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(54) AIR CONDITIONER AIRFLOW GUIDE PLATE, COVER ASSEMBLY AND AIR CONDITIONER

(57) An air deflector (1) and a housing assembly (100) for an air conditioner, and an air conditioner (1000), wherein the air deflector (1) has a plurality of through holes (11) penetrating the air deflector in its thickness direction, and a boundary (12) extending in its length direction; when the air deflector (1) closes the air outlet (2) of the air conditioner (1000), the centerline of the through hole (11) above the boundary (12) obliquely extends upwards and the centerline of the through hole (11) below the boundary (12) obliquely extends downwards in the direction from the inside to the outside of the air deflector (1).

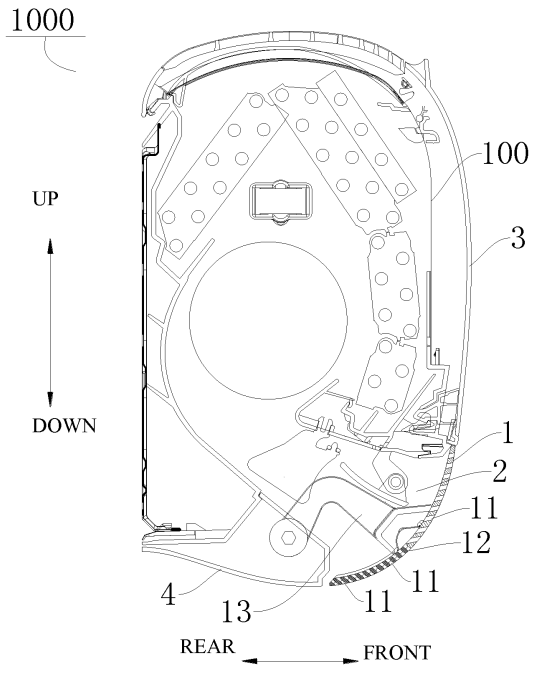

Figure 3

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Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application claims priority to and benefits of Chinese Patent Applications No. 201810098151.3 and No. 201820181566.2, both filed on January 31, 2018, the entire contents of which are incorporated herein by reference.

FIELD

[0002] The present disclosure relates to a field of air-conditioning technology, and more particularly to an air deflector and a housing assembly for an air conditioner, and an air conditioner.

BACKGROUND

[0003] The users are prone to feeling uncomfortable if being exposed to the direct blowing of the air conditioner. For example, the part of human body to which the cool air is blowing will feel very cold while other parts will feel relatively hot in the cool mode, bringing poor sense of comfort as a whole. Worse still, that will affect the health of the users and make them sick if they are exposed to the cold simulation for long time.

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 air deflector for an air conditioner, which can offer a comfortable breezeless experience to the users.

[0005] The present disclosure also proposes a housing assembly for an air conditioner, which includes the above air deflector.

[0006] The present disclosure also proposes an air condition which includes the above housing assembly.

[0007] According to the air deflector for the air conditioner in the embodiments of the present disclosure, the air deflector has a plurality of through holes penetrating the air deflector in a thickness direction of the air deflector, and has a boundary extending in a length direction thereof; when the air deflector closes the air outlet of the air conditioner, in a direction from the inside to the outside of the air deflector, a centerline of a through hole above the boundary will obliquely extend upwards and a centerline of a through hole below the boundary will obliquely extend downwards.

[0008] The air deflector for the air conditioner according to the embodiments of the present disclosure is provided with the plurality of through holes penetrating its thickness, and the centerline of the through hole above the boundary obliquely extends upwards while the centerline of the through hole below the boundary obliquely extends downwards in the direction from the inside to the outside of the air deflector, so that part of the air flow moves upwards from the horizontal direction, while another part moves downwards from the horizontal direction under the guidance of the through holes in the air deflector when the breezeless mode is activated by the user, thus preventing a large amount of air from being blown directly toward the user, so as to improve the breezeless experience of the user, and make the user feel more comfortable.

[0009] According to some embodiments of the present disclosure, a distance between an upper edge and a lower edge of the air deflector is L1, and a distance between the boundary and the upper edge of the air deflector is L2, wherein $2/5 \le L2/L1 \le 2/3$.

[0010] According to some embodiments of the present disclosure, the distance between the upper edge and the lower edge of the air deflector is L1, and the distance between the boundary and the upper edge of the air deflector is L2, wherein $3/5 \le L2/L1 \le 2/3$.

[0011] According to some embodiments of the present disclosure, an angle between the centerline of the through hole above the boundary and the horizontal plane is α, wherein α satisfies: $0 < \alpha \le 15°$.

[0012] Further, wherein α satisfies: $0 < \alpha \le 10°$.

[0013] Further, wherein α satisfies: $3° \le \alpha \le 5°$.

[0014] According to some embodiments of the present disclosure, an angle between the centerline of the through hole below the boundary and the horizontal plane is β, wherein β satisfies: $0 < \beta \le 45°$.

[0015] Further, wherein β satisfies: $0 < \beta \le 20°$.

