

(19)



(11)

EP 2 778 547 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
17.09.2014 Bulletin 2014/38

(51) Int Cl.:
F24F 1/02 (2011.01)

(21) Application number: **14160058.5**

(22) Date of filing: **14.03.2014**

(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**
 Designated Extension States:
BA ME

- **Miyazawa, Kenichi**
TOKYO, 108-8215 (JP)
- **Okada, Yuji**
TOKYO, 108-8215 (JP)
- **Kuwayama, Hironobu**
TOKYO, 108-8215 (JP)

(30) Priority: **15.03.2013 JP 2013052902**

(74) Representative: **Intès, Didier Gérard André et al**
Cabinet Beau de Loménie
158, rue de l'Université
75340 Paris Cedex 07 (FR)

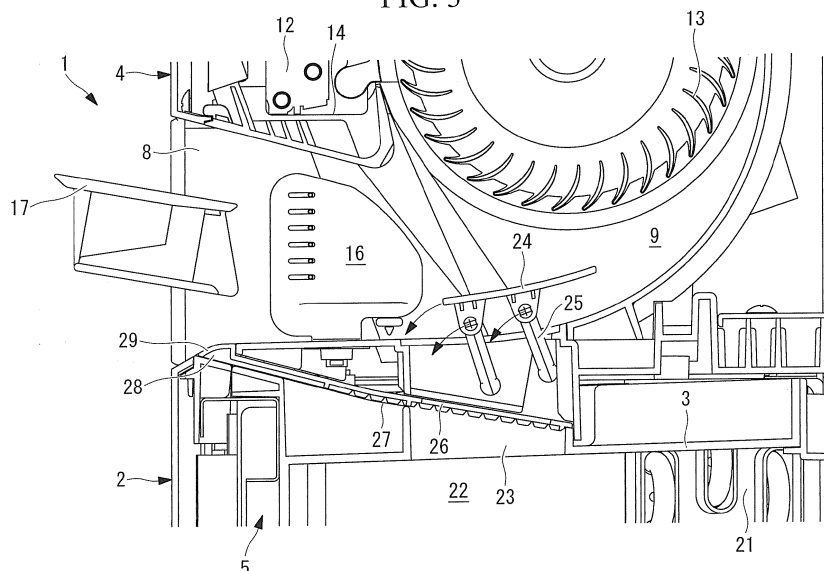
(71) Applicant: **MITSUBISHI HEAVY INDUSTRIES, LTD.**
Tokyo 108-8215 (JP)

(72) Inventors:
 • **Nunome, Yoshinori**
TOKYO, 108-8215 (JP)

(54) Integrated air conditioner

(57) An integrated air conditioner in which a filter (26) is provided in an external-air introduction vent to remove foreign matter and dust, the filter being easily attached and removed from the front of the indoor unit (4) to facilitate maintenance, such as cleaning. In an integrated air conditioner (1) including an indoor unit (4) and an outdoor unit (5) that are integrated in a single unit, an indoor air duct (9) and a blowing duct of an outdoor fan (22) of the outdoor unit (5) communicate with each other via an ex-

ternal-air entry duct (23). A damper (24) for introducing the external air is provided at an opening of the external-air entry duct (23), which opening leads to the indoor air duct (9), in such a manner that the damper (24) can be opened and closed. A filter (26) accessible from the front of the indoor unit (4) and attachably and removably fitted to the external-air entry duct (23) is provided in the external-air entry duct (23).

FIG. 3**EP 2 778 547 A2**

Description

{Technical Field}

[0001] The present invention relates to an integrated air conditioner in which an indoor unit and an outdoor unit are integrated in a single unit.

{Background Art}

[0002] A conventionally known integrated air conditioner includes an indoor unit and an outdoor unit that are integrated in a single unit, the indoor unit having an indoor air duct that takes in indoor air from an air intake vent and blows the indoor air indoors from an air blowing vent via an indoor heat exchanger and an indoor fan, and the outdoor unit taking in external air from an external-air intake vent and blowing the external air outdoors via an outdoor fan and an outdoor heat exchanger. Typically, such an integrated air conditioner is configured such that a main unit is divided into two chambers by a partition wall, one chamber accommodating indoor unit components, and the other chamber accommodating outdoor unit components.

[0003] In such an integrated air conditioner, when ventilation external air is to be introduced indoors, as shown in, for example, Patent Literature (PTL) 1, the integrated air conditioner has been configured such that an external-air introduction vent (air supply port) is provided in the partition wall dividing the indoor side and the outdoor side, and a damper is provided on the external-air introduction vent. When the external air is to be introduced, the damper is opened to introduce primary air (external air) blown from the outdoor fan into the air passage on the indoor side, and the introduced air is blown indoors, together with the heated conditioned air.

{Citation List}

{Patent Literature}

[0004]

{PTL 1} Japanese Unexamined Patent Application, Publication No. Sho 64-57030

{Summary of Invention}

{Technical Problem}

[0005] As described above, in the integrated air conditioner, by providing the external-air introduction vent and the damper in the partition wall dividing the indoor side and the outdoor side, external air needed for ventilation can be introduced indoors at any time. However, in a configuration in which simply the external-air introduction vent is provided in the partition wall to introduce the external air from there, foreign matter and dust, if

existing in the external air, are directly introduced indoors through the external-air introduction vent. Hence, it is of course desirable that a filter for removing foreign matter and dust be provided in the external-air introduction vent.

