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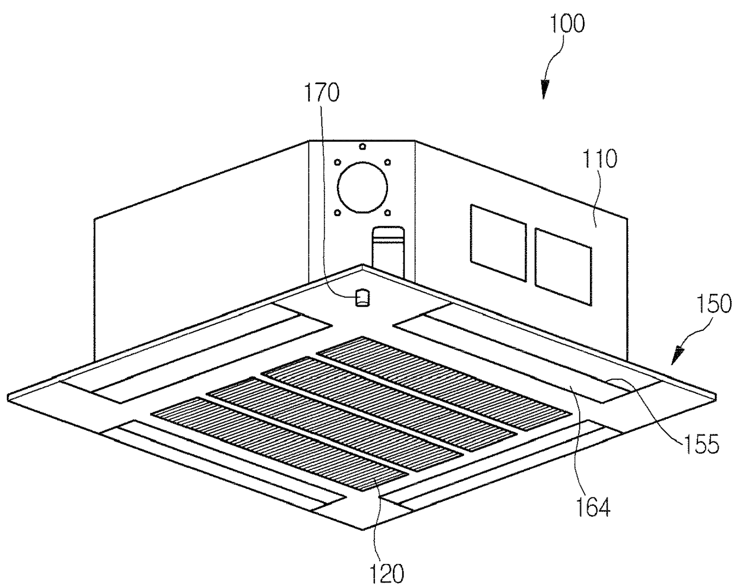
(54) **Indoor unit for air conditioner and control method thereof**

(57) Provided is an indoor unit for an air conditioner buried in a ceiling and including a heat exchanger with respect to an indoor space defined by a bottom surface, the ceiling, and a plurality of wall surface, including: a front panel where a suction part suctioning air of the indoor space; a discharge hole placed on at least one side of the suction part and discharging heat-exchanged air from the heat exchanger; an opening member provided movably to selectively open the discharge hole; a distance sensing unit sensing at least one of a distance up to the bottom surface from the front panel or the indoor unit and a distance up to the wall surface from the indoor unit; and a controller controlling the opening degree of the opening member based on a sensing result sensed by the distance sensing unit.

Fig. 1



EP 2 423 608 A2

Description

[0001] Exemplary embodiments of the present invention relate to an indoor unit for an air conditioner and a control method thereof.

[0002] In general, an air conditioner as a cooling/heating system that suctions indoor air to exchange heat with refrigerant and thereafter, discharge heat-exchanged air to a room is an apparatus forming a refrigeration cycle constituted by a compressor, a condenser, an expansion device, and an evaporator.

[0003] The air conditioner is classified into a separate type air conditioner in which an outdoor unit and an indoor unit are separated and installed and an integral air conditioner in which the outdoor unit and the indoor unit are integrally installed.

[0004] In recent years, a multi-type air conditioner in which a plurality of indoor units are connected to one outdoor unit and the plurality of indoor units are installed in different indoor spaces have been generally used.

[0005] The separate type air conditioner includes the outdoor unit installed outdoors and the indoor unit installed in a building. In addition, a heat exchanger can be provided in each of the outdoor unit and the indoor unit.

[0006] Meanwhile, in the separate type air conditioner, the indoor unit may be buried in a ceiling. The indoor unit may be called a ceiling buried indoor unit. Air of which heat is exchanged in the ceiling buried indoor unit may be discharged downwardly from the ceiling. In addition, the amount of air discharged from the indoor unit is controlled to vary depending on the height of the ceiling. That is, as the ceiling is higher, a discharge amount of air may be controlled to be larger.

[0007] In general, the height of the ceiling in which the ceiling buried indoor unit is installed may be various depending on the structure or size of the building.

[0008] While the ceiling buried indoor unit in the related art was installed in an installation space, there was inconvenience that the size of the installation space, e.g., the height of the ceiling should be additionally set. When the height of the ceiling was not set or wrongly set, the amount of air discharged from the indoor unit was inappropriately controlled.

[0009] Further, an operation of the indoor unit in the related art is not controlled depending on the actual height of the ceiling but controlled depending on a height section divided with a predetermined width. That is, when different ceiling heights are included in the same height section, air of the same amount may be controlled to be discharged.

[0010] In this case, a person who lives in an indoor space having a relatively low ceiling height among the ceiling heights included in the same height section feels the cold and a person who lives in an indoor space having a relatively high ceiling height feels the heat.

[0011] Since discharging of the optimal amount of air in which a user could feel comfort was limited, unnecessary power consumption is wasted in order to receive air having a required temperature.

[0012] Meanwhile, when the indoor unit is installed to be concentrated on any one side of the indoor space, that is, the indoor unit is installed to be closer to the other wall surface than one wall surface, the discharge amount of air is unbalanced with respect to the entirety of the indoor space.

[0013] The present invention has been made in an effort to provide an indoor unit for an air conditioner in which the discharge of air can be appropriately controlled depending on an installation height of the indoor unit.

[0014] Further, the present invention has been made in an effort to provide an indoor unit for an air conditioner in which the discharge amount of air can be appropriately controlled depending on a distance between the indoor unit and a wall surface.

[0015] In order to achieve the above objects, an exemplary embodiment of the present invention provides an indoor unit for an air conditioner buried in a ceiling and including a heat exchanger with respect to an indoor space defined by a bottom surface, the ceiling, and a plurality of wall surface including: a front panel where a suction part suctioning air of the indoor space; a discharge hole placed on at least one side of the suction part and discharging heat-exchanged air from the heat exchanger; an opening member provided movably to selectively open the discharge hole; a distance sensing unit sensing at least one of a distance up to the bottom surface from the front panel or the indoor unit and a distance up to the wall surface from the indoor unit; and a controller controlling the opening degree of the opening member based on a sensing result sensed by the distance sensing unit.

[0016] Another exemplary embodiment of the present invention provides an indoor unit for an air conditioner buried in a ceiling and including a suction part suctioning air and heat exchanger exchanging heat with the air suctioned in the suction part with respect to an indoor space defined by a bottom surface, the ceiling, and a plurality of wall surface, including: a discharge hole placed on at least one side of the suction part and discharging heat-exchanged air from the heat exchanger; a blowing fan providing driving force to discharge the air through the discharge hole; discharge veins provided on one side of the discharge hole to selectively opening the discharge hole; a height sensing unit sensing an installation height of the indoor unit; and a controller controlling RPM of the blowing fan or opening degrees of the discharge veins based on the installation height of the indoor unit sensed by the height sensing unit.

