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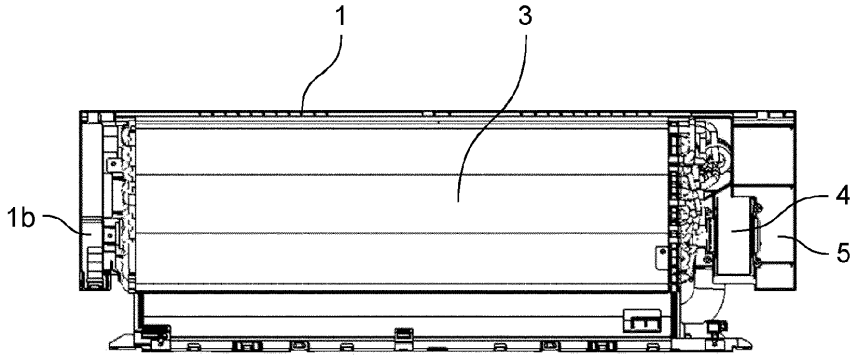
(54) WALL-MOUNTED AIR CONDITIONER

(57) A wall-mounted air conditioner includes: a main body casing including first and second side end portions disposed respectively on opposite sides to each other in a horizontal direction, and a central portion disposed between the first and second side end portions; a heat exchanger disposed in the central portion of the main body casing; a fan motor disposed in the first side end portion of the main body casing; a mounting plate having a locking unit for locking the main body casing, the locking unit being disposed at an upper portion of the mounting plate; and a holding member configured to hold main body casing in an inclined state where the main body casing is locked to the locking unit during installation. The main body casing includes a holding member containing unit configured to contain the holding member, and a rotational supporting unit having a horizontal shaft engaged with the holding member. The holding member is disposed in a position, the position being in the second side end portion of the main body casing and on a side of a back surface of the main body casing. The holding member includes a rotational shaft unit using the horizontal shaft as an axis. The holding member rotates upward to be contained in the main body casing.

FIG. 1



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Description

BACKGROUND

1. Technical Field

[0001] The present disclosure relates to a wall-mounted air conditioner with improved workability during installation of an interior unit of the air conditioner.

2. Description of the Related Art

[0002] PTL 1 discloses an installation apparatus for an air conditioner capable of improving workability of piping work and wiring work for an interior unit. The installation apparatus includes a plurality of hook portions provided on the back surface of the interior unit. The plurality of hook portions are locked to a mounting plate fixed to a wall surface of a house. One of the plurality of hook portions is disposed at a substantial center of gravity of the interior unit.

[0003] PTL 2 discloses an air conditioner that effectively uses a support member that supports an interior unit in an inclined state during piping work after the support member is used as a brace. The support member of the air conditioner includes a base rotatably attached to a back surface of the interior unit, a tension portion extending from the base, a contact portion that is bent from a tip of the tension portion and brought into contact with an installation frame, and a pipe support portion extending from the contact portion. When the support member is rotated downward, the pipe support portion can be inserted into a piping space, and the pipe disposed in the piping space can be pushed in by the pipe support portion.

Citation List

Patent Literature

[0004]

PTL 1: Unexamined Japanese Patent Publication No. 2002-98403 A
PTL 2: Unexamined Japanese Patent Publication No. 2006-145049 A

SUMMARY

[0005] The present disclosure provides a wall-mounted air conditioner that improves workability of piping work and wiring work for an indoor unit, reduces a depth size, and improves energy saving performance.

[0006] A wall-mounted air conditioner according to the present disclosure includes: a main body casing including first and second side end portions disposed respectively on opposite sides to each other in a horizontal direction, and a central portion disposed between the first and second side end portions; a heat exchanger disposed in the central portion of the main body casing; a fan motor disposed in the first side end portion of the main body casing; a mounting plate having a locking unit for locking the main body casing, the locking unit being disposed at an upper portion of the mounting plate; and a holding member configured to hold the main body casing in an inclined state where the main body casing is locked to the locking unit during installation. The main body casing includes a holding member containing unit configured to contain the holding member, and a rotational supporting unit having a horizontal shaft engaged with the holding member. The holding member is disposed in a position, the position being in the second side end portion of the main body casing and on a side of a back surface of the main body casing. The holding member includes a rotational shaft unit using the horizontal shaft as an axis. The holding member rotates upward to be contained in the main body casing.

[0007] The wall-mounted air conditioner according to the present disclosure includes the holding member on a side opposite in front view to the fan motor across the heat exchanger. The wall-mounted air conditioner is able to effectively use a storage space in a depth direction of the electric part, and may increase an effective length of the heat exchanger. Furthermore, since the holding member is located away from a back side of the heat exchanger in the main body casing, the wall-mounted air conditioner can employ a heat exchanger having a large cross-sectional area. Further, the holding member rotates upward, to a direction that does not relate to a space in which the pipe is disposed, and is stored in the main body casing. The worker is able to carry out the piping work easily. Therefore, it is possible to reduce the depth size of the interior unit, improve the energy saving performance, and improve the workability during installation of the interior unit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