[0006] However, the partition wall is provided inside the main unit, and if the filter is provided in the external-air introduction vent provided in that partition wall, when maintenance, such as removing the filter for cleaning, is to be performed, the filter inside the main unit has to be accessed by removing a panel or the like constituting the exterior of the main unit, leading to a problem of infrequent cleaning of the filter because it is such a troublesome task.

[0007] 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 filter is provided in an external-air introduction vent to remove foreign matter and dust, the filter being easily attached and removed from the front of the indoor unit to facilitate maintenance, such as cleaning.

{Solution to Problem}

[0008] To overcome the above-described problem, the present invention employs the following solutions.

[0009] Specifically, an integrated air conditioner according to one aspect of the present invention is an integrated air conditioner in which an indoor unit and an outdoor unit are integrated in a single unit, the indoor unit having an indoor air duct that takes in indoor air from an air intake vent and blows the indoor air indoors from an air blowing vent via an indoor heat exchanger and an indoor fan, and the outdoor unit taking in external air from an external-air intake vent and blowing the external air outdoors via an outdoor fan and an outdoor heat exchanger. The indoor air duct and a blowing duct of the outdoor fan in the outdoor unit communicate with each other via an external-air entry duct. A damper for introducing external air is provided at an opening of the external-air entry duct, which opening leads to the indoor air duct, in such a manner that the damper can be opened and closed. A filter accessible from the front of the indoor unit and attachably and removably fitted to the external-air entry duct is provided in the external-air entry duct.

[0010] According to one aspect of the present invention, in an integrated air conditioner in which an indoor unit and an outdoor unit are integrated in a single unit, an indoor air duct and a blowing duct of the outdoor fan of the outdoor unit communicate with each other via an external-air entry duct, a damper for introducing external air is provided at an opening of the external-air entry duct, which opening leads to the indoor air duct, in such a manner that the damper can be opened and closed, and a filter accessible from the front of the indoor unit and attachably and removably fitted to the external-air entry duct is provided in the external-air entry duct. Hence, by opening the damper provided at the opening of the external-air entry duct, which opening leads to the indoor

air duct, to introduce the external air from the blowing duct of the outdoor fan into the indoor air duct and by blowing the external air indoors, together with the heated conditioned air, through the air blowing vent, fresh external air can be introduced indoors. Furthermore, because the filter is provided in the external-air entry duct, and the filter can be accessed from the front of the indoor unit for attachment and removal, foreign matter and dust existing in the external air can be removed with the filter, and the filter used to remove foreign matter and dust can be attached or removed from the front of the unit for cleaning. Accordingly, it is possible to easily add a ventilation function to the integrated air conditioner without deteriorating the intrinsic air-conditioning function and, at the same time, to introduce indoors only purified external air produced by removing foreign matter and dust by the filter. Moreover, because the filter can be easily attached and removed from the front of the unit for cleaning, the cleanliness thereof can be constantly maintained.

[0011] Moreover, in the above-described integrated air conditioner, the external-air entry duct is provided between the indoor air duct and the blowing duct of the outdoor fan so as to penetrate through a partition wall dividing the inside of a main unit into the indoor unit and the outdoor unit, making it possible to introduce the external air blown from the outdoor fan.

[0012] With the above-described configuration, the external-air entry duct is provided between the indoor air duct and the blowing duct of the outdoor fan so as to penetrate through a partition wall dividing the inside of a main unit into the indoor unit and the outdoor unit, making it possible to introduce the external air blown from the outdoor fan. Hence, by opening the damper provided on the external-air entry duct, it is possible to directly introduce the air blown from the outdoor fan into the indoor air duct and to blow the air indoors, together with the heated conditioned air. Accordingly, it is possible to efficiently take in the external air using the existing indoor and outdoor fans without requiring an additional power supply for introducing the external air.

[0013] Moreover, in any one of the above-described integrated air conditioners, an insertion slot for the filter is provided near an outlet of the air blowing vent in the indoor unit, and the filter can be attached and removed by inserting the filter from the insertion port, along a filter guide extending across an inlet of the external-air entry duct.

[0014] According to the above aspect, an insertion slot for the filter is provided near an outlet of the air blowing vent in the indoor unit, and the filter can be attached and removed by inserting the filter from the insertion port, along a filter guide extending across an inlet of the external-air entry duct. Hence, by inserting the filter along the filter guide from the insertion slot provided near the outlet of the air blowing vent, the filter can be set so as to extend across the inlet of the external-air entry duct, and furthermore, the filter can be easily removed from the indoor unit by pulling the filter. Accordingly, although

the external-air entry duct is provided in the partition wall dividing the indoor unit and the outdoor unit of the integrated air conditioner, the filter provided in the external-air entry duct can be easily attached and removed for cleaning.

