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

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## Description

### FIELD

[0001] 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

[0002] 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.

[0003] JP 2003 106555 A relates generally to an indoor unit of an air conditioner including a front panel having an air guide portion, which re-directs air rising from the outlet of the indoor unit, such that the air circulates within the room and is prevented from re-entering the suction ports.

### SUMMARY

[0004] The purpose of the present invention is to address at least one of the technical problems existing in the related art. Therefore, the present invention 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 invention also proposes an air conditioner equipped with such indoor hanging unit.

[0006] In accordance with a first aspect of the present invention, 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 present invention, 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 im-

prove 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 invention, 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  $\beta$ , and  $\beta$  satisfies:  $30^\circ \leq \beta \leq 100^\circ$ .

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

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

[0011] According to some embodiments of the present invention, 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 invention, the baffle has a flat plate structure, or the baffle forms an arc structure bent forward.

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

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

[0015] According to the present invention, 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 a second aspect of the present invention includes the indoor hanging unit according to the first aspect of the present invention.

[0017] For the air conditioner according to the embodiments of the present invention, 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 invention 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 invention.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0019]** The above and/or additional aspects and advantages of the present invention 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 invention, 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 invention, in which the arrow direction indicates the airflow direction.

**[0020]** Reference numerals:

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 invention 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 invention but should not be construed as restrictions on the present invention.

**[0022]** In the description of the present invention, it should be understood that the orientation or position re-

lations 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 invention 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 invention. 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 invention.

**[0023]** In the description of the present invention, 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 invention 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 invention.

**[0025]** As shown in Figures 1-8, the indoor hanging unit as specified in the embodiment of the present invention 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 hang-

ing 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 angle between the extension direction of upper end of baffle 10 and the extension direction at the top of front panel 11 would exceed  $0^\circ$ . 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 manufactured 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. It is appreciated that the present invention is not restricted to this. Alternatively, after front panel 11 has been processed, it is possible to further process front panel 11 to form baffle 10. Thus, 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 invention, 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 invention, 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 " $\beta$ ", which meets the requirement of:  $30^\circ \leq \beta \leq 100^\circ$ . Therefore, it can prevent the failure of blocking the partial airflow blowing upward from air outlet 10b due to small included angle  $\beta$  between front panel 11 and baffle 10, avoid the collision between baffle 10 and airflow due to big included angle  $\beta$ . 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  $\beta$ " 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]** It is appreciated that 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  $\alpha$  between the extension direction and vertical direction of the upper end of baffle 10 can exceed  $0^\circ$ ; the specific number of included angle  $\alpha$  can be configured according to actual needs.

**[0038]** In some embodiments of the present invention, 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.

**[0039]** It is appreciated that baffle 10 may extend vertically or lean and extend upward or forward.

**[0040]** 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.

**[0041]** In some optional embodiments of the present invention, 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.

**[0042]** In other optional embodiments of the present invention, 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.

**[0043]** 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.

**[0044]** 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.

**[0045]** In some optional embodiments of the present

invention, 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. It is appreciated that 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.

**[0046]** 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.

**[0047]** According to the present invention, 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 are 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.

**[0048]** The air conditioner according to the second embodiment of the present invention includes indoor hanging unit 100 according to the first embodiment of the present invention.

**[0049]** For the air conditioner according to the embodiment of the present invention, 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.

**[0050]** For the air conditioner according to the embodiment of the present invention, its other compositions and operations are known to the ordinary technical personnel in the field, and will not be described in detail here.

**[0051]** The following part refers to Figures 1-8 to describe the indoor hanging unit 100 of the embodiment in the present invention. It needs to be understood that the descriptions below are only illustrative, but do not provide specific restrictions for the present invention.

#### Embodiment 1

**[0052]** In this embodiment, as shown in Figures 1-7, the indoor hanging unit as specified in the embodiment of the present invention comprises body 1, air deflector 2, heat exchanger 3, and fan wheel 4.

**[0053]** 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  $\beta$  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:  $30^\circ \leq \beta \leq 100^\circ$ . 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 " $\beta$ ". The top surface of baffle 10 is lower than the top surface of body 1.

**[0054]** 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.

**[0055]** 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.

**[0056]** 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.

**[0057]** Here, it should be noted that the "internal" direction 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

**[0058]** 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.

**[0059]** In the description of the present invention, 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 invention. 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.

