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(54) **AIR-CONDITIONER AIR SUPPLY APPARATUS WITH AIRFLOW DISTRIBUTION ASSEMBLY**

LUFTZUFUHRVORRICHTUNG FÜR EINE KLIMAAANLAGE MIT EINER
LUFTSTROM-VERTEILUNGSANORDNUNG

APPAREIL D'ALIMENTATION EN AIR DE CLIMATISEUR À ENSEMBLE DE DISTRIBUTION
D'ÉCOULEMENT D'AIR

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Description

BACKGROUND

Technical Field

[0001] The present invention relates to the field of air conditioning technologies, and in particular, to an air-conditioner air supply apparatus provided with an airflow distribution assembly.

Related Art

[0002] When a conventional vertical air-conditioner supplies air, air is subjected to heat exchange by a heat exchanger and is directly blown out from an air outlet provided on the air-conditioner under the action of an internal fan, and all of the blown-out air is heat-exchanged air. Generally, no additional air supply apparatus is disposed between the heat exchanger and the air outlet. One disadvantage of such an air supply method of the air-conditioner is that indoor air circulation is slow because the supplied air is all heat-exchanged air and the air flow rate is low; another disadvantage is that the supplied air is not mild enough, and especially in the cooling mode, the blown-out cool air directly blows on a user, making the user feel uncomfortable.

[0003] To solve the foregoing problems, the applicant proposed an air-conditioner air supply apparatus that can be applied to an air-conditioner. The air-conditioner air supply apparatus includes an annular cover body. A through-duct running through the annular cover body is formed in the middle of the annular cover body. An annular opening is formed on a wall of the annular cover body. A plurality of annular deflectors is disposed on the annular opening. An annular air outlet duct is formed between adjacent annular deflectors. After the air-conditioner air supply apparatus is disposed between an air-conditioner heat exchanger and an air outlet of an air-conditioner housing, the air intake volume of the air-conditioner can be increased, indoor air circulation can be accelerated, and the air-conditioner is enabled to supply milder air, thereby making the user feel more comfortable and improving the user experience. However, because the annular deflector and the annular air outlet duct are both formed on one annular cover body, it is not convenient to flexibly select and control the structure of the annular deflector and air outlet duct, resulting in a narrow application scope. Moreover, because the fan of the air-conditioner supplies air from bottom to top, the heat-exchanged air is not uniformly distributed in the circumferential direction when entering the annular air outlet duct, and the air flow rate is high at the lower end of the annular air outlet duct but low at the left and right sides of the annular air outlet duct. As a result, the air supplied by the air-conditioner air supply apparatus is not uniformly distributed in the entire circumferential direction, affecting the comfort of the user.

[0004] CN 202692257 U discloses an air conditioner according to the preamble of claim 1. The air conditioner comprises a main body, wherein the main body is provided with an air suction hole, a space and a discharged main body which is arranged in the space; an opening part and an air outlet are arranged at the discharged main body; the opening part is provided with a discharging space; air is guided by the air outlet to discharge outside the space from the periphery of the opening part; the discharged main body comprises a first main body and a second main body; the first main body is provided with a discharging space; and the air outlet is jointly formed by the second main body and the first main body and is used for guiding air blown from the main body to disperse towards the air outlet. The air conditioner has the advantages of being capable of making the discharged main body look simple and cleanly keeping the discharge space.

SUMMARY

[0005] One objective of the present invention is to provide an air-conditioner air supply apparatus provided with an airflow distribution assembly, and the airflow distribution assembly is used to distribute air in the circumferential direction of the air supply apparatus, so as to improve the uniformity of air supply.

[0006] To achieve the foregoing objective of the present invention, the present invention is implemented by means of the following technical solutions:

An air-conditioner air supply apparatus provided with an airflow distribution assembly is provided, where the air supply apparatus includes at least two annular air guiding bodies that are hollow and have front and rear openings; each annular air guiding body is a single component; the rear opening of the annular air guiding body is an air inlet, and the front opening of the annular air guiding body is an air outlet; the at least two annular air guiding bodies are arranged sequentially from front to rear, a through-duct which runs from front to end is formed in the middle; the air-conditioner air supply apparatus comprises at least one annular heat-exchanged air duct, formed between two adjacent annular air guiding bodies; an air inlet of a rear-end annular air guiding body located at the rear end is a non-heat-exchanged air inlet of the air supply apparatus; an air outlet of a front-end annular air guiding body located at the front end is a mixed air outlet of the air supply apparatus; and an airflow distribution assembly for distributing heat-exchanged air that enters the at least one annular heat-exchanged air duct from a heat exchanger of an air-conditioner that has the air-conditioner air supply apparatus is disposed in at least one of the annular heat-exchanged air ducts. The airflow distribution assembly comprises a plurality of airflow distribution plates, and the plurality of airflow distribution

plates is bilaterally symmetrically arranged in a circumferential direction of the annular heat-exchanged air duct, and along an air supply direction of the heat-exchanged air. The invention is characterized in that the plurality of airflow distribution plates are bent distribution plates of the same bending direction, and the bending direction of the plurality of airflow distribution plates is reverse to the air supply direction of the heat-exchanged air.