[0016] According to some embodiments of the present disclosure, a diameter of the through hole is D, wherein D satisfies: $1mm \le D \le 3mm$.

[0017] Further, D satisfies: $1.3mm \le D \le 2.5mm$.

[0018] According to some embodiments of the present disclosure, diameters of the plurality of through holes are the same.

[0019] According to some embodiments of the present disclosure, the diameters of the through holes above the boundary increase gradually, and the diameters of the through holes below the boundary decrease gradually in a direction from top to bottom.

[0020] The housing assembly for the air conditioner according to the embodiment of the present disclosure includes the air deflector.

[0021] The air deflector for the air conditioner according to the embodiment of the present disclosure is provided with the plurality of through holes penetrating its thickness, and the centerline of the through hole above the boundary obliquely extends upwards while the centerline of the through hole below the boundary obliquely extends downwards in the direction from the inside to the outside of the air deflector, so that part of the air flow moves upwards from the horizontal direction, while another part moves downwards from the horizontal direction under the guidance of the through holes in the air deflector when the breezeless mode is activated by the user, thus preventing a large amount of air from being

blown directly toward the users, so as to improve the breezeless experience of the user, and make the user feel more comfortable.

[0022] The air conditioner according to the embodiment of the present disclosure includes the above housing assembly.

[0023] The air conditioner according to the embodiment of the present disclosure is provided with the plurality of through holes penetrating the thickness of its air deflector, and the centerline of the through hole above the boundary obliquely extends upwards while the centerline of the through hole below the boundary obliquely extends downwards in the direction from the inside to the outside of the air deflector, so that part of the air flow moves upwards from the horizontal direction, while another part moves downwards from the horizontal direction under the guidance of the through holes on the air deflector when the breezeless mode is activated by the user, thus preventing a large amount of air being blown directly toward the users, which improves the breezeless experience of the users, and makes them more comfortable.

[0024] 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 DRAWING

[0025] 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 structure diagram of air conditioner as specified in the embodiment of the present disclosure;

Figure 2 is an enlarged drawing of the position A in Figure 1;

Figure 3 is a section view of air conditioner as specified in the embodiment of the present disclosure;

Figure 4 is a structure diagram of air deflector for air conditioner as specified in the embodiment of the present disclosure;

Figure 5 is a section view of air deflector for air conditioner as specified in the embodiment of the present disclosure;

[0026] Reference numerals:

air conditioner 1000,
housing assembly 100,
air deflector 1, through hole 11, boundary 12, hook 13,
air outlet 2, front panel 3, pedestal 4.

DETAILED DESCRIPTION

[0027] 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 elements or elements 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.

[0028] In the description of the present disclosure, it should be understood that the orientation or position relations indicated with the terms "length", "thickness", "up", "down", "front", "rear", "left", "right" and "bottom" are based on the orientation or position relations 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.

[0029] 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.

[0030] The following describes the air deflector 1 for the air conditioner 1000 according to the embodiment of the present disclosure with reference to Figures 1-5.

[0031] As shown in Figure 1 and Figure 3, the air deflector 1 has a plurality of through holes 11 penetrating the air deflector in a thickness direction of the air deflector, and a boundary 12 extending in a length direction thereof (a left-right direction as shown in Figure 1); when the air deflector 1 closes the air outlet 2 of air conditioner 1000, the centerline of the through holes 11 above the boundary 12 (as shown in Figure 3) extends upwards at certain angle, while the centerline of the through holes 11 below the boundary 12 (as shown in Figure 3) extends downwards at certain angle in the direction from the inside (the side of air deflector 1 toward the inside of the air conditioner 1000) to the outside (the side of air deflector 1 toward the indoor space).

[0032] It should be noted that, as shown in Figure 1, Figure 3 and Figure 5, air conditioner 1000 may be set

to breeze mode and breezeless mode. When the breezeless mode is activated by the user, the air deflector 1 may be turned to the position on which the air outlet 2 of air conditioner 1000 is closed, so that the air will flow through the through holes 11 on the air deflector 1 for the air conditioner 1000 first before entering the indoor space; when the air flows through the through holes 11 above the boundary 12 of the air deflector 1, it will flow upwards from the horizontal direction under the guidance of the through holes 11; when the air flows through the through holes 11 below the boundary 12 of the air deflector 1, it will flow downwards from the horizontal direction under the guidance of the through holes 11, so that the air from the air outlet 2 of the air conditioner 1000 is dispersed further, therefore preventing a large amount of air being blown directly to the user, and improving the breezeless experience of the users.

[0033] The air deflector 1 for the air conditioner 1000 according to the embodiment of the present disclosure is provided with the plurality of through holes 11 through the thickness of its air deflector 1, therefore the centerline of the through holes 11 above the boundary 12 extends upwards at certain angle while the centerline of the through holes 11 below the boundary 12 extends downwards at certain angle in the direction from the inside to the outside of the air deflector 1, so that a portion of the air flow moves upwards from the horizontal direction, while another portion moves downwards from the horizontal direction under the guidance of the through holes 11 on the air deflector 1 when the breezeless mode is activated by the user, thus preventing a large amount of air being blown directly toward the users, which improves the breezeless experience of the users, and makes them more comfortable.

