoor unit 100'. (b) of FIG. 10 shows a contour of a discharged air flow in case of the conventional indoor unit 100'.

[0217] In case of the conventional indoor unit 100', air blown toward a discharge flow path 141' blown by a fan 160' is guided by a guide 201'. In this case, air discharged to an outside of the indoor unit 100' through the discharge flow path 141' is reintroduced into a suction port 130' like an arrow F. In this case, air blown by the fan 160' toward an outside of the indoor unit' can not diffuse to the indoor space and circulate in the indoor unit 100'.

[0218] Desirable embodiments of the invention are described and illustrated above, but the invention is not limited to the specific embodiments disclosed above and can be variously modified within the scope of the claims which define the invention

Claims

1. An air conditioner comprising:

a case (110) having an inner space;
a fan (160) disposed inside the case (110);
a frame (128) coupled to a front portion of the case (110);
a front plate (129) coupled to the frame (128) to be movable in a front-rear direction, wherein a suction port (130) is formed between the front plate (129) and the frame (128);
a discharge flow path (141, 142) that air blown by the fan (160) flows and that is spaced rearward from the suction port (130);
a discharge grille (201, 202) disposed downstream of the discharge flow path (141, 142) and comprising a guide (210, 220) inclined forward as the guide goes away from the discharge flow path (141, 142),
wherein the guide (210, 220) is configured in plural and the plurality of guides are spaced apart from each other in the front-rear direction, and
wherein the guide (210, 220) comprises:

a guide body (210a, 220a) positioned inward further than an outer surface of the discharge grille (201, 202); and
a guide end portion (210b, 220b) positioned

outward further than the outer surface of the discharge grille (201, 202).

2. The air conditioner of claim 1, wherein the discharge grille (201, 202) is inclined with respect to the front-rear direction.

3. The air conditioner according to any one of the preceding claims, wherein a length of the guide body (210a, 220a) is longer than a length of the guide end portion (210b, 220b).

4. The air conditioner according to any one of the preceding claims, wherein the guide (210, 220) is inclined along an extending direction of the discharge grille (201, 202), and wherein an inclined angle of the guide (210, 220) ranges from 22 to 26 degrees.

5. The air conditioner according to any one of the preceding claims, wherein a length of the guide (210, 220) ranges from 12mm to 15mm.

6. The air conditioner according to any one of the preceding claims, wherein the discharge grille (201, 202) comprises:

a rear end portion (213, 223) positioned at a rear of the discharge flow path (141, 142); and
a rear protruding portion (215, 225) protruding outward of the case (110) from the rear end portion (213, 223) and positioned at a rear of the discharge flow path (141, 142).

7. The air conditioner according to any one of the preceding claims, wherein the discharge grille (201, 202) comprises:

a front end portion (214, 224) positioned at a front of the discharge flow path (141, 142); and
a front protruding portion (216, 226) protruding outward of the case (110) from the front end portion (214, 224) and positioned at a rear of the suction port (130).

8. The air conditioner according to any one of the preceding claims, wherein the discharge grille (201, 202) comprises a front protruding portion (216, 226) positioned at a rear of a lateral wall of the frame (128).

9. The air conditioner according to any one of the preceding claims, wherein the guide (210, 220) comprises:

a rear guide (211, 221) connected to the case (110) and positioned at a rear of the discharge flow path (141, 142),
wherein the case (110) comprises:

a first body (128a) forming a boundary of the discharge flow path (141, 142) and arranged along extending directions of the rear guide (211, 221) and the discharge flow path (141, 142).

10. The air conditioner according to any one of the preceding claims, wherein the guide (210, 220) comprises:
a front guide (212, 222) connected to the frame (128) and positioned at a front of the discharge flow path,
wherein the frame (128) comprises:
a second body (128) forming a boundary of the discharge flow path and arranged along extending directions of the front guide and the discharge flow path.

11. The air conditioner according to any one of the preceding claims, wherein the frame (128) comprises a second body forming a front boundary of the discharge flow path, and
wherein the second body comprises:

a first body wall (128a) facing the discharge flow path;
a second body wall (128b) bent forward from the first body wall; and
a third body wall (128c) extending to be bent forward from the second body wall.

12. The air conditioner according to any one of the preceding claims, wherein the frame (128) comprises:
a second body forming a boundary of the discharge flow path and having a groove that the guide is seated.

13. The air conditioner according to any one of the preceding claims,
wherein the discharge grille (201, 202) comprises:

a first discharge grille (201) spaced apart from one side of the fan (160); and
a second discharge grille (202) spaced apart from the other side of the fan (160), and
wherein the suction port (130) comprises:

a first suction port (131) spaced forward from the first discharge grille (201); and
a second suction port (132) spaced forward from the second discharge grille (202), and
wherein the frame (128) comprises:

a first wall (125) disposed between the first discharge grille and the first suction port (131); and
a second wall (126) disposed between the second discharge grille and the second suction port (132),

wherein outer surfaces of the first wall (125) and the second wall (126) are positioned outside an outer end portion of the guide (210, 220).

Patentansprüche

1. Klimaanlage, die Folgendes umfasst:

ein Gehäuse (110) mit einem Innenraum;
einen Ventilator (160), der im Inneren des Gehäuses (110) angeordnet ist;
einen Rahmen (128), der mit einem vorderen Abschnitt des Gehäuses (110) gekoppelt ist;
eine Stirnplatte (129), die mit dem Rahmen (128) gekoppelt ist, derart, dass sie in einer Vorne/Hinten-Richtung beweglich ist, wobei zwischen der Stirnplatte (129) und dem Rahmen (128) eine Ansaugöffnung (130) gebildet ist;
einen Auslassströmungsweg (141, 142), durch den Luft strömt, die durch den Ventilator (160) geblasen wird, und der von der Ansaugöffnung (130) nach hinten beabstandet ist;
ein Auslassgitter (201, 202), das stromabwärts des Auslassströmungswegs (141, 142) angeordnet ist und eine Führung (210, 220) umfasst, die nach vorne geneigt ist, während sich die Führung vom Auslassströmungsweg (141, 142) weg erstreckt,
wobei die Führung (210, 220) in Mehrzahl konfiguriert ist und die mehreren Führungen in der Vorne/Hinten-Richtung voneinander beabstandet sind, und
wobei die Führung (210, 220) Folgendes umfasst:

einen Führungskörper (210a, 220a), der weiter als eine Außenfläche des Auslassgitters (201, 202) nach innen angeordnet ist; und
einen Führungsendabschnitt (210b, 220b), der weiter als die Außenfläche des Auslassgitters (201, 202) nach außen angeordnet ist.