[0017] Yet another exemplary embodiment of the present invention provides a control method of an indoor unit for an air conditioner buried in a ceiling and including a heat exchanger for cooling or heating and discharge veins controlling the discharge amount of air passing through the heat exchanger with respect to an indoor space defined by a bottom surface, a ceiling, and a plurality of wall surface, including: sensing an installation height of the indoor unit based on the bottom surface; determining the discharge amount of the air based on the installation height of the indoor unit; and starting the indoor unit.

[0018] According to the indoor unit for the air conditioner according to the exemplary embodiments, the installation height of the indoor unit can be measured by the distance sensing sensor and the discharge amount of air can be appropriately controlled depending on the measured height.

[0019] In addition, since the discharge amount of air is controlled to vary linearly depending on the actual measured height, the indoor space can be effectively cooled or heated.

[0020] Further, the distance between the indoor unit and the wall surface can be measured by the distance sensing sensor and the discharge amount of air can be appropriately controlled depending on the measured distance up to the wall surface.

[0021] Since inconvenience to set the installation height disappears while installing the ceiling buried indoor unit, installation can be easier. In addition, cooling or heating efficiency of a conditioned space can be prevented from being deteriorated due to incorrect height setting after installation, and as a result, energy loss which may occur can be prevented.

FIG. 1 is a perspective view of an indoor unit according to a first exemplary embodiment of the present invention.

FIG. 2 is a diagram showing a configuration of the indoor unit according to the first exemplary embodiment of the present invention.

FIG. 3 is a flowchart of a control method of the indoor unit according to the first exemplary embodiment of the present invention.

FIG. 4 is a graph showing variation in flow rate of discharged air depending on the height of the indoor unit in the first exemplary embodiment of the present invention.

FIG. 5 is a block diagram showing a configuration of an indoor unit according to a second exemplary embodiment of the present invention.

FIG. 6 is a flowchart of a control method of the indoor unit according to the second exemplary embodiment of the present invention.

FIG. 7 is a diagram showing the flow rate of discharged air depending on a position where the indoor unit is placed.

FIG. 8 is a block diagram showing a configuration of an indoor unit according to a third exemplary embodiment of the present invention.

[0022] Hereinafter, detailed exemplary embodiments of the present invention will be described with reference to the accompanying drawings.

[0023] FIG. 1 is a perspective view of an indoor unit according to a first exemplary embodiment of the present invention.

[0024] Referring to FIG. 1, the indoor unit 100 according to the first exemplary embodiment of the present invention includes a body 110 buried in a ceiling and including a plurality of components for air conditioning, which are incorporated therein and a front panel 150 provided on the front of the body 110 and exposed from the ceiling to the outside.

[0025] Specifically, a suction part 120 through which air of an indoor space is suctioned and a discharge hole 155 through which the suctioned air is discharged after the air suctioned through the suction part 120 is heat-exchanged.

[0026] The suction part 120 is formed at the center of the front panel 150 and the plurality of discharge holes 155 may be provided around the suction part 120. However, forming positions of the suction part 120 and the discharge hole 155 are not limited thereto.

[0027] A discharge vein 164 as an "opening member" selectively opening the discharge hole 155 is included in the front panel 150. The discharge vein 164 may be provided movably at one side of the discharge hole 155. According to movement of the discharge vein 164, e.g., a rotation operation, the amount or a discharge direction of air discharged through the discharge hole 155 may be controlled.

[0028] Although not shown, a heat exchange for cooling or heating the air suctioned into the indoor unit 100 and a blowing fan providing suction force may be provided in the body 110.

[0029] A height sensing unit 170 for sensing an installation height of the indoor unit 100 or the front panel 150, i.e., a distance between the indoor unit 100 or the front panel 150 and the bottom surface of an installation space thereof is provided in the front panel 150.

[0030] The height sensing unit 170 is provided on a front surface of the front panel 150 and may be placed downwardly. A distance measuring sensor may be included in the height sensing unit 170.

[0031] FIG. 2 is a diagram showing a configuration of the indoor unit according to the first exemplary embodiment of the present invention.

[0032] Referring to FIG. 2, the indoor unit 100 according to the first exemplary embodiment of the present invention includes the height sensing unit 170 sensing the height of the ceiling where the indoor unit 100 is installed and a temperature sensing unit 175 sensing the temperature of the indoor space. The temperature sensing unit 175 may include a temperature sensor.

[0033] The indoor unit 100 further includes a fan assembly 180 capable of adjusting the discharge amount of air depending on the height sensed by the height sensing unit 170. The fan assembly 180 includes a fan motor 182 providing driving force and a blowing fan 184 provided to be rotatable by the fan motor 182. The RPM of the fan motor 182 is controlled to increase or decrease in proportion to the height of the ceiling.

[0034] The indoor unit 100 further includes a memory unit 190 storing data. In the memory unit 190, a table associated with the height sensed by the height sensing unit 170 and the RPM of the fan motor 182 may be mapped and stored.

[0035] The indoor unit 100 further includes a discharge control unit 160 controlling the amount or discharge direction of the air discharged through the discharge hole 155. The discharge control unit 160 includes the discharge vein selectively opening the discharge hole 155 and a discharge motor 162 providing driving force to the discharge vein 164. The discharge vein 164 may be provided to be rotatable or movable straightly. In addition, the plurality of discharge veins 164 may be provided to correspond to the discharge holes 155.

[0036] In the memory unit 190, a table associated with the height sensed by the height sensing unit 170 and an opening degree of the discharge control unit 160 may be mapped and stored. In addition, the indoor unit 100 further includes a controller 200 receiving information sensed by the sensing units 170 and 175 and controlling the driving motors 162 and 182.

[0037] FIG. 3 is a flowchart of a control method of the indoor unit according to the first exemplary embodiment of the present invention. Referring to FIG. 3, the control method of the indoor unit according to the exemplary embodiment of the present invention will be described.

[0038] Power is applied to the indoor unit 100. In this case, the power of the indoor unit may be controlled remotely by a remote controller.