FIG. 1 is a front view of a wall-mounted air conditioner according to a first exemplary embodiment;
FIG. 2 is a back view of the wall-mounted air conditioner according to the first exemplary embodiment;
FIG. 3 shows partial perspective views of the wall-mounted air conditioner according to the first exemplary embodiment as viewed from the back side;
FIG. 4 is a perspective view of a holding member in the first exemplary embodiment;
FIG. 5 is a cross-sectional view taken along line A-A corresponding to a central portion of the holding member in the first exemplary embodiment;
FIG. 6 is a side view of the wall-mounted air conditioner according to the first exemplary embodiment installed on a wall;
FIG. 7 is a side view of the wall-mounted air condi-

tioner according to the first exemplary embodiment during installation;

FIG. 8 is a perspective view, as viewed slightly upward in front, of the wall-mounted air conditioner according to a second exemplary embodiment;

FIG. 9 is a perspective view, as viewed slightly upward in front, of the wall-mounted air conditioner according to the second exemplary embodiment from which the construction cover is removed; and

FIG. 10 is a side view of the wall-mounted air conditioner according to the second exemplary embodiment during installation.

DETAILED DESCRIPTION

(Knowledge and the like underlying the present disclosure)

[0009] At the time when the inventors have reached the present disclosure, there has been a demand from users for an air conditioner including an indoor unit with excellent design, reduced depth, and high energy saving performance. There has also been a demand from workers who install air conditioners for improved workability when piping work and wiring work are carried out during attachment of the wall-mounted air conditioner on the wall. In general, in order to secure a space during piping and wiring work, there is a method in which a mounting plate is fixed to a wall in a room in advance, a hook portion of an indoor unit is hooked on a locking unit of the mounting plate, and the indoor unit is held by a holding member in an inclined state.

[0010] As a conventional method for maintaining inclination of the indoor unit during installation, as disclosed in PTL 1, in order to stabilize a holding state, the holding member is often provided at a substantial central portion or a substantial center of gravity of the indoor unit, and thus, a space for disposing those installation members and the locking unit is required. Therefore, the installation members and the locking unit are located on a side of the back surface of the heat exchanger. It is necessary to dispose the heat exchanger and this space so as not to interfere with each other. An area of a heat-transfer portion of the stored heat exchanger cannot be increased, and it is difficult to increase the volume of the heat exchanger. Further, when the holding member is disposed on the back side of the electric part or the fan motor, the board or the like contained in the electric part cannot be made larger in the depth direction. There is no choice but to arrange a plurality of substrates in the horizontal direction, thus an effective length of the heat exchanger in the horizontal direction is decreased. As another method of arranging the electric part, the electric part may be arranged in front of the heat exchanger. However, such an arrangement is difficult in a thin model having a reduced depth.

[0011] Further, as shown in PTL 2, a support member for holding the inclined state during installation rotates in a downward direction different from the side of the back surface of the heat exchanger and is stored in the piping space. In this case, the piping space corresponds to a space defined by an air supply passage connected to a blow-out port of the air conditioner, a side of a back surface of a heat insulating material that insulates the air supply passage from heat, and an indoor wall surface. In this case, it is possible to increase the area of the heat-transfer portion of the heat exchanger stored in the indoor unit. There is no problem when the piping space can be made sufficiently large. However, in a case of a wall-mounted air conditioner having a reduced depth, the piping space cannot be made large. Therefore, it is difficult to secure a space for storing the support member that holds the inclined state during installation. In addition, since a work space is small, the work for storing the support member cannot be easily carried out.

[0012] In order to improve energy saving performance, the wall-mounted air conditioner having a reduced depth size is desired to have a heat exchanger with an increased volume. However, the volume of the heat exchanger cannot be increased, because the space for the holding member and the locking unit for locking the holding member and the space for storing the holding member in the interior unit are required. The inventor has found this problem, and has made the subject matter of the present disclosure in order to solve this problem.

[0013] Thus, the present disclosure provides a wall-mounted air conditioner that improves workability for an indoor unit during piping work, wiring work, and the like, reduces the depth size, and improves energy saving performance

[0014] Hereinafter, exemplary embodiments will be described in detail with reference to the drawings. However, unnecessarily detailed description may be omitted. For example, the detailed description of already well-known matters and the overlap description of substantially the same configurations may be omitted. This is to avoid an unnecessary redundancy in the following description and to facilitate understanding of a person skilled in the art.

[0015] Note that the attached drawings and the following description are provided for those skilled in the art to fully understand the present disclosure, and are not intended to limit the subject matter as described in the appended claims.

(First exemplary embodiment)

[0016] A first exemplary embodiment will be described below with reference to FIGS. 1 to 7.

[1-1. Configuration]

[1-1-1. Configuration of wall-mounted air conditioner]

[0017] FIG. 1 is a front view of a wall-mounted air conditioner. FIG. 1 illustrates the wall-mounted air condition-

er with front frame 2 (see FIG. 6) and a blow-out grill removed, so that an arrangement of members in main body casing 1 can be seen. FIG. 2 is a back view of the wall-mounted air conditioner.

