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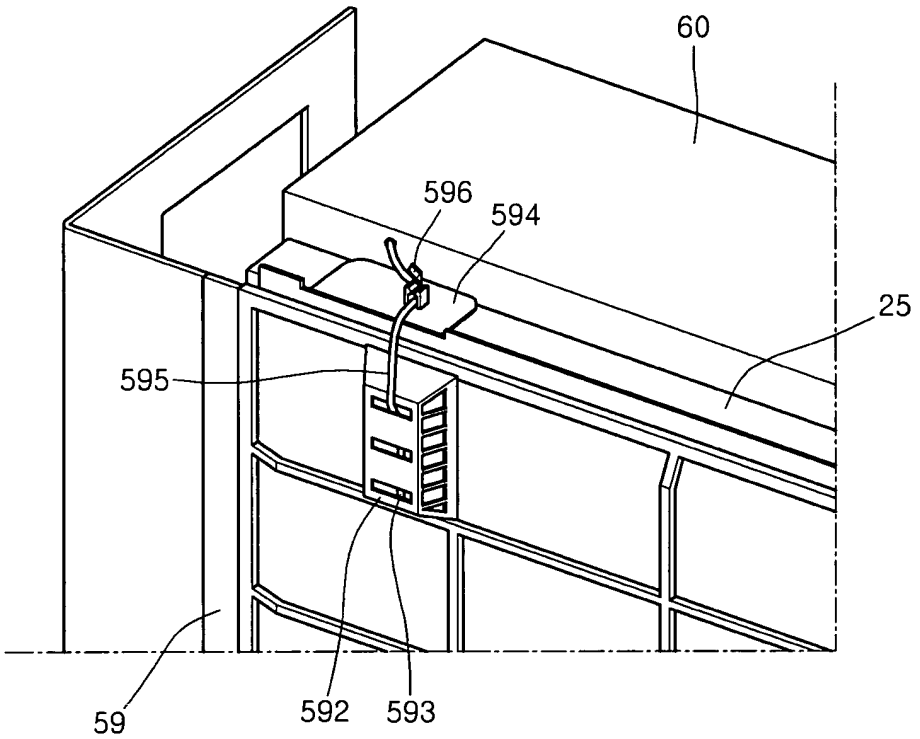
(54) **Outdoor unit of air conditioner**

(57) Provided is an outdoor unit (10) of an air conditioner. The outdoor unit includes a case (50) defining an outer appearance, an intake grill (59) provided on a side of the case to suck outdoor air, a heat exchanger (25) provided inside the case to heat-exchange the outdoor air with a refrigerant, a fan (31) provided inside the case to suck the outdoor air, and a temperature sensor (593) detecting a temperature of the sucked outdoor air. The temperature sensor is installed on the intake grill such that the temperature sensor is spaced from the heat exchanger.

FIG.3



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Description

BACKGROUND TO 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 capable of further accurately detecting an indoor temperature.

[0006] In a preferred embodiment, an outdoor unit of an air conditioner comprises: a case defining an outer appearance; an intake grill provided on a side of the case to suck outdoor air; a heat exchanger provided inside the case to heat-exchange the outdoor air with a refrigerant; a fan provided inside the case to suck the outdoor air; and a temperature sensor detecting a temperature of the sucked outdoor air, wherein the temperature sensor is installed on the intake grill such that the temperature sensor is spaced from the heat exchanger.

[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 a perspective view illustrating a temperature sensor fixing part and an electric wire fixing part of 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 spirit or scope of the invention. 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 accumulator 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 pan 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 a 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 is defined in the heat exchanger-side case 54. A back surface intake grill 59 for sucking the indoor 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 temperature sensor of an outdoor unit of an air conditioner according to an embodiment will be described in detail.

[0022] FIG. 3 is a perspective view illustrating a temperature sensor fixing part and an electric wire fixing part of an outdoor unit of an air conditioner according to an embodiment.

