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(54) INDOOR AIR-CONDITIONING HANGING UNIT AND AIR CONDITIONER HAVING SAME

(57) An indoor hanging unit (100) for an air conditioner, and an air conditioner having the same are disclosed. The indoor hanging unit (100) includes a body (1), an air deflector (2), a heat exchanger (3), and a fan wheel (4). The body (1) is formed with an air inlet (10a) and an air outlet (10b). The front side of the body (1) is provided with a front panel (11). The top of the front panel (11) is provided with a baffle (10). The baffle (10) is located in front of the air inlet (10a). One end of the baffle (10) is connected with the front panel (11), and the other end of the baffle (10) extends towards the direction away from the air inlet (10a) with respect to the front panel (11). The air deflector (2) is provided at the air outlet (10b). When the air deflector (2) opens the air outlet (10b) upward with respect to the front panel (11), the air flowing out of the air outlet (10b) can flow upward under the action of the air deflector (2).

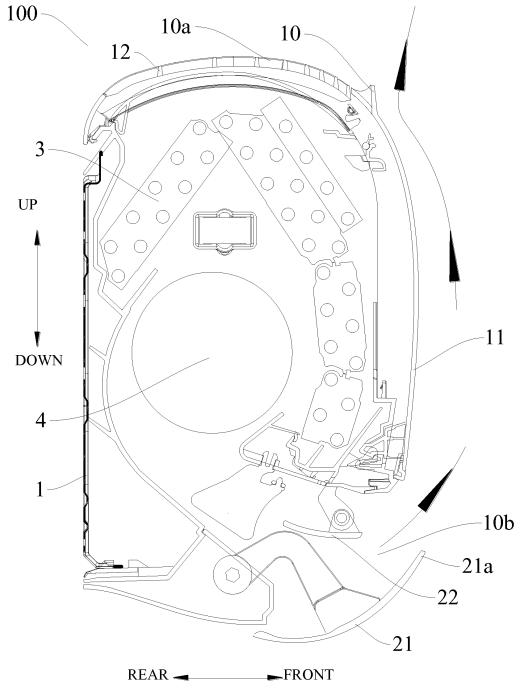

Figure 3

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Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to and benefits of Chinese Patent Application No. 201820181591.0, filed on January 31, 2018, the entire contents of which are introduced herein for reference.

FIELD

[0002] This application relates to a field of air conditioner manufacturing technology, and more particularly to an indoor hanging unit for an air conditioner and an air conditioner having such indoor hanging unit.

BACKGROUND

[0003] In the relevant technology, on the precondition of guaranteeing its refrigerating capacity, the indoor hanging unit realizes wind-free air outlet, thus making users feel more comfortable. However, the molding efficiency and appearance of the indoor hanging unit still need to be improved.

SUMMARY

[0004] The purpose of the present disclosure is to address at least one of the technical problems existing in the related art. Therefore, the present disclosure proposes an indoor hanging unit for an air conditioner, which improves the molding efficiency and aesthetics on the precondition of guaranteeing its air intake and heat exchange efficiency.

[0005] The present disclosure also proposes an air conditioner equipped with such indoor hanging unit.

[0006] In accordance with embodiments of a first aspect of the present disclosure, the indoor hanging unit includes: a body, formed with an air inlet at a top of the body and with an air outlet on a lower front side thereof, and provided with a front panel on a front side of the body, a baffle being provided at a top of the front panel and located in front of the air inlet, the baffle having a first end connected with the top of the front panel and a second end extending away from the air inlet with respect to the front panel, and the baffle and the front panel being formed integrally; an air deflector, provided at the air outlet to open and close the air outlet, so that air blown from the air outlet can flow upwards under the action of the air deflector when the air deflector opens the air outlet upwards with respect to the front panel; a heat exchanger provided inside the body; and a fan wheel provided in the body and located on a side of the heat exchanger away from the air inlet.

[0007] For the indoor hanging unit according to the embodiments of the present disclosure, the baffle is provided at the top of the front panel and in front of the air inlet, and the second end of the baffle extends towards the direction away from the air inlet with respect to the front panel, so that the baffle can cover internal structures of the body, and improve the overall appearance of the indoor hanging unit. Meanwhile, the baffle can block the airflow blown upward at the air outlet, so as to prevent the air from flowing back, avoid short circulation, and guarantee the heat exchange efficiency of the indoor hanging unit. Moreover, the baffle can guide the airflow at the air inlet to ensure the air intake volume of the indoor hanging unit. By configuring the baffle and the front panel as an integrally formed part, the molding efficiency and assembly efficiency of the indoor hanging unit can be improved.

[0008] According to some embodiments of the present disclosure, an included angle between a direction along which the top of the front panel extends upwards and a direction in which the second end of the baffle extends upwards is β, and β satisfies: $30°\leq\beta\leq100°$.

[0009] According to some embodiments of the present disclosure, the front panel forms an arc structure protruding forward.

[0010] According to some embodiments of the present disclosure, the baffle obliquely extends rearwards from bottom to top.

[0011] According to some embodiments of the present disclosure, from the first end of the baffle to the second end of the baffle, the thickness of the baffle is reduced gradually.

[0012] According to some embodiments of the present disclosure, the baffle has a flat plate structure, or the baffle forms an arc structure bent forward.

[0013] According to some embodiments of the present disclosure, a top surface of the baffle is lower than a top surface of the body.

[0014] According to some embodiments of the present disclosure, along a left-and-right direction, the length of baffle is greater than or equal to the length of air inlet.

[0015] According to some embodiments of the present disclosure, the front panel is provided with extension plates extending backward, on a left end and a right end of the top of the front panel, and a rear surface of each extension plate is provided with a front panel pivoting structure pivotably connected with the body, wherein the baffle is located between the two extension plates, and respectively transitions smoothly to the two extension plates.

[0016] The air conditioner according to embodiments of a second aspect of the present disclosure includes the indoor hanging unit according to the embodiments of the first aspect of the present disclosure.

[0017] For the air conditioner according to the embodiments of the present disclosure, by adopting the indoor hanging unit, it is possible to guarantee the heat exchange efficiency of the air conditioner and improve the aesthetics, the molding efficiency, and the assembly efficiency of the air conditioner.

