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(54) **PANEL ASSEMBLY, AIR CONDITIONER INDOOR UNIT, AND AIR CONDITIONER**

(57) Disclosed are a panel assembly, an air conditioner indoor unit, and an air conditioner. The panel assembly includes a panel, a back plate, a box and a sensor. The back plate and the panel are enclosed to form an accommodation cavity, and the back plate is provided with a first side extending along a length direction of the back plate. The side of the back plate away from the

panel is provided with a guide plate facing the first side, and the guide plate is provided with an air guide hole communicating with the accommodation cavity. The box is provided in the accommodation cavity, and an inner cavity of the box is communicated with the air guide hole. The sensor is provided in the inner cavity, and the sensor is configured to detect air entering the inner cavity.

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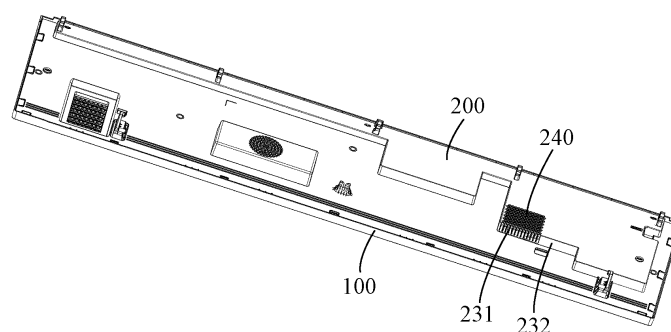


FIG. 1

Description**CROSS-REFERENCE TO RELATED APPLICATIONS**

- 5 **[0001]** The present application claims priority to Chinese Patent Application No. 202121973869.6, filed on August 19, 2021, the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

- 10 **[0002]** The present application relates to the technical field of air conditioners, and in particular to a panel assembly, an air conditioner indoor unit, and an air conditioner.

BACKGROUND

- 15 **[0003]** At present, the air conditioner indoor unit is usually equipped with sensors for detecting indoor environmental parameters, such as the temperature sensor or the humidity sensor. However, limited by the internal structure of the air conditioner, the airflow cannot pass through the sensor smoothly, resulting in inaccurate detection data of the sensor.

SUMMARY

- 20 **[0004]** The main purpose of the present application is to provide a panel assembly, aiming to solve the problem that the airflow cannot pass through the sensor smoothly and makes detection data of the sensor inaccurate.

- [0005]** In order to achieve the above objectives, the present application provides a panel assembly for an air conditioner indoor unit. The panel assembly comprises:

- 25 a panel;
a back plate, the back plate and the panel being enclosed to form an accommodation cavity, and the back plate being provided with a first side extending along a length direction of the back plate, a side of the back plate away from the panel being provided with a guide plate facing the first side, and the guide plate being provided with an air
30 guide hole communicating with the accommodation cavity;
a box provided in the accommodation cavity, an inner cavity of the box being communicated with the air guide hole; and
a sensor provided in the inner cavity, the sensor being configured to detect air entering the inner cavity.

- 35 **[0006]** In an embodiment, the guide plate is provided with a windward surface, and the windward surface is configured to extend obliquely away from the first side.

- [0007]** In an embodiment, the air guide hole is a strip-shaped hole, and the strip-shaped hole is configured to extend along a width direction of the back plate; the guide plate is provided with a plurality of strip-shaped holes, and the plurality of strip-shaped holes are distributed at intervals on the guide plate along the length direction of the back plate.

- 40 **[0008]** In an embodiment, the side of the box facing the panel is provided with an opening, and a bottom plate and/or a side plate of the box are provided with a via hole communicating with the air guide hole.

- [0009]** In an embodiment, the back plate is provided with a plurality of through holes communicating with the via hole, and the via hole is located between the through hole and the sensor.

- [0010]** In an embodiment, a rib is provided at a side of the back plate facing the panel, and the through hole is located between the guide plate and the rib; the rib, the guide plate, the box, the panel and the back plate are enclosed to form
45 an air guide channel, and the air guide channel is configured to guide air entering the air guide channel into the via hole.

- [0011]** In an embodiment, the sensor comprises a base plate and a detection module provided at the base plate. The box is provided with a support platform for supporting the base plate and a fastening platform for fastening the base plate, and the base plate is limited between the fastening platform and the support platform.

- 50 **[0012]** In an embodiment, the back plate is provided with a second side extending along the length direction of the back plate, and the second side is provided opposite to the first side. The detection module is provided at a side of the base plate facing a bottom wall of the box, and a distance between the base plate and the bottom wall of the box is configured to gradually increase along a direction from the first side to the second side.

- [0013]** In an embodiment, the sensor is a humidity sensor.

- 55 **[0014]** In an embodiment, the box is a display box. The display box comprises a box body and a display module provided in the box body, and the sensor is provided in the box body and is electrically connected to the display module.

- [0015]** The present application further provides an air conditioner indoor unit comprising the panel assembly as mentioned above. The panel assembly comprises a panel, a back plate, a box and a sensor. The back plate and the panel are enclosed to form an accommodation cavity, and the back plate is provided with a first side extending along a length

direction of the back plate. The side of the back plate away from the panel is provided with a guide plate facing the first side, and the guide plate is provided with an air guide hole communicating with the accommodation cavity. The box is provided in the accommodation cavity, and an inner cavity of the box is communicated with the air guide hole. The sensor is provided in the inner cavity, and the sensor is configured to detect air entering the inner cavity.

[0016] The present application further provides an air conditioner comprising the air conditioner indoor unit as mentioned above. The air conditioner indoor unit comprises the panel assembly as mentioned above. The panel assembly comprises a panel, a back plate, a box and a sensor. The back plate and the panel are enclosed to form an accommodation cavity, and the back plate is provided with a first side extending along a length direction of the back plate. The side of the back plate away from the panel is provided with a guide plate facing the first side, and the guide plate is provided with an air guide hole communicating with the accommodation cavity. The box is provided in the accommodation cavity, and an inner cavity of the box is communicated with the air guide hole. The sensor is provided in the inner cavity, and the sensor is configured to detect air entering the inner cavity.

[0017] In the panel assembly of the present application, the box is provided in the accommodation cavity formed by the enclosure of the panel and the back plate. The sensor is provided in the inner cavity of the box. The back plate is provided with a first side extending along the length direction of the back plate. A side of the back plate away from the panel is provided with a guide plate facing the first side, and the guide plate is provided with an air guide hole communicating with the accommodation cavity. The inner cavity of the box communicates with the air guide hole, so that the air entering from the air guide hole can enter the inner cavity of the box. In addition, the air guide hole can guide the air flow, so that the air can enter the inner cavity of the box smoothly. The sensor is provided in the inner cavity, and the sensor is configured to detect the air entering the inner cavity. In this way, the sensor can accurately detect the air, and the problem that the airflow cannot pass through the inner cavity smoothly and causes inaccurate detection data of the sensor can be avoided, thereby improving the reliability of the panel assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] In order to more clearly illustrate technical solutions in the embodiments or the related art, the following will briefly introduce the drawings that need to be used in the description of the embodiments or the related art. Obviously, the drawings in the following description are only some embodiments of the present application. For those skilled in the art, without creative effort, other drawings can be obtained according to the structures shown in these drawings.

FIG. 1 is a schematic structural view of a panel assembly according to an embodiment of the present application.

FIG. 2 is a schematic structural view of the structure in FIG. 1 after decomposition.

FIG. 3 is an internal detail view of FIG. 1.

FIG. 4 is an internal detail view of FIG. 3.

FIG. 5 is a schematic structural view of the box in FIG. 2.

FIG. 6 is a schematic structural view of the structure in FIG. 5 from another perspective.

FIG. 7 is an enlarged view of the point A in FIG. 6.

FIG. 8 is a schematic structural view of partial structure in FIG. 1.

FIG. 9 is an enlarged view of the point B in FIG. 8.

FIG. 10 is a schematic structural view of the structure in FIG. 8 from another perspective.