[0007] In the air-conditioner air supply apparatus described above, the airflow distribution assembly for uniformly distributing, in a circumferential direction of the at least one annular heat-exchanged air duct, the heat-exchanged air that enters the at least one annular heat-exchanged air duct is disposed in the at least one annular heat-exchanged air duct.

[0008] In the air-conditioner air supply apparatus described above, the airflow distribution assembly is disposed in all the annular heat-exchanged air ducts.

[0009] In the air-conditioner air supply apparatus described above, there are at least three annular air guiding bodies, the airflow distribution assembly is disposed on the annular air guiding body located in the middle position, and extends into inner and outer two annular heat-exchanged air ducts formed by the annular air guiding bodies.

[0010] Preferably, the annular air guiding body located in the middle position is integrally formed with the airflow distribution assembly disposed on the annular air guiding body.

[0011] Compared with the prior art, the present invention has the following advantages and positive effects:

1. After the air-conditioner air supply apparatus of the present invention is applied in an air-conditioner, when heat-exchanged air in an internal air duct of the air-conditioner is blown out from a front end of a through-duct, part of external non-heat-exchanged air that is not subjected to heat exchange is sucked under the negative pressure, and becomes part of the air finally supplied from the air-conditioner, which increases the overall air intake volume of the air-conditioner, accelerates indoor air circulation, and further improves the overall uniformity of indoor air. Moreover, the mixed air is mild, which makes the user feel more comfortable, thereby improving the comfort of the user.

2. A plurality of annular air guiding bodies in a form of a single component is combined to form an air-conditioner air supply apparatus, so that it is convenient to control flexibly the structure of each annular air guiding body according to requirements of air supply, and to manufacture conveniently annular air guiding bodies of different structures, and an assembling method of the entire air-conditioner air supply apparatus in the air-conditioner may also be selected

flexibly, thereby improving the application scope of the air-conditioner air supply apparatus and the production efficiency of the air-conditioner.

3. An airflow distribution assembly is disposed in a heat-exchanged air duct, so that the airflow distribution assembly can be used to distribute heat-exchanged air that enters an air supply apparatus in a circumferential direction, so as to improve the uniformity of air supply from the air supply apparatus.

[0012] Other features and advantages of the present invention will become apparent after reading the detailed description of the present invention with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

FIG. 1 is a schematic structural view of an embodiment of an air-conditioner having an air-conditioner air supply apparatus of the present invention;

FIG. 2 is a schematic three-dimensional structural view of an embodiment of an air-conditioner air supply apparatus in the air-conditioner in FIG. 1;

FIG. 3 is a schematic view of a blast structure of the air-conditioner air supply apparatus in FIG. 2; and

FIG. 4 is a schematic structural rear view of the air-conditioner air supply apparatus in FIG. 2.

DETAILED DESCRIPTION

[0014] The technical solutions of the present invention are further described in detail below with reference to the accompanying drawings and the detailed description.

[0015] First, technical terms involved in the detailed description are briefly described. The front end or rear end of each structural component as mentioned below is defined in terms of the position of the structural component in the normal use state relative to the user; front or rear, when used to describe the positions at which multiple structural components are arranged, is also defined in terms of the position of an apparatus formed by the multiple structural components in the normal use state relative to the user. In the following description, heat-exchanged air refers to air that is from the inside of an air-conditioner and has been subjected to heat exchange by a heat exchanger; non-heat-exchanged air refers to air from the environmental space in which the air-conditioner is located, is relative to the heat-exchanged air, and is part of air that is not directly from the heat exchanger; and mixed air refers to air formed by mixing the heat-exchanged air with the non-heat-exchanged air. In the following description, the shape being

annular refers an enclosed structure formed by an annular enclosure, and is not limited to being circular.

[0016] Then, the design concept of the present invention is briefly described. With an air-conditioner air supply apparatus that can produce and supply mixed air by mixing heat-exchanged air of a heat exchanger of an air-conditioner with external non-heat-exchanged air, the amount of air supplied can be increased and the temperature of air supplied can be ensured. However, because the fan inside the air-conditioner is located at the lower end, the heat-exchanged air is supplied from bottom to top after being subjected to heat exchange by the heat exchanger; in this case, once such an air-conditioner air supply apparatus is arranged in the air-conditioner, most of the heat-exchanged air enters the air-conditioner air supply apparatus from the bottom of the air-conditioner air supply apparatus under the action of the fan, and only a small amount of air enters the air-conditioner air supply apparatus from left and right sides and the top of the air-conditioner air supply apparatus, resulting in a non-uniform air supply in the circumferential direction of the air-conditioner air supply apparatus. To solve this problem, in an annular heat-exchanged air duct in the air-conditioner air supply apparatus, an airflow distribution assembly for distributing, particularly uniformly distributing heat-exchanged air that enters the annular heat-exchanged air duct from the heat exchanger of the air-conditioner may be disposed. Preferably, the airflow distribution assembly is disposed in all annular heat-exchanged air ducts of the air-conditioner air supply apparatus, so as to make the heat-exchanged air enter the heat-exchanged air duct uniformly in the circumferential direction, thereby improving the uniformity of air supply from the air-conditioner air supply apparatus.