**[0060]** Although the embodiments of the present invention 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 invention, and that the scope of the present invention is defined by the claims.

#### Claims

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

a body (1), formed with an air inlet (10a) at a top of the body and with an air outlet (10b) on a lower front side thereof, and provided with a front panel (11) on a front side of the body, a baffle (10) being provided at a top of the front panel (11) and located in front of the air inlet (10a), the baffle (10) having a first end connected with the top of the front panel (11) and a second end extending away from the air inlet (10a) with respect to the front panel (11), and the baffle (10) and the front panel (11) being formed integrally;  
an air deflector (2), provided at the air outlet (10b) to open and close the air outlet (10b), so that air blown from the air outlet (10b) can flow upwards under the action of the air deflector (2) when the air deflector (2) opens the air outlet

(10b) upwards with respect to the front panel (11);

a heat exchanger (3) provided inside the body (1); and

a fan wheel (4) provided in the body (1) and located on a side of the heat exchanger (3) away from the air inlet; **characterised in that**

the front panel (11) is provided with extension plates (111) extending backward, on a left end and a right end of the top of the front panel (11), and a rear surface of each extension plate (111) is provided with a front panel pivoting structure (112) pivotably connected with the body (1), wherein the baffle (10) is located between the two extension plates (111), and respectively transitions smoothly to the two extension plates (111).

2. The indoor hanging unit according to claim 1, wherein an included angle between a direction along which the top of the front panel (11) extends upwards and a direction in which the second end of the baffle (10) extends upwards is  $\beta$ , and  $\beta$  satisfies:  $30^\circ \leq \beta \leq 100^\circ$ .
3. The indoor hanging unit according to claim 2, wherein the front panel (11) forms an arc structure protruding forward.
4. The indoor hanging unit according to any one of claims 1-3, wherein the baffle (10) 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 (10) to the second end of the baffle (10), a thickness of the baffle (10) is reduced gradually.
6. The indoor hanging unit according to any one of claims 1-5, wherein the baffle (10) has a flat plate structure, or the baffle (10) 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 (10) is lower than a top surface of the body (1).
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 (10) is greater than or equal to a length of the air inlet.
9. An air conditioner, comprising an indoor hanging unit for an air conditioner according to any one of claims 1-8.

## Patentansprüche

1. Innen-Hängeeinheit für eine Klimaanlage, umfassend:

einen Körper (1), der mit einem Lufteinlass (10a) zuoberst an dem Körper und mit einem Luftauslass (10b) unten auf einer Vorderseite desselben gebildet ist, und der mit einer vorderen Blende (11) auf einer Vorderseite des Körpers versehen ist, wobei ein Leitelement (10) an einer Oberkante der vorderen Blende (11) bereitgestellt ist,

das sich von dem Lufteinlass (10a) befindet, wobei das Leitelement (10) ein mit der Oberkante der vorderen Blende (11) verbundenes erstes Ende und ein sich von dem Lufteinlass (10a) in Bezug auf die vordere Blende (11) weg erstreckendes zweites Ende aufweist und das Leitelement (10) und die vordere Blende (11) einstückig ausgebildet sind;

ein Luftablenkelement (2), das an dem Luftauslass (10b) bereitgestellt ist, um den Luftauslass (10b) zu öffnen und zu schließen, sodass aus dem Luftauslass (10b) geblasene Luft unter der Wirkung des Luftablenkelements (2) nach oben strömen kann, wenn das Luftablenkelement (2) den Luftauslass (10b) in Bezug auf die vordere Blende (11) nach oben öffnet;

einen Wärmetauscher (3), der in dem Körper (1) bereitgestellt ist; und

ein Gebläserad (4), das in dem Körper (1) bereitgestellt ist und sich auf einer von dem Lufteinlass abgelegenen Seite des Wärmetauschers (3) befindet, **dadurch gekennzeichnet, dass**

die vordere Blende (11) mit sich nach hinten erstreckenden Verlängerungsplatten (111) an einem linken Ende und einem rechten Ende der Oberkante der vorderen Blende (11) versehen ist, und eine hintere Oberfläche jeder Verlängerungsplatte (111) mit einer Schwenkstruktur (112) der vorderen Blende versehen ist, die schwenkbar mit dem Körper (1) verbunden ist, wobei sich das Leitelement (10) zwischen den zwei Verlängerungsplatten (111) befindet und gleichmäßig in die zwei Verlängerungsplatten (111) übergeht.

