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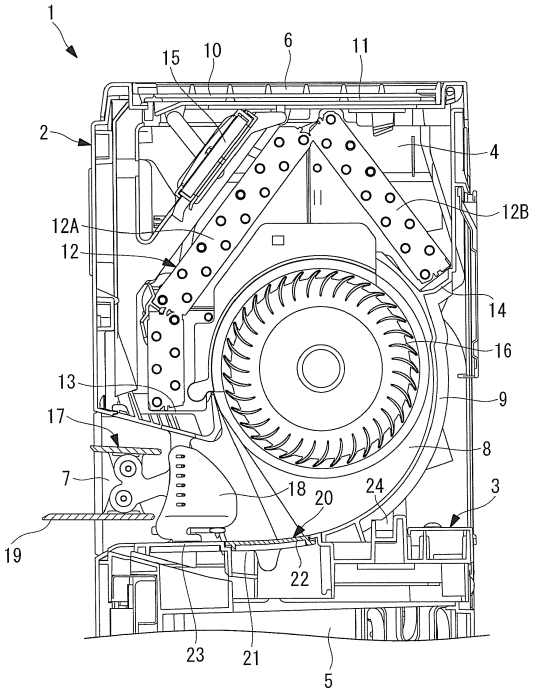
(54) INTEGRATED AIR CONDITIONER

(57) Provided is an integrated air conditioner (1) in which a partition plate that used to have only the function of a partition wall (3) constitutes a central frame, and other functional parts or mechanisms are integrally molded or subassembled thereon to achieve functional integration, thereby improving ease of assembly. In an integrated air conditioner 1 in which the inside of a unit main body (2) is partitioned into two, namely, upper (4) and lower (5), chambers by a partition wall, indoor-side component devices are accommodated in an upper chamber (4), and outdoor-side component devices are accommodated in a lower chamber (5), the partition wall constitutes a central frame (3), and a windpath forming part (23) that forms at least part of a blownwind path for temperature-adjusted wind, a drain-water pathway (24) that guides drain water produced on an indoor side to an outdoor side, and a wind-direction adjusting mechanism (17) that adjusts the blowing direction of temperature-adjusted wind are integrated on the central frame (3) through integral molding or subassembly.

FIG. 1



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Description

{Technical Field}

[0001] The present invention relates to an integrated air conditioner in which the inside of a unit main body is partitioned into two, namely, upper and lower, chambers, indoor-side component devices are incorporated in one of the chambers, and outdoor-side component devices are incorporated in the other.

{Background Art}

[0002] If an integrated air conditioner has a configuration in which outdoor-side component devices are laid out in a lower chamber of a unit main body, and indoor-side component devices are laid out in an upper chamber thereof, a partition wall is provided above a lower outdoor-side assembly, and an indoor-side assembly is stacked on the partition wall, in most cases (for example, see PTLs 1 and 2). In this case, in the lower chamber, a drain pan is provided on the base, and a compressor, an outdoor fan, an outdoor heat exchanger, a four-way valve, and other devices are arranged thereon; in the upper chamber above the partition wall, a wind path in which indoor air is circulated is formed, and a filter, an indoor heat exchanger, an indoor fan, a wind-direction adjusting mechanism, and an indoor-side drain pan are arranged in the wind path.

[0003] As an example of such integrated air conditioners, PTL 1 describes a technology in which a ventilation hole and a ventilation damper are provided on a partition plate serving as a partition wall between an upper chamber and a lower chamber, thus making it possible to introduce outside air into a wind path leading from the lower chamber to the upper chamber; and PTL 2 describes a technology in which an outdoor-fan casing and a fan motor are installed above a compressor and an outdoor heat exchanger that are installed on an outdoor-side base, an indoor-fan casing is installed on an upper surface of the fan motor, a drain pan is installed on an upper surface of the casing, an indoor heat exchanger is installed thereon, and a wind-direction adjusting mechanism is installed at the exit of the indoor-fan casing.

