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(54) **AIR CONDITIONER**

(57) The present invention relates to the field of air conditioning technology, and an air conditioner is provided. The air conditioner comprises: a housing and an outer air guide plate; the housing is provided with an air outlet, and the outer air guide plate is rotatably arranged on an outer wall of the housing at a position corresponding to above the air outlet, so as to guide output air of the air outlet. The present air conditioner has unique qualities of a visible air guide plate rotation process and a superior flow guiding effect.

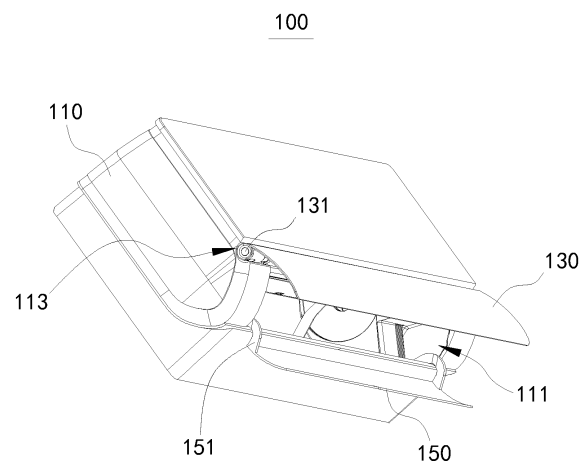


FIG. 1

Description

[0001] The present application claims priority to the Chinese patent application No. 202111013187.5, filed with the China National Intellectual Property Administration on August 31, 2021, and entitled "INDOOR UNIT AND AIR CONDITIONER", the contents of which are incorporated herein by reference in entirety.

Technical Field

[0002] The present application relates to the field of air conditioning technology, and particularly to an air conditioner.

Background Art

[0003] At present, for indoor units of air conditioners on the market, after a user sends, through a remote controller, an instruction for adjusting an angle of an air guide plate, since the air guide plate is provided inside an air outlet, a rotation process can hardly be observed, the user needs to wait for a period of time to judge whether the angle of the air guide plate is adjusted in place through feeling of skin about output air, which is quite inconvenient.

[0004] Moreover, as the air guide plate is provided inside the air outlet, a size thereof is restricted by a size of the air outlet, which results in a poor flow guiding effect thereof on the output air, and affects user experience.

Summary

[0005] In order to solve the problems of the existing air conditioners that the rotation process of the air guide plate is invisible and the flow guiding effect is poor, the present application provides an air conditioner, which adopts the following technical solutions.

[0006] Air conditioner includes a housing and an outer air guide plate, wherein the housing is provided with an air outlet, the outer air guide plate is rotatably provided on an outer wall of the housing at a position corresponding to the air outlet, so as to guide output air of the air outlet, one side of the outer air guide plate is provided with a rotating shaft, the rotating shaft is provided outside the air outlet and is located above the air outlet, and the outer air guide plate is rotatably provided on the outer wall of the housing via the rotating shaft.

[0007] By using the above technical solution, a user may observe a rotation angle of the outer air guide plate, and then adjust the output air as required, and moreover, providing the rotating shaft of the outer air guide plate outside renders a better flow guiding effect on the output air, and enables the user better experience.

[0008] Optionally, a rotating portion is provided on the outer wall of the housing at a position corresponding to above the air outlet, and the rotating shaft is rotatably fitted with the rotating portion.

[0009] By using the above technical solution, through the providing of the rotating shaft and the rotating portion, the rotation of the outer air guide plate is implemented, so that the outer air guide plate may rotate at more angles, facilitating control over the outer air guide plate, and making the rotation process and the rotation angle visible.

[0010] Optionally, a length of the outer air guide plate is greater than that of the air outlet, and/or a width of the outer air guide plate is greater than that of the air outlet.

[0011] By using the above technical solution, it is convenient for the outer air guide plate to guide the output air, when the air conditioner is not used, the outer air guide plate may cover the air outlet, and therefore, the outer air guide plate rotating to get close to the air outlet may reduce dust entering the air outlet.

[0012] Optionally, an air guide mechanism is further included, wherein the air guide mechanism is provided on the housing, and the air guide mechanism and the outer air guide plate jointly form an air guide channel capable of changing a wind direction of the output air, so as to guide the output air of the air outlet.

[0013] By using the above technical solution, the outer air guide plate guides the output air in a fixed direction, and through cooperation between the air guide mechanism and the outer air guide plate, the air guide mechanism and the outer air guide plate may change the wind direction of the output air while guiding the output air, thus better meeting user requirements, and rendering a better using effect.

