



(11)

EP 4 553 390 A1

(12)

EUROPEAN PATENT APPLICATION

published in accordance with Art. 153(4) EPC

(43) Date of publication:
14.05.2025 Bulletin 2025/20

(51) International Patent Classification (IPC):
F24F 1/00 ^(2019.01) **F24F 13/22** ^(2006.01)

(21) Application number: **22950045.9**

(52) Cooperative Patent Classification (CPC):
F24F 1/00; F24F 13/22

(22) Date of filing: **26.10.2022**

(86) International application number:
PCT/CN2022/127761

(87) International publication number:
WO 2024/007486 (11.01.2024 Gazette 2024/02)

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
 GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL
 NO PL PT RO RS SE SI SK SM TR**
 Designated Extension States:
BA
 Designated Validation States:
KH MA MD TN

(30) Priority: 08.07.2022 CN 202210806310
08.07.2022 CN 202221776214 U

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(54) **AIR CONDITIONER INDOOR UNIT AND KITCHEN AIR CONDITIONER SET**

(57) The present application discloses an air conditioner indoor unit and a kitchen air conditioner set. The air conditioner indoor unit comprises: a housing, provided with air inlets and air outlets; a water receiving tray, provided with a water receiving area and located above a bottom plate of the housing; an indoor heat exchanger, placed on the water receiving tray and arranged directly opposite to the water receiving area; indoor blowers, each indoor blower comprising a blower wheel and a motor assembly, and the motor assembly being connected to the blower wheel to drive the blower wheel to rotate; and an electric control device, used for controlling the operating state of the air conditioner indoor unit, the electric control device being electrically connected to the motor assemblies, and the electric control device being placed above or below the motor assemblies. According to the air conditioner indoor unit of the present application, after a dropped ceiling is installed, the air conditioner in-door unit can be installed by removing a ceiling panel corresponding to the air conditioner indoor unit, so that

the installation difficulty of the air conditioner indoor unit is reduced.

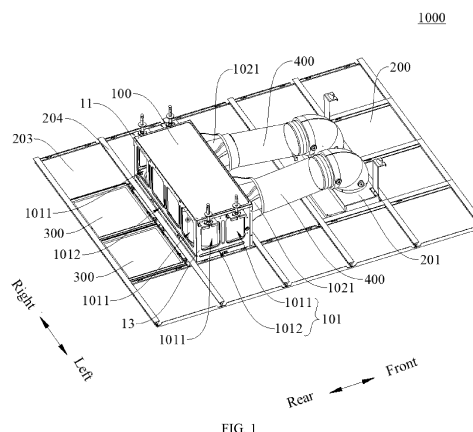


FIG. 1

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priorities to Chinese Patent Applications No. 202210806310.7, and No. 202221776214.4 that are filed on July 08, 2022 and entitled "AIR CONDITIONER INDOOR UNIT AND KITCHEN AIR CONDITIONER SET", the entire contents of which are incorporated herein by reference.

FIELD

[0002] The present disclosure relates to the technical field of kitchen air conditioners, and in particular, to an air conditioner indoor unit and a kitchen air conditioner set.

BACKGROUND

[0003] An existing kitchen air conditioner generally adopts a central air conditioner and a conventional duct-type air conditioner for refrigeration, in which an in-line evaporator is usually employed. A manner of directly blowing is adopted in an air duct. A water pump is provided at two ends of the evaporator. In this case, the conventional duct-type air conditioner is large, leading to an increased size of the kitchen air conditioner. When the kitchen air conditioner is installed at a ceiling, the kitchen air conditioner may only be installed before a dropped ceiling is installed. If the kitchen air conditioner is installed after the dropped ceiling is installed, installation of the kitchen air conditioner is difficult with high installation costs. Meanwhile, it is unbeneficial to later maintenance and cleaning of the kitchen air conditioner.

SUMMARY

[0004] The present disclosure aims to at least solve one of the technical problems existing in the prior art. Therefore, embodiments of the present disclosure are to provide an air conditioner indoor unit, which can be installed by removing a ceiling panel of a ceiling corresponding to the air conditioner indoor unit after the dropped ceiling is installed. Therefore, it is beneficial to a reduction in installation difficulty of the air conditioner indoor unit and easy later maintenance and cleaning of the air conditioner indoor unit.