2. Innen-Hängeeinheit nach Anspruch 1, wobei ein eingeschlossener Winkel zwischen einer Richtung, entlang der sich die Oberkante der Vorderplatte (11) nach oben erstreckt, und einer Richtung, in der sich das zweite Ende des Leitelements (10) nach oben erstreckt,  $\beta$  ist und  $\beta \ 30^\circ \leq \beta \leq 100^\circ$  genügt.

3. Innen-Hängeeinheit nach Anspruch 2, wobei die vordere Blende (11) eine nach vorne vorstehende Bo-

genstruktur bildet.

4. Innen-Hängeeinheit nach einem der Ansprüche 1-3, wobei sich das Leitelement (10) schräg nach hinten von unten nach oben erstreckt.

5. Innen-Hängeeinheit nach einem der Ansprüche 1-4, wobei eine Dicke des Leitelements (10) von dem ersten Ende des Leitelements (10) zu dem zweiten Ende des Leitelements (10) allmählich verringert ist.

6. Innen-Hängeeinheit nach einem der Ansprüche 1-5, wobei das Leitelement (10) eine flache Plattenstruktur aufweist oder das Leitelement (10) eine nach vorne gekrümmte Bogenstruktur bildet.

7. Innen-Hängeeinheit nach einem der Ansprüche 1-6, wobei eine obere Oberfläche des Leitelements (10) tiefer liegt als eine obere Oberfläche des Körpers (1).

8. Innen-Hängeeinheit nach einem der Ansprüche 1-7, wobei entlang einer Links-Rechts-Richtung eine Länge des Leitelements (10) größer als oder gleich einer Länge des Lufteinlasses ist.

9. Klimaanlage, umfassend eine Innen-Hängeeinheit für eine Klimaanlage nach einem der Ansprüche 1-8.

## Revendications

1. Unité intérieure de suspension pour un climatiseur, comportant :

un corps (1), formé avec une entrée d'air (10a) au niveau d'une partie supérieure du corps et avec une sortie d'air (10b) sur un côté avant inférieur de celui-ci, et comportant un panneau avant (11) sur un côté avant du corps, une chicane (10) qui est mise en œuvre au niveau d'une partie supérieure du panneau avant (11) et située devant l'entrée d'air (10a), la chicane (10) ayant une première extrémité raccordée à la partie supérieure du panneau avant (11) et une deuxième extrémité s'étendant en s'écartant de l'entrée d'air (10a) par rapport au panneau avant (11), et la chicane (10) et le panneau avant (11) étant formés d'un seul tenant ;

un déflecteur d'air (2), mis en œuvre au niveau de la sortie d'air (10b) pour ouvrir et fermer la sortie d'air (10b), de telle sorte que l'air soufflé en provenance de la sortie d'air (10b) peut s'écouler vers le haut sous l'action du déflecteur d'air (2) quand le déflecteur d'air (2) ouvre la sortie d'air (10b) vers le haut par rapport au panneau avant (11) ;

