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(54) **INDOOR UNIT OF AIR CONDITIONER**

(57) An indoor unit (100) of an air conditioner, comprising: a housing (1), wherein the housing (1) comprises a first accommodating portion (11) that has a first accommodating space and a second accommodating portion (12) that has a second accommodating space, and the first accommodating portion (11) has an air outlet (16); an inner air deflector (2); an outer air deflector (3); and an air duct assembly (4), which comprises a first side wall (41) and a second side wall (42). A second pivot axis (6) is arranged adjacent to the second side wall (42); the side surface of the first side wall (41) facing the second side wall (42) is a first air duct surface (411); the side surface of the second side wall (42) facing the first side wall (41) is a second air duct surface (421); the end of the first side wall (41) facing the air outlet (16) is provided with a transition portion (44); the side surface of the transition portion (44) facing the second side wall (42) is a transition surface (441); and along the direction toward the air outlet (16), the transition surface (441) extends obliquely downwards relative to the first air duct surface (411).

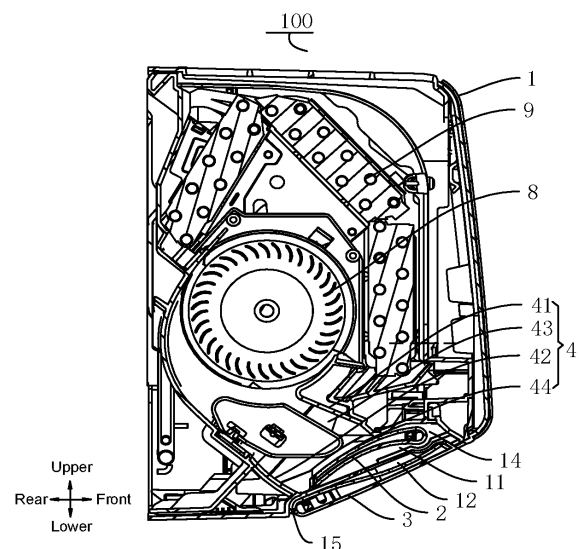


FIG. 1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of air conditioner manufacturing, and in particular, to an air conditioner indoor unit.

BACKGROUND

[0002] In the related art, an air guide plate is disposed at an air outlet of the air conditioner indoor unit for ease of adjustment to an air supply direction of an air conditioner indoor unit. The air guide plate is rotatably connected with a casing of the air conditioner indoor unit to adjust an air exhaust direction of the air outlet. However, in order to ensure smooth rotation of the air guide plate, a certain safety gap is usually reserved between the air guide plate and the casing. As a result, a portion of airflow flows to an outer side face of the air guide plate through the safety gap, so that condensation is formed on the air guide plate and the casing. Thus, experience of the air conditioner indoor unit for users is greatly reduced.

SUMMARY

[0003] The present disclosure aims to solve at least one of the technical problems existing in the prior art. To this end, an object of the present disclosure is to propose an air conditioner indoor unit. The air conditioner indoor unit has advantages of reasonable structural arrangement and condensation prevention.

[0004] An air conditioner indoor unit according to embodiments of the present disclosure includes: a housing, the housing includes a first accommodating portion having a first accommodating space and a second accommodating portion having a second accommodating space, the first accommodating portion has an air outlet, and the second accommodating space is located on a front side of the first accommodating space; an inner air guide plate which is pivotally disposed in the first accommodating space through a first pivot shaft; an outer air guide plate which is pivotally disposed in the second accommodating space through a second pivot shaft; an air duct assembly which is disposed in the housing. The air duct assembly includes a first side wall and a second side wall located below the first side wall, and an air duct communicated with the air outlet is defined between the first side wall and the second side wall. The first pivot shaft is disposed adjacent to the first side wall, and the second pivot shaft is disposed adjacent to the second side wall. A surface of the first side wall facing the second side wall is a first air duct surface, and a surface of the second side wall facing the first side wall is a second air duct surface. An end of the first side wall facing the air outlet is provided with a transition portion, and a surface of the transition portion facing the second side wall is a transition surface. The transition surface extends ob-

liquely downwards relative to the first air duct surface in a direction toward the air outlet.

[0005] In the air conditioner indoor unit according to the embodiments of the present disclosure, the end of the first side wall of the air duct assembly facing the air outlet is provided with the transition portion, and the transition portion is able to have a guiding effect on airflow. The transition portion is able to guide the airflow to flow obliquely downwards, so that it is possible to effectively prevent the airflow from entering a gap between the first pivot shaft and the housing, which is able to prevent a formation of condensation on the inner air guide plate and the housing.

[0006] In some embodiments of the present disclosure, the first pivot shaft is located on a side of the first side wall away from the second side wall.

[0007] In some embodiments of the present disclosure, in a case where the inner air guide plate is at an open position where the air outlet is open, a surface of the inner air guide plate facing the second side wall is substantially flush with the first air duct surface.

[0008] In some embodiments of the present disclosure, a front end of the second side wall has an outer air guide plate mounting portion, an upper end of the outer air guide plate mounting portion is located on a front side of a lower end of the outer air guide plate mounting portion, and the second pivot shaft is disposed at the outer air guide plate mounting portion.

[0009] In some embodiments of the present disclosure, at least a portion of the second air duct surface adjacent to the second pivot shaft is formed as a concave surface.

[0010] In some embodiments of the present disclosure, in a case where the outer air guide plate is at the open position where the air outlet is open, a surface of the outer air guide plate facing the first side wall is substantially flush with the second air duct surface.

[0011] In some embodiments of the present disclosure, there are a first gap between the first pivot shaft and an inner wall of the first accommodating space and a second gap between the second pivot shaft and an inner wall of the second accommodating space, and a sealing strip is disposed in at least one of the first gap or the second gap.

[0012] In some embodiments of the present disclosure, the sealing strip includes a first sealing strip, and the first sealing strip adheres to the housing.

[0013] In some embodiments of the present disclosure, the first sealing strip includes: an adhesive portion adhering to the housing; and a sealing portion, an end of the sealing portion is connected with the adhesive portion, and another end of the sealing portion extends into the at least one of the first gap or the second gap.

[0014] In some embodiments of the present disclosure, the first sealing strip is substantially L-shaped.

[0015] In some embodiments of the present disclosure, the sealing strip includes a second sealing strip, and the second sealing strip is connected with the hous-

ing in a snap-fit manner.

[0016] In some embodiments of the present disclosure, a plurality of clamping grooves that are spaced apart are formed on the housing, a side of the second sealing strip in a width direction of the second sealing strip is provided with a plurality of fasteners, the plurality of fasteners are respectively fitted in the plurality of clamping grooves, and another side of the second sealing strip in the width direction of the second sealing strip extends into the at least one of the first gap or the second gap.

[0017] In some embodiments of the present disclosure, the plurality of fasteners include: a plurality of first fasteners, the plurality of first fasteners being spaced apart in a length direction of the second sealing strip, and each first fastener having a first fastener portion; and a plurality of second fasteners, the plurality of second fasteners being spaced apart in the length direction of the second sealing strip, the plurality of second fasteners and the plurality of first fasteners being arranged alternatively, each second fastener having a second fastener portion; and an orientation of the second fastener portion being opposite to an orientation of the first fastener portion.

[0018] In some embodiments of the present disclosure, a limiting portion is disposed on the second sealing strip, and the limiting portion extends outwards from both sides of the second sealing strip in a thickness direction of the second sealing strip.

[0019] In some embodiments of the present disclosure, the first gap and the second gap are each provided with the sealing strip.

[0020] In some embodiments of the present disclosure, the sealing strip is an elastic sealing strip.

[0021] Additional aspects and advantages of the present disclosure will be given in part in the following description, and in part, will become obvious from the following descriptions, or will be known through practice of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The above and/or additional aspects and advantages of the present disclosure will become apparent and readily understood from the following description of embodiments, taken in conjunction with accompanying drawings in which:

FIG. 1 is a vertical sectional view of an air conditioner indoor unit in which an inner air guide plate and an outer air guide plate are in a state of closing an air outlet, in accordance with an embodiment of the present disclosure;

FIG. 2 is a vertical sectional view of an air conditioner indoor unit in which an inner air guide plate and an outer air guide plate are in a bathing air plate state, in accordance with an embodiment of the present disclosure;

FIG. 3 is a partial enlarged view of a portion shown by circle A in FIG. 2;

FIG. 4 is a vertical sectional view of an air conditioner indoor unit in which an inner air guide plate and an outer air guide plate are in a maximum air plate state, in accordance with an embodiment of the present disclosure;

FIG. 5 is a partial enlarged view of a portion shown by circle B in FIG. 4;

FIG. 6 is a vertical sectional view of an air conditioner indoor unit in which an inner air guide plate and an outer air guide plate are in a carpet air plate state, in accordance with an embodiment of the present disclosure;

FIG. 7 is a vertical sectional view of an air conditioner indoor unit in which an inner air guide plate and an outer air guide plate are in a first swinging air supply state, in accordance with an embodiment of the present disclosure;

FIG. 8 is a vertical sectional view of an air conditioner indoor unit in which an inner air guide plate and an outer air guide plate are in a second swinging air supply state, in accordance with an embodiment of the present disclosure;

FIG. 9 is a schematic diagram showing an assembled structure of a sealing strip and a housing, in accordance with an embodiment of the present disclosure;

FIG. 10 is a schematic diagram showing an assembled structure of a sealing strip and a housing viewed from another perspective, in accordance with an embodiment of the present disclosure;

FIG. 11 is a partial enlarged view of a portion shown by circle C in FIG. 10;

FIG. 12 is a vertical cross-sectional view of the assembled structure of the sealing strip and the housing shown in FIG. 10;

FIG. 13 is a partial enlarged view of a portion shown by circle D in FIG. 12;

FIG. 14 is a schematic structural diagram of a sealing strip, in accordance with a first embodiment of the present disclosure;

FIG. 15 is a schematic structural diagram of a sealing strip, in accordance with a second embodiment of the present disclosure;

FIG. 16 is a schematic diagram showing an assembled structure of a sealing strip and a housing, in accordance with a second embodiment of the present disclosure;

FIG. 17 is a vertical cross-sectional view of an assembled structure of a sealing strip and a housing, in accordance with a second embodiment of the present disclosure; and

FIG. 18 is a partial enlarged view of a portion shown by circle E in FIG. 17.