[0018] Additional aspects and advantages of embodiments of present disclosure will be given in part in the

following descriptions, become apparent in part from the following descriptions, or be learned from the practice of the embodiments of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The above and/or additional aspects and advantages of the present disclosure will become apparent and more readily appreciated from the description of embodiments in combination with the accompanying drawings, in which:

Figure 1 is a cutaway view of the indoor hanging unit specified in the present disclosure, in which the air deflector closes the air outlet.
Figure 2 is an enlarged view of Area A in the encircled part in Figure 1.
Figure 3 is a cutaway view of the indoor hanging unit specified in Figure 1, in which the air deflector opens upward the air outlet against the front panel, and the arrow direction indicates the airflow direction.
Figure 4 is a schematic structural view of the baffle and front panel specified in Figure 1.
Figure 5 is a schematic structural view (from another aspect) of the baffle and front panel specified in Figure 4.
Figure 6 is a schematic structural view (from another aspect) of the baffle and front panel specified in Figure 4.
Figure 7 is an enlarged view of Area B in the encircled part in Figure 6.
Figure 8 is a partial cutaway view of the indoor hanging unit specified in another embodiment of the present disclosure, in which the arrow direction indicates the airflow direction.

Reference numerals:

[0020]

indoor hanging unit 100, body 1, air inlet 10a, air outlet 10b,
baffle 10, front panel 11, air inlet frame 12, air outlet frame 13, face frame 14,
extension plate 111, front panel pivoting structure 112,
air deflector 2, first air deflector 21, exit end 21a, second air deflector 22, heat exchanger 3, fan wheel 4.

DETAILED DESCRIPTION

[0021] The embodiments of the present disclosure are described in detail below, and examples of the embodiments are shown in the attached drawings, throughout which the identical or similar labels are used to denote the identical or similar members or members having identical or similar functions. The embodiments described below by reference to the attached drawings are illustrative and are used only to interpret the present disclosure but should not be construed as restrictions on the present disclosure.

[0022] In the description of the present disclosure, it should be understood that the orientation or position relations indicated with the terms "center", "transverse", "length", "width", "thickness", "up", "down", "front" and "rear", "left", "right", "vertical", "horizontal", "top", "inner" and "outer" are based on the orientation or position relationships shown in the attached drawings, are used only for the convenience of describing the present disclosure and simplifying the description, rather than indicating or implying that the device or element referred to must have a particular orientation, be constructed and operated in a particular orientation, so they shall not be construed as a restriction on the present disclosure. In addition, a feature defined as "first" or "second" may, explicitly or implicitly, include one or more such features. Unless otherwise stated, the term "a plurality of' means two or more in the description of the present disclosure.

[0023] In the description of the present disclosure, it should be noted that unless otherwise expressly specified and defined, the terms "installation", "linking" and "connection" shall be understood generally, for example, it may be fixed connection, detachable connection, or integral connection; or mechanical or electrical connections; or direct linking, indirect linking through an intermediate medium, or internal connection of two components. The specific meaning of the above terms in the present disclosure may be understood on a case by case basis by ordinary technical personnel in the field.

[0024] The following part refers to Figures 1-8 to describe the indoor hanging unit 100 of the first embodiment of the present disclosure.

[0025] As shown in Figures 1-8, the indoor hanging unit as specified in the embodiment of the present disclosure comprises body 1, air deflector 2, heat exchanger 3, and fan wheel 4.

[0026] The air inlet 10a is formed at the top of body 1; air outlet 10b is formed on the front side in the lower part of body 1; front panel 11 is provided on the front side of body 1; baffle 10 is provided at the top of front panel 11; baffle 10 is positioned in front of air inlet 10a; one end of baffle 10 (for example, lower end in Figure 1 and Figure 3) is connected with the top of front panel 11; another end of baffle 10 (for example, upper end in Figure 1 and Figure 3) extends towards the direction far from air inlet 10a against front panel 11; baffle 10 and front panel 11 are integral forming parts. Here, it should be noted that "front side of body 1" denotes the side of indoor hanging unit 100 away from the wall surface.

[0027] The air deflector 2 is provided at air outlet 10b to open and close air outlet 10b. When air deflector 2 opens upward air outlet 10b against front panel 11, the air flowing out of air outlet 10b can flow upward due to the action of air deflector 2. Heat exchanger 3 is provided inside body 1. Fan wheel 4 is also provided on the side

of heat exchanger 3 far from air inlet 10a inside body 1.

[0028] For example, as shown in Figure 1-8, the heat exchange duct, which is respectively connected with air inlet 10a and air outlet 10b, is defined in body 1. Heat exchanger 3 and fan wheel 4 may be provided inside the heat exchange duct. During the operation of indoor hanging unit 100, fan wheel 4 runs to form negative pressure at air inlet 10a. The air flows into the heat exchange duct via air inlet 10a, and driven by fan wheel 4 to exchange heat with heat exchanger 3. After heat exchange, the air flows out via air outlet 10b, so as to adjust the indoor temperature.

[0029] The baffle 10 may be provided at the edge of front side in air inlet 10a; baffle 10 may extend along the left and right directions, so as to cover up body 1 and protect it from exposure, thus improve the overall appearance of indoor hanging unit 100 and realizing certain decorative effect. The lower end of baffle 10 may connect and fix with the top of front panel 11. The upper end of baffle 10 extends towards the direction far from air inlet 10a against front panel 11, so that the included angel between the extension direction of upper end of baffle 10 and the extension direction at the top of front panel 11 would exceed 0°. At such time, the upper end of baffle 10 can extend forward, extend backward, or extend vertically against the lower end of baffle 10 provided that: the upper end of baffle 10 extend towards the direction far from air inlet 10a against front panel 11, so that airflow on the surface of front panel 11 would not flow back to air inlet 10a. Here, it should be noted that "left and right directions" denote the left and right directions from the user when indoor hanging unit 100 is mounted on the wall and the user faces indoor hanging unit 100.

[0030] The baffle 10 and the front panel 11 can be processed integrally. Baffle 10 is a part of front panel 11. Therefore, it's able to reduce the number of parts for indoor hanging unit 100, and improve the molding efficiency and assembly efficiency. For example, baffle 10 and front panel 11 can be processed integrally. Optionally, baffle 10 and front panel 11 can be cast integrally. Certainly, the present disclosure is restricted to this. Based on the processed front panel 11, it's able to process baffle 10. Then, front panel 11 and baffle 10 can be molded after being processed for two times. It can be understood that regardless of the processing sequence of baffle 10 and front panel 11, baffle 10 and front panel 11 should be of integral structure after the integral processing of indoor hanging unit 100.