un échangeur de chaleur (3) mis en œuvre à l'intérieur du corps (1) ; et



- une roue de ventilateur (4) mise en œuvre dans le corps (1) et située sur un côté de l'échangeur de chaleur (3) à l'opposé de l'entrée d'air ; **caractérisée en ce que**
- le panneau avant (11) comporte des plaques d'extension (111) s'étendant vers l'arrière, sur une extrémité gauche et une extrémité droite de la partie supérieure du panneau avant (11), et une surface arrière de chaque plaque d'extension (111) comporte une structure pivotante de panneau avant (112) raccordée de manière pivotante au corps (1), dans laquelle la chicane (10) est située entre les deux plaques d'extension (111), et effectue respectivement une transition de manière fluide par rapport aux deux plaques d'extension (111).
2. Unité intérieure de suspension selon la revendication 1, dans laquelle un angle inclus entre une direction le long de laquelle la partie supérieure du panneau avant (11) s'étend vers le haut et une direction dans laquelle la deuxième extrémité de la chicane (10) s'étend vers le haut est  $\beta$ , et  $\beta$  satisfait à :  $30^\circ \leq \beta \leq 100^\circ$ .
  3. Unité intérieure de suspension selon la revendication 2, dans laquelle le panneau avant (11) forme une structure en arc faisant saillie vers l'avant.
  4. Unité intérieure de suspension selon l'une quelconque des revendications 1 à 3, dans laquelle la chicane (10) s'étend de manière oblique vers l'arrière depuis le bas vers le haut.
  5. Unité intérieure de suspension selon l'une quelconque des revendications 1 à 4, dans laquelle, depuis la première extrémité de la chicane (10) jusqu'à la deuxième extrémité de la chicane (10), une épaisseur de la chicane (10) va progressivement en se réduisant.
  6. Unité intérieure de suspension selon l'une quelconque des revendications 1 à 5, dans laquelle la chicane (10) a une structure de plaque plate, ou la chicane (10) forme une structure en arc coudée vers l'avant.
  7. Unité intérieure de suspension selon l'une quelconque des revendications 1 à 6, dans laquelle une surface supérieure de la chicane (10) est inférieure par rapport à une surface supérieure du corps (1).
  8. Unité intérieure de suspension selon l'une quelconque des revendications 1 à 7, dans laquelle, le long d'une direction gauche et droite, une longueur de la chicane (10) est supérieure ou égale à une longueur de l'entrée d'air.
  9. Climatiseur, comportant une unité intérieure de suspension pour un climatiseur selon l'une quelconque des revendications 1 à 8.