2. Klimaanlage nach Anspruch 1, wobei das Auslassgitter (201, 202) in Bezug auf die Vorne/Hinten-Richtung geneigt ist.

3. Klimaanlage nach einem der vorhergehenden Ansprüche, wobei eine Länge des Führungskörpers (210a, 220a) länger als eine Länge des Führungsendabschnitts (210b, 220b) ist.

4. Klimaanlage nach einem der vorhergehenden Ansprüche, wobei die Führung (210, 220) entlang einer Erstreckungsrichtung des Auslassgitters (201, 202) geneigt ist, und
wobei ein Neigungswinkel der Führung (210, 220) im Bereich von 22° bis 26° liegt.

5. Klimaanlage nach einem der vorhergehenden Ansprüche, wobei eine Länge der Führung (210, 220) im Bereich von 12 mm bis 15 mm liegt.

6. Klimaanlage nach einem der vorhergehenden Ansprüche, wobei das Auslassgitter (201, 220) Folgendes umfasst:

einen hinteren Endabschnitt (213, 223), der an einer Rückseite des Auslassströmungswegs (141, 142) angeordnet ist; und
einen hinteren vorstehenden Abschnitt (215, 225), der vom hinteren Endabschnitt (213, 223) aus dem Gehäuse (110) vorsteht und an einer Rückseite des Auslassströmungswegs (141, 142) angeordnet ist.

7. Klimaanlage nach einem der vorhergehenden Ansprüche, wobei das Auslassgitter (201, 202) Folgendes umfasst:

einen vorderen Endabschnitt (214, 224), der an einer Vorderseite des Auslassströmungswegs (141, 142) angeordnet ist; und
einen vorderen vorstehenden Abschnitt (216, 226), der vom vorderen Endabschnitt (214, 224) aus dem Gehäuse (110) vorsteht und an einer Rückseite der Ansaugöffnung (130) angeordnet ist.

8. Klimaanlage nach einem der vorhergehenden Ansprüche, wobei das Auslassgitter (201, 202) einen vorderen vorstehenden Abschnitt (216, 226) umfasst, der an einer Rückseite einer Seitenwand des Rahmens (128) angeordnet ist.

9. Klimaanlage nach einem der vorhergehenden Ansprüche, wobei die Führung (210, 220) Folgendes umfasst:

eine hintere Führung (211, 221), die mit dem Gehäuse (110) verbunden ist und an einer Rückseite des Auslassströmungswegs (141, 142) angeordnet ist,
wobei das Gehäuse (110) Folgendes umfasst:
einen ersten Körper (128a), der eine Begrenzung des Auslassströmungswegs (141, 142) bildet und entlang der Erstreckungsrichtungen der hinteren Führung (211, 221) und des Auslassströmungswegs (141, 142) angeordnet ist.

10. Klimaanlage nach einem der vorhergehenden Ansprüche, wobei die Führung (210, 220) Folgendes umfasst:

eine vordere Führung (212, 222), die mit dem Rahmen (128) verbunden ist und an einer Vorderseite des Auslassströmungswegs angeordnet ist, wobei der Rahmen (128) Folgendes umfasst:
einen zweiten Körper (128), der eine Begrenzung des Auslassströmungswegs bildet und entlang der Erstreckungsrichtungen der vorderen Führung und des Auslassströmungswegs angeordnet ist.

11. Klimaanlage nach einem der vorhergehenden Ansprüche, wobei der Rahmen (128) einen zweiten Körper umfasst, der eine vordere Begrenzung des Auslassströmungswegs bildet, und
wobei der zweite Körper Folgendes umfasst:

eine erste Körperwand (128a), die dem Auslassströmungsweg zugewandt ist;
eine zweite Körperwand (128b), die von der ersten Körperwand nach vorne gebogen ist; und
eine dritte Körperwand (128c), die sich derart erstreckt, dass sie von der zweiten Körperwand nach vorne gebogen ist.

12. Klimaanlage nach einem der vorhergehenden Ansprüche, wobei der Rahmen (128) Folgendes umfasst:
einen zweiten Körper, der eine Begrenzung des Auslassströmungswegs bildet und eine Nut aufweist, in der die Führung aufgenommen ist.

13. Klimaanlage nach einem der vorhergehenden Ansprüche,
wobei das Auslassgitter (201, 202) Folgendes umfasst:

ein erstes Auslassgitter (201), das von einer Seite des Ventilators (160) beabstandet ist; und
ein zweites Auslassgitter (202), das von der anderen Seite des Ventilators (160) beabstandet ist,
wobei die Ansaugöffnung (130) Folgendes umfasst:

eine erste Ansaugöffnung (131), die vom ersten Auslassgitter (201) nach vorne beabstandet ist; und
eine zweite Ansaugöffnung (132), die vom zweiten Auslassgitter (202) nach vorne beabstandet ist, und
wobei der Rahmen (128) Folgendes umfasst:

eine erste Wand (125), die zwischen dem ersten Auslassgitter und der ersten Ansaugöffnung (131) angeordnet ist; und
eine zweite Wand (126), die zwischen dem zweiten Auslassgitter und der zweiten Ansaugöffnung (132) angeordnet ist,
wobei die Außenflächen der ersten Wand (125) und der zweiten Wand (126) außerhalb eines äußeren Endabschnitts der Führung (210, 220) angeordnet sind.

Revendications

1. Climatiseur comportant :

un boîtier (110) ayant un espace intérieur ;
un ventilateur (160) disposé à l'intérieur du boîtier (110) ;
un châssis (128) couplé à une partie avant du boîtier (110) ;
une plaque avant (129) couplée au châssis (128) de manière à être mobile dans une direction avant-arrière, dans lequel un orifice d'aspiration (130) est formé entre la plaque avant (129) et le châssis (128) ;
un trajet d'écoulement pour l'évacuation (141, 142) dans lequel de l'air soufflé par le ventilateur (160) s'écoule et qui est espacé vers l'arrière par rapport à l'orifice d'aspiration (130) ;
une grille d'évacuation (201, 202) disposée en aval du trajet d'écoulement pour l'évacuation (141, 142) et comportant un guide (210, 220) incliné vers l'avant lorsque le guide s'éloigne du trajet d'écoulement pour l'évacuation (141, 142),
dans lequel le guide (210, 220) est configuré en pluralité et les guides de la pluralité de guides sont espacés les uns des autres dans la direction avant-arrière, et
dans lequel le guide (210, 220) comporte :

un corps de guide (210a, 220a) positionné vers l'intérieur plus loin qu'une surface extérieure de la grille d'évacuation (201, 202) ; et
une partie d'extrémité de guide (210b, 220b) positionnée vers l'extérieur plus loin que la surface extérieure de la grille d'évacuation (201, 202).