FIG. 11 is a cross-sectional view along the line I-I in FIG. 10.

FIG. 12 is an enlarged view of the point C in FIG. 11.

Description of reference numbers:

[0019]

Reference number	Name	Reference number	Name
10	panel assembly	310	bottom plate
100	panel	320	side plate
200	back plate	330	via hole
201	accommodation cavity	331	first via hole
210	first side	332	second via hole
220	second side	340	support platform

(continued)

Reference number	Name	Reference number	Name
230	guide plate	341	first support platform
231	air guide hole	342	second support platform
232	windward surface	350	fastening platform
240	through hole	400	sensor
250	rib	410	base plate
260	air guide channel	420	detection module
300	box		

[0020] The realization of the objective, functional characteristics, and advantages of the present application are further described with reference to the accompanying drawings.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0021] The technical solutions of the embodiments of the present application will be described in detail below with reference to the accompanying drawings of the embodiments of the present application. It is obvious that the embodiments described are only some rather than all of the embodiments of the present application. All other embodiments obtained by those skilled in the art based on the embodiments of the present application without creative efforts shall fall within the claimed scope of the present application.

[0022] It should be noted that all the directional indications (such as up, down, left, right, front, rear...) in the embodiments of the present application are only used to explain the relative positional relationship, movement, or the like of the components in a certain posture (as shown in the drawings). If the specific posture changes, the directional indication will change accordingly.

[0023] Besides, the descriptions associated with, e.g., "first" and "second," in the present application are merely for descriptive purposes, and cannot be understood as indicating or suggesting relative importance or impliedly indicating the number of the indicated technical feature. Therefore, the feature associated with "first" or "second" can expressly or impliedly comprise at least one such feature. In addition, the technical solutions of the various embodiments can be combined with each other, but the combinations must be based on the realization of those skilled in the art. When the combination of technical solutions is contradictory or cannot be achieved, it should be considered that such a combination of technical solutions does not exist, nor does it fall within the scope of the present application.

[0024] The present application proposes a panel assembly, an air conditioner indoor unit comprising the panel assembly, and an air conditioner comprising the air conditioner indoor unit.

[0025] As shown in FIG. 1 to FIG. 4, in an embodiment of the panel assembly 10 of the present application, the panel assembly 10 is applied to an air conditioner indoor unit. The panel assembly 10 comprises a panel 100, a back plate 200, a box 300 and a sensor 400. The back plate 200 and the panel 100 are enclosed to form an accommodation cavity 201. The back plate 200 is provided with a first side 210 extending along the length direction of the back plate 200. A side of the back plate 200 away from the panel 100 is provided with a guide plate 230 facing the first side 210, and the guide plate 230 is provided with an air guide hole 231 communicating with the accommodation cavity 201. The box 300 is provided in the accommodating cavity 201. The inner cavity of the box 300 communicates with the air guide hole 231. The sensor 400 is provided in the inner cavity, and the sensor 400 is configured to detect the air entering the inner cavity.

[0026] In an embodiment, the panel assembly 10 is applied to an air conditioner indoor unit. The air conditioner indoor unit comprises a housing. The panel assembly 10 is installed at the housing. The housing is provided with an air inlet. The air can enter the housing via the air inlet. The air inside the housing can enter the panel assembly 10, and the sensor 400 in the panel assembly 10 can detect the air entering the inner cavity of the box 300. The detection parameters may comprise humidity, temperature, or gas concentration, and the like. The back plate 200 is detachably installed at the panel 100. The back plate 200 and the panel 100 are enclosed to form an accommodation cavity 201. The detachable connection of the back plate 200 can be in various ways, such as but not limited to, the clamping connection, or the bolted connection. The back plate 200 can be provided inside the housing, and the panel 100 can be provided outside the housing. The back plate 200 is provided with a first side 210, and the first side 210 can be provided towards the air inlet of the housing, or of course can also be provided towards other positions, which will not be limited here. The back plate 200 is provided with a guide plate 230 facing the first side 210. The guide plate 230 can be formed by a boss provided at the back plate 200, that is, one side plate 320 of the boss forms the guide plate 230. The guide plate 230 is

provided with an air guide hole 231 communicating with the accommodating cavity 201. The air guide hole 231 can guide the air flow, so that the air passing through the guide plate 230 can smoothly enter the accommodating cavity 201.

[0027] Furthermore, the inner cavity of the box 300 can communicate with the air guide hole 231 in various ways, for example but not limited to, the box 300 is provided with an opening hole, or the box 300 is configured with an open top.

The sensor 400 is provided in the box 300. The sensor 400 can be a temperature sensor, which can detect the temperature of the air entering the inner cavity of the box 300. Or the sensor 400 can be a humidity sensor, which can detect the humidity of the air entering the inner cavity of the box 300. Or the sensor 400 can be a formaldehyde sensor, which can detect the concentration of formaldehyde in the air entering the inner cavity of the box 300. The details are not limited here.

[0028] In this embodiment, the first side 210 is provided towards the air inlet of the housing. The air entering the housing via the air inlet flows towards the back plate 200. When the flowing air passes through the guide plate 230 at the back plate 200, the air guide hole 231 at the guide plate 230 will guide the air flow, so that the air flow can smoothly enter the accommodation cavity 201. The air guide hole 231 communicates with the inner cavity of the box 300, so that the air can enter the inner cavity of the box 300, and the sensor 400 detects the air entering the inner cavity of the box 300. In this way, the air data detected by the sensor 400 can be accurate. The box 300 can be installed at the panel 100 or the back plate 200. The sensor 400 is installed inside the box 300. A control plate can be provided in the box 300. The control plate can be electrically connected to the sensor. Of course, or only the sensor can be installed at the box, and the sensor is electrically connected to the device outside the panel assembly 10, which will not be limited here.

[0029] In the panel assembly 10 of the present application, the box 300 is provided in the accommodation cavity 201 formed by the enclosure of the panel 100 and the back plate 200. The sensor 400 is provided in the inner cavity of the box 300. The back plate 200 is provided with a first side extending along the length direction of the back plate 200. A side of the back plate 200 away from the panel 100 is provided with a guide plate 230 facing the first side 210, and the guide plate 230 is provided with an air guide hole 231 communicating with the accommodation cavity 201. The inner cavity of the box 300 communicates with the air guide hole 231, so that the air entering from the air guide hole 231 can enter the inner cavity of the box 300. In addition, the air guide hole 231 can guide the air flow, so that the air can enter the inner cavity of the box 300 smoothly. The sensor 400 is provided in the inner cavity, and the sensor 400 is configured to detect the air entering the inner cavity. In this way, the sensor 400 can accurately detect the air, and the problem that the airflow cannot pass through the inner cavity smoothly and causes inaccurate detection data of the sensor 400 can be avoided, thereby improving the reliability of the panel assembly 10.

[0030] As shown in FIG. 2 to FIG. 4, in an embodiment, the guide plate 230 is provided with a windward surface 232, and the windward surface 232 extends obliquely away from the first side 210. In an embodiment, the windward surface 232 is provided with a first end and a second end opposite to the first end. The back plate 200 comprises a plate body and a boss provided at the plate body. The boss is provided at a side of the plate body away from the panel 100. The side plate 320 of the boss facing the first side 210 is the guide plate 230. The guide plate 230 is connected to the first end and the plate body. The second end is spaced apart from the plate body. The first end extends towards the second end to form the guide plate 230. The distance between the projection of the first end on the plate body and the first side 210 is smaller than the distance between the projection of the second end on the plate body and the first side 210. That is, the angle formed by the first side 210, the first end, and the second end is an obtuse angle. The first end is located between the first side 210 and the second end, so that the windward surface 232 extends obliquely away from the first side 210.