[0039] In addition, the installation height of the indoor unit, i.e., the height of the ceiling may be sensed by the height sensing unit 170 (S12). When a predetermined height is sensed, the fan motor 182 is controlled with RPM corresponding to the sensed height, and as a result, the blowing fan 184 may be rotated. For example, as the sensed height is higher, the RPM of the fan motor 182 may be higher (S 13).

[0040] The control for compensating for a difference between the indoor temperature sensed by the temperature sensing unit 175 and a set (target) temperature is performed. The compensation control may be performed based on the height of the ceiling.

[0041] Specifically, a predetermined error value may be generated between a surrounding temperature of the temperature sensing unit 175 positioned around the ceiling and a temperature between locations (approximately 1 to 1.5 m from the bottom surface) which residents feel. The compensation control may be appreciated as a control method for compensating the error value to an appropriate level.

[0042] A case in which the indoor temperature is 30°C and the set temperature is 25°C will be described as an example. In this case, the difference between the indoor temperature and the set temperature as a first temperature difference may be recognized as 5°C. When the ceiling height of the indoor space is 3.2 m, an actual temperature difference (a second temperature difference) is just recognized as 5°C.

[0043] On the contrary, when the ceiling height is 2.7 m, a value acquired by subtracting a compensation constant α from 5°C may be recognized as the actual temperature difference. In addition, when the ceiling height is 3.7m, a value acquired by adding the compensation constant α from 5°C may be recognized as the actual temperature difference.

[0044] Therefore, as the ceiling height is higher, the actual temperature difference (the second temperature difference) is higher than the sensed value (the first temperature difference) to compensate for the temperature. Herein, the ceiling height (the installation height of the indoor unit), 3.2 may be a predetermined installation height which is a reference for adding or subtracting the compensation constant.

[0045] That is, when the installation height of the indoor unit is higher than 3.2 , the second temperature difference is compensated to be larger than the first temperature difference and when the installation height of the indoor unit is lower than 3.2 m, the second temperature difference may be compensated to be smaller than the first temperature difference.

[0046] Meanwhile, data associated with the application of the compensation constant and the temperature compensation may be stored in the memory unit 190 in advance (S14).

[0047] In addition, an opening angle of the discharge vein 164 may be adjusted by controlling the discharge motor 162, and as a result, the direction or amount of the air discharge through the discharge hole 155 may be controlled (S15). After the set-up is made, the indoor unit 100 may start (S16).

[0048] FIG. 4 is a graph showing variation in flow rate of discharged air depending on the height of the indoor unit in the first exemplary embodiment of the present invention.

[0049] Referring to FIG. 4, the amount of the air discharged from the indoor unit 100 varies in linear proportion to the height of the ceiling.

[0050] Specifically, when the ceiling height sensed by the height sensing unit 170 is Ho, the flow rate of the air discharged through the discharge hole 155 may be controlled as Wo. The flow rate of the air discharged through the discharge hole 155 may be controlled by the RPM of the blowing fan 184 or the opening degree of the discharge vein 164. In addition, as described above, the flow rate corresponding to the height may be stored in the memory unit 190 in advance.

[0051] In addition as the height of the ceiling increases (HO $\rightarrow$ H1 $\rightarrow$ H2), the flow rate of the discharged air increases linearly (WO $\rightarrow$ W1 $\rightarrow$ W2). That is, the flow rate of the discharged air may be appropriately controlled to correspond to the actual height of the ceiling.

[0052] By this configuration, even though the indoor unit that is installed in one indoor space is moved to and installed in another indoor space having a difference ceiling height, the flow rate may be automatically controlled depending on the sensed information of the height sensing unit 170 without additionally setting the height.

[0053] Hereinafter, second and third exemplary embodiments of the present invention will be described. Since the exemplary embodiments are different from the first exemplary embodiment in only some configurations, the difference will be primarily described and the same reference numerals as the first exemplary embodiment will refer to the same components as the first exemplary embodiments.

[0054] FIG. 5 is a block diagram showing a configuration of an indoor unit according to a second exemplary embodiment of the present invention, FIG. 6 is a flowchart of a control method of the indoor unit according to the second exemplary embodiment of the present invention, and FIG. 7 is a diagram showing the flow rate of discharged air depending on a position where the indoor unit is placed.

[0055] Referring to FIGS. 5 to 7, the indoor unit 100 according to the second exemplary embodiment of the present invention includes a wall surface sensing unit 172 sensing a distance to a wall surface of an indoor space from the indoor unit 100 or a front panel 150. The wall surface sensing unit 172 may include a distance sensor. The wall surface sensing unit 172 and the height sensing unit 170 may be called a "distance sensing unit".

[0056] The wall surface sensing unit 172 is provided on the front panel 150 and may be placed so that a sensing direction of the wall surface sensing unit 172 face the wall surface. The wall surface sensing unit 172 may be constituted by a plurality of sensors facing a plurality of wall surfaces.

[0057] However, unlike this, the wall surface sensing unit 172 may be constituted by one sensor and installed to be rotatable.

[0058] In this case, the wall surface sensing unit 172 senses a distance up to one wall surface and thereafter, rotates while facing one direction and may sense a distance up to the other wall surface while facing the other direction. In this case, the wall surface sensing unit 172 may further include a direction switching unit switching the direction to face the plurality of wall surfaces.

[0059] The indoor unit 100 includes a discharge control unit 260 including a plurality of discharge veins. The plurality of discharge veins include a first discharge vein 261, a second discharge vein 262, a third discharge vein 263, and a fourth discharge vein 264.

[0060] Opening or not or opening degree of the plurality of discharge veins 261, 262, 263, and 264 may be controlled independently. In this case, the indoor unit 100 may include one or more discharge motors for independently driving the plurality of discharge veins 261, 262, 263, and 264.

[0061] Meanwhile, a table associated with the distance values sensed by the height sensing unit 170 or the wall surface sensing unit 172 and the RPM of the fan motor 182 or the opening degree of the discharge control unit 260 may be mapped and stored in the memory unit 190. In addition, data regarding application of a compensation constant depending on the distance value and temperature compensation may be stored in the memory unit 190 in advance.

[0062] Referring to FIG. 6, the control method of the indoor unit according to the exemplary embodiment of the present invention will be described.