[0015] Moreover, in the above-described integrated air conditioner, a handle is integrally provided at an end of the filter, the handle constituting a portion of the indoor air duct, near the outlet of the air blowing vent.

[0016] With the above-described configuration, a handle is integrally provided at an end of the filter, the handle constituting a portion of the indoor air duct, near the outlet of the air blowing vent. Thus, even in the configuration in which the insertion slot for the filter is provided near the outlet of the air blowing vent to enable the filter to be attached and removed via the insertion slot, the heated conditioned air and the external air introduced from the external-air entry duct can be smoothly blown out without being blocked by the handle of the filter. Accordingly, even though the handle of the filter is disposed near the outlet of the air blowing vent, the handle does not disturb the airflow, causing noise, or deteriorate the appearance, but increases the ease of attachment and removal of the filter, improving the operability.

[0017] Moreover, in any one of the above-described integrated air conditioners, the damper is provided at the opening of the external-air entry duct in such a manner that the damper can be opened and closed via a parallelogram linkage and is configured such that the damper can be translated toward the indoor air duct when the opening is to be opened.

[0018] With the above-described configuration, the damper is provided at the opening of the external-air entry duct in such a manner that the damper can be opened and closed via a parallelogram linkage and is configured such that the damper can be translated toward the indoor air duct when the opening is to be opened. Thus, when the external air is to be introduced indoors, the external-air entry duct can be opened to the indoor air duct by translating the damper toward the indoor air duct by the parallelogram linkage. Accordingly, it is possible to minimize the increase in ventilation resistance occurring on the indoor air duct side due to opening or closing the damper, and at the same time, it is possible to obtain the effect of mixing the heated conditioned air and the external air.

[0019] Moreover, in the above-described integrated air conditioner, the damper may be a plate-shaped damper having a shape conforming to the inner surface of the indoor air duct.

[0020] With the above-described configuration, the damper is a plate-shaped damper having a shape conforming to the inner surface of the indoor air duct. Hence, the plate-shaped damper, which is translated and disposed in the indoor air duct when introducing the external air, can be disposed substantially parallel to the airflow flowing along the inner surface of the indoor air duct. Accordingly, it is possible to minimize the increase in ven-

tilation resistance due to the damper, thereby suppressing a decrease in efficiency of the indoor fan or worsening of noise due to the increase in fan motive power.

{Advantageous Effects of Invention}

[0021] According to the present invention, it is possible to introduce fresh external air indoors by opening the damper provided at the opening of the external-air entry duct, which opening leads to the indoor air duct, to introduce the external air from the blowing duct of the outdoor fan into the indoor air duct and by blowing the external air indoors, together with the heated conditioned air, through the air blowing vent. Furthermore, a filter is provided in the external-air entry duct, and the filter can be accessed from the front of the indoor unit for attachment and removal. Thus, foreign matter and dust existing in the external air can be removed with the filter, and the filter used to remove foreign matter and dust can be attached or removed from the front of the unit for cleaning. Accordingly, it is possible to easily add a ventilation function to the integrated air conditioner without deteriorating the intrinsic air-conditioning function and, at the same time, to introduce indoors only purified external air produced by removing foreign matter and dust with the filter. Moreover, because the filter can be easily attached or removed from the front of the unit for cleaning, the cleanliness thereof can be constantly maintained.

{Brief Description of Drawings}

[0022]

{FIG. 1} FIG. 1 is a vertical sectional view of a portion where an external-air entry duct and a damper of an integrated air conditioner according to an embodiment of the present invention are provided, and the vicinity thereof.

{FIG. 2} FIG. 2 is a perspective view of the section in FIG. 1, as viewed from the front at an angle.

{FIG. 3} FIG. 3 is an enlarged view of the portion where the external-air entry duct and the damper in FIG. 1 are provided, and the vicinity thereof.

{Description of Embodiments}

[0023] An embodiment of the present invention will be described below with reference to FIGS. 1 to 3.

[0024] FIG. 1 shows a vertical sectional view of a portion where an external-air entry duct and a damper of an integrated air conditioner according to an embodiment of the present invention are provided, and the vicinity thereof; FIG. 2 is a perspective view of FIG. 1; and FIG. 3 shows an enlarged view of the portion where the external-air entry duct and the damper are provided, and the vicinity thereof.

[0025] An integrated air conditioner 1 includes a main unit 2, which is a three-dimensional housing having ver-

tical and horizontal dimensions that form a rectangular shape and a depth dimension that is smaller than the vertical and horizontal dimensions. The inside of the main unit 2 is divided into an upper side and a lower side by a partition wall 3, and the upper side serves as an indoor unit 4, and the lower side serves as an outdoor unit 5.

[0026] The main unit 2 constituting the indoor unit 4 is provided with an air intake vent 7 having an intake grill 6, through which the indoor air is introduced, so as to extend over substantially the overall top surface and is provided with an air blowing vent 8 at a position slightly higher than the middle of the front surface so as to extend over substantially the overall length in the horizontal direction. An indoor air duct 9 that guides the indoor air taken in from the air intake vent 7 to the air blowing vent 8 is formed inside the indoor unit 4, and the indoor air duct 9 accommodates, in sequence from the upstream side, a pre-filter 10, an air purifying filter 11, an indoor heat exchanger 12, and an indoor fan (cross-flow fan) 13.