[0014] Optionally, the air guide mechanism includes an inner air guide plate, the inner air guide plate is rotatably provided on the housing, and the outer air guide plate and the inner air guide plate are used to jointly form the air guide channel, so as to guide the output air of the air outlet.

[0015] By using the above technical solution, through cooperation between the inner air guide plate and the outer air guide plate, air guiding is implemented in a simplest way, and the wind direction of the output air may be changed as required by users.

[0016] Optionally, the inner air guide plate is rotatably provided on a side wall inside the air outlet and away from the outer air guide plate.

[0017] By using the above technical solution, the outer air guide plate and the inner air guide plate are provided at two sides of the air outlet, the output air at the air outlet is both guided by the outer air guide plate and the inner air guide plate, and a better air guiding effect can be obtained.

[0018] Optionally, one side of the inner air guide plate is provided with a rotating crank arm, one end of the rotating crank arm away from the inner air guide plate is rotatably connected to a side wall inside the air outlet and away from the outer air guide plate, and the rotating crank arm is configured to drive the inner air guide plate to rotate inside and outside the air outlet.

[0019] By using the above technical solution, through the providing of the rotating crank arm, the rotation angle

of the inner air guide plate is larger, and the inner air guide plate is easier to control, which facilitates the inner air guide plate in guiding the output air.

[0020] Optionally, a maximum shielding area of the outer air guide plate is greater than a maximum shielding area of the inner air guide plate.

[0021] By using the above technical solution, the shielding areas of the inner and outer air guide plates are different, so that the inner and outer air guide plates are not easy to interfere with each other during the operation.

[0022] Optionally, when the air conditioner is in a power-off state, the inner air guide plate is received in the air outlet, and the outer air guide plate shields the air outlet.

[0023] By using the above technical solution, the outer air guide plate and the inner air guide plate are not easy to interfere with each other during the operation, and in the power-off state, the outer air guide plate shields the air outlet, reducing the dust entering the air outlet and simultaneously enabling a certain protecting effect on the inner air guide plate.

[0024] Optionally, when the air conditioner operates in a heating mode from the power-off state, the inner air guide plate rotates to the outside of the air outlet, and the outer air guide plate rotates at a first angle, so as to guide airflow blown out from the air outlet to flow obliquely downwards.

[0025] By using the above technical solution, as hot air rises up, the outer air guide plate and the inner air guide plate are adjusted during heating, so that the airflow flows obliquely downwards to press down the hot air, enabling better heating effect, and the inner air guide plate rotates to the outside of the air outlet, to avoid shielding the air outlet and preventing pressing down of the hot air.

[0026] Optionally, when the air conditioner operates in a cooling mode from the power-off state, the inner air guide plate rotates to the outside of the air outlet, and the outer air guide plate rotates at a second angle, wherein the second angle is greater than the first angle.

[0027] By using the above technical solution, as cold air is different from the hot air, in order to transport the cold air farther during cooling, the cold air should not flow at an inclined downward angle, so in this case, the providing of the outer air guide plate and the inner air guide plate in such a way that the second angle is greater than the first angle makes the cold air not easy to flow obliquely downwards, and the second angle may be adjusted to be an more inclined upward angle, which is more conducive to long-distance transport of the cold air. Moreover, as the outer air guide plate is provided outside the air outlet, the outer air guide plate can be adjusted to be larger in size, so as to improve a gathering effect on the cold air, further increase a blowing distance of the cold air, prevent the cold air from falling quickly and being accumulated under the air conditioner, and improve the cooling effect.

[0028] Optionally, the outer air guide plate and the inner air guide plate are both provided in an arc shape, and when operating in a working mode, a concave arc surface

of the outer air guide plate is opposite to a concave arc surface of the inner air guide plate.

[0029] By using the above technical solution, when the air conditioner operates, the concave arc surfaces of the outer air guide plate and the inner air guide plate are opposite to each other, ensuring centralized air output at the air outlet, increasing an air blowing stroke, and further improving a flow guiding effect.

[0030] In conclusion, the present application includes at least one of the following beneficial technical effects.

1. As the outer air guide plate of the air conditioner is rotatably provided on the outer wall of the housing, the rotation process and the rotation angle thereof are visible, and the user can quickly determine whether an air guide angle of the outer air guide plate is adjusted in place. Moreover, the outer air guide plate is provided outside the air outlet, a size thereof is not restricted by a size of the air outlet, and the outer air guide plate can be adjusted to have a larger size, so as to obtain a better air guiding effect. Therefore, the air conditioner has the characteristics of a better air guiding effect and better user experience.

