(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 498 020 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
18.04.2018 Bulletin 2018/16

(21) Application number: **10828238.5**

(22) Date of filing: **28.10.2010**

(51) Int Cl.:
F24F 13/20 *(2006.01)*

(86) International application number:
PCT/JP2010/069170

(87) International publication number:
WO 2011/055678 (12.05.2011 Gazette 2011/19)

(54) WALL-MOUNTED INDOOR UNIT

WANDMONTIERTE INNENRAUMEINHEIT

UNITÉ INTÉRIEURE MURALE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **04.11.2009 JP 2009253249**

(43) Date of publication of application:
12.09.2012 Bulletin 2012/37

(73) Proprietor: **Daikin Industries, Ltd.**
Osaka-shi, Osaka 530-8323 (JP)

(72) Inventors:
- **NAKANISHI, Junichi**
  Kusatsu-shi
  Shiga 525-8526 (JP)
- **MINAKUCHI, Kouichi**
  Kusatsu-shi
  Shiga 525-8526 (JP)
- **INOUE, Tetsuji**
  Kusatsu-shi
  Shiga 525-8526 (JP)

(74) Representative: **Hoffmann Eitle**
Patent- und Rechtsanwälte PartmbB
Arabellastraße 30
81925 München (DE)

(56) References cited:
EP-A1- 1 688 679
EP-A1- 1 696 186
WO-A1-2007/012156
WO-A2-02/103251
DE-A1- 19 726 522
JP-A- 8 135 994
JP-A- 11 101 470
JP-A- 11 173 599
JP-A- 2005 106 398
JP-A- 2005 249 374
JP-A- 2006 090 695
JP-A- 2006 097 934
JP-A- 2009 115 348
JP-A- 2009 115 348
JP-A- 2009 222 302
JP-U- 57 075 322
JP-U- 63 029 026
US-A1- 2006 021 359
US-A1- 2008 099 570

EP 2 498 020 B1

Description

TECHNICAL FIELD

[0001] The present invention relates to a wall-mounted indoor apparatus for an air conditioning device and specifically relates to a wall-mounted indoor apparatus for an air conditioning device in which the functional components are housed in the main body.

BACKGROUND ART

[0002] With wall-mounted indoor apparatuses for air conditioning devices, an indoor-side heat exchanger is provided in the main unit. Indoor air is taken in through an intake opening in the main unit by a circulating fan such as a cross-flow fan, and conditioned air is discharged from a discharge opening out from the main unit through the indoor-side heat exchanger. Thus, in order to control the blowing direction of the conditioned air that is discharged from the discharge opening, vertical blades are generally provided for adjusting the horizontal blowing direction, and horizontal blades are generally provided for adjusting the vertical blowing direction.

[0003] In order to balance the air that is discharged in this manner or in order to adjust the blowing speed or blowing direction, various functional components are necessary, such as moving parts like motors and gears, sensors for detecting the environment or operating conditions in order to control the moving parts, and electrical parts that constitute the control circuits. EP 1 696 186 A1 is directed to an air conditioner in which a front panel is installed to a front of a main body. Aiming at an improvement of the optical appearance of the air conditioning device, a front cover is disposed at the front of the front panel and detachably coupled to the main body, and an art panel is interchangeably inserted in the front cover.

SUMMARY OF THE INVENTION

<Technical Problem>

[0004] However, with conventional wall-mounted indoor apparatuses as described, for example, in Patent Document 1 (Japanese Patent Unexamined publication No. 2005-98671), a configuration is adopted in which the main body of a substantially rectangular unit is covered by a casing, and the internal volume that is covered by the casing is made as small as possible. For this reason, with wall-mounted indoor apparatuses, various parts and members are disposed densely within a narrow space, and various parts are arranged at the periphery of the functional components. With the functional components of wall-mounted indoor apparatuses, in view of the circumstances described above, installation work for the functional components during assembly is difficult.

[0005] An object of the invention is to provide a wall-mounted indoor apparatus for an air conditioning device whereby installation of functional components that are housed inside the main body can be readily performed.

<Solution to Problem>

[0006] The wall-mounted indoor apparatus for an air conditioning device according to a first aspect of the present invention comprises a main body and a functional component. The main body comprises a back surface part that faces a side wall surface on which installation is to be performed, a depthwise-central part that is provided frontward from the back surface part and is laterally wider than the back surface part, and a front surface part that is provided frontward from the depthwise-central part. The functional component is disposed in an internal protruding space that is formed between the end surface of the frontward space of the back surface part and a side surface of the depthwise-central part. Further, the wall mounted indoor apparatus comprises a movable panel that is installed on the main body. The functional component is a driving component for generating or transmitting power for driving the movable panel.

[0007] In accordance with the present invention, because the functional component is disposed in the internal protruding space, the number of other components in the surrounding area that act as obstacles to installation is reduced. Therefore, the functional component can be installed without any obstacles present in the surrounding area.

[0008] The wall-mounted indoor apparatus for an air conditioning device according to a second aspect of the present invention pertains to the wall-mounted indoor apparatus for an air conditioning device according to the first aspect of the present invention, wherein the main body has a cover member that forms at least a side surface of the depthwise-central part.

[0009] In accordance with the present invention, when the cover member is removed, the functional component can be readily exposed, and a state is revealed in which there are no other interfering parts surrounding the functional component. For this reason, the regions and directions from which functional component installation or maintenance operations can be carried out are expanded.

[0010] In accordance with the present invention, the driving component is disposed in an internal protruding space, and so operations involving checking and adjusting functioning can be carried out from the front or rear, in addition to directly from one of the sides of the main body.

[0011] The wall-mounted indoor apparatus for an air conditioning device according to a third aspect of the present invention pertains to the wall-mounted indoor apparatus for an air conditioning device according to the first aspect of the present invention, wherein the driving component comprises an arm driving motor that generates drive power that is to be transferred to the moveable panel through the panel support arm. In accordance with

the present invention, the arm driving motor must be attached carefully so that the drive force that has been generated is suitably transferred to the movable panel. Consequently, by disposing the arm driving motor that requires careful installation in the internal protruding space in this manner, the operability of the arm driving motor installation operation is improved.

[0012] The wall-mounted indoor apparatus for an air conditioning device according to a fourth aspect of the present invention pertains to the wall-mounted indoor apparatus for an air conditioning device according to the third aspect of the present invention, where the movable panel covers the front surface and part of the side surface of the main body in a non-operating period. The wall-mounted indoor apparatus further comprises a panel support arm adapted for supporting the movable panel and is disposed in the inner protruding space and/or a proximal space that is contiguously connected to a surrounding vicinity of the internal protruding space is also provided. The arm driving motor is disposed outside the panel support arm in the lateral direction.

[0013] In accordance with the present invention, the operations for disposing the arm driving motor and the panel support arm can be carried out together.

[0014] The wall-mounted indoor apparatus for an air conditioning device according to a fifth aspect of the present invention pertains to the wall-mounted indoor apparatus for an air conditioning device according to any one of the first through fourth aspects of the present invention, which also comprises a light-receiving part and a controller for controlling the light-receiving part. The light-receiving part is disposed in the internal protruding space and/or the proximal space that is contiguously connected to the surrounding vicinity of the internal protruding space. The controller is provided in the internal protruding space and/or the proximal space and controls the light-receiving part.

[0015] In accordance with the present invention, because light such as infrared light is received by the light-receiving part through the internal protruding space, the light-receiving part is not easily influenced by the parts external to the main body, because it is disposed at a distance from the parts external to the main body. In addition, because the light-receiving part and the controller are disposed in the internal protruding space, installation operations, replacement operations, and the like for the light-receiving part and controller are facilitated.

<Advantageous Effects of Invention>

[0016] According to the wall-mounted indoor apparatus for an air conditioning device of the first aspect of the present invention, functional component installation operations are facilitated. According to the wall-mounted indoor apparatus for an air conditioning device of the second aspect of the present invention, the cover member can be removed, and thus the regions and directions from which functional component installation or maintenance operations can be carried out are expanded, operational efficiency is improved, and maintenance operations are facilitated.

[0017] According to the wall-mounted indoor apparatus for an air conditioning device of the first aspect of the present invention, checking the drive conditions and installation of the driving components are facilitated, and the time required for installation operations or maintenance can be shortened.

[0018] According to the wall-mounted indoor apparatus for an air conditioning device of the third aspect of the present invention, arm driving motor installation operations and maintenance are facilitated.

[0019] According to the wall-mounted indoor apparatus for an air conditioning device of the fourth aspect of the present invention, two operations can be consolidated, thereby improving operational efficiency.

[0020] According to the wall-mounted indoor apparatus for an air conditioning device of the fifth aspect of the present invention, viewability of the panel support arm is improved, and so installation operations and maintenance operations are additionally facilitated.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021]

FIG. 1 is a front view showing the wall-mounted indoor apparatus for an air conditioning device pertaining to an embodiment of the present invention.
FIG. 2 is a plan view of the wall-mounted indoor apparatus of FIG. 1.
FIG. 3 is a side view of the wall-mounted indoor apparatus of FIG. 1.
FIG. 4 is an oblique view for illustrating the internal protruding space of the wall-mounted indoor apparatus of FIG. 1.
FIG. 5 is an oblique view of the wall-mounted indoor apparatus of FIG. 1.
FIG. 6 is a front view showing a state in which the movable panel of the wall-mounted indoor apparatus of FIG. 1 has moved upward.
FIG. 7 is a side view of the wall-mounted indoor apparatus of FIG. 6.
FIG. 8 is a plan view of the wall-mounted indoor apparatus of FIG. 6.
FIG. 9 is an oblique view of the wall-mounted indoor apparatus of FIG. 6.

<External Appearance of the Wall-Mounted Indoor Apparatus>

[0022] FIG. 1 is a front view of the wall-mounted indoor apparatus in a state in which operation has been stopped. A plan view and a side view of the wall-mounted indoor apparatus of FIG. 1 are shown in FIGS. 2 and 3. In the description below, the wall-mounted indoor apparatus 1 is referred to as "indoor apparatus 1." In addition, when

facing the front surface 2F of a main body 2 of the indoor apparatus 1, the right hand side is left in the indoor apparatus 1, and the left hand side is right in the indoor apparatus 1.

[0023] The indoor apparatus 1 shown in FIGS. 1 to 3 comprises a heat exchanger (not shown) and a fan (not shown) that are disposed inside the main body 2, which has a front surface 2F, left and right side surfaces 2S, a back surface 2B, an upper surface 2U, and a bottom surface 2D. The main body 2 has a rectangular shape that is elongated in the horizontal direction (transverse direction) as seen from the front surface and a rectangular shape that is elongated in the vertical direction as seen from the side surface. From a plan view, the front surface 2F and the back surface 2B are parallel, and the middle of the side surface 2s has a horizontally elongated shape that is elongated in the horizontal direction. An attachment part (not shown) is provided on the back surface 2B of the main body 2. The back surface 2B of the main body 2 faces the wall surface when the indoor apparatus 1 is attached to a wall surface.

[0024] FIG. 4 is an elevated oblique view showing the contour of the indoor apparatus 1 when viewed from the front-left of the indoor apparatus 1. The internal protruding space will be described with reference to FIG. 4. As shown in FIG. 4, the main body 2 of the indoor apparatus 1 can be divided into three portions in the depthwise direction. Specifically, the main body 2 comprises a back surface part 2c in the vicinity of the back surface 2B that faces the wall surface to which the unit is attached, a depthwise-central part 2b that is to the front of the back surface part 2c, and a front surface part 2a that is to the front of the depthwise-central part 2b. The front surface part 2a and the back surface part 2c are extremely thin spaces that are in the vicinity of the front surface 2F and the back surface 2B of the main body 2. For example, the depth of the front surface part 2a is about 5 mm from the front surface 2F and the depth of the back surface part 2C is about 5 mm from the back surface 2B. The depth of the front surface part 2a and the depth of the back surface part 2C are substantially same as the thickness of the casing 6.

[0025] A frontward space SP1 is present in the depthwise-central part 2b to the front of the back surface part 2c. The frontward space SP1 has the same width and height as the back surface part 2c. The frontward space SP1 has end surfaces SF1 and SF2 to the left and right side. These end surfaces SF1 and SF2 are the rectangular surfaces that are bounded by the single-dotted line and the two dashed lines in FIG. 4 and are surfaces that face towards the side surface 2S of the main body 2.

[0026] The depthwise-central part 2b comprises a frontward space SP1, an internal protruding space SP2 that extends farther to the left from the frontward space SP1, and an internal protruding space SP3 that extends out farther to the right from the frontward space SP1. The internal protruding space SP2 is a space that is between the left end surface SF1 of frontward space SP1 and the left end surface 2S of the main body. In FIG. 4, the upper surface and the lower surface of the internal protruding space SP2 are shaded with diagonal lines. An internal protruding space SP3 that has a shape that is symmetrical with the internal protruding space SP2 is between the right end surface SF2 and the right side surface 2S. Functional components are disposed in at least one of these internal protruding spaces SP2, SP3. The proximal spaces that are contiguous to the internal protruding spaces SP2, SP3 are described below.

[0027] As shown in FIG. 1, the indoor apparatus 1 has a movable panel 3 that covers all of the front surface 2F of the main body 2 and a part of the side surface 2S. This movable panel 3 comprises a front surface part 3a which is flat and side surface parts 3b which curve smoothly. The front surface part 3a runs along the front surface 2F and covers all the front surface 2F. The side surface parts 3b follow along the side surfaces 2S to the left and the right of the main body 2, covering parts of the side surfaces 2S. As shown in FIG. 2, the side surface parts 3b of the movable panel 3 are curved in a circular arc as viewed from the upper surface.

[0028] As is clear from FIG. 1, the only part that can be seen from the front is the movable panel 3. When viewed from the front surface, primarily only the flat front surface part 3a of the movable panel 3 is seen, giving the impression that the wall is embossed outward, reducing obtrusiveness to occupants of the room. In addition, because the side surface parts 3b of the movable panel 3 curve smoothly with an arc, there is no ridge present between the front surface part 3a and the side surface part 3b, and the indoor apparatus 1 is thus made to be less obtrusive to occupants than parts in which a defined ridge is seen.