[0031] The air deflector 2 can be connected pivotally with body 1, so that air deflector 2 can turn to open and close air outlet 10b. When air deflector 2 closes air outlet 10b, air deflector 2 and front panel 11 transit smoothly to each other, thus ensuring pleasant appearance of indoor hanging unit 100, preventing the intrusion of dust in air into body 1 via air outlet 10b, and guaranteeing the heat exchange efficiency of indoor hanging unit 100. When air deflector 2 opens upward air outlet 10b against front panel 11, the air at air outlet 10b flows upward due to the action of air deflector 2. Then, the exit end of air deflector 2 can lean and extend upward, and indoor hanging unit 100 can run at the state of direct blow mode, breeze mode or wind-free mode, thus ensuring satisfactory comfort for the user. Due to the wall attachment effect of fluid, at least a part of airflow flows upward along the front surface of front panel 11. When the airflow reaches the top of front panel 11, because the upper end of baffle 10 extends towards the direction far from air inlet 10a against front panel 11, baffle 10 can block the airflow, so that the airflow will flow towards the direction far from air inlet 10a at the top of front panel 11. Therefore, it's able to prevent the airflow from flowing to the rear side of baffle 10 along front panel 11 and flowing back directly to air inlet 10a, avoid great temperature difference between air inlet 10a and indoor environment, thus ensuring the heat exchange efficiency of indoor hanging unit 100.

[0032] In addition, during the operation of indoor hanging unit 100, because baffle 10 is positioned in front of air inlet 10a, and the upper end of baffle 10 extends towards the direction far from air inlet 10a against front panel 11, baffle 10 can better guide the air above indoor hanging unit 100 into air inlet 10a, thus increasing the air intake of indoor hanging unit 100.

[0033] For the indoor hanging unit 100 according to the embodiment of the present disclosure, baffle 10 is provided at the top of the front panel 11 or in front of the air inlet 10a, and the another end of baffle 10 extends towards the direction far from air inlet 10a against front panel 11, so that baffle 10 can cover internal structure of body 1 and realize certain decorative effect, thus and improving the overall appearance of indoor hanging unit 100. Meanwhile, baffle 10 can stop the airflow blowing upward from air outlet 10b, so as to prevent the back flow and short circle, and guarantee the heat exchange efficiency of indoor hanging unit 100. Moreover, baffle 10 can guide the airflow at air inlet 10a to ensure the air intake of indoor hanging unit 100; by configuring baffle 10 and front panel 11 as integral forming parts, it's able to improve the molding efficiency and assembly efficiency of indoor hanging unit 100.

[0034] In some specific embodiments of the present disclosure, as shown in Figures 1-3, the included angle between the upward extension direction of one end at the top of front panel 11 and the upward extension direction of another end of baffle 10 (for example, upper end in Figure 1 and Figure 3) is defined as "β", which meets the requirement of: $30° \leq \beta \leq 100°$. Therefore, it can prevent the failure of blocking the partial airflow blowing upward from air outlet 10b due to small included angle β between front panel 11 and baffle 10, avoid the collision between baffle 10 and airflow due to big included angle β. Thus, baffle 10 can better guide the airflow blowing upward from air outlet 10b, and further guarantee the air intake.

[0035] Here, it should be noted that "included angle β" can be understood as the included angle between the upward extension direction of another end of baffle 10 and the tangential direction at the top of front panel 11.

The tangential direction is generally identical with the direction towards air inlet 10a.

[0036] Optionally, as shown in Figures 1-7, front panel 11 forms the arc structure protruding forward. Then, the front panel 11 may form an arc plate, thus further ensuring pleasant appearance for the indoor hanging unit 100.

[0037] Certainly, the front panel 11 may form a flat plate structure. For example, as shown in Figure 8, front panel 11 may extend vertically; the upper end of baffle 10 may extend forward in curve against front panel 11; the included angle α between the extension direction and vertical direction of the upper end of baffle 10 can exceed 0°; the specific number of included angle α can be configured according to actual needs.

[0038] In some embodiments of the present disclosure, as shown in Figures 1-3, baffle 10 can extend vertically or horizontally. At such time, in the horizontal direction, the upper end of baffle 10 is positioned on the rear side at the lower end of baffle 10, and the upper end of baffle 10 can be positioned on the rear side of at least partial front panel 11. That is to say, in the horizontal direction, the foremost position of indoor hanging unit 100 is located on front panel 11. Therefore, it can protect baffle 10 to some extent, and avoid the damage of baffle 10 due to collision during the movement, repair and installation of indoor hanging unit 100. Certainly, baffle 10 can extend vertically or lean and extend upward or forward.

[0039] To be specific, along the direction from one end (for example, lower end in Figure 1 and Figure 3) of baffle 10 to another end (for example, upper end in Figure 1 and Figure 3) of baffle 10, the thickness of baffle 10 reduces gradually. Moreover, one end of baffle 10 is connected with the top of front panel 11, thus guaranteeing the reliable connection between baffle 10 and front panel 11, reducing the material amount of baffle 10, and cutting the costs.

[0040] In some optional embodiments of the present disclosure, as shown in Figures 1-7, baffle 10 features flat plate structure, which is simple and easy to realize. At such time, front panel 11 may form an arc structure protruding forward, or form a flat plate structure, but are not limited to this.

[0041] In other optional embodiments of the present disclosure, baffle 10 forms the arc structure protruding forward. For example, in Figure 8, the upper end of baffle 10 extends forward against front panel 11, so that baffle 10 can better guide the airflow at air inlet 10a, and guide the airflow blowing upward from air outlet 10b. Then, front panel 11 may form a flat plate structure, or an arc structure protruding forward, but are not limited to this.

[0042] Optionally, the top surface of baffle 10 is lower than the top surface of body 1. Therefore, on the precondition of ensuring the pleasant appearance of indoor hanging unit 100, it's able to protect baffle 10 to certain extent, and prevent the damage of baffle 10 due to collision during the movement, repair and installation of indoor hanging unit 100.

[0043] It can be understood that the top surface of baffle 10 can be parallel with the top surface of body 1, so as to ensure pleasant appearance for indoor hanging unit 100 and protect baffle 10.

[0044] In some optional embodiments of the present disclosure, baffle 10 is longer than air inlet 10a in the horizontal direction. For example, as shown in Figure 1 and Figures 4-6, in the horizontal direction, baffle 10 is longer than air inlet 10a, thus further ensuring the covering effect of baffle 10. Therefore, the baffle 10 can better cover up the internal structure of body 1, protect the internal part of body 1 from exposure, and guarantee pleasant appearance for indoor hanging unit 100. Certainly, in the horizontal direction, baffle 10 can be longer than air inlet 10a, so as to ensuring the covering effect of baffle 10, and guaranteeing pleasant appearance for indoor hanging unit 100.