2. Climatiseur selon la revendication 1, dans lequel la grille d'évacuation (201, 202) est inclinée par rapport à la direction avant-arrière.

3. Climatiseur selon l'une quelconque des revendications précédentes, dans lequel une longueur du corps de guide (210a, 220a) est plus longue qu'une longueur de la partie d'extrémité de guide (210b, 220b).

4. Climatiseur selon l'une quelconque des revendications précédentes, dans lequel le guide (210, 220) est incliné le long d'une direction d'extension de la grille d'évacuation (201, 202), et
dans lequel un angle incliné du guide (210, 220) varie de 22 à 26 degrés.

5. Climatiseur selon l'une quelconque des revendications précédentes, dans lequel une longueur du guide (210, 220) varie de 12 mm à 15 mm.

6. Climatiseur selon l'une quelconque des revendications précédentes, dans lequel la grille d'évacuation (201, 202) comporte :

une partie d'extrémité arrière (213, 223) positionnée sur un arrière du trajet d'écoulement pour l'évacuation (141, 142) ; et
une partie saillante arrière (215, 225) faisant saillie vers l'extérieur du boîtier (110) à partir de la partie d'extrémité arrière (213, 223) et positionnée sur un arrière du trajet d'écoulement pour l'évacuation (141, 142).

7. Climatiseur selon l'une quelconque des revendications précédentes, dans lequel la grille d'évacuation (201, 202) comporte :

une partie d'extrémité avant (214, 224) positionnée sur un avant du trajet d'écoulement pour l'évacuation (141, 142) ; et
une partie saillante avant (216, 226) faisant saillie vers l'extérieur du boîtier (110) à partir de la partie d'extrémité avant (214, 224) et positionnée sur un arrière de l'orifice d'aspiration (130).

8. Climatiseur selon l'une quelconque des revendications précédentes, dans lequel la grille d'évacuation (201, 202) comporte une partie saillante avant (216, 226) positionnée sur un arrière d'une paroi latérale du châssis (128).

9. Climatiseur selon l'une quelconque des revendications précédentes, dans lequel le guide (210, 220) comporte :

un guide arrière (211, 221) relié au boîtier (110) et positionné sur un arrière du trajet d'écoulement pour l'évacuation (141, 142),
dans lequel le boîtier (110) comporte :
un premier corps (128a) formant une frontière du trajet d'écoulement pour l'évacuation (141, 142) et agencé le long de directions d'extension du guide arrière (211, 221) et du trajet d'écoulement pour l'évacuation (141, 142).

10. Climatiseur selon l'une quelconque des revendications précédentes, dans lequel le guide (210, 220) comporte :
un guide avant (212, 222) relié au châssis (128) et positionné sur un avant du trajet d'écoulement pour l'évacuation, dans lequel le châssis (128) comporte :
un second corps (128) formant une frontière du trajet d'écoulement pour l'évacuation et agencé le long de directions d'extension du guide avant et du trajet d'écoulement pour l'évacuation.

11. Climatiseur selon l'une quelconque des revendications précédentes, dans lequel le châssis (128) comporte un second corps formant une frontière avant du trajet d'écoulement pour l'évacuation, et
dans lequel le second corps comporte :

une première paroi de corps (128a) dirigée vers le trajet d'écoulement pour l'évacuation ;
une deuxième paroi de corps (128b) pliée vers l'avant à partir de la première paroi de corps ; et
une troisième paroi de corps (128c) s'étendant de manière à être pliée vers l'avant à partir de la deuxième paroi de corps.

12. Climatiseur selon l'une quelconque des revendications précédentes, dans lequel le châssis (128) comporte :
un second corps formant une frontière du trajet d'écoulement pour l'évacuation et ayant une rainure dans laquelle le guide est en appui.

13. Climatiseur selon l'une quelconque des revendications précédentes,
dans lequel la grille d'évacuation (201, 202) comporte :

une première grille d'évacuation (201) espacée d'un côté du ventilateur (160) ; et
une seconde grille d'évacuation (202) espacée de l'autre côté du ventilateur (160), et
dans lequel l'orifice d'aspiration (130) comporte :

un premier orifice d'aspiration (131) espacé vers l'avant par rapport à la première grille d'évacuation (201) ; et
un second orifice d'aspiration (132) espacé vers l'avant par rapport à la seconde grille d'évacuation (202), et
dans lequel le châssis (128) comporte :

une première paroi (125) disposée entre la première grille d'évacuation et le premier orifice d'aspiration (131) ; et
une seconde paroi (126) disposée entre la seconde grille d'évacuation et le second orifice d'aspiration (132),
dans lequel des surfaces extérieures de la première paroi (125) et de la se-

conde paroi (126) sont positionnées à l'extérieur d'une partie d'extrémité extérieure du guide (210, 220).