[0034] According to some embodiments of the present disclosure, and as shown in Figure 2 and Figure 3, the distance between the upper edge and the lower edge of the air deflector is L1, and the distance between the boundary and the upper edge of the air deflector is L2, wherein L1 and L2 satisfy: $2/5 \leq L2/L1 \leq 2/3$. Thus, the quantity of through holes 11 above the boundary 12 is different from that of through holes 11 below the boundary 12, for the convenience of controlling and defining the air flowing upwards from the air deflector 1 and the air flowing downwards from the air deflector 1.

[0035] According to some embodiments of the present disclosure, and as shown in Figure 2 and Figure 3, the distance between the upper edge and the lower edge of the air deflector 1 is L1, and the distance between the boundary 12 and the upper edge of the air deflector 1 is L2, wherein L1 and L2 satisfy: $3/5 \leq L2/L1 \leq 2/3$. Thus, the quantity of through holes 11 above the boundary 12 is different from that of through holes 11 below the boundary 12, for the convenience of controlling and defining the air flowing upwards from the air deflector 1 and the air flowing downwards from the air deflector 1.

[0036] It should be noted that the L1 between the upper edge and the lower edge of the air deflector 1 is the vertical distance between the upper edge and the lower edge of the air deflector 1, while the distance L2 between the boundary 12 and the upper edge of the air deflector 1 is the vertical distance between the boundary 12 and the upper edge of the air deflector 1 in case the air deflector 1 is of planar construction; the distance L1 between the upper edge and the lower edge of the air deflector 1 is the distance between the upper edge and the lower edge of the air deflector 1 when the air deflector 1 is unfolded fully to horizontal state, while the distance L2 between the boundary 12 and the upper edge of the air deflector 1 is the distance between the boundary 12 and the upper edge of the air deflector 1 when the air deflector 1 is unfolded fully to horizontal state in case the air deflector 1 is of curved surface construction.

[0037] According to some embodiments of the present disclosure, and as shown in Figure 1, Figure 3 and Figure 5, the angle between the centerline of the through holes 11 above the boundary 12 and the horizontal plane is α, wherein α satisfy: $0<\alpha\leq 15°$. Thus, after passing through the through holes 11 above the boundary 12, the air can flow upwards from the horizontal direction, thus preventing the air being blown directly toward the user, and offering the users breezeless comfort. In addition, it can prevent the air forming the circular flow close to the wall after flowing upwards from the air deflector 1, affecting the breezeless experience.

[0038] It should be noted that the angle α between the centerline of the through holes 11 above the boundary 12 and the horizontal plane is the angle when the air deflector 1 closes the air outlet 2 of the air conditioner 1000.

[0039] According to some embodiments of the present disclosure, α satisfies: $0<\alpha\leq 10°$. Thus, it can prevent further the air being blown directly toward the user, so that the users can feel breezeless comfort. In addition, it can prevent the air forming the circular flow close to the wall after flowing upwards from the air deflector 1, affecting the breezeless experience.

[0040] According to some embodiments of the present disclosure, α satisfies: $3°\leq\alpha\leq 5°$. Thus, it can prevent further the air being blown directly toward the user, so that the users can feel breezeless comfort. In addition, it can prevent the air forming the circular flow close to the wall after flowing upwards from the air deflector 1, affecting the breezeless experience.

[0041] According to some embodiments of the present disclosure, and as shown in Figure 1, Figure 3 and Figure 5, the angle between the centerline of the through holes 11 below the boundary 12 and the horizontal plane is β, wherein β satisfies: $0<\beta\leq 45°$. Thus, after passing through the through holes 11 below the boundary, the air can flow downwards from the horizontal direction, which prevents the air being blown directly toward the user, and thereby increases the breezeless experience of the user.

[0042] It should be noted that the angle β between the centerline of the through holes 11 below the boundary 12 and the horizontal plane is the angle when the air

deflector 1 closes the air outlet 2 of the air conditioner 1000.

[0043] According to some embodiments of the present disclosure, β satisfies: $0<\beta\leq 20°$. Thus, after passing through the through holes 11 below the boundary 12, the air can flow further downwards from the horizontal direction, which prevents the air being blown directly toward the user, and thereby increases the breezeless experience of the users further.

[0044] According to some embodiments of the present disclosure, and as shown in Figure 1 and Figure 4, the diameter of the through holes 11 is D, wherein D satisfies: $1mm\leq D\leq 3mm$. Thus, the through holes 11 can realize deflection and guidance of the air flow, which reduces the energy loss of the air flow in the guide process, lowers the energy consumption of the air conditioner 1000 in breezeless mode and improves the breezeless effect of the air conditioner 1000.

[0045] According to some embodiments of the present disclosure, D satisfies: $1.3mm\leq D\leq 2.5mm$. Thus, the through holes 11 can realize deflection and guidance of the air flow, which reduces the energy loss of the air flow in the guide process, lowers the energy consumption of the air conditioner 1000 in breezeless mode and improves the breezeless effect of the air conditioner 1000.