[0005] An air conditioner indoor unit according to embodiments of the present disclosure comprises a housing, a water receiving tray, an indoor heat exchanger, an indoor fan, and an electric control device. The housing has an air inlet and an air outlet. The water receiving tray has a water receiving region and is located above a bottom plate of the housing, and an indoor heat exchanger is provided on the water receiving tray and directly faces towards the water receiving region. The indoor fan comprises a fan wheel and a motor assembly. The motor assembly is connected to the fan wheel to drive the fan

wheel to rotate. The electric control device is configured to control an operation state of the air conditioner indoor unit. The electric control device is electrically connected to the motor assembly, and the electric control device is provided above or below the motor assembly.

[0006] With the air conditioner indoor unit according to the embodiments of the present disclosure, the electric control device is provided above or below the motor assembly, which facilitates a reduction in an overall length and width of the air conditioner indoor unit. Further, when installing the air conditioner indoor unit at the ceiling, the air conditioner indoor unit can be installed by removing the ceiling panel of the ceiling corresponding to the air conditioner indoor unit after a dropped ceiling is installed, which is beneficial to reduction of the installation difficulty of the air conditioner indoor unit and easy later maintenance and cleaning of the air conditioner indoor unit.

[0007] With the air conditioner indoor unit according to some embodiments of the present disclosure, the water receiving tray has an avoidance region. The electric control device is disposed in the avoidance region and located below the motor assembly.

[0008] In the air conditioner indoor unit according to some embodiments of the present disclosure, the bottom plate is detachable, and the water receiving tray has a drainage hole. A blocking element is provided at the drainage hole, and the blocking element is configured to open or close the drainage hole.

[0009] The air conditioner indoor unit according to some embodiments of the present disclosure further comprises a water pump assembly configured to guide condensed water in the water receiving region to an exterior of the housing.

[0010] In the air conditioner indoor unit according to some embodiments of the present disclosure, the water pump assembly is located directly above the water receiving tray.

[0011] In the air conditioner indoor unit according to some embodiments of the present disclosure, two fan wheels are provided and spaced apart from each other. The water pump assembly is located between the two fan wheels.

[0012] The air conditioner indoor unit according to some embodiments of the present disclosure further comprises a detection device configured to detect a water level in the water receiving region. The detection device is connected to the electric control device. The electric control device is configured to control the air conditioner indoor unit to stop operating when the detection device detects that the water level has reached a predetermined value.

[0013] In the air conditioner indoor unit according to some embodiments of the present disclosure, the housing comprises an air inlet panel, an air outlet panel, and two air inlet side plates. The two air inlet side plates are opposite to each other. Two ends of each of the two air inlet side plates are respectively connected to the air inlet

panel and the air outlet panel. Each of the air inlet panel and the two air inlet side plates has an air inlet, and the air outlet panel has an air outlet. The indoor heat exchanger is formed into a bent shape having an opening facing towards the air outlet panel, and directly faces towards the air inlet panel and the two air inlet side plates, respectively.

[0014] In the air conditioner indoor unit according to some embodiments of the present disclosure, the air inlet has a plurality of rectangular holes arranged at an interval.

[0015] In the air conditioner indoor unit according to some embodiments of the present disclosure, the air inlet further has a plurality of air inlet through holes, wherein the plurality of air inlet through holes are elongated in shape. Air inlet through holes is formed between adjacent rectangular holes.

[0016] In the air conditioner indoor unit according to some embodiments of the present disclosure, the fan wheel is provided with an oil-repellent and hydrophobic coating.

[0017] The air conditioner indoor unit according to some embodiments of the present disclosure further comprises a volute provided with an oil-repellent and hydrophobic coating. The fan wheel is disposed in the volute.

[0018] Embodiments of the present disclosure also provides a kitchen air conditioner set.

[0019] The kitchen air conditioner set according to the embodiments of the present disclosure comprises the air conditioner indoor unit as described in any one of the embodiments, a return air panel, and an air outlet tube. The air conditioner indoor unit is adapted to be disposed above a ceiling, and the ceiling has an air outlet region. The return air panel is provided at the ceiling and separated from the air conditioner indoor unit. The air outlet tube is connected to an air outlet, and extends towards the air outlet region to guide air towards the air outlet region.

[0020] With the kitchen air conditioner set according to some embodiments of the present disclosure, the return air panel comprises a return air grille and a return air filtering mesh provided above the return air grille; and/or the air outlet tube is provided with an oil-repellent and hydrophobic coating.

[0021] Compared with the prior art, the kitchen air conditioner set and the above-described air conditioner indoor unit have the same advantages, and details are omitted herein.

