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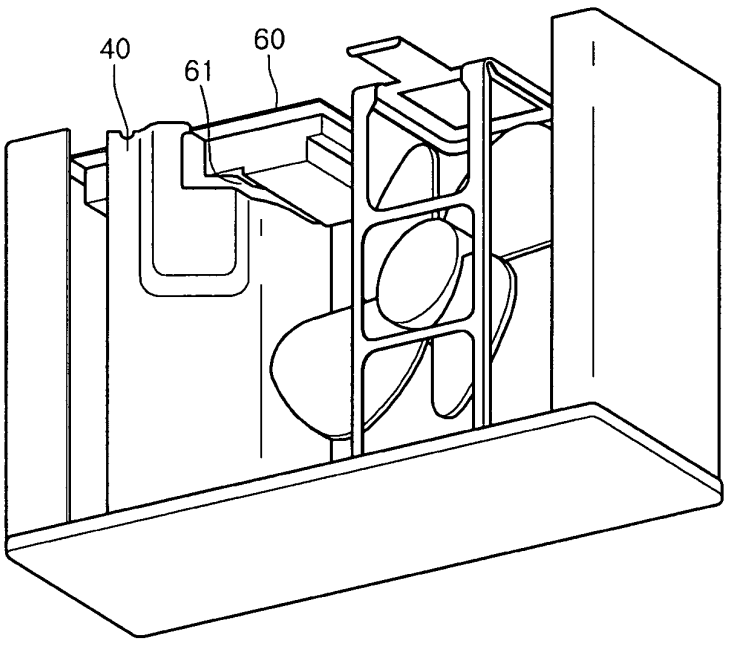
(54) **Outdoor unit of air conditioner**

(57) Provided is an outdoor unit (10) of an air conditioner including an outer case (50) defining an outer appearance, a fan motor assembly (31,33,35) in the outer case, the fan motor assembly sucking and discharging outdoor air, a compressor (21) in the outer case, the compressor compressing refrigerant, a heat exchanger (25) where the outdoor air heat-exchanges with the refrigerant, a partition (40) partitioning an inner space of the outer case into a blowing region in which the fan motor assembly is disposed, and a device region in which the compressor is disposed, a control box (60) placed on the partition and controlling driving of the fan motor assembly and the compressor, and a water ingress prevention part (61) interposed between the partition (40) and the control box (60), and preventing condensed water generated at the heat exchanger from being scattered to the device region by the fan motor assembly.

FIG.4



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Description

BACKGROUND OF THE INVENTION

[0001] Embodiments relate to an outdoor unit of an air conditioner.

[0002] In general, an air conditioner is an apparatus heating and cooling indoor space by performing a refrigerant cycle including compression-condensation-expansion-evaporation.

[0003] Such an air conditioner includes an indoor unit where refrigerant is heat-exchanged with indoor air, and an outdoor unit where the refrigerant is heat-exchanged with outdoor air. The indoor unit includes an indoor heat exchanger for heat-exchanging the indoor air with the refrigerant, a fan blowing the indoor air, and a motor rotating the fan. The outdoor unit includes an outdoor heat exchanger for heat-exchanging the refrigerant with the outdoor air, a fan for blowing the outdoor air, a motor for rotating the fan, a compressor compressing the refrigerant, an expansion part expanding the refrigerant, and a four-way valve changing a flow direction of the refrigerant.

[0004] When an indoor cooling operation is performed, the indoor heat exchanger serves as an evaporator, and the outdoor heat exchanger serves as a condenser. The four-way valve changing the flow direction of the refrigerant switches the heating and cooling operations to each other.

SUMMARY OF THE INVENTION

[0005] Embodiments provide an outdoor unit of an air conditioner, which is adapted for minimizing corrosion of devices disposed in the outdoor unit.

[0006] In a preferred embodiment, an outdoor unit of an air conditioner comprises: an outer case defining an outer appearance; a fan motor assembly in the outer case, the fan motor assembly sucking and discharging outdoor air; a compressor in the outer case, the compressor compressing refrigerant; a heat exchanger where the outdoor air heat-exchanges with the refrigerant; a partition partitioning an inner space of the outer case into a blowing region in which the fan motor assembly is disposed, and a device region in which the compressor is disposed; and a control box placed on the partition and controlling driving of the fan motor assembly and the compressor, and the outdoor unit further comprises: a water ingress prevention part interposed between the partition and the control box, and preventing condensed water generated at the heat exchanger from being scattered to the device region by the fan motor assembly.

[0007] The details of one or more embodiments are set forth in the accompanying drawings and the description below. Other features will be apparent from the description and drawings, and from the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

FIG. 1 is a perspective view illustrating an outdoor unit of an air conditioner according to an embodiment.