Reference signs:

[0023]

air conditioner indoor unit 100
housing 1
first accommodating portion 11
second accommodating portion 12
clamping groove 13
first gap 14
second gap 15
air outlet 16
inner air guide plate 2
outer air guide plate 3
air duct assembly 4
first side wall 41
first air duct surface 411
second side wall 42
second air duct surface 421
outer air guide plate mounting portion 422
air duct 43
transition portion 44
transition surface 441
first pivot shaft 5
second pivot shaft 6
sealing strip 7
first sealing strip 71
adhesive portion 711
sealing portion 712
second sealing strip 72
fastener 721
first fastener 7211
first fastener portion 7211a
second fastener 7212
second fastener portion 7212a
limiting portion 722
main body 723
draught fan 8
heat exchanger 9

DETAILED DESCRIPTION

[0024] Embodiments of the present disclosure will be described in detail below. The embodiments described with reference to accompanying drawings are exemplary, and the embodiments of the present disclosure will be described in detail below.

[0025] An air conditioner indoor unit 100 according to the embodiments of the present disclosure will be described below with reference to FIGS. 1 to 18. The air conditioner indoor unit 100 may be used to adjust indoor air temperature and indoor air humidity.

[0026] As shown in FIG. 1, the air conditioner indoor unit 100 according to the embodiments of the present disclosure includes a housing 1, an inner air guide plate 2, an outer air guide plate 3, and an air duct assembly 4.

[0027] As shown in FIGS. 2 to 5, the housing 1 includes a first accommodating portion 11 having a first accom-

modating space and a second accommodating portion 12 having a second accommodating space. The first accommodating portion 11 may have an air outlet 16, and the second accommodating space may be located on a front side of the first accommodating space. The inner air guide plate 2 is pivotally disposed in the first accommodating space through a first pivot shaft 5, and the outer air guide plate 3 is pivotally disposed in the second accommodating space through a second pivot shaft 6. The inner air guide plate 2 and the outer air guide plate 3 may rotate relative to the housing 1 to adjust an air exhaust direction of the air outlet 16, so that different air supply states may be achieved, and different usage requirements of a user may be satisfied.

[0028] As shown in FIGS. 1 and 2, the air duct assembly 4 is disposed in the housing 1. The air duct assembly 4 may include a first side wall 41 and a second side wall 42 located below the first side wall 41, and an air duct 43 communicated with the air outlet 16 may be defined between the first side wall 41 and the second side wall 42. The first pivot shaft 5 is disposed adjacent to the first side wall 41, and the second pivot shaft 6 is disposed adjacent to the second side wall 42. A surface (a lower surface as shown in FIGS. 2 and 3) of the first side wall 41 facing the second side wall 42 is a first air duct surface 411, and a surface (an upper surface as shown in FIGS. 4 and 5) of the second side wall 42 facing the first side wall 41 is a second air duct surface 421. It will be noted that the "upper" in the above description refers to a wall on a side of the first side wall 41 proximate to a ceiling, and the "lower" in the above description refers to a wall on a side of the first side wall 41 proximate to a floor.

[0029] As shown in FIGS. 2 and 3, an end (a front end as shown in FIG. 2) of the first side wall 41 facing the air outlet 16 may be provided with a transition portion 44. A surface (a lower surface as shown in FIG. 3) of the transition portion 44 facing the second side wall 42 is a transition surface 441, and the transition surface 441 may extend obliquely downwards relative to the first air duct surface 411 in a direction toward the air outlet 16. For example, as shown in FIG. 3, the transition surface 441 may extend obliquely downwards relative to the first air duct surface 411 in a direction from a rear to a front. Therefore, through the above arrangement, the transition surface 441 may have a guiding effect on airflow, and the transition surface 441 may guide the airflow to run obliquely downwards, thereby effectively preventing the airflow from entering a gap between the first pivot shaft 5 and the housing 1. Thus, a formation of condensation may be prevented on the inner air guide plate 2 and the housing 1.

[0030] It will be noted that the "front" in the above description refers to a side of the air conditioner indoor unit 100 away from a wall, and the "rear" in the above description refers to a side of the air conditioner indoor unit 100 proximate to the wall.

[0031] In the air conditioner indoor unit 100 according to the embodiments of the present disclosure, the tran-

sition portion 44 is disposed at the end of the first side wall 41 of the air duct assembly 4 facing the air outlet 16, the transition portion 44 may have the guiding effect on the airflow, and the transition portion 44 may guide the airflow to run obliquely downwards, which may effectively prevent the airflow from entering the gap between the first pivot shaft 5 and the housing 1, thereby preventing the formation of the condensation on the inner air guide plate 2 and the housing 1.

[0032] According to some embodiments of the present disclosure, the first pivot shaft 5 is located on a side of the first side wall 41 away from the second side wall 42. For example, as shown in FIG. 2, the first pivot shaft 5 may be located above the first side wall 41, so that the first pivot shaft 5 may avoid an air exhaust path of the air duct 43. As a result, it is possible to reduce a flow resistance of the airflow and noise of the air conditioner indoor unit 100 during operation.

[0033] As shown in FIG. 2, in some embodiments of the present disclosure, in a case where the inner air guide plate 2 is at an open position where the air outlet 16 is open, a surface (a lower surface as shown in FIG. 2) of the inner air guide plate 2 facing the second side wall 42 is substantially flush with the first air duct surface 411. As a result, the lower surface of the inner air guide plate 2 and the first air duct surface 411 may substantially constitute an air guide surface, so that an air supply distance of the air conditioner indoor unit 100 may be effectively extended. Furthermore, cooling and heating efficiencies of the air conditioner indoor unit 100 may be improved.

[0034] As shown in FIGS. 4 and 5, according to some embodiments of the present disclosure, a front end of the second side wall 42 may have an outer air guide plate mounting portion 422. An upper end of the outer air guide plate mounting portion 422 is located on a front side of a lower end of the outer air guide plate mounting portion 422 (as shown in FIG. 4, L_1 is greater than L_2 ($L_1 > L_2$)). The second pivot shaft 6 may be disposed at the outer air guide plate mounting portion 422. As a result, a surface of the outer air guide plate mounting portion 422 proximate to the air duct 43 may guide the airflow to discharge through the air outlet 16, which may prevent the airflow from entering a gap between the second pivot shaft 6 and the housing 1. Thus, condensation may be prevented from being formed on the outer air guide plate 3 and the housing 1.

[0035] As shown in FIG. 5, in some embodiments of the present disclosure, at least a portion of the second air duct surface 421 adjacent to the second pivot shaft 6 is formed as a concave surface. Thus, according to the "Coanda effect", the airflow may run in an extending direction of the second air duct surface 421, which may ensure that the airflow runs in a direction away from the gap between the second pivot shaft 6 and the housing 1. As a result, the airflow will not enter the gap between the second pivot shaft 6 and the housing 1. Of course, it will be understood that the whole second air duct surface 421 may be set as a concave surface. According to the

"Coanda effect", the airflow may run obliquely upwards at the air outlet 16, which may effectively prevent the formation of the condensation on the outer air guide plate 3 and the housing 1.

[0036] As shown in FIG. 2, in some embodiments of the present disclosure, in a case where the outer air guide plate 3 is at the open position where the air outlet 16 is open, a surface (an upper surface as shown in FIG. 2) of the outer air guide plate 3 facing the first side wall 41 is substantially flush with the second air duct surface 421. Therefore, the upper surface of the outer air guide plate 3 and the second air duct surface 421 may be substantially formed as an air guide surface, so that the air supply distance of the air conditioner indoor unit 100 may be effectively extended. Furthermore, the cooling and heating efficiencies of the air conditioner indoor unit 100 may be improved.

[0037] As shown in FIGS. 3 and 5, according to some embodiments of the present disclosure, there are a first gap 14 between the first pivot shaft 5 and an inner wall of the first accommodating space and a second gap 15 between the second pivot shaft 6 and an inner wall of the second accommodating space. The first gap 14 may ensure a smooth relative rotation between the first pivot shaft 5 and the housing 1, and the second gap 15 may ensure a smooth relative rotation between the second pivot shaft 6 and the housing 1. As shown in FIGS. 9 and 10, a sealing strip 7 is disposed in at least one of the first gap 14 or the second gap 15. That is to say, the sealing strip 7 may be disposed in the first gap 14, or the sealing strip 7 may be disposed in the second gap 15, or the sealing strip 7 may be disposed both in the first gap 14 and the second gap 15. The sealing strip 7 may seal the first gap 14 and/or the second gap 15, thereby preventing the airflow from entering the first gap 14 and the second gap 1, and further preventing the formation of the condensation on the housing 1, the inner air guide plate, 2, and the outer air guide plate 3.

[0038] According to some embodiments of the present disclosure, the sealing strip 7 includes a first sealing strip 71, and the first sealing strip 71 may be glued to the housing 1. For example, an adhering surface is disposed on the housing 1, and the first sealing strip 71 adheres to the housing 1 through the adhering surface. Therefore, through the above arrangement, an assembling manner of the sealing strip 7 may be simple, and an assembling efficiency of the sealing strip 7 may be improved.