[0017] Referring to FIG. 1, FIG. 1 is a schematic structural view of an embodiment of an air-conditioner having an air-conditioner air supply apparatus 1.

[0018] As shown in FIG. 1, the air-conditioner of this embodiment includes a front panel 2, a rear panel 3, a left panel, a right panel, a top plate and a bottom plate (not marked in the figure) that constitute a housing of the air-conditioner. The housing defines an internal air duct 4 of the air-conditioner. A mixed air outlet 21 is formed on an upper part of the front panel 2 of the air-conditioner, and a non-heat-exchanged air inlet 31 is formed on an upper part of the rear panel 3 of the air-conditioner and at a position corresponding to the mixed air outlet 21 on the front panel 2. A blower 6, a heat exchanger 5 and an air-conditioner air supply apparatus 1 are disposed from bottom to top in the internal air duct 4, and the blower 6 is arranged in such a manner that air from the internal air duct 4 of the air-conditioner is blown out from the mixed air outlet 21 on the front panel 2.

[0019] For the structure of the air-conditioner air supply apparatus 1, refer to the schematic three-dimensional structural view in FIG. 2, the schematic view of a blast structure in FIG. 3 and the schematic structural rear view in FIG. 4.

[0020] As show in FIG. 2, FIG. 3 and FIG. 4, and with reference to FIG. 1, the air-conditioner air supply apparatus 1 of this embodiment includes three annular air guiding bodies, respectively being a front-end annular air guiding body 11, a first middle annular air guiding body 13, and a rear-end annular air guiding body 12. Each annular air guiding body in the three annular air guiding bodies that are arranged sequentially from front to rear is a single component, and is formed independently. The front-end annular air guiding body 11 is hollow and has front and rear two openings, respectively being a mixed air outlet 111 and an air inlet 112; the first middle annular air guiding body 13 is hollow and has front and rear two openings, respectively being an air outlet 131 and an air inlet 132; and the rear-end annular air guiding body 12 is hollow and has front and rear two openings, respectively being an air outlet 121 and a non-heat-exchanged air inlet 122. After the front-end annular air guiding body 11, the first middle annular air guiding body 13 and the rear-end annular air guiding body 12 are arranged sequentially from front to rear, a through-duct (not marked in the figure) that runs through all the three annular air guiding bodies from front to rear is formed in the middle. Moreover, a first annular heat-exchanged air duct 14 is formed between the front-end annular air guiding body 11 and the first middle annular air guiding body 13; a second annular heat-exchanged air duct 15 is formed between the first middle annular air guiding body 13 and the rear-end annular air guiding body 12; and the internal air duct 4 of the air-conditioner is connected to the through-duct in the air-conditioner air supply apparatus 1 by using the first annular heat-exchanged air duct 14 and the second annular heat-exchanged air duct 15. An airflow distribution assembly 16 that extends into the first annular heat-exchanged air duct 14 and the second annular heat-exchanged air duct 15 is disposed on the first middle annular air guiding body 13. Besides, for convenience of manufacturing, the airflow distribution assembly 16 is preferably integrally formed with the first middle annular air guiding body 13. Definitely, they may also be separately formed, and then the airflow distribution assembly 16 is fixedly installed on the first middle annular air guiding body 13.

[0021] When the air-conditioner air supply apparatus 1 is assembled into the air-conditioner, the rear-end annular air guiding body 12 is fixed to the rear panel 3 of the air-conditioner, the first middle annular air guiding body 13 is first fixed to the front-end annular air guiding body 11 by using a screw, and then the front-end annular air guiding body 11 that is fixed with the first middle annular air guiding body 13 is fixed to the front panel 2 of the air-conditioner. After it is fixed in place, the mixed air outlet 111 of the front-end annular air guiding body 11 used as an air outlet of the entire air-conditioner air supply apparatus 1 is assembled in an enclosed manner with the mixed air outlet 21 on the front panel 2; and the non-heat-exchanged air inlet 122 in the rear-end annular air guiding body 12 used as a non-heat-exchanged air inlet

of the entire air-conditioner air supply apparatus 1 is assembled in an enclosed manner with the non-heat-exchanged air inlet 31 on the rear panel 3.

[0022] In the air-conditioner that uses the air-conditioner air supply apparatus 1 of the above structure, when the air-conditioner operates, indoor air enters the inside of the air-conditioner, is accelerated by the blower 6, and enters the heat exchanger 5 for heat exchange. Heat-exchanged air after heat exchange is blown from the internal air duct 4 to the air-conditioner air supply apparatus 1. The heat-exchanged air is distributed by the airflow distribution assembly 16 to enter the first annular heat-exchanged air duct 14 and the second annular heat-exchanged air duct 15 uniformly in the circumferential direction, then enter the through-duct through the heat-exchanged air duct, and is blown out from the mixed air outlet 21 on the front panel 2 and the mixed air outlet 111 on the front-end annular air guiding body 11 through the through-duct. The flow rate of the heat-exchanged air blown out from the annular heat-exchanged air duct is increased, so that the surface pressure of the corresponding annular air guiding body decreases to form a negative pressure in the through-duct. Indoor air outside the air-conditioner is used as the non-heat-exchanged air. Under the negative pressure, the non-heat-exchanged air enters the through-duct from the non-heat-exchanged air inlet 122 on the rear-end annular air guiding body 12 and the non-heat-exchanged air inlet 31 on the rear panel 3, and is mixed with the heat-exchanged air blown out from the annular heat-exchanged air duct to form mixed air, and then sent to the indoors.