[0046] According to some embodiments of the present disclosure, the diameters of the plurality of through holes 11 are the same, which thereby simplifies the manufacturing procedure of the through holes 11, shortens the production cycle of the air deflector 1, lowers the production costs of the air conditioner 1000 and enhances the aesthetics of the air conditioner 1000.

[0047] According to some embodiments of the present disclosure, and as shown in Figure 1, Figure 3 and Figure 4, the diameters of the through holes 11 above the boundary 12 increases gradually, while the diameters of the through holes 11 below the boundary 12 decreases gradually in the direction from top to bottom (as shown in Figure 3). Therefore, in the direction from top to bottom, the air flow through the through holes 11 will increase gradually when it passes through the through holes 11 above the boundary 12, and will decrease gradually when it passes through the through holes 11 below the boundary 12, which thereby reduces the energy loss of air flow when passing through the through holes 11, lowers the energy consumption of the air conditioner 1000 and enhances the aesthetics of the air conditioner 1000. Meanwhile, it can prevent the air forming circular flow close to the wall after flowing upwards from the air deflector 1, affecting the breezeless experience of the user.

[0048] The following describes the housing assembly 100 as specified in the embodiment of the present disclosure with reference to the Figures 1-5.

[0049] As shown in Figure 1 and Figure 3, the housing assembly 100 as specified in the embodiment of the present disclosure comprises the air deflector 1.

[0050] The housing assembly 100 for the air conditioner 1000 according to the embodiment of the present disclosure is provided with the plurality of through holes 11 through the thickness of its air deflector 1, therefore the centerline of the through holes 11 above the boundary 12 extends upwards at certain angle while the centerline of the through holes 11 below the boundary 12 extends downwards at certain angle in the direction from the inside to the outside of the air deflector 1, so that a portion of the air flow moves upwards from the horizontal direction, while another portion moves downwards from the horizontal direction under the guidance of the through holes 11 on the air deflector 1 when the breezeless mode is activated by the user, thus preventing a large amount of air being blown directly toward the users, which improves the breezeless experience of the users, and makes them more comfortable.

[0051] The following describes the air conditioner 1000 as specified in the embodiment of the present disclosure with reference to the Figures 1-5.

[0052] As shown in Figure 1 and Figure 3, the air conditioner 1000 as specified in the embodiment of the present disclosure comprises the housing assembly 100.

[0053] The air conditioner 1000 according to the embodiment of the present disclosure is provided with the plurality of through holes 11 through the thickness of its air deflector 1, therefore the centerline of the through holes 11 above the boundary 12 extends upwards at certain angle while the centerline of the through holes 11 below the boundary 12 extends downwards at certain angle in the direction from the inside to the outside of the air deflector 1, so that a portion of the air flow moves upwards from the horizontal direction, while another portion moves downwards from the horizontal direction under the guidance of the through holes 11 on the air deflector 1 when the breezeless mode is activated by the user, thus preventing a large amount of air being blown directly toward the users, which improves the breezeless experience of the users, and makes them more comfortable.

[0054] The following describes the air conditioner 1000 as specified in the specific embodiment of the present disclosure with reference to the Figures 1-5. It should be understood that the following description is only illustrative and is used to interpret the present disclosure but should not be construed as restrictions on the present disclosure.

[0055] As shown in Figure 1, Figure 3 and Figure 4, the air conditioner 1000 of the present disclosure comprises the housing assembly 100, the pedestal 4, the front panel 3 and the rear panel, where the housing assembly 100 also comprises the air deflector 1 which is connected to the housing assembly 100 through the hook 13.

[0056] As shown in Figure 1 and Figure 3, the housing assembly 100 is provided with the air outlet 2 which is located at the bottom (the bottom as shown in Figure 3) of the front side (the front side as shown in Figure 3) of the air conditioner 1000, and extends in the length direction (the left-right direction as shown in Figure 1) of the

air conditioner 1000.

[0057] As shown in Figures 1-3, the air deflector 1 extends in the length direction (the left-right direction as shown in Figure 1) of the air conditioner 1000, and is used to close the air outlet 2 of the air conditioner 1000.

[0058] As shown in Figures 1-3, the air deflector 1 has the plurality of through holes 11 penetrating the air deflector in the thickness direction, and the boundary 12 extending in its length direction, where the centerline of the through holes 11 above the boundary 12 (as shown in Figure 3) extends upwards at certain angle while the centerline of the through holes 11 below the boundary 12 (as shown in Figure 3) extends downwards at certain angle in the direction from the inside (the side of air deflector 1 toward the air conditioner 1000) to the outside (the side of air deflector 1 toward the indoor space) of the air deflector 1.