[0039] As shown in FIGS. 16 to 18, in some embodiments of the present disclosure, the first sealing strip 71 includes an adhesive portion 711 and a sealing portion 712. The adhesive portion 711 may adhere to the housing 1. An end of the sealing portion 712 may be connected with the adhesive portion 711, and the other end of the sealing portion 712 may extend into at least one of the first gap 14 or the second gap 15. Thus, through the above arrangement, a structural design of the first sealing strip 71 may be simple, so that a manufacturing difficulty of a mold of the first sealing strip 71 may be reduced,

and a production efficiency may be improved. For example, in a specific example shown in FIG. 15, the adhesive portion 711 and the sealing portion 712 are each formed to be in a flat plate-like shape, and the first sealing strip 71 may be substantially L-shaped, which may make an overall structure of the first sealing strip 71 simple and reduce the manufacturing difficulty of the mold.

[0040] As shown in FIGS. 9 to 11, in some embodiments of the present disclosure, the sealing strip 7 may further include a second sealing strip 72, and the second sealing strip 72 may be connected with the housing 1 in a snap-fit manner, thereby facilitating installation and detachment of the second sealing strip 72, and further facilitating maintenance and replacement of the second sealing strip 72.

[0041] As shown in FIGS. 11 and 14, in some embodiments of the present disclosure, a plurality of clamping grooves 13 that are spaced apart may be formed on the housing 1, and a plurality of fasteners 721 may be provided on a side of the second sealing strip 72 in a width direction (a front-and-rear direction as shown in FIG. 14). The plurality of fasteners 721 may be respectively fitted into the plurality of clamping grooves 13. The other side of the second sealing strip 72 in the width direction (the front-and-rear direction as shown in FIG. 14) may extend into at least one of the first gap 14 or the second gap 15. Thus, through the above arrangement, a multi-point connection may be formed between the second sealing strip 72 and the housing 1, so that a firmness of fitting between the second sealing strip 72 and the housing 1 may be improved. It will be noted that the "rear" in the above description refers to the side of the air conditioner indoor unit 100 proximate to the wall.

[0042] As shown in FIG. 14, in some embodiments of the present disclosure, the plurality of fasteners 721 may include a plurality of first fasteners 7211 and a plurality of second fasteners 7212. The plurality of first fasteners 7211 may be spaced apart in a length direction (a left-and-right direction as shown in FIG. 14) of the second sealing strip 72, and each first fastener 7211 may have a first fastener portion 7211a. The plurality of second fasteners 7212 may be spaced apart in the length direction (the left-and-right direction as shown in FIG. 14) of the second sealing strip 72, and the plurality of second fasteners 7212 and the plurality of first fasteners 7211 are arranged alternatively. Each second fastener 7212 may have a second fastener portion 7212a, and an orientation of the second fastener portion 7212a is opposite to an orientation of the first fastener portion 7211a. In a case where the second sealing strip 72 cooperates with the housing 1, the first fastener portion 7211a and the second fastener portion 7212a may be respectively hooked on the housing 1, so that the second sealing strip 72 may be firmly fixed on the housing 1. It will be noted that "left and right" in the above description respectively refer to directions of left and right hands of the user when he is facing the front side of the air conditioner indoor unit 100.

[0043] As shown in FIG. 14, in a specific example of the present disclosure, the second sealing strip 72 includes a main body 723 and a plurality of fasteners 721, and the plurality of fasteners 721 include a plurality of first fasteners 7211 and a plurality of second fasteners 7212 that are located at a front end of the main body 723. The plurality of first fasteners 7211 are uniformly spaced apart in a length direction of the main body 723, and the plurality of second fasteners 7212 are uniformly spaced apart in the length direction of the main body 723. The plurality of first fasteners 7211 and the plurality of second fasteners 7212 are uniformly arranged alternatively in the length direction of the main body 723. The housing 1 is provided with clamping grooves 13 that are in one-to-one correspondence with the plurality of first fasteners 7211 and the plurality of second fasteners 7212. A front end of each first fastener 7211 is provided with a first fastener portion 7211a, and the first fastener portion 7211a is disposed upwards. A first guide surface is disposed on the first fastener portion 7211a, and the first guide surface extends obliquely downwards in the direction from the rear to the front. The first guide surface may guide a first fastener 7211 to enter a corresponding clamping groove 13. A front end of each second fastener 7212 is provided with a second fastener portion 7212a, and the second fastener portion 7212a is disposed downwards. A second guide surface is disposed on the second fastener portion 7212a, and the second guide surface extends obliquely upwards in the direction from the rear to the front. The second guide surface may guide a second fastener 7212 to enter a corresponding clamping groove 13. Therefore, through the above arrangement, a structural arrangement of the second sealing strip 72 may be reasonable, which not only facilitates the installation and detachment of the second sealing strip 72, but also may improve an assembly firmness between the second sealing strip 72 and the housing 1.

[0044] As shown in FIG. 13, in some embodiments of the present disclosure, a limiting portion 722 may be disposed on the second sealing strip 72, and the limiting portion 722 extends outwards from both sides of the second sealing strip 72 in a thickness direction (an upper-and-lower direction as shown in FIG. 13) of the second sealing strip 72. The limiting portion 722 may limit the second sealing strip 72, thereby preventing the second sealing strip 72 from falling off the housing 1, and ensuring a sealing effect of the second sealing strip 72.

[0045] In some optional embodiments of the present disclosure, the first gap 14 and the second gap 15 may each be provided with a sealing strip 7. As a result, a good sealing effect may be achieved, and the formation of the condensation may be effectively prevented on the inner air guide plate 2, the outer air guide plate 3, and the housing 1.

[0046] Optionally, the sealing strip 7 may be an elastic sealing strip. The elastic sealing strip has good flexibility, which may not only satisfy normal rotations of the inner air guide plate 2 and the outer air guide plate 3, but also

have a good sealing effect. For example, the elastic sealing strip may be a rubber material piece, or the elastic sealing strip may also be a silica gel material piece.

[0047] Various air supply states of the air conditioner indoor unit 100 according to the embodiments of the present disclosure will be described in detail below with reference to the accompanying drawings.

[0048] As shown in FIG. 2, the lower surface of the inner air guide plate 2 may be formed as a convex surface, and the upper surface of the outer air guide plate 3 may be formed as a concave surface. The air conditioner indoor unit 100 may be in a bathing air plate state. In this case, the inner air guide plate 2 rotates to a position suitable for being flush with the first air duct surface 411, and the outer air guide plate 3 rotates to a position substantially flush with a horizontal plane. According to the "Coanda effect", the inner air guide plate 2 and the outer air guide plate 3 may guide airflow to run obliquely upwards. Due to a high air density of cold air, the cold air runs under gravity from top to bottom in an indoor space, which forms a blowing effect of bathing air. As a result, it is possible to prevent the cold air from blowing directly to the user and improve the user's comfort.

[0049] As shown in FIG. 4, the air conditioner indoor unit 100 may be in a maximum air plate state. In a case where a temperature difference between an indoor temperature and a temperature required by the user is large, the air conditioner indoor unit 100 may be adjusted to the maximum air plate state. In this case, the inner air guide plate 2 may rotate counterclockwise to a position where the lower surface of the inner air guide plate 2 is flush with the first air duct surface 411, and the outer air guide plate 3 may rotate clockwise to a position where the upper surface of the outer air guide plate 3 is flush with the second air duct surface 421. In this case, an air exhaust area of the air outlet 16 is the largest, and an air supply volume per unit time of the air conditioner indoor unit 100 is also the largest, so that the cooling and heating efficiencies of the air conditioner indoor unit 100 may be improved.

[0050] As shown in FIG. 6, the air conditioner indoor unit 100 may be in a carpet air plate state. In a case where the air conditioner indoor unit 100 is in a heating state, due to a low air density of hot air, it is difficult for the hot air to blow onto an indoor floor. In this case, the air conditioner indoor unit 100 may be adjusted to the carpet air plate state. In a case where the air conditioner indoor unit 100 is in the carpet air plate state, both the inner air guide plate 2 and the outer air guide plate 3 rotate to a vertically extending position. In this case, the inner air guide plate 2 and the outer air guide plate 3 may guide the hot air to run vertically downwards, thereby ensuring that the hot air smoothly runs to the floor, which may warm the user's feet.

[0051] As shown in FIG. 7, the air conditioner indoor unit 100 may be in a first swinging air supply state. In a case where the air conditioner indoor unit 100 is in the first swinging air supply state, the inner air guide plate 2

rotates to a position where the lower surface of the inner air guide plate 2 is flush with the first air duct surface 411 and remains stationary, and the outer air guide plate 3 rotates relative to the housing 1. In a case where the air conditioner indoor unit 100 is in a cooling mode, the air conditioner indoor unit 100 may be adjusted to the first swinging air supply state, so that cold air may be guided to run from the bottom to the top in the indoor space first, and then the cold air runs slowly under gravity from the top to the bottom. Thus, the cold air may be prevented from blowing directly to the user, and uniformity of the indoor temperature may also be improved.

[0052] As shown in FIG. 8, the air conditioner indoor unit 100 may be in a second swinging air supply state. In a case where the air conditioner indoor unit 100 is in the second swinging air supply state, the outer air guide plate 3 rotates to a vertically extending position and remains stationary, and the inner air guide plate 2 rotates relative to the housing 1. In a case where the air conditioner indoor unit 100 is in a heating mode, the air conditioner indoor unit 100 may be adjusted to the second swinging air supply state, so that hot air may be guided to run from the top to the bottom in the indoor space, the hot air may smoothly run to the floor, and the uniformity of the indoor temperature may be improved.