{Citation List}

{Patent Literature}

[0004]

{PTL 1} Japanese Unexamined Patent Application, Publication No. Hei 5-149579
{PTL 2} Japanese Examined Utility Model Application, Publication No. Sho 62-40261

{Summary of Invention}

{Technical Problem}

[0005] In the technology described in PTL 1, although the ventilation hole and the ventilation damper are provided on the partition plate between the upper chamber and the lower chamber, the partition plate itself has only a single function, namely, a partition wall function, and the purpose thereof is not an improvement in ease of assembly of the air conditioner achieved by aggregating functions other than the partition wall function. Furthermore, in the technology described in PTL 2, although it can be said that the casings for the outdoor and indoor fans are used as partition walls between the upper chamber and the lower chamber, this technology can be applied only to air conditioners provided with a fan-casing such as that for a sirocco fan, the unit height becomes extremely high, and the technology does not specifically suggest an enhancement in ease of assembly of air conditioners by making the partition wall between the upper chamber and the lower chamber multifunctional.

[0006] The present invention has been made in view of such circumstances, and an object thereof is to provide an integrated air conditioner in which a partition plate that used to have only a single function, namely, a partition wall function, in the conventional art constitutes a central frame, and other functional parts or mechanisms are integrally molded or subassembled thereon to achieve functional integration, thereby improving ease of assembly.

{Solution to Problem}

[0007] In order to resolve the above-described problems, an integrated air conditioner of the present invention adopts the following solutions.

[0008] According to one aspect, the present invention provides an integrated air conditioner in which the inside of a unit main body is partitioned by a partition wall into an upper chamber and a lower chamber, indoor-side component devices are accommodated in the upper chamber, and outdoor-side component devices are accommodated in the lower chamber, in which the partition wall constitutes a central frame, and a wind-path forming part that forms at least part of a blown-wind path for temperature-adjusted wind, a drain-water pathway that guides drain water produced on an indoor side to an outdoor side, and a wind-direction adjusting mechanism that adjusts a blowing direction of temperature-adjusted wind are integrated on the central frame through integral molding or subassembly.

[0009] According to the above-described integrated air conditioner of the aspect of the present invention, a part having a partition-wall function of partitioning the inside of the unit main body into an indoor side and an outdoor side constitutes the central frame, and the wind-path forming part, which forms at least part of the blown-wind

path for temperature-adjusted wind, the drain-water pathway, which guides drain water produced on the indoor side to the outdoor side, and the wind-direction adjusting mechanism, which adjusts the blowing direction of temperature-adjusted wind, are integrated on the central frame through integral molding or subassembly. Therefore, on a part that used to have only a single function, namely, a partition wall function, in the conventional art, other functional parts or mechanisms are integrally molded or subassembled to achieve functional integration, and those parts are integrally incorporated, thereby making it possible to assemble the integrated air conditioner. Therefore, compared with a case in which those parts are individually manufactured and assembled as separate parts, it is possible to reduce the number of parts and assembly man-hours, thereby achieving ease of assembly and a reduction in costs and improving production efficiency.

[0010] In the above-described integrated air conditioner, an actuator that actuates the wind-direction adjusting mechanism, which includes louvers for adjusting the wind direction in a horizontal direction and flaps for adjusting the wind direction in a vertical direction, and electrical system parts that include an electrical wiring harness connected to the actuator may be collectively subassembled on the central frame.

[0011] According to this configuration, in addition to the wind-direction adjusting mechanism, which usually comprises a plurality of louvers, a plurality of flaps, and driving mechanisms, such as linkage mechanisms for connecting the louvers to each other and the flaps to each other and driving them, all of the components of the wind-direction adjusting mechanism, including actuators, such as stepping motors for driving those driving mechanisms, and electrical system parts, such as electrical wiring harnesses to be connected to those actuators, can be collectively subassembled on the central frame and incorporated therein. Therefore, it is possible to eliminate the burden involved with the wiring process of the actuators and the electrical system parts, including the electrical wiring harnesses to be connected to the actuators, which is performed on the assembly line, thus simplifying the assembly.

[0012] In one of the above-described integrated air conditioners, an outside-air introduction mechanism that comprises an outside-air introduction port that penetrates the partition wall to communicate between the lower chamber and the blown-wind path, which is located in the upper chamber, and an outside-air introduction damper that opens and closes the outside-air introduction port may be integrally subassembled on the central frame.

[0013] According to this configuration, the outside-air introduction mechanism, which comprises the outside-air introduction port for guiding fresh outside air from the lower chamber, accommodating the outdoor-side component devices, to the blown-wind path, located in the upper chamber, and the outside-air introduction damper, can be subassembled on the central frame and integrally incorporated therein. Therefore, the outside-air introduction mechanism, for ventilating indoors, is subassembled on the central frame, thereby making it possible to easily incorporate the outside-air introduction mechanism therein.