FIG. 2 is an exploded perspective view illustrating an outdoor unit of an air conditioner according to an embodiment.

FIG. 3 is an enlarged perspective view of a portion C of FIG. 2 illustrating a support in an outdoor unit of an air conditioner according to an embodiment.

FIG. 4 is a perspective view illustrating a water ingress prevention part in an outdoor unit of an air conditioner according to an embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0009] Reference will now be made in detail to the embodiments of the present disclosure, examples of which are illustrated in the accompanying drawings.

[0010] In the following detailed description of the preferred embodiments, reference is made to the accompanying drawings that form a part hereof, and in which is shown by way of illustration specific preferred embodiments in which the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is understood that other embodiments may be utilized and that logical structural, mechanical, electrical, and chemical changes may be made without departing from the scope of the invention as defined by the claims. To avoid detail not necessary to enable those skilled in the art to practice the invention, the description may omit certain information known to those skilled in the art. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is defined only by the appended claims.

[0011] FIG. 1 is a perspective view illustrating an outdoor unit of an air conditioner according to an embodiment, and FIG. 2 is an exploded perspective view illustrating an outdoor unit of an air conditioner according to an embodiment.

[0012] Referring to FIGS. 1 and 2, an outdoor unit 10 of an air conditioner according to an embodiment includes various devices for a refrigerant flow, a fan motor assembly for blowing air, a partition 40 for partitioning inner space of the outdoor unit 10, a control box 60 for controlling the various devices and the fan motor assembly, and an outer case 50 defining an outer appearance.

[0013] In detail, the various devices for the refrigerant flow includes a compressor 21 for compressing the refrigerant, a four-way valve 22 for changing a flow direction of the refrigerant, an expansion part 23 in which the refrigerant is expanded, a heat exchanger 25 for heat-exchange between the refrigerant and outdoor air, an ac-

cumulator 26 for separating a gaseous refrigerant from a liquid refrigerant, a refrigerant pipe 27 connecting the above-described devices to each other such that the refrigerant flows, an indoor unit for heat-exchange between the refrigerant and indoor air, and a connection pipe 28 connecting the indoor unit 80 to the refrigerant pipe 27.

[0014] The fan motor assembly includes a fan 31 generating an air-pressure difference due to rotation, a motor 33 providing a driving force for rotating the fan 31, and a motor-fixing part 35 for fixing the motor 33.

[0015] The partition 40 is provided between the fan motor assembly and the various devices for the refrigerant flow except the heat exchanger 25. That is, the inner space of the outdoor unit 10 is partitioned into a blowing region in which the fan motor assembly is installed and a device region in which the various devices for the refrigerant flow except the heat exchanger 25 are installed.

[0016] The control box 60 is seated on an upper end of the partition 40. In detail, a support 42 that will be described later is provided on the upper end of the partition 40, and the control box 60 is seated on the support 42. A control panel 62 for fixing various electric wires connected to the control box 60 is coupled to a side of the control box 60.

[0017] The outer case 50 includes a front surface case 51 defining an outer appearance of a front surface, a pipe-side case 53 shielding the refrigerant pipe 27, a heat exchanger-side case 54 shielding a lateral surface of the heat exchanger 25, a top surface case 55 shielding a top surface, and a base pan 56 supporting the various devices for the refrigerant flow and the fan motor assembly.

[0018] In detail, an exhaust grill 52 exhausting air heat-exchanged through the heat exchanger 25 is provided in the front surface case 51. The exhaust grill 52 has a circular shape having a size equal to or greater than that of the fan 31 when viewed from the front side. In addition, the exhaust grill 53 is provided with a plurality of exhaust holes having a net shape.

[0019] A pipe fixing part 57 for fixing the refrigerant pipe 27 and the connection pipe 28 is coupled to the pipe-side case 53. A pipe cover 58 for shielding the pipe fixing part 57 and the connection pipe 28 is coupled to an outer surface of the pipe-side case 53.

[0020] A plurality of intake holes for sucking the outdoor air toward the heat exchanger 25 are defined in the heat exchanger-side case 54. A back surface intake grill 59 for sucking the outdoor air is provided in a rear direction of the heat exchanger 25, i.e., a back surface of the outer case 50. A fixing support 70 for fixing and supporting the base pan 56 is provided under the base pan 56.

[0021] Hereinafter, a support and a water ingress prevention part in an outdoor unit of an air conditioner according to an embodiment will now be described in detail.

[0022] FIG. 3 is an enlarged perspective view of a portion C of FIG. 2 illustrating a support in an outdoor unit of an air conditioner according to an embodiment. FIG. 4 is a perspective view illustrating a water ingress prevention part in an outdoor unit of an air conditioner according to an embodiment.