[0027] The indoor heat exchanger 12 is divided into a plurality of sections and is disposed in a bent state so as to form a substantially Λ shape in section, and the indoor fan (cross-flow fan) 13 is arranged to face the inside space thereof. Drain pans 14 and 15 are disposed at the lower ends of the substantially Λ -shaped indoor heat exchanger 12. Furthermore, a plurality of louver slats 16 for changing the air-blowing direction to the right and left and a flap 17 for changing the air-blowing direction up and down are arranged at the back and front, in the air-blowing direction, in the air blowing vent 8 so as to be able to swing.

[0028] The outdoor unit 5 on the lower side of the main unit 2 accommodates outdoor-side devices, such as an outdoor fan (turbo fan) 19 that takes in external air from outdoors via an external air duct (not shown) and an external-air intake vent 18, a driving motor 20 therefor, an outdoor heat exchanger 21 disposed on the blowing-out side of the outdoor fan 19, and a compressor (not shown), and is configured such that the external air circulated through the outdoor heat exchanger 21 is discharged outdoors through an external-air blowing vent and the external air duct (not shown).

[0029] In the thus-configured integrated air conditioner 1, in order to introduce the external air indoors, as illustrated in FIG. 3, the external-air entry duct 23 connecting a downstream area of the indoor fan 13 in the indoor air duct 9 and a blowing duct 22 of the outdoor fan 19 is provided so as to penetrate through the partition wall 3 dividing the indoor unit 4 and the outdoor unit 5. This external-air entry duct 23 has a rectangular cross-section.

[0030] A plate-shaped damper 24 for introducing the external air is provided at the opening of the external-air entry duct 23 leading to the indoor air duct 9 in such a manner that the plate-shaped damper 24 can be opened and closed via a parallelogram linkage 25. This plate-shaped damper 24 is curved so as to conform to the shape of the inner surface of the indoor air duct 9 and is

configured to open the opening by translating toward the indoor air duct 9 via the parallelogram linkage 25, as illustrated in FIG. 3, when the opening is to be opened.

[0031] Furthermore, a filter 26 for removing foreign matter and dust existing in the external air is attachably and removably fitted at the inlet side of the external-air entry duct 23 via a filter guide 27. As illustrated in FIG. 3, this filter guide 27 extends from an insertion slot 28 provided in the front of the main unit 2, near the lower edge of the outlet of the air blowing vent 8, into the main unit 2, up to the opposing surface side across the external-air entry duct 23. The filter 26 can be removed or attached by pulling the filter 26 out of or inserting the filter 26 into the insertion slot 28 along the filter guide 27.

[0032] The filter 26 has an integrally-formed handle 29 that allows gripping with a hand, at one end thereof. The handle 29 is shaped such that, when the filter 26 is inserted along the filter guide 27 and is set to a predetermined position, it is smoothly continuous with the indoor air duct 9, near the outlet of the air blowing vent 8, thus constituting a portion thereof and covering the insertion slot 28 for the filter 26 provided in the front of the main unit 2.

[0033] With the above-described configuration, this embodiment provides the following advantages.

[0034] In the above-described integrated air conditioner 1, when the air conditioner is started, the indoor fan 13 is rotated, taking in the indoor air from the air intake vent 7 via the grill 6 and the filters 10 and 11. The indoor air is then heated through heat exchange with refrigerant in the indoor heat exchanger 12, passes through the indoor air duct 9, and is blown indoors from the air blowing vent 8 in the direction adjusted with the louver slats 16 and the flap 17. Thus, the indoor air is conditioned. On the other hand, in the outdoor unit 5, external air is taken in from outdoors due to rotation of the outdoor fan 19, is circulated through the outdoor heat exchanger 21, and is blown outdoors again.

[0035] By opening the damper 24 provided in the external-air entry duct 23 at this time, it is possible to introduce fresh external air from outdoors to ventilate the indoor air. The external air is introduced from the blowing duct 22 of the outdoor fan 19 into the external-air entry duct 23, is blown to the downstream area of the indoor fan 13 in the indoor air duct 9 to be mixed with the heated conditioned air, and is blown indoors through the air blowing vent 8, together with the heated conditioned air. Foreign matter or dust, if existing in the external air introduced from outdoors, is removed with the filter 26 provided at the inlet of the external-air entry duct 23, and therefore, it is possible to introduce only fresh external air.

[0036] The filter 26 can be easily removed for cleaning by pulling the filter 26, with the handle 29, from the insertion slot 28 provided near the outlet of the air blowing vent 8 in the front side of the indoor unit 4. Thus, by appropriately removing and cleaning the filter 26 at a timing when foreign matter and dust are assumed to be deposited thereon, the cleanliness thereof can be main-

tained.