[0045] Optionally, the color of baffle 10 can be identical with or different from the color of front panel 11. Therefore, the color of baffle 10 and front panel 11 can be configured according to the design needs, thus further improving the appearance of indoor hanging unit 100, and meeting the needs of different users. For example, spray coating and other processes can be adopted to make the color of baffle 10 different from the color of front panel 11. Therefore, the color of baffle 10 can better match with the color of front panel 11, thus improving the decorative effect of baffle 10.

[0046] In some embodiments of the present disclosure, extension plates 111 that extend backward are respectively provided at the top, left side and right side of front panel 11. The rear surface of each extension plate 111 is provided with front panel pivoting structure 112 that can be connected pivotally with body 1. Baffle 10 is positioned between the two extension plates 111, and is respectively transitioned smoothly with the two extension plates 111. For example, as shown in Figures 4-7, two extension plates 111 can be provided symmetrically. The left end and right end of baffle 10 can respectively connect with and transit smoothly to extension plates 111, thus ensuring pleasant appearance for indoor hanging unit 100. Each front panel pivoting structure 112 may be provided with a pivotal axis. Two pivotal axes may extend horizontally towards each other. Each pivotal axis is connected pivotally with body 1, so that front panel 11 can rotate around the central axis of pivotal axis. When indoor hanging unit 100 needs to be repaired, front panel 11 can be opened directly to check the internal structure of body 1, thus facilitating the maintenance of indoor hanging unit 100.

[0047] The air conditioner according to the second embodiment of the present disclosure includes indoor hanging unit 100 according to the first embodiment of the present disclosure.

[0048] For the air conditioner according to the embodiment of the present disclosure, by adopting the indoor hanging unit 100, it's able to guarantee the heat exchange efficiency and, at the same time, improve the

appearance, molding efficiency, and assembly efficiency of the air conditioner.

[0049] For the air conditioner according to the embodiment of the present disclosure, its other compositions and operations are known to the ordinary technical personnel in the field, and will not be described in detail here.

[0050] The following part refers to Figures 1-8 to describe the indoor hanging unit 100 of the embodiment in the present disclosure. It needs to be understood that the descriptions below are only illustrative, but do not provide specific restrictions for the present disclosure.

Embodiment 1

[0051] In this embodiment, as shown in Figures 1-7, the indoor hanging unit as specified in the embodiment of the present disclosure comprises body 1, air deflector 2, heat exchanger 3, and fan wheel 4.

[0052] The air inlet 10a is formed at the top of body 1; air inlet frame 12 is provided at air inlet 10a; air can flow into body 1 via air inlet 10a, and exchange heat with heat exchanger 3 inside body 1; air outlet 10b is formed on the front side in the lower part of body 1; air outlet frame 13 is provided at air outlet 10b; face frame 14 is provided inside body 1 to support body 1; the heat exchange duct, which is respectively connected with air inlet 10a and air outlet 10b, is defined in body 1; heat exchanger 3 and fan wheel 4 may be provided inside the heat exchange duct. A rear panel is provided on the rear side of body 1; the rear panel forms a vertical flat plate to place the indoor hanging unit 100; front panel 11 is provided on the front side of body 1; front panel 11 forms an arc structure protruding forward; baffle 10 is provided at the top of front panel 11; baffle 10 and front panel 11 are integral forming parts; baffle 10 is positioned in front of air inlet 10a; baffle 10 can define the front side edge of air inlet 10a. In the horizontal direction, baffle 10 is equal to the length of air inlet 10a. Therefore, baffle 10 can better guide the airflow at air inlet 10a, ensure the air intake, and better cover up the internal structure of body 1. Generally, baffle 10 forms the flat plate structure. The lower end of baffle 10 is fixed and connected with the top of front panel 11. The upper end of baffle 10 extends towards the direction far from air inlet 10a against front panel 11. Therefore, baffle 10 slants upward and backward, and the thickness of baffle 10 reduces gradually. Then, the included angle β between the extension direction of the upper end of baffle 10 and the extension direction at the top of front panel 11 meet the requirement of: $30°\leq\beta\leq100°$. That is to say, the included angle between the upward extension direction of the upper end of baffle 10 and the tangential direction at the top of front panel 11 towards air inlet 10a is defined as "β". The top surface of baffle 10 is lower than the top surface of body 1.

[0053] As shown in Figures 4-7, extension plates 111, which extend backward, are provided at the left end and right end at the top of front panel 11. Each extension plate 111 forms an arc plate. Two extension plates 111 are arranged symmetrically. The right side edge of extension plate 111 on the left side can define the left side edge of air inlet 10a; the left side edge of extension plate 111 on the right side can define the right side edge of air inlet 10a; baffle 10 is positioned between two extension plates 111; the left end and right end of baffle 10 are respectively connected with extension plate 111; the left end and right end of baffle 10 bend smoothly respectively along the extension direction of corresponding extension plate 111; the rear surface of each extension plate 111 is provided with the front panel pivoting structure 112; each front panel pivoting structure 112 is provided with a pivotal axis; two pivotal axes may extend horizontally towards each other; each pivotal axis is connected pivotally with body 1, so that front panel 11 can rotate around the central axis of pivotal axis; the lower part of front panel 11 is connected with body 1 via fastener, so that the lower part of front panel 11 can separate from body 1 to rotate, and front panel 11 can be installed conveniently.

[0054] The air deflector 2 is provided at air outlet 10b; air deflector 2 can be connected pivotally with body 1, so that air deflector 2 can rotate against body 1; the cross section of heat exchanger 3 is generally V-shaped; fan wheel 4 is provided below heat exchanger 3 inside body 1. Therefore, on the precondition of ensuring the heat exchange efficiency, it's able to reduce the space occupied by indoor hanging unit 100.

[0055] As shown in Figures 1-3, air deflector 2 comprises first air deflector 21 and second air deflector 22. First air deflector 21 and second air deflector 22 can both form arc plates. First air deflector 21 can be turned to open and close air outlet 10b, and guide the airflow at air outlet 10b. Second air deflector 22 is provided on the internal side of first air deflector 21, and can rotate to guide the airflow at air outlet 10b. When first air deflector 21 closes air outlet 10b, first air deflector 21 protrudes and transits smoothly to front panel 11. When indoor hanging unit 100 is set at anti-direct blowing mode, breeze mode or wind-free mode, first air deflector 21 can rotate downward and open upward air outlet 10b against front panel 11. Then, second air deflector 22 rotates for certain degree, and the air (for example, the cold air after heat exchange) flows upward due to the action of first air deflector 21 and second air deflector 22. At such time, the first exit end 21a of first air deflector 21 can extend upward. Due to the wall attachment effect of fluid, at least part of the airflow can flow upward to the top of front panel 11 along the front surface of front panel 11. Baffle 10 can stop such part of airflow, so that such part of airflow can flow towards the direction far from air inlet 10a at the top of front panel 11. Therefore, it's able to prevent the back flow due to the direct back flow of airflow to air inlet 10a along front panel 11, avoid the decrease of temperature of air inlet 10a due to the cold air after heat exchange, and prevent the misguide of temperature sensor arranged at air inlet 10a, thus guaranteeing the heat exchange efficiency of indoor hanging unit 100.