[0063] When power is applied to the indoor unit 100, an installation height of the indoor unit may be sensed by the height sensing unit 170 (S21 and S22). In addition, distances up to the plurality of wall surfaces from the indoor unit 100 may be respectively sensed through the wall surface sensing unit 172.

[0064] In order to form appropriate flow rate to correspond to the sensed height, an output (RPM) of the fan motor 182 is controlled and compensation control for a difference between an indoor temperature and a set temperature depending on the height may be performed (S25).

[0065] In addition, the RPM of the discharge motor or the opening angels of the discharge veins 261, 262, 263, and 264 are adjusted to correspond to the sensed distances up to the wall surface to control a discharge direction and discharge flow rate of air (S26). In addition, the indoor unit 100 starts. Herein, the opening degrees of the discharge veins 261, 262, 263, and 264 may be controlled to be different from each other (S27).

[0066] Specifically, in FIG. 7, three cases in which the indoor unit 100 is placed at different positions in an indoor space 300. It is assumed that the indoor space 300 has a substantially square shape.

[0067] Referring to FIG. 7, when the front panel 150 is positioned substantially at the center of the indoor space 300 (position A), that is, when distances up to 4-direction wall surfaces 311, 312, 313, and 314 from the indoor unit 100 are substantially the same as each other, the opening degrees of the first to fourth discharge veins 261, 262, 263, and 264 may be substantially the same as each other. In this case, the flow rate of the air discharged from the indoor unit 100 have substantially equal to each other with respect to four directions.

[0068] Meanwhile, when the front panel 150 is closest to the first wall surface 311 (position B), specifically, when a distance between the front panel 150 and the first wall surface 311 is shortest, a distance between the front panel 150 and the second wall surface 312 is longest, and distances between the front panel 150 and the third and fourth wall surfaces 313 and 314 are middle distances (position B) the opening degree of the second discharge vein 262 is small and the flow rate of the air discharge from the second discharge vein 262 may be thus smallest.

[0069] On the contrary, the flow rate discharged from the third discharge vein 263 is largest and the flow rates discharged from the first discharge vein 261 and the fourth discharge vein 264 may be larger than the flow rate discharged from the second discharge vein and smaller than the flow rate discharged from the third discharge vein 263. In this case, the opening degrees of the discharge veins will be controlled to increase in the order of the second discharge vein 262, the first and fourth discharge veins 261 and 264, and the third discharge vein 263.

[0070] That is, based on the distance value up to each wall surface from the front panel 150, the opening degree of each of the discharge veins 261, 262, 263, and 264 corresponding thereto may be controlled.

[0071] Meanwhile, when the front panel 150 is positioned close to the second wall surface 312 (position C), that is, when the distance up to the second wall surface 312 from the indoor unit 100 is smallest, the flow rates discharged from the first discharge vein 261 and the third discharge vein 263 may be smallest.

[0072] On the contrary, the flow rates discharged from the second discharge vein 262 and the fourth discharge vein 264 may be larger than the flow rates discharged from the first discharge vein 261 and the third discharge vein 263.

[0073] Therefore, the plurality of discharge veins are placed to face the plurality of wall surfaces and the opening degree of the discharge vein may be controlled to correspond to the distance value up to the wall surface which each discharge vein faces. That is, as the distance value is larger, the opening degree of the corresponding discharge vein may be larger in proportion thereto.

[0074] According to the control method, since the opening degree of the discharge vein corresponding to each wall surface may be controlled depending on the distances up to the plurality of wall surfaces, the entire indoor space can be evenly cooled or heated.

[0075] FIG. 8 is a block diagram showing a configuration of an indoor unit according to a third exemplary embodiment of the present invention.

[0076] Referring to FIG. 8, the indoor unit 100 or the front panel 150 according to the exemplary embodiment includes one distance sensing unit 270 sensing the height of the indoor space or the distance up to the wall surface.

[0077] The distance sensing unit 270 includes a sensing sensor 272 sensing a distance up to the bottom surface or one wall surface of the indoor space or from the front panel 150 and a direction switching unit 274 switching a placement direction of the sensing sensor 272. The direction switching unit 274 includes a motor or an actuator.

[0078] The sensing sensor 272 may sense the installation height of the indoor unit while facing one direction. In addition, the sensing sensor 272 is moved by the direction switching motor 274 and thereafter, may sense a distance up to one wall surface among the plurality of wall surfaces while facing the other direction.

[0079] Of course, the sensing sensor 272 may respectively sense the distances up to the plurality of wall surfaces while the direction is switched. As described above, one sensing sensor 272 can be direction-switched to sense the installation height of the indoor unit and the distances up to the wall surface in sequence.

[0080] Consequently, according to the exemplary embodiments, since the plurality of sensors do not need to be provided in order to measure the installation height and the distance up to the wall surface, the configuration of the indoor unit becomes compact and a fabrication cost can be saved.

Claims

1. An indoor unit for an air conditioner buried in a ceiling and including a heat exchanger with respect to an indoor space defined by a bottom surface, the ceiling, and a plurality of wall surface, comprising:

   a front panel provided with a suction part suctioning air of the indoor space;
   a discharge hole placed on at least one side of the suction part and discharging heat-exchanged air from the heat exchanger;
   an opening member provided movably to selectively open the discharge hole;
   a distance sensing unit sensing at least one of a distance up to the bottom surface from the front panel or the indoor unit and a distance up to the wall surface from the indoor unit; and
   a controller controlling the opening degree of the opening member based on a sensing result sensed by the distance sensing unit.

2. The indoor unit for an air conditioner of claim 1, wherein the distance sensing unit includes:

   a height sensing sensor sensing an installation height of the front panel or the indoor unit; and
   a wall surface sensing sensor sensing the distance up to the wall surface from the front panel or the indoor unit.

3. The indoor unit for an air conditioner of claim 2, wherein the height sensing sensor is the wall surface sensing sensor.

4. The indoor unit for an air conditioner of claim 3, wherein the distance sensing unit further includes a direction switching motor sensing both the installation height and the distance up to the wall surface by switching a placement direction of the height sensing sensor.