[0023] Referring to FIG. 3, a temperature sensor 593 is installed in a temperature sensor fixing part 592 provided on a back surface intake grill 59. The temperature sensor fixing part 592 is spaced a predetermined distance from a heat exchanger 25. A top surface of the temperature sensor fixing part 592 is shielded, and the rest surfaces are opened. The temperature sensor fixing part 592 may be integrally injection-molded with the back surface intake grill 59.

[0024] The temperature sensor 593 is connected to a control box 60 through an electric wire 595 for supplying a current. The temperature sensor 593 and the electric wire 595 are vertically disposed in upward and downward directions.

[0025] An electric wire separation part 594 for preventing the electric wire connected to the temperature sensor 593 from being in contact with the heat exchanger 25 is provided on an upper end of the back surface intake grill 59. An electric wire fixing part 596 for fixing the electric wire 595 is provided on a top surface of the electric wire separation part 594. The electric wire fixing part 596 has a hook shape extending upwardly from the electric wire separation part 594. The electric wire 595 connected to the temperature sensor 593 is connected to the control box 60 in a state where the electric wire 595 is fixed to the electric wire fixing part 596. The electric wire fixing part 596 is provided above the temperature sensor 593 such that the electric wire connected to the temperature sensor 593 extends upwardly and downwardly.

[0026] According to the temperature sensor 593, since the temperature sensor 593 is spaced from the heat exchanger 25, it prevents the temperature sensor 593 from malfunctioning due to an inflow of condensed water generated from the heat exchanger 25. Since the top surface of the temperature sensor fixing part 592 is shielded, it prevents rain or snow from directly contacting with the temperature sensor 593 even in bad weather such as heavy rain or snow. Thus, it can prevent the temperature sensor 593 from malfunctioning due to the rain or snow.

[0027] Also, since the electric wire 595 connected to the temperature sensor 593 is not in contact with the heat exchanger 25, it can prevent a fin of the heat exchanger 25 from being damaged or a cover of the electric wire 595 from being stripped off.

[0028] Since the electric wire 595 connected to the temperature sensor 593 is vertically disposed in the upward and downward directions, there increases a possibility in which water flows downwardly due to a self-weight even if the water is suffused on a surface of the electric wire 595. Thus, it can further prevent the temperature sensor 593 from malfunctioning.

[0029] In addition, since the temperature sensor fixing part 592 is integrated with the back surface intake grill 59, an assembly process can be further facilitated.

[0030] 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:

   a case defining an outer appearance; an intake grill provided on a side of the case to suck outdoor air; a heat exchanger provided inside the case to heat-exchange the outdoor air with a refrigerant; a fan provided inside the case to suck the outdoor air; and a temperature sensor detecting a temperature of the sucked outdoor air,

   wherein the temperature sensor is installed on the intake grill such that the temperature sensor is spaced from the heat exchanger.

2. The outdoor unit according to claim 1, wherein a temperature sensor fixing part for receiving the temperature sensor is provided on the intake grill.

3. The outdoor unit according to claim 2, wherein the temperature sensor fixing part is integrally injection-molded with the intake grill.

4. The outdoor unit according to claim 2, wherein the temperature sensor fixing part has at least continuous top surface to shield an upper side of the temperature sensor.

5. The outdoor unit according to claim 1, further comprising an electric wire separation part extending from the intake grill to prevent an electric wire connected to the temperature sensor from directly contacting with the heat exchanger.

6. The outdoor unit according to claim 5, further comprising an electric wire fixing part provided on the electric wire separation part to fix the electric wire.

7. The outdoor unit according to claim 1, wherein the electric wire fixing part is provided above at least temperature sensor such that an electric wire connected to the temperature sensor extends in upward and downward directions.