[0018] As illustrated in FIG. 1, the wall-mounted air conditioner according to the first exemplary embodiment includes main body casing 1. Main body casing 1 has a first side end portion and a second side end portion opposite to each other in the horizontal direction, and a central portion positioned between the first side end portion and the second side end portion. The wall-mounted air conditioner includes heat exchanger 3 in the central portion. The wall-mounted air conditioner includes fan motor 4 in the first side end portion. The wall-mounted air conditioner includes holding member containing unit 1b that contains holding member 7 in the second side end portion. The wall-mounted air conditioner further includes a cross flow fan (not shown), and electric part 5 that contains a drive power supply that drives fan motor 4, a control board, and the like.

[0019] In the wall-mounted air conditioner, the cross flow fan is rotationally driven by fan motor 4, indoor air is taken through an intake port provided by front frame 2, and air that is heat-exchanged by heat exchanger 3 is blown into the room through a blowout port. During cooling operation in which heat exchanger 3 functions as an evaporator, heat exchanger 3 generates condensed water in which moisture in the air is condensed. The condensed water is collected in a drain pan provided by main body casing 1, the blow-out grill, and the like, and is discharged outside the room through a drain hose connected to the drain pan. Furthermore, in order to circulate the refrigerant between a heat exchanger provided in the outdoor unit and heat exchanger 3 of the indoor unit, two types of refrigerant pipes for high pressure and low pressure are connected by auxiliary pipe 8 covered with heat insulating material. Auxiliary pipe 8 is routed to a lower portion on the back side of main body casing 1 and is connected to the outdoor unit through a hole in a wall disposed on the back side of the wall-mounted air conditioner.

[0020] As illustrated in FIG. 2, the wall-mounted air conditioner includes mounting plate 6 for fixing main body casing 1 to the indoor wall surface. Mounting plate 6 includes locking unit 6a on an upper portion of mounting plate 6, for hooking attachment claw 1a provided in the upper portion on the back side of main body casing 1. The wall-mounted air conditioner further includes holding member 7 for holding the wall-mounted air conditioner in an inclined state with respect to the wall during installation of the wall-mounted air conditioner. Holding member 7 is disposed on the back side in main body casing 1 in the second side end portion of main body casing 1. Holding member 7 is disposed so as not to overlap heat exchanger 3 in the horizontal direction.

[1-1-2. Configuration of holding member]

[0021] FIG. 3 shows partial perspective views of the wall-mounted air conditioner as viewed from the back side, and illustrates (a) a state in which holding member 7 is contained in the holding member containing unit 1b of main body casing 1, and (b) a state in which holding member 7 is opened by 90 degrees from main body casing 1. As illustrated in FIG. 3, main body casing 1 includes a rotational supporting unit having horizontal shaft 7a as a rotation axis, and being engaged with rotational shaft unit 7b of holding member 7. Holding member 7 rotates upward and is contained in holding member containing unit 1b of main body casing 1. Holding member 7 may be locked to main body casing 1 with a claw or the like (not illustrated) in order to hold a state of being opened by 90 degrees.

[0022] FIG. 4 is a perspective view of holding member 7, and FIG. 5 is a cross-sectional view taken along line A-A in FIG. 4, which is a central portion of holding member 7. Holding member 7 includes: rotational shaft unit 7b that engages with the rotational supporting unit and is able to rotate about horizontal shaft 7a; rotation stopping unit 7c that is able to stop rotational operation when holding member 7 rotates by 90 degrees with respect to main body casing 1; and contact surface 7d that is brought into contact with the indoor wall surface or mounting plate 6 when the wall-mounted air conditioner is held in an inclined manner with respect to the wall. Further, as illustrated in FIG. 5, holding member 7 is able to secure height H so as to increase a contact area of contact surface 7d with the indoor wall surface or mounting plate 6, and is able to maintain the rigidity of holding member 7 high even if holding member 7 has a thin shape by providing a substantial box shape.

[1-2. Installation work]

[0023] Installation work of the wall-mounted air conditioner configured as described above will be described below.

[0024] FIG. 6 is a side view of the wall-mounted air conditioner installed on the wall, and FIG. 7 is a side view of the wall-mounted air conditioner where piping work and arrangement work are carried out during installation, that is, a state in which the wall-mounted air conditioner is supported by holding member 7 and is maintained in an inclined state.

[0025] First, as preparation for installation of the wall-mounted air conditioner of the present disclosure, a worker fixes mounting plate 6 to the wall with screws at several points. Next, as illustrated in FIG. 7, the worker hooks attachment claw 1a of main body casing 1 on locking unit 6a of mounting plate 6 while causing front frame 2 not to be brought into contact with ceiling 11. The worker rotates holding member 7 contained in the holding member containing unit 1b of main body casing 1 by 90 degrees with the worker's hand, and causes holding member 7 to pro-

trude from main body casing 1. When holding member 7 is brought into contact with the wall in a state where holding member 7 is opened by 90 degrees, the wall-mounted air conditioner can be inclined and maintain its posture. The worker secures a space between the wall-mounted air conditioner and wall 10 in this inclined state, and carries out various works for connecting refrigerant pipes of the indoor unit and the outdoor unit, arranging a drain hose, connecting the indoor unit and the outdoor unit electrically, and the like. When the piping and arrangement work is completed, the worker rotates holding member 7 upward by 90 degrees, and stores holding member 7 in the holding member containing unit 1b of main body casing 1. The worker further fixes the back surface of main body casing 1 and mounting plate 6 with claws, screws, or the like such that the back surface of main body casing 1 and mounting plate 6 are fitted to each other at their lower portions. The worker confirms that main body casing 1 and mounting plate 6 are reliably fitted. In this manner, the wall-mounted air conditioner is installed on wall 10.