[0029] The side surface part 3b, as is seen in FIGS. 2 and 3, extends to the widest lateral location of the depthwise-central part 2b. A cosmetic panel 4 is formed on the side surface 2S of the main body 2 farther to the rear from the side surface part 3b. In the portion in which the movable panel 3 and the cosmetic panel 4 meet, the surface position of the side surface part 3b of the movable panel 3 and the surface of the cosmetic panel 4 are made flush so that there is no step at the end parts of the surface of the side surface part 3b of the movable panel 3 and the surface of the cosmetic panel 4. For this reason, no seam between the movable panel 3 and the cosmetic panel 4 is seen when viewed from the front of the indoor apparatus 1.

[0030] With the side surface 2S of the main body 2 that is constituted by the cosmetic panel 4 and the side surface part 3b of the movable panel 3, the main body 2 has a gradually narrowing width in a portion of the cosmetic panel 4. For this reason, the cosmetic panel 4 has a side surface 2S on the left of the main body 2 as seen from a plan view that curves smoothly in the shape of an S. The side surface 2S on the right curves smoothly in the shape of a reverse S.

[0031] In this manner, the lateral width of the depth-

wise-central part 2b is larger in comparison to that of the back surface part 2c, and thus an internal protruding space is formed inside the side surfaces 2S of a portion of the depthwise-central part 2b.

[0032] This cosmetic panel 4 is attached to a cover member 30 of the main body 2 (refer to FIG. 2). The cover member 30 is attached to a casing 6 that covers the main body 2. The casing 6, as shown in FIG. 2, has a lattice-form grille 6b in the upper surface 2U of the main body 2, and a first intake opening 7 is formed in a portion of the grille 6b.

[0033] FIG. 5 is an oblique view of the indoor apparatus 1 as seen from below and to the left of the indoor apparatus 1. The main body 2 has a bottom surface of the casing 6 on the bottom surface 2D. A discharge opening 9 is formed in the bottom surface of the casing 6. This discharge opening 9 is formed in the front surface 2F as well as in the bottom surface 2D of the main body 2, as will be described below. A flap 10 is provided on the discharge opening 9 in order to adjust the blowing direction of conditioned air that is discharged from the discharge opening 9 upwards or downwards. When operation is stopped, the flap 10 covers the discharge opening 9 as shown in FIG. 5. However, when the flap 10 closes off the discharge opening 9, the respective surface positions align so that the surface of the flap 10 and the surface of the bottom surface of the casing 6 reside on the same line so that they constitute a single surface. In addition, a circular comparatively large pushbutton switch 11 is provided following the shape of the side surface 2S on the left side on the bottom surface 2D of the main body 2. The power is turned on and off using this pushbutton switch 11. The pushbutton switch 11 not only turns the power on and off, but is formed from material that transmits infrared light, so that infrared light that has passed through the pushbutton switch 11 can be received inside the main body 2. In addition, the ring 11a surrounding the pushbutton switch 11 is formed from a material that is transmissive with respect to light, and can thus externally transmit light from light-emitting diodes that are provided inside the main body 2. The disposition of infrared receiving parts and light-emitting diodes is described below.

<External Appearance of the Indoor Apparatus with the Movable Panel Raised>

[0034] The movable panel 3 rises to its highest point during operation and drops to its lowest point when not in operation. Consequently, there are two locations where the movable panel 3 of the indoor apparatus 1 rests: at the highest point and at the lowest point. FIGS. 6 to 10 show a state in which the indoor apparatus 1 is operating and the movable panel 3 has been lifted upwards. FIG. 6 is a front view of the indoor apparatus 1. FIG. 7 is a side view thereof. FIG. 8 is a plan view of the indoor apparatus 1. FIG. 9 is an elevated view of the indoor apparatus 1 from the front left of the indoor apparatus 1, and FIG. 10 is an elevated oblique view of the indoor apparatus 1 from the back-left of the indoor apparatus 1.

[0035] As shown in FIG. 6, the moving of the movable panel 3 to its highest point causes the first opening part 9a formed below the casing 6 to assume a state of being visible from the front. The discharge opening 9 that was described previously and is shown in FIG. 5 comprises a first opening part 9a and a second opening part 9b that is formed on the bottom surface of the casing 6 but can be covered by the flap 10. The first opening part 9a and the second opening part 9b are connected and meet with the outlet of the discharge flow path (not shown) that is provided in the main body 2 and faces downwards at an angle. In FIG. 6, the second opening part 9b is closed off by the flap 10, but, in FIG. 9, the flap 10 rotates and opens the second opening part 9b because the flap is situated in the discharge flowpath. During operation, the bottom end part 3c of the movable panel 3 rises above the position of the upper edge of the first opening part 9a so that at least the first opening part 9a is opened.

[0036] In addition, with the lower end part 3c of the movable panel 3 positioned above the upper edge of the first opening part 9a, the person detection sensor 12 that is provided on the front surface 6a of the casing 6 will become exposed and assume a state of being capable of detecting people.

[0037] When the movable panel 3 moves upwards, the distance over which the lower end part 3c moves to the front and back is small, and the frontward movement of the upper end part 3d is large. For this reason, as shown in FIG. 7, when viewed from the side, the upper end part 3d moves forwards more than the lower end part 3c, and the movable panel 3 inclines to the front. As a result, an opening part 13 is formed between the back surface 3e of the movable panel 3 and the front surface 6a of the casing 6. In FIG. 6 or FIG. 9, a second intake opening is provided on the front surface 6a of the casing 6, although it is shielded by the movable panel 3 and cannot be seen. By forming the opening part 13, it is possible to take in indoor air from the second intake opening that is provided on the front surface 6a of the casing 6. The second intake opening is shown below in FIG. 16.

[0038] In this manner, indoor air is taken in downward from the opening part 13 that has an upper end that broadens like a funnel, so that the flow of indoor air that is taken in from the second intake opening and flow of conditioned air that is discharged from the discharge opening 9 are generated on both sides of the movable panel 3 in the vicinity of the lower end part 3c of the movable panel 3. For this reason, if the gap between the lower end part 3c of the movable panel 3 and the front surface 6a of the casing 6 is large, then conditioned air will enter into the flow of the indoor air, and conversely, indoor air flowing through the back surface side of the movable panel 3 will enter into the flow of conditioned air, which will cause undesirable effects such as the production of condensation. Thus, when the movable panel

3 reaches its highest point, an operation is carried out whereby the lower end part 3c of the movable panel 3 is drawn towards the front surface 6a of the casing 6.

[0039] In addition, for similar reasons, due to the deformation of the movable panel 3, it is undesirable for a gap to arise between the bottom end part 3 c of the movable panel 3 and the front surface 6a of the casing 6. A material that is light and has comparatively high stiffness such as plastic or plastic-clad aluminum is used for the movable panel 3. However, the stiffness of the plate-form member that constitutes the movable panel 3 alone is insufficient to prevent a gap of this type from being formed. Thus, with the objective of further increasing stiffness, a hollow metal bar 14 or the like that is made of stainless steel is affixed to the back side of the front surface part 3a of the movable panel 3 as shown in Fig 8 or 10.

Support of Movable panel

[0040] The movable panel 3 is supported by a panel support arm 15 on which a rack gear is formed as shown in FIG. 8 or FIG. 10. The panel support arm 15 moves as a result of drive force being transmitted from a stepper motor described below to the rack gear.

[0041] As described previously, in order to provide the indoor apparatus 1 with superior external appearance, the movable panel 3 constituted so as to cover a part of the side surface 2S of the main body 2 as well as the entire front surface 2F of the main body 2, and the movable panel thus becomes heavy. In addition, in order to take in indoor air from the second intake opening, the allowed amount of deformation is small, and a material with high stiffness is thus required. The weight of the movable panel 3 thus tends to increase further. In addition, because the movable panel 3 does not simply slide upwards and downwards, and a more complex operation is required, the load on the support member of the movable panel 3 such as the panel support arm 15 is increased.

[0042] A side view of the indoor apparatus 1 with the movable panel 3 removed is shown in FIG. 11. In the state shown in FIG. 11, the movable panel 3 has been removed from the panel support arm 15 in the state shown in FIG. 7 with the movable panel 3 rested at its highest point.

[0043] FIGS. 12, 13, and 14 illustrate the structure and operation of the panel support arm 15 with a portion of the apparatus that includes the panel support arm 15 and the peripheral parts. FIG. 12 shows a state in which the movable panel 3 is at its lowest point with operation stopped (closed condition). FIG. 14 shows a state in which the movable panel 3 is at its highest point with operation being carried out (open condition). FIG. 13 shows a state occurring during movement from the state shown in FIG. 12 to the state shown in FIG. 14, or, conversely, a state occurring during movement from the state of FIG. 14 to the state of FIG. 12.

[0044] The movable panel 3 shown in FIGS. 12 to 14 has a clad structure formed from an aluminum plate 3m and a plastic plate 3n. A first linking part 16a and a second linking part 16b are provided on the back surface side of the plastic plate 3n in order to link to the panel support arm 15. The first linking part 16a that is provided in the vicinity of the upper end part 3d of the movable panel 3 links with the opening part 15a that is provided on the upper part of the panel support arm 15. On the other hand, the second linking part 16b is provided at a height of approximately one-fourth the height of the movable panel 3 referenced from the lower end part 3c of the movable panel 3. This second linking part 16b links with the linking part 15b that is provided on the lower part of the panel support arm 15. The movable panel 3 and the panel support arm 15 are constituted so that they can be attached and removed by carrying out the linking referred to above.

[0045] The panel support arm 15 is constituted by a plate-form member that resembles a triangular square with the width decreasing towards the upper part. A first sliding opening 15d and a second sliding opening 15e are formed in the shape of long holes that are formed with the same angle with respect to the edge 15c with which the movable panel 3 is in close contact. In addition, a roller 15f is attached at the apex of the panel support arm 15 farthest from the edge 15c.

[0046] The panel support arm 15 is housed inside a thin case 17 constituted by the mating of two plate-form member sheets. A cylindrical first support member 20a that fits inside the first sliding opening 15d so that it can slide through the first sliding opening 15d and a cylindrical second support member 20b that fits inside the second sliding opening 15e so that it can slide through the second sliding opening 15e are fixed with screws to one of the plate-form members 18 that constitute the thin case 17. A guide part 18a that can move while striking the roller 15f is formed at the periphery of the plate-form member 18.

[0047] This guide part 18a comprises a guide wall 18a1 that extends linearly and a recess part 18a2 that leads to the upper part of the guide wall 18a1. The recess part 18a2 is at a position that is farther from the edge 15c with respect to a straight line extended along the guide wall 18a1. In addition, the second sliding opening 15e comprises a long upper opening 15e1 and a very short lower opening 15e2. The distance between the upside of the upper opening 15e1 and the edge 15c is shorter than the distance between the downside of the upper opening 15e1 and the edge 15c. The distance between the upside of the lower opening 15e2 and the edge 15c is longer than the distance between the downside of the lower opening 15e2 and the edge 15c.

[0048] The guide part 18a has a depression part 18a2, and the second sliding opening 15e has a lower opening 15e2, and thus the movable panel 3 has a complicated movement. When the second support member 20b slides from above to below through the upper opening 15e1 of

the second sliding opening 15e, as the movable panel 3 moves upwards, the upper end part 3d of the movable panel 3 assumes a large separation from the front surface 6a of the casing 6, whereas the lower part 3c separates slightly from the front surface 6a. When the second support member 20b then enters into the lower opening 15e2, the roller 15f enters into the recess part 18a2. At this time, the panel support arm 15 moves while rolling with the first support member 20a as the center, and the upper end part 3d of the movable panel 3 moves so that it is even farther from the front surface 6a of the casing 6, whereas the lower end part 3c moves so that it approaches the front surface 6a. The trajectory of the movement of the movable panel 3 is shown in FIG. 15.

[0049] The panel support arm 15 carries out an operation involving movement through the transmission of drive force from the driven gear 21 to the rack gear of the panel support arm 15 shown in FIGS. 12 to 14. Power is transmitted to the driven gear 21 from a drive gear 22 that is linked to the drive shaft of a stepper motor described below. The driven gear 21 and the drive gear 22 are attached on the inside of the thin case 17, and the driven gear 21 meshes with the rack gear of the panel support arm 15.

[0050] The operation whereby the heavy movable panel 3 described above and the panel support arm 15 having a complicated movement are installed so as to allow proper functioning becomes difficult when other members are densely packed at the periphery. For this reason, the members such as the panel support arm 15 in the indoor apparatus 1 are provided in the internal protruding space of the depthwise-central part 2b of the main body 2.

Installation Site of the Panel Support Arm 15

[0051] The installation site, for the panel support arm 15 and peripheral members thereof, described above with reference to FIGS. 12 to 14, will now be described. A state in which the movable panel 3 of the indoor apparatus 1 has been removed is shown in FIGS. 16 and 17. FIG. 16 is a front view of the indoor apparatus 1, and FIG. 17 is a plan view of the indoor apparatus 1.

[0052] As shown in FIG. 16, the second intake opening 27 is provided on the front surface 6a of the casing 6. The second intake opening 27, as with the first intake opening 7, is slightly closer to the right of the main body 2. From this, it will be understood that the force that is received by the movable panel 3 from the indoor air that is taken into the second intake opening 27 is slightly larger towards the right of the main body 2. Although the force that is placed on the movable panel 3 is different on the right and left, there must be no shift in the positions, at which support by the panel support arms 15, provided on the left and right, occurs. For this reason as well, installation of the panel support arm 15 becomes important.

[0053] The panel support arm 15 is disposed in a position that is corresponding to the protruding regions 2d, 2e shown in FIG. 16. From a front view, the positions of the protruding regions 2d, 2e overlap the position of the side surface part 3b of the movable panel 3. The cover member 30 is installed on the protruding regions 2d, 2e, and the main body 2 describes a shape that protrudes in the horizontal direction farther than the casing 6 by exactly the amount of the cover member 30. This cover member 30 is fixed to the casing 6 by a screw 31. In addition, the panel support arm 15 and peripheral members described in FIGS. 12 to 14 are fixed to the casing 6 by screws 32.

[0054] FIG. 18 is a view of FIG. 16 across a section A-A. FIGS. 20 and 21 show a state in which the screw 31 has been detached and the cover member 30 has been removed. FIG. 20 is an elevated oblique view of the indoor apparatus 1 from the front and left, and FIG. 21 is a left side view of the indoor apparatus 1.