FIG.1

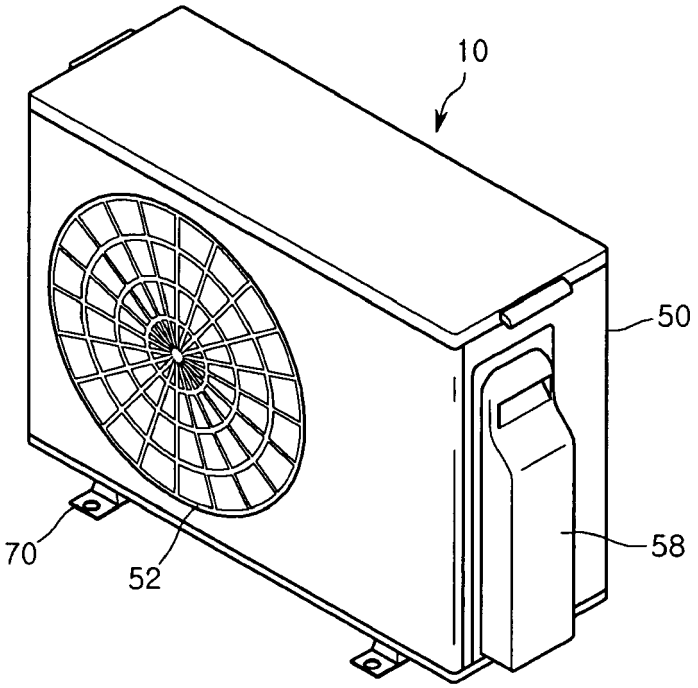

FIG.2

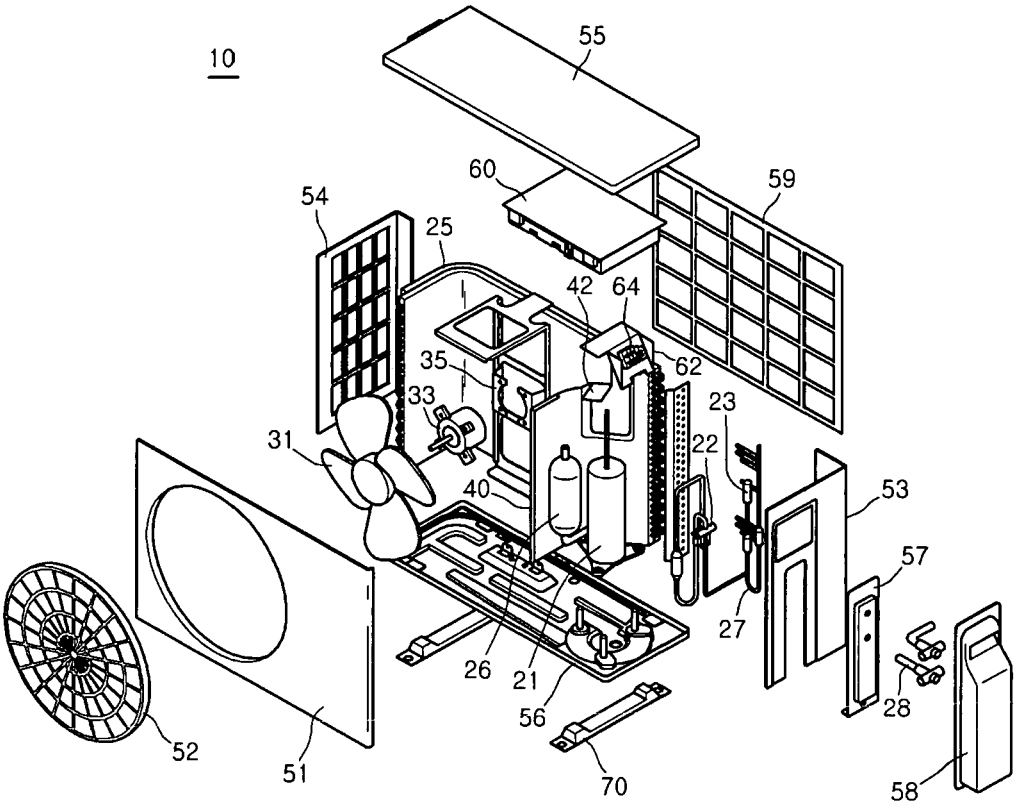
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FIG.3