2. Through the providing of the inner air guide plate, the whole air guide channel is controlled through the outer air guide plate and the inner air guide plate in cooperation, and when heating or cooling is carried out, different adjustment manners are used respectively to make the wind direction changed, so that the heating or cooling effect is better and is more in line with needs of the human body.

Brief Description of Drawings

[0031]

FIG. 1 is a structural schematic diagram of an air conditioner provided in embodiments of the present application;

FIG. 2 is a sectional view of an air conditioner provided in embodiments of the present application in a power-off state;

FIG. 3 is a sectional view of an air conditioner provided in embodiments of the present application in a heating mode; and

FIG. 4 is a sectional view of an air conditioner provided in embodiments of the present application in a cooling mode.

[0032] Description of reference signs: 100. air conditioner; 110. housing; 111. air outlet; 113. rotating portion; 130. outer air guide plate; 131. rotating shaft; 150. inner air guide plate; 151. rotating crank arm.

Detailed Description of Embodiments

[0033] In order to make the above objectives, features and advantages of the present application more obvious and understandable, the present application is further described in detail below with reference to FIGS. 1-4.

[0034] Embodiments of the present application provide an air conditioner. With reference to FIG. 1, an air conditioner 100 includes a housing 110 and an outer air guide plate 130, wherein the housing 110 is provided with an air outlet 111, the outer air guide plate 130 is rotatably provided on an outer wall of the housing 110, so as to guide output air of the air outlet 111, and the outer air guide plate 130 is provided at a position corresponding to a position of the air outlet 111. One side of the outer air guide plate 130 is provided with a rotating shaft 131, wherein the rotating shaft 131 is provided outside the air outlet 111 and is located above the air outlet 111, and the outer air guide plate 130 is rotatably provided on the outer wall of the housing 110 via the rotating shaft 131. In the above, a length of the outer air guide plate 130 is greater than that of the air outlet 111 and/or a width of the outer air guide plate 130 is greater than that of the air outlet 111.

[0035] The outer air guide plate 130 is rotatably provided on the outer wall of the housing 110, a rotation process and a rotation angle thereof are visible, and a user can quickly determine whether an air guide angle of the outer air guide plate 130 is adjusted in place. Moreover, as the outer air guide plate 130 is provided outside the air outlet 111, a size thereof is not restricted by a size of the air outlet 111, and the outer air guide plate can be adjusted to have a larger size, so as to obtain a better air guiding effect. Since the length and/or width of the outer air guide plate 130 are greater than the length and/or width of the air outlet 111, the outer air guide plate 130 may completely shield the air outlet 111, and airflow of the air outlet 111 may be completely guided by the outer air guide plate 130, thus the outer air guide plate 130 has a superior flow guiding effect, and when the air conditioner 100 is not used, dust entering the air outlet 111 may be reduced, and service life of the air conditioner 100 is prolonged.

[0036] A rotating portion 113 is provided on the outer wall of the housing 110 at a position corresponding to above the air outlet 111, and the rotating shaft 131 is rotatably fitted with the rotating portion 113. In the present embodiment, in order to improve rotation tightness of the outer air guide plate 130 and prevent generation of condensation on the outer wall of the housing 110. The rotating portion 113 is provided with a groove, and the rotating shaft 131 provided on the outer air guide plate 130 is embedded in the groove and is rotatably fitted with the groove.

[0037] By providing the rotating shaft 131 and the groove, the outer air guide plate 130, when rotating, is always tightly arranged in the groove, and the output air of the air outlet 111 is guided along the outer air guide

plate 130, and is not easy to contact the outer wall of the housing 110 from a rotation position.

[0038] In order to further improve a utilization rate of the outer air guide plate 130, in the present embodiment, the groove is connected to an upper edge of the air outlet 111 and is parallel to an extension direction of the upper edge of the air outlet 111. The groove being connected to and extending in parallel with the upper edge of the air outlet 111 ensures that the outer air guide plate 130, after mounted to the groove, has air guiding effect in a wider area, which further improves an air-guiding utilization rate of the outer air guide plate 130.

[0039] In order to ensure that the outer air guide plate 130, after mounted to the groove, can fully cover the housing 110 in a horizontal direction, which avoids an uncovered region where a gap is generated on a surface of the housing 110 to cause generation of condensation. In the present embodiment, one end of the groove is formed on an end wall of one end of the housing 110 in the horizontal direction, and the other end of the groove extends to an end wall of the other end of the housing 110 in the horizontal direction. That is, the groove penetrates through two ends of the housing 110 in the horizontal direction.