[0037] According to this embodiment, because the integrated air conditioner 1 is configured such that the indoor air duct 9 and the blowing duct 22 of the outdoor fan 19 communicate with each other via the external-air entry duct 23, such that the damper 24 for introducing the external air is provided at the opening of the external-air entry duct 23, which opening leads to the indoor air duct 9, in such a manner that the damper 24 can be opened and closed, and such that the filter 26 accessible from the front of the indoor unit 4 and attachably and removably fitted to the external-air entry duct 23 is provided, it is possible to introduce fresh external air indoors by opening the damper 24 provided at the opening of the external-air entry duct 23, which opening leads to the indoor air duct 9, to introduce the external air from the blowing duct 22 of the outdoor fan 19 into the indoor air duct 9 and by blowing the external air indoors through the air blowing vent 8, together with the heated conditioned air.

[0038] Furthermore, because the filter 26 is provided in the external-air entry duct 23, and the filter 26 can be accessed from the front of the indoor unit 4 for attachment and removal, foreign matter and dust existing in the external air can be removed with the filter 26, and the filter 26 used to remove foreign matter and dust can be attached or removed from the front of the indoor unit 4 for cleaning.

[0039] Accordingly, it is possible to easily add a ventilation function to the integrated air conditioner 1 without deteriorating the intrinsic air-conditioning function and, at the same time, to introduce indoors only purified external air produced by removing foreign matter and dust with the filter 26. Moreover, because the filter 26 can be easily attached and removed from the front of the unit 4 for cleaning, the cleanliness thereof can be constantly maintained.

[0040] Furthermore, the external-air entry duct 23 is provided between the indoor air duct 9 and the blowing duct 22 of the outdoor fan 19 so as to penetrate through the partition wall 3 dividing the inside of the main unit 2 into the indoor unit 4 and the outdoor unit 5 to enable entry of the external air blown from the outdoor fan 19. Therefore, by opening the damper 24 provided in the external-air entry duct 23, it is possible to directly introduce the air blown from the outdoor fan 19 into the indoor air duct 9 and to blow the air indoors, together with the heated conditioned air. Accordingly, it is possible to efficiently take in the external air using the existing indoor and outdoor fans 13 and 19 without requiring an additional power supply for introducing the external air.

[0041] Moreover, the filter 26 can be attached and removed by inserting the filter 26 from the insertion slot 28 provided near the outlet of the air blowing vent 8 in the indoor unit 4, along the filter guide 27 extending across the inlet of the external-air entry duct 23. Hence, by inserting the filter 26 along the filter guide 27 from the insertion slot 28 provided near the outlet of the air blowing

vent 8, the filter 26 can be set so as to extend across the inlet of the external-air entry duct 23, and furthermore, by pulling the filter 26, the filter 26 can be easily removed from the indoor unit 4.

[0042] Accordingly, although the external-air entry duct 23 is provided in the partition wall 3 dividing the indoor unit 4 and the outdoor unit 5 of the integrated air conditioner 1, the filter 26 provided in the external-air entry duct 23 can be easily attached and removed for cleaning without removing the panel or the like constituting the main unit 2.

[0043] Furthermore, this embodiment is configured such that the handle 29 is provided at one end of the filter 26 and such that this handle 29 constitutes a portion of the indoor air duct 9, near the outlet of the air blowing vent 8. Thus, even in the configuration in which the insertion slot 28 for the filter 26 is provided near the outlet of the air blowing vent 8 to enable the filter 26 to be attached and removed via the insertion slot 28, the heated conditioned air and the external air can be smoothly blown out without being blocked by the handle 29 of the filter 26. Accordingly, even though the handle 29 of the filter 26 is disposed near the outlet of the air blowing vent 8, the handle 29 does not disturb the airflow, causing noise, or deteriorate the appearance, but increases the ease of attachment and removal of the filter 26, improving the operability.

[0044] Moreover, the damper 24 is provided at the opening of the external-air entry duct 23 in such a manner that the damper 24 can be opened and closed via the parallelogram linkage 25 and is configured such that the damper 24 can be translated toward the indoor air duct 9 when the opening is to be opened. Thus, when the external air is to be introduced, the damper 24 is translated toward the indoor air duct 9 by the parallelogram linkage 25 to open the external-air entry duct 23 to the indoor air duct 9, which minimizes the increase in ventilation resistance occurring on the indoor air duct 9 side, caused by opening or closing the damper 24, and, at the same time, provides the effect of mixing the heated conditioned air and the external air.

[0045] Furthermore, the damper 24 is the plate-shaped damper 24 having a shape conforming to the inner surface of the indoor air duct 9. Hence, the plate-shaped damper 24, which is translated and disposed in the indoor air duct 9 when introducing the external air, can be disposed substantially parallel to the airflow flowing along the inner surface of the indoor air duct 9. Accordingly, it is possible to minimize the increase in ventilation resistance due to the damper 24, thereby suppressing a decrease in efficiency of the indoor fan 13 or worsening of noise due to the increase in fan motive power.

[0046] Note that the present invention is not limited to the invention according to the above-described embodiments, but may be appropriately modified without departing from the scope thereof. For example, in the above-described embodiments, although an example in which the insertion slot 28 for the filter 26 is provided near

the lower edge of the outlet of the air blowing vent 8 in the indoor unit 4, a configuration in which the insertion slot 28 is independently provided below the air blowing vent 8 is also possible.