[1-3. Effects and the like]

[0026] As described above, the wall-mounted air conditioner according to the present exemplary embodiment includes: main body casing 1 including first and second side end portions disposed respectively on opposite sides to each other in a horizontal direction, and a central portion disposed between the first and second side end portions; heat exchanger 3 disposed in the central portion of main body casing 1; fan motor 4 disposed in the first side end portion of main body casing 1; mounting plate 6 having locking unit 6a for locking main body casing 1, the locking unit 6a being disposed at an upper portion of the mounting plate; and holding member 7 configured to hold main body casing 1 in an inclined state where main body casing 1 is locked to the locking unit 6a during installation, wherein main body casing 1 includes holding member containing unit 1b configured to contain holding member 7, and a rotational supporting unit having a horizontal shaft engaged with holding member 7, and holding member 7 is disposed in a position, the position being in the second side end portion of main body casing 1 and on a side of a back surface of main body casing 1, the holding member 7 includes rotational shaft unit using the horizontal shaft as an axis, and the holding member 7 rotates upward to be contained in main body casing 1.

[0027] As a result, holding member 7 is positioned opposite to fan motor 4 across heat exchanger 3 in front view. The wall-mounted air conditioner is able to effectively use a storage space in a depth direction of the electric part 5 and may increase an effective length of heat exchanger 3 in the horizontal direction. Furthermore, since holding member 7 is located away from the back side of heat exchanger 3 in main body casing 1, the wall-mounted air conditioner may employ heat exchanger 3 having a large cross-sectional area. Moreover, since holding member 7 is disposed so as not to overlap heat exchanger 3 in front view, it is possible, regardless of the cross section of heat exchanger 3, to secure a storage space of holding member 7 and to provide a shape necessary for holding main body casing 1 in an inclined state. Further, holding member 7 rotates upward, to a direction that does not relate to the space in which the pipe is disposed, and is stored in main body casing 1. The worker is able to carry out the piping work easily. Therefore, it is possible to reduce the depth size of the indoor unit, improve the energy saving performance, and improve the workability during installation of the indoor unit.

[0028] As in the present exemplary embodiment, holding member 7 may have a substantial box shape including contact surface 7d that is brought into contact with the indoor wall surface or mounting plate 6.

[0029] Since holding member 7 has a substantial box shape, sufficient strength and rigidity may be secured even if holding member 7 is a resin molded article. Furthermore, by increasing height H of holding member 7, holding member 7 may increase the area of contact surface 7d in contact with the indoor wall surface or mounting plate 6 attached to the indoor wall surface. Therefore, even if holding member 7 is not at the position of the center of gravity of the wall-mounted air conditioner in a state where the wall-mounted air conditioner is held in an inclined manner, holding member 7 can be firmly supported with respect to the indoor wall surface, and the posture of the wall-mounted air conditioner can be stably maintained. Therefore, it is possible to maintain and improve workability. Further, in a case where holding member 7 is brought into direct contact with the indoor wall surface, it is not necessary to provide mounting plate 6 at a position where holding member 7 is disposed. Therefore, the material for mounting plate 6 can be reduced, and the cost can be reduced.

[0030] As in the present exemplary embodiment, holding member 7 may include: rotation stopping unit 7c that is able to stop the rotational operation when holding member 7 is rotated by 90 degrees about rotational shaft unit 7b; and a rotation stopping unit locking unit that locks rotation stopping unit 7c to one or both of holding member 7 and main body casing 1.

[0031] As a result, by rotating holding member 7 by 90 degrees with respect to main body casing 1 and supporting holding member 7, holding member 7 can be configured to have an optimum length without securing a length more than necessary. Further, when holding member 7 is rotated until rotation stopping unit 7c is brought into contact with holding member containing unit 1b of main body casing 1, holding member 7 is rotated by 90 degrees. At this time, rotation stopping unit 7c can be locked by the rotation stopping unit locking unit such as a claw. Therefore, it is possible to suppress the occurrence of a situation in which main body casing 1 cannot be maintained in the inclined state due to unintentional rotation of holding member 7 during pipe arrangement work, and the worker is able to carry out the work safely.

[0032] As in the present exemplary embodiment, holding member 7 may be disposed at a position adjacent to the side surface of main body casing 1.

[0033] As a result, holding member 7 can be disposed at a distance at which the worker is able to hold holding member 7 with hand from the side surface. Therefore, the worker is able to easily move holding member 7, and it is possible to improve the workability.

(Second exemplary embodiment)

[0034] A second exemplary embodiment will be described below with reference to FIGS. 8 to 10.

[2-1. Overall configuration]

[0035] A wall-mounted air conditioner according to the second exemplary embodiment includes front frame 2 and construction cover 15 disposed on a lower surface portion of front frame 2.