[0023] Under a certain fan rotating speed, air flow test and temperature detection is performed on a vertical air-conditioner. After the foregoing air-conditioner air supply apparatus 1 is used, air flow of the inducted non-heat-exchanged air is about 1.1 times of air flow of the heat-exchanged air, and air flow of the obtained mixed air is about 2.1 times of the air flow of the heat-exchanged air. Compared with air supply of an air-conditioner, that does not use the air-conditioner air supply apparatus 1, under a same condition, air flow of the air-conditioner increases about 1.1 times. Moreover, if the room temperature is about 28°C, air blown out from the air-conditioner that does not use the air-conditioner air supply apparatus 1 is the heat-exchanged air, and a temperature of the heat-exchanged air is about 14°C; while after the air-conditioner air supply apparatus 1 is used, the mixed air sent out by the air-conditioner is about 19°C, and the temperature of the mixed air satisfies comfort requirements of the human body sensible temperature. Such mixed air is mild, which makes the user feel more comfortable, thereby improving the comfort of the user. Moreover, part of external air that is not subjected to heat exchange is sucked under the negative pressure generated by the air supply apparatus 1, and becomes part of the air finally supplied from the air-conditioner, which increases the overall air intake volume of the air-conditioner, accelerates indoor air circulation, and further improves the over-

all uniformity of indoor air.

[0024] In this embodiment, a plurality of annular air guiding bodies in a form of a single component is combined to form the air-conditioner air supply apparatus 1, so that it is convenient to control flexibly the structure of each annular air guiding body according to requirements of air supply, and to manufacture conveniently annular air guiding bodies of different structures, so as to ensure the uniformity of air supply and the speed of the air supply. Moreover, because each annular air guiding body is a single component, an assembling method of the entire air-conditioner air supply apparatus 1 in the air-conditioner may be selected flexibly, thereby improving the application scope of the air-conditioner air supply apparatus 1 and the production efficiency of the air-conditioner.

[0025] For the specific structure of the airflow distribution assembly 16, refer to the rear view in FIG. 4. The airflow distribution assembly 16 in this embodiment is implemented by using a plurality of airflow distribution plates. In this embodiment, the airflow distribution assembly 16 totally includes eight airflow distribution plates in pairs, namely, primary airflow distribution plates 161 and 162, first auxiliary airflow distribution plates 163 and 164, second auxiliary airflow distribution plates 165 and 166, and third auxiliary airflow distribution plates 167 and 168. All the airflow distribution plates are bent distribution plates of the same bending direction, and the surface of each of the airflow distribution plates is an arc-shaped curved surface, which can effectively guide the air, reduce pressure loss and noise during splitting of the air flow, and achieve a high-speed air supply at low noise. The four pairs of airflow distribution plates are arranged bilaterally symmetrically in the circumferential direction of the first annular heat-exchanged air duct 14 and the second annular heat-exchanged air duct 15 in such a manner that the primary airflow distribution plates 161 and 162, the first auxiliary airflow distribution plates 163 and 164, the second auxiliary airflow distribution plates 165 and 166, and the third auxiliary airflow distribution plates 167 and 168 are sequentially arranged from bottom to top. That is, in the air supply direction of the heat-exchanged air that is from bottom to top, the primary airflow distribution plate 161, the first auxiliary airflow distribution plate 163, the second auxiliary airflow distribution plate 165 and the third auxiliary airflow distribution plate 167 are disposed from bottom to top on the left side of the air-conditioner air supply apparatus 1, and the primary airflow distribution plate 162, the first auxiliary airflow distribution plate 164, the second auxiliary airflow distribution plate 166 and the third auxiliary airflow distribution plate 168 are arranged bilaterally symmetrically on the right side of the air-conditioner air supply apparatus 1. In addition, the bending direction of each of the airflow distribution plates is reverse to the air supply direction of the heat-exchanged air. That is, the air supply direction of the heat-exchanged air is from bottom to top, and accordingly, the bending direction of each of the airflow distribution plates will be reverse to the air supply

direction, that is, each of the airflow distribution plates is bent in the anticlockwise direction shown in FIG. 4.

[0026] The airflow distribution assembly 16 formed by a plurality of bent airflow distribution plates radially symmetrically arranged is disposed in the heat-exchanged air duct, so that the primary airflow distribution plates 161 and 162 can be used to divide the heat-exchanged air from the heat exchanger into left, middle and right parts, and the heat-exchanged air on the left and right sides is further divided by the auxiliary airflow distribution plates, uniform air intake and outtake in the circumferential direction of the heat-exchanged air duct of the air-conditioner air supply apparatus 1 are finally achieved, thereby improving the uniformity of air supply from the air-conditioner air supply apparatus 1.

[0027] Definitely, the airflow distribution assembly 16 may not necessarily be implemented by a plurality of bent airflow distribution plates, and may also use other structures, as long as the heat-exchanged air from the heat exchanger 5 can be uniformly distributed in the circumferential direction.