[0022] Additional aspects and advantages of the present disclosure will be provided in part in the following description, or will become apparent in part from the following description, or can be learned from practicing of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] The above and/or additional aspects and ad-

vantages of the present disclosure will become apparent and readily understood from the following description of the embodiments in conjunction with the accompanying drawings, in which:

FIG. 1 is a schematic view of a kitchen air conditioner set according to some embodiments of the present disclosure.

FIG. 2 is a partially exploded view of the kitchen air conditioner set in FIG. 1.

FIG. 3 is a schematic view of an air conditioner indoor unit in FIG. 2.

FIG. 4 is an assembly view of an indoor fan and an indoor heat exchanger of the air conditioner indoor unit in FIG. 3.

FIG. 5 is an exploded view of an air conditioner indoor unit in FIG. 2.

FIG. 6 is a front view of the air conditioner indoor unit in FIG. 3.

FIG. 7 is a cross-sectional view taken along line A-A in FIG. 6.

FIG. 8 is a cross-sectional view taken along line B-B in FIG. 6.

[0024] Reference numerals:

kitchen air conditioner set 1000,
air conditioner indoor unit 100,
ceiling 200, air outlet region 201, return air region 202, ceiling panel 203, joist 204,
return air panel 300, return air grille 301, return air filtering mesh 302,
air outlet tube 400,
housing 10, air inlet 101, rectangular hole 1011, air inlet through hole 1012,
air outlet 102, air outlet connector 1021, snap 1022, air inlet panel 11, air outlet panel 12, engagement groove 121,
air inlet side plate 13, bottom plate 14, chassis component 15,
water receiving tray 20, water receiving region 21, avoidance region 22, blocking element 23,
indoor heat exchanger 30,
indoor fan 40, fan wheel 41, motor assembly 42, volute 43,
electric control device 50,
water pump assembly 60, water pipe 61,
detection device 70;
drainage connector 81, refrigerant input tube 82, and refrigerant output tube 83.

DETAILED DESCRIPTION

[0025] Embodiments of the present disclosure will be described in detail below with reference to examples thereof as illustrated in the accompanying drawings, throughout which same or similar elements, or elements having same or similar functions, are denoted by same or

similar reference numerals. The embodiments described below with reference to the drawings are illustrative only, and are intended to explain rather than limit the present disclosure.

[0026] The disclosure herein provides many different embodiments or examples for implementing different structures of the present disclosure. In order to simplify the disclosure, components and arrangements of specific examples are described herein. Of course, the specific examples are exemplary only and are not intended to limit the present disclosure. In addition, the present disclosure may use repeated reference numerals and/or reference letters in different examples. Such repetition is for the purpose of simplicity and clarity and does not in itself indicate the relation between various embodiments and/or arrangements as discussed. In addition, the present disclosure provides examples of various specific processes and materials, but applications of other processes and/or the use of other materials are conceivable for those skilled in the art.

[0027] An air conditioner indoor unit 100 according to the embodiments of the present disclosure is described below with reference to FIG. 1 to FIG. 8.

[0028] The air conditioner indoor unit 100 according to the embodiments of the present disclosure comprises a housing 10, a water receiving tray 20, an indoor heat exchanger 30, an indoor fan 40, and an electric control device 50 configured to control an operation state of the air conditioner indoor unit 100.

[0029] In an exemplary embodiment of the present disclosure, the housing 10 has an air inlet 101 and an air outlet 102. The water receiving tray 20 has a water receiving region 21 and is located above a bottom plate 14 of the housing 10. The indoor heat exchanger 30 is provided on the water receiving tray 20 and directly faces towards the water receiving region 21. The indoor fan 40 comprises a fan wheel 41 and a motor assembly 42. The motor assembly 42 is connected to the fan wheel 41 to drive the fan wheel 41 to rotate. The electric control device 50 is electrically connected to the motor assembly 42. The electric control device 50 is provided above or below the motor assembly 42.

[0030] It should be understood that the electric control device 50 is electrically connected to the motor assembly 42 to control the motor assembly 42 to drive the fan wheel 41 to rotate or stop rotating, i.e., the electric control device 50 is used to control the air conditioner indoor unit 100 to start and stop operating. When the electric control device 50 controls the motor assembly 42 to drive the fan wheel 41 to rotate, outside air may enter the housing 10 through the air inlet 101 to exchange heat with the indoor heat exchanger 30 and be blown to an indoor space from the air outlet 102. During refrigeration, condensed water is generated during the heat exchange of the indoor heat exchanger 30 with the air. The indoor heat exchanger 30 is provided on the water receiving tray 20 and directly faces towards the water receiving region 21 of the water receiving tray 20. In this way, the condensed water gen-

erated by the indoor heat exchanger 30 can flow to the water receiving region 21 for temporary storage, which prevents water generated by the indoor heat exchanger 30 from flowing to other structures. Moreover, the electric control device 50 is provided above or below the motor assembly 42.