[0055] As shown in FIG. 18, a large inner protruding space 33 is formed in the portion corresponding to the depthwise-central part 2b in between the cover member 30 and the casing 6. Because this inner protruding space 33 is present, the stepper motor 25 can be disposed outside the thin case 17 in the lateral direction. This case 17 is constituted by the mating of a plate-form member 18 and a transparent plate-form member 19. The stepper motor 25 inserts into the transparent plate-form member 19. As is clear from FIG. 18, the cover member 30 has the shape of a longitudinally half of a cylinder with a downward bulge, similar to the shape of a longitudinally half of a pear, and there is no comparative excess of space formed inside the main body 2. For example, given the shape indicated by the double-dotted line, an excess large space 34 is formed in the area close to the back surface 2B of the main body 2. By cutting off such excess space, and allowing the shape of the protruding cover member 30 to be smoothly curved, the shape of the side surface 2S of the main body 2 can be finished off to produce an external appearance that is minimally intrusive to the occupant.

[0056] As shown in FIG. 20, when the cover member 30 is removed, the structure of the surroundings of the panel support arm 15 and the stepper motor 25 is exposed three-dimensionally. As a result, the operations whereby the peripheral structures of the panel support arm 15 and the stepper motor 25 are installed on the side surface of the casing 6 are facilitated. In other words, a plate-form member 18 can be screwed to the casing 6 together with the thin case 17 in which the stepper motor 25 is installed, and installation of the flat thin case 17 in a flat location such as the side wall 6c of the casing 6 is readily achieved.

[0057] After assembly has been completed in this manner, when the cover member 30 is removed, the entire surroundings of the stepper motor 25 and the panel support arm 15 can be exposed three-dimensionally. For this reason, there is little limitation on the directions from which tools can be inserted, and maintenance operations are facilitated.

[0058] Moreover, because the transparent plate-form

member 19 covers the outer side surface of the panel support arm 15, movement of the driving components such as the panel support arm 15, the driven gear 21, the drive gear 22, and the stepper motor 25 can be checked by looking through the transparent plate-form member 19.

[0059] In order to detect the position of the panel support arm 15, a limit switch 26 is provided on the case 17. A plate-form sheet 28 having a step is installed on the panel support arm 15 (refer to FIG. 21), and the plate-form sheet 28 moves together with the panel support arm 15. The step of this plate-form sheet 28 is detected by the limit switch 26 and position detection is thus carried out by the limit switch 26.

[0060] As described above, because the roller 15f enters into the recess part 18a2 in the support structure of the movable panel 3, support of the movable panel 3 is bolstered. Once the roller 15f enters into the recess part 18a2, in order for the roller 15f to leave the recess part 18a2, the roller must overcome the difference in level between the recess part 18a2 and the guide wall 18a1, and support thus can be bolstered. Consequently, with the limit switch 26, it is necessary to detect that the panel support arm 15 has definitely moved to a position at which the roller 15f enters into the recess part 18a2 (that it has reached the highest point). Because of this, it is necessary to accurately provide the limit switch 26 or the plate-form sheet 28 at the correct position and in the correct orientation. By using the internal protruding space 33, the limit switch 26 and plate-form sheet 28 can be placed together with the case 17 housing the panel support arm 15, and attachment is thus carried out easily and accurately. In addition, during maintenance, the peripheral members of the case 17 are exposed three-dimensionally, and so adjustment using tools or the hands as well as replacement of parts can be easily carried out.

[0061] Across the internal protruding space 33 and the spaces contiguous therewith, in addition to the stepper motor 25, a printed wiring board 40 (functional component) on which electrical parts are mounted is disposed as shown in FIG. 21. The printed wiring board 40 is disposed above the pushbutton switch 11. A light-receiving element 41 that receives infrared light is carried on this printed wiring board 40, and the controller thereof is formed. The light-receiving element 41 is disposed directly above the middle point of the pushbutton switch 11. The reason that maintenance and installation of the printed wiring board 40 are facilitated is the same as the reason that maintenance and installation of functional components such as the panel support arm 15 and the stepper motor 25 are facilitated.

[0062] In addition, a light-emitting diode 42 that emits different colored light is disposed above a ring 11a surrounding the pushbutton switch 11. The light-emitting diode 42 is also carried on the printed wiring board 40. In order to relay different operations such as heating and cooling in accordance with the emitted light color, a configuration is provided whereby the ring 11a surrounding the pushbutton switch 11 can be lighted in various colors. Maintenance of functional components involves maintenance of this type of light-emitting diode 42 or light-receiving element 41.

[0063] The proximal spaces will now be described using FIG. 19. FIG. 19 is a sectional view showing a state in which the panel support arm 15, peripheral members thereof, the stepper motor 25, and the like have been removed from FIG. 18. The single dotted line in the drawing extends frontward with the left edge of the back surface part 2c as a base point. With the indoor apparatus 1, part of the back surface side of the cover member 30 constitutes the back surface part 2c. The cover member 30 constitutes the side surface 2S of the main body 2, and a space is formed between the cover member 30 and the side wall 6c of the casing 6. In essence, the space that is formed between the side wall 6c and the cover member 30 is a space that bulges out, but in order to clarify the range of terminology, the space outside of the single dotted line in the drawing is defined as the internal protruding space 33. However, in cases where a functional component is disposed in a proximal space 33a that is contiguously connected with the inner protruding space 33 and is contiguous therewith, a similar function can be expected as when disposed in the inner protruding space 33. For example, although the space that is on the inside of the casing 6 but past the side wall 6c is contiguous with the inner protruding space 33, similar function as the inner protruding space 33 clearly cannot be expected, and the space is not a proximal space 33a. In addition, the same functioning cannot be expected if the distance is too great, even if the space is connected. Consequently, the thickness of the proximal space 33a (distance from the inner protruding space 33 to the farthest location), in consideration of the size of the functional components that are used in a common indoor apparatus 1, is preferably about 2 to 4 cm, more preferably less than 2 cm.

Cover Member Structure

[0064] FIGS. 22 and 23 show six views and one sectional view of the left-side cover member 30 that constitutes the left side surface of the indoor apparatus 1. Specifically, FIG. 22(a) is a front view of the cover member 30, FIG. 22(b) is a left-side view, FIG. 22(c) is a back view, and FIG. 22(d) is a left-side view. In addition, FIG. 23(a) is a plan view, FIG. 23(b) is a bottom view, and FIG. 23(c) is a B-B sectional view.

[0065] As described previously, the cover member 30 has a three-dimensional shape and the cover member 30, by virtue of being disposed on the side surface 2S of the main body 2, forms the inner protruding space 33. Because the external form of the main body 2 of the indoor apparatus 1 is made as small as possible, excess space is preferably not provided inside the main body 2, and so the shape of the cover member 30 describes a curve that has a smooth outward protrusion in the vicinity

of the stepper motor 25 so as to tightly encompass the stepper motor 25. The shape of the cover member 30 as seen from a plan view will be described with reference to FIG. 23(a). First, moving from the leading end towards the back surface 2B to the trailing end towards the front surface 2F, the side surfaces gradually bulge in the widthwise direction of the main body 2. Next, a substantially semicircular arc is shown as starting from a location that is more than about 1/3 of the way and extending up to the front surface 2F. The trailing end of the front surface 2F and the leading end of the back surface 2B are at substantially the same positions in the widthwise direction (horizontal direction) of the main body 2. For this reason, sufficient inner protruding space 33 is formed inside of the substantially semicircular arc to contain the functional components. When viewed in additional detail, a step is formed at the farthest protruding location of the cover member 30. This step is formed in order to constitute a single surface between the movable panel 3 and the outer surface of the cosmetic panel 4.

[0066] From a comparison of FIG. 23(a), FIG. 23(b), and FIG. 23(c), the cover member 30 can be seen to have a linear outline in the vertical direction of the main body 2. This is an aspect that is heavily dependent on design. For example, if there is excessive inner protruding space 33 in the upper part of the main body 2 then a configuration may be adopted in which the shape of the top surface in FIG. 23(a) is decreased more than the shape of the bottom surface in FIG. 23(b). With a gentle curve, the functional components such as the stepper motor 25 that are provided in the inner protruding space 33 are contained within a side surface outer profile such as that of the cover member 30 while eliminating unnecessary internal space, thereby decreasing the intrusiveness of the device from the standpoint of the occupant. At the same time, assembly of the functional component disposed in the inner protruding space 33 is facilitated.

[0067] A latching hook 35 is provided on the back surface side of the cover member 30. This latching hook 35 inserts into a prescribed hole in the casing 6. Inserting a screw 31 into the hole 36, and screwing it into the screw hole of the casing 6 enables the cover member 30 to be readily installed on the casing 6. A rib 37 for reinforcing the cover member 30 is formed on the back surface of the cover member 30.

Modification Example

[0068]

(1) In the embodiment described above, the side surface 2S of the main body 2 was constituted by a cover member 30 that can be removed. However, the side surface 2S of the main body 2 need not be removable and, for example, a configuration may be used in which the side surface 2S of the main body 2 is constituted by the casing 6. In this case, ease of maintenance decreases, but is still higher than in the past, and installation operations are also easier than in the past. In the past, when the casing was removed, the parts that were densely packed on the side surfaces were spread out over a flat surface, whereas if a bulging side surface shape is adopted as with the embodiment described above, the densely packed parts are spread out in association with the shape of the bulging side surface. Consequently, by providing the side surface with a bulging curve as in the embodiment described above, the densely packed parts extend three-dimensionally along the shape of the side surface, and so insertion of a tool or hand is facilitated in this portion. As a result, installation operational efficiency and maintenance operational efficiency are improved.

(2) In the embodiment described above, the inner protruding space 33 was formed over the entire height from the lower surface 2D to the upper surface 2U of the main body 2 in the vertical direction. However, even if the inner protruding space 33 is not formed across the entire height, there are cases where similar effects can be realized. For example, if the panel support arm 15 is miniaturized to create extra space, then the side wall 6c of the casing 6 can be made to protrude out and approach the cover member 30. Alternatively, by eliminating the bulge in the portion where excess space was generated and forming the inner protruding space 33 midway along the vertical direction, a design can be adopted in which the width of the main body 2 is narrowed only in the locations where the inner protruding space 33 is not provided.

(3) In the embodiment described above, the entire height of the side surface 2S of the main body 2 was constituted by a single sheet of the cover member 30. However, this cover member 30 may be divided midway and can be configured so that only part of the side surface 2S can be removed. For example, the cover member may fit only onto the upper half, with the lower half being constituted by the casing.

Features

[0069]

(a) The wall-mounted indoor apparatus 1 has a stepper motor 25 that is disposed in the inner protruding space 33 of the main body 2. In the past, the parts have been packed into the casing with the objective of minimizing the form of the indoor apparatus, and thus these types of conventional substantially cuboid main bodies have had flat side walls. Dense packing of other parts into the surroundings of the stepper motor 25 also has been common. In contrast, because the periphery of the stepper motor 25 is covered by a curved cover member 30 in the embodiments described above, the internal protruding space does not have room for any other parts, and

almost all of the stepper motor 25 is exposed. As a result, installation operations for the stepper motor 25 are facilitated. On the other hand, because the shape of the side surface 2S of the main body 2 is a protruding shape that is smoothly curved, obtrusiveness can be decreased relative to cases where the transverse width of the main body 2 is increased. The stepper motor 25 is the arm driving motor for driving the panel support arm 15. The arm driving motor of the panel support arm 15 that must be supported without shifting of the position of the movable panel 3 must be disposed at a precise position, and so significant improvements can be anticipated by facilitating the installation operation for the arm driving motor. The arm driving motor is a type of moving part. The moving parts of the indoor apparatus 1 must be suited to a quiet space with few moving objects, such as in a living room. These types of moving parts have the function of being movable, and installation work typically is difficult in comparison to static parts. This tendency is particularly pronounced in cases where a large drive force must be transmitted or generated by the moving part. Significant operational efficiency improvement effects are obtained as a result of facilitating installation of moving parts of this type. In addition, moving parts are a type of functional component. Functional components have various functions, and must be installed in order to manifest these functions. Operational efficiency thus is significantly improved by facilitating installation of these types of functional components.

In particular, the curved cover member 30 that encompasses the surroundings of the stepper motor 25 can be removed. Because the cover member 30 can be removed, when performing maintenance on the stepper motor 25, it is not necessary to remove the casing 6, as in the past, which facilitates performing maintenance. In addition, even during installation operations for functional components such as the stepper motor 25, the operations can be carried out with the casing 6 on. For example, if a plurality of fins are provided on the heat exchanger, carrying out operations without the casing 6 covering the fins can lead to injury to the worker. However installation work can thus be facilitated while preventing such undesirable outcomes.

(b) The panel support arm 15 supports the movable panel 3 that covers part of the side surfaces 2S of the main body 2 while also covering the entire front surface 2F of the main body 2. In the embodiment described above, the panel support arm 15 was disposed in the proximal space 33a. For this reason, the panel support arm 15 can be installed together with the stepper motor 25 which is a functional component that is disposed in the inner protruding space 33. As a result, the panel support arm 15 and the stepper motor 25 can be installed easily in precise positions, which simplifies the installation operation and improves operational efficiency. In the embodiment described above, the panel support arm 15 was disposed in a proximal space 33a, but improvement in operational efficiency can likewise be obtained when disposed in the inner protruding space 33 or when disposed in the inner protruding space 33 and the proximal space 33a.

This panel support arm 15 is covered by the transparent plate-form member 19, and the working state of the panel support arm 15 inside the case 17 can be observed through the plate-form member 19. For this reason, it is easy to check the working state of the panel support arm 15 during maintenance while also facilitating installation of the panel support arm 15. Moreover, operation of the driven gear 21 or the drive gear 22 can be checked, and operation of the stepper motor 25 also can be checked indirectly by checking operation of the gears through the transparent plate-form member 19.

(c) The light-receiving element 41 (light-receiving part) is disposed in the inner protruding space 33. Thus, infrared light is received through the pushbutton switch 11. Because the light-receiving element 41 is separated from the outside of the main body 2, it is not readily influenced by changes in the indoor environment. Because the printed wiring board 40 having the light-receiving element 41 and controllers is disposed in the internal protruding space, the installation and removal operations of the light-receiving element 41 and the printed wiring board 40 on which is the controller thereof can be easily carried out.