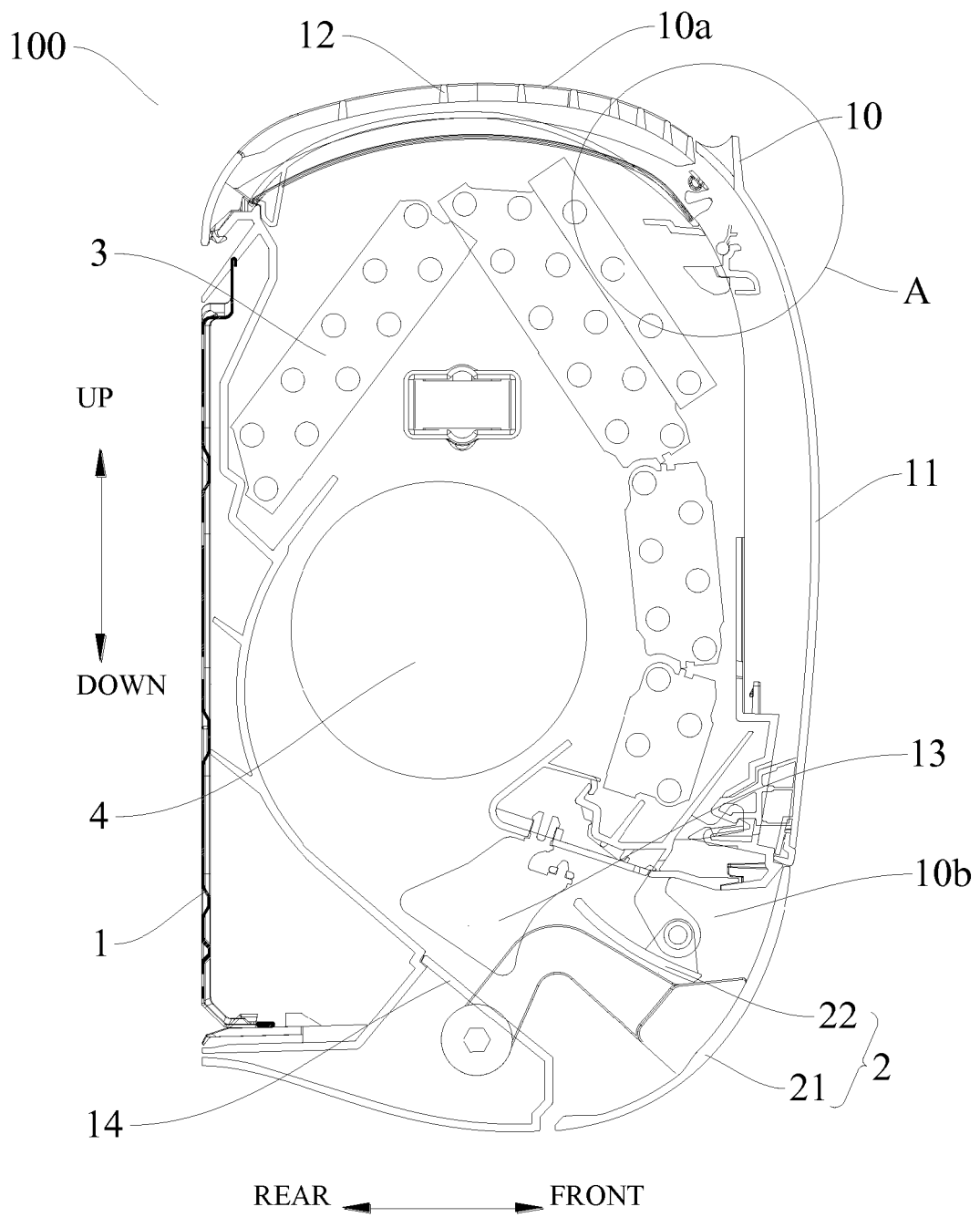


Figure 1

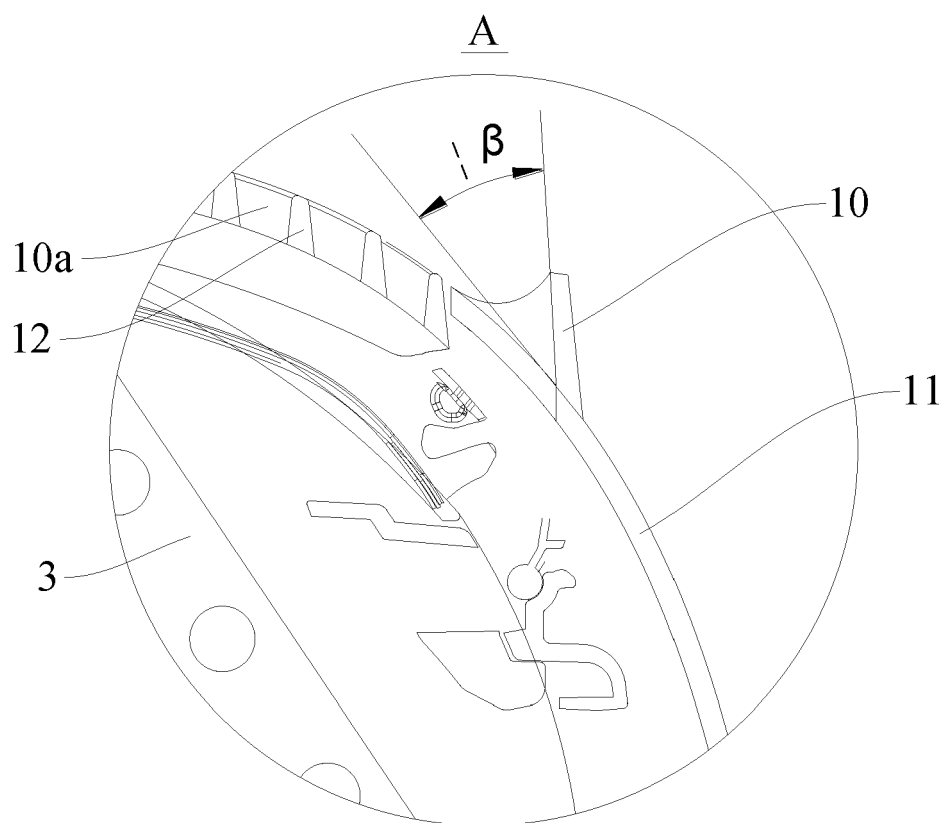


Figure 2

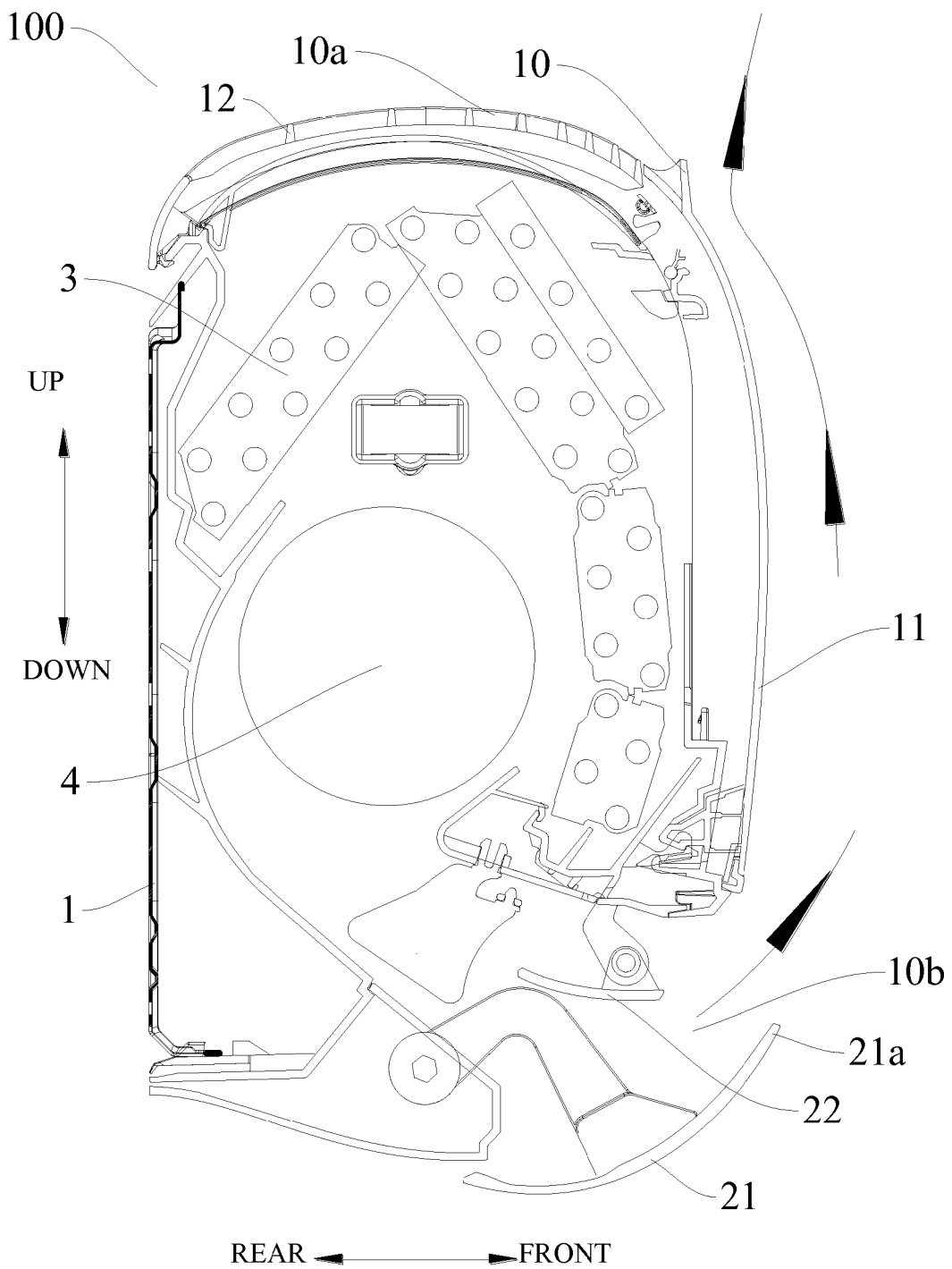