[2-2. Configuration of construction cover]

[0036] Similarly to front frame 2, construction cover 15 also serves as a design surface of the wall-mounted air conditioner, and is configured separately from front frame 2. FIG. 8 is a perspective view, as viewed slightly upward in front, of the wall-mounted air conditioner according to the second exemplary embodiment of the present disclosure. Construction cover 15 is disposed below main body casing 1. In addition, construction cover 15 includes screw covers 16, one on a left side and one on a right side. The worker is able to remove screw covers 16 to remove screws for fixing construction cover 15 to main body casing 1. After removing the screws, the worker is able to remove construction cover 15 by removing the claws locked to main body casing 1 and front frame 2.

[0037] FIG. 9 is a perspective view, as viewed slightly upward in front, of the wall-mounted air conditioner from which construction cover 15 is removed. At this time, an area surrounded by a dotted line serves as work space 20 for piping arrangement.

[0038] FIG. 10 is a side view of the wall-mounted air conditioner according to the second exemplary embodiment during installation, where holding member 7 holds main body casing 1 in the inclined state with respect to the indoor wall surface. FIG. 10 illustrates a partial cross-sectional view such that pipe storage space 30 can be seen. It is possible to secure wide work space 20 by removing construction cover 15.

[2-3. Effects and the like]

[0039] As described above, in the present exemplary embodiment, the wall-mounted air conditioner includes: pipe storage space 30 in the lower portion of main body casing 1, pipe storage space 30 being for the indoor-outdoor connection pipes that connects the indoor unit and the outdoor unit; and detachable construction cover 15 that covers the indoor-outdoor connection pipes disposed in pipe storage space 30.

[0040] By removing construction cover 15, the worker is able to take large work space 20 in which the piping is disposed. Therefore, even if holding member 7 is not provided at the position of the center of gravity of the wall-mounted air conditioner, it is possible to secure work space 20 in which sufficient pipes are disposed, and to improve workability.

(Other exemplary embodiments)

[0041] As described above, the first exemplary embodiment and the second exemplary embodiment have been described as examples of the present disclosure. However, the techniques of the present disclosure are not limited to those examples, and can also be applied to exemplary embodiments in which changes, replacements, additions, omissions, and the like are made. Further, a new exemplary embodiment may be made by combining the components described in the first and second exemplary embodiments.

[0042] Therefore, other exemplary embodiments will be described below.

[0043] The first and second exemplary embodiments describe the example of the wall-mounted air conditioner in which in front view, fan motor 4 and electric part 5 are provided on the right side (first side end portion) and holding member 7 is provided on the left side (second side end portion) with heat exchanger 3 interposed therebetween. The wall-mounted air conditioner may be any type as long as it can be installed on the wall and perform air-conditioning. Therefore, the wall-mounted air conditioner is not limited to the wall-mounted air conditioner including fan motor 4 and electric part 5 on the right side and holding member 7 on the left side with heat exchanger 3 interposed therebetween in front view. However, when holding member 7 is disposed so as not to overlap with heat exchanger 3 in front view as the wall-mounted air conditioner, the area of the heat-transfer portion of the heat exchanger can be increased regardless of holding member 7, and thus, it is possible to reduce the depth size of the indoor unit, improve the energy saving performance, and improve the workability during installation of the indoor unit.

[0044] The present disclosure is applicable to an indoor unit of an air conditioner having a reduced depth size and high energy saving performance. Specifically, the present disclosure is applicable to wall-mounted air conditioner or the like.

Claims

1. A wall-mounted air conditioner comprising:

a main body casing including first and second

side end portions disposed respectively on opposite sides to each other in a horizontal direction, and a central portion disposed between the first and second side end portions;
a heat exchanger disposed in the central portion of the main body casing;
a fan motor disposed in the first side end portion of the main body casing;
a mounting plate having a locking unit for locking the main body casing, the locking unit being disposed at an upper portion of the mounting plate; and
a holding member configured to hold the main body casing in an inclined state where the main body casing is locked to the locking unit during installation,
wherein
the main body casing includes

a holding member containing unit configured to contain the holding member, and
a rotational supporting unit having a horizontal shaft engaged with the holding member, and

the holding member is disposed in a position, the position being in the second side end portion of the main body casing and on a side of a back surface of the main body casing, the holding member includes a rotational shaft unit using the horizontal shaft as an axis, and the holding member rotates upward to be contained in the main body casing.

2. The wall-mounted air conditioner according to claim 1, further comprising;

a pipe storage space configured to store an indoor-outdoor connection pipe that connects an indoor unit and an outdoor unit at a lower portion of the main body casing; and
a detachable construction cover configured to cover the indoor-outdoor connection pipe disposed in the pipe storage space.

3. The wall-mounted air conditioner according to claim 1 or 2, wherein the holding member has a substantial box shape having a contact surface that is brought into contact with one of an indoor wall surface and the mounting plate.

4. The wall-mounted air conditioner according to any one of claims 1 to 3, wherein the holding member includes:

a rotation stopping unit capable of stopping rotational operation when the holding member is rotated by 90 degrees about the rotational shaft unit; and
a rotation stopping unit locking unit configured to lock the rotation stopping unit to one or both of the holding member and the main body casing.

5. The wall-mounted air conditioner according to any one of claims 1 to 4, wherein the holding member is disposed at a position adjacent to a side surface of the main body casing.