[0056] Here, it should be noted that the "internal" di-

rection denotes the direction close to the center of indoor hanging unit 100. The direction opposite to the "internal" direction is defined as "external" direction. Wherein, the rotation angels and other parameters of first air deflector 21 and second air deflector 22 under different modes of indoor hanging unit 100 (including the anti-direct blowing mode, breeze mode and wind-free mode) can be configured according to actual applications, so as to better meet the demands of users.

Embodiment 2

[0057] As shown in Figure 8, this embodiment has the structure identical with that of Embodiment 1. The same keys of drawings are adopted for same components. The difference between them is: in Embodiment 2, front panel 11 forms a flat plate structure, and baffle 10 forms an arc structure. To be specific, as shown in Figure 8, front panel 11 extends vertically, and the upper end of baffle 10 extend forward against front panel 11, so that baffle 10 forms the arc structure protruding backward.

[0058] In the description of the present disclosure, the terms "an embodiment", "some embodiments" and "schematic embodiment", "example", "specific example", or "some examples" etc. means that the specific feature, structure, material or characteristic of that embodiment or example described are included in at least one embodiment or example of the present disclosure. In this description, the schematic presentation of such terms may not refer to the same embodiment or example. Moreover, the specific features, structure, material or characteristics described may be combined in an appropriate manner in any one or multiple embodiments or examples.

[0059] Although the embodiments of the present disclosure have been presented and described, the ordinary technical personnel in the field can understand that various changes, modifications, substitutions and variations of such embodiments can be made without deviating from the principles and purposes of the present disclosure, and that the scope of the present disclosure is defined by the claims and their equivalents.

Claims

1. An indoor hanging unit for an air conditioner, comprising:

   a body, formed with an air inlet at a top of the body and with an air outlet on a lower front side thereof, and provided with a front panel on a front side of the body, a baffle being provided at a top of the front panel and located in front of the air inlet, the baffle having a first end connected with the top of the front panel and a second end extending away from the air inlet with respect to the front panel, and the baffle and the front panel being formed integrally;

   an air deflector, provided at the air outlet to open and close the air outlet, so that air blown from the air outlet can flow upwards under the action of the air deflector when the air deflector opens the air outlet upwards with respect to the front panel;

   a heat exchanger provided inside the body; and

   a fan wheel provided in the body and located on a side of the heat exchanger away from the air inlet.

2. The indoor hanging unit according to claim 1, wherein an included angle between a direction along which the top of the front panel extends upwards and a direction in which the second end of the baffle extends upwards is β, and β satisfies: $30°\leq\beta\leq100°$.

3. The indoor hanging unit according to claim 2, wherein the front panel forms an arc structure protruding forward.

4. The indoor hanging unit according to any one of claims 1-3, wherein the baffle obliquely extends rearwards from bottom to top.

5. The indoor hanging unit according to any one of claims 1-4, wherein from the first end of the baffle to the second end of the baffle, a thickness of the baffle is reduced gradually.

6. The indoor hanging unit according to any one of claims 1-5, wherein the baffle has a flat plate structure, or the baffle forms an arc structure bent forward.

7. The indoor hanging unit according to any one of claims 1-6, wherein a top surface of the baffle is lower than a top surface of the body.

8. The indoor hanging unit according to any one of claims 1-7, wherein along a left-and-right direction, a length of the baffle is greater than or equal to a length of the air inlet.

9. The indoor hanging unit according to any one of claims 1-8, wherein the front panel is provided with extension plates extending backward, on a left end and a right end of the top of the front panel, and a rear surface of each extension plate is provided with a front panel pivoting structure pivotably connected with the body, wherein the baffle is located between the two extension plates, and respectively transitions smoothly to the two extension plates.