[0047] Furthermore, in the above-described embodiments, although the integrated air conditioner 1 having a configuration in which the indoor unit 4 is provided on the upper side and the outdoor unit 5 is disposed therebelow has been described, the present invention is not necessarily limited to those having such a configuration, but may of course be equally applied to those having a configuration in which the indoor unit 4 and the outdoor unit 5 are arranged at the right and left or front and back.

15 {Reference Signs List}

[0048]

1	integrated air conditioner
20 2	main unit
3	partition wall
25 4	indoor unit
5	outdoor unit
6	grill
30 7	air intake vent
8	air blowing vent
35 9	indoor air duct
12	indoor heat exchanger
13	indoor fan
40 14, 15	drain pan
16	louver slat
45 17	flap
18	external-air intake vent
19	outdoor fan
50 20	driving motor
21	outdoor heat exchanger
55 22	blowing duct
23	external-air entry duct

- 24 damper (plate-shaped damper)
- 25 parallelogram linkage
- 26 filter
- 27 filter guide
- 28 insertion slot
- 29 handle

Claims

1. An integrated air conditioner (1) in which an indoor unit (4) and an outdoor unit (5) are integrated in a single unit, the indoor unit having an indoor air duct (9) that takes in indoor air from an air intake vent (7) and blows the indoor air indoors from an air blowing vent (8) via an indoor heat exchanger (12) and an indoor fan (13), and the outdoor unit taking in external air from an external-air intake vent (18) and blowing the external air outdoors via an outdoor fan (19) and an outdoor heat exchanger (21), **characterized in that** the indoor air duct (9) and a blowing duct of the outdoor fan in the outdoor unit (5) communicate with each other via an external-air entry duct (23), a damper (24) for introducing external air is provided at an opening of the external-air entry duct (23), the opening leading to the indoor air duct (9), in such a manner that the damper can be opened and closed, and a filter (26) accessible from the front of the indoor unit (24) and attachably and removably fitted to the external-air entry duct (23) is provided in the external-air entry duct (23).
2. The integrated air conditioner according to Claim 1, wherein the external-air entry duct (23) is provided between the indoor air duct (9) and the blowing duct of the outdoor fan (19) so as to penetrate through a partition wall (3) dividing the inside of a main unit (2) into the indoor unit (4) and the outdoor unit (5), making it possible to introduce the external air blown from the outdoor fan (19).
3. The integrated air conditioner according to Claim 1 or 2, wherein an insertion slot (28) for the filter (26) is provided near an outlet of the air blowing vent (8) in the indoor unit, and the filter (26) can be attached and removed by inserting the filter from the insertion slot, along a filter guide (27) extending across an inlet of the external-air entry duct.

4. The integrated air conditioner according to Claim 3, wherein a handle (29) is integrally provided at an end of the filter (26), the handle constituting a portion of the indoor air duct (9), near the outlet of the air blowing vent (8).
5. The integrated air conditioner according to any one of Claims 1 to 4, wherein the damper (24) is provided at the opening of the external-air entry duct (23) in such a manner that the damper can be opened and closed via a parallelogram linkage (25) and is configured such that the damper can be translated toward the indoor air duct (9) when the opening is to be opened.
6. The integrated air conditioner according to Claim 5, wherein the damper (24) is a plate-shaped damper having a shape conforming to an inner surface of the indoor air duct (9).