REFERENCE SIGNS LIST

[0070]

1	Wall-mounted indoor apparatus
2	Main body
2a	Front surface part
2b	Depthwise-central part
2c	Back surface part
3	Movable panel
6	Casing
15	Panel support arm
25	Stepper motor
30	Cover member
40	Printed wiring board
41	Light-receiving element

CITATUON LIST

PATENT LITERATURE

[0071] **<Patent Document 1>** Japanese Patent Unexamined publication 2005-98671

Claims

1. A wall-mounted indoor apparatus for an air conditioning device, comprising:

   a main body (2) having a back surface part (2c) that faces a side wall surface on which installation is to be performed, a depthwise-central part (2b) that is provided frontward from the back surface part and is laterally wider than the back surface part, and a front surface part (2a) that is provided frontward from the depthwise-central part; and
   a functional component (25) that is a driving component for generating or transmitting power **characterized in that** the wall-mounted indoor apparatus further comprises:

   a movable panel (3) that is installed on the main body, wherein
   the functional component is a driving component for generating or transmitting power for driving the movable panel and is disposed in an internal protruding space (SP2, SP3, 33) that is formed between an end surface (SF1, SF2) of the frontward space (SP1) of the back surface part and a side surface of the depthwise-central part.

2. The wall-mounted indoor apparatus for an air conditioning device according to claim 1, wherein the main body has a cover member (30) that forms at least a side surface of the depthwise-central part.

3. The wall-mounted indoor apparatus for an air conditioning device according to claim 1, wherein the driving component comprises an arm driving motor (25) for generating drive power that is to be transferred to the movable panel.

4. The wall-mounted indoor apparatus for an air conditioning device according to claim 1 or 3, further comprising:

   the movable panel further comprises a panel support arm (15) adapted for supporting the movable panel, the panel support arm disposed in the internal protruding space and/or in a proximal space (33a) that is contiguously connected to a surrounding vicinity of the internal protruding space, wherein
   the movable panel covers the front surface and part of the side surface of the main body in a non-operating period, and
   the arm driving motor is disposed outside the panel support arm in the lateral direction.

5. The wall-mounted indoor apparatus for an air conditioning device according to any of claims 1 to 4, further comprising:

   a light-receiving part (41) disposed in the internal protruding space and/or in the proximal space (33a) that is contiguously connected to the surrounding vicinity of the internal protruding space; and
   a controller (40) for controlling the light-receiving part, the controller provided in the internal protruding space and/or the proximal space.

Patentansprüche

1. An einer Wand befestigte Innenraumeinrichtung für eine Klimaanlagenvorrichtung, umfassend:

   einen Hauptkörper (2), der einen Hinterflächenteil (2c), der einer Seitenwandfläche zugewandt ist, an der die Installation durchzuführen ist, einen in der Tiefe mittigen Teil (2b), der weiter vorne als der Hinterflächenteil vorgesehen und seitlich breiter ist als der Hinterflächenteil, und einen Vorderflächenteil (2a) aufweist, der weiter vorne als der in der Tiefe mittige Teil vorgesehen ist; und
   eine funktionelle Komponente (25), die eine Antriebskomponente zu dem Erzeugen oder Übertragen von Kraft ist,
   dadurch gekennzeichnet, dass die an einer Wand befestigte Innenraumeinrichtung weiter Folgendes umfasst:

   eine bewegbare Platte (3), die auf dem Hauptkörper installiert ist,
   wobei die funktionelle Komponente eine Antriebskomponente zu dem Erzeugen oder Übertragen von Kraft zu dem Antreiben der bewegbaren Platte ist und in einem inneren vorstehenden Raum (SP2, SP3, 33) angeordnet ist, der zwischen einer Stirnfläche (SF1, SF2) des vorderen Raumes (SP1) des Hinterflächenteils und einer Seitenfläche des in der Tiefe mittigen Teils ausgebildet ist.

2. An einer Wand befestigte Innenraumeinrichtung für eine Klimaanlagenvorrichtung nach Anspruch 1, wobei der Hauptkörper ein Abdeckelement (30) aufweist, das zumindest eine Seitenfläche des in der Tiefe mittigen Teils ausbildet.

3. An einer Wand befestigte Innenraumeinrichtung für eine Klimaanlagenvorrichtung nach Anspruch 1, wobei die Antriebskomponente einen Armantriebsmotor (25) zu dem Erzeugen von Antriebskraft umfasst, die an die bewegbare Platte zu übertragen ist.

4. An einer Wand befestigte Innenraumeinrichtung für eine Klimaanlagenvorrichtung nach Anspruch 1 oder 3, weiter umfassend:

dass die bewegbare Platte weiter einen Plattenhaltearm (15) umfasst, der zu dem Halten der bewegbaren Platte angepasst ist, wobei der Plattenhaltearm in dem inneren vorstehenden Raum und/oder in einem proximalen Raum (33a) angeordnet ist, der mit einer näheren Umgebung des inneren vorstehenden Raums angrenzend verbunden ist,
wobei die bewegbare Platte in einem Nichtbetriebszeitraum die Vorderfläche und einen Teil der Seitenfläche des Hauptkörpers abdeckt und der Armantriebsmotor in seitlicher Richtung außerhalb des Plattenhaltearms angeordnet ist.

5. An einer Wand befestigte Innenraumeinrichtung für eine Klimaanlagenvorrichtung nach einem der Ansprüche 1 bis 4, weiter umfassend:

einen Lichtaufnahmeteil (41), der in dem inneren vorstehenden Raum und/oder in dem proximalen Raum (33a) angeordnet ist, der mit der näheren Umgebung des inneren vorstehenden Raums angrenzend verbunden ist; und
eine Steuerung (40) zu dem Steuern des Lichtaufnahmeteils, wobei die Steuerung in dem inneren vorstehenden Raum und/oder dem proximalen Raum vorgesehen ist.

Revendications

1. Appareil intérieur mural pour un dispositif de climatisation, comprenant :

un corps principal (2) ayant une partie de surface arrière (2c) qui est tournée vers une surface de paroi latérale sur laquelle une installation doit être effectuée, une partie centrale dans le sens de la profondeur (2b) qui est prévue vers l'avant par rapport à la partie de surface arrière et est plus large latéralement que la partie de surface arrière, et une partie de surface avant (2a) qui est prévue vers l'avant par rapport à la partie centrale dans le sens de la profondeur ; et
un composant fonctionnel (25) qui est un composant d'entraînement pour générer ou transmettre une puissance,
caractérisé en ce que l'appareil intérieur mural comprend en outre :

un panneau mobile (3) qui est installé sur le corps principal,
dans lequel le composant fonctionnel est un composant d'entraînement pour générer ou transmettre une puissance pour entraîner le panneau mobile et est disposé dans un espace en saillie interne (SP2, SP3, 33) qui est formé entre une surface d'extrémité (SF1, SF2) de l'espace vers l'avant (SP1) de la partie de surface arrière et une surface latérale de la partie centrale dans le sens de la profondeur.

2. Appareil intérieur mural pour un dispositif de climatisation selon la revendication 1, dans lequel le corps principal possède un élément de couverture (30) qui forme au moins une surface latérale de la partie centrale dans le sens de la profondeur.

3. Appareil intérieur mural pour un dispositif de climatisation selon la revendication 1, dans lequel le composant d'entraînement comprend un moteur d'entraînement de bras (25) pour générer une puissance d'entraînement qui doit être transférée au panneau mobile.

4. Appareil intérieur mural pour un dispositif de climatisation selon la revendication 1 ou 3, comprenant en outre :

le panneau mobile comprend en outre un bras de support de panneau (15) adapté pour supporter le panneau mobile, le bras de support de panneau étant disposé dans l'espace en saillie interne et/ou dans un espace proximal (33a) qui est relié de manière contiguë à un voisinage proche de l'espace en saillie interne,
dans lequel
le panneau mobile couvre la surface avant et une partie de la surface latérale du corps principal dans une période non opérationnelle, et
le moteur d'entraînement de bras est disposé à l'extérieur du bras de support de panneau dans la direction latérale.

5. Appareil intérieur mural pour un dispositif de climatisation selon l'une quelconque des revendications 1 à 4, comprenant en outre :

une partie réceptrice de lumière (41) disposée dans l'espace en saillie interne et/ou dans l'espace proximal (33a) qui est relié de manière contiguë au voisinage proche de l'espace en saillie interne ; et
une unité de commande (40) pour commander la partie réceptrice de lumière, l'unité de commande étant prévue dans l'espace en saillie interne et/ou de l'espace proximal.