FIG. 1

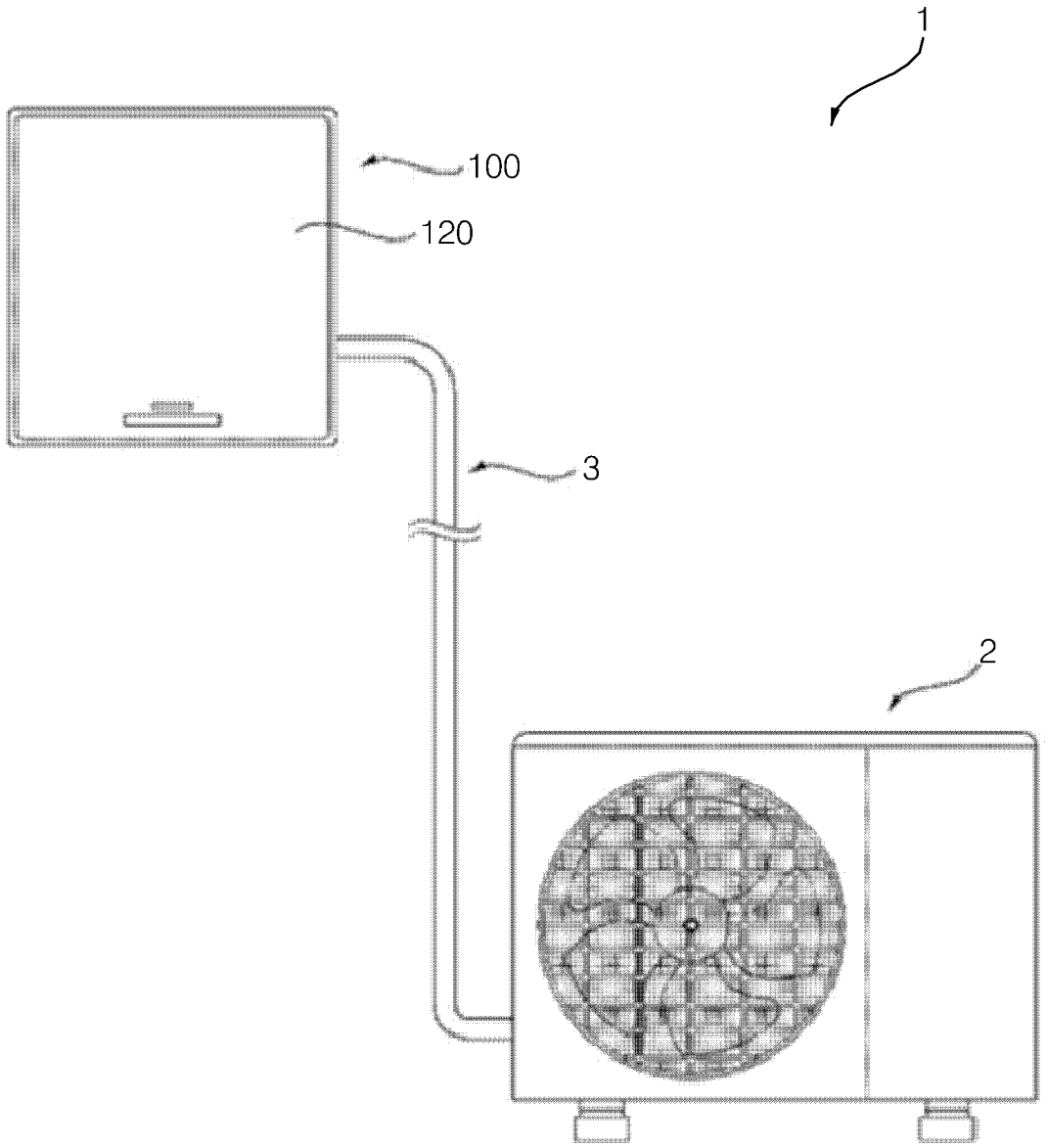


FIG. 2

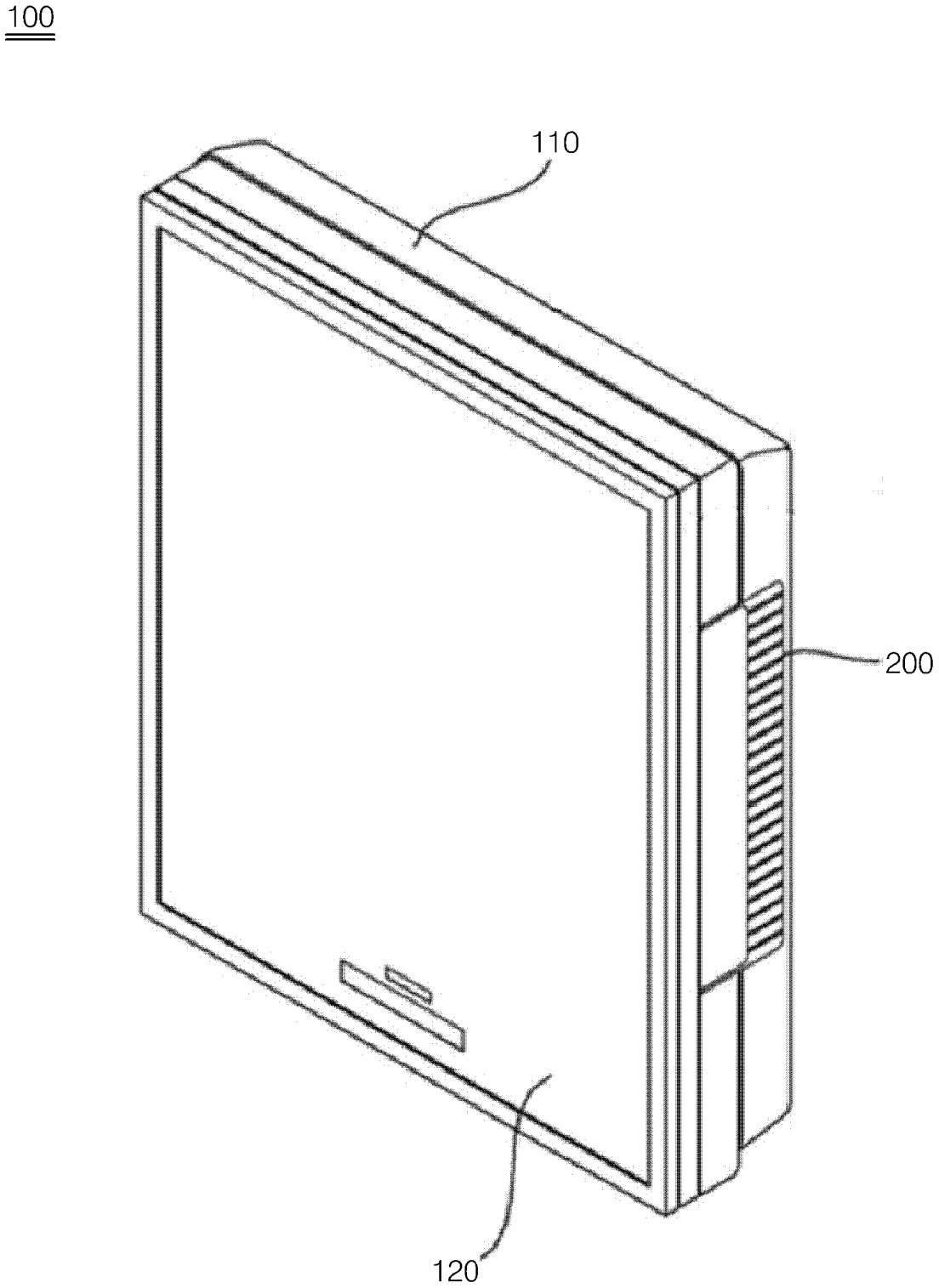


FIG. 3

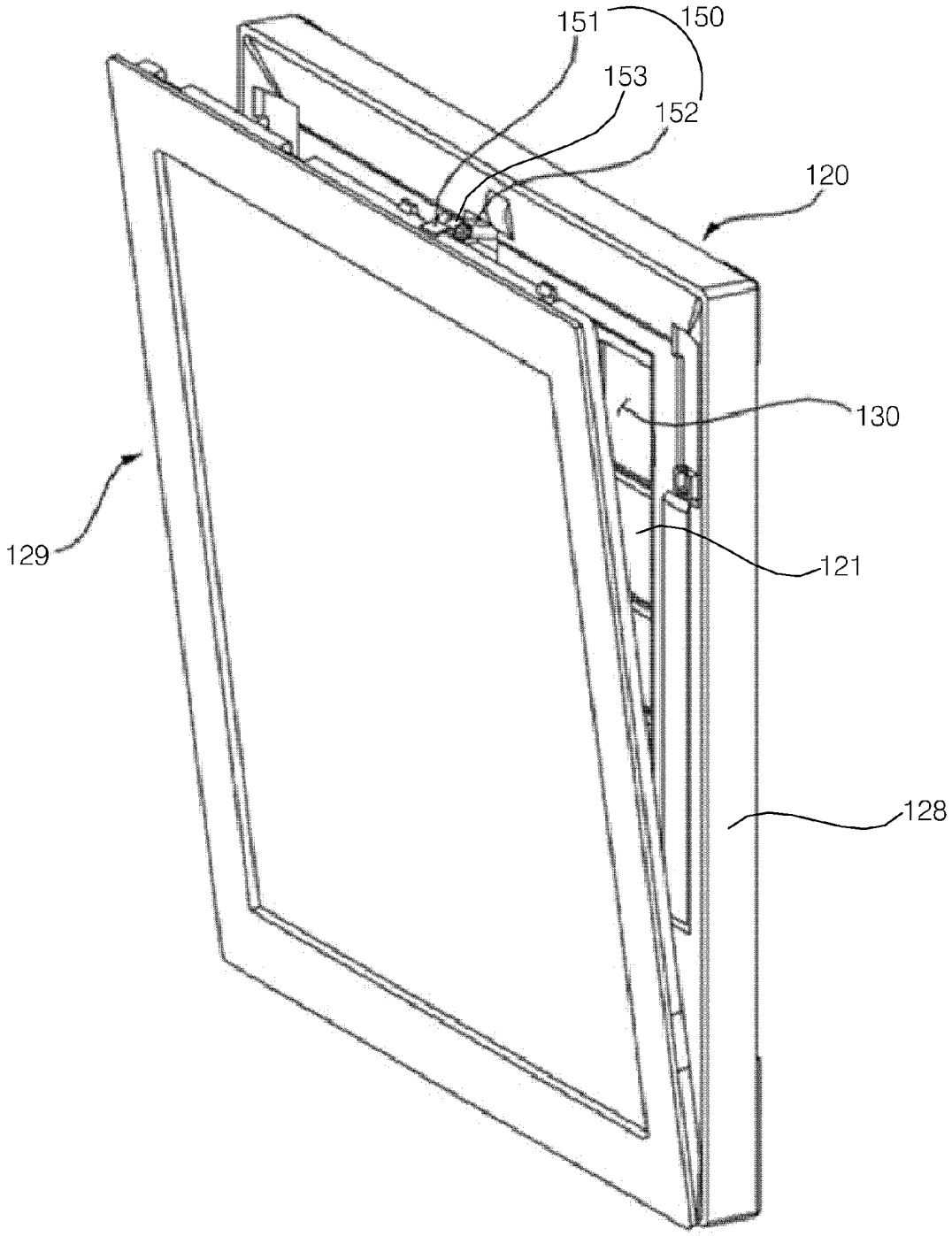


FIG. 4