FIG. 1

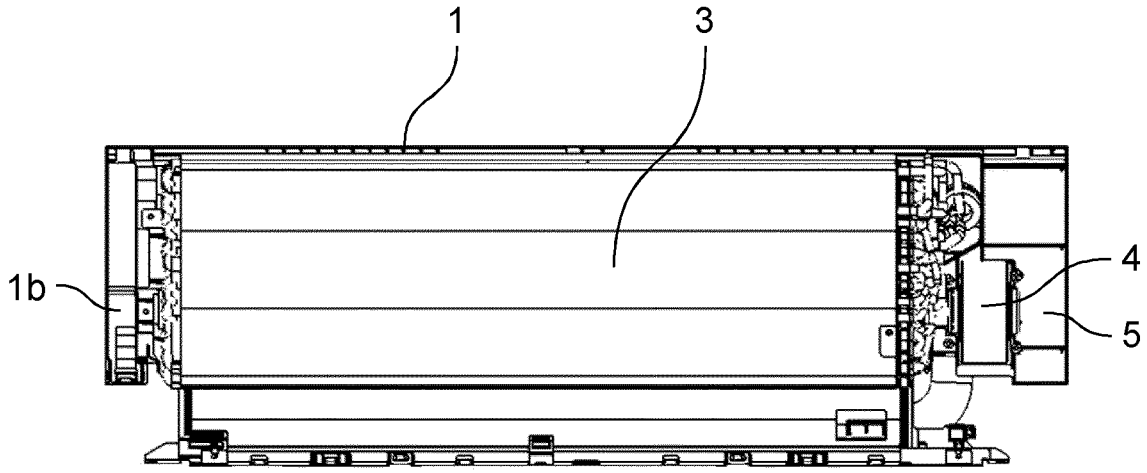


FIG. 2

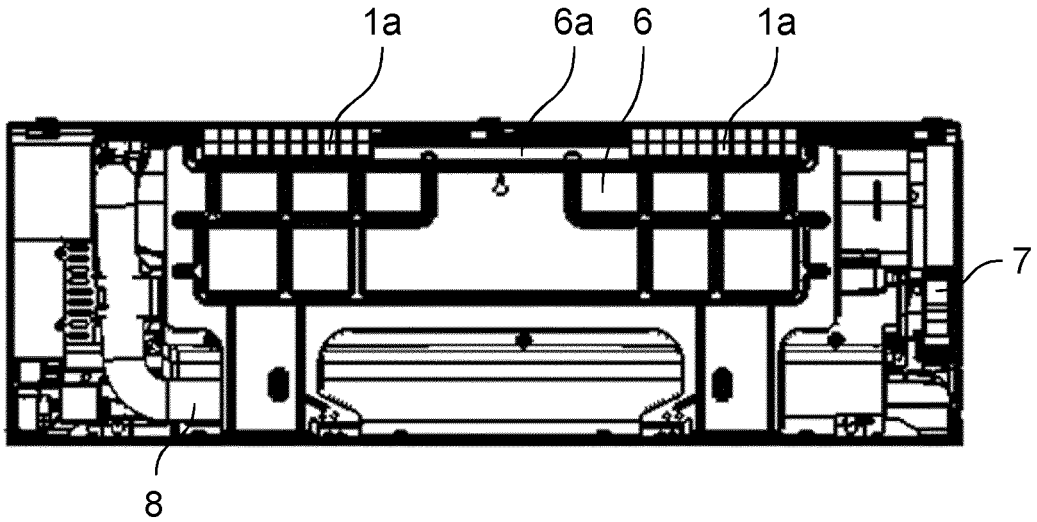


FIG. 3

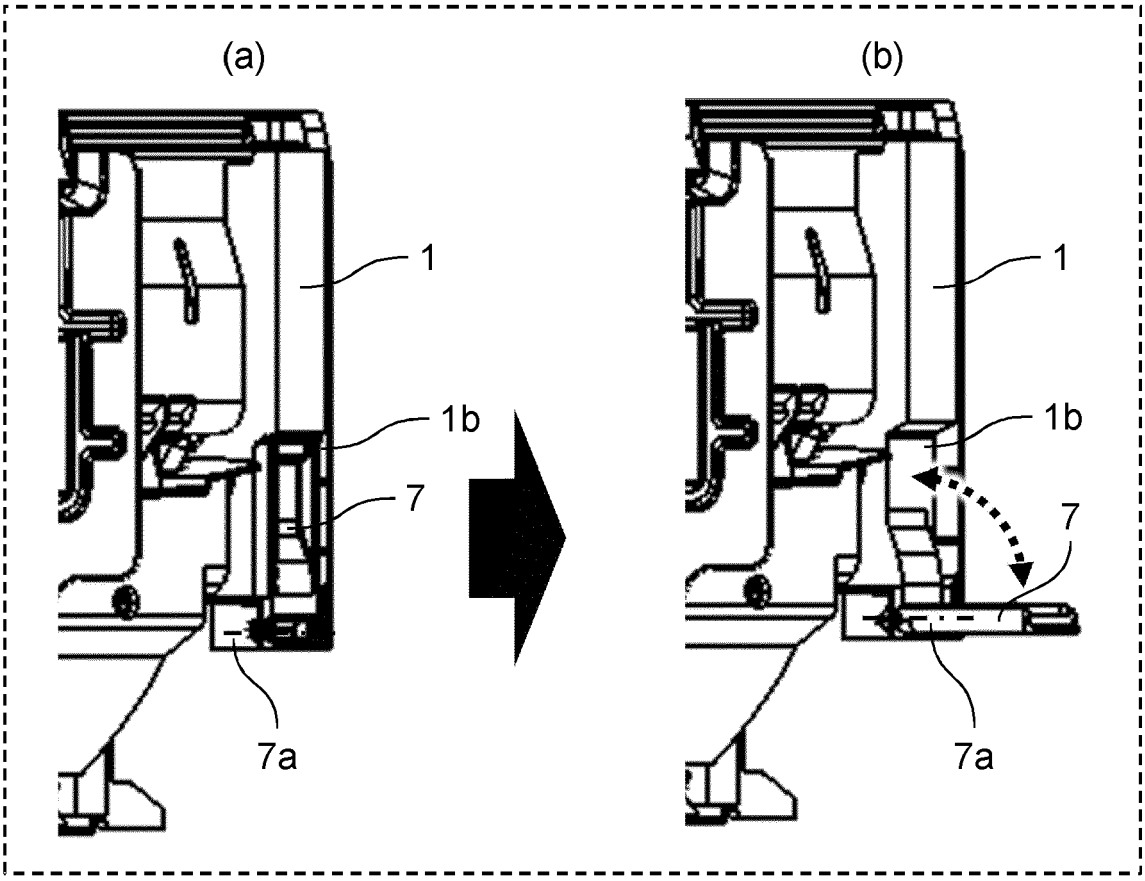


FIG. 4

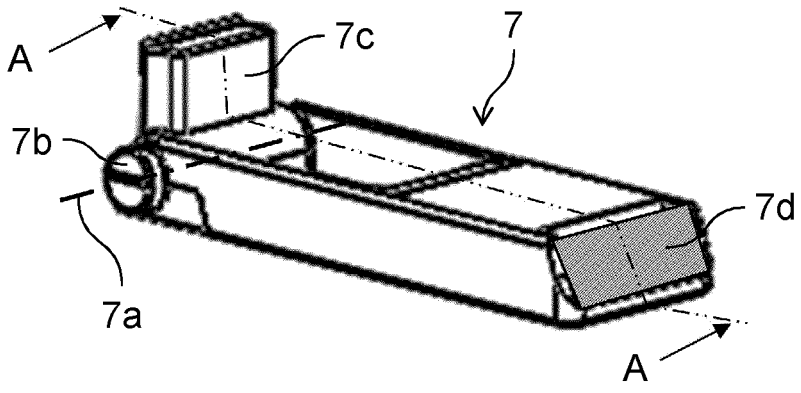


FIG. 5

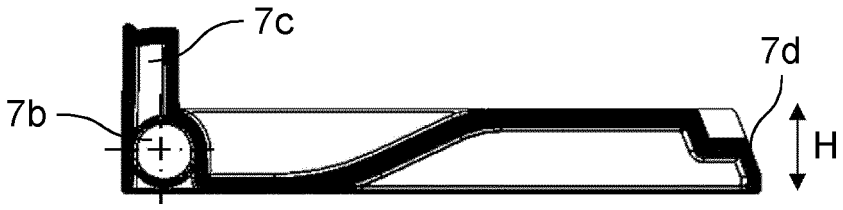


FIG. 6