[0040] After the outer air guide plate 130 is mounted to the groove, in order to implement smooth rotation, and further ensure tight fit between the outer air guide plate 130 and the housing 110 so as to prevent generation of a too big gap, in the present embodiment, a cross section of the groove is in a semi-circular arc shape.

[0041] The rotating shaft 131 is embedded in the groove, so as to realize rotatable fit between the outer air guide plate 130 and the housing 110. As the groove is recessed in the outer wall of the housing 110, outward protruding of the joint of the outer air guide plate 130 and the housing 110 is avoided, thus improving an overall aesthetic degree of the air conditioner 100.

[0042] In order to ensure the anti-condensation effect, lengths of the rotating shaft 131 and the outer air guide plate 130 are both corresponding to the length of the groove, and are both greater than the length of the air outlet 111. That is, in cases where the rotating shaft 131 is embedded in the groove, two ends of the rotating shaft 131 are coplanar with end walls of the two ends of the groove respectively, and two ends of the outer air guide plate 130 in the length direction are coplanar with the end walls of the two ends of the groove, respectively.

[0043] Referring to FIG. 1, the air conditioner 100 further includes an air guide mechanism, wherein the air guide mechanism is provided on the housing 110, and the air guide mechanism and the outer air guide plate 130 jointly form an air guide channel capable of changing a wind direction of the output air, so as to guide the output air of the air outlet 111. In the prior art, a wind direction is fixed in a direction of the air outlet 111, and the output air is only guided by the outer air guide plate 130, without changing the wind direction. By providing the air guide mechanism, the air guide mechanism cooperates with

the outer air guide plate 130, so that the wind direction may be changed to a direction showing the best effect, and the air conditioner 100 may achieve the best effect when used, and comply with use requirements of users.

[0044] The air guide mechanism includes an inner air guide plate 150, wherein the inner air guide plate 150 is rotatably provided on the housing 110, and the outer air guide plate 130 and the inner air guide plate 150 are used to jointly form the air guide channel, so as to guide the output air of the air outlet 111. The outer air guide plate 130 and the inner air guide plate 150 cooperate with each other. The inner air guide plate 150 may flexibly rotate along with the outer air guide plate 130, so as to achieve the purpose of changing the wind direction.

[0045] The inner air guide plate 150 is rotatably provided on a side wall inside the air outlet 111 and away from the outer air guide plate 130. One side of the inner air guide plate 150 is provided with a rotating crank arm 151, wherein one end of the rotating crank arm 151 away from the inner air guide plate 150 is rotatably connected to the side wall inside the air outlet 111 and away from the outer air guide plate 130. The rotating crank arm 151 increases a rotation angle range of the inner air guide plate 150, so that the inner air guide plate 150 can completely rotate out of the air outlet 111, so as to obtain a larger air guide angle.

[0046] Referring to FIG. 2, a maximum air shielding area of the outer air guide plate 130 is greater than a maximum air shielding area of the inner air guide plate 150. In a power-off state of the air conditioner 100, the inner air guide plate 150 is received in the air outlet 111, and the outer air guide plate 130 shields the air outlet 111, so that the outer air guide plate 130 and the inner air guide plate 150 are less likely to interfere with each other, and meanwhile have a certain protection effect on the inner air guide plate 150 in the power-off state.

[0047] With reference to FIG. 2 and FIG. 3, the outer air guide plate 130 and the inner air guide plate 150 are both provided in an arc shape. When the air conditioner 100 operates in a heating mode from the power-off state, the inner air guide plate 150 rotates to the outside of the air outlet 111, the outer air guide plate 130 rotates at a first angle, and the outer air guide plate 130 and the inner air guide plate 150 form an inclined downward air guide channel, so that the airflow blown out from the air outlet 111 obliquely flows downwards along a side of the outer air guide plate 130 close to the inner air guide plate 150, and in this case, a concave arc surface of the outer air guide plate 130 is opposite to a concave arc surface of the inner air guide plate 150. The outer air guide plate 130 and the inner air guide plate 150 are both provided in an arc shape. The concave surface of the outer air guide plate 130 faces one side of the outer air guide plate 130 close to the air outlet 111, and the concave surface of the inner air guide plate 150 faces one side of the inner air guide plate 150 close to the air outlet 111.