[0031] It can be understood that when the air flows from the side close to the first side 210 to the side facing the windward surface 232, the windward surface 232 extends obliquely away from the first side 210, so that the air can pass through the windward surface 232 of the guide plate 230 smoothly, and the air can enter the accommodation cavity 201 via the air guide hole 231 at the guide plate 230 smoothly. In this way, the air can enter the accommodation cavity 201 smoothly, so that the sensor 400 in the accommodation cavity 201 can accurately detect the air, and the problem that the airflow cannot pass through the inner cavity smoothly and causes inaccurate detection data of the sensor 400 can be avoided, thereby improving the reliability of the panel assembly 10.

[0032] As shown in FIG. 2 to FIG. 4, in an embodiment, the air guide hole 231 is a strip-shaped hole. The strip-shaped hole extends along a width direction of the back plate 200. The guide plate 230 is provided with a plurality of strip-shaped holes, and the plurality of strip-shaped holes are distributed at intervals on the guide plate 230 along the length direction of the back plate 200.

[0033] In an embodiment, the strip-shaped hole are provided at the guide plate 230. The strip-shaped hole can increase the air intake volume, and the strip-shaped hole extends along the width direction of the back plate 200. The first side 210 extends along the length direction of the back plate 200. That is, the extending direction of the strip-shaped hole is perpendicular to the first side 210. When the air flows from the side close to the first side 210 to the side facing the guide plate 230, the extending direction of the strip-shaped hole is parallel to the flow direction of the air, so that the air can enter the strip-shaped hole smoothly, that is, the air can enter the air guide hole 231 smoothly.

[0034] Furthermore, there are a plurality of strip-shaped holes, and the plurality of strip-shaped hole are distributed at intervals on the guide plate 230 along the length direction of the back plate 200, so that the air flowing from the side

close to the first side 210 to the side facing the guide plate 230 can smoothly enter the accommodation cavity 201 along the plurality of strip-shaped holes. The plurality of strip-shaped holes increase the air intake volume, thereby making the air data detected by the sensor 400 more accurate.

[0035] As shown in FIG. 3 to FIG. 5, in an embodiment, the side of the box 300 facing the panel 100 is provided with an opening, a bottom plate 310 and/or a side plate 320 of the box 300 are provided with a via hole 330 communicating with the air guide hole 231.

[0036] It can be understood that the side of the box 300 facing the panel 100 is provided with an opening, and the panel 100 is provided with a window corresponding to the opening. The box 300 is detachably connected to the panel 100, and the detachable connection can be a bolt connection, or can be a clamping connection, which is not limited here. The bottom plate 310 may be provided with a via hole 330 communicating with the air guide hole 231, and the side plate 320 may also be provided with a via hole 330 communicating with the air guide hole 231, which can be set according to the actual needs. In this embodiment, both the bottom plate 310 and the side plates 320 are provided with the via holes 330. There may be a plurality of via holes 330 on the bottom plate 310, and there may also be a plurality of via holes 330 on the side plates 320. For convenience of description, the via hole 330 on the bottom plate 310 of the box 300 is the first via hole 331, and the via hole 330 on the side plate 320 of the box 300 is the second via hole 332. The first via hole 331 and the second via hole 332 communicate the accommodating cavity 201 with the inner cavity of the box 300. The accommodating cavity 201 communicates with the air guide hole 231, so that the air guide hole 231 communicates with both the first via hole 331 and the second via hole 332, and the air entering from the air guide hole 231 can enter the inner cavity of the box 300 through the first via hole 331 and the second via hole 332. In this way, the sensor 400 can detect the air entering the inner cavity of the box 300. By arranging the plurality of first via holes 331 and second via holes 332, the air intake amount entering the inner cavity of the box 300 can be increased, making the air data detected by the sensor 400 more accurate.

[0037] As shown in FIG. 2 to FIG. 4, in an embodiment, the backplane 200 is provided with a plurality of through holes 240 communicating with the via holes 330, and the via holes 330 are provided between the through holes 240 and the sensors 400. It can be understood that the through hole 240 is provided on the back plate 200, and the through hole 240 is located at the side of the air guide hole 231 and is provided at the boss, that is, the through hole 240 is provided at the side of the air guide hole 231 away from the first side 210. The air guided by the guide plate 230 can flow along the side away from the first side 210. When the air passes through the through hole 240 on the boss, the air can pass through the through hole 240, the accommodation cavity 201 and the via hole 330 in sequence, and then can enter the inner cavity of the box 300. In addition, the via hole 330 is provided between the through hole 240 and the sensor 400, and the through hole 240 is provided on the boss. The projections of the sensor 400 and the via hole 330 on the back plate 200 fall on the boss, and fall into the area where the plurality of the through holes 240 are located. In this way, the air can be prevented from bending around after the air enters the accommodation cavity 201, so that the air can smoothly enter the inner cavity of the box 300 from the via hole 330, thereby improving the smoothness of the air flow.

[0038] As shown in FIG. 2 to FIG. 4, in an embodiment, a rib 250 is provided at a side of the back plate 200 facing the panel 100, and the through hole 240 is located between the guide plate 230 and the rib 250. The rib 250, the guide plate 230, the box 300, the panel 100 and the back plate 200 are enclosed to form an air guide channel 260, and the air guide channel 260 is configured to guide air entering the air guide channel 260 into the via hole 330.

[0039] In an embodiment, the rib 250 can be arranged in a linear shape or in an arc shape. There may be a plurality of ribs 250. A frame is formed by an enclosure of the plurality of ribs 250 provided on the back plate 200 and the guide plate 230. The through hole 240 is provided in the area enclosed by the frame. The rib 250, the guide plate 230, the box 300, the panel 100 and the back plate 200 are enclosed to form an air guide channel 260. The air guide channel 260 can guide the air entering the air guide channel 260, so that the air in the accommodation cavity 201 can only flow towards the via hole 330 in the air guide channel 260. The air guide channel 260 is a part of the accommodation cavity 201. The air guide channel 260 can be adopted to avoid the situation that the air flows to other positions in the accommodation cavity 201 and causes the air to not smoothly enter the via hole 330, and the air guide channel 260 can make the air enter the inner cavity of the box 300 smoothly.

[0040] Furthermore, in order to improve the sealing performance of the air guide channel 260 and prevent air from flowing into the accommodation cavity 201 from the gap between the box 300 and the back plate 200, in an embodiment, a convex portion is provided at the bottom plate 310 of the box 300. The convex portion is provided in the area of the frame enclosed by the rib 250 and the guide plate 230 and is abutted against the rib 250. In this way, the gap between the box 300 and the back plate 200 can be reduced, and airtightness of the air guide channel 260 can be improved, thereby enabling the air entering the air guide channel 260 to flow into the inner cavity of the box 300.

[0041] As shown in FIG. 6 to FIG. 9, in an embodiment, the sensor 400 comprises a base plate 410 and a detection module 420 provided at the base plate 410. The box 300 is provided with a support platform 340 for supporting the base plate 410 and a fastening platform 350 for fastening the base plate 410. The base plate 410 is limited between the fastening platform 350 and the support platform 340.

[0042] In an embodiment, there can be a plurality of support platforms 340, and there can be a plurality of fastening

platforms 350, which will not be limited here. In this embodiment, the base plate 410 is shaped in a square, and there are four support platforms 340. The four support platforms 340 are distributed on the bottom plate 310 of the box 300 in a rectangular shape, to support the four corners of the base plate 410. The fastening platform 350 is provided above the support platform 340 and is spaced apart from the support platform 340. The fastening platforms 350 are clamped on both sides of the base plate 410, so that the base plate 410 can be limited and fixed on the support platform 340. In this way, the installation stability of the base plate 410 can be ensured, that is, the installation stability of the sensor 400 can be ensured.

[0043] As shown in FIG. 10 to FIG. 12, in an embodiment, the back plate 200 is provided with a second side 220 extending along the length direction, and the second side 220 is opposite to the first side 210. The detection module 420 is provided at a side of the base plate 410 facing a bottom wall of the box 300, and a distance between the base plate 410 and the bottom wall of the box 300 gradually increases along a direction from the first side 210 to the second side 220.