[0028] In the air-conditioner of this embodiment, as a preferable implementation manner, the mixed air outlet 21 on the front panel 2 and the non-heat-exchanged air inlet 31 on the rear panel 3 are in the shape of a circle; and correspondingly, the annular air guiding bodies in the air-conditioner air supply apparatus 1 are in the shape of a circle. In addition to the annular shape, the technical objectives of the present invention can also be achieved by using other combinations of shapes, for example, an ellipse and an elliptical ring, or a regular polygon and a regular polygonal ring.

[0029] Although in this embodiment, the air-conditioner air supply apparatus 1 has three annular air guiding bodies, but is not limited to such three annular air guiding bodies, and may also only have the two annular air guiding bodies, namely, the front-end annular air guiding body 11 and the rear-end annular air guiding body 12, and the two annular air guiding bodies form a heat-exchanged air duct. Under this structure, an airflow distribution assembly fixed to one of the annular air guiding bodies may be disposed in the heat-exchanged air duct to implement distribution of the heat-exchanged air.

[0030] Definitely, there may also be a plurality of annular air guiding bodies, for example, in addition to the front-end annular air guiding body 11 and the rear-end annular air guiding body 12, two or more first middle annular air guiding bodies 13 are further included to form an air-conditioner air supply apparatus that has four or more annular air guiding bodies. Under the structure, three or more heat-exchanged air ducts are formed. In such air-conditioner air supply apparatus, an airflow distribution assembly is preferably disposed in all heat-exchanged air ducts. Moreover, in order to simplify the structure, two heat-exchanged air ducts may use a same airflow distribution assembly, that is, the airflow distribution assembly is disposed on an annular air guiding body located in the middle position, and extends into inner and

outer two annular heat-exchanged air ducts formed by the annular air guiding bodies.

[0031] The foregoing embodiments are merely used to describe rather than limit the technical solutions of the present invention. Although the present invention as defined in the appended claims is described in detail with reference to the foregoing embodiments, a person of ordinary skill in the art can still make modifications to the technical solutions described in the foregoing embodiments, or make equivalent replacements to some technical features thereof.

Claims

1. An air-conditioner air supply apparatus (1) provided with an airflow distribution assembly (16), wherein the air supply apparatus (1) comprises at least two annular air guiding bodies (11, 12, 13) that are hollow and have front and rear openings; each annular air guiding body (11, 12, 13) is a single component; the rear opening of the annular air guiding body (11, 12, 13) is an air inlet (112, 122, 132), and the front opening of the annular air guiding body (11, 12, 13) is an air outlet (111, 121, 131); the at least two annular air guiding bodies (11, 12, 13) are arranged sequentially from front to rear, a through-duct which runs from front to end is formed in the middle; the air-conditioner air supply apparatus (1) comprises at least one annular heat-exchanged air duct (14, 15), formed between two adjacent annular air guiding bodies (11, 12, 13); an air inlet (122) of a rear-end annular air guiding body (12) located at the rear end is a non-heat-exchanged air inlet (31) of the air supply apparatus (1); an air outlet (111) of a front-end annular air guiding body (11) located at the front end is a mixed air outlet (21) of the air supply apparatus; and an airflow distribution assembly (16) for distributing heat-exchanged air that enters the at least one annular heat-exchanged air duct (14, 15) from a heat exchanger (5) of an air-conditioner that has the air-conditioner air supply apparatus (1) is disposed in at least one of the annular heat-exchanged air ducts (14, 15) wherein the airflow distribution assembly (16) comprises a plurality of airflow distribution plates (161-168), and the plurality of airflow distribution plates (161-168) is bilaterally symmetrically arranged in a circumferential direction of the annular heat-exchanged air duct (14, 15), and along an air supply direction of the heat-exchanged air, **characterized in that** the plurality of airflow distribution plates (161-168) are bent distribution plates of the same bending direction, and the bending direction of the plurality of airflow distribution plates (161-168) is reverse to the air supply direction of the heat-exchanged air.

2. The air-conditioner air supply apparatus (1) accord-

ing to claim 1, wherein the airflow distribution assembly (16) for uniformly distributing, in a circumferential direction of the at least one annular heat-exchanged air duct (14, 15), the heat-exchanged air that enters the at least one annular heat-exchanged air duct (14, 15) is disposed in the at least one annular heat-exchanged air duct (14, 15).

3. The air-conditioner air supply apparatus (1) according to claim 1, wherein the airflow distribution assembly (16) is disposed in all the annular heat-exchanged air ducts (14, 15).
4. The air-conditioner air supply apparatus (1) according to claim 1, wherein there are at least three annular air guiding bodies (11, 12, 13), the airflow distribution assembly (16) is disposed on the annular air guiding body (13) located in the middle position, and extends into inner and outer two annular heat-exchanged air ducts (14, 15) formed by the annular air guiding bodies (11, 12, 13).
5. The air-conditioner air supply apparatus (1) according to claim 4, wherein the annular air guiding body (13) located in the middle position is integrally formed with the airflow distribution assembly (16) disposed on the annular air guiding body (13).