[0048] In the prior art, the air guide plate is provided in the air outlet 111, an air guiding size thereof is restricted

by the size of the air outlet 111, and the flow guiding effect on the output air is limited. During the operation of the air conditioner 100 in the heating mode, hot air will immediately float upwards after being blown out from the air outlet 111, which results in a large amount of hot air being gathered in an upper space of a room, causing the user to feel that the head is hot and feet are cold, such that the heating effect on the whole room is poor. In the present embodiment, the outer air guide plate 130 is provided outside the housing 110, the size thereof is not restricted by the size of the air outlet 111, and all the output air of the air outlet may be guided, thus the pressing down effect on the hot air is better, and the heating effect on the whole room is better. Moreover, the outer air guide plate 130 is an arc-shaped plate, with end hanging down, and has a better pressing down effect on the hot air.

[0049] With reference to FIG. 2 to FIG. 4, when the air conditioner 100 operates in a cooling mode from the power-off state, the inner air guide plate 150 rotates to the outside of the air outlet 111, the outer air guide plate 130 rotates at a second angle, in this case, the concave arc surface of the outer air guide plate 130 is opposite to the concave arc surface of the inner air guide plate 150, and the outer air guide plate 130 and the inner air guide plate 150 form an approximately horizontal air guide channel, where the second angle is greater than the first angle.

[0050] As the hot air and the cold air have different airflow distributions, the cold air needs to be transported farther in order to achieve a better cooling effect. By providing the outer air guide plate 130 outside the housing 110, the size of the outer air guide plate is not restricted by the size of the air outlet 111, and then the outer air guide plate may be provided to be longer in size, so as to ensure that the cold air can be blown farther, and improve the cooling effect. In the cooling mode, as the inner air guide plate 150 is an arc-shaped plate, with ends upturned, it is more conducive to long-distance transport of the cold air.

[0051] In conclusion, in practical application of the air conditioner 100 provided in the present embodiment, as the outer air guide plate 130 is provided on the outer wall of the housing 110, the rotation process and the rotation angle thereof are visible, and the user can quickly determine whether the outer air guide plate 130 is adjusted in place by observing with naked eyes when adjusting the air guide angle, so that the user obtains a good use feeling. Moreover, by providing the outer air guide plate 130 outside the air outlet 111, the outer air guide plate may be adjusted to a larger size, so as to obtain a better air guiding effect and prevent generation of condensation.

[0052] The implementation principle of the embodiments of the present application is as follows: when the air conditioner 100 needs to be used, the air conditioner 100 is turned on, in this case, the outer air guide plate 130 rotates to open, and after the outer air guide plate 130 is opened, the inner air guide plate 150 rotates to open, so that the air guide channel between the outer air

guide plate 130 and the inner air guide plate 150 is opened. During the operation of the heating mode, the outer air guide plate 130 and the inner air guide plate 150 rotate to form a hot air down-pressing channel, so that the airflow blown out from the air outlet 111 flows obliquely downwards, thereby rendering a better heating effect. During the operation of the cooling mode, the outer air guide plate 130 and the inner air guide plate 150 rotate to form a cold air up-rising channel, so that the airflow blown out from the air outlet may transport cold air over a long distance, thereby rendering a better cooling effect. After the use is completed, the air conditioner 100 is turned off, and in this case, first the inner air guide plate 150 rotates back into the housing 110, and then the outer air guide plate 130 rotates to cover at the air outlet 111.

[0053] The above are all preferred embodiments of the present application, but the scope of protection of the present application is not limited thereby, so: equivalent variations in structure, shape, and principle of the present application should be covered within the scope of protection of the present application.

Claims

1. An air conditioner, **characterized by** comprising a housing (110) and an outer air guide plate (130), wherein the housing (110) is provided with an air outlet (111), the outer air guide plate (130) is rotatably provided on an outer wall of the housing (110) at a position corresponding to the air outlet (111), so as to guide output air of the air outlet (111), one side of the outer air guide plate (130) is provided with a rotating shaft (131), the rotating shaft (131) is provided outside the air outlet (111) and is located above the air outlet (111), and the outer air guide plate (130) is rotatably provided on the outer wall of the housing (110) via the rotating shaft (131).
2. The air conditioner according to claim 1, wherein a rotating portion (113) is provided on the outer wall of the housing (110) at a position corresponding to above the air outlet (111), and the rotating shaft (131) is rotatably fitted with the rotating portion (113).
3. The air conditioner according to claim 1, wherein a length of the outer air guide plate (130) is greater than a length of the air outlet (111), and/or a width of the outer air guide plate (130) is greater than a width of the air outlet (111).
4. The air conditioner according to claim 1, further comprising an air guide mechanism, wherein the air guide mechanism is provided on the housing (110), and the air guide mechanism and the outer air guide plate (130) jointly form an air guide channel configured for changing a wind direction of the output air, so as to guide the output air of the air outlet (111).