[0044] In an embodiment, the direction from the first side 210 to the second side 220 is the width extension direction of the back plate 200. The air blown from the air conditioner indoor unit also flows along the width extension direction of the back plate 200. The distance between the base plate 410 and the bottom wall of the box 300 gradually increases along a direction from the first side 210 to the second side 220. The support platform 340 comprises a first support platform 341 and a second support platform 342. The distance between the projection of the first support platform 341 on the back plate 200 and the first side 210 is less than the distance between the projection of the second support platform 342 on the back plate 200 and the first side 210. The height between the first support platform 341 and the bottom wall of the box 300 is less than the height between the second support platform 342 and the bottom wall of the box 300. In this way, the base plate 410 is tilted on the first support platform 341 and the second support platform 342, and the flow space of the air flow gradually increases when the air flows from the first side 210 to the second side 220, that is, the flow space after the air enters the inner cavity of the box 300 gradually increases, thereby making the air flow smoother. In addition, the detection module 420 is located at the side of the base plate 410 facing the bottom wall of the box 300, and the detection module 420 can detect the flowing air, and the smooth flowing air ensures that the data detected by the detection module 420 is accurate.

[0045] Further, in this embodiment, the sensor 400 is a humidity sensor, and the humidity sensor can detect the humidity of the air entering the inner cavity of the box 300.

[0046] In an embodiment, the box 300 is a display box. The display box comprises a box body and a display module provided in the box body, and the sensor 400 is provided in the box body and is electrically connected to the display module. It can be understood that the display module comprises a display panel and wires. The display module and the sensor 400 are both provided in the box body. The display panel is electrically connected to the sensor 400 through the wires, thereby controlling the sensor 400.

[0047] The present application further proposes an air conditioner indoor unit. The air conditioner indoor unit comprises the panel assembly 10 as described above. The specific structure of the panel assembly 10 refers to the above-mentioned embodiments. Since this air conditioner indoor unit adopts all the technical solutions of all the above-mentioned embodiments, so it at least has all the beneficial effects brought by the technical solutions of the above embodiments, which will not be repeated here.

[0048] In an embodiment, the air conditioner indoor unit comprises a housing, and the panel assembly 10 is installed at the housing. The housing is provided with an air inlet and an air outlet, and the back plate 200 in the panel assembly 10 is provided with a first side 210 and a second side 220 extending along the length direction. The second side 220 is opposite to the first side 210. The first side 210 is provided between the air inlet and the second side 220. The air entering from the air inlet flows from the side close to the first side 210 towards the second side 220. The flowing air can enter the accommodation cavity 201 from the back plate 200 and then enters the inner cavity of the box 300, so that the sensor 400 in the inner cavity of the box 300 can detect the air, for example, the sensor 400 can detect the temperature or humidity of the air.

[0049] The present application further proposes an air conditioner, which comprises an air conditioner indoor unit as described above. The specific structure of the air conditioner indoor unit refers to the above embodiments. Since this air conditioner adopts all the technical solutions of all the above embodiments, so it at least has all the beneficial effects brought by the technical solutions of the above embodiments, which will not be repeated here. In an embodiment, the air conditioner further comprises an air conditioner outdoor unit. The air conditioner outdoor unit is connected to the air conditioner indoor unit through a refrigerant pipe.

[0050] The above are only some embodiments of the present application, and do not limit the scope of the present application thereto. Under the concept of the present application, any equivalent structural transformation made according to the description and drawings of the present application, or direct/indirect application in other related technical fields shall fall within the claimed scope of the present application.

Claims

1. A panel assembly for an air conditioner indoor unit, **characterized by** comprising:

5 a panel;

a back plate, wherein the back plate and the panel are enclosed to form an accommodation cavity, and the back plate is provided with a first side extending along a length direction of the back plate, a side of the back plate away from the panel is provided with a guide plate facing the first side, and the guide plate is provided with an air guide hole communicating with the accommodation cavity;

10 a box provided in the accommodation cavity, wherein an inner cavity of the box is communicated with the air guide hole; and

a sensor provided in the inner cavity, wherein the sensor is configured to detect air entering the inner cavity.

2. The panel assembly according to claim 1, wherein the guide plate is provided with a windward surface, and the windward surface extends obliquely away from the first side.

3. The panel assembly according to claim 2, wherein the air guide hole is a strip-shaped hole, and the strip-shaped hole extends along a width direction of the back plate; the guide plate is provided with a plurality of strip-shaped holes, and the plurality of strip-shaped holes are distributed at an interval on the guide plate along the length direction of the back plate.

4. The panel assembly according to claim 1, wherein a side of the box facing the panel is provided with an opening, and a bottom plate and/or a side plate of the box are provided with a via hole communicating with the air guide hole.

5. The panel assembly according to claim 4, wherein the back plate is provided with a plurality of through holes communicating with the via hole, and the via hole is located between the through holes and the sensor.

6. The panel assembly according to claim 5, wherein a rib is provided at a side of the back plate facing the panel, and the through holes are located between the guide plate and the rib; the rib, the guide plate, the box, the panel and the back plate are enclosed to form an air guide channel, and the air guide channel is configured to guide air entering the air guide channel into the via hole.

7. The panel assembly according to claim 2, wherein the sensor comprises a base plate and a detection module provided on the base plate; the box is provided with a support platform for supporting the base plate and a fastening platform for fastening the base plate, and the base plate is limited between the fastening platform and the support platform.

8. The panel assembly according to claim 7, wherein the back plate is provided with a second side extending along the length direction of the back plate, and the second side is provided opposite to the first side; the detection module is provided at a side of the base plate facing a bottom wall of the box, and a distance between the base plate and the bottom wall of the box gradually increases along a direction from the first side to the second side.

9. The panel assembly according to claim 1, wherein the sensor is a humidity sensor.

10. The panel assembly according to claim 1, wherein the box is a display box; the display box comprises a box body and a display module provided in the box body, and the sensor is provided in the box body and is electrically connected to the display module.

11. An air conditioner indoor unit, **characterized by** comprising a panel assembly according to any one of claims 1 to 10.

12. An air conditioner, **characterized by** comprising an air conditioner indoor unit according to claim 11.

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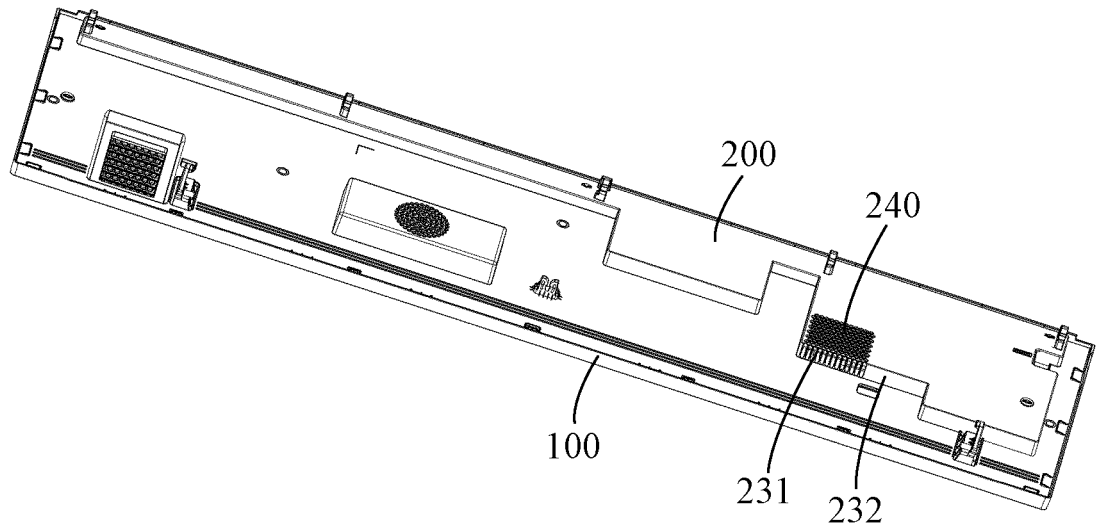