[0053] As shown in FIG. 1, in a case where the air conditioner indoor unit 100 is out of use, the inner air guide plate 2 and the outer air guide plate 3 may each rotate to a position where they match with the housing 1 to close the air outlet 16.

[0054] The air conditioner indoor unit 100 according to the present disclosure will be described in detail below using three specific embodiments with reference to the accompanying drawings. It will be understood that the following description is only exemplary, and is not a specific limitation on the present disclosure.

Embodiment 1:

[0055] As shown in FIG. 1, an air conditioner indoor unit 100 according to an embodiment of the present disclosure includes a housing 1, an inner air guide plate 2, an outer air guide plate 3, an air duct assembly 4, a draught fan 8, and a heat exchanger 9.

[0056] The draught fan 8 and the heat exchanger 9 are both disposed in the housing 1, and the housing 1 is provided with an air inlet directly opposite to the heat exchanger 9. The housing 1 includes a first accommodating portion 11 having a first accommodating space and a second accommodating portion 12 having a second accommodating space, the first accommodating portion 11 has an air outlet 16, and the second accommodating space is located on a front side of the first accommodating space. The inner air guide plate 2 is pivotally disposed in the first accommodating space through a first pivot shaft 5, and the outer air guide plate 3 is pivotally disposed in the second accommodating space through a second pivot shaft 6.

[0057] As shown in FIGS. 2 and 3, the air duct assembly 4 is disposed in the housing 1. The air duct assembly 4 includes a first side wall 41 and a second side wall 42 located below the first side wall 41. An air duct 43 communicated with the air outlet 16 may be defined between the first side wall 41 and the second side wall 42. The first pivot shaft 5 is disposed adjacent to the first side wall 41, and the second pivot shaft 6 is disposed adjacent to the second side wall 42. A surface (a lower surface as shown in FIG. 2) of the first side wall 41 facing the second side wall 42 is a first air duct surface 411, and a surface (an upper surface shown in FIG. 2) of the second side wall 42 facing the first side wall 41 is a second air duct surface 421.

[0058] An end (a front end as shown in FIG. 2) of the first side wall 41 facing the air outlet 16 is provided with a transition portion 44, and a surface (a lower surface as shown in FIG. 3) of the transition portion 44 facing the second side wall 42 is a transition surface 441. In a direction toward the air outlet 16, the transition surface 441 may extend obliquely downwards relative to the first air duct surface 411. Therefore, through the above arrangement, the transition surface 441 may have a guiding effect on airflow, and the transition surface 441 may guide the airflow to run obliquely downwards, so that the airflow may be prevented from entering a gap between the first pivot shaft 5 and the housing 1. Thus, a formation of condensation may be prevented on the inner air guide plate 2 and the housing 1.

Embodiment 2:

[0059] As shown in FIGS. 4 and 5, a difference from the first embodiment is that in the second embodiment, a front end of the second side wall 42 of the air conditioner indoor unit 100 has an outer air guide plate mounting portion 422. An upper end of the outer air guide plate mounting portion 422 may be located on a front side of a lower end of the outer air guide plate mounting portion 422 (as shown in FIG. 4, L_1 is greater than L_2 ($L_1 > L_2$)), and the second pivot shaft 6 may be disposed at the outer air guide plate mounting portion 422. Moreover, at least a portion of the second air duct surface 421 adjacent to the second pivot shaft 6 is formed as a concave surface. Thus, according to the "Coanda effect", the airflow may run in an extending direction of the second air duct surface 421, which may ensure that the airflow runs in a direction away from a gap between the second pivot shaft 6 and the housing 1. Thus, the airflow will not enter the gap between the second pivot shaft 6 and the housing 1, thereby effectively preventing the formation of the condensation on the outer air guide plate 3 and the housing 1.

Embodiment 3:

[0060] As shown in FIGS. 16 to 18, a difference from the first embodiment is that in the air conditioner indoor unit 100 in the third embodiment, there are a first gap 14

between the first pivot shaft 5 and an inner wall of the first accommodating space and a second gap 15 between the second pivot shaft 6 and an inner wall of the second accommodating space, and a sealing strip 7 is disposed in at least one of the first gap 14 or the second gap 15.

[0061] The sealing strip 7 may include a first sealing strip 71, and the first sealing strip 71 includes an adhesive portion 711 and a sealing portion 712. The adhesive portion 711 may adhere to the housing 1. An end of the sealing portion 712 may be connected with the adhesive portion 711, and the other end of the sealing portion 712 may extend into at least one of the first gap 14 or the second gap 15.

[0062] As shown in FIGS. 9 to 11, the sealing strip 7 may further include a second sealing strip 72, and the second sealing strip 72 may be connected with the housing 1 in a snap-fit manner. The second sealing strip 72 includes a main body 723 and a plurality of fasteners 721. The plurality of fasteners 721 include a plurality of first fasteners 7211 and a plurality of second fasteners 7212 that are located at a front end of the main body 723. The plurality of first fasteners 7211 are evenly spaced apart in a length direction of the main body 723, and the plurality of second fasteners 7212 are evenly spaced apart in the length direction of the main body 723. The plurality of first fasteners 7211 and the plurality of second fasteners 7212 are uniformly arranged alternatively in the length direction of the main body 723. The housing 1 is provided with clamping grooves 13 that are in one-to-one correspondence with the plurality of first fasteners 7211 and the plurality of second fasteners 7212. A front end of each first fastener 7211 is provided with a first fastener portion 7211a, and the first fastener portion 7211a is disposed upwards. The first fastener portion 7211a is provided with a first guide surface, and the first guide surface extends obliquely downwards in a direction from a rear to a front. The first guide surface may guide a first fastener 7211 to enter a corresponding clamping groove 13. A front end of each second fastener 7212 is provided with a second fastener portion 7212a, and the second fastener portion 7212a is disposed downwards. The second fastener portion 7212a is provided with a second guide surface, and the second guide surface extends obliquely upwards in the direction from the rear to the front. The second guide surface may guide a second fastener 7212 to enter a corresponding clamping groove 13.

[0063] Therefore, through the above arrangement, the sealing strip 7 may seal the first gap 14 and/or the second gap 15, thereby preventing the airflow from entering the first gap 14 and the second gap 15, and further preventing the formation of the condensation on the housing 1, the inner air guide plate 2, and the outer air guide plate 3.

[0064] In the description of the present disclosure, it will be understood that orientations or positional relationships indicated by terms "length", "width", "thickness", "upper", "lower", "front", "rear", "left", "right", "vertical",

"horizontal", "top", "bottom", "inner", "outer", "clockwise", "counterclockwise", etc. are based on orientations or positional relationships shown in the accompanying drawings, which are merely to facilitate and simplify the description of the present disclosure, but are not to indicate or imply that the referred devices or elements must have a particular orientation, or must be constructed or operated in a particular orientation. Therefore, these terms should not be construed as limitations on the present disclosure. In the description of the present disclosure, the term "a/the plurality of" means two or more. A first feature being "above" or "under" a second feature may mean that the first feature and the second feature are in direct contact, or the first feature and the second feature are not in direct contact but are in contact through another feature between them.

[0065] In the description of the specification, reference terms such as "one embodiment", "some embodiments", "exemplary embodiment", "example", "specific example", or "some examples", etc. mean that specific features, structures, materials, or characteristics described in combination with the embodiment(s) or example(s) are included in at least one embodiment or example of the present disclosure. In this specification, schematic representations of the above terms do not necessarily refer to the same embodiment(s) or example(s).

[0066] Although the embodiments of the present disclosure have been shown and described, it will be understood by those of ordinary skill in the art that various changes, modifications, substitutions, and alterations may be made in these embodiments without departing from the principles and spirit of the present disclosure. The scope of the present disclosure is defined by the claims and their equivalents.

Claims

1. An air conditioner indoor unit, **characterized by** comprising:

a housing, the housing including a first accommodating portion having a first accommodating space and a second accommodating portion having a second accommodating space, the first accommodating portion having an air outlet, and the second accommodating space being located on a front side of the first accommodating space;

an inner air guide plate, the inner air guide plate being pivotally disposed in the first accommodating space through a first pivot shaft;

an outer air guide plate, the outer air guide plate being pivotally disposed in the second accommodating space through a second pivot shaft; and

an air duct assembly, the air duct assembly being disposed in the housing, the air duct assembly

bly including a first side wall and a second side wall located below the first side wall, an air duct communicated with the air outlet being defined between the first side wall and the second side wall, the first pivot shaft being disposed adjacent to the first side wall, the second pivot shaft being disposed adjacent to the second side wall, a surface of the first side wall facing the second side wall being a first air duct surface, and a surface of the second side wall facing the first side wall being a second air duct surface, and an end of the first side wall facing the air outlet being provided with a transition portion, a surface of the transition portion facing the second side wall being a transition surface, and the transition surface extending obliquely downwards relative to the first air duct surface in a direction toward the air outlet.

2. The air conditioner indoor unit according to claim 1, **characterized in that** the first pivot shaft is located on a side of the first side wall away from the second side wall.
3. The air conditioner indoor unit according to claim 1 or 2, **characterized in that** in a case where the inner air guide plate is at an open position where the air outlet is open, a surface of the inner air guide plate facing the second side wall is substantially flush with the first air duct surface.
4. The air conditioner indoor unit according to any of claims 1 to 3, **characterized in that** a front end of the second side wall has an outer air guide plate mounting portion, an upper end of the outer air guide plate mounting portion is located on a front side of a lower end of the outer air guide plate mounting portion, and the second pivot shaft is disposed at the outer air guide plate mounting portion.
5. The air conditioner indoor unit according to claim 4, **characterized in that** at least a portion of the second air duct surface adjacent to the second pivot shaft is formed as a concave surface.
6. The air conditioner indoor unit according to claim 4, **characterized in that** in a case where the outer air guide plate is at an open position where the air outlet is open, a surface of the outer air guide plate facing the first side wall is substantially flush with the second air duct surface.
7. The air conditioner indoor unit according to any of claims 1 to 6, **characterized in that** there are a first gap between the first pivot shaft and an inner wall of the first accommodating space and a second gap between the second pivot shaft and an inner wall of the second accommodating space, and a sealing

strip is disposed in at least one of the first gap or the second gap.