Patentansprüche

1. Luftzufuhrvorrichtung (1) für eine Klimaanlage, die mit einer Luftstrom-Verteilungsanordnung (16) versehen ist, wobei die Luftzufuhrvorrichtung (1) mindestens zwei ringförmige Luftleitkörper (11, 12, 13) umfasst, welche hohl sind und vordere und hintere Öffnungen aufweisen; jeder ringförmige Luftleitkörper (11, 12, 13) eine einzelne Komponente ist; die hintere Öffnung des ringförmigen Luftleitkörpers (11, 12, 13) ein Lufteinlass (112, 122, 132) ist und die vordere Öffnung des ringförmigen Luftleitkörpers (11, 12, 13) ein Luftauslass (111, 121, 131) ist; die mindestens zwei ringförmigen Luftleitkörper (11, 12, 13) fortlaufend von vorn nach hinten angeordnet sind, wobei sich in der Mitte ein von Anfang bis Ende durchlaufender Kanal bildet; die Luftzufuhrvorrichtung (1) für eine Klimaanlage mindestens einen ringförmigen Wärmegetauschte-Luft-Kanal (14, 15) umfasst, der zwischen zwei benachbarten ringförmigen Luftleitkörpern (11, 12, 13) gebildet ist; ein Lufteinlass (122) eines hinteren ringförmigen Luftleitkörpers (12), der sich am hinteren Ende befindet, ein Nichtwärmegetauschte-Luft-Einlass (31) der Luftzufuhrvorrichtung (1) ist; ein Luftauslass (111) eines vorderen ringförmigen Luftleitkörpers (11), der sich am vorderen Ende befindet, ein Mischluft-Auslass (21) der Luftzufuhrvorrichtung ist; und eine Luftstrom-Verteilungsanordnung (16), die dazu dient,

wärmegetauschte Luft, die aus einem Wärmetauscher (5) einer Klimaanlage, welche die Luftzufuhrvorrichtung (1) für eine Klimaanlage aufweist, in den mindestens einen ringförmigen Wärmegetauschte-Luft-Kanal (14, 15) eintritt, zu verteilen, in mindestens einem der ringförmigen Wärmegetauschte-Luft-Kanäle (14, 15) angeordnet ist, wobei die Luftstrom-Verteilungsanordnung (16) eine Mehrzahl von Luftstrom-Verteilungsplatten (161-168) umfasst und die Mehrzahl von Luftstrom-Verteilungsplatten (161-168) bilateral symmetrisch in einer umlaufenden Richtung des ringförmigen Wärmegetauschte-Luft-Kanals (14, 15) und entlang einer Luftzufuhr-Richtung der wärmegetauschten Luft angeordnet sind, **dadurch gekennzeichnet, dass** die Mehrzahl von Luftstrom-Verteilungsplatten (161-168) gebogene Verteilungsplatten derselben Biegerichtung sind und die Biegerichtung der Mehrzahl von Luftstrom-Verteilungsplatten (161-168) entgegengesetzt zu der Luftzufuhr-Richtung der wärmegetauschten Luft ist.

2. Luftzufuhrvorrichtung (1) für eine Klimaanlage nach Anspruch 1, wobei die Luftstrom-Verteilungsanordnung (16), die dazu dient, die wärmegetauschte Luft, die in den mindestens einen ringförmigen Wärmegetauschte-Luft-Kanal (14, 15) eintritt, in einer umlaufenden Richtung des mindestens einen ringförmigen Wärmegetauschte-Luft-Kanals (14, 15) gleichmäßig zu verteilen, in dem mindestens einen ringförmigen Wärmegetauschte-Luft-Kanal (14, 15) angeordnet ist.
3. Luftzufuhrvorrichtung (1) für eine Klimaanlage nach Anspruch 1, wobei die Luftstrom-Verteilungsanordnung (16) in allen ringförmigen Wärmegetauschte-Luft-Kanälen (14, 15) angeordnet ist.
4. Luftzufuhrvorrichtung (1) für eine Klimaanlage nach Anspruch 1, wobei mindestens drei ringförmige Luftleitkörper (11, 12, 13) vorhanden sind, die Luftstrom-Verteilungsanordnung (16) auf dem ringförmigen Luftleitkörper (13) angeordnet ist, der sich in der Mitte befindet, und sich in zwei innen und außen befindliche ringförmige Wärmegetauschte-Luft-Kanäle (14, 15) erstreckt, die durch die ringförmigen Luftleitkörper (11, 12, 13) gebildet werden.
5. Luftzufuhrvorrichtung (1) für eine Klimaanlage nach Anspruch 4, wobei der ringförmige Luftleitkörper (13), der sich in der Mitte befindet, aus einem Stück mit der auf dem ringförmigen Luftleitkörper (13) angeordneten Luftstrom-Verteilungsanordnung (16) ausgebildet ist.