[0014] In the above-described integrated air conditioner, an actuator that actuates the outside-air introduction mechanism and electrical system parts that include an electrical wiring harness connected to the actuator may be collectively subassembled on the central frame.

[0015] According to this configuration, not only electrical system parts for the wind-direction adjusting mechanism but also an actuator for driving the outside-air introduction mechanism and electrical system parts, including an electrical wiring harness to be connected to the actuator, can be collectively subassembled on the central frame and incorporated therein. Therefore, the wiring process of the electrical system parts for the wind-direction adjusting mechanism and the outside-air introduction mechanism can be collectively performed at the subassembling stage, thereby making it possible to eliminate the burden involved with the wiring process performed in the assembly step and to facilitate the assembly.

[0016] In one of the above-described integrated air conditioners, the central frame may be a plastic molding, and the wind-path forming part and the drain-water pathway may be integrally molded thereon.

[0017] According to this configuration, by integrally molding, on the plastic-molding central frame, which has the function of a partition wall for partitioning the inside of the unit main body into the indoor side and the outdoor side, the wind-path forming part and the drain-water pathway, which are other functional parts, it is possible not only to reduce the number of parts and the assembly man-hours but also to enhance the strength and the stiffness of the central frame, compared with a case in which those parts are individually manufactured and assembled. Therefore, it is possible to successfully improve the ease of assembly and to enhance the stiffness and the strength of the central frame, thereby eventually ensuring the stiffness and the strength of the air conditioner, which is an assembled product.

{Advantageous Effects of Invention}

[0018] According to the present invention, on a part that used to have only a single function, namely, a partition wall function, in the conventional art, other functional parts or mechanisms are integrally molded or subassembled to achieve functional integration, and those parts are integrally incorporated, thereby making it possible to assemble the integrated air conditioner; therefore, compared with a case in which those parts are individually manufactured and assembled as separate parts, it is possible to reduce the number of parts and assembly man-hours, thereby achieving ease of assem-

bly and a reduction in costs and improving production efficiency.

{Brief Description of Drawings}

[0019]

{Fig. 1} Fig. 1 is a longitudinal sectional view showing a main portion of an integrated air conditioner according to one embodiment of the present invention.
{Fig. 2} Fig. 2 is a lateral view showing a central frame integrated by aggregating functions of the integrated air conditioner.

{Description of Embodiment}

[0020] One embodiment of the present invention will be described below with reference to Figs. 1 and 2.

[0021] Fig. 1 is a longitudinal sectional view showing a main portion of an integrated air conditioner according to the embodiment of the present invention. Fig. 2 is a lateral view showing a central frame integrated by aggregating functions of the integrated air conditioner.

[0022] An integrated air conditioner 1 is an indoor/outdoor-integrated air conditioner to be used in a state installed on a floor surface or a wall surface and includes a unit main body 2 that is a boxlike chassis. The unit main body 2 is partitioned into an upper chamber 4 and a lower chamber 5 by a central frame 3 serving as a partition wall, in the vicinity of a central portion in the vertical direction. The central frame 3 is a plastic molding.

[0023] The lower chamber 5, which is located below the central frame 3 partitioning the inside of the unit main body 2 into the upper and lower chambers, is a chamber for accommodating outdoor-side component devices of the integrated air conditioner 1. As is well-known, a bottom-portion base plate serves as a drain pan, and a compressor, an outdoor heat exchanger, an outdoor fan, a four-way valve, and other outdoor-side devices are installed on an upper surface of the base plate. The lower chamber 5 communicates with the outside via a suction/exhaust duct etc. that penetrates a wall surface, for example, and outside air can be circulated by the outdoor fan through the outdoor heat exchanger.

[0024] The upper chamber 4, which is located above the central frame 3, accommodates indoor-side component devices of the integrated air conditioner 1, and an air flow path 8 leading from an air inlet port 6 formed on an upper surface of the upper chamber 4 to an air outlet port 7 formed on a front surface of the upper chamber 4 is formed by an outlet casing 9 etc. An inlet grill 10 is provided at the air inlet port 6, and an air filter 11 for trapping dust in the air is installed at a rear surface side of the inlet grill 10 in a manner allowing attachment and detachment thereof by opening the inlet grill 10.