[0023] Referring to FIG. 3, the upper portion of the partition 40 is provided with the support 42 preventing the control box 60 from being inclined by its own weight. The support 42 extends horizontally from the upper end of the partition 40. The control box 60 is placed on a top surface of the support 42, in which the center of gravity of the control box 60 is disposed within the top surface of the support 42. Here, the support 42 may be provided independently from the partition 40, and provided in various shapes such as a wire shape and a plurality of cantilever shapes.

[0024] The support 42 prevents the control box 60 from being inclined by its own weight. Particularly, although the control box 60 is placed on the upper end of the partition 40, the support 42 supports a portion of the control box 60 corresponding to the center of the gravity, so as to keep a stable state.

[0025] Thus, the installing and repairing of the various devices for the refrigerant flow are more conveniently performed with the outer case 50 opened.

[0026] Referring to FIG. 4, a bottom surface of the control box 60 is provided with a water ingress prevention part 61 for preventing condensed water generated at the heat exchanger 25 from being introduced into the device region. The water ingress prevention part 61, with the control box 60 coupled to the partition 40, extends downward from the bottom surface of the control box 60 in a corresponding shape to the partition 40. Particularly, the water ingress prevention part 61 further shields a surface exposed toward the fan motor assembly on the partition 40. The water ingress prevention part 61 may extend from the partition 40, or may be provided independently from the partition 40 and the control box 60.

[0027] Since the water ingress prevention part 61 covers the space between the partition 40 and the control box 60, the condensed water generated at the heat exchanger 25 is prevented from being introduced into the device region. Particularly, even when the condensed water is scattered between the partition 40 and the control box 60 by the rotating fan 31, the water ingress prevention part 61 guides the condensed water to flow downward, so as to prevent the ingress of the condensed water more effectively.

[0028] Although embodiments have been described with reference to a number of illustrative embodiments thereof, it should be understood that numerous other modifications and embodiments can be devised by those skilled in the art. More particularly, various variations and modifications are possible in the component parts and/or arrangements of the subject combination arrangement within the scope of the invention as defined by the appended claims. In addition to variations and modifications in the component parts and/or arrangements, alternative uses will also be apparent to those skilled in the art.

Claims

1. An outdoor unit of an air conditioner, comprising:

   an outer case defining an outer appearance; a fan motor assembly in the outer case, the fan motor assembly sucking and discharging outdoor air; a compressor in the outer case, the compressor compressing refrigerant; a heat exchanger where the outdoor air heat-exchanges with the refrigerant; a partition partitioning an inner space of the outer case into a blowing region in which the fan motor assembly is disposed, and a device region in which the compressor is disposed; and
   a control box placed on the partition and controlling driving of the fan motor assembly and the compressor, the outdoor unit further comprising:

      a water ingress prevention part interposed between the partition and the control box, and preventing condensed water generated at the heat exchanger from being scattered to the device region by the fan motor assembly.

2. The outdoor unit according to claim 1, wherein the water ingress prevention part extends from a bottom surface of the control box along a surface of the partition exposed to the blowing region.

3. The outdoor unit according to claim 1, wherein the partition has a portion contacting the control box and provided with a support supporting the control box.

4. The outdoor unit according to claim 3, wherein the support is provided by bending a portion of the partition.

5. The outdoor unit according to claim 3, wherein a center of gravity of the control box is disposed within the support to prevent the control box from being inclined.