Figure 3

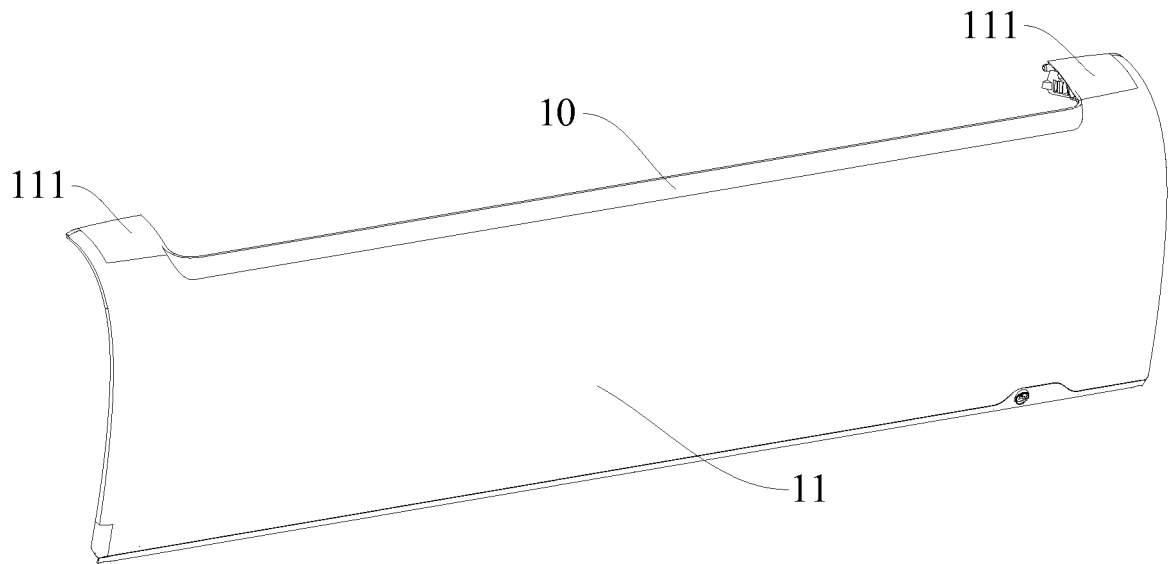


Figure 4

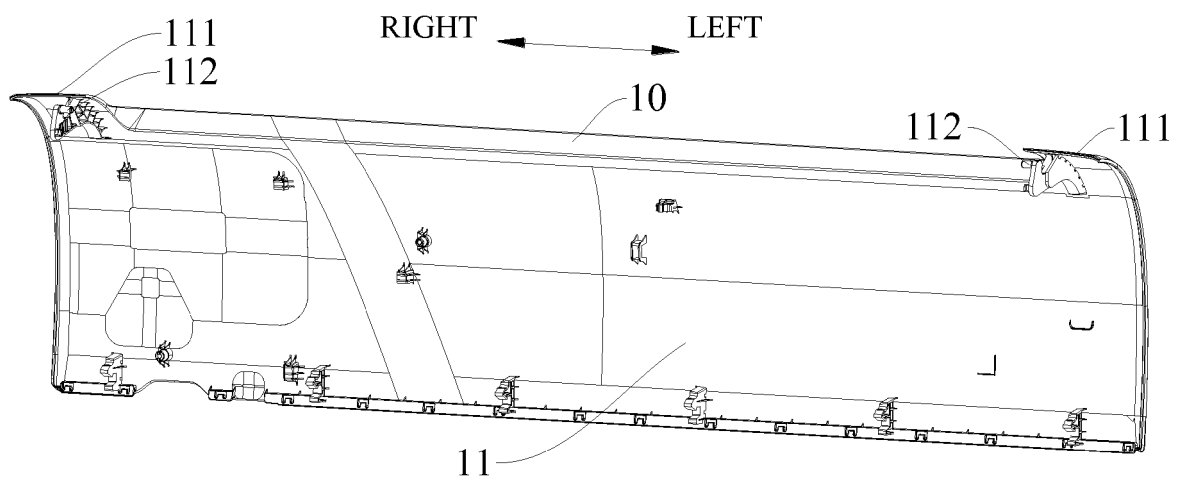