10. An air conditioner, comprising an indoor hanging unit for an air conditioner according to any one of claims 1-9.

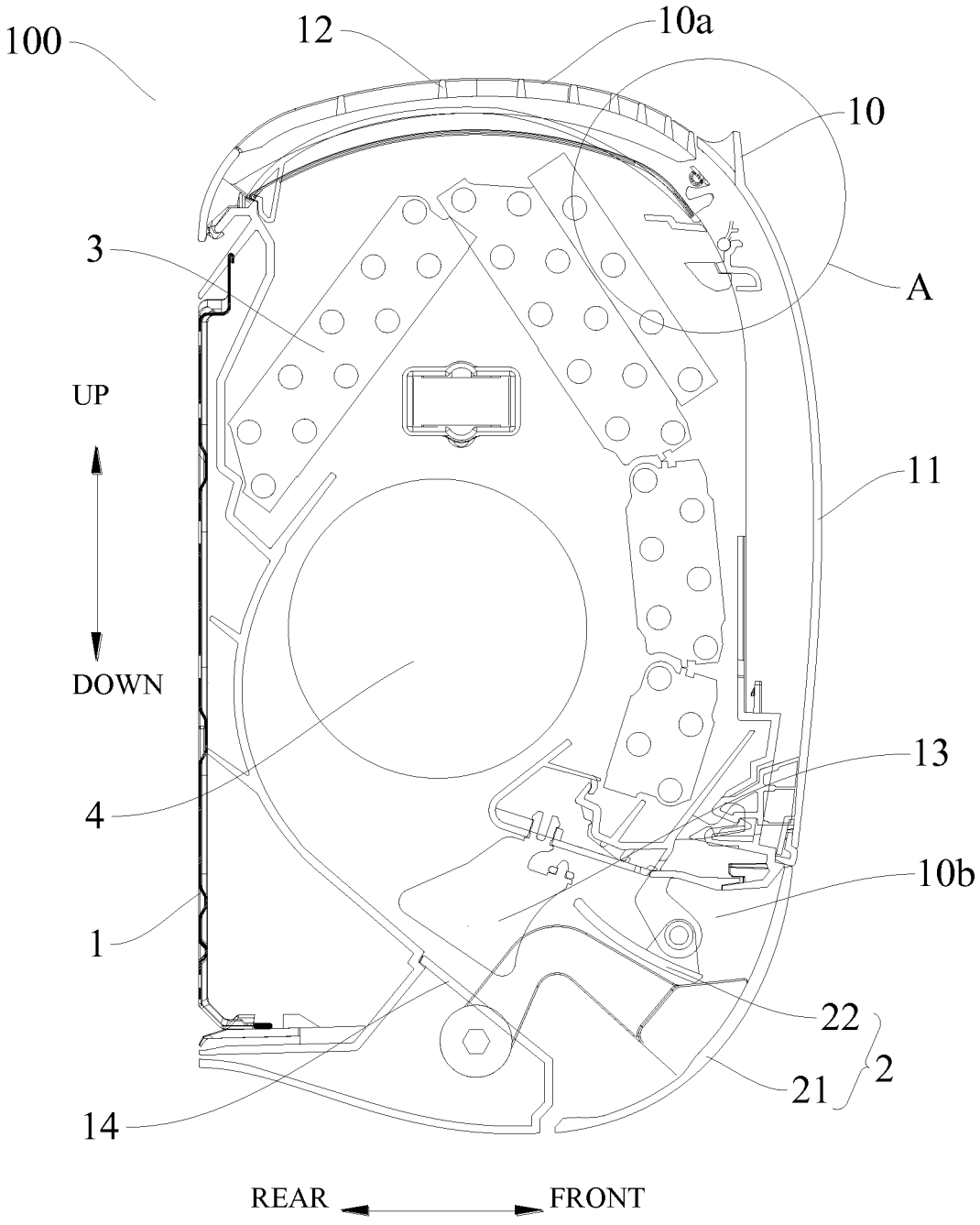

Figure 1

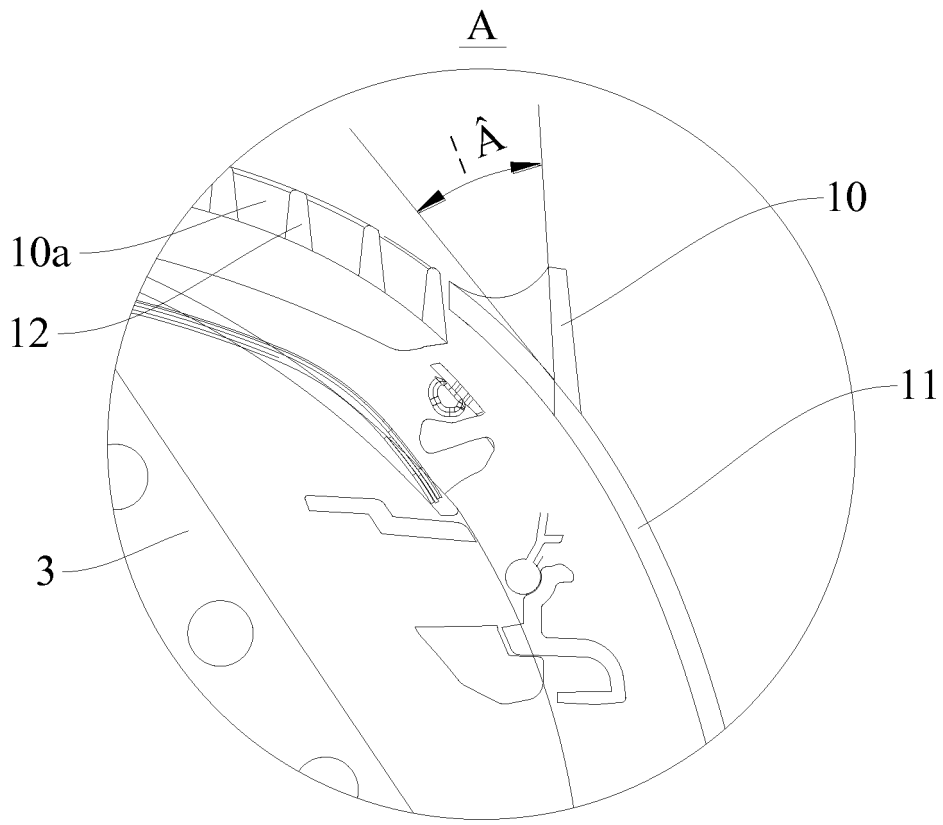

Figure 2

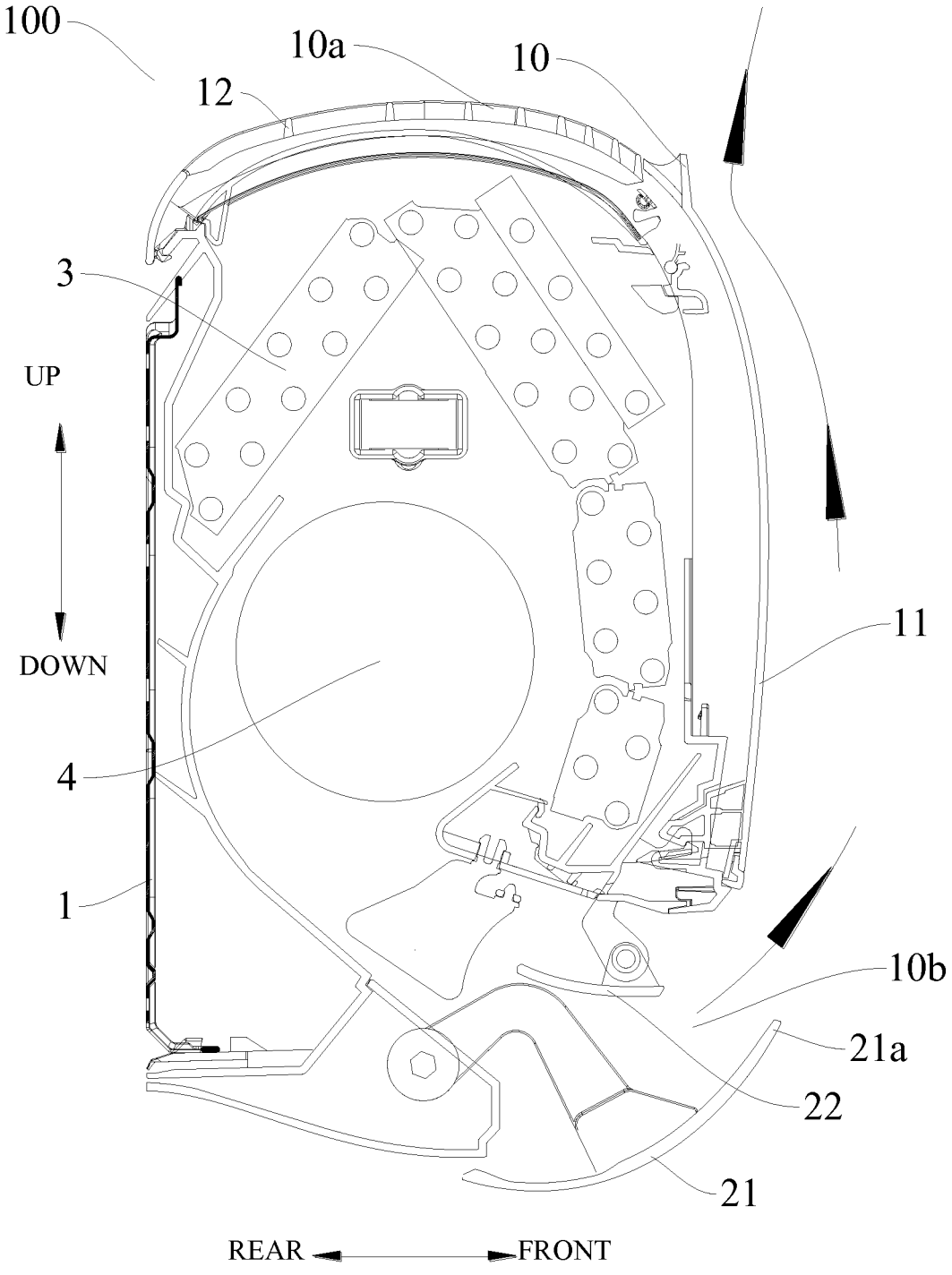

Figure 3

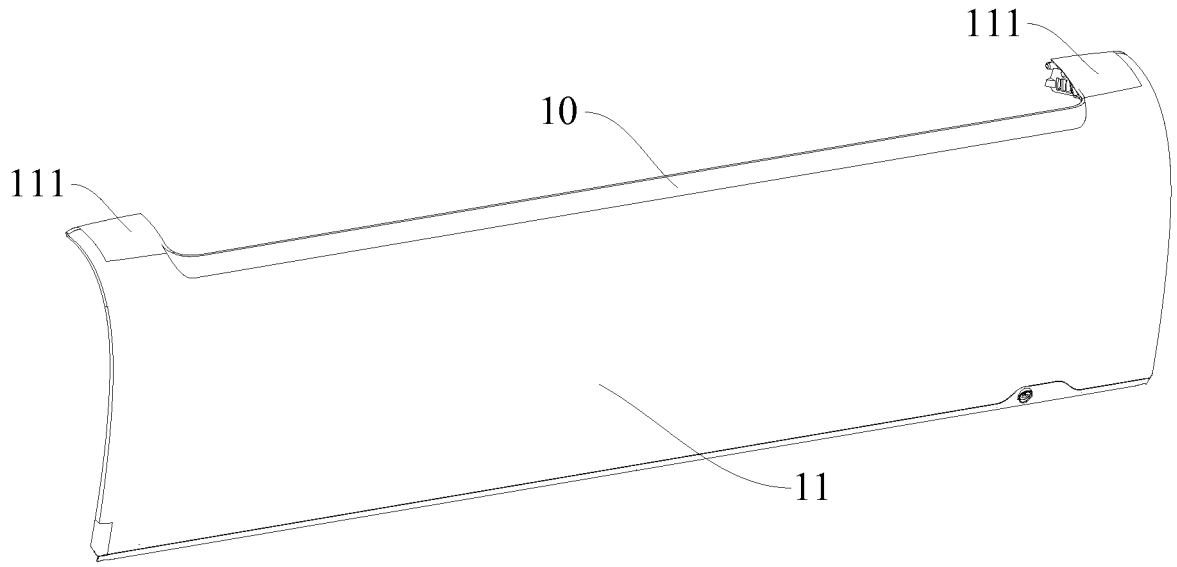

Figure 4

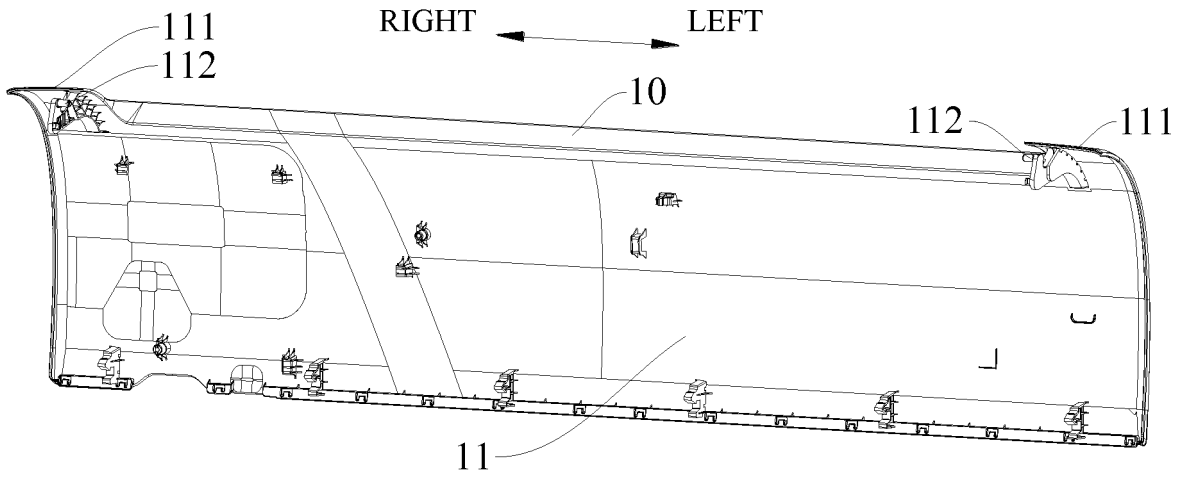

Figure 5

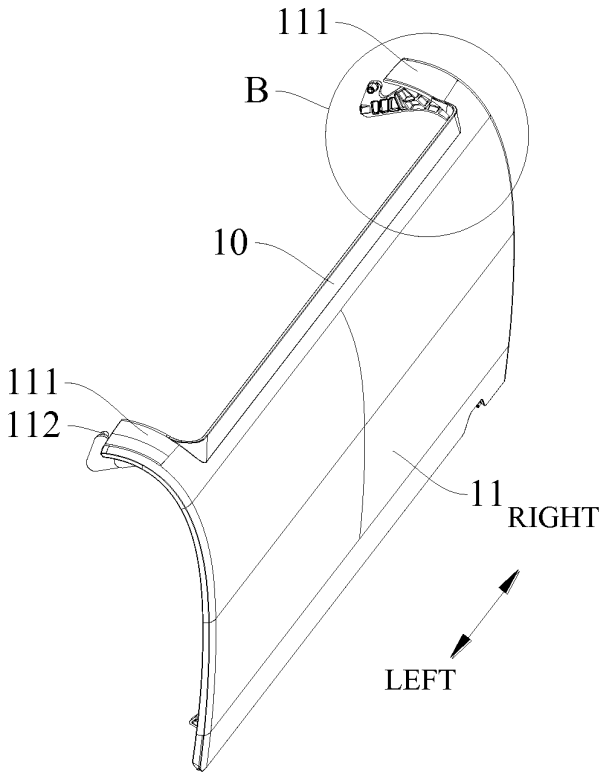

Figure 6

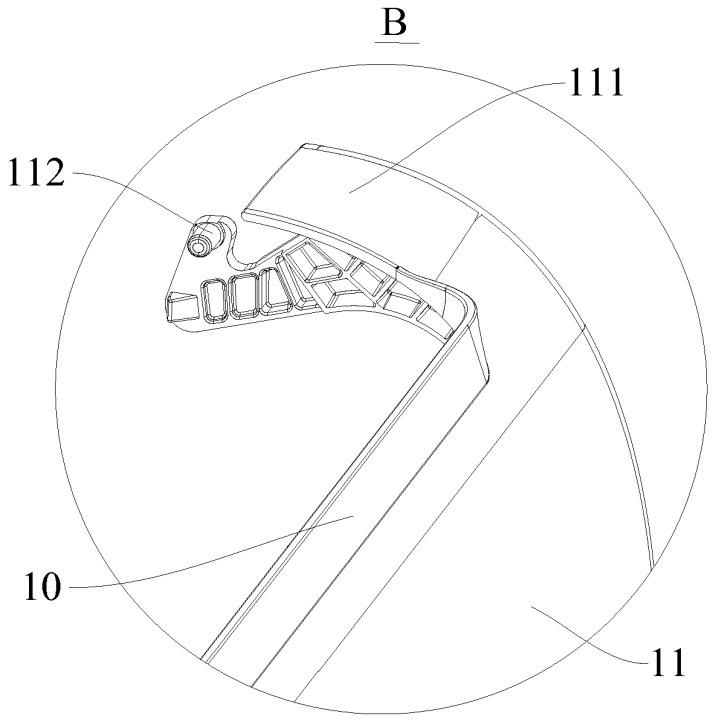

Figure 7

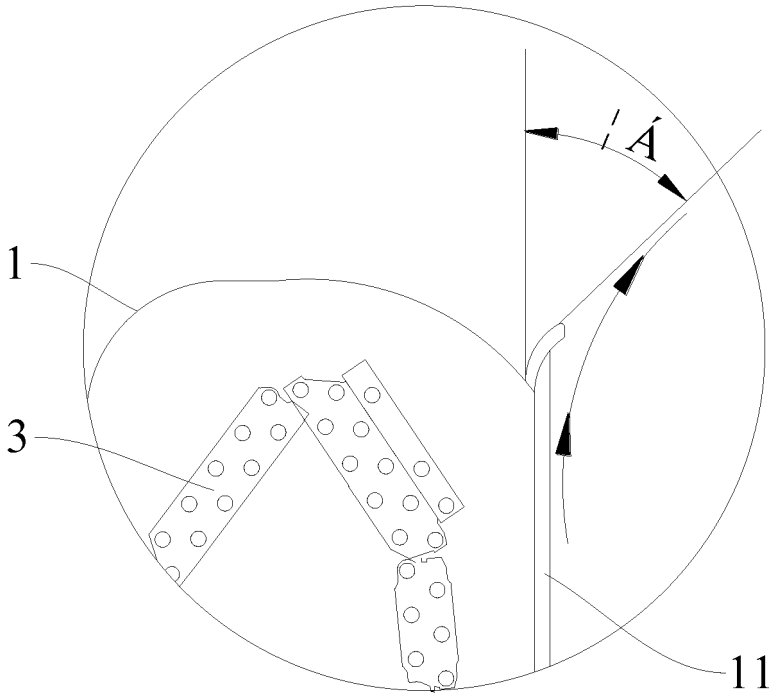

Figure 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/108051

A. CLASSIFICATION OF SUBJECT MATTER

F24F 1/00(2011.01)i; F24F 13/20(2006.01)i; F24F 13/08(2006.01)i; F24F 13/30(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)

CNPAT, CNKI, CNTXT, VEN: 空调, 室内, 挂机, 进风口, 出风口, 空气调节, 空气, 挡板, 顶, 导风板, 向上, 送风, 换热器, 风轮, 风机, 风扇, 厚度, 弧形, 弯曲, air, condition+, indoor, guide, wind, inlet, panel, baffle, outlet, upward, blow+, hang+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2003106555 A (SHARP KK) 09 April 2003 (2003-04-09) description, paragraphs [0028]-[0044], and figures 1-2	1-8, 10