FIG.1

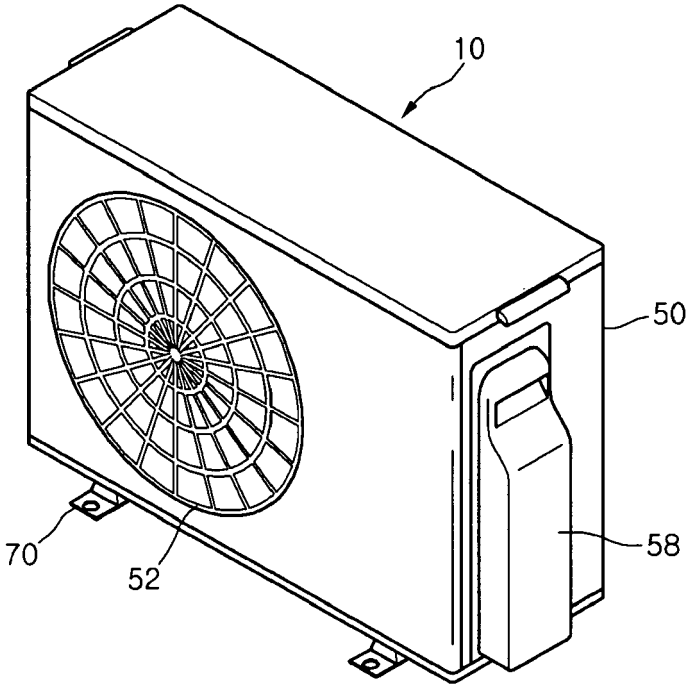

FIG.2

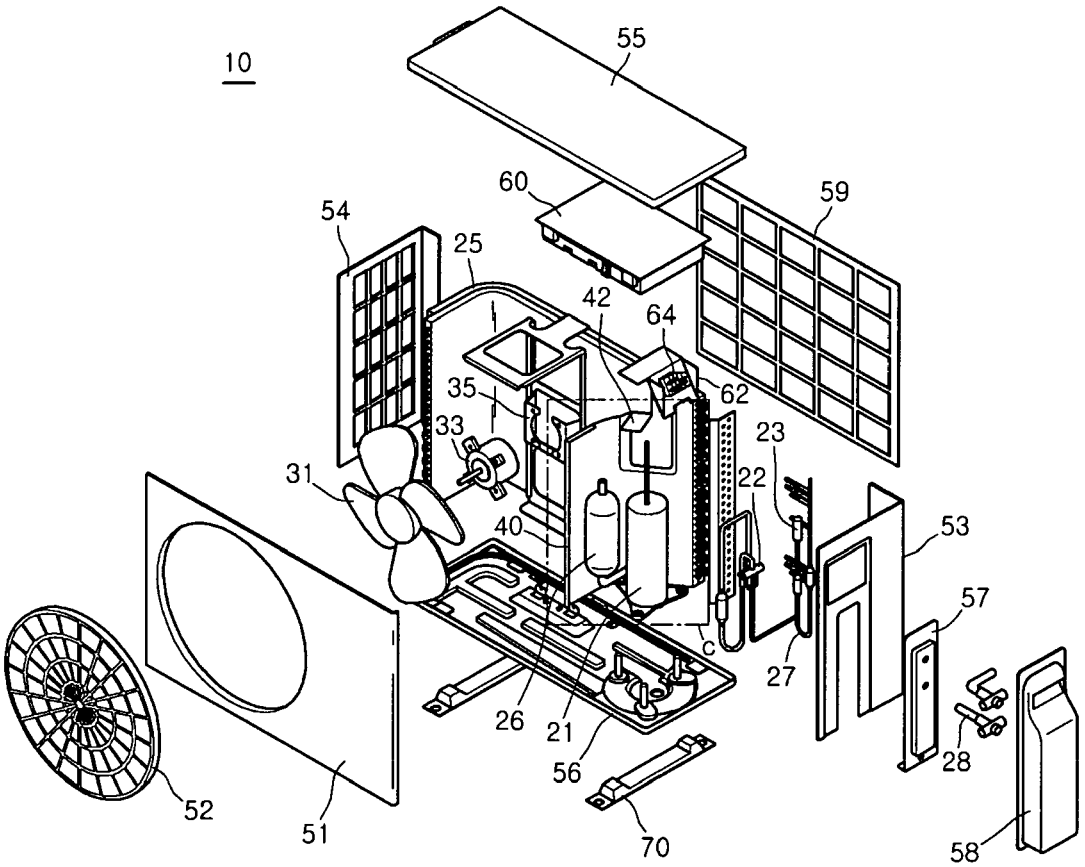
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FIG.3

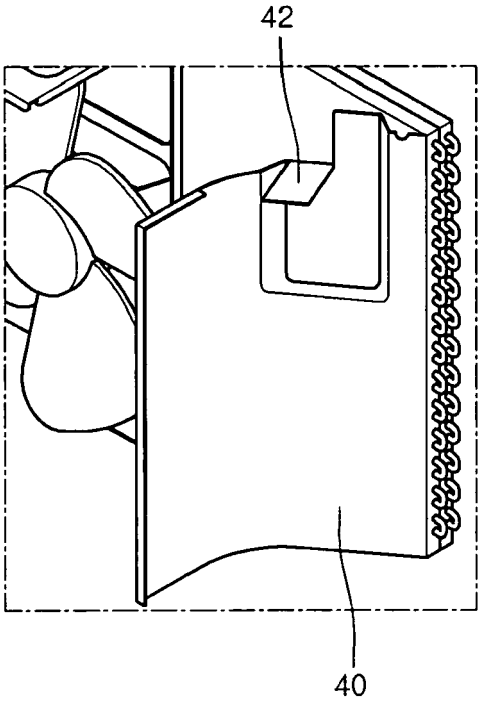

FIG.4