Figure 5

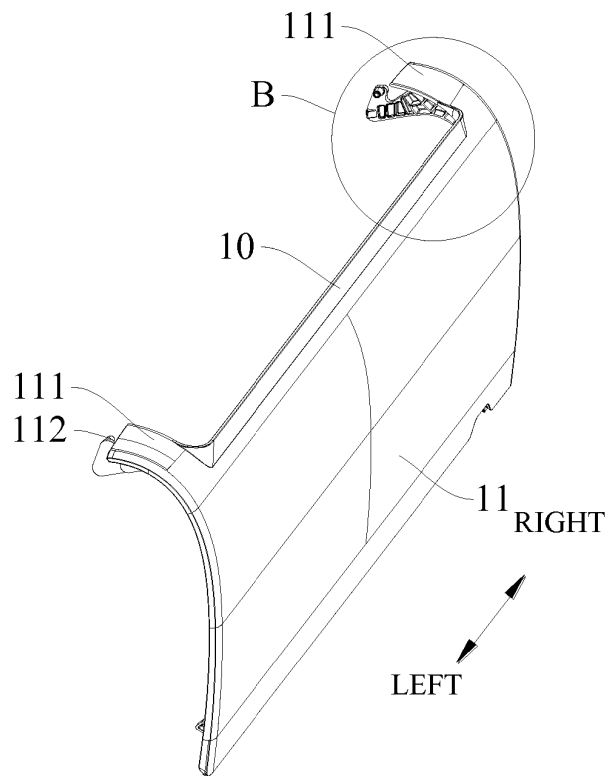


Figure 6

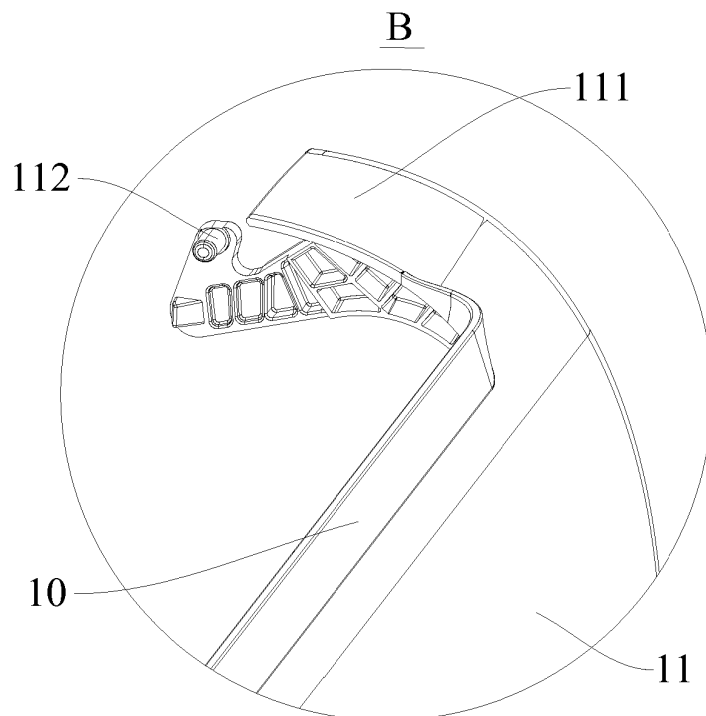


Figure 7