5. The air conditioner according to claim 4, wherein the air guide mechanism comprises an inner air guide plate (150), the inner air guide plate (150) is rotatably provided on the housing (110), and the outer air guide plate (130) and the inner air guide plate (150) are configured to jointly form the air guide channel, so as to guide the output air of the air outlet (111).
6. The air conditioner according to claim 5, wherein the inner air guide plate (150) is rotatably provided on a side wall inside the air outlet (111) and away from the outer air guide plate (130).
7. The air conditioner according to claim 5, wherein one side of the inner air guide plate (150) is provided with a rotating crank arm (151), one end of the rotating crank arm (151) away from the inner air guide plate (150) is rotatably connected to a side wall inside the air outlet (111) and away from the outer air guide plate (130), and the rotating crank arm (151) is configured to drive the inner air guide plate (150) to rotate inside and outside the air outlet (111).
8. The air conditioner according to any one of claims 5-7, wherein a maximum shielding area of the outer air guide plate (130) is greater than a maximum shielding area of the inner air guide plate (150).
9. The air conditioner according to claim 8, wherein when the air conditioner (100) is in a power-off state, the inner air guide plate (150) is received in the air outlet (111), and the outer air guide plate (130) shields the air outlet (111) outside the air outlet (111).
10. The air conditioner according to claim 9, wherein when the air conditioner (100) operates in a heating mode from the power-off state, the inner air guide plate (150) rotates to the outside of the air outlet (111), and the outer air guide plate (130) rotates at a first angle, so as to guide airflow blown out from the air outlet (111) to flow obliquely downwards.
11. The air conditioner according to claim 9, wherein when the air conditioner (100) operates in a cooling mode from the power-off state, the inner air guide plate (150) rotates to the outside of the air outlet (111), and the outer air guide plate (130) rotates at a second angle, wherein the second angle is greater than the first angle.
12. The air conditioner according to claim 1, wherein the outer air guide plate (130) and the inner air guide plate (150) of the air conditioner are both provided in an arc shape, and when operating in a working mode, a concave arc surface of the outer air guide plate (130) is opposite to a concave arc surface of the inner air guide plate (150).

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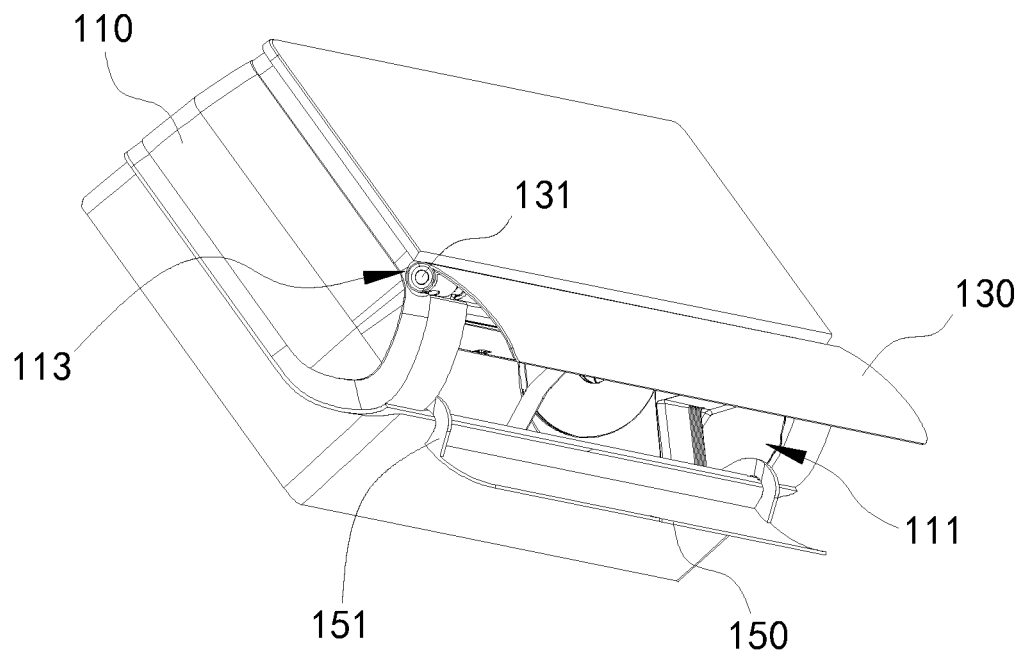