[0031] In this way, the indoor heat exchanger 30 and the water receiving tray 20 are distributed in an up-down direction, and the electric control device 50 and the motor assembly 42 are also distributed in the up-down direction, i.e., the indoor heat exchanger 30 and the electric control device 50 occupy an installation space in the up-down direction, rather than occupying an installation space of the air conditioner indoor unit 100 in a length direction of the air conditioner indoor unit 100 and an installation space of the air conditioner indoor unit 100 in a width direction of the air conditioner indoor unit 100. In this way, a reduction in an overall length and width of the air conditioner indoor unit 100 is facilitated. Further, when the air conditioner indoor unit 100 is installed at a ceiling 200, the air conditioner indoor unit 100 may be installed by removing a ceiling panel 203 of the ceiling 200 corresponding to the air conditioner indoor unit 100 after a dropped ceiling is installed, which is beneficial to a reduction in installation difficulty of the air conditioner indoor unit 100 and easy later maintenance and cleaning of the air conditioner indoor unit 100.

[0032] For example, the water receiving tray 20, the indoor heat exchanger 30, the indoor fan 40, and the electric control device 50 are each installed in the housing 10. The water receiving tray 20 is located above the bottom plate 14, and the indoor heat exchanger 30 is disposed above the water receiving tray 20, which allows the indoor heat exchanger 30 to directly face towards the water receiving region 21 of the water receiving tray 20 in the up-down direction, enabling the water receiving region 21 to be configured as a water storage tank. In this way, when the indoor heat exchanger 30 exchanges heat with the air, the water generated by the indoor heat exchanger 30 can flow directly to the water storage tank under the action of gravity, to prevent the water generated by the indoor heat exchanger 30 from flowing to other structures.

[0033] Further, the electric control device 50 is disposed above or below the motor assembly 42. For example, the electric control device 50 is disposed above or below the motor assembly 42, i.e., the electric control device 50 and the motor assembly 42 are distributed in the up-down direction. In this way, an electric control element would not occupy the installation space of the air conditioner indoor unit 100 in the length direction of the air conditioner indoor unit 100 and the installation space of the air conditioner indoor unit 100 in the width direction of the air conditioner indoor unit 100. As a result, the reduction of the overall length and width of the air conditioner indoor unit 100 is facilitated. Further, when the air conditioner indoor unit 100 is installed at the ceiling 200, an area of the ceiling panel 203 of the ceiling 200 corre-

sponding to the air conditioner indoor unit 100 is small. Therefore, compared with a scheme of installing the air conditioner indoor unit 100 before the dropped ceiling is installed in the prior art, the air conditioner indoor unit 100 of the present disclosure can be installed by removing the ceiling panel 203 of the ceiling 200 corresponding to the air conditioner indoor unit 100 after the dropped ceiling is installed.

[0034] With the air conditioner indoor unit 100 according to the embodiments of the present disclosure, the electric control device 50 is disposed above or below the motor assembly 42, which can reduce the overall length and width of the air conditioner indoor unit 100. Further, when the air conditioner indoor unit 100 is installed at the ceiling 200, the air conditioner indoor unit 100 may be installed by removing the ceiling panel 203 of the ceiling 200 corresponding to the air conditioner indoor unit 100 after the dropped ceiling is installed, which facilitates the reduction of the installation difficulty of the air conditioner indoor unit 100 and the easy later maintenance and cleaning of the air conditioner indoor unit 100.

[0035] In some embodiments, as illustrated in FIG. 5, the water receiving tray 20 has an avoidance region 22. Moreover, as illustrated in FIG. 4, the electric control device 50 is disposed in the avoidance region 22 and located below the motor assembly 42.

[0036] Therefore, it is convenient to avoid the electric control device 50 by forming the avoidance region 22, and to prevent occurrence of interference between the electric control device 50 and the water receiving tray 20. Moreover, the electric control device 50 may be installed in the avoidance region 22 to make full use of the installation space, making a layout more reasonable. Therefore, it is beneficial to reducing a height of the air conditioner indoor unit 100, and thus reduce a size of the air conditioner indoor unit 100.