[0059] As shown in Figures 1-3, the cross section of the air deflector 1 is arc-shaped, the distance of arc section between the upper edge and the lower edge of the air deflector 1 is L1, the distance of arc section between the boundary 12 and the upper edge of the air deflector 1 is L2, wherein L1 and L2 satisfy: $3/5 \leq L2/L1 \leq 2/3$. Thus, the quantity of through holes 11 above the boundary 12 is different from that of through holes 11 below the boundary 12, for the convenience of controlling and defining the air flowing upwards from the horizontal direction and the air flowing downwards from the horizontal direction.

[0060] As shown in Figure 1, Figure 3 and Figure 4, in the direction from top to bottom, the air flow through the through holes 11 will increase gradually when it passes through the through holes 11 above the boundary 12, and will decrease gradually when it passes through the through holes 11 below the boundary 12, which thereby reduces the energy loss of air flow when passing through the through holes 11, lowers the energy consumption of the air conditioner 1000 and enhances the aesthetics of the air conditioner 1000. Specifically, the diameter of the through holes 11 is D, wherein D satisfies: $1.3mm \leq D \leq 2.5mm$.

[0061] As shown in Figure 1, Figure 3 and Figure 5, the angle between the centerline of the through holes 11 above the boundary 12 and the horizontal plane is α, wherein α satisfies: $0<\alpha\leq 10°$, and the angle between the centerline of the through holes 11 below the boundary 12 is β, wherein β satisfies: $0<\beta\leq 20°$. Thus, after the air flows through the through holes 11 above and below the boundary 12, it can flow upwards and downwards from the air deflector respectively, which thus prevents the air being blown directly toward the user, and thereby offers the users a breezeless comfortable environment.

[0062] 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.

[0063] 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 air deflector for an air conditioner, wherein the air deflector has a plurality of through holes penetrating the air deflector in a thickness direction of the air deflector, and has a boundary extending in a length direction thereof; when the air deflector closes an air outlet of the air conditioner, a centerline of a through hole above the boundary obliquely extends upwards, while a centerline of a through hole below the boundary obliquely extends downwards, in a direction from the inside to the outside of the air deflector.

2. The air deflector according to claim 1, wherein a distance between an upper edge and a lower edge of the air deflector is L1, a distance between the boundary and the upper edge of the air deflector is L2, and L1 and L2 satisfy: $2/5 \leq L2/L1 \leq 2/3$.

3. The air deflector according to claim 2, wherein the distance between the upper edge and the lower edge of the air deflector is L1, the distance between the boundary and the upper edge of the air deflector is L2, and L1 and L2 satisfy: $3/5 \leq L2/L1 \leq 2/3$.

4. The air deflector according to any of claims 1-3, wherein an angle between the centerline of the through hole above the boundary and the horizontal plane is α, and α satisfies: $0<\alpha\leq 15°$.

5. The air deflector according to claim 4, wherein α satisfies: $0<\alpha\leq 10°$.

6. The air deflector according to claim 5, wherein α satisfies: $3°\leq\alpha\leq 5°$.

7. The air deflector according to any of claims 1-6, wherein an angle between the centerline of the through hole below the boundary and the horizontal plane is β, and β satisfies: $0<\beta\leq 45°$.

8. The air deflector according to claim 7, wherein β satisfies: $0<\beta\leq 20°$.

9. The air deflector according to any of claims 1-8, wherein a diameter of the through hole is D, and D satisfies: 1mm≤D≤3mm.

10. The air deflector according to claim 9, wherein D satisfies: 1.3mm≤D≤2.5mm.

11. The air deflector according to any of claims 1-10, wherein diameters of the plurality of through holes are the same.

12. The air deflector according to any of claims 1-11, wherein diameters of the through holes above the boundary increase gradually, while diameters of the through holes below the boundary decrease gradually, in a direction from top to bottom.

13. A housing assembly for an air conditioner, comprising an air deflector for an air conditioner according to any of claims 1-12.