FIG. 1

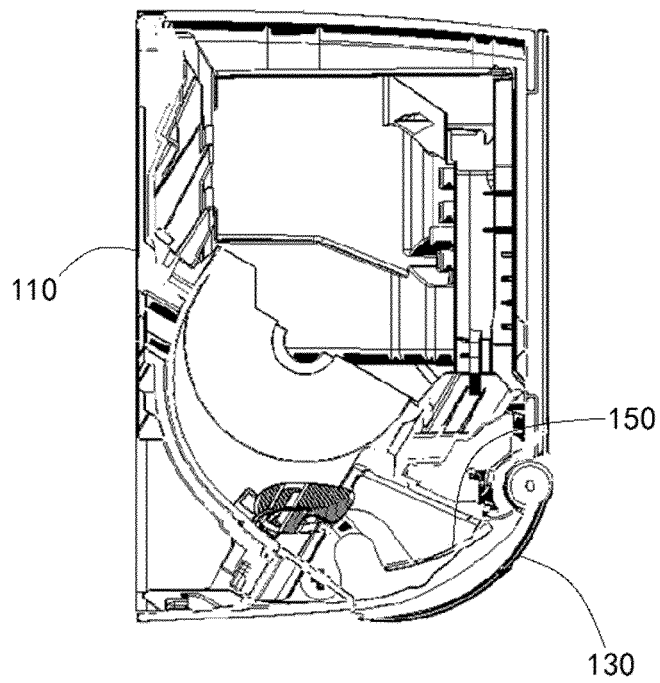


FIG. 2

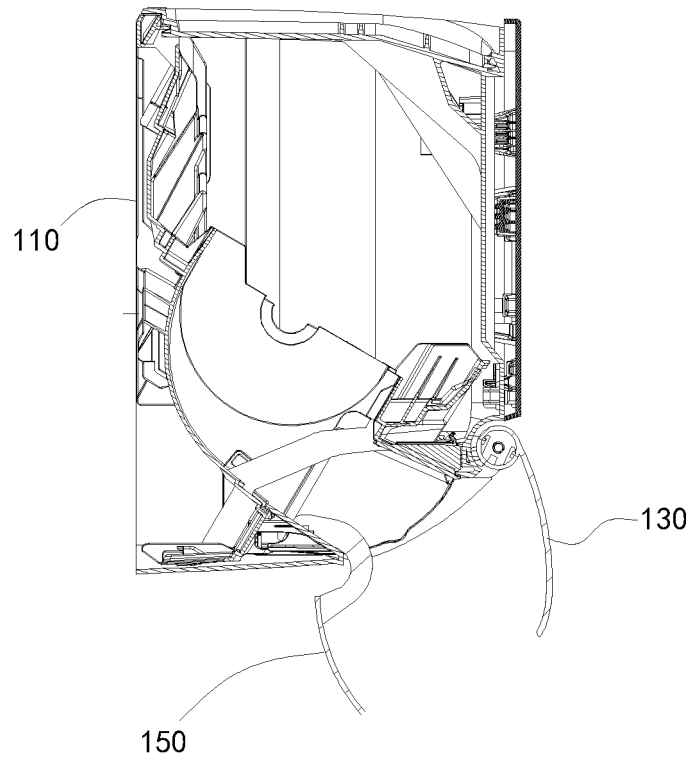


FIG. 3

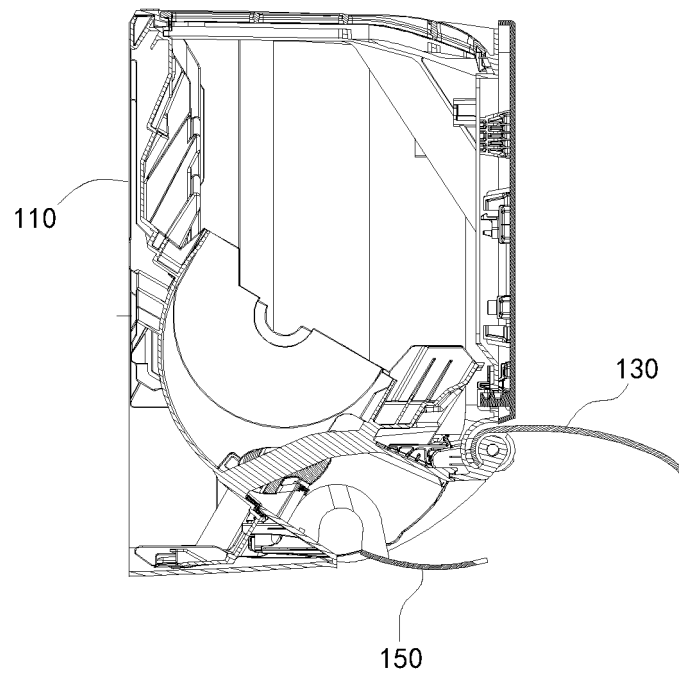


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/116336

A. CLASSIFICATION OF SUBJECT MATTER F24F 1/0011(2019.01)i; F24F 11/79(2018.01)i; F24F 13/10(2006.01)i According to International Patent Classification (IPC) or to both national classification and IPC	B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) F24F Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNABS, WPABSC, CNTXT, ENTXTC, VEN, CNKI, CJFD: 空调, 导风板, 导流, 角度, 可视, 制冷, 制热, conditioner, guide, lead, angle, visual, refrigerate, cool, heat																		
C. DOCUMENTS CONSIDERED TO BE RELEVANT	<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>CN 109974089 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 05 July 2019 (2019-07-05) description, paragraphs 40-74, and figures 1-7B</td> <td>1, 2, 4</td> </tr> <tr> <td>Y</td> <td>CN 109974089 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 05 July 2019 (2019-07-05) description, paragraphs 40-74, and figures 1-7B</td> <td>3, 5-12</td> </tr> <tr> <td>Y</td> <td>CN 108488907 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 04 September 2018 (2018-09-04) description, paragraphs 35-66, and figures 1-6</td> <td>3, 5-12</td> </tr> <tr> <td>X</td> <td>CN 111351130 A (QINGDAO HAIER AIR CONDITIONER CO., LTD. et al.) 30 June 2020 (2020-06-30) description, paragraphs 37-60, and figures 1-6</td> <td>1, 2, 4</td> </tr> <tr> <td>Y</td> <td>CN 111351130 A (QINGDAO HAIER AIR CONDITIONER CO., LTD. et al.) 30 June 2020 (2020-06-30) description, paragraphs 37-60, and figures 1-6</td> <td>3, 5-12</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	CN 109974089 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 05 July 2019 (2019-07-05) description, paragraphs 40-74, and figures 1-7B	1, 2, 4	Y	CN 109974089 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 05 July 2019 (2019-07-05) description, paragraphs 40-74, and figures 1-7B	3, 5-12	Y	CN 108488907 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 04 September 2018 (2018-09-04) description, paragraphs 35-66, and figures 1-6	3, 5-12	X	CN 111351130 A (QINGDAO HAIER AIR CONDITIONER CO., LTD. et al.) 30 June 2020 (2020-06-30) description, paragraphs 37-60, and figures 1-6	1, 2, 4	Y	CN 111351130 A (QINGDAO HAIER AIR CONDITIONER CO., LTD. et al.) 30 June 2020 (2020-06-30) description, paragraphs 37-60, and figures 1-6	3, 5-12