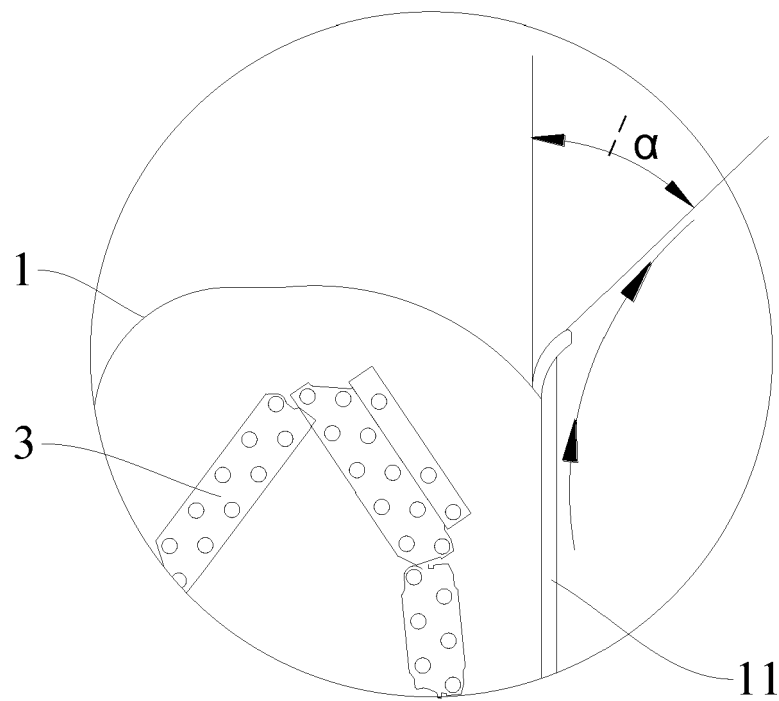


Figure 8

**REFERENCES CITED IN THE DESCRIPTION**

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