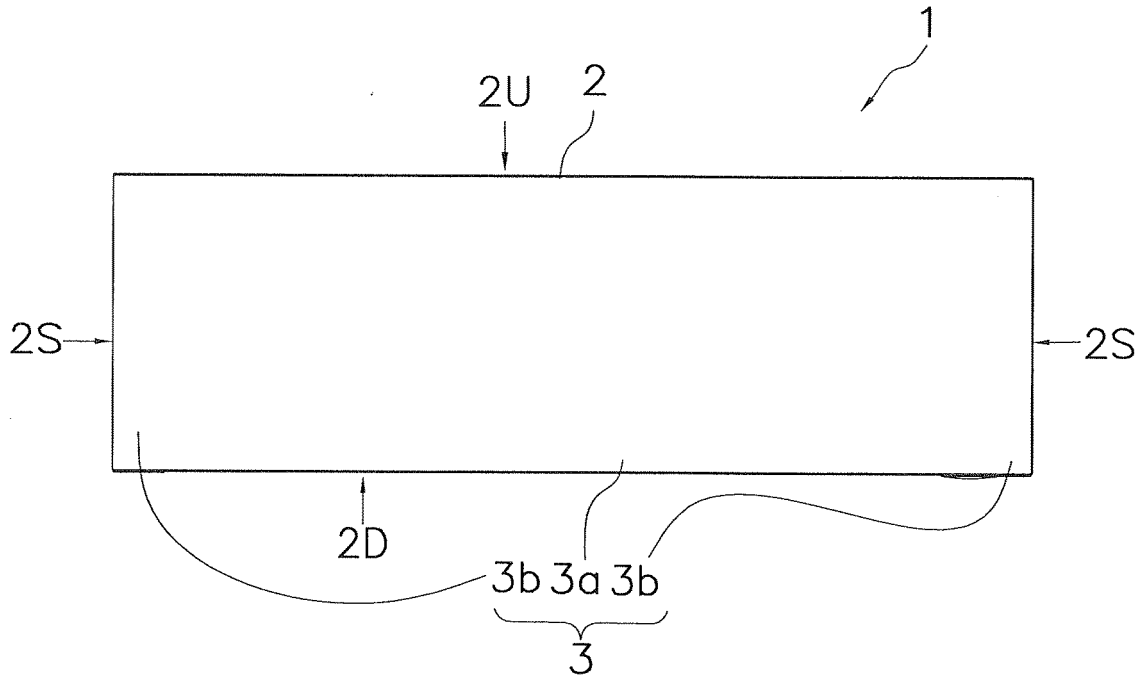


FIG. 1

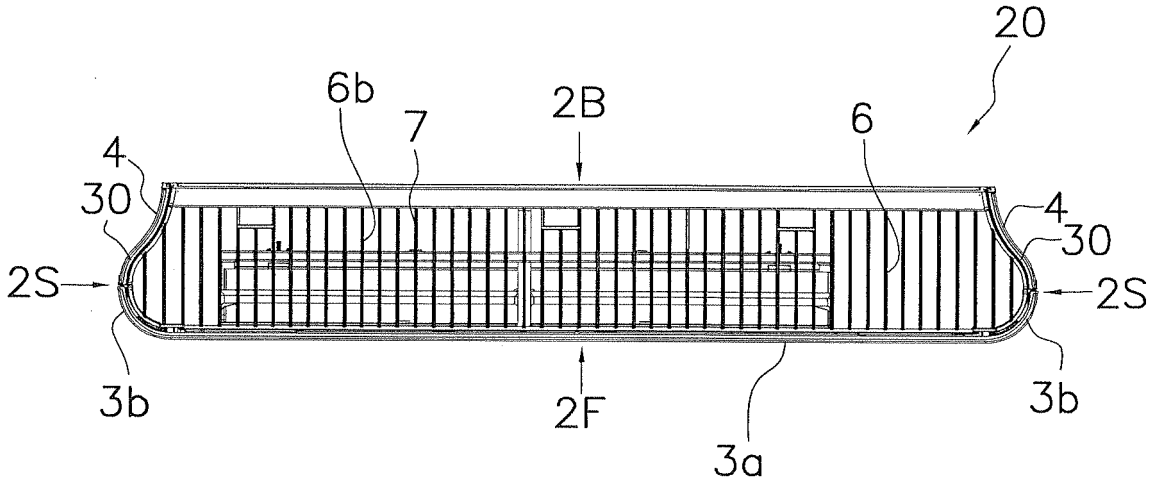


FIG. 2

FIG. 3

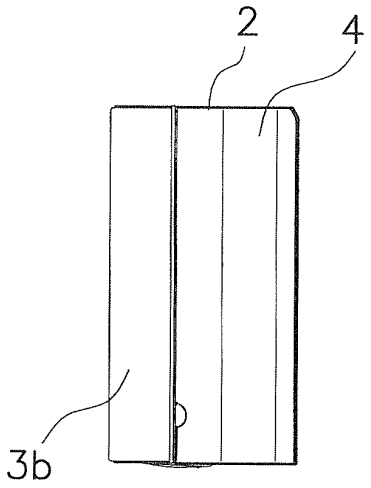


FIG. 4

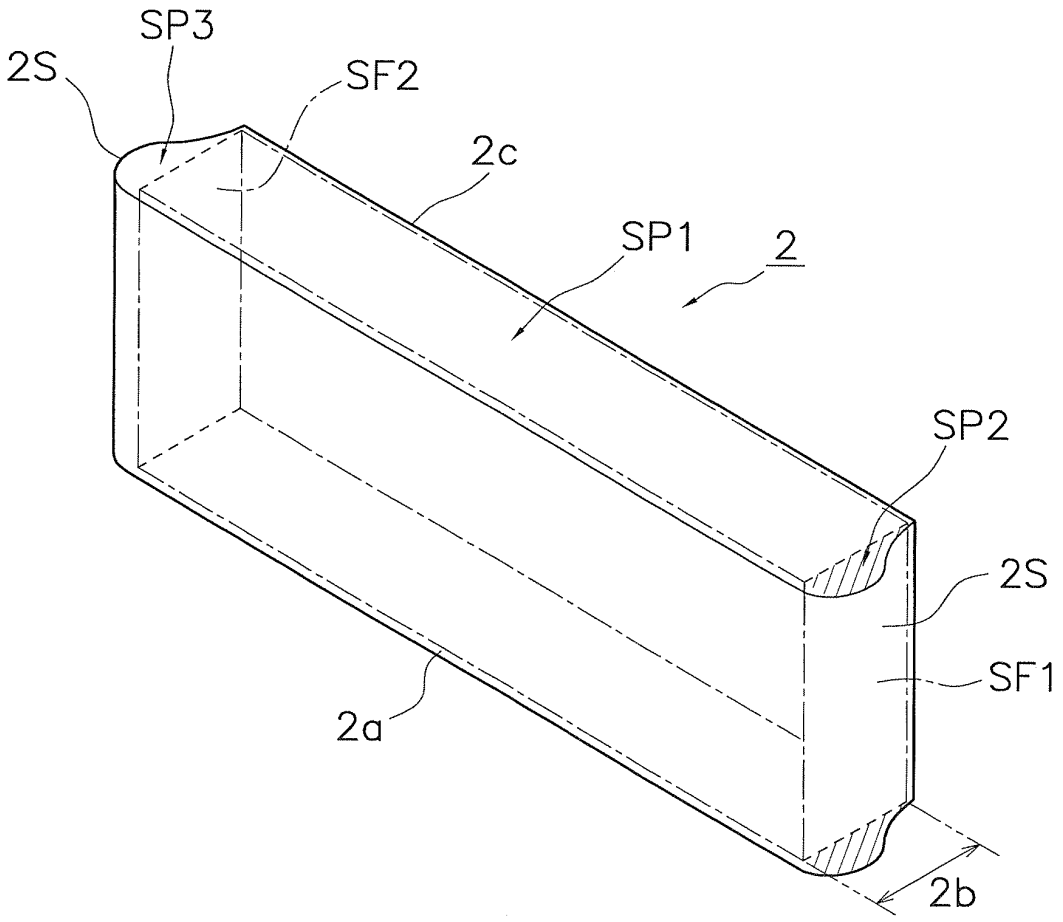


FIG. 5

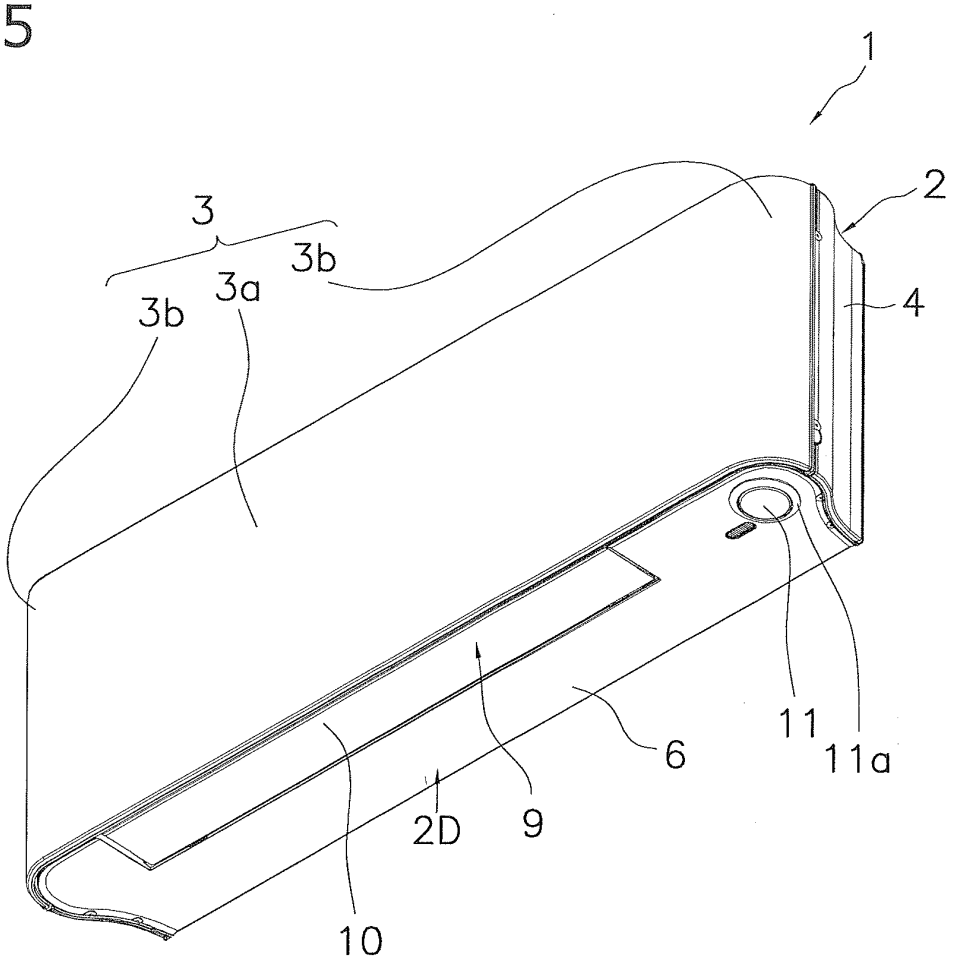
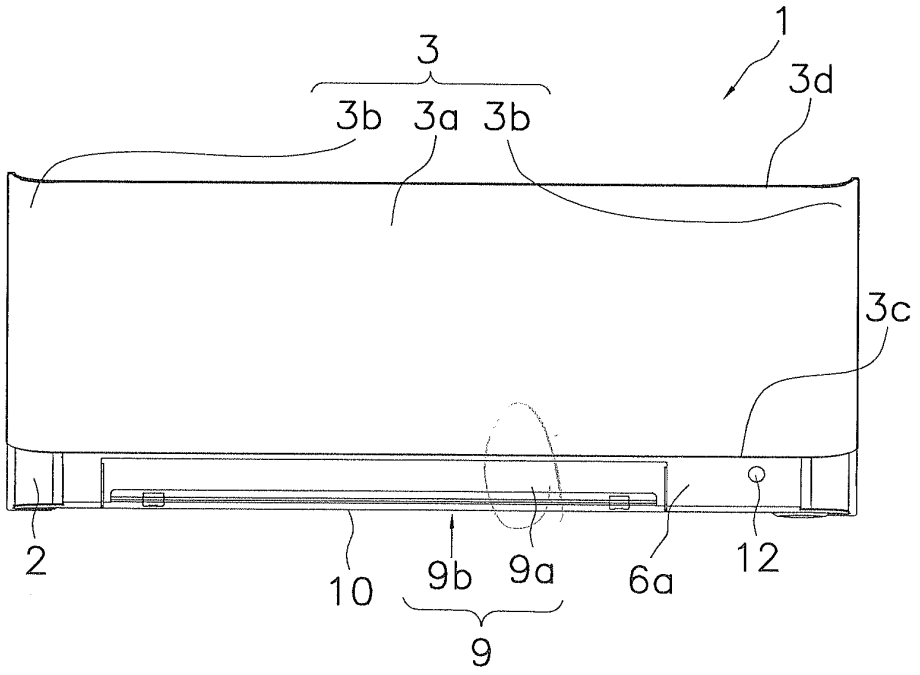