8. The air conditioner indoor unit according to claim 7, **characterized in that** the sealing strip includes a first sealing strip, and the first sealing strip is glued to the housing. 5
9. The air conditioner indoor unit according to claim 8, **characterized in that** the first sealing strip includes: 10
 - an adhesive portion, the adhesive portion adhering to the housing; and
 - a sealing portion, an end of the sealing portion being connected with the adhesive portion, and another end of the sealing portion extending into the at least one of the first gap or the second gap. 15
10. The air conditioner indoor unit according to claim 8 or 9, **characterized in that** the first sealing strip is substantially L-shaped. 20
11. The air conditioner indoor unit according to claim 7, **characterized in that** the sealing strip includes a second sealing strip, and the second sealing strip is connected with the housing in a snap-fit manner. 25
12. The air conditioner indoor unit according to claim 11, **characterized in that** a plurality of clamping grooves that are spaced apart are formed on the housing, and a side of the second sealing strip in a width direction of the second sealing strip is provided with a plurality of fasteners, the plurality of fasteners are respectively fitted in the plurality of clamping grooves, and another side of the second sealing strip in the width direction of the second sealing strip extends into the at least one of the first gap or the second gap. 30 35
13. The air conditioner indoor unit according to claim 12, **characterized in that** the plurality of fasteners include: 40
 - a plurality of first fasteners, the plurality of first fasteners being spaced apart in a length direction of the second sealing strip, and each first fastener having a first fastener portion; and 45
 - a plurality of second fasteners, the plurality of second fasteners being spaced apart in the length direction of the second sealing strip, the plurality of second fasteners and the plurality of first fasteners being arranged alternatively, each second fastener having a second fastener portion, and an orientation of the second fastener portion being opposite to an orientation of the first fastener portion. 50 55
14. The air conditioner indoor unit according to claim 12 or 13, **characterized in that** the second sealing strip

is provided with a limiting portion, and the limiting portion extends outwards from both sides of the second sealing strip in a thickness direction of the second sealing strip.

15. The air conditioner indoor unit according to any of claims 7 to 14, **characterized in that** the first gap and the second gap are each provided with the sealing strip.
16. The air conditioner indoor unit according to any of claims 7 to 14, **characterized in that** the sealing strip is an elastic sealing strip.