[0025] In the air flow path 8, which is located at a downstream side of the air filter 11, a finned-tube indoor heat exchanger 12 is disposed so as to be bent in an inverted-V-shape manner. The indoor heat exchanger 12 functions as an evaporator to cool indoor air during cooling operation and functions as a condenser to heat indoor air during heating operation. Drain pans 13 and 14 are installed at lower portions of a front-surface-side heat exchanger 12A and a rear-surface-side heat exchanger 12B of the indoor heat exchanger 12, respectively, so as to be able to receive drain water produced at the heat exchangers 12A and 12B.

[0026] Furthermore, an air cleaning filter 15 having an air purifying function, such as deodorant filters, various types of sterilization filters, allergen inactivation filters, and HEPA filters, is installed in an open space that is located at a downstream side of the air filter 11 and at the upper front of the front-surface-side heat exchanger 12A, thereby making it possible to purify part of suction air that has passed through the air filter 11 by making the air pass through the air cleaning filter 15.

[0027] Furthermore, in the air flow path 8, which is located at a downstream side of the indoor heat exchanger 12, an indoor fan 16 that is formed of a cross flow fan is installed so as to be rotatable about a horizontal axis and is rotationally driven via a fan motor (not shown).

[0028] At the air outlet port 7, from which wind blown from the indoor fan 16 is blown indoors, a wind-direction adjusting mechanism 17 including a plurality of louvers 18 that adjust the wind direction of the blown wind in the horizontal direction and two, that is, upper and lower, flaps 19 that adjust the wind direction of the blown wind in the vertical direction and that close the air outlet port 7 when the operation is stopped is installed. The plurality of louvers 18 are coupled to each other via a linkage mechanism (not shown) and can be swiveled in the horizontal direction by an actuator, such as a stepping motor. In the same way, the two, i.e., upper and lower, flaps 19 can be swiveled in the vertical direction independently or integrally via a linkage mechanism by an actuator, such as a stepping motor. Note that the wind-direction adjusting mechanism 17 is not a special mechanism, and a known mechanism can be adopted.

[0029] Furthermore, an outside-air introduction mechanism 20 including an outside-air introduction port 21 that is formed of a through-hole for communicating between the lower chamber 5 and the air flow path 8 located at the downstream side of the indoor fan 16, an outside-air introduction damper 22 that opens and closes the outside-air introduction port 21, and a driving mechanism that comprises a linkage mechanism (not shown) and an actuator, such as a stepping motor, for driving the outside-air introduction damper 22 is subassembled on the partition wall, which constitutes the central frame 3. The outside-air introduction mechanism 20 is not a special mechanism, and a known mechanism can be adopted.

[0030] Furthermore, as described above, the outside-air introduction mechanism 20, the actuator serving as a driving source thereof, and electrical system parts, including an electrical wiring harness, are subassembled together and integrated on the central frame 3, which

functions as the partition wall between the upper chamber 4 and the lower chamber 5; in addition, as shown in Fig. 2, the wind-direction adjusting mechanism 17, which includes the louvers 18 and the flaps 19, the driving linkage mechanism (not shown), the driving actuators, and electrical system parts, including an electrical wiring harness, are collectively subassembled and integrated on the central frame 3. Note that, in this embodiment, the configuration of the actuators and the electrical system parts, including the electrical wiring harness, does not have a special feature.

[0031] Similarly, a wind-path forming part 23 that forms part of a blown-wind path for temperature-adjusted wind is integrally formed on the central frame 3, which is a plastic molding, continuously from the outlet casing 9, which forms the air flow path 8, and the outside-air introduction port 21 opens at the wind-path forming part 23. Furthermore, a drain-water pathway 24 that collects drain water received by the drain pans 13 and 14 and guides the drain water to a drain pan formed on the bottom-portion base plate closer to the lower chamber 5 is integrally formed on the central frame 3.

[0032] In this way, the central frame 3 is made to be multifunctional, and, as shown in Fig. 2, the outside-air introduction mechanism 20, which includes the outside-air introduction port 21, the outside-air introduction damper 22, the driving actuator thereof, and the electrical wiring harness; the wind-direction adjusting mechanism 17, which includes the louvers 18, the flaps 19, the driving actuators thereof, and the electrical wiring harnesses; the wind-path forming part 23, which forms part of the blown-wind path for temperature-adjusted wind; and the drain-water pathway 24, which collects drain water produced on the indoor side and guides it to the outdoor side, are aggregated through integral molding or subassembly. Then, the central frame 3, which is integrated by means of this functional aggregation, is incorporated to serve as the partition wall between the upper chamber 4 and the lower chamber 5, thereby assembling the integrated air conditioner 1.