FIG. 1

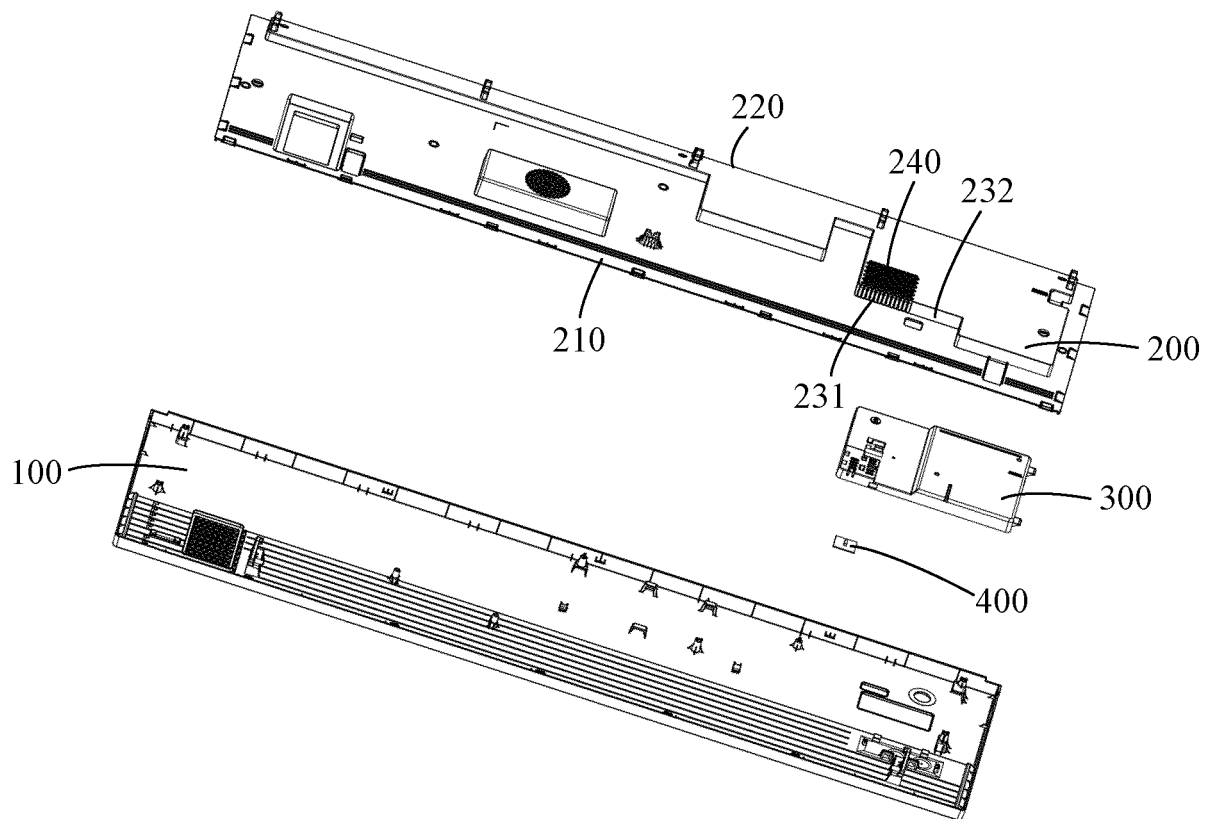


FIG. 2

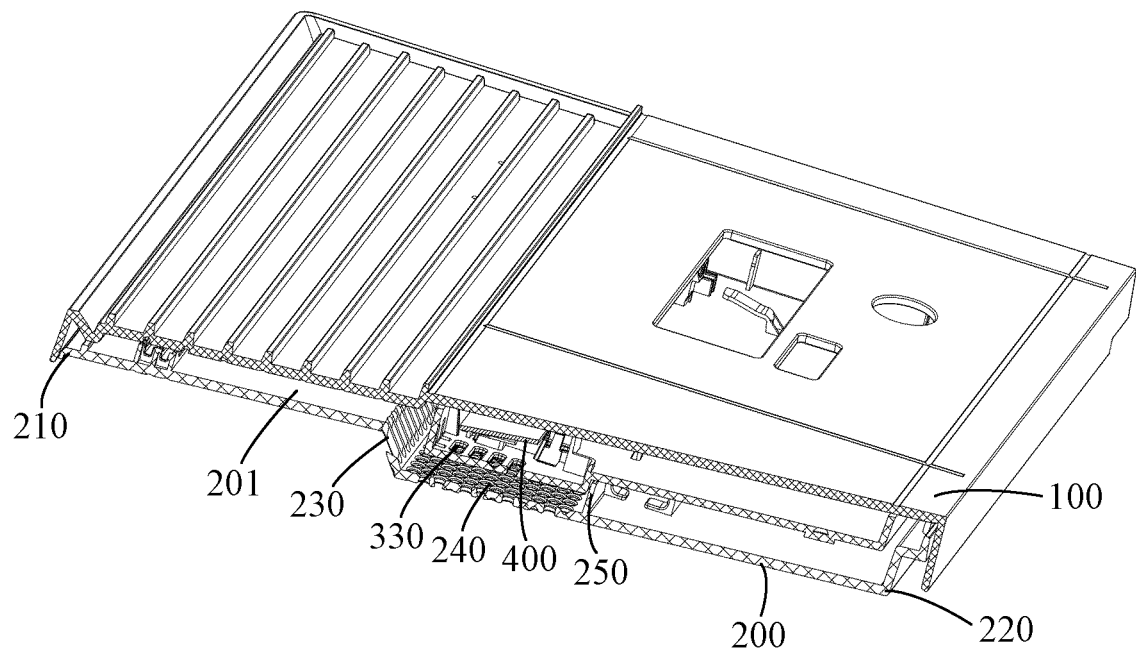


FIG. 3

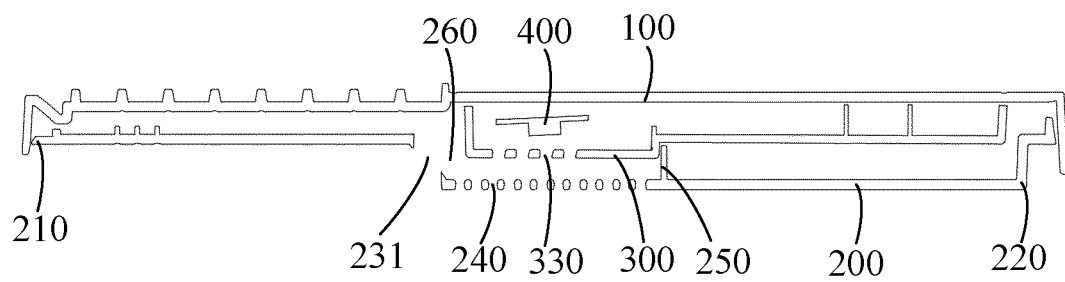


FIG. 4

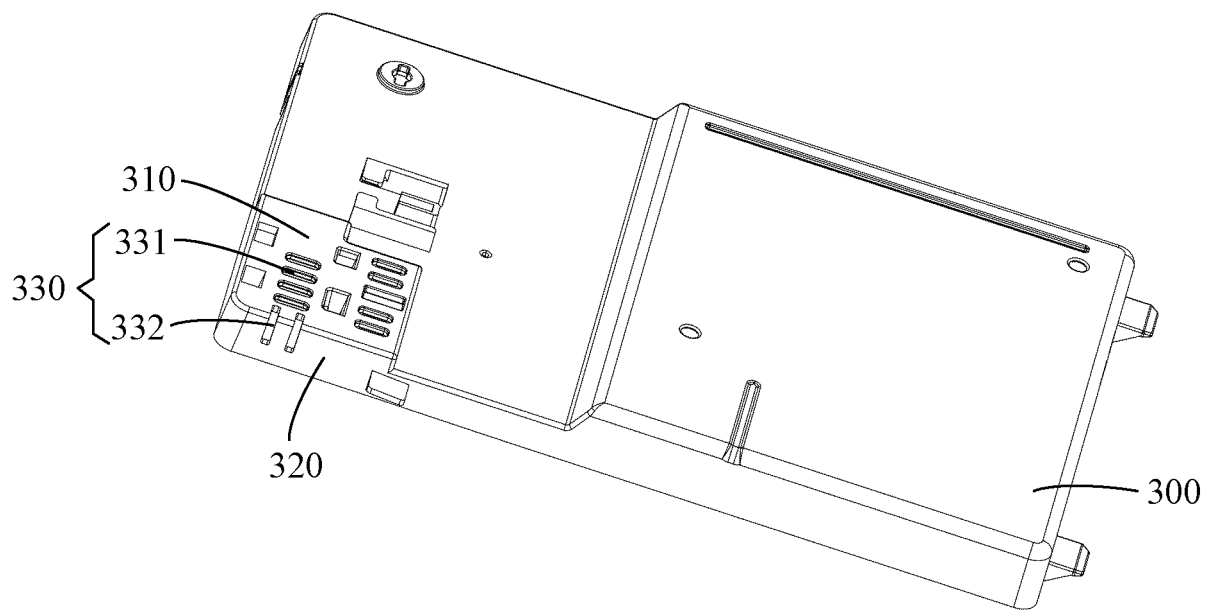


FIG. 5

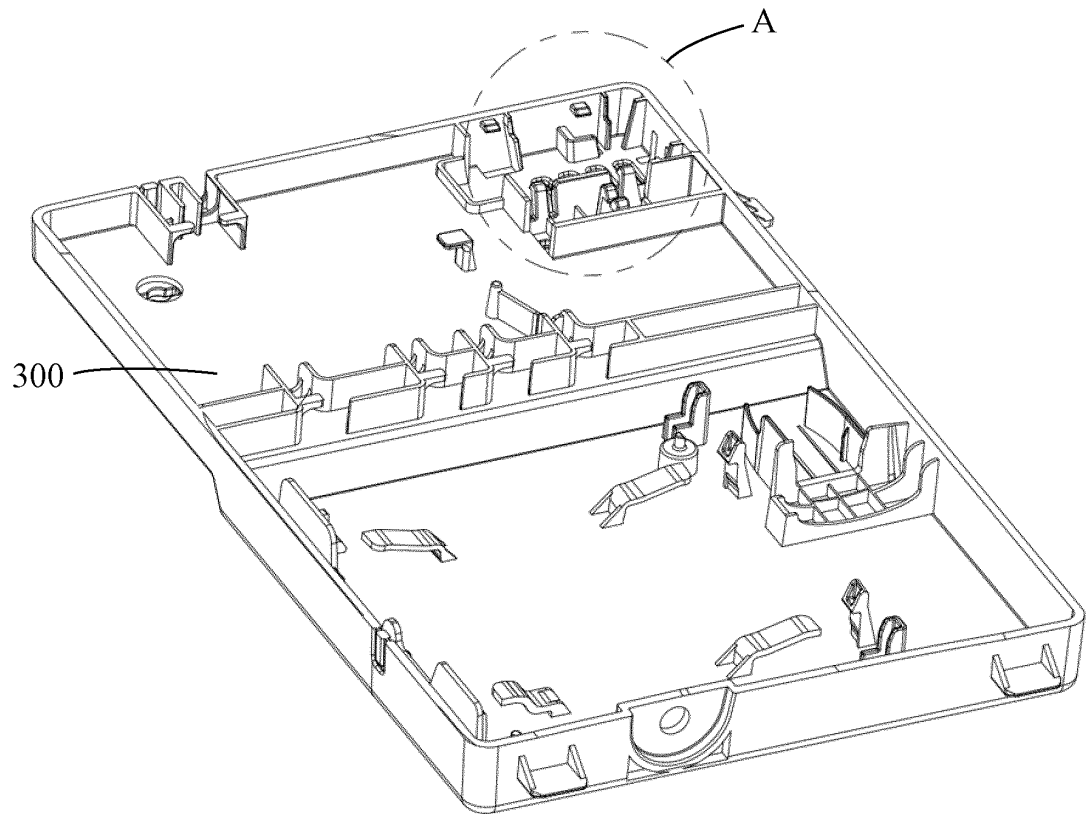


FIG. 6

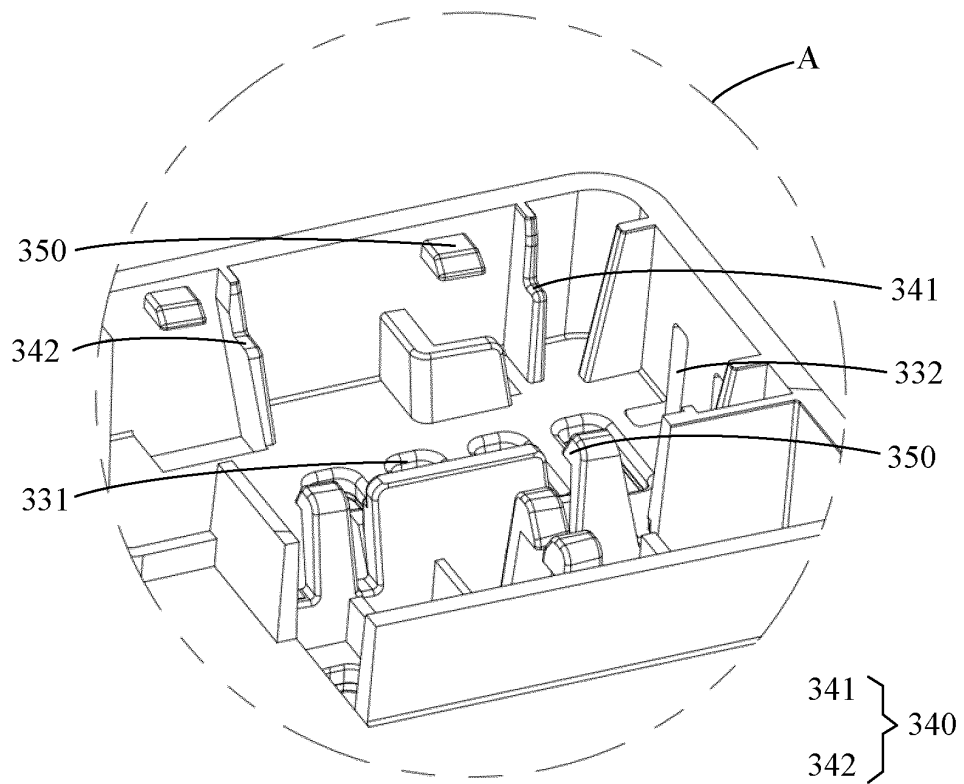


FIG. 7

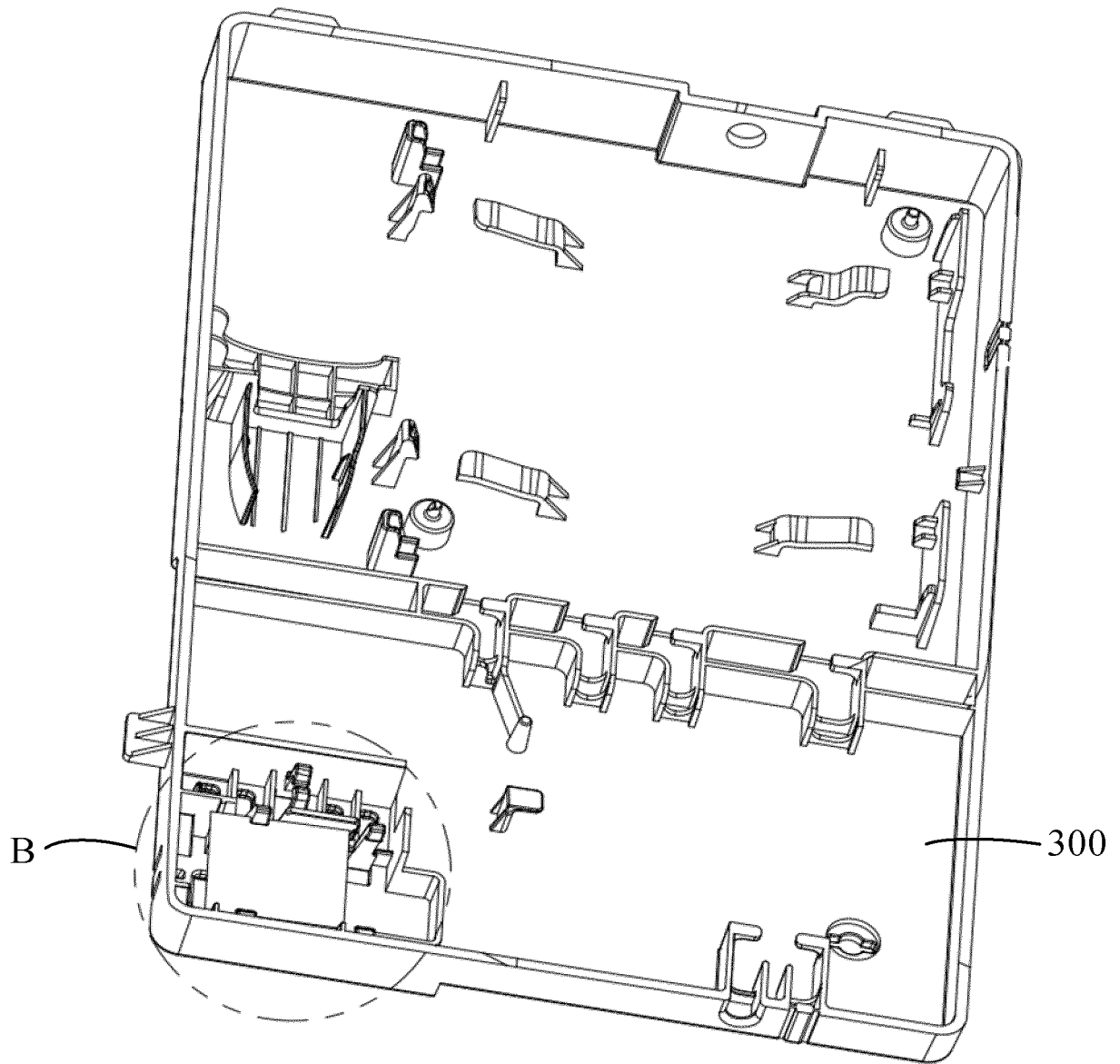


FIG. 8

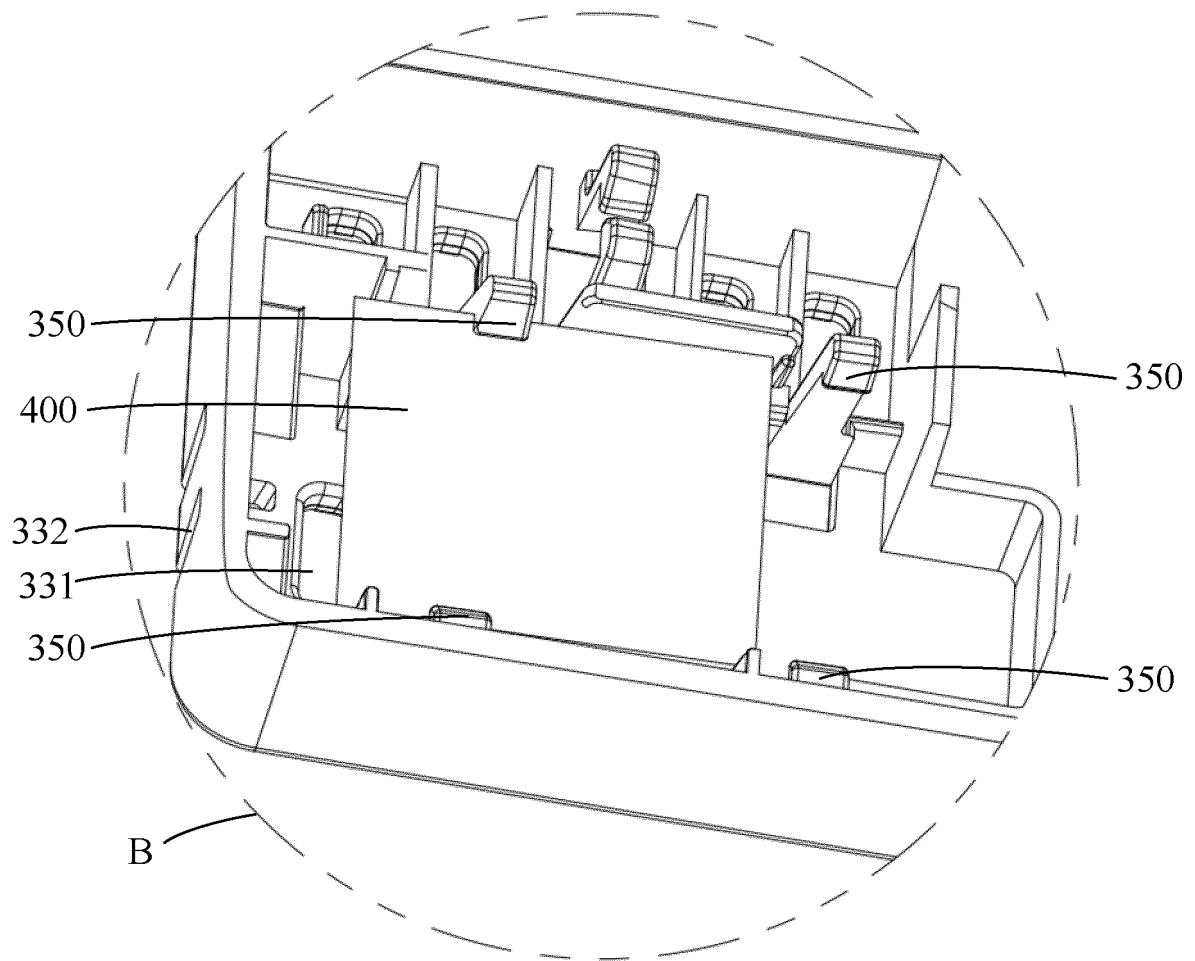


FIG. 9

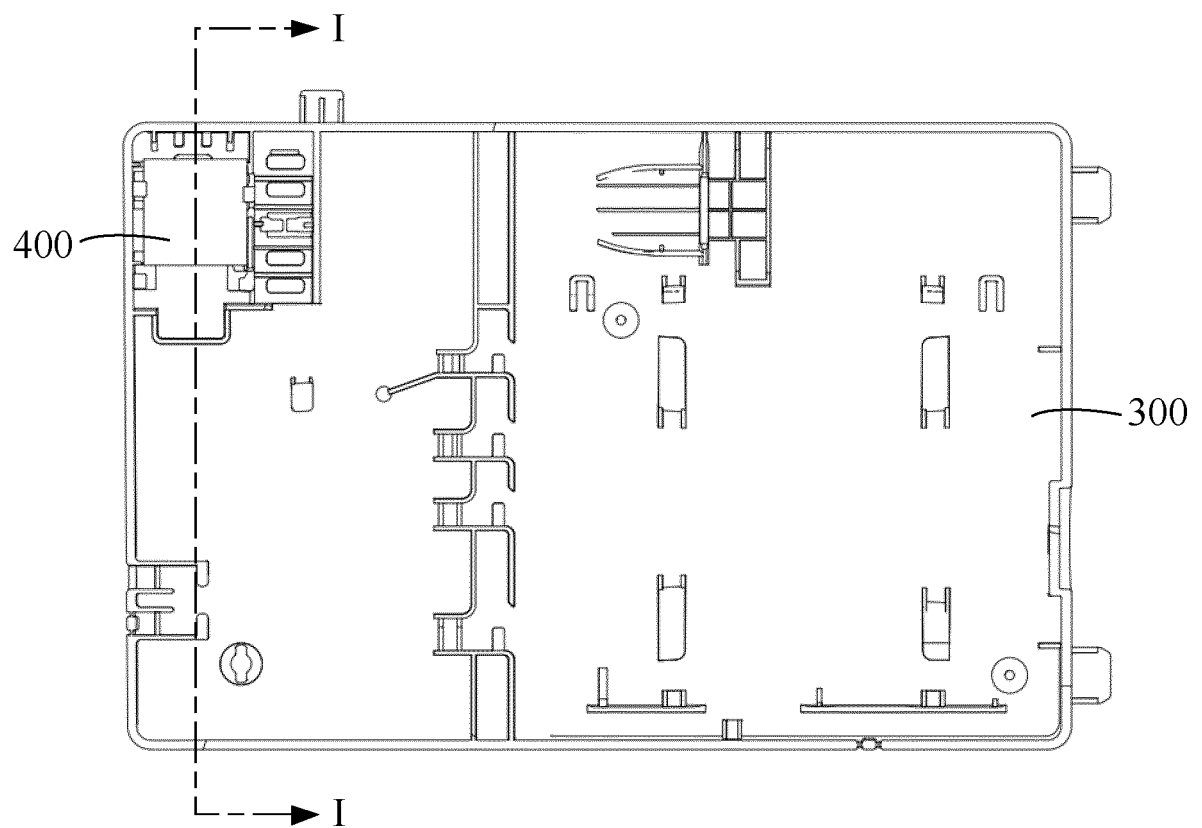


FIG. 10

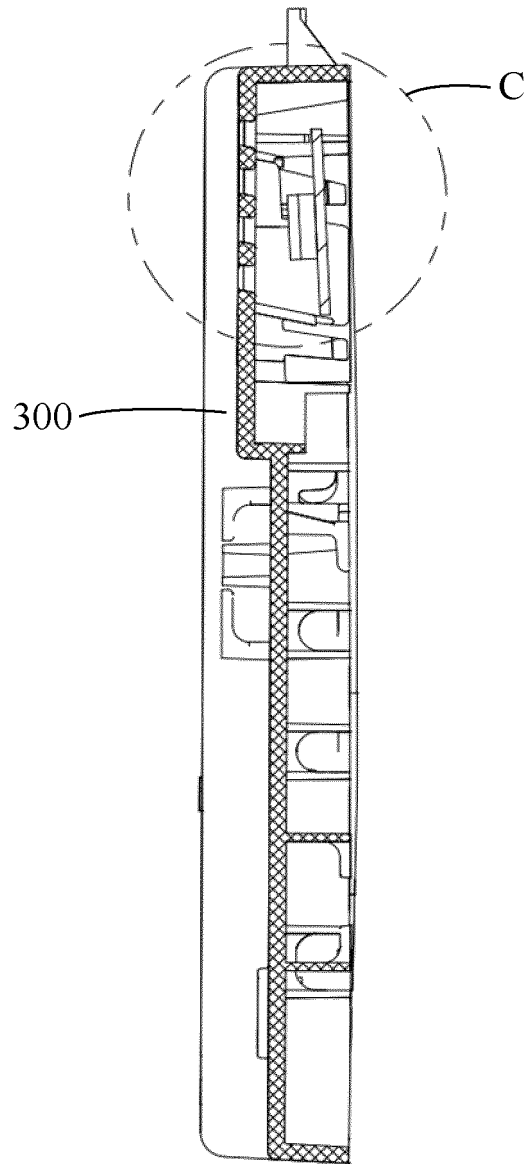


FIG. 11

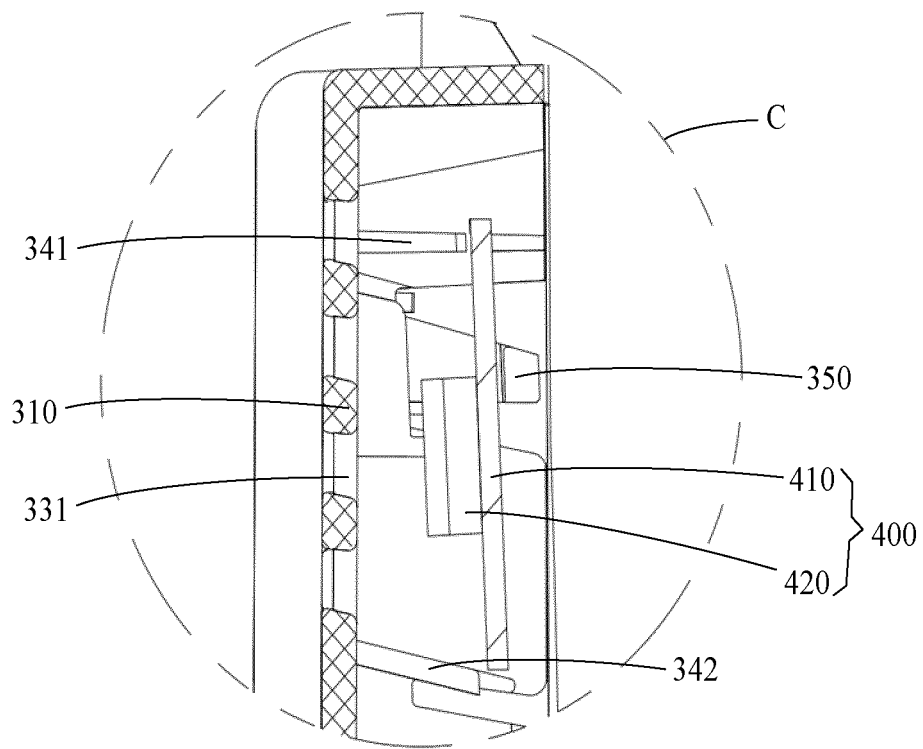


FIG. 12

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/127615

A. CLASSIFICATION OF SUBJECT MATTER

F24F 11/89(2018.01)i; F24F 13/20(2006.01)i; F24F 1/0007(2019.01)i; F24F 110/20(2018.01)n