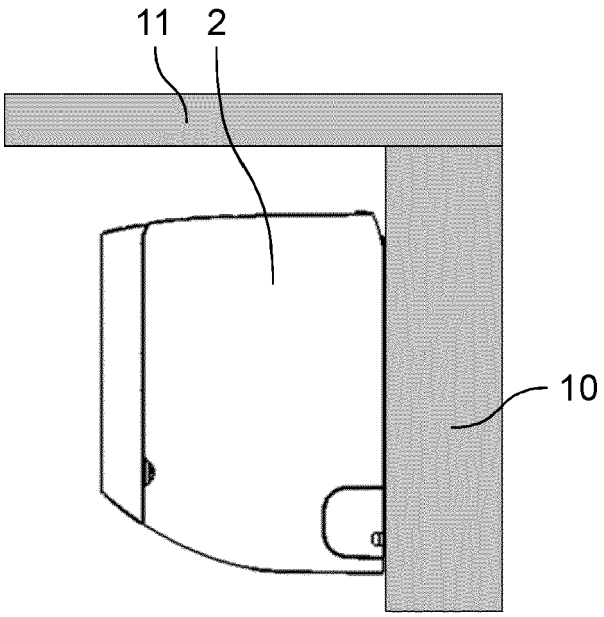


FIG. 7

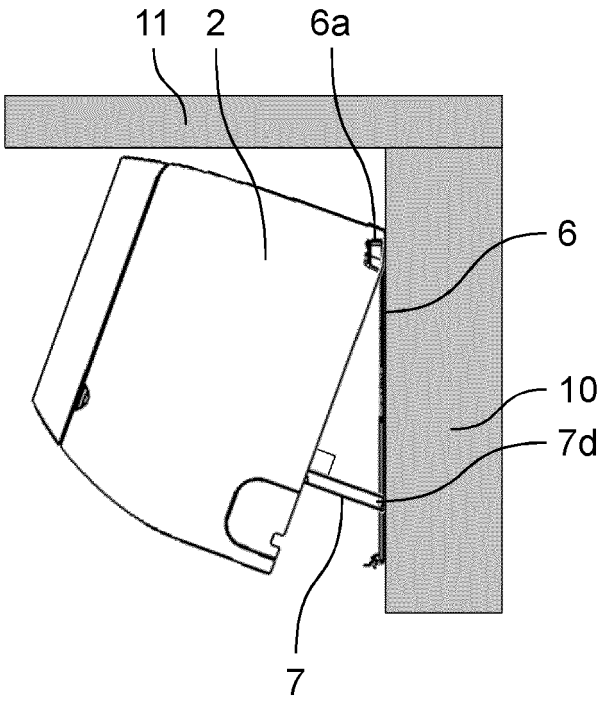


FIG. 8

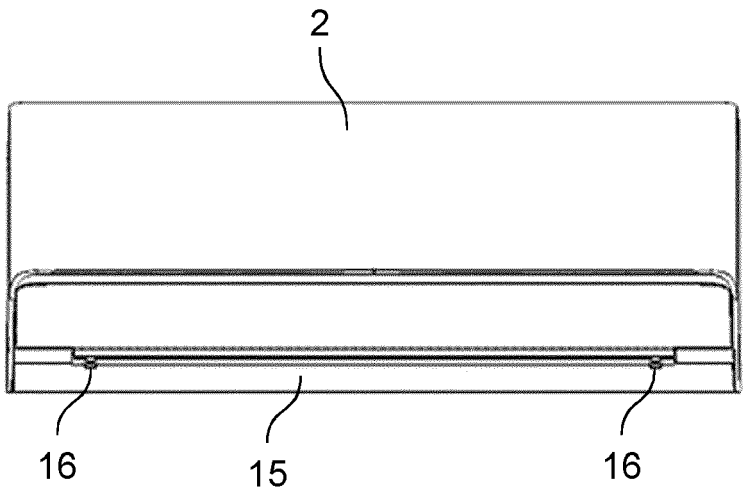


FIG. 9

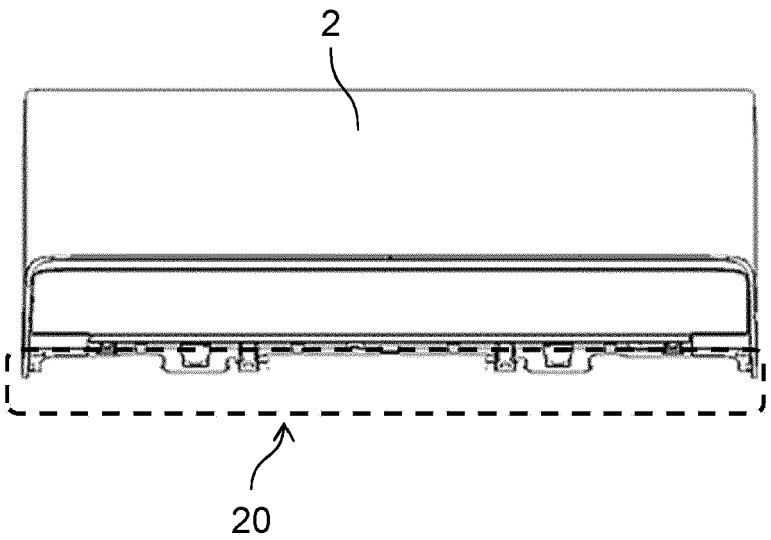
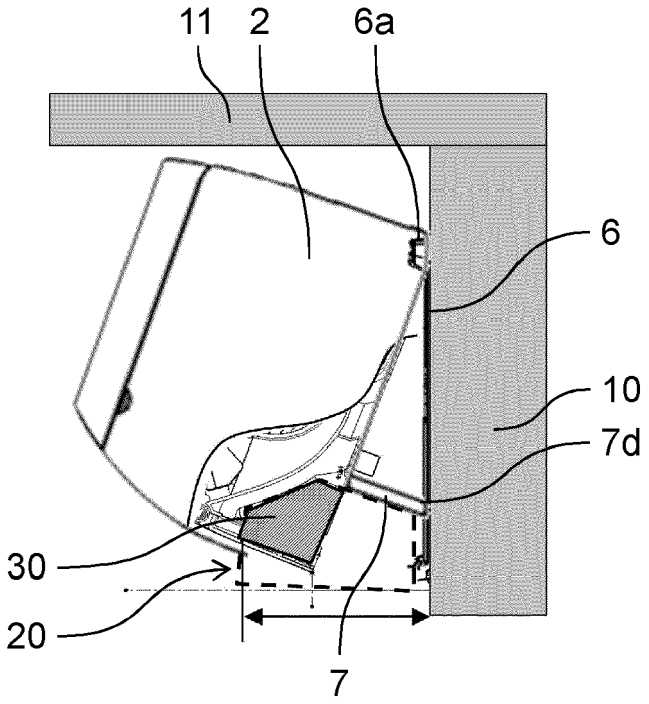


FIG. 10



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Application Number
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Place of search	Date of completion of the search	Examiner
Munich	15 March 2022	Ismail, Youssef

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