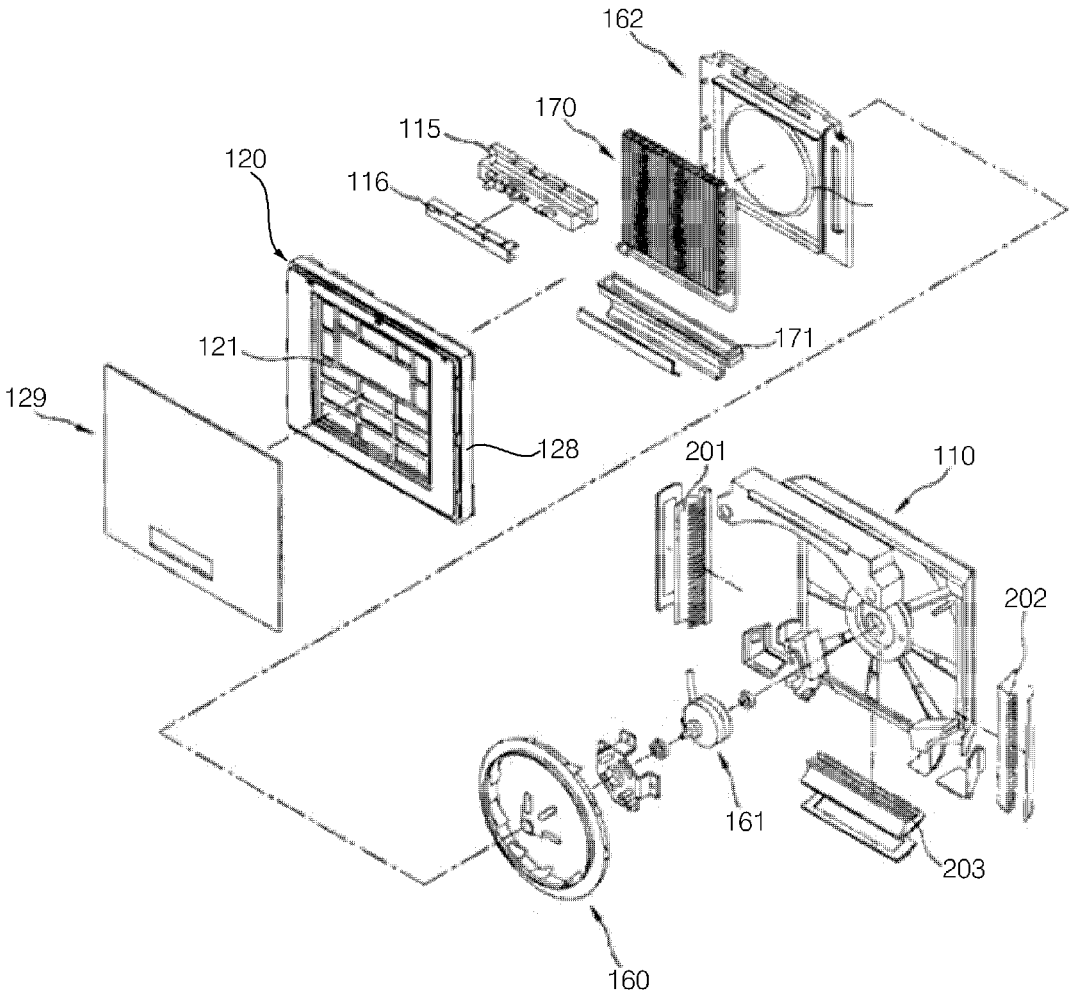


FIG. 5

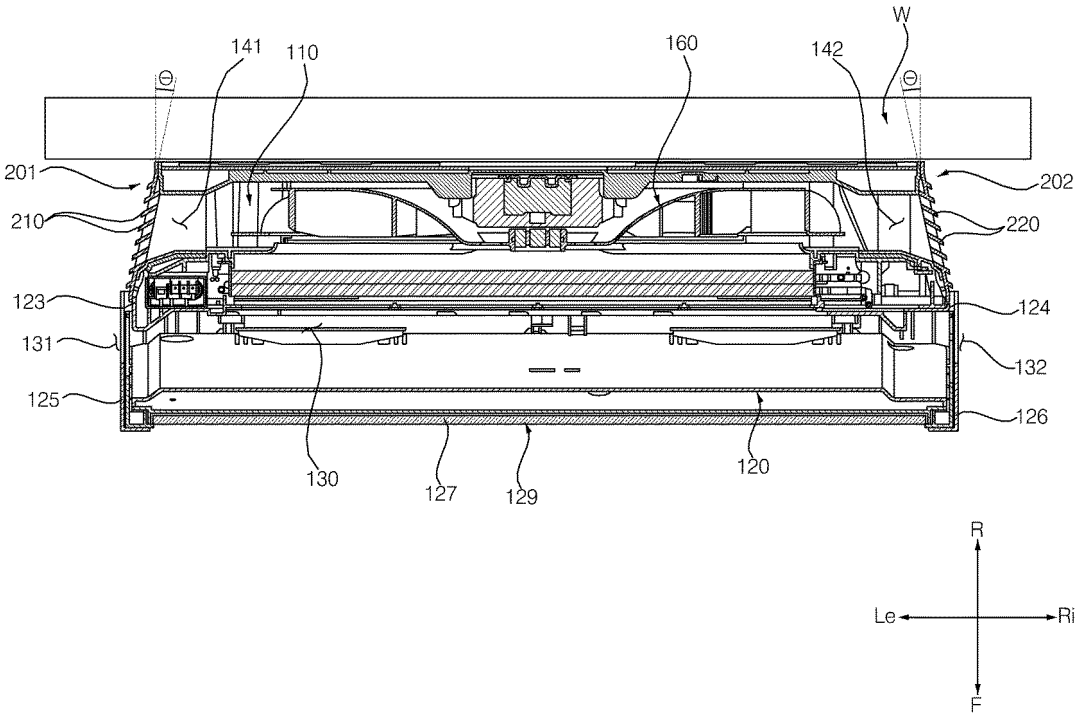

W
141
110
160
142
Θ
Θ
201
202
210
220
123
124
131
132
125
126
130