Revendications

1. Appareil d'alimentation en air d'un climatiseur (1) pourvu d'une unité de distribution de flux d'air (16), où ledit appareil d'alimentation en air (1) comprend au moins deux corps de guidage d'air annulaires (11, 12, 13) creux et présentant une ouverture avant et une ouverture arrière ; chaque corps de guidage d'air annulaire (11, 12, 13) est un composant simple ; l'ouverture arrière du corps de guidage d'air annulaire (11, 12, 13) est une entrée d'air (112, 122, 132), et l'ouverture avant du corps de guidage d'air annulaire (11, 12, 13) est une sortie d'air (111, 121, 131) ; les au moins deux corps de guidage d'air annulaires (11, 12, 13) sont séquentiellement disposés de l'avant vers l'arrière, un conduit traversant de l'avant vers l'arrière est formé au centre ; l'appareil d'alimentation en air d'un climatiseur (1) comprend au moins un conduit d'air d'échange thermique annulaire (14, 15) formé entre deux corps de guidage d'air annulaires (11, 12, 13) adjacents ; une entrée d'air (122) d'un corps de guidage d'air annulaire d'extrémité arrière (12) situé à l'extrémité arrière est une entrée d'air exempte d'échange thermique (31) de l'appareil d'alimentation en air (1) ; une sortie d'air (111) d'un corps de guidage d'air annulaire d'extrémité avant (11) situé à l'extrémité avant est une sortie d'air mixte (21) de l'appareil d'alimentation en air ; et une unité de distribution de flux d'air (16) pour la distribution d'air d'échange thermique entrant dans ledit au moins un conduit d'air d'échange thermique annulaire (14, 15) depuis un échangeur de chaleur (5) d'un climatiseur doté de l'appareil d'alimentation en air d'un climatiseur (1) est disposée dans ledit au moins un conduit d'air d'échange thermique annulaire (14, 15), l'unité de distribution de flux d'air (16) comprenant une pluralité de plaques de distribution de flux d'air (161-168), et la pluralité de plaques de distribution de flux d'air (161-168) étant disposée de manière symétrique bilatéralement dans une direction circonférentielle du conduit d'air d'échange thermique annulaire (14, 15), et dans une direction d'alimentation de l'air d'échange thermique, **caractérisé en ce que** le pluralité de plaques de distribution de flux d'air (161-168) est constituée de plaques de distribution pliées dans la même direction de pliage, et la direction de pliage de la pluralité de plaques de distribution de flux d'air (161-168) est inverse à la direction d'alimentation de l'air d'échange thermique.
2. Appareil d'alimentation en air d'un climatiseur (1) selon la revendication 1, où l'unité de distribution de flux d'air (16) pour une distribution homogène de l'air d'échange thermique entrant dans ledit au moins un conduit d'air d'échange thermique annulaire (14, 15) dans une direction circonférentielle dudit au moins un conduit d'air d'échange thermique annulaire (14, 15), est disposée dans ledit au moins un conduit d'air d'échange thermique annulaire (14, 15).
3. Appareil d'alimentation en air d'un climatiseur (1) selon la revendication 1, où l'unité de distribution de flux d'air (16) est disposée dans tous les conduits d'air d'échange thermique annulaires (14, 15).
4. Appareil d'alimentation en air d'un climatiseur (1) selon la revendication 1, où au moins trois corps de guidage d'air annulaires (11, 12, 13), où l'unité de distribution de flux d'air (16) est disposée sur le corps de guidage d'air annulaire (13) situé en position centrale, et s'étend à l'intérieur et à l'extérieur de deux conduits d'air d'échange thermique annulaires (14, 15) formés par les corps de guidage d'air annulaires (11, 12, 13).
5. Appareil d'alimentation en air d'un climatiseur (1) selon la revendication 4, où le corps de guidage d'air annulaire (13) situé en position centrale est formé d'un seul tenant avec l'unité de distribution de flux d'air (16) disposée sur le corps de guidage d'air annulaire (13).