5. The indoor unit for an air conditioner of any one of claims 1 to 4, further comprising:

   a fan assembly providing blowing force to corresponding to the distance value sensed by the distance sensing unit; and
   a memory unit storing data in which the distance value and the flow rate of the fan assembly are

mapped.

6. The indoor unit for an air conditioner of any one of claims 1 to 5, wherein the opening member is provided in multiple numbers and the plurality of opening members are placed to face the plurality of wall surfaces, respectively to discharge air.

7. The indoor unit for an air conditioner of claim 6, wherein the controller independently controls opening or not or opening degree of the plurality of opening members and the opening degrees of the plurality of opening members are controlled in proportion to the distances up to the wall surfaces corresponding thereto, respectively among the plurality of wall surfaces.

8. The indoor unit for an air conditioner of any one of claims 1 to 7, further comprising:

a temperature sensing unit sensing the temperature of the indoor space,
wherein the controller compensates for a difference between a set temperature and the temperature of the indoor space based on the result sensed by the distance sensing unit.

9. The indoor unit for an air conditioner of claim 8, wherein the controller recognizes a first temperature difference between the temperature of the indoor space sensed by the temperature sensing unit and a set temperature and the controller compensates for the first temperature difference as a second temperature difference larger than the first temperature difference when the installation height of the indoor unit is higher than a predetermined height.

10. The indoor unit for an air conditioner of any one of claims 2 to 9, wherein the flow rate of the air discharged to the indoor space varies linearly to corresponding to the installation height of the front panel or the indoor unit.

11. A control method of an indoor unit for an air conditioner buried in a ceiling and including a heat exchanger for cooling or heating and discharge vein controlling the discharge amount of air passing through the heat exchanger with respect to an indoor space defined by a bottom surface, the ceiling, and a plurality of wall surface, comprising:

sensing an installation height of the indoor unit based on the bottom surface;
determining the discharge amount of the air based on the installation height of the indoor unit; and
starting the indoor unit.

12. The control method of an indoor unit for an air conditioner of claim 11, further comprising:

sensing a distance up to the indoor unit from the wall surface; and
determining the discharge amount of the air based on the distance up to the indoor unit from the wall surface.

13. The control method of an indoor unit for an air conditioner of claim 11 or 12, wherein the discharge amount of the air is controlled by controlling the RPM of a fan motor providing blowing force or opening degrees of the discharge vein.

14. The control method of an indoor unit for an air conditioner of any one of claims 11 to 13, further comprising:

a plurality of discharge veins discharging air toward the plurality of wall surfaces,
wherein the amounts of air discharged from the plurality of discharge veins are different from each other depending on the distances up to the indoor unit from the plurality of wall surfaces.

15. The control method of an indoor unit for an air conditioner of any one of claims 11 to 14, further comprising:

sensing the temperature of the indoor space;
recognizing a difference value between the temperature of the indoor space and a set temperature; and
compensating for the difference value through increasing or decreasing depending on the installation height of the indoor unit.

Fig. 1

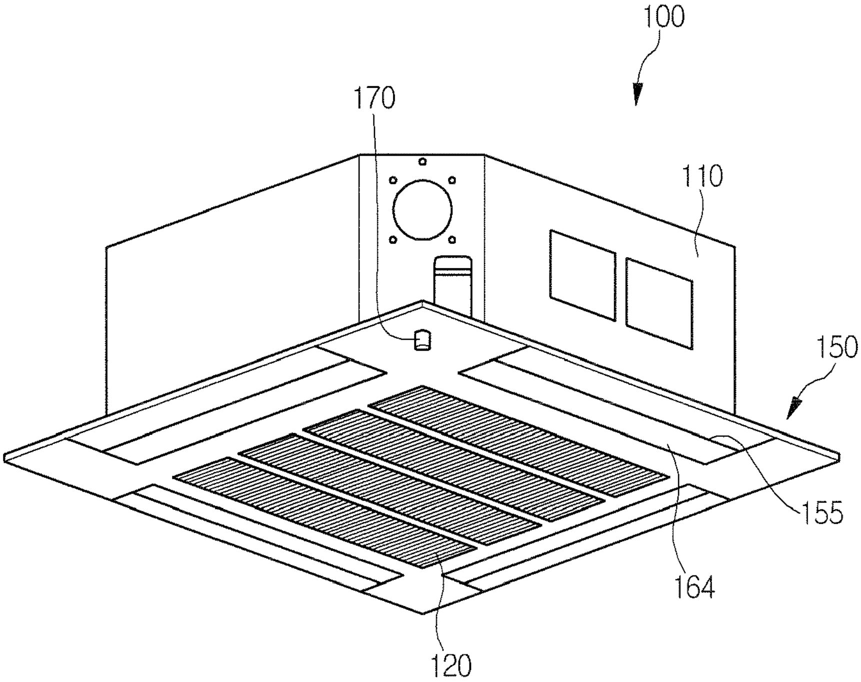
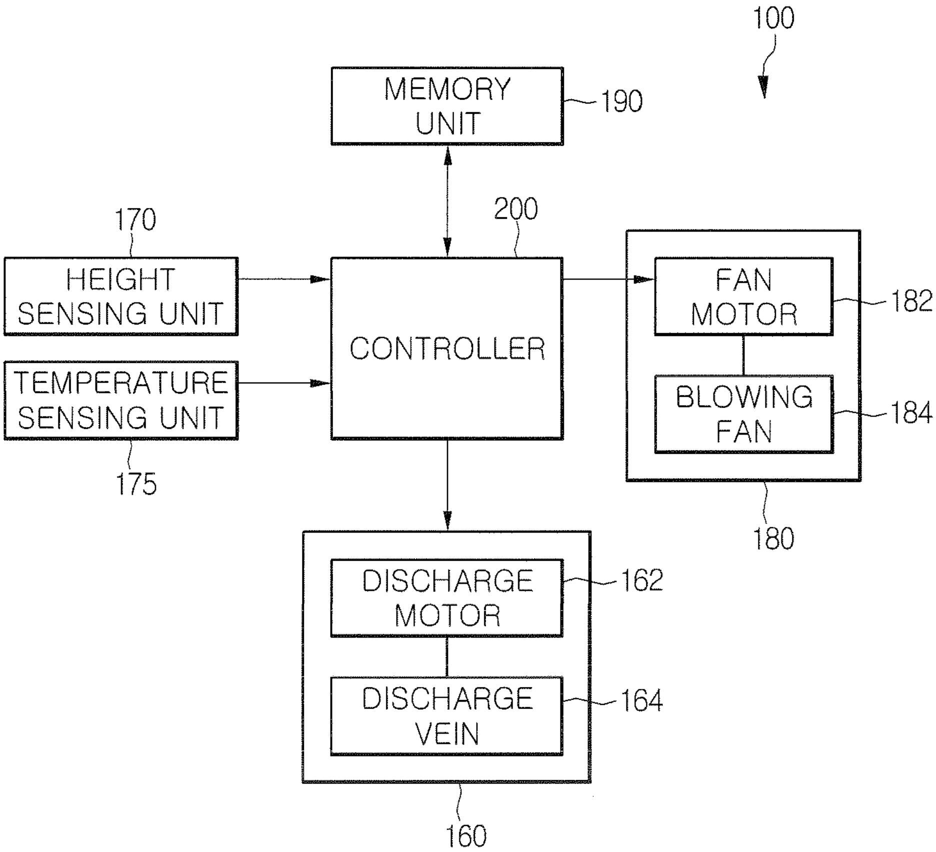