FIG. 1

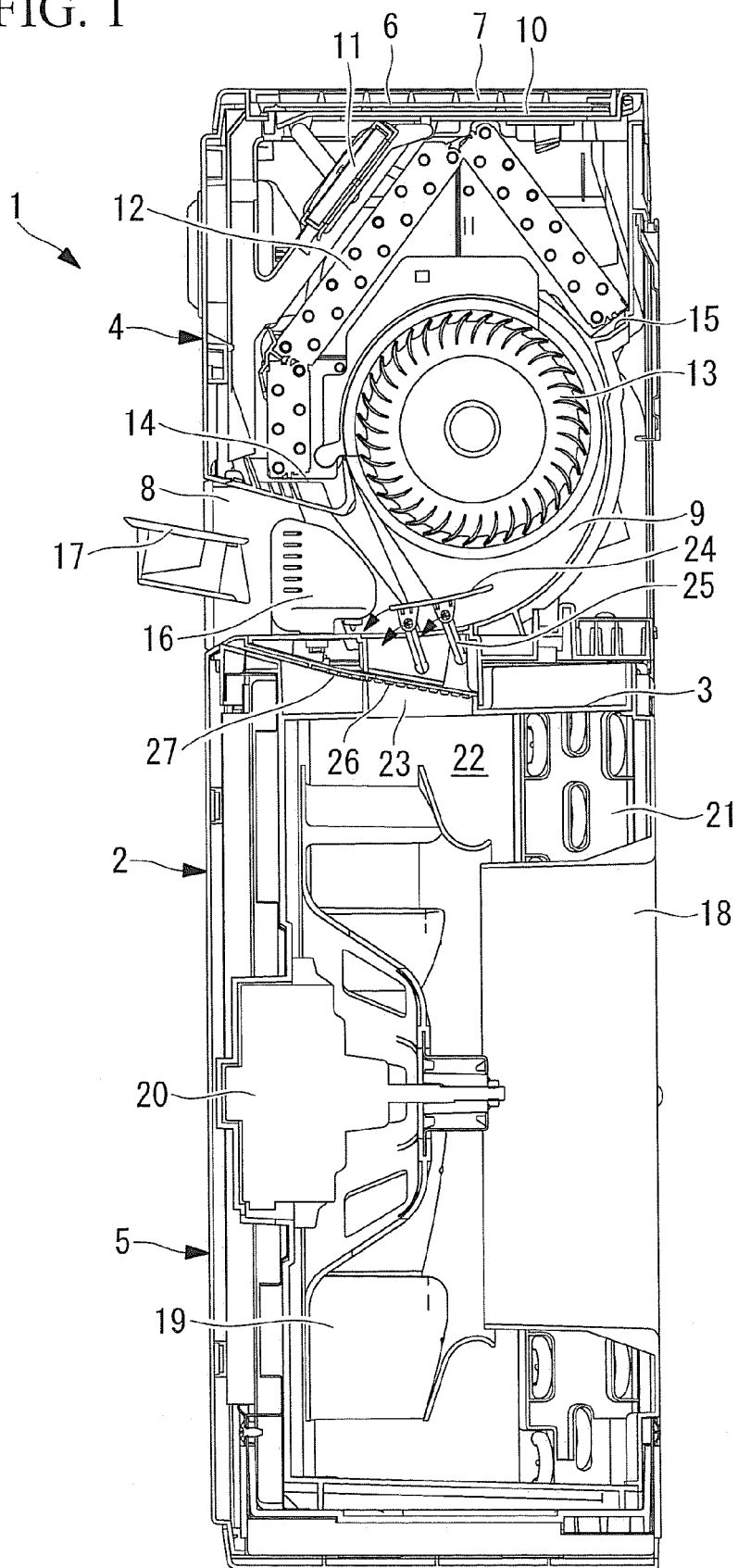


FIG. 2

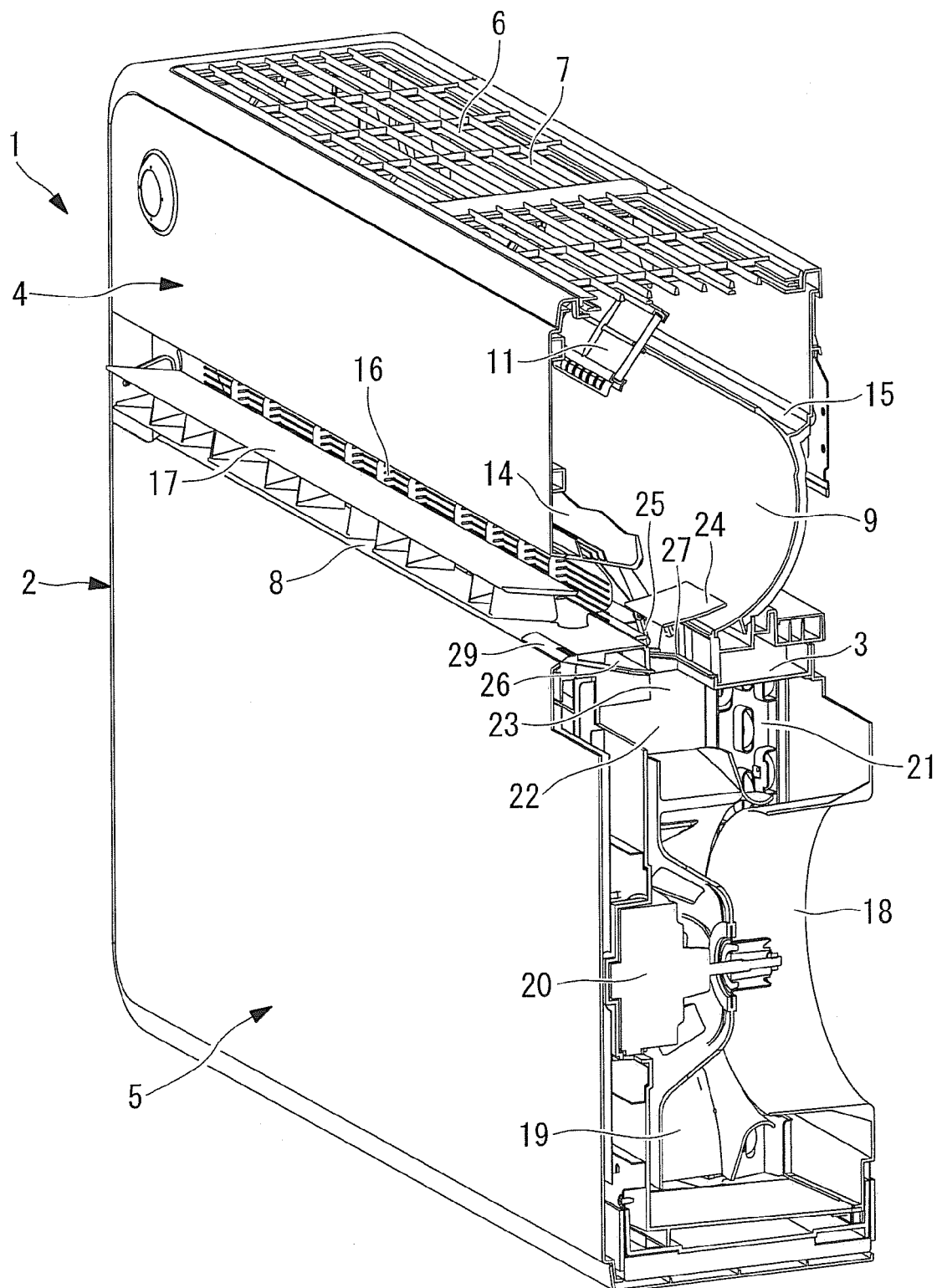