127
129
120
R
Le
Ri
F

FIG. 6

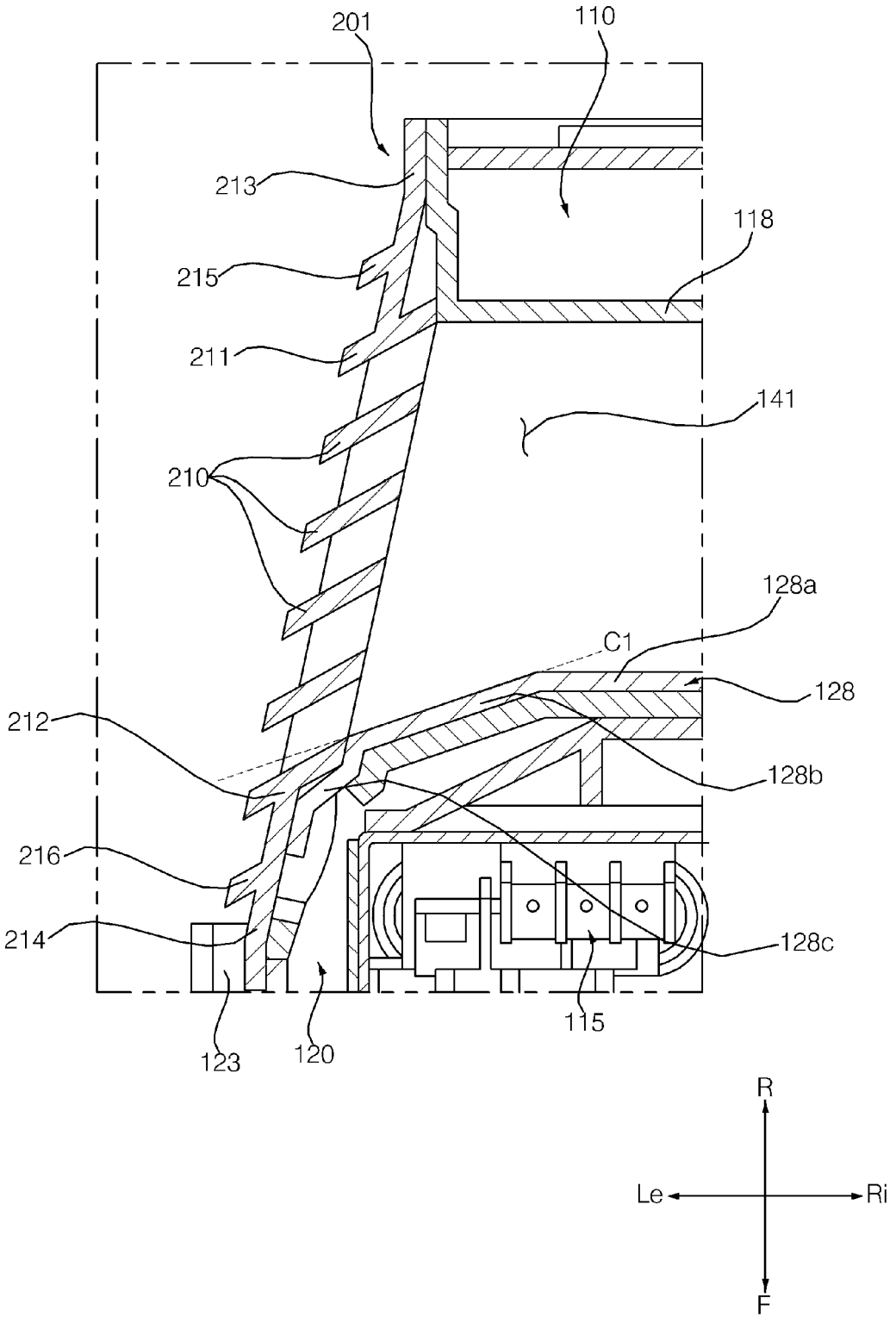

201
110
213
118
215
211
141
210
128a
C1
128
212
128b
216
214
128c
115
123
120
R
Le
Ri
F