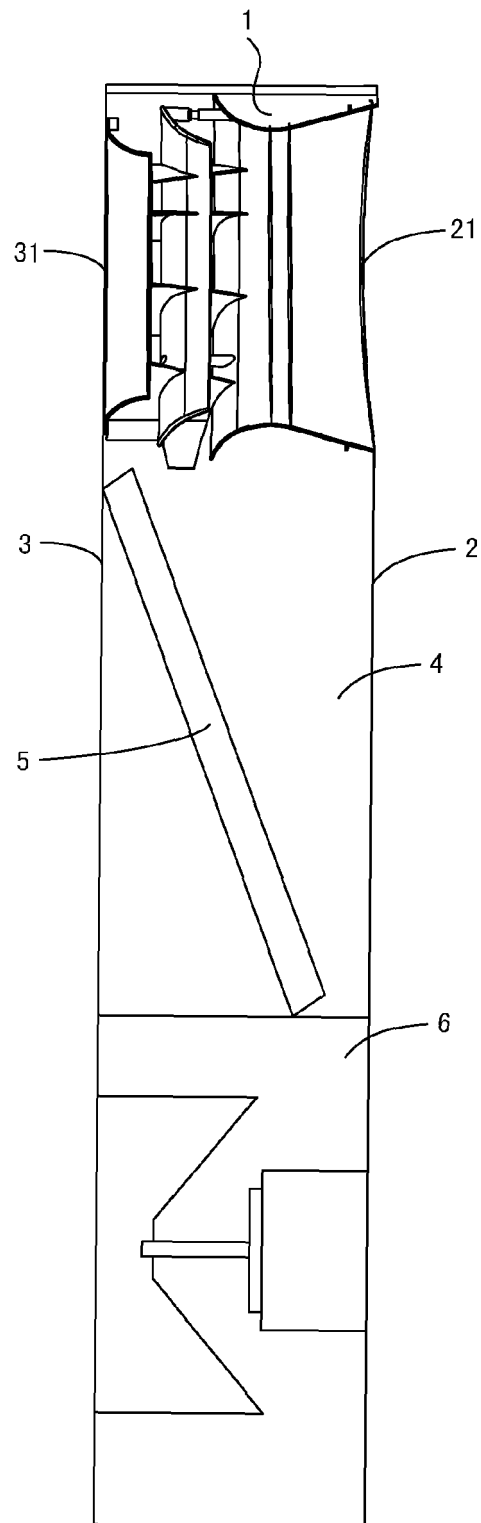


FIG. 1

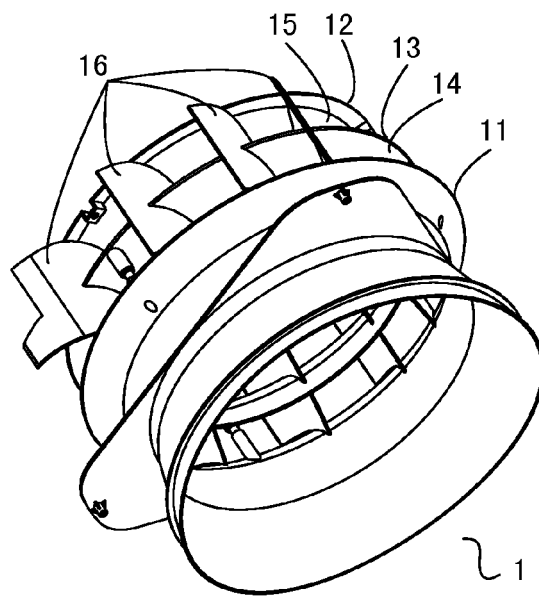


FIG. 2

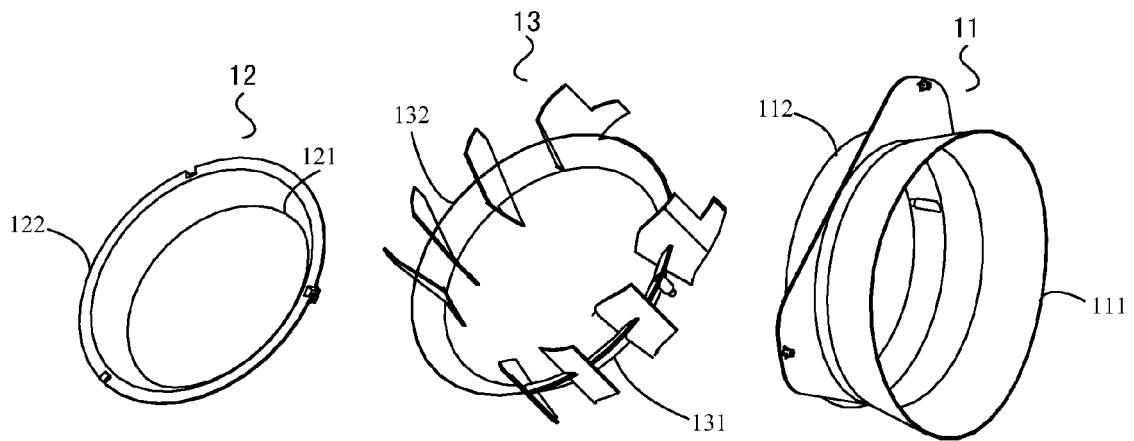


FIG. 3

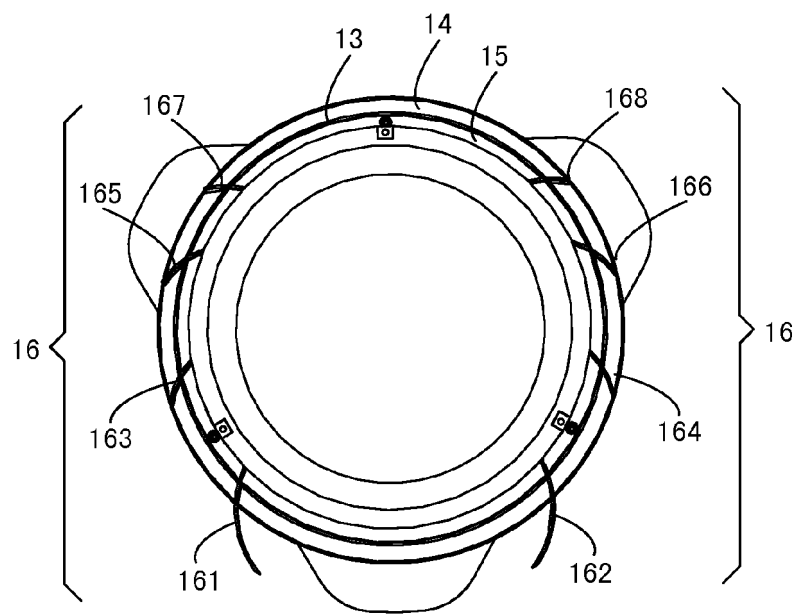


FIG. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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