[0033] With the above-described configuration, according to this embodiment, the following advantageous effects are afforded.

[0034] The integrated air conditioner 1 is installed on a floor surface or a wall surface on the indoor side such that the lower chamber 5 communicates with the outside via the duct etc., thereby allowing outside air to be circulated. Then, during operation, outside air is circulated to the lower chamber 5 via the outdoor fan and is heat-exchanged with refrigerant at the outdoor heat exchanger, and indoor air is suctioned from the air inlet port 6, which is formed on the upper surface of the upper chamber 4, via the inlet grill 10. Dust is removed from the air suctioned into the upper chamber 4 by the air filter 11, and part of the air passes through the air cleaning filter 15 to be purified and is then circulated to the indoor heat exchanger 12.

[0035] The air whose temperature has been adjusted through cooling or heating at the indoor heat exchanger 12 is suctioned along the air flow path 8 into the indoor fan 16, is blown to a downstream side of the indoor fan 16, and is circulated to the air outlet port 7. Since the wind-direction adjusting mechanism 17 is provided at the air outlet port 7, the temperature-adjusted wind is blown indoors in a desired direction set by the louvers 18 and the flaps 19 and is provided for air conditioning indoors.

[0036] In the integrated air conditioner 1, the outdoor-side component devices are first assembled on a base frame constituting the unit main body 2, and the central frame 3, which is subassembled as shown in Fig. 2, is incorporated above the outdoor-side component devices. Of the indoor-side component devices installed in the upper chamber 4, lower-half component devices, specifically, the wind-direction adjusting mechanism 17, the outside-air introduction mechanism 20, the wind-path forming part 23, and the drain-water pathway 24, have already been integrated on the central frame 3 through integral molding or subassembly; therefore, individual assembly steps for those devices on an assembly line can be omitted.

[0037] Then, above the thus-incorporated central frame 3, the other indoor-side component devices, i.e., the indoor fan 16, the drain pans 13 and 14, the indoor heat exchanger 12, and the air cleaning filter 15 are assembled sequentially or are assembled after being appropriately subassembled, the inlet grill 10 is attached to the upper surface, and the air filter 11 is provided at the inlet grill 10, thereby making it possible to assembly the integrated air conditioner 1.

[0038] In this way, in this embodiment, a part having a partition-wall function of partitioning the inside of the unit main body 2 into the indoor side and the outdoor-side constitutes the central frame 3, and the wind-path forming part 23, which forms part of the blown-wind path for temperature-adjusted wind, the drain-water pathway 24, which guides drain water produced on the indoor side to the outdoor side, the wind-direction adjusting mechanism 17, which adjusts the blowing direction of temperature-adjusted wind, and the outside-air introduction mechanism 20 are integrated on the central frame 3 through integral molding or subassembly. Thus, on the part that used to have only a single function, namely, a partition wall function, in the conventional art, the other functional parts 23 and 24 and the mechanisms 17 and 20, which afford other functions, are integrally molded or subassembled to achieve functional aggregation, and those parts are integrally incorporated, thereby making it possible to assemble the integrated air conditioner 1.

[0039] Therefore, compared with a case in which the wind-path forming part 23, the drain-water pathway 24, the wind-direction adjusting mechanism 17, and the outside-air introduction mechanism 20 are individually manufactured and assembled as separate parts and mechanisms, it is possible to reduce the number of parts and assembly man-hours, thereby achieving ease of assembly and a reduction in costs and improving production

efficiency.

[0040] Furthermore, because the wind-direction adjusting mechanism 17, which comprises the louvers 18, the flaps 19, and their driving mechanisms; the outside-air introduction mechanism 20, which comprises the outside-air introduction port 21 and the outside-air introduction damper 22; the actuators, such as stepping motors for driving the wind-direction adjusting mechanism 17 and the outside-air introduction mechanism 20; and the electrical system parts, which include electrical wiring harnesses, to be connected to the actuators, are all collectively subassembled on the central frame 3, all of the components of the wind-direction adjusting mechanism 17 and the outside-air introduction mechanism 20 can be subassembled on the central frame 3 and integrally incorporated.

[0041] With this configuration, the wiring process etc. of the electrical system parts for the wind-direction adjusting mechanism 17 and the outside-air introduction mechanism 20 can be collectively performed at the subassembling stage, thereby making it possible to eliminate the burden involved with the wiring process of the actuators and the electrical system parts, including the electrical wiring harnesses, to be connected to the actuators, which is performed on the assembly line, thus simplifying the assembly.