14. An air conditioner, comprising a housing assembly for an air conditioner according to claim 13.

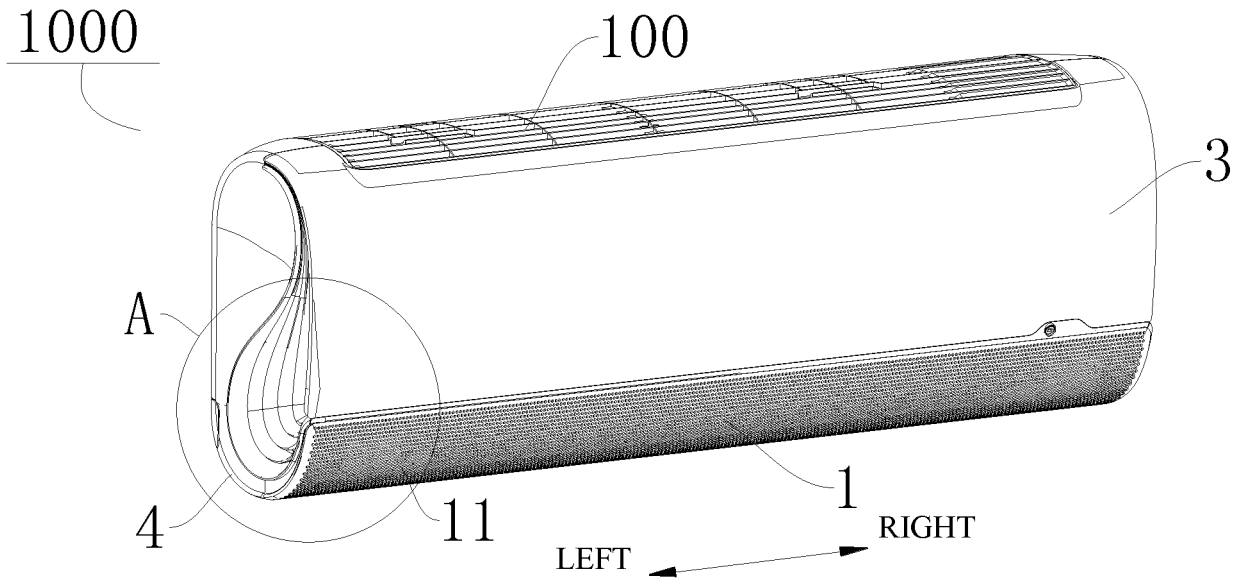

Figure 1

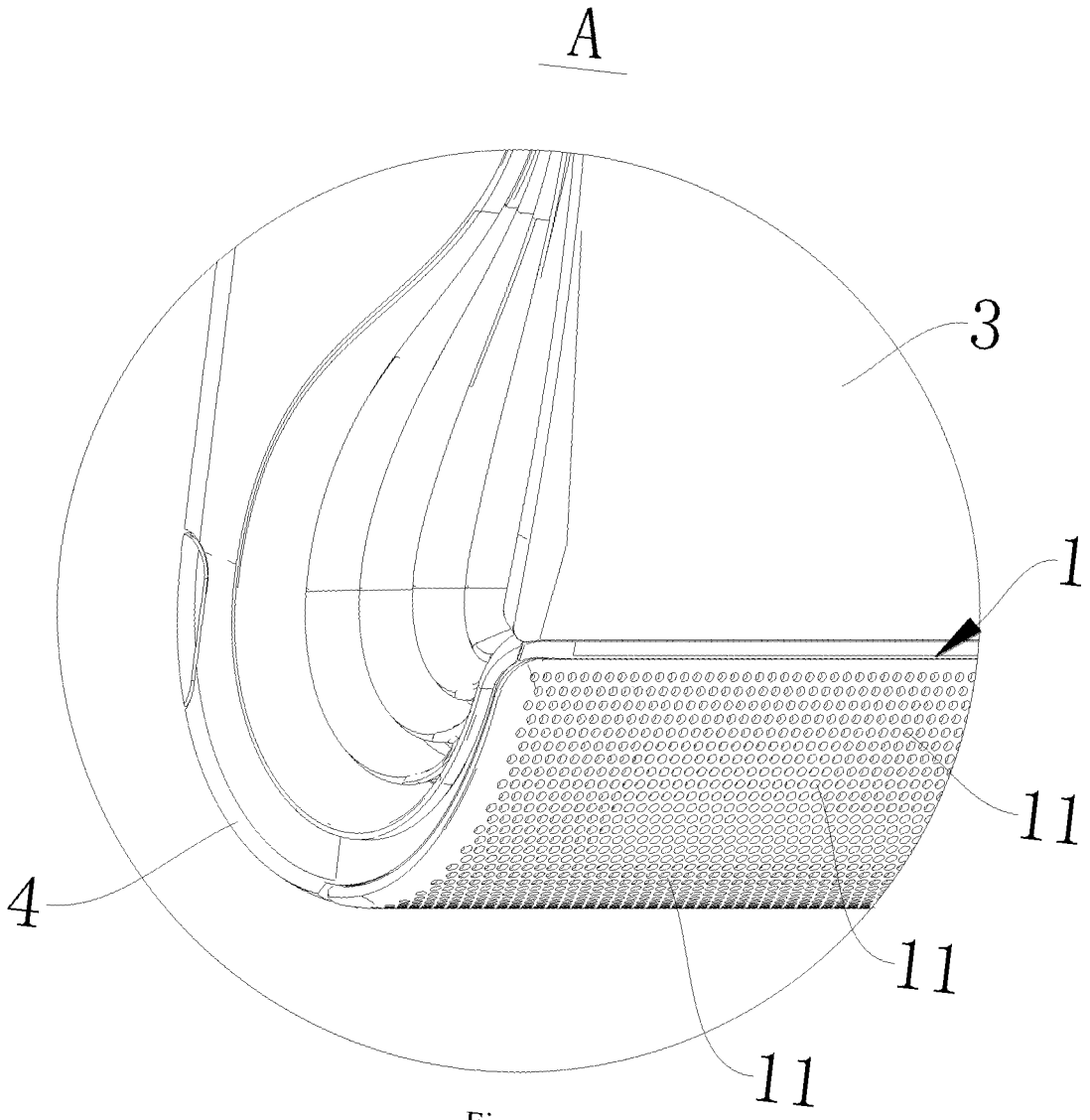

Figure 2

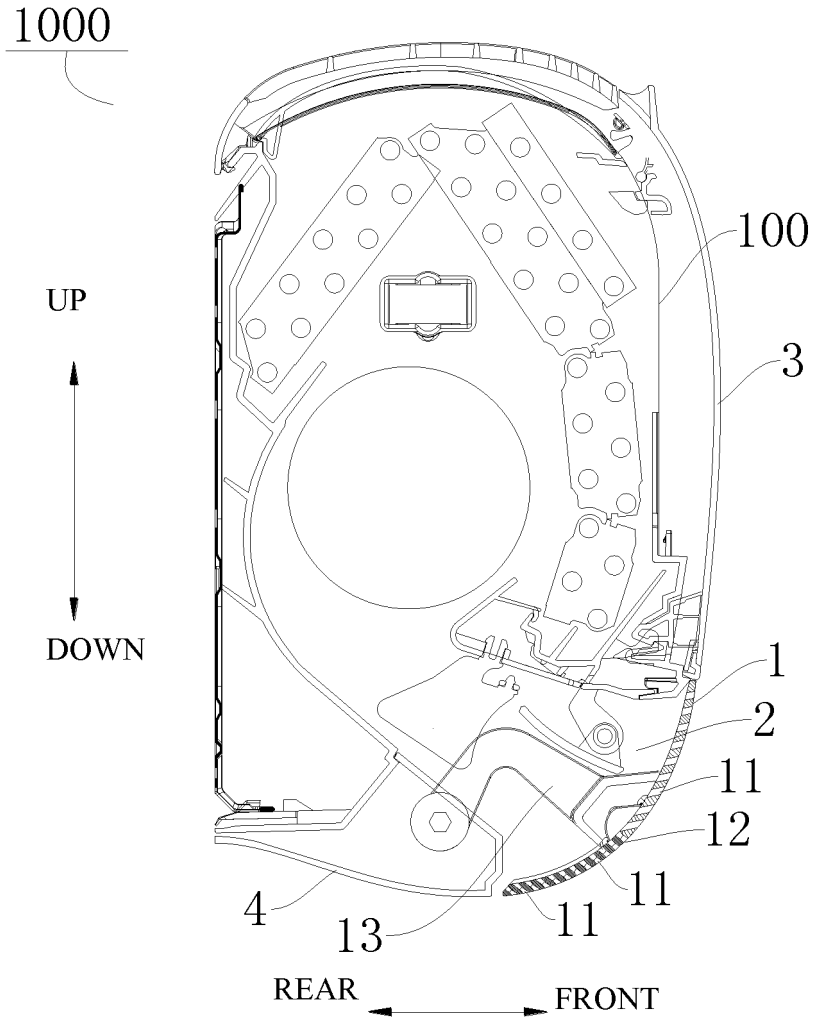

Figure 3

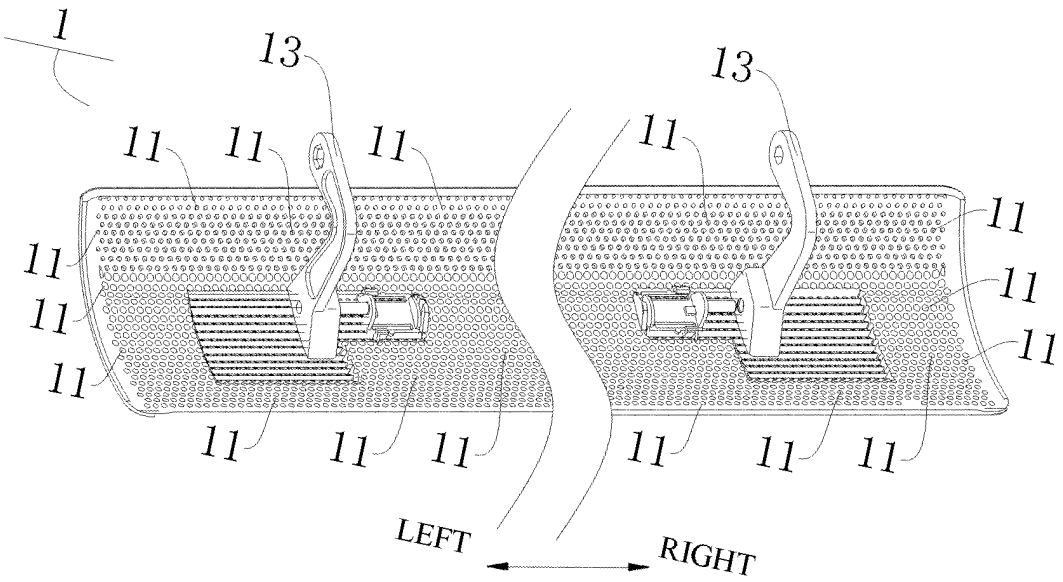

Figure 4

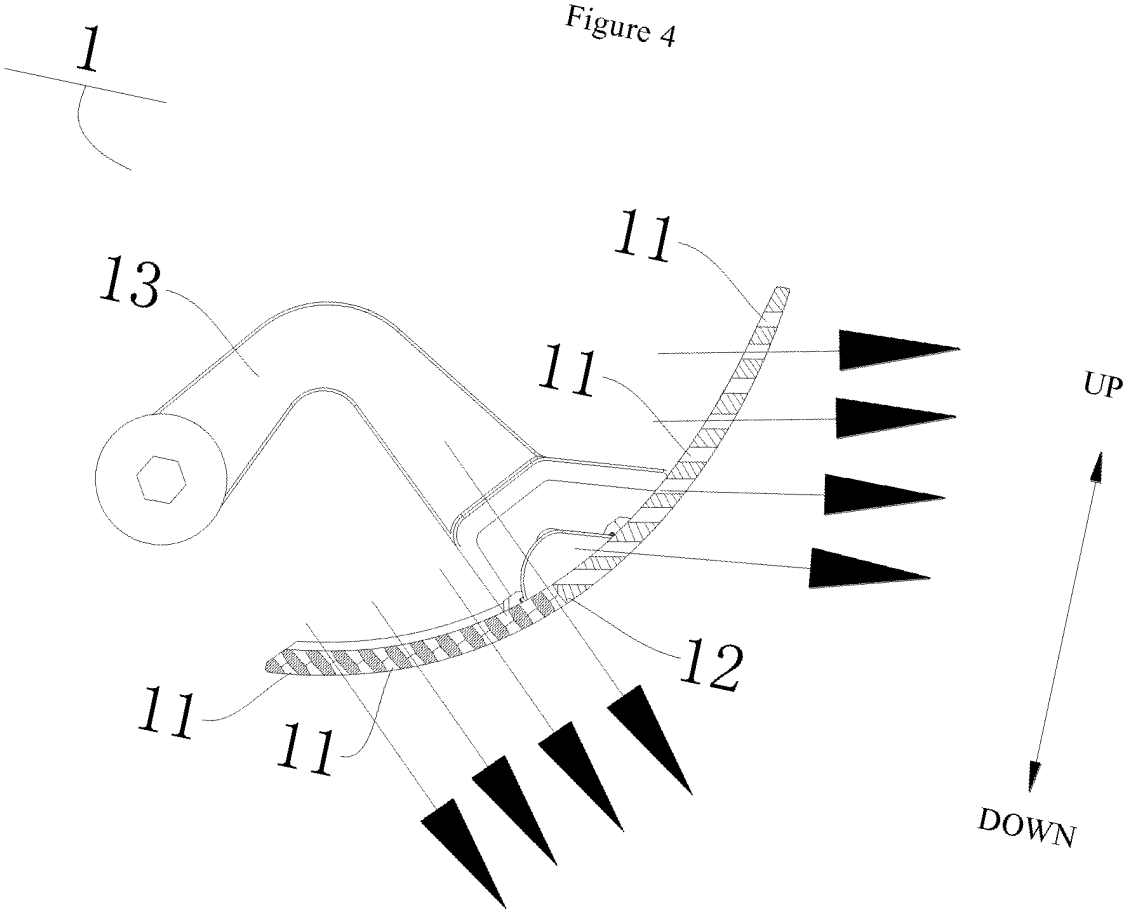

Figure 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/108048

A. CLASSIFICATION OF SUBJECT MATTER

F24F 13/14(2006.01)i; F24F 11/79(2018.01)i; F24F 1/00(2011.01)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, 空气调节, 导风板, 通孔, 分界线, 出风口, 空气, 内, 外, 长度, 上, 送风, 下, 倾斜, 孔, 散风, 导风, 中心线, 排风, air, condition+, plate, guid+, wind, hole, panel, downward, outlet, comfort+, boundary, direct+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 