FIG. 7

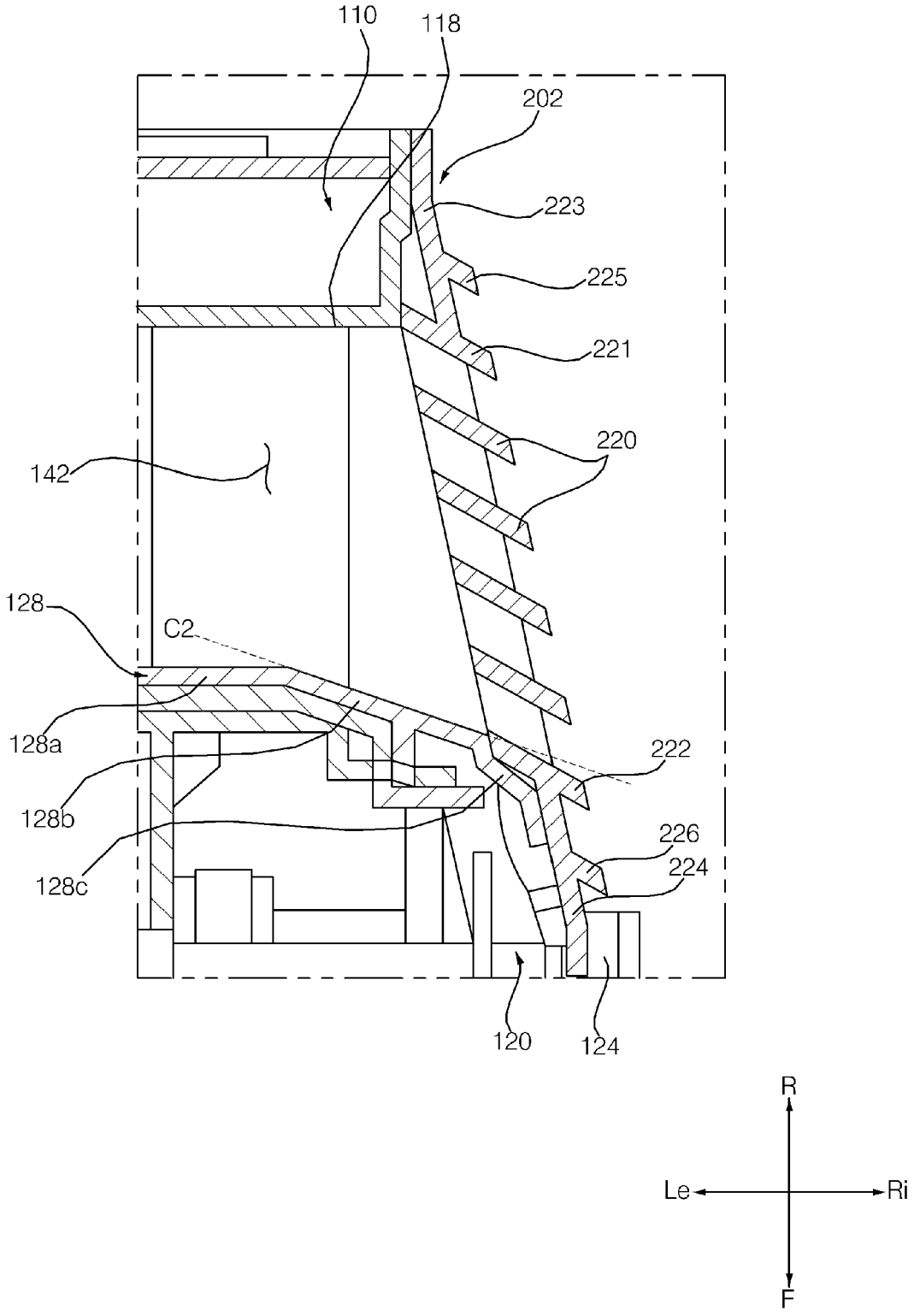

110
118
202
223
225
221
220
142
128
C2
128a
128b
128c
222
226
224
120
124
R
Le
Ri
F

FIG. 8

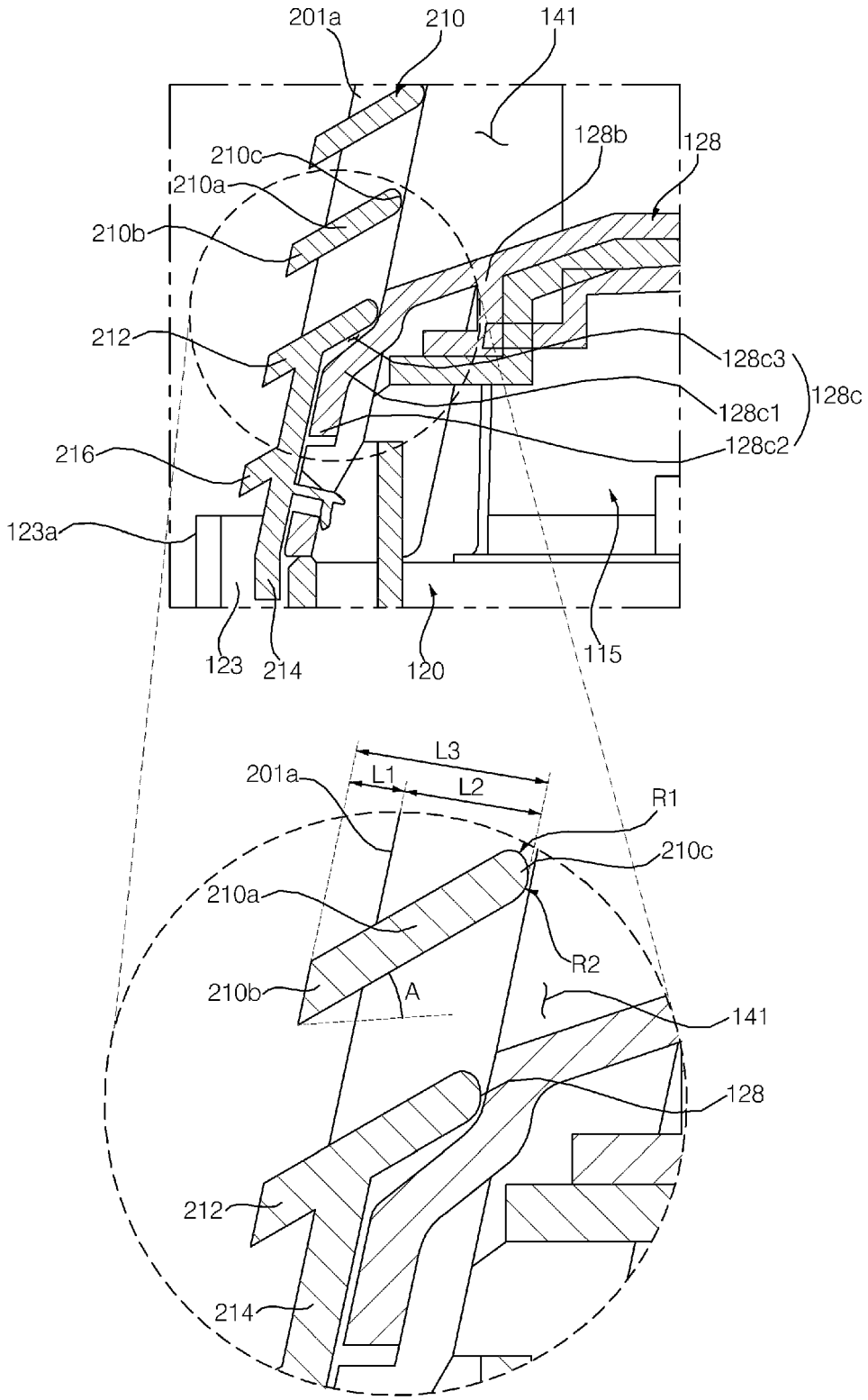
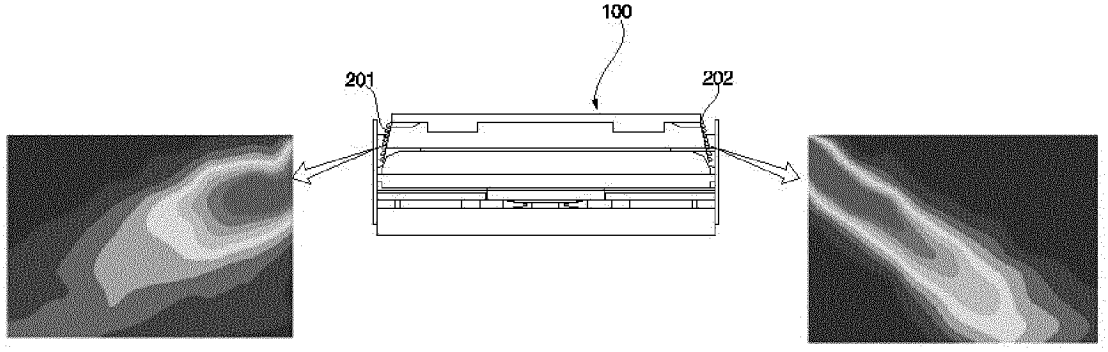