[0042] Furthermore, the central frame 3 is a plastic molding, and the wind-path forming part 23 and the drain-water pathway 24 are integrally molded thereon. Thus, by integrally molding, on the plastic-molding central frame 3, which has a function as a partition wall for partitioning the inside of the unit main body 2 into the indoor side and the outdoor side, the wind-path forming part 23 and the drain-water pathway 24, which are other functional parts, it is possible not only to reduce the number of parts and assembly man-hours but also to enhance the strength and the stiffness of the central frame 3, compared with a case in which those parts are individually manufactured and assembled.

[0043] With this configuration, it is possible to successfully improve the ease of assembly and to enhance the stiffness and the strength of the central frame 3, thereby eventually ensuring the stiffness and the strength of the integrated air conditioner 1, which is an assembled product.

[0044] Note that the present invention is not limited to the invention according to the above-described embodiment and can be appropriately modified without departing from the scope thereof. For example, in the above-described embodiment, a description has been given of an example case in which the indoor heat exchanger 12 is installed so as to be bent in an inverted-V-shape manner, and the indoor fan 16 is installed below the indoor heat exchanger 12; however, because various forms can be adopted as the configuration of the indoor heat exchanger 12 and the indoor fan 16, it is needless to say that the configuration thereof is not limited to this embodiment.

[0045] Furthermore, because various configurations can be adopted as the respective detailed configurations of the wind-direction adjusting mechanism 17 and the outside-air introduction mechanism 20, it is needless to say that their configurations are not limited to those in the above-described embodiment. Furthermore, the integrated air conditioner 1 is not limited to those of a floor-mounted type and a wall-mounted type and can be applied to those of other types, such as a through-the-wall type.

{Reference Signs List}

[0046]

1	integrated air conditioner
2	unit main body
3	central frame (partition wall)
4	upper chamber
5	lower chamber
12	indoor heat exchanger
16	indoor fan
17	wind-direction adjusting mechanism
18	louvers
19	flaps
20	outside-air introduction mechanism
21	outside-air introduction port
22	outside-air introduction damper
23	wind-path forming part
24	drain-water pathway

Claims

1. An integrated air conditioner (1) in which the inside of a unit main body (2) is partitioned by a partition wall (3) into an upper chamber (4) and a lower chamber (5), indoor-side component devices are accommodated in the upper chamber (4), and outdoor-side component devices are accommodated in the lower chamber (5),
   wherein the partition wall (3) constitutes a central frame, and a wind-path forming part (23) that forms at least part of a blown-wind path for temperature-adjusted wind, a drain-water pathway (24) that guides drain water produced on an indoor side to an outdoor side, and a wind-direction adjusting mechanism (17) that adjusts a blowing direction of temperature-adjusted wind are integrated on the central frame (3) through integral molding or subassembly.

2. An integrated air conditioner (1) according to claim 1, wherein an actuator that actuates the wind-direction adjusting mechanism (17), which comprises louvers (18) for adjusting the wind direction in a horizontal direction and flaps (19) for adjusting the wind direction in a vertical direction, and electrical system parts that include an electrical wiring harness con-

nected to the actuator are collectively subassembled on the central frame (3).

3. An integrated air conditioner (1) according to claim 1 or 2, wherein an outside-air introduction mechanism (20) that comprises an outside-air introduction port (21) that penetrates the partition wall (3) to communicate between the lower chamber (5) and the blown-wind path, which is located in the upper chamber (4), and an outside-air introduction damper (22) that opens and closes the outside-air introduction port (21) is integrally subassembled on the central frame (3).

4. An integrated air conditioner (1) according to claim 3, wherein an actuator that actuates the outside-air introduction mechanism (20) and electrical system parts that include an electrical wiring harness connected to the actuator are collectively subassembled on the central frame (3).

5. An integrated air conditioner (1) according to one of claims 1 to 4, wherein the central frame (3) is a plastic molding, and the wind-path forming part (23) and the drain-water pathway (24) are integrally molded thereon.