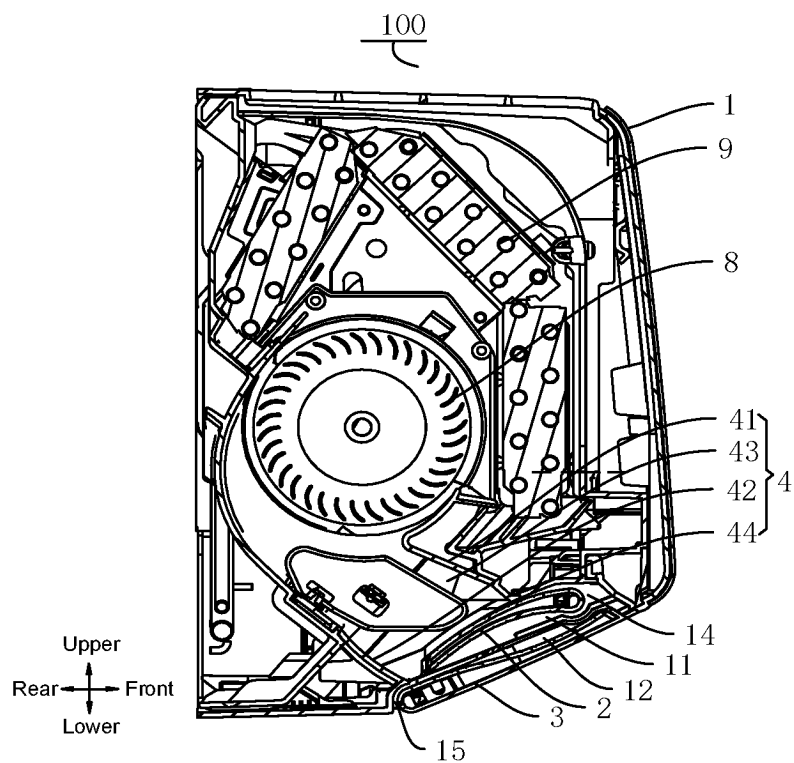


FIG. 1

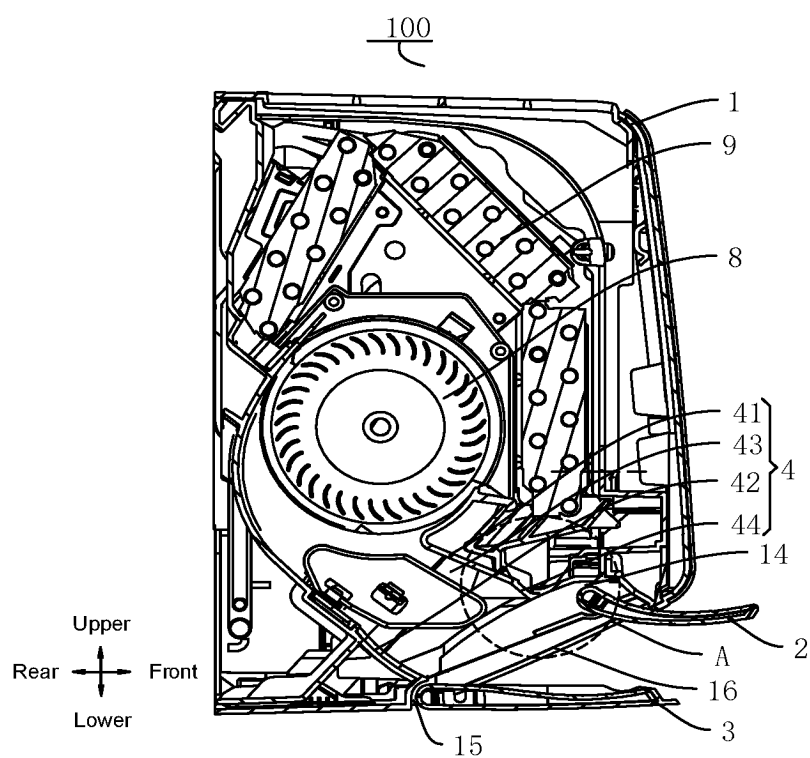


FIG. 2

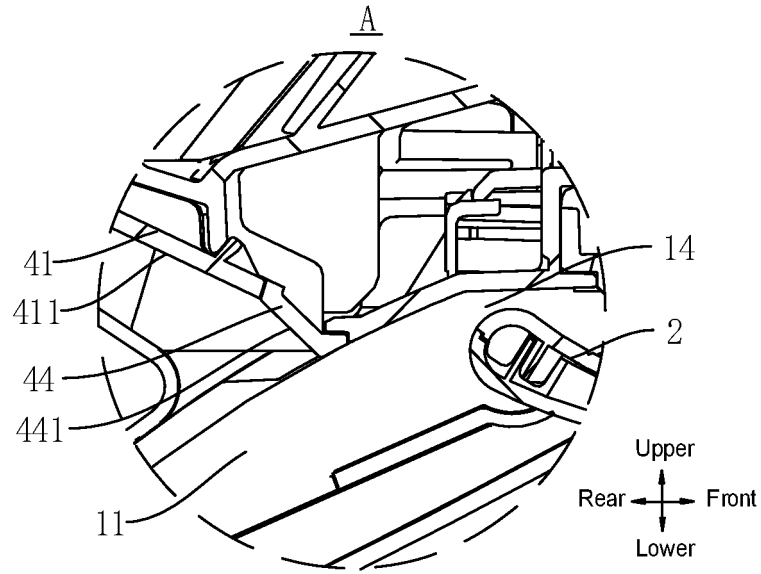


FIG. 3

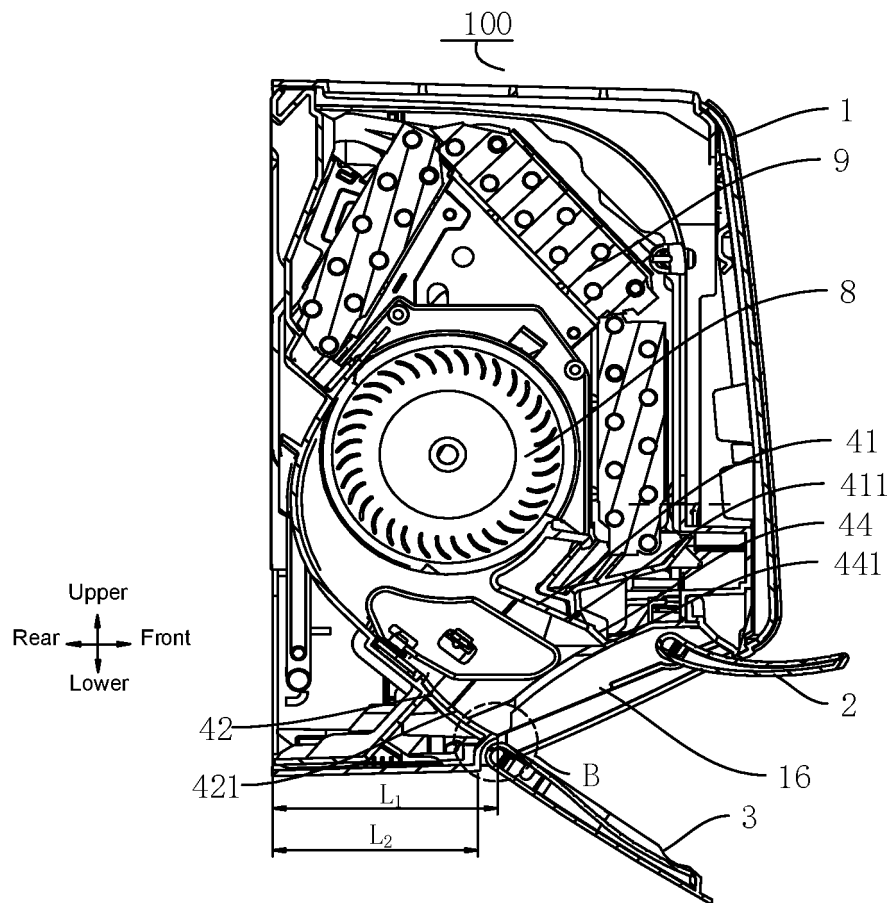


FIG. 4

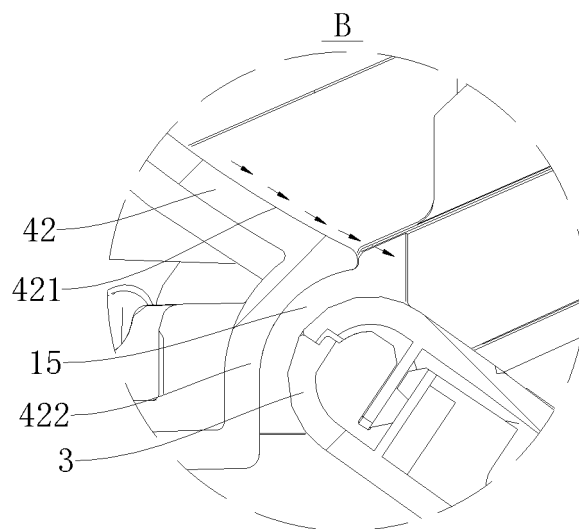


FIG. 5

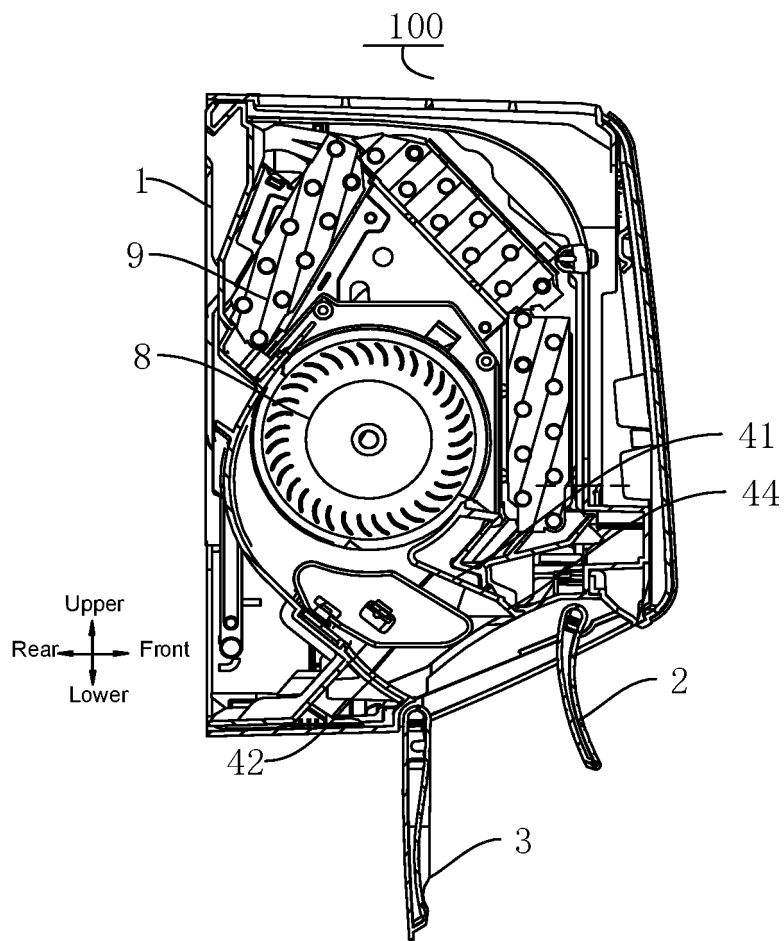


FIG. 6

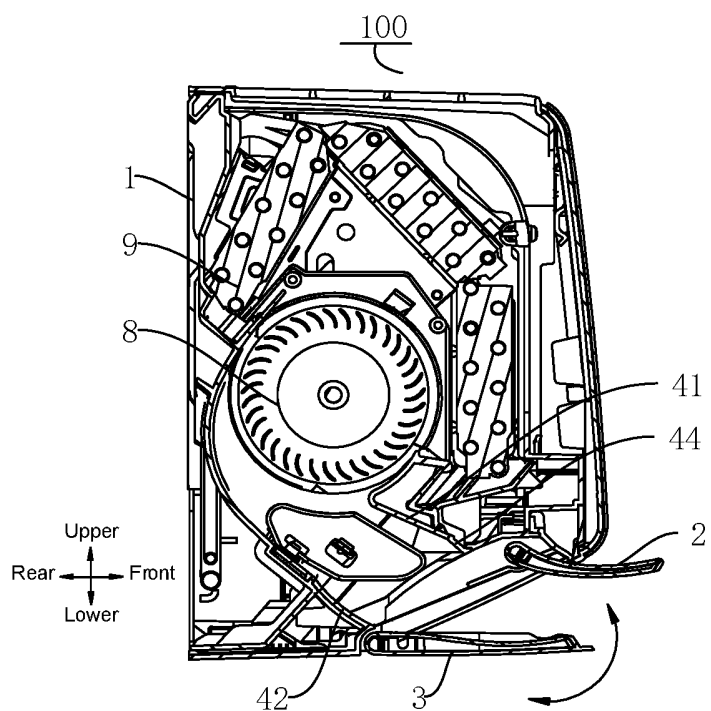


FIG. 7

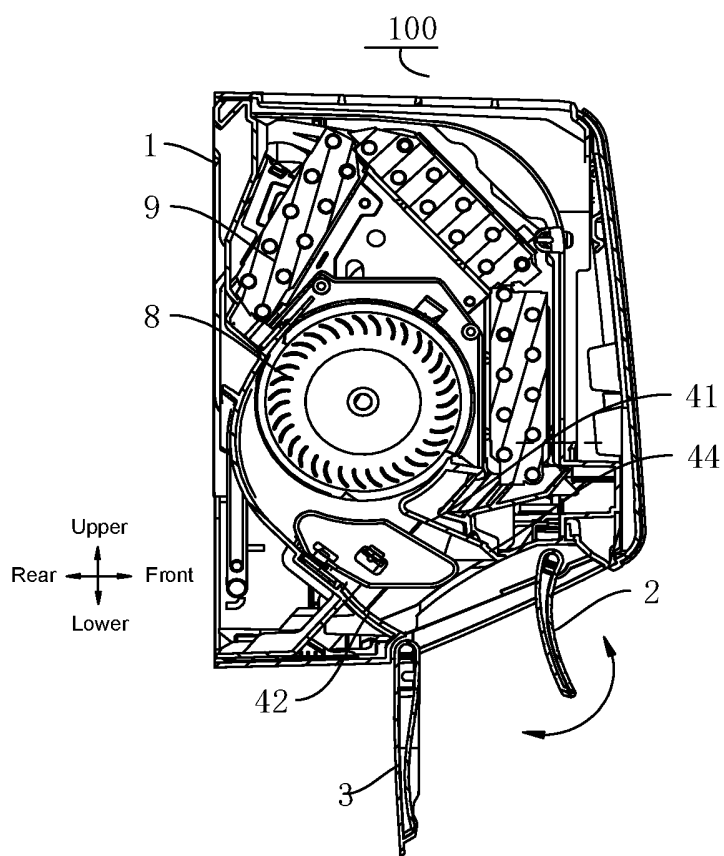


FIG. 8

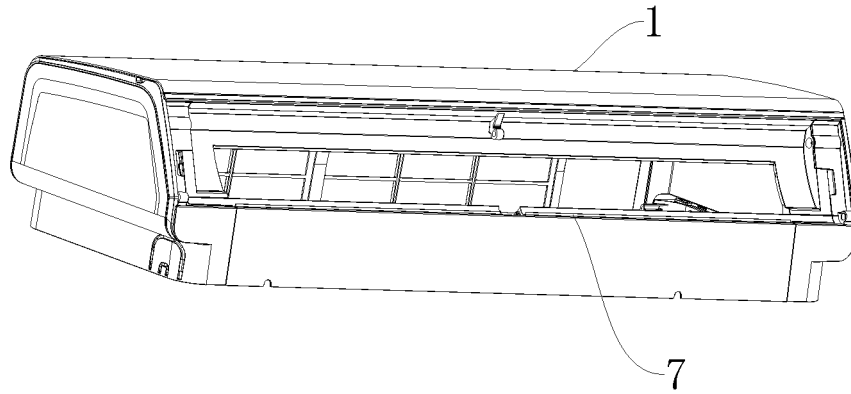


FIG. 9

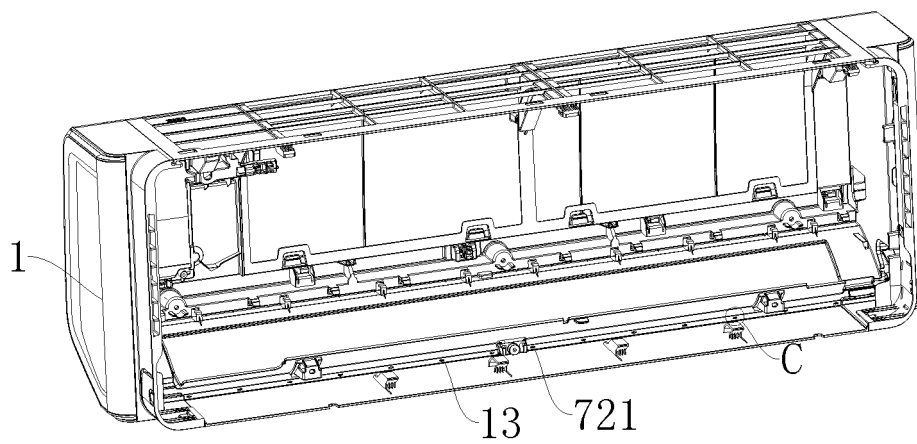


FIG. 10

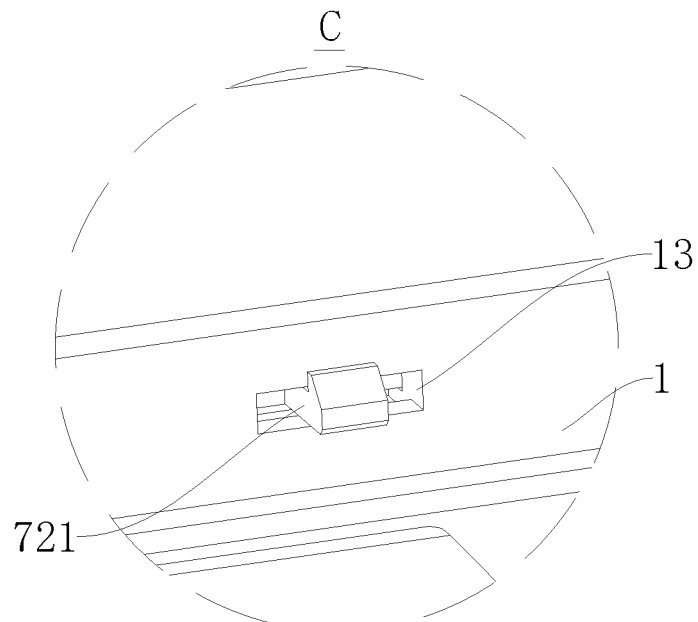


FIG. 11

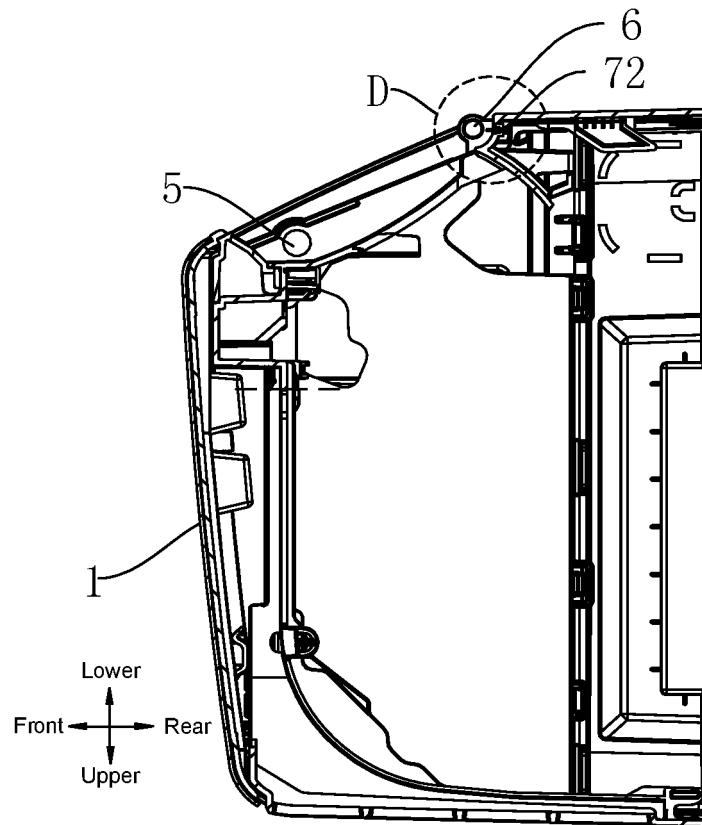


FIG. 12

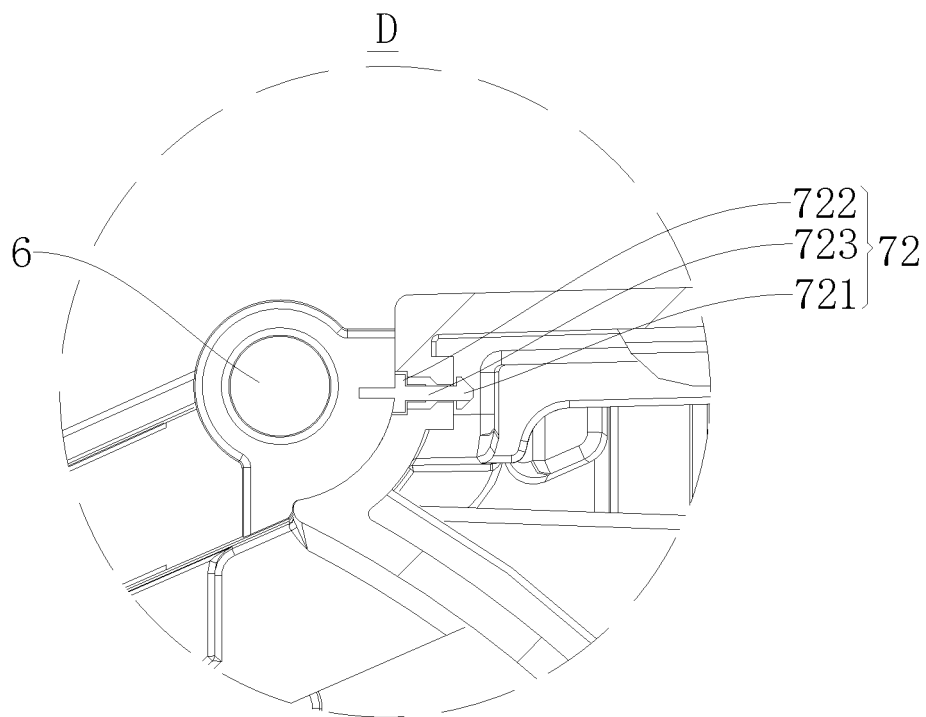


FIG. 13

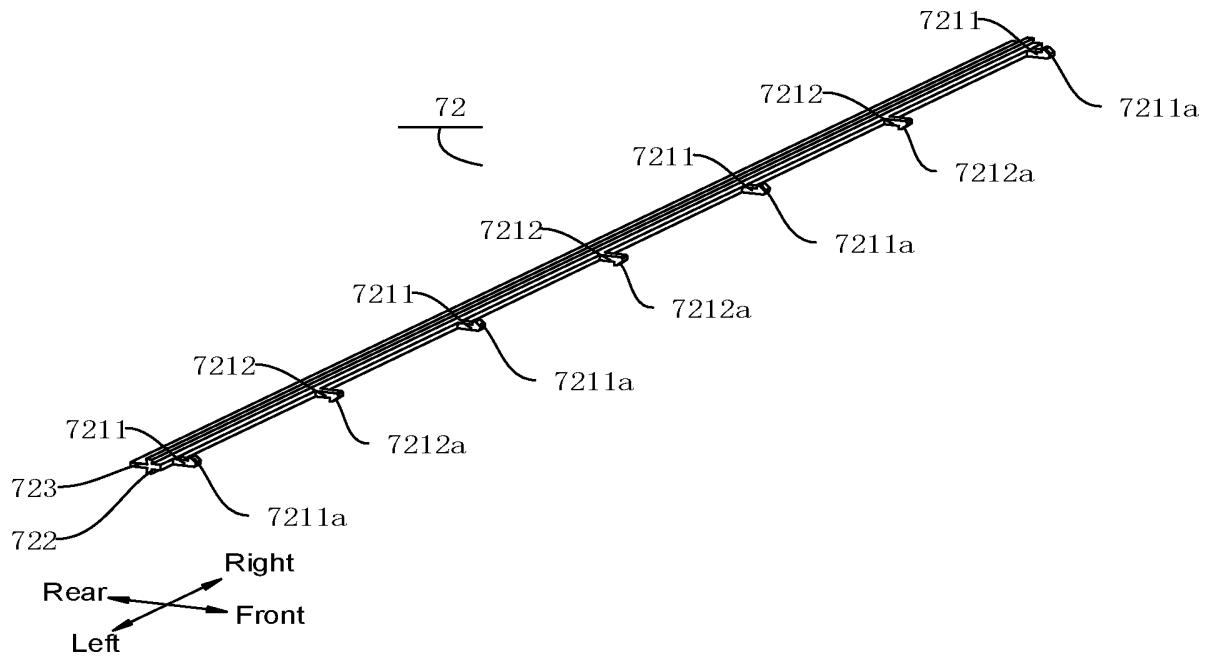


FIG. 14

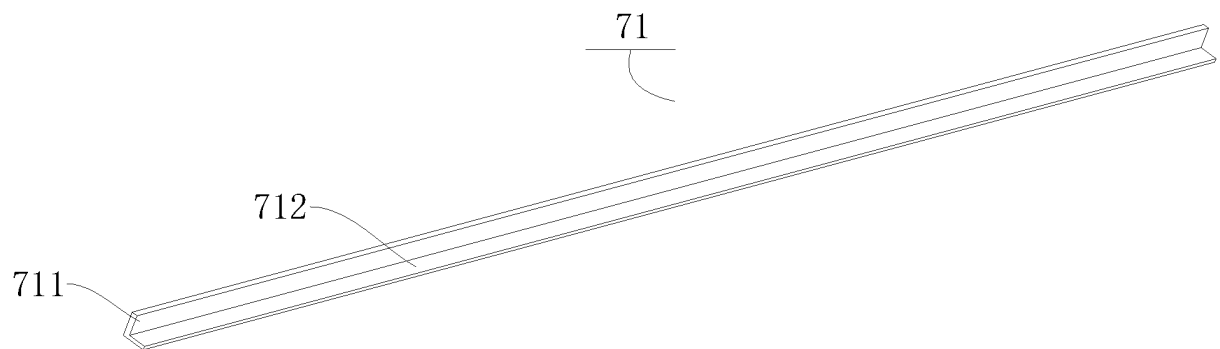


FIG. 15

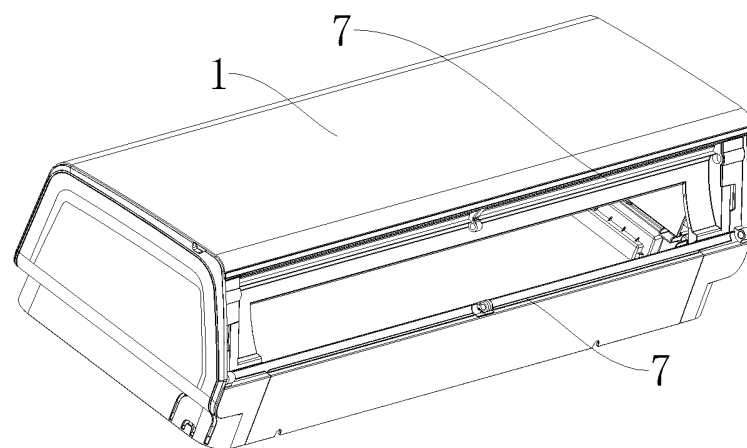


FIG. 16

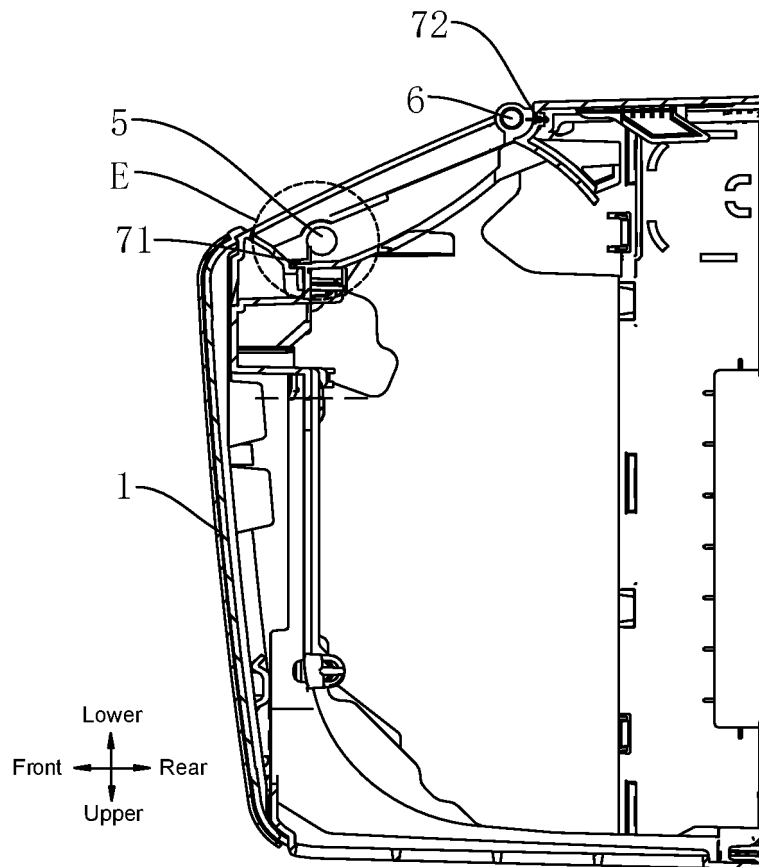


FIG. 17

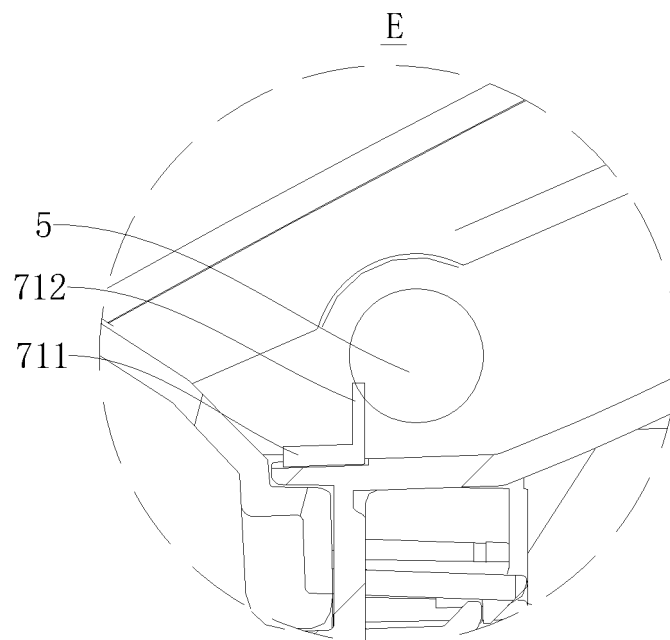


FIG. 18

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2020/131860

A. CLASSIFICATION OF SUBJECT MATTER F24F 1/0011(2019.01)i; F24F 1/0057(2019.01)i; F24F 13/14(2006.01)i; F24F 13/22(2006.01)i 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) CNABS, CNKI, CNTXT, VEN: 空气, 调节, 空调, 导风板, 内, 外, 风道, 过渡, 倾斜, 下, 露, 密封, 卡, 扣, air, condition+, inclined, downwards, guide, outlet, inner, outer, duct, condens+, seal																					
C. DOCUMENTS CONSIDERED TO BE RELEVANT																					