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNTXT, WPABSC, WPABS, ENTXT, CNKI: 美的, 成日雄, 室内, 面板, 背板, 底板, 衬板, 腔, 温度, 湿度, 甲醛, 空气质量, 传感, 检测, 感测, 感温, 准确, 电控, 盒, 孔, 导气, 通气, 导风, 送风, indoor, panel, plate, temper+, sens+, intect+, hole?, guid+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 210602185 U (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 22 May 2020 (2020-05-22) description, paragraphs [0054]-[0098], and figures 1-11	1-12
A	KR 100319692 B1 (SAMSUNG ELECTRONICS CO., LTD.) 09 January 2002 (2002-01-09) entire document	1-12
A	CN 208920233 U (QINGDAO HAIER AIR CONDITIONER GENERAL CO., LTD.) 31 May 2019 (2019-05-31) entire document	1-12
A	CN 203231494 U (DAIKIN INDUSTRIES LTD.) 09 October 2013 (2013-10-09) entire document	1-12
A	CN 209623040 U (SICHUAN CHANGHONG AIR CONDITIONING CO., LTD.) 12 November 2019 (2019-11-12) entire document	1-12
A	CN 109520015 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD) 26 March 2019 (2019-03-26) entire document	1-12

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

06 May 2022

Date of mailing of the international search report

13 May 2022

Name and mailing address of the ISA/CN

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Facsimile No. (86-10)62019451

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No. PCT/CN2021/127615

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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 207936413 U (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD.) 02 October 2018 (2018-10-02) entire document	1-12
A	CN 207881119 U (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 18 September 2018 (2018-09-18) entire document	1-12

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2021/127615

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CN	208920233	U	31 May 2019	None			
CN	203231494	U	09 October 2013	None			
CN	209623040	U	12 November 2019	None			
CN	109520015	A	26 March 2019	None			
CN	207936413	U	02 October 2018	None			
CN	207881119	U	18 September 2018	None			

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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