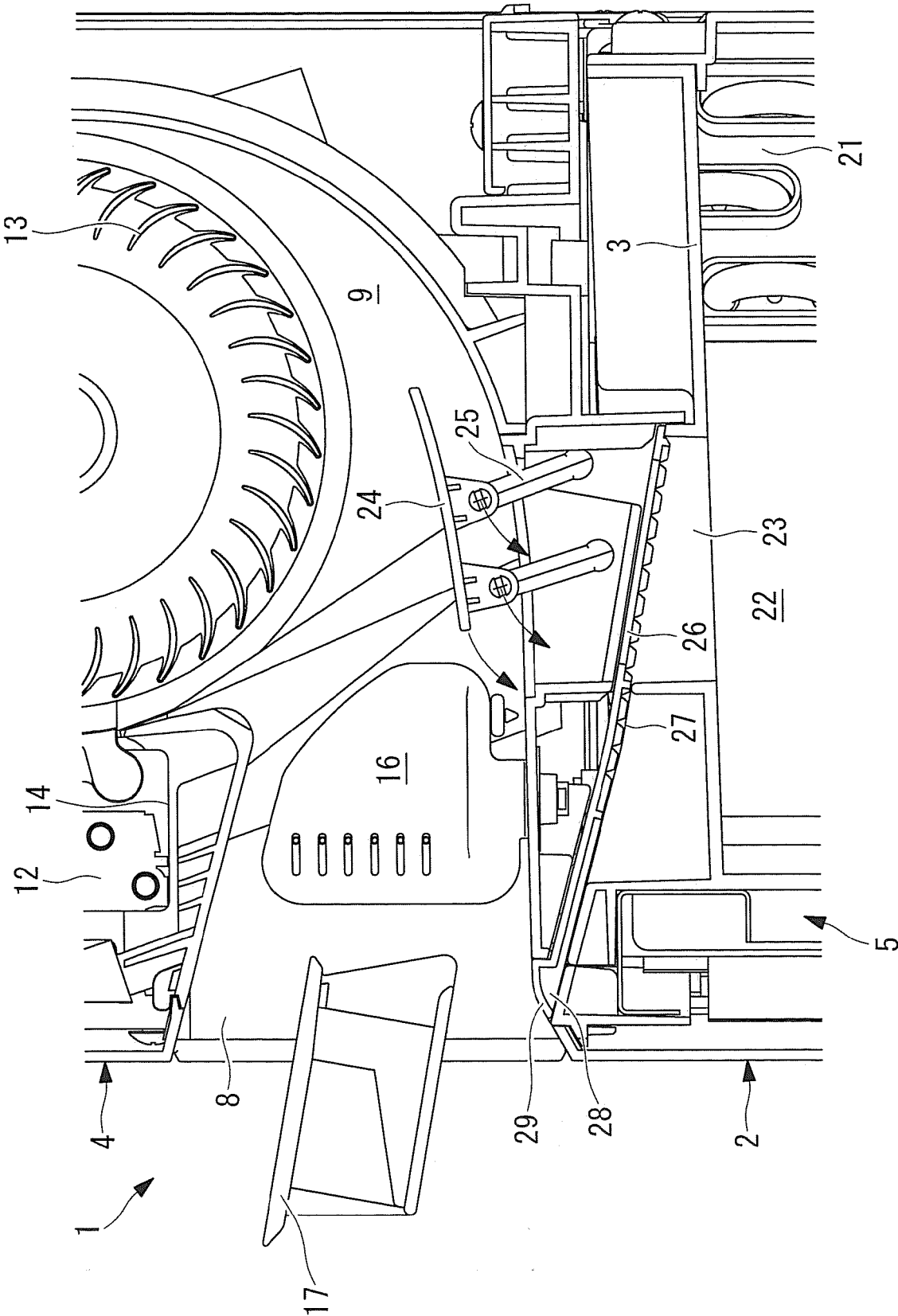


FIG. 3



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

- JP SHO6457030 B [0004]