107084427 A (QINGDAO HAIER AIR CONDITIONER CO., LTD.) 22 August 2017 (2017-08-22) description, paragraphs [0038]-[0051], and figures 1-3	1-14
Y	CN 204786798 U (GD MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD. ET AL.) 18 November 2015 (2015-11-18) description, paragraphs [0031]-[0051], and figures 1-3	1-14
PX	CN 108105981 A (GD MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD. ET AL.) 01 June 2018 (2018-06-01) claims 1-14	1-14
A	CN 107401778 A (GD MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD.) 28 November 2017 (2017-11-28) entire document	1-14
A	JP 2006226672 A (SHARP KK) 31 August 2006 (2006-08-31) entire document	1-14

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"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
25 December 2018	**29 December 2018**
Name and mailing address of the ISA/CN **National Intellectual Property Administration, PRC** **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
Information on patent family members

International application No.
PCT/CN2018/108048

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	107084427	A	22 August 2017	None			
CN	204786798	U	18 November 2015	CN	105003965	B	02 February 2018
				CN	105003965	A	28 October 2015
CN	108105981	A	01 June 2018	None			
CN	107401778	A	28 November 2017	None			
JP	2006226672	A	31 August 2006	JP	4880345	B2	22 February 2012

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 201810098151 **[0001]**
- CN 201820181566 **[0001]**