FIG. 6



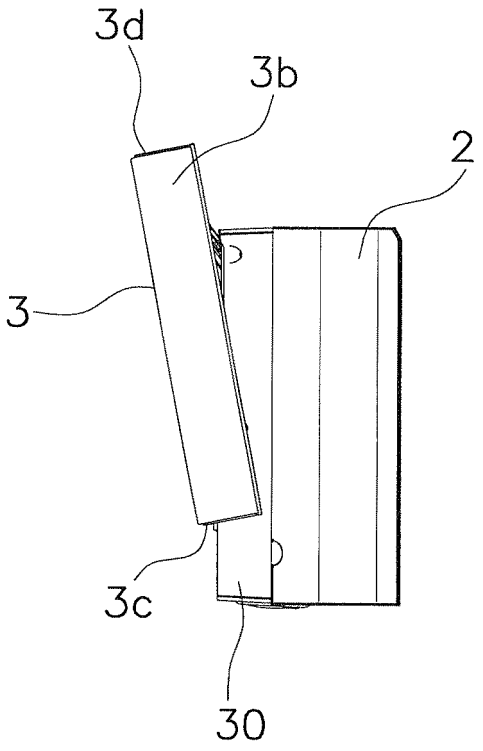


FIG. 7

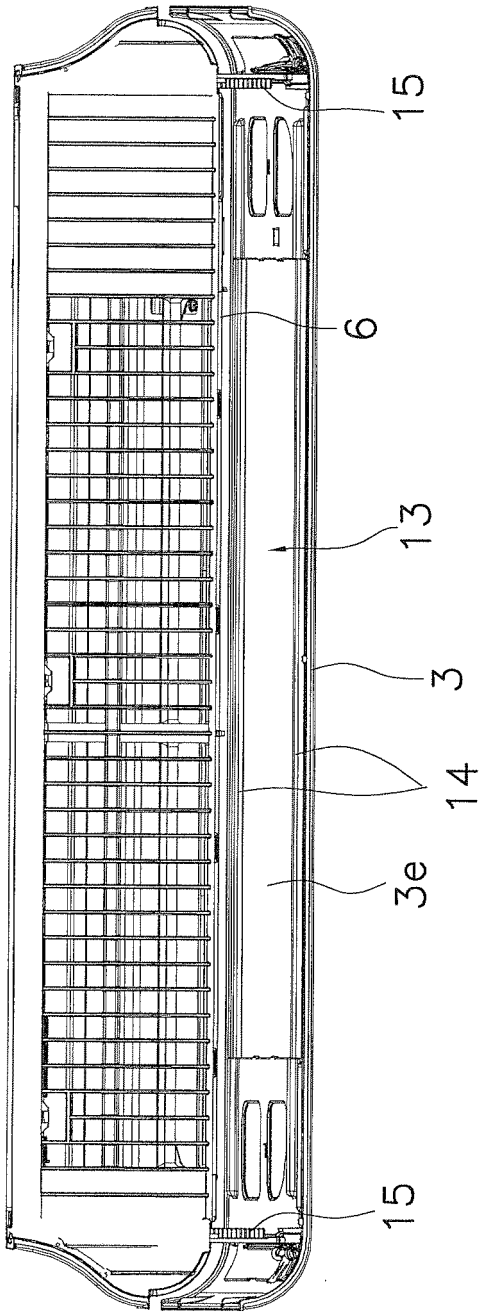


FIG. 8

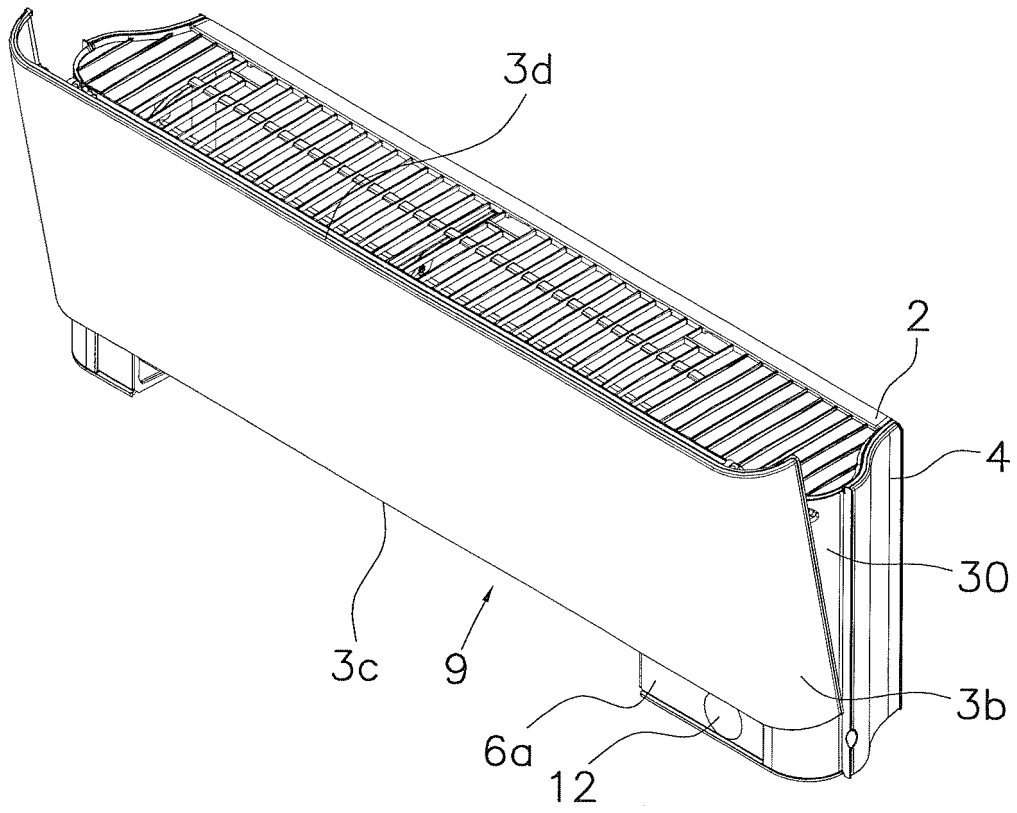


FIG. 9

FIG. 10

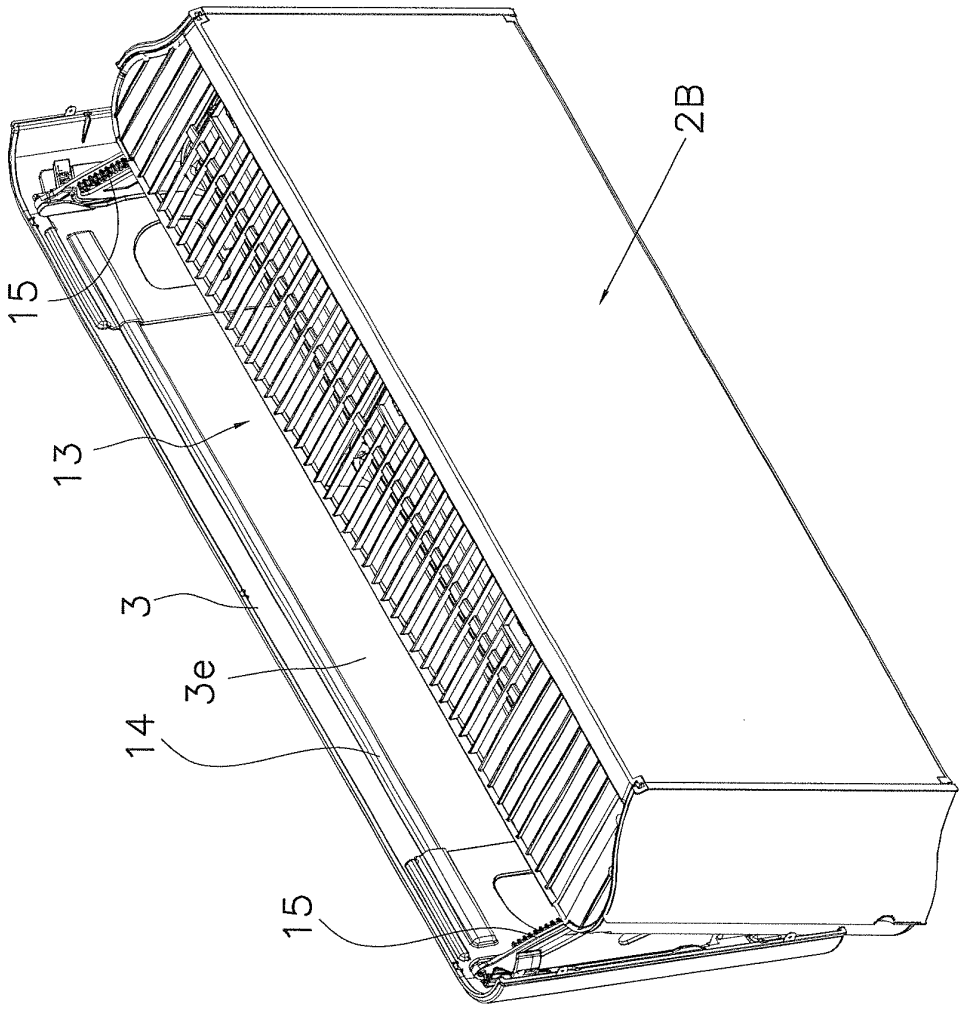
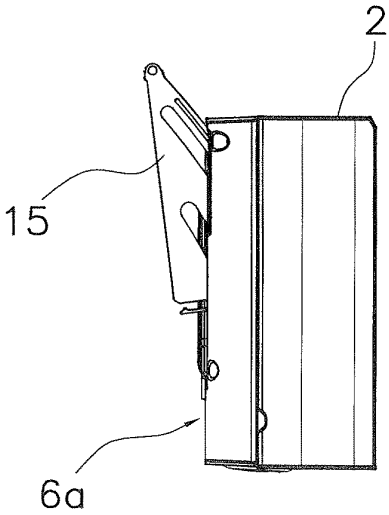


FIG. 11



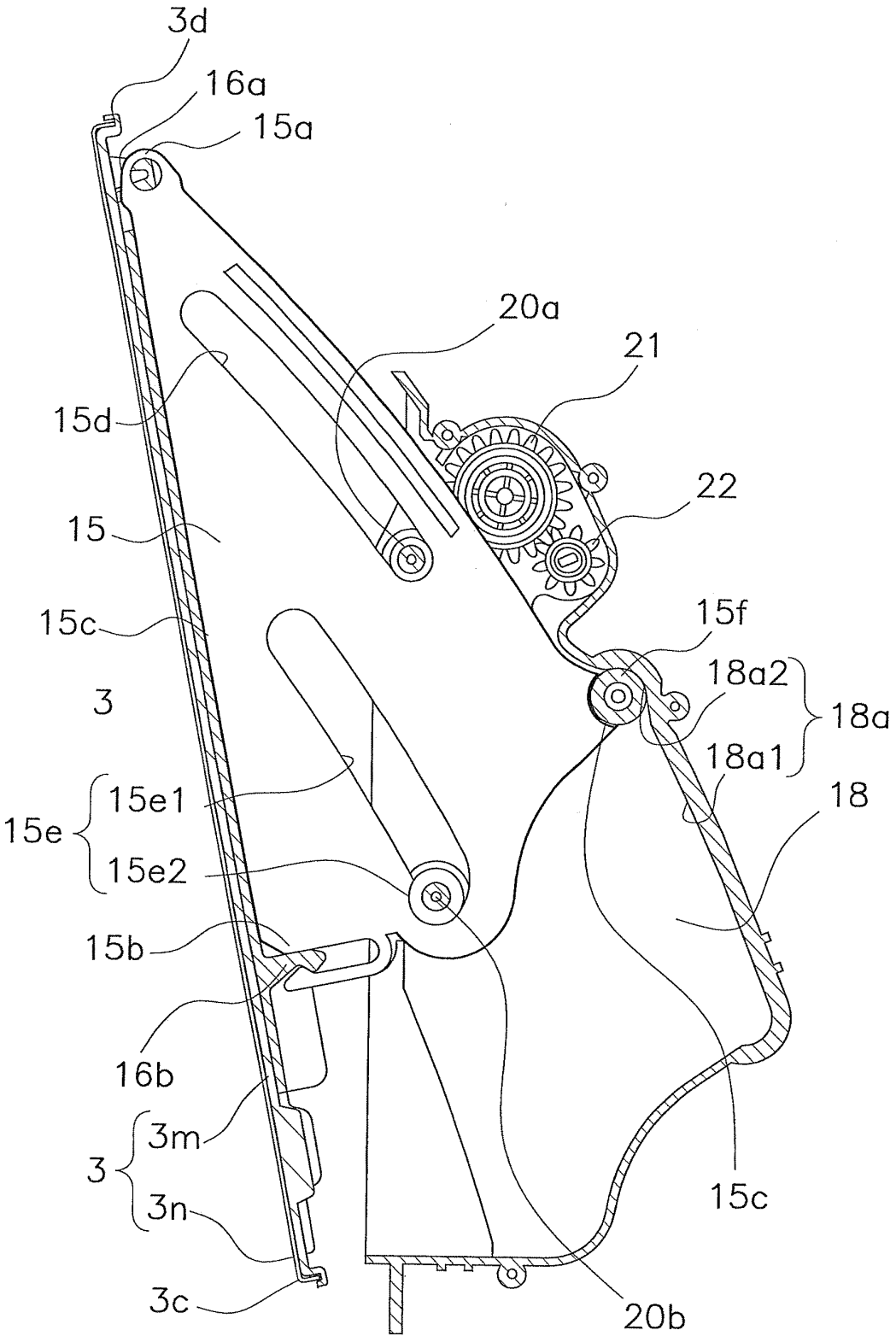

3d
16a
15a
20a
21
15d
22
15
15c
15f
18a2
18a
3
18a1
15e
15e1
18
15e2
15b
16b
3
3m
3n
15c
3c
20b