Fig. 2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200
170
HEIGHT SENSING UNIT
CONTROLLER
TEMPERATURE SENSING UNIT
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FAN MOTOR
182
BLOWING FAN
184
180
DISCHARGE MOTOR
162
DISCHARGE VEIN
164
160

Fig. 3

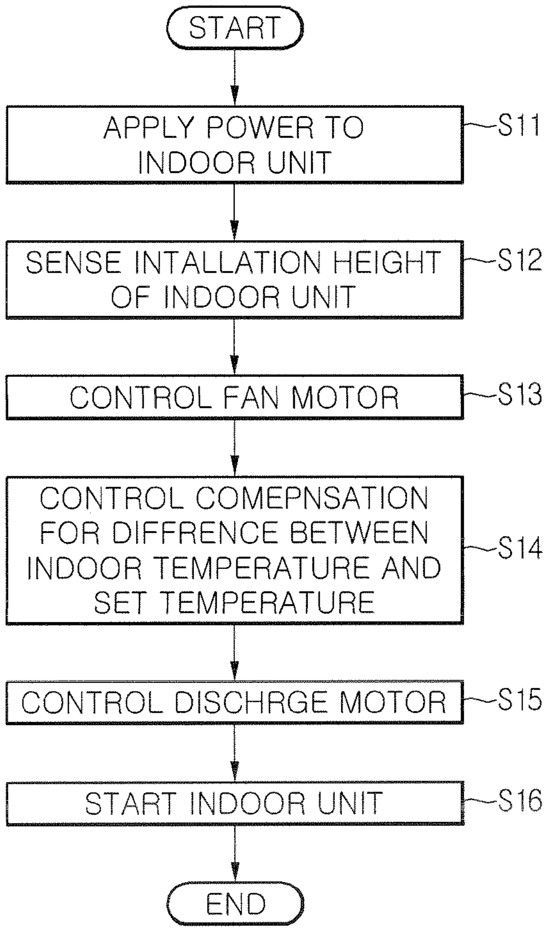

START
APPLY POWER TO INDOOR UNIT
S11
SENSE INTALLATION HEIGHT OF INDOOR UNIT
S12
CONTROL FAN MOTOR
S13
CONTROL COMEPNSATION FOR DIFFRENCE BETWEEN INDOOR TEMPERATURE AND SET TEMPERATURE
S14
CONTROL DISCHRGE MOTOR
S15
START INDOOR UNIT
S16
END

Fig. 4

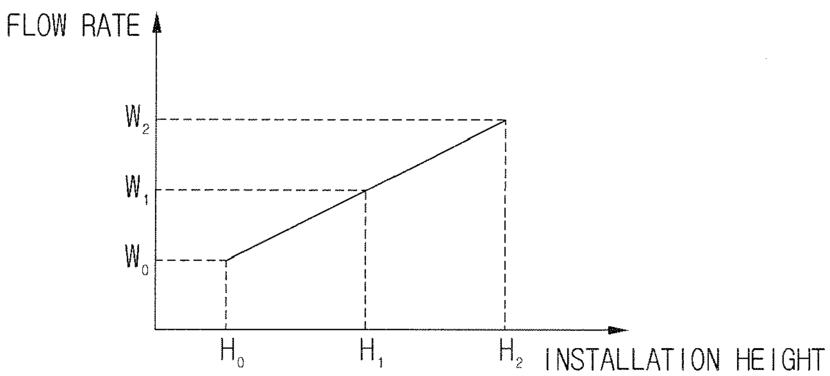
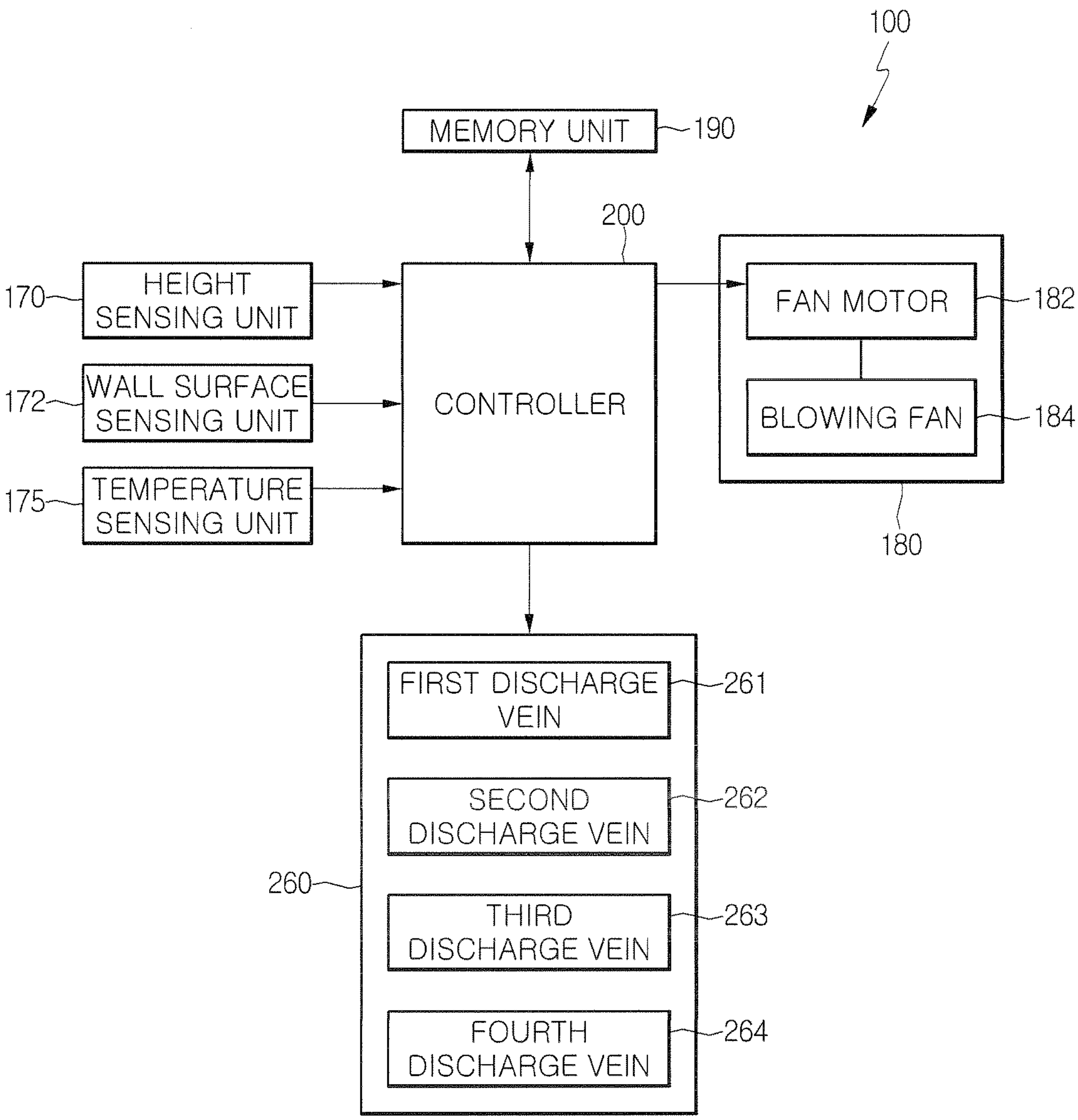