201a
210
141
128b
128
210c
210a
210b
212
128c3
128c
128c1
128c2
216
123a
123
214
120
115
L3
L1
L2
R1
210c
210a
R2
210b
A
141
128
212
214

FIG. 9



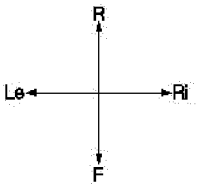
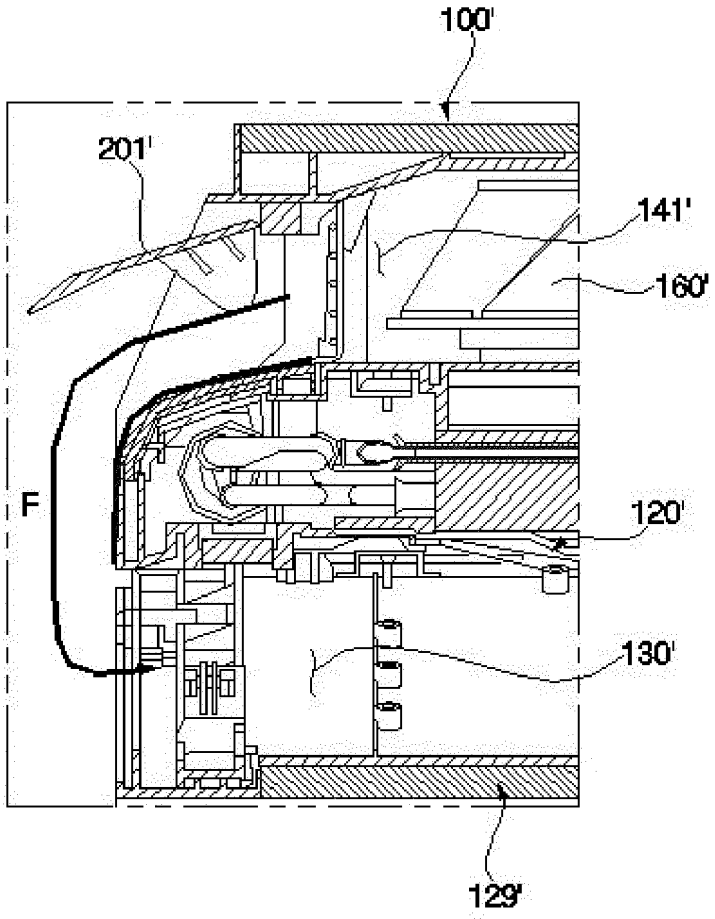
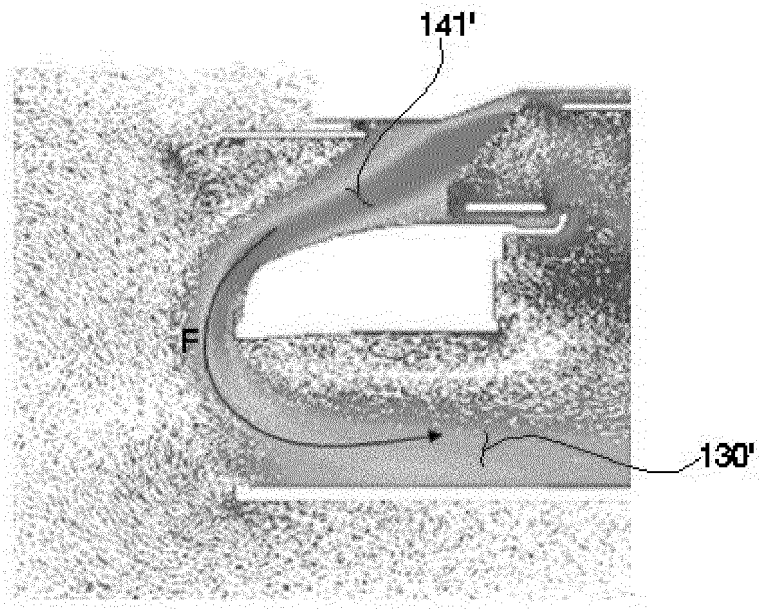


FIG. 10

(a)



(b)



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- EP 1621825 B1 **[0010]**