FIG. 12

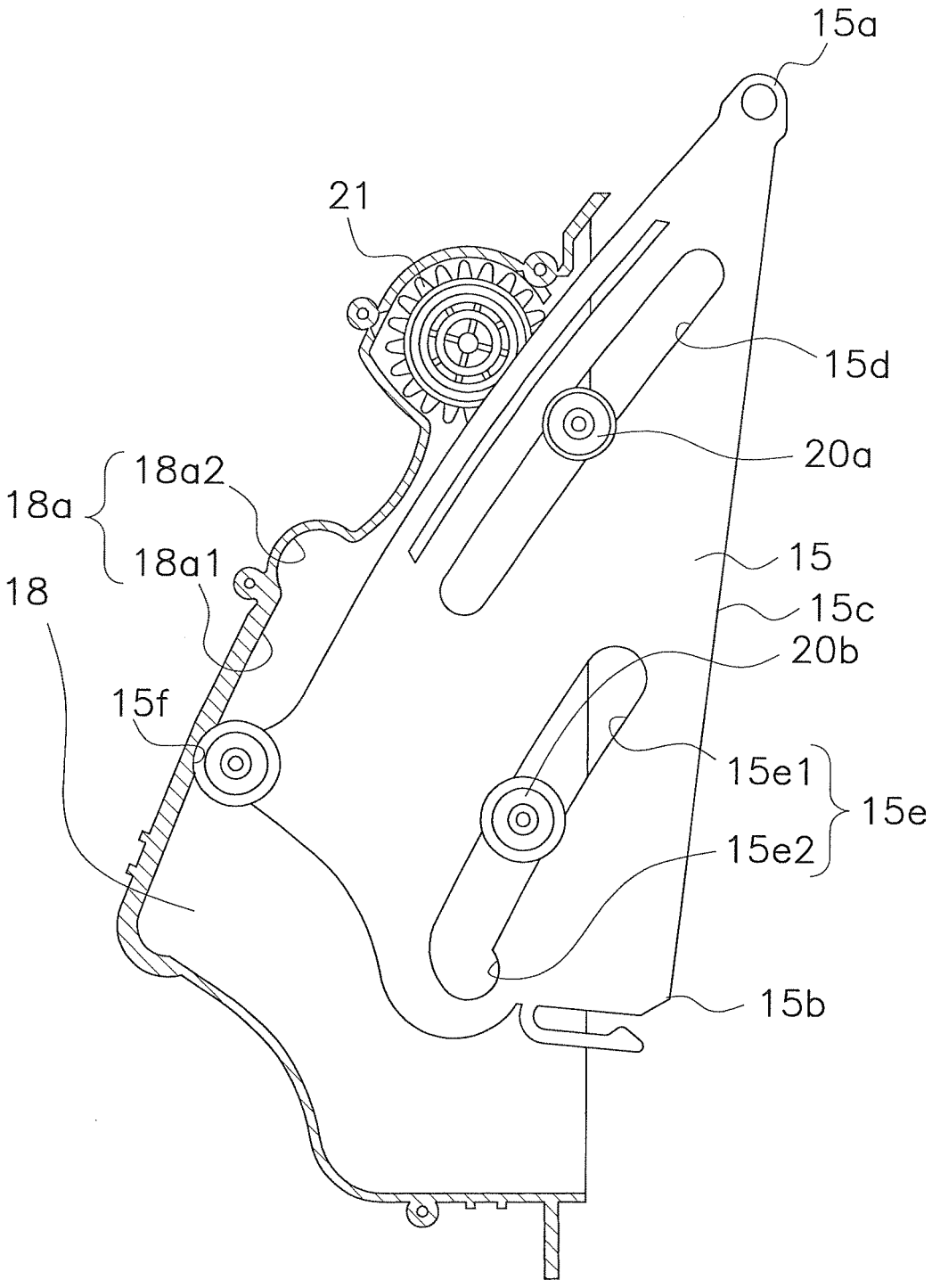


FIG. 13

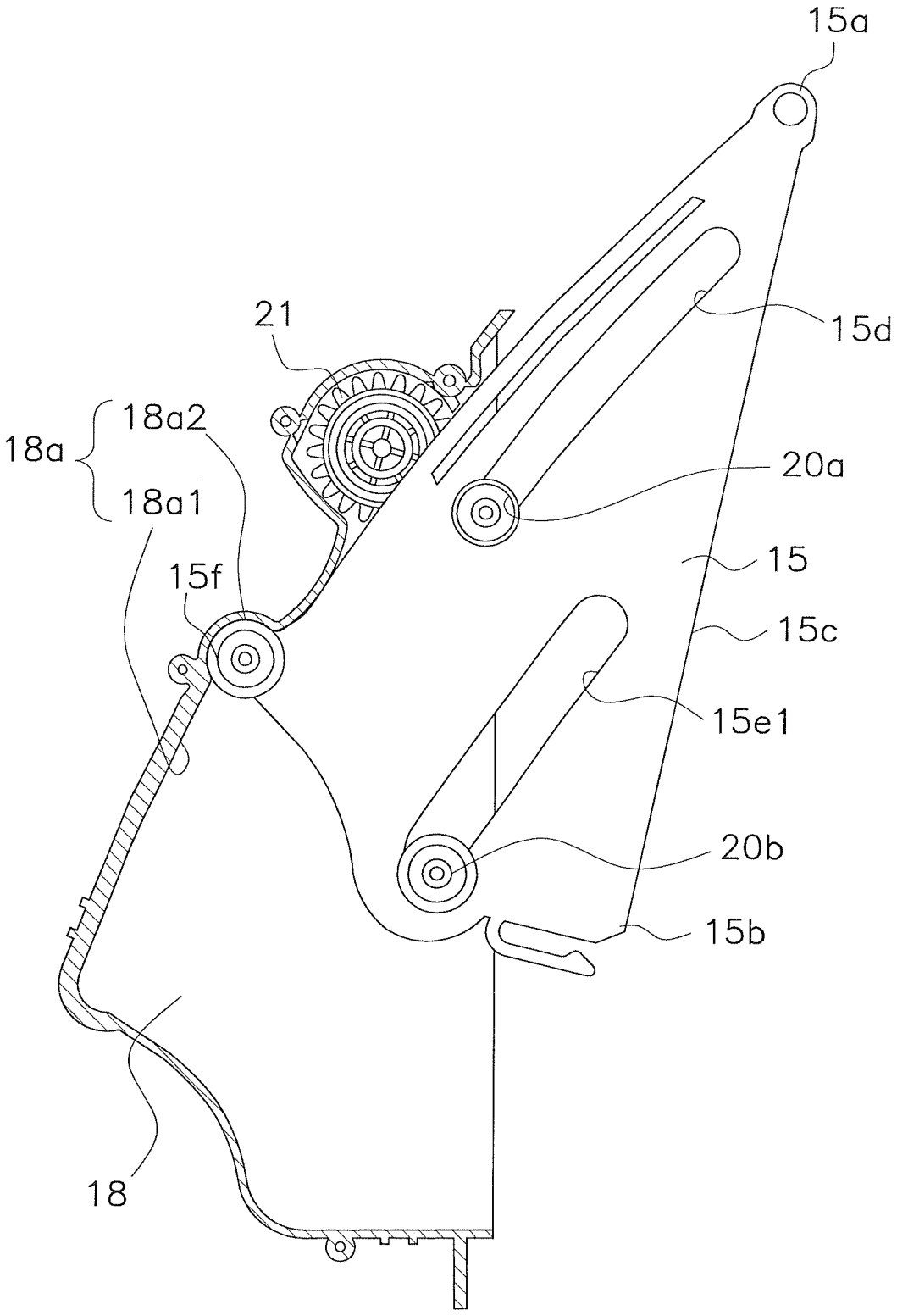


FIG. 14

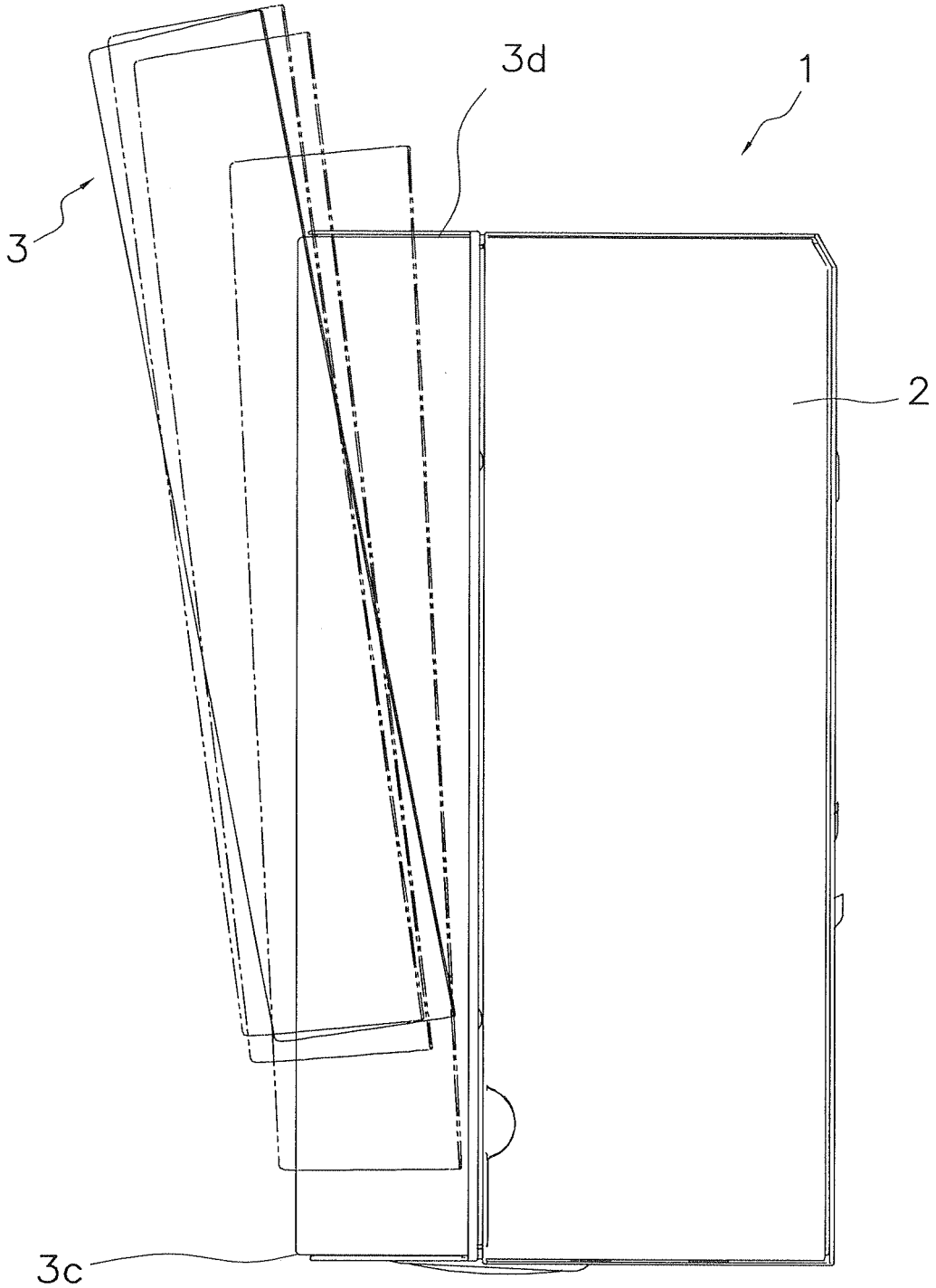


FIG. 15

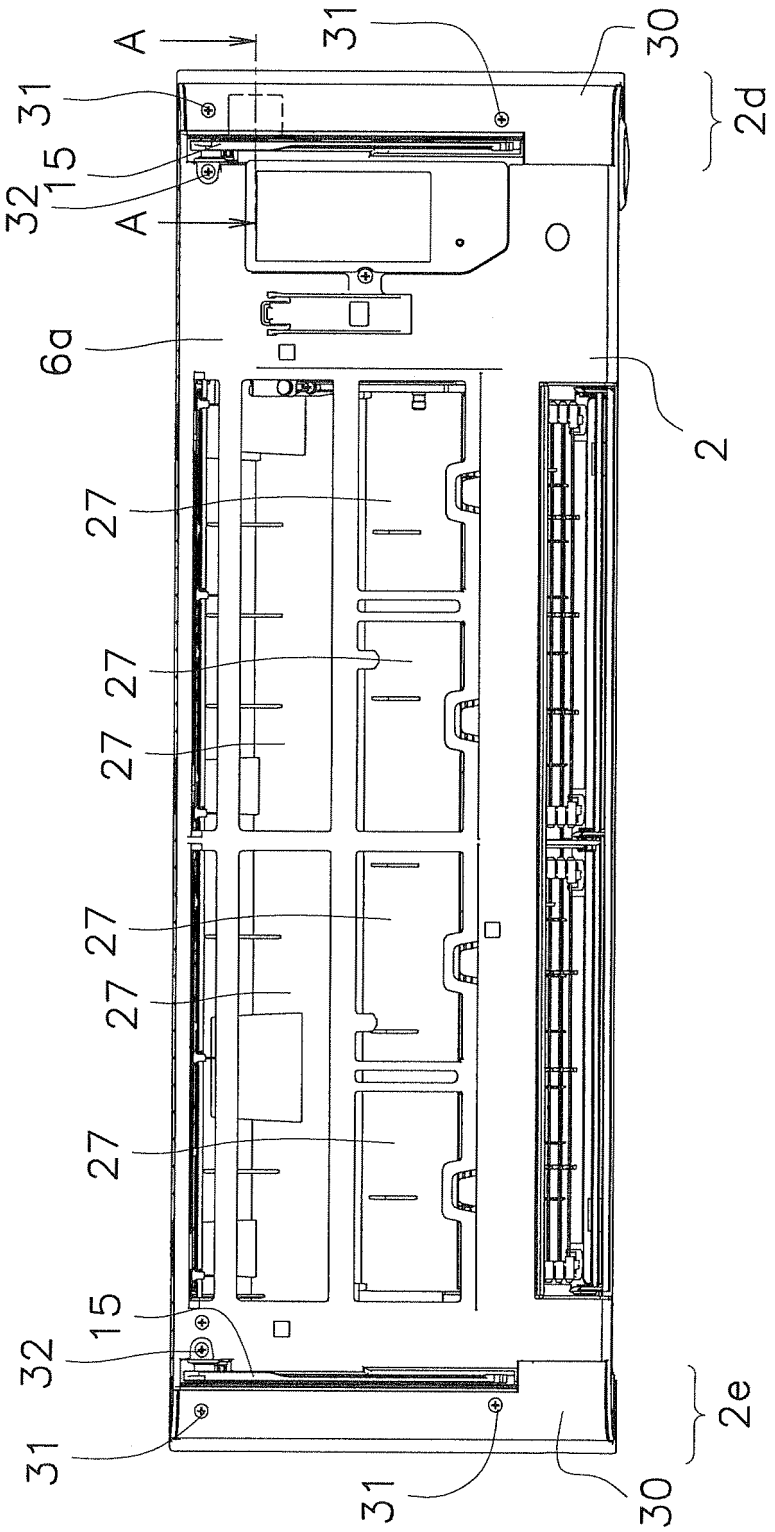


FIG. 16

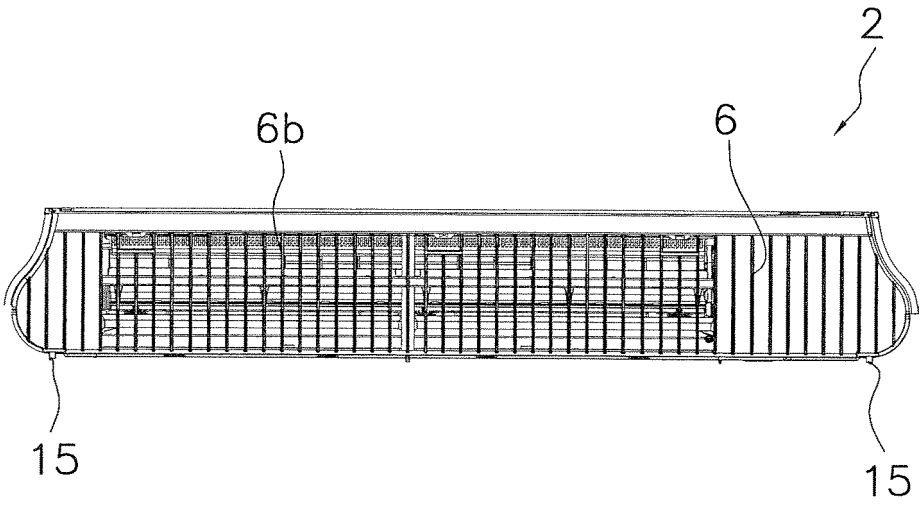


FIG. 17

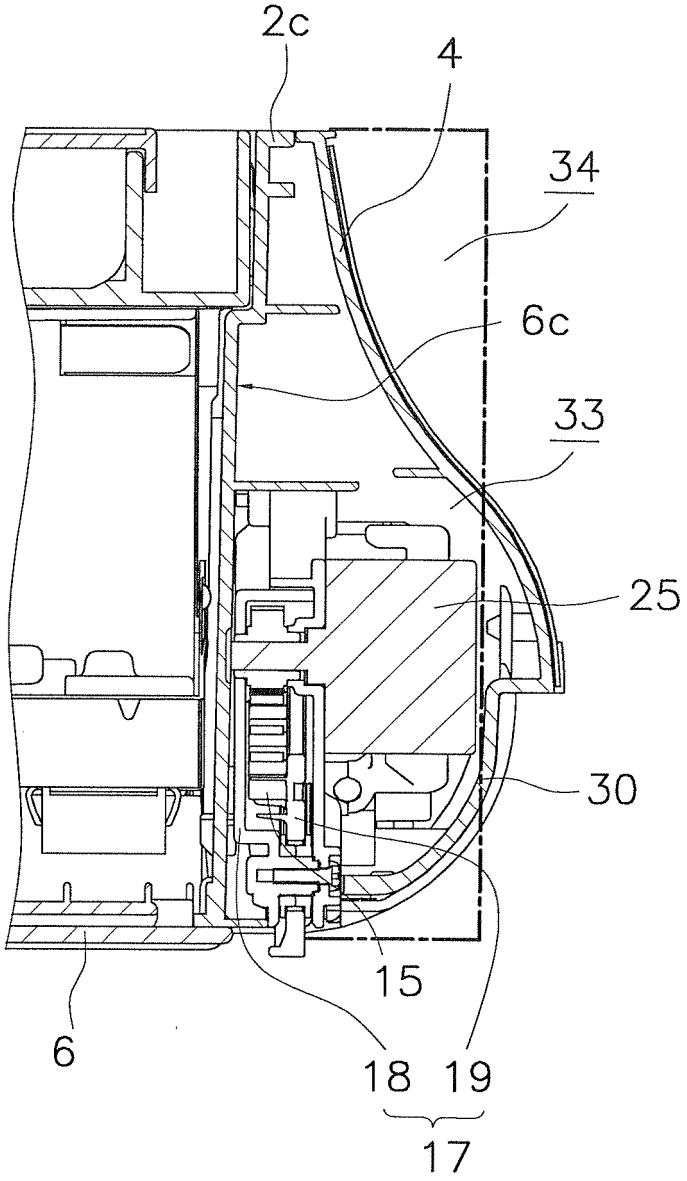


FIG. 18

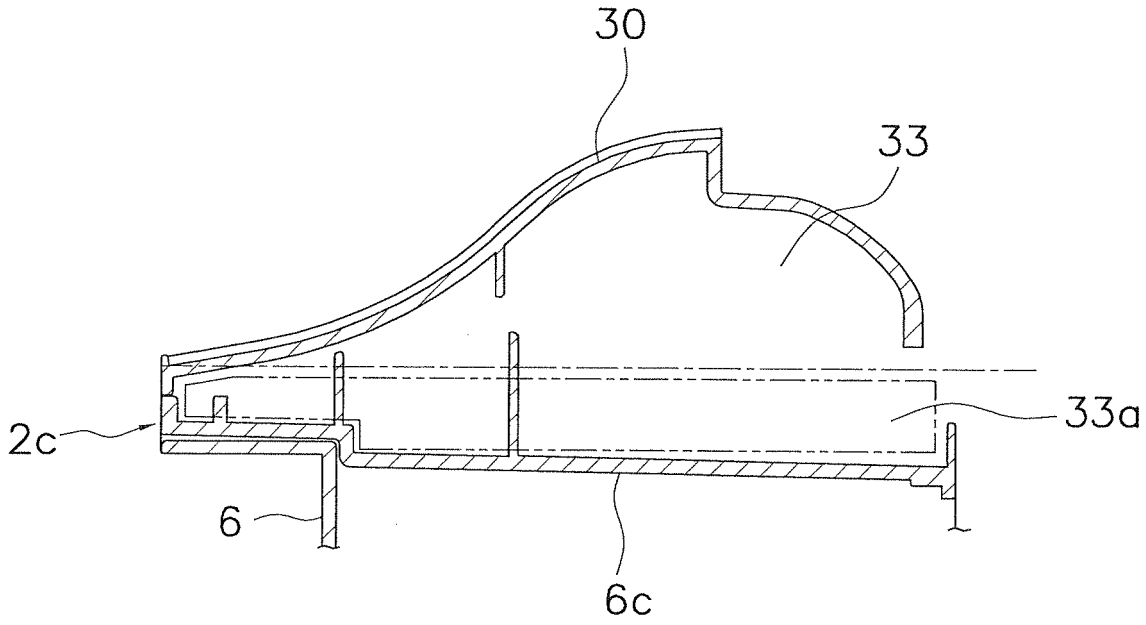