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☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.	<table border="1"> <tr> <td> * Special categories of cited documents: “A” document defining the general state of the art which is not considered to be of particular relevance “E” earlier application or patent but published on or after the international filing date “L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) “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 </td> <td> “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 </td> </tr> </table>	* Special categories of cited documents: “A” document defining the general state of the art which is not considered to be of particular relevance “E” earlier application or patent but published on or after the international filing date “L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) “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																
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Date of the actual completion of the international search 18 November 2022	Date of mailing of the international search report 29 November 2022																		
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China Facsimile No. (86-10)62019451	Authorized officer Telephone No.																		

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INTERNATIONAL SEARCH REPORT

International application No. PCT/CN2022/116336

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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 104697059 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD. et al.) 10 June 2015 (2015-06-10) entire document	1-12
A	CN 104110724 A (ZHUHAI GREE ELECTRIC APPLIANCES INC.) 22 October 2014 (2014-10-22) entire document	1-12

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

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Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 109974089 A	05 July 2019	CN 210241759 U	03 April 2020
CN 108488907 A	04 September 2018	CN 208154791 U	27 November 2018
CN 111351130 A	30 June 2020	CN 212252841 U	29 December 2020
CN 104697059 A	10 June 2015	None	
CN 104110724 A	22 October 2014	CN 104110724 B	17 April 2018

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 202111013187 [0001]