Fig. 5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190
200
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170
WALL SURFACE SENSING UNIT
172
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CONTROLLER
FAN MOTOR
182
BLOWING FAN
184
180
FIRST DISCHARGE VEIN
261
SECOND DISCHARGE VEIN
262
THIRD DISCHARGE VEIN
263
FOURTH DISCHARGE VEIN
264
260

Fig. 6

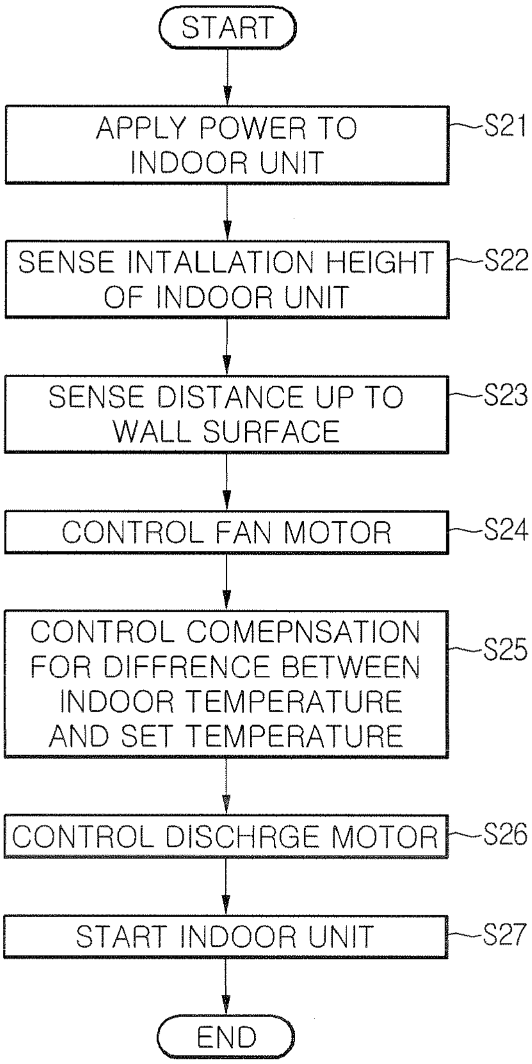

START
APPLY POWER TO INDOOR UNIT
S21
SENSE INTALLATION HEIGHT OF INDOOR UNIT
S22
SENSE DISTANCE UP TO WALL SURFACE
S23
CONTROL FAN MOTOR
S24
CONTROL COMEPNSATION FOR DIFFRENCE BETWEEN INDOOR TEMPERATURE AND SET TEMPERATURE
S25
CONTROL DISCHRGE MOTOR
S26
START INDOOR UNIT
S27
END