Y	JP 2003106555 A (SHARP KK) 09 April 2003 (2003-04-09) description, paragraphs [0028]-[0052], and figures 1-2	9
Y	CN 204718060 U (GD MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD. ET AL.) 21 October 2015 (2015-10-21) description, paragraphs [0056]-[0059], and figure 1	9
A	CN 106958864 A (QINGDAO HAIER AIR CONDITIONER CO., LTD.) 18 July 2017 (2017-07-18) entire document	1-10
A	CN 104913443 A (GD MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD. ET AL.) 16 September 2015 (2015-09-16) entire document	1-10
A	EP 2463599 A1 (MITSUBISHI ELECTRIC CORP.) 13 June 2012 (2012-06-13) entire document	1-10

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

* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"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	Date of mailing of the international search report
17 December 2018	**07 January 2019**

Name and mailing address of the ISA/CN	Authorized officer
National Intellectual Property Administration, PRC **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing** **100088** **China**	
Facsimile No. **(86-10)62019451**	Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2018/108051

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
JP 2003106555 A	09 April 2003	None	
CN 204718060 U	21 October 2015	None	
CN 106958864 A	18 July 2017	None	
CN 104913443 A	16 September 2015	CN 104913443 B	13 October 2017
EP 2463599 A1	13 June 2012	JP 5709965 B2	30 April 2015
		EP 2463599 A4	13 December 2017
		US 9157673 B2	13 October 2015
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		WO 2011016152 A1	10 February 2011
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		US 8910492 B2	16 December 2014
		JP 2014052183 A	20 March 2014
		JP 5406930 B2	05 February 2014

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 201820181591 **[0001]**