FIG. 19

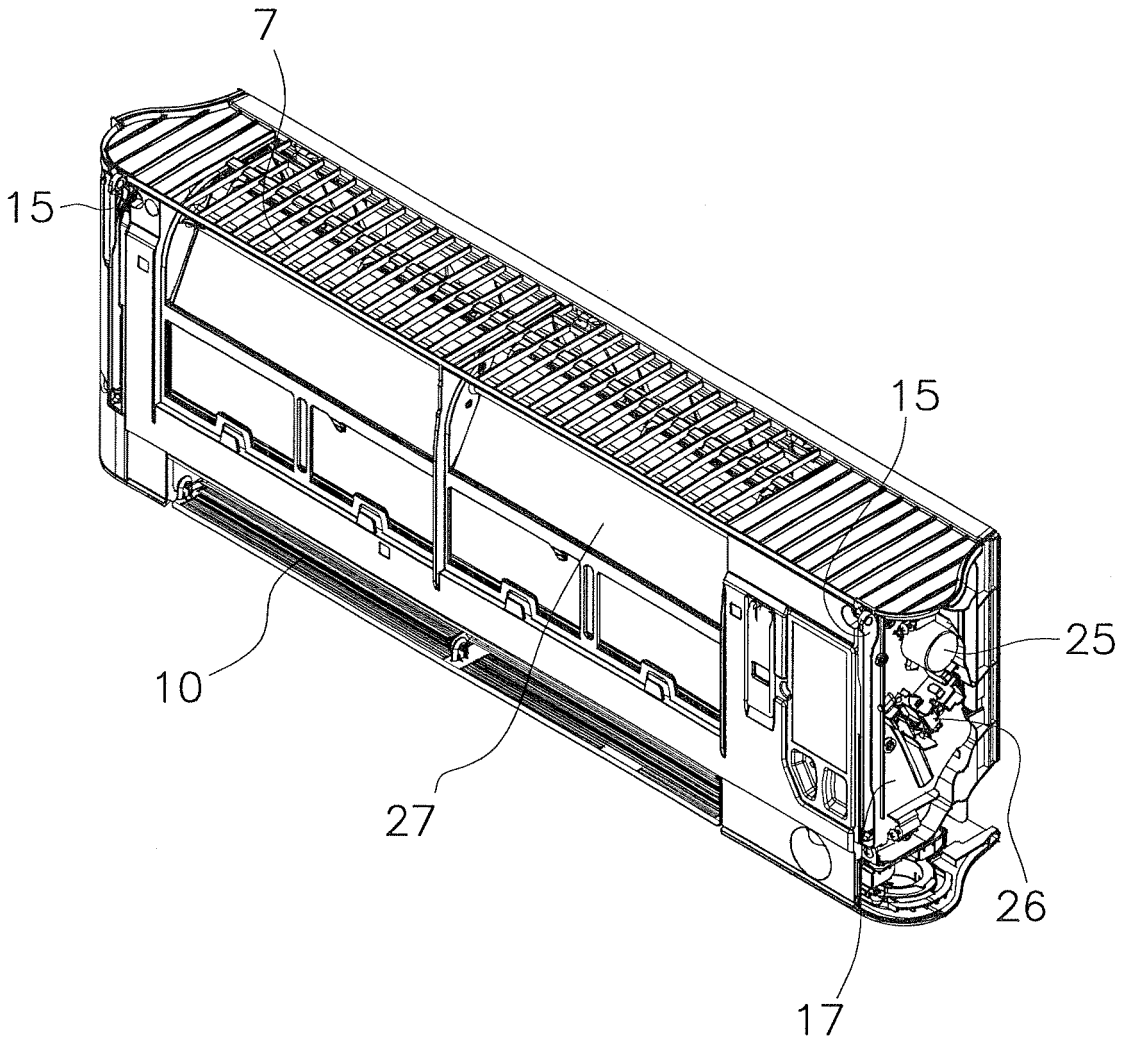


FIG. 20

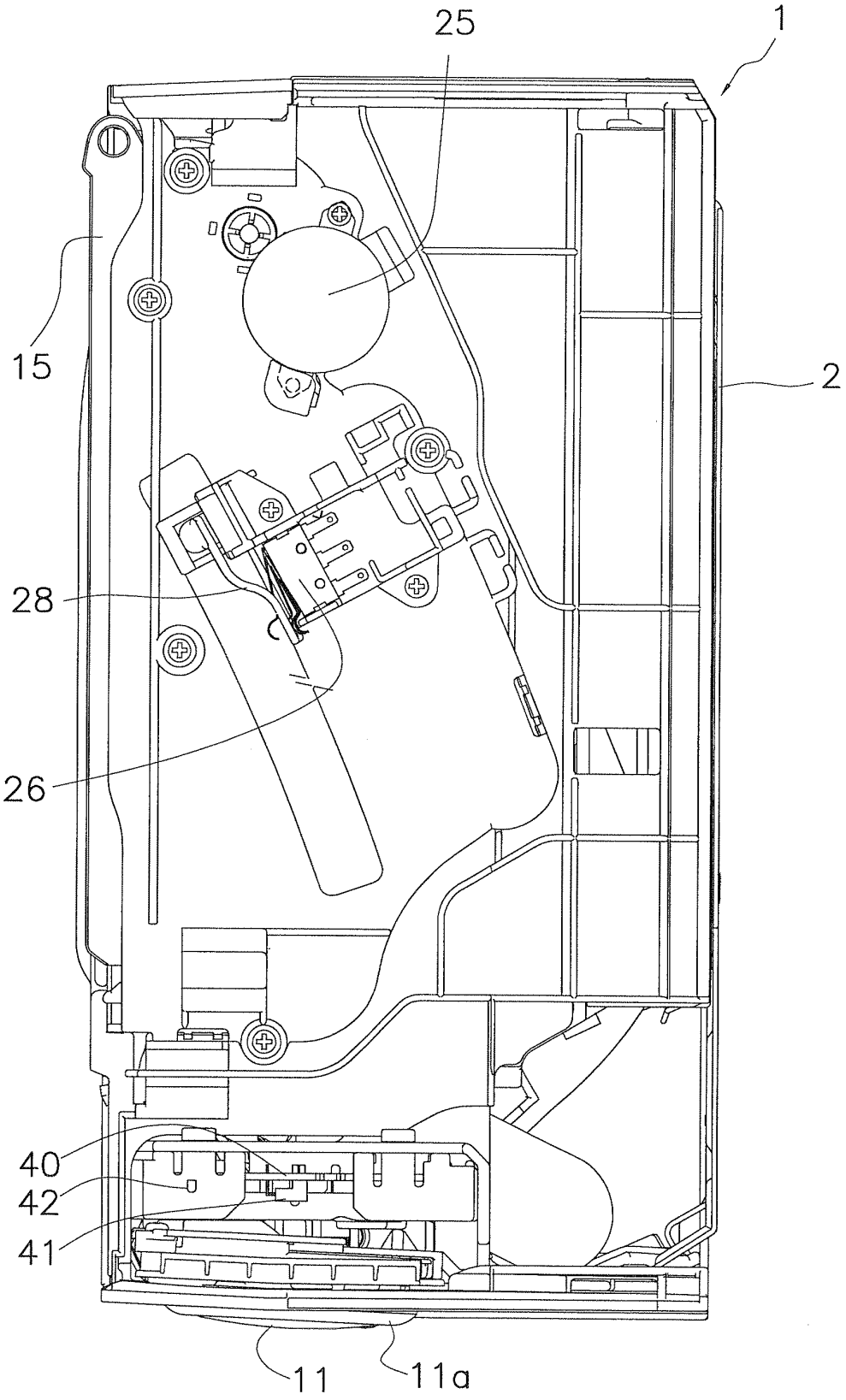


FIG. 21

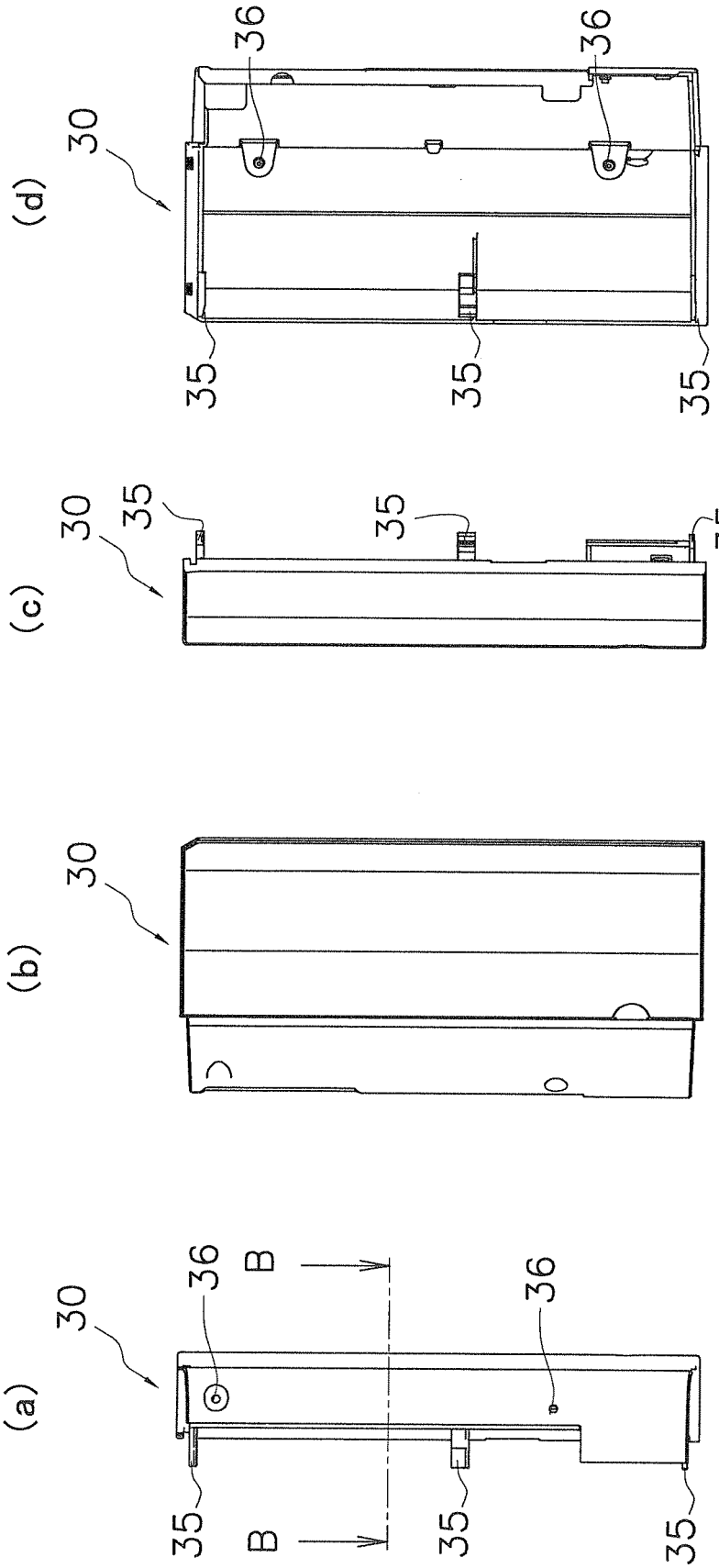


FIG. 22

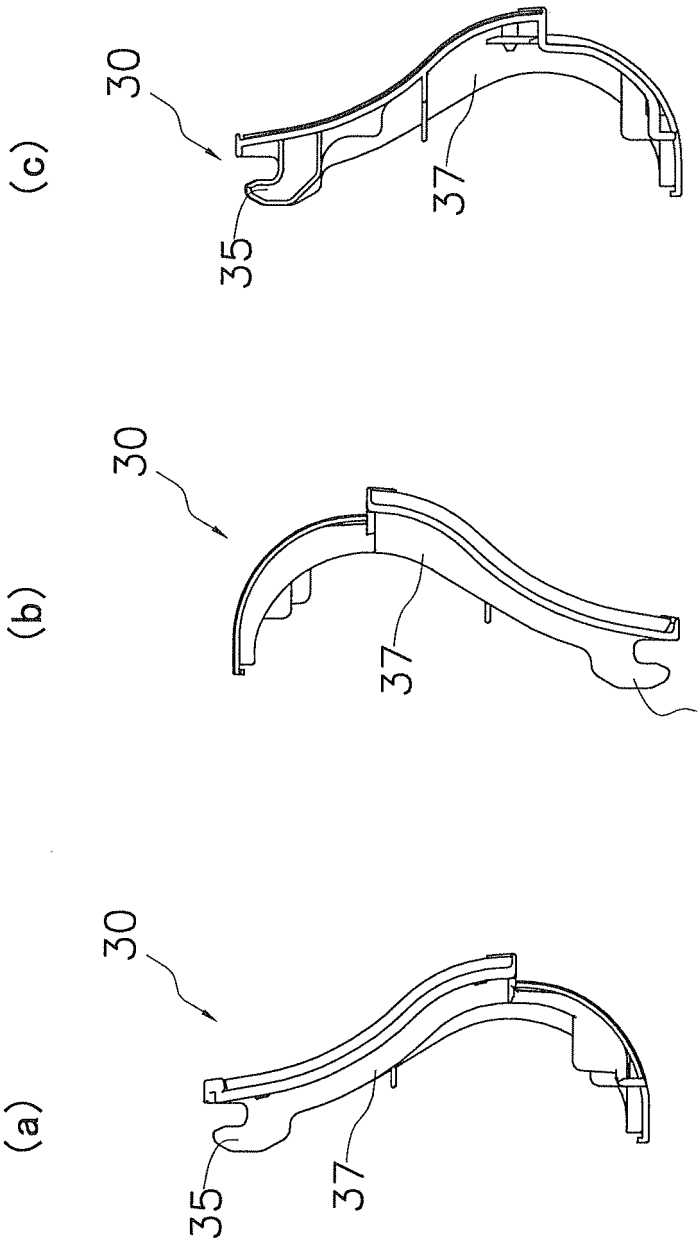


FIG. 23

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 1696186 A1 **[0003]**
- JP 2005098671 A **[0004] [0071]**