FIG. 1

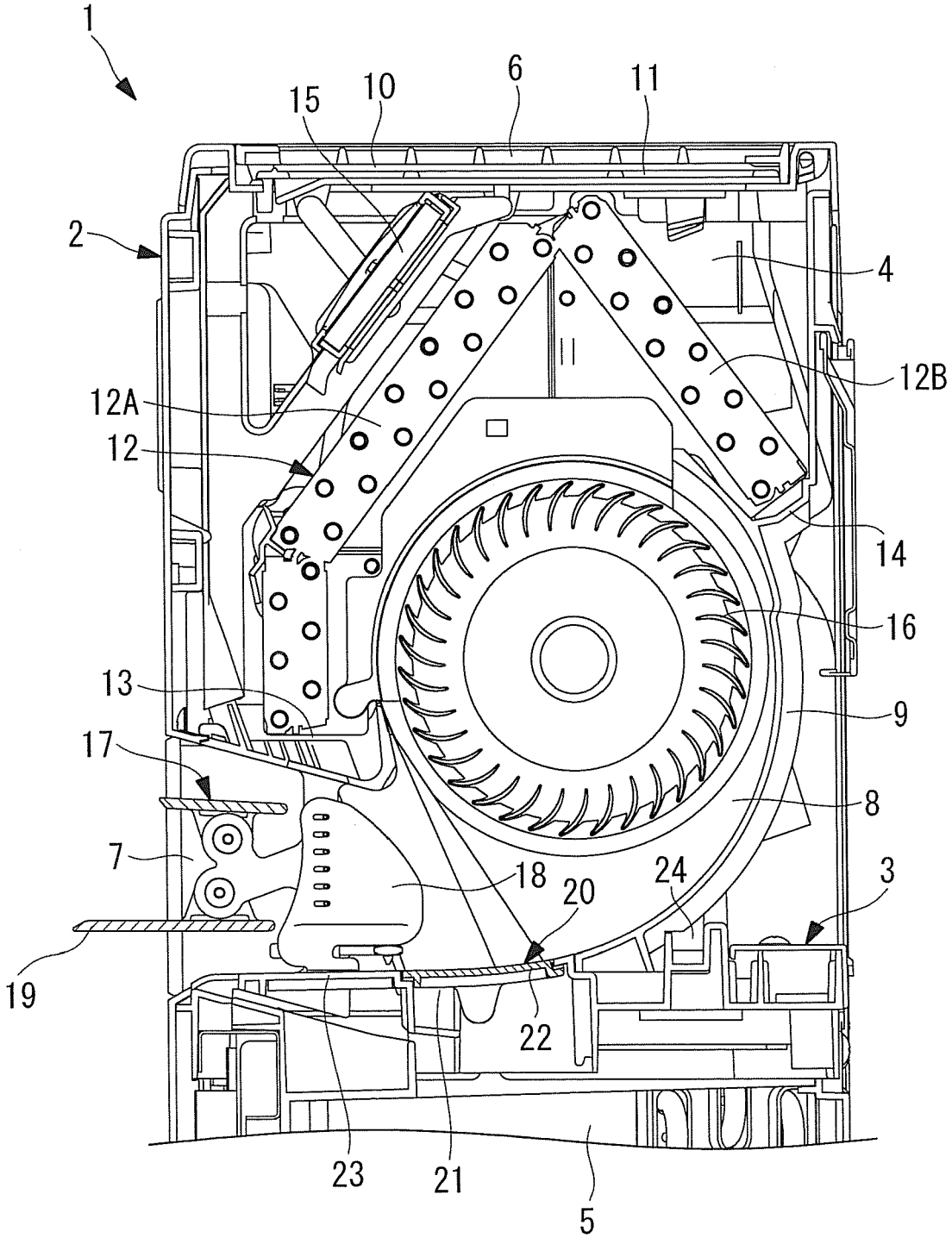
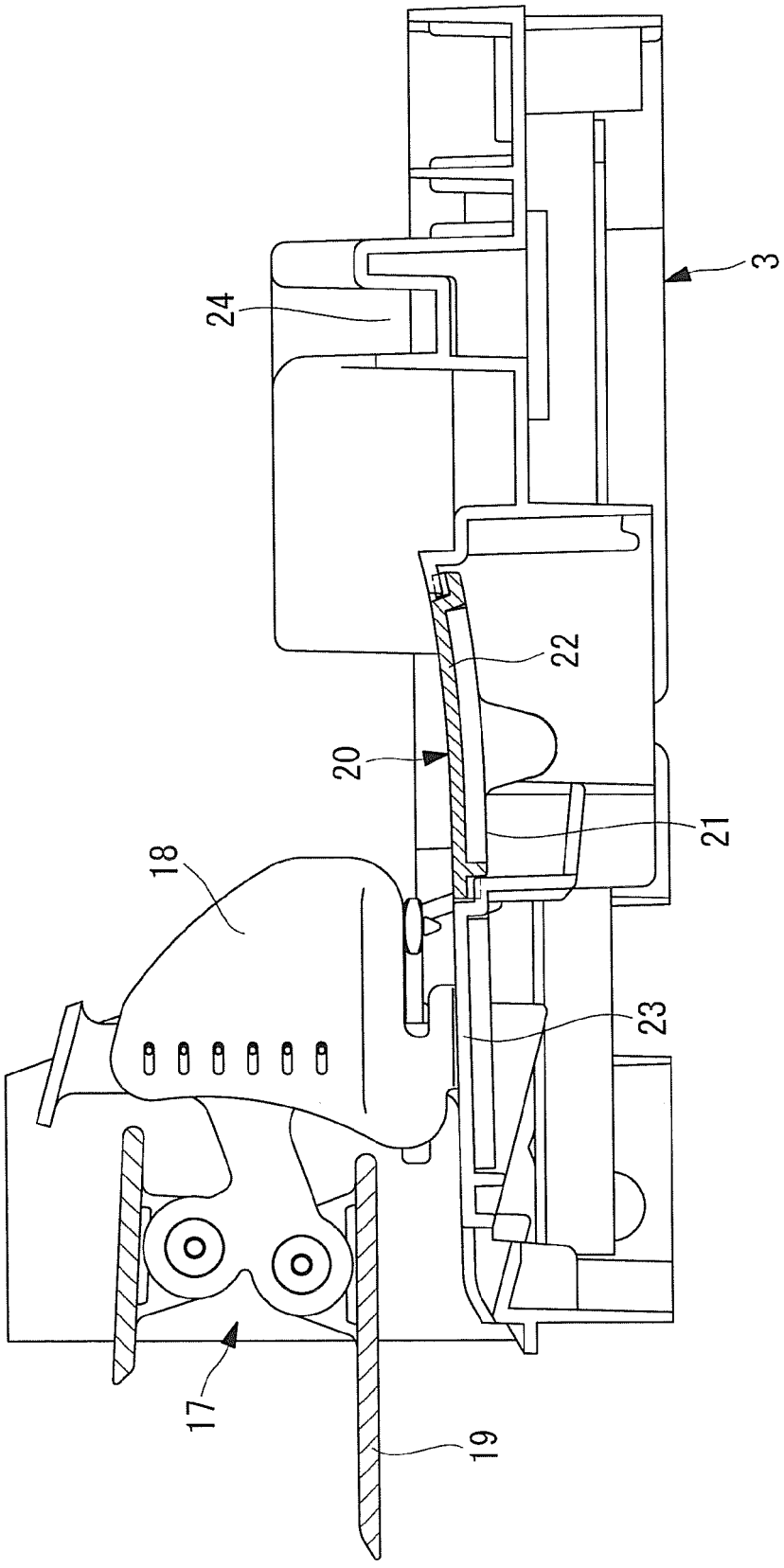


FIG. 2



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EUROPEAN SEARCH REPORT

Application Number
EP 15 15 8792

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	JP 2008 180408 A (MATSUSHITA ELECTRIC IND CO LTD) 7 August 2008 (2008-08-07) * abstract *	1-5	INV. F24F13/20 F24F13/22 F24F1/00
A	JP 2009 024927 A (MEIWA KK) 5 February 2009 (2009-02-05) * abstract *	1-5	F24F1/02
A	JP H05 93527 A (MATSUSHITA SEIKO KK) 16 April 1993 (1993-04-16) * abstract *	1-5	
A,D	JP H05 149579 A (MITSUBISHI ELECTRIC CORP) 15 June 1993 (1993-06-15) * abstract *	1-5	

TECHNICAL FIELDS SEARCHED (IPC)

F24F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 July 2015	Valenza, Davide

CATEGORY OF CITED DOCUMENTS

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2008180408 A	07-08-2008	JP 5034512 B2	26-09-2012
		JP 2008180408 A	07-08-2008
JP 2009024927 A	05-02-2009	NONE	
JP H0593527 A	16-04-1993	NONE	
JP H05149579 A	15-06-1993	NONE	

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP HEI5149579 B **[0004]**
- JP SHO6240261 B **[0004]**