Fig. 7

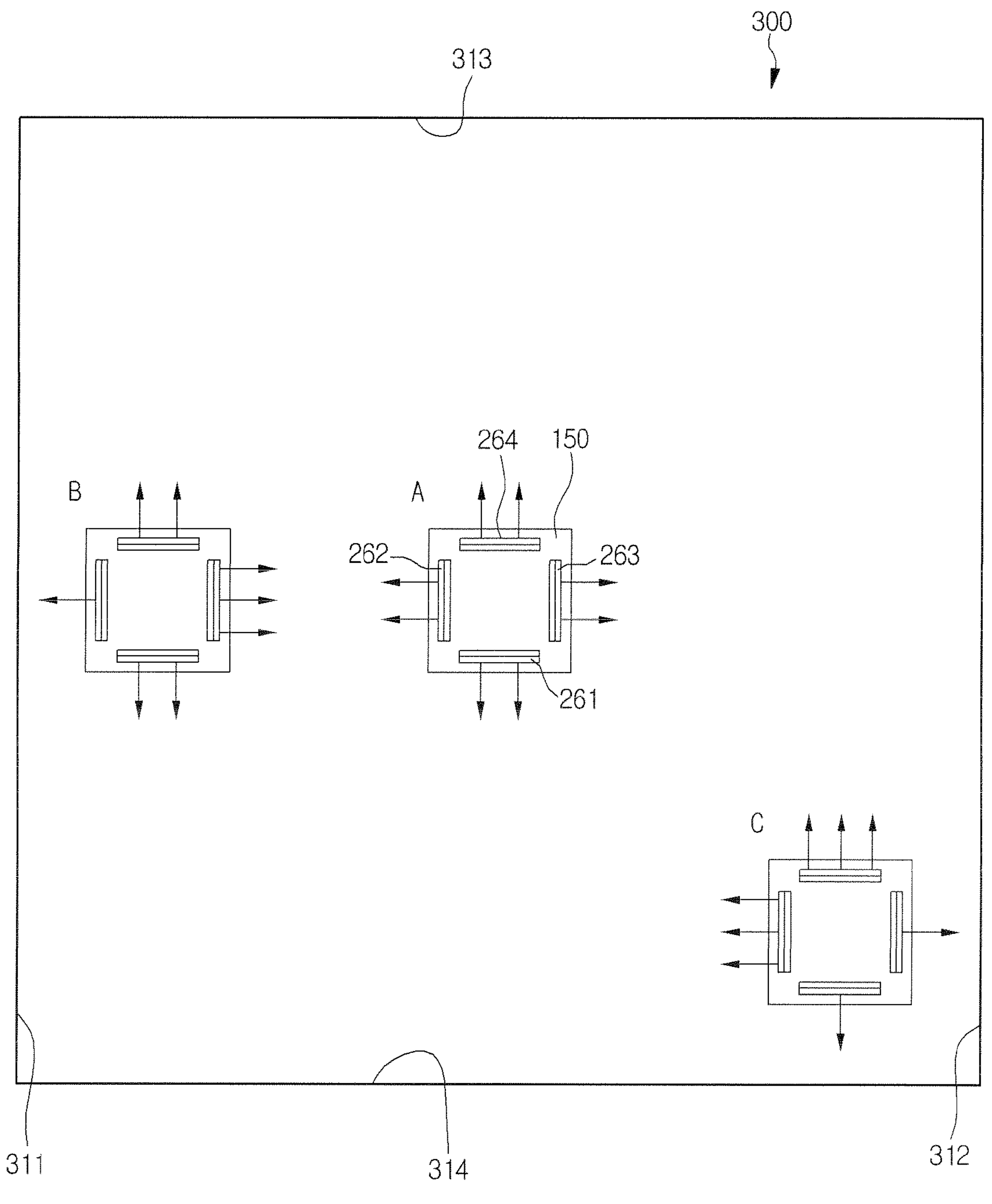
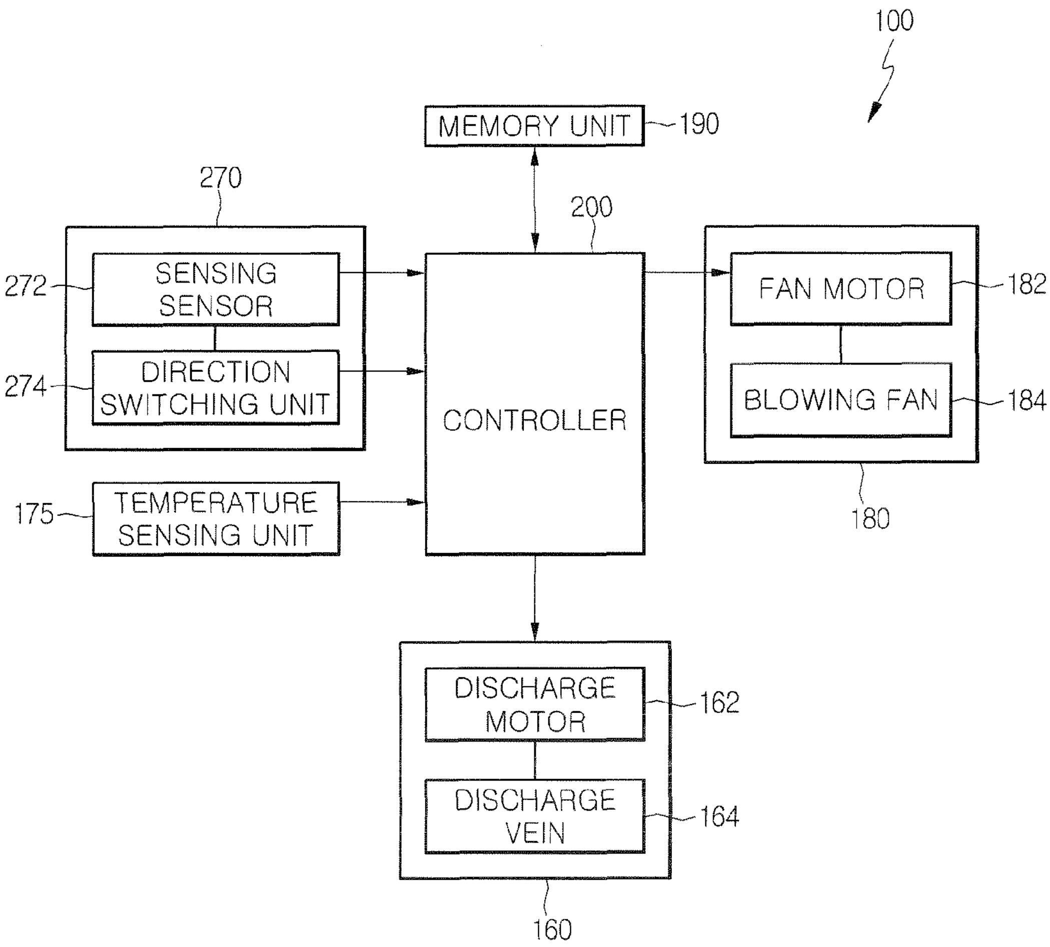


Fig. 8


100
MEMORY UNIT
190
270
200
272
SENSING SENSOR
274
DIRECTION SWITCHING UNIT
CONTROLLER
FAN MOTOR
182
BLOWING FAN
184
175
TEMPERATURE SENSING UNIT
180
DISCHARGE MOTOR
162
DISCHARGE VEIN
164
160