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>PX</td> <td>CN 211551816 U (HISENSE (GUANGDONG) AIR-CONDITIONING CO., LTD.) 22 September 2020 (2020-09-22) claims 1-10, description paragraphs [0050] to [0089], figures 1-18</td> <td>1-16</td> </tr> <tr> <td>PX</td> <td>CN 211551814 U (HISENSE (GUANGDONG) AIR-CONDITIONING CO., LTD.) 22 September 2020 (2020-09-22) description, paragraphs [0050] to [0089], figures 1-18</td> <td>1-16</td> </tr> <tr> <td>PX</td> <td>CN 211233091 U (HISENSE (GUANGDONG) AIR-CONDITIONING CO., LTD.) 11 August 2020 (2020-08-11) description, paragraphs [0050] to [0088], figures 1-18</td> <td>1-16</td> </tr> <tr> <td>A</td> <td>CN 103776093 A (MIDEA GROUP CO., LTD.) 07 May 2014 (2014-05-07) description, paragraphs [0045] to [0087], figures 1-13</td> <td>1-16</td> </tr> <tr> <td>A</td> <td>CN 208282259 U (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI) 25 December 2018 (2018-12-25) entire document</td> <td>1-16</td> </tr> <tr> <td>A</td> <td>CN 207963099 U (GUANGDONG MEDIA REFRIGERATION EQUIPMENT CO., LTD. et al.) 12 October 2018 (2018-10-12) entire document</td> <td>1-16</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	PX	CN 211551816 U (HISENSE (GUANGDONG) AIR-CONDITIONING CO., LTD.) 22 September 2020 (2020-09-22) claims 1-10, description paragraphs [0050] to [0089], figures 1-18	1-16	PX	CN 211551814 U (HISENSE (GUANGDONG) AIR-CONDITIONING CO., LTD.) 22 September 2020 (2020-09-22) description, paragraphs [0050] to [0089], figures 1-18	1-16	PX	CN 211233091 U (HISENSE (GUANGDONG) AIR-CONDITIONING CO., LTD.) 11 August 2020 (2020-08-11) description, paragraphs [0050] to [0088], figures 1-18	1-16	A	CN 103776093 A (MIDEA GROUP CO., LTD.) 07 May 2014 (2014-05-07) description, paragraphs [0045] to [0087], figures 1-13	1-16	A	CN 208282259 U (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI) 25 December 2018 (2018-12-25) entire document	1-16	A	CN 207963099 U (GUANGDONG MEDIA REFRIGERATION EQUIPMENT CO., LTD. et al.) 12 October 2018 (2018-10-12) entire document	1-16
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☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.																					
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Date of the actual completion of the international search 10 February 2021	Date of mailing of the international search report 24 February 2021																				
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 China Facsimile No. (86-10)62019451	Authorized officer Telephone No.																				

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2020/131860

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2017215092 A (SHARP K. K.) 07 December 2017 (2017-12-07) entire document	1-16

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2020/131860

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 211551816 U	22 September 2020	None	
CN 211551814 U	22 September 2020	None	
CN 211233091 U	11 August 2020	None	
CN 103776093 A	07 May 2014	CN 103776093 B	01 February 2017
CN 208282259 U	25 December 2018	None	
CN 207963099 U	12 October 2018	None	
JP 2017215092 A	07 December 2017	JP 6633457 B2	22 January 2020

Form PCT/ISA/210 (patent family annex) (January 2015)