[0037] For example, the avoidance region 22 is configured as an avoidance notch, and the electric control device 50 is provided at the avoidance notch in the up-down direction, to install the electric control device 50 below the motor assembly 42. Therefore, on the one hand, it is convenient to reduce a size of the water receiving tray 20, and it is beneficial to realizing a miniaturization and lightweight design of the water receiving tray 20. On the other hand, it is convenient to make full use of the installation space and reduce the height of the air conditioner indoor unit 100 through a reasonable layout of the electric control device 50 and the water receiving tray 20, and thus the size of the air conditioner indoor unit 100 is reduced.

[0038] In some embodiments, the bottom plate 14 is detachable, and the water receiving tray 20 has a drainage hole. Moreover, as illustrated in FIG. 5, a blocking element 23 is provided at the drainage hole, and the blocking element 23 is configured to open or close the drainage hole.

[0039] Therefore, when it is unnecessary to drain the water receiving tray 20, the drainage hole is closed by the

blocking element 23. At this time, the water receiving region 21 of the water receiving tray 20 may store the condensed water generated by the indoor heat exchanger 30. When it is necessary to drain the water receiving tray 20, the bottom plate 14 may be removed, and then the blocking element 23 is controlled to open the drainage hole. At this time, water in the water receiving region 21 of the water receiving tray 20 may be discharged from the drainage hole.

[0040] For example, the drainage hole is formed at a lowest water level of the water receiving region 21. In this way, when the drainage hole is opened by the blocking element 23, the condensed water in the water receiving region 21 can be completely drained from the drainage hole, to avoid a problem of water leakage when removing the water receiving tray 20. The blocking element 23 is configured as a drainage rubber plug, and the drainage rubber plug is pluggable into the drainage hole to be connected to an inner wall of the drainage hole in a sealing manner for closing the drainage hole. Moreover, the drainage rubber plug may be removed from the drainage hole, which facilitates drainage of the water receiving tray 20 through the drainage hole. Therefore, a sealing effect of the blocking element 23 on the drainage hole is facilitated, and difficulty of blocking the drainage hole by the blocking element 23 is reduced. Moreover, it is beneficial to removal of the blocking element 23.

[0041] It should be noted that the above-described drainage rubber plug is taken as an example for illustration only, and the blocking element 23 may be configured as other structures capable of opening or closing the drainage hole. For example, the blocking element 23 may be configured as a drainage switch, a drainage valve, or the like, and is not limited herein.

[0042] In some embodiments, as illustrated in FIG. 5 and FIG. 7, the air conditioner indoor unit 100 further comprises a water pump assembly 60. The water pump assembly 60 is configured to guide condensed water in the water receiving region 21 to an exterior of the housing 10.

[0043] Therefore, by providing the water pump assembly 60, when the air conditioner indoor unit 100 is in operation, it is possible to guide the condensed water in the water receiving region 21 to the exterior of the housing 10 by using the water pump assembly 60. In this way, a water level in the water receiving region 21 is prevented from being too high, and it is beneficial to ensuring a normal operation of the air conditioner indoor unit 100.

[0044] For example, the water pump assembly 60 comprises a water pump and a water pipe 61. The water pump has a water inlet and a drainage opening. The water pump in operation is capable of pumping the condensed water in the water receiving region 21 from the water inlet into the water pump and discharging the water from the drainage opening. The water pipe 61 is in communication with the drainage opening. An end of the

water pipe 61 is in communication with the drainage opening of the water pump, and another end of the water pipe 61 is in communication with a drainage connector 81 of the air conditioner indoor unit 100. Therefore, the condensed water in the water receiving region 21 can be discharged out of the air conditioner indoor unit 100 along the water pipe 61 and the drainage connector 81. Therefore, the normal operation of the air conditioner indoor unit 100 is ensured.

[0045] Further, as illustrated in FIG. 7, the water pump assembly 60 is located directly above the water receiving tray 20.

[0046] That is, the water pump assembly 60 is installed at a side of the water receiving tray 20 facing away from the bottom plate 14. Therefore, on the one hand, it is convenient for the water pump assembly 60 to guide the condensed water in the water receiving region 21 to the exterior of the housing 10. On the other hand, the water pump assembly 60 and the water receiving tray 20 are distributed in the up-down direction, i.e., the water pump assembly 60 occupies the installation space in the up-down direction, rather than occupying the installation space of the air conditioner indoor unit 100 in the length direction of the air conditioner indoor unit 100 and the installation space of the air conditioner indoor unit 100 in the width direction of the air conditioner indoor unit 100. As a result, the reduction of the overall length and width of the air conditioner indoor unit 100 is facilitated.

[0047] As illustrated in FIG. 4 and FIG. 7, two fan wheels 41 are provided and spaced apart from each other. The water pump assembly 60 is located between the two fan wheels 41.

[0048] Therefore, it is convenient to fully utilize an installation space between the two fan wheels 41, and a space utilization rate is improved to reduce the size of the air conditioner indoor unit 100.

[0049] For example, as illustrated in FIG. 4, two fan wheels 41 are provided and spaced apart from each other in a left-right direction, and the motor assembly 42 is installed between the two fan wheels 41 and may be configured as a double-shaft motor, i.e., the motor assembly 42 has two output shafts, and the two output shafts extend in opposite directions to be in a power connection with the two fan wheels 41, respectively. In this way, the motor assembly 42 can control both the two fan wheels 41, allowing the two fan wheels 41 to be started or stopped synchronously. Moreover, it is beneficial to saving the arrangement of one motor and to realizing a lightweight and miniaturization design of the indoor fan 40.

[0050] Further, the water pump assembly 60 is located between the two fan wheels 41, and the water pump assembly 60 and the electric control device 50 are spaced apart from each other in a front-rear direction. In this way, installation of the motor assembly 42 is unaffected. Meanwhile, the layout is compact, which is beneficial to making full use of the installation space and to reducing the size of the air conditioner indoor unit 100.

[0051] In some embodiments, as illustrated in FIG. 5, the air conditioner indoor unit 100 further comprises a detection device 70 configured to detect a water level in the water receiving region 21.

[0052] In an exemplary embodiment of the present disclosure, the detection device 70 is connected to the electric control device 50. The electric control device 50 is configured to control the air conditioner indoor unit 100 to stop operating when the detection device 70 detects that the water level has reached a predetermined value.

[0053] Therefore, by providing the detection device 70, it is possible to detect the water level in the water receiving region 21. Moreover, the electric control device 50 controls the air conditioner indoor unit 100 to stop operating when the detection device 70 detects that the water level has reached the predetermined value. Therefore, the water level in the water receiving region 21 can be prevented from being too high, providing protection in the air conditioner indoor unit 100.

[0054] For example, the detection device 70 may be configured as a water level switch. Moreover, the predetermined value may be a maximum value that is reachable by the water level of the water receiving region 21 while ensuring the normal operation of the air conditioner indoor unit 100. Therefore, when the water level switch detects that the water level reaches the maximum value, the electric control device 50 controls the air conditioner indoor unit 100 to stop operating, to prevent the water level of the water receiving region 21 from being too high and affecting the air conditioner indoor unit 100. Therefore, it is beneficial to protecting the air conditioner indoor unit 100 and prolonging a service life of the air conditioner indoor unit 100.

[0055] In some embodiments, as illustrated in FIG. 5, the housing 10 comprises an air inlet panel 11, an air outlet panel 12, and two air inlet side plates 13. The two air inlet side plates 13 are opposite to each other. Two ends of each of the two air inlet side plates 13 are respectively connected to the air inlet panel 11 and the air outlet panel 12. Each of the air inlet panel 11 and the two air inlet side plates 13 has an air inlet 101, and the air outlet panel 12 has an air outlet 102.

[0056] Therefore, the air inlet 101 is formed at each of the air inlet panel 11 and the two air inlet side plates 13, and the air outlet 102 is formed at the air outlet panel 12, which facilitates the outside air entering the housing 10 from the air inlet 101 and being discharged from the air outlet 102. In this way, on the one hand, an air inlet area can be increased. On the other hand, weights of the air inlet panel 11, the two air inlet side plates 13, and the air outlet panel 12 can be reduced. Therefore, it is beneficial to realization of lightweight designs of the air inlet panel 11, the two air inlet side plates 13, and the air outlet panel 12.

[0057] The indoor heat exchanger 30 is formed into a bent shape having an opening facing towards the air outlet panel 12. Further, the indoor heat exchanger 30 directly faces towards the air inlet panel 11 and the two air

inlet side plates 13.

[0058] Therefore, by designing the indoor heat exchanger 30 into a bent shape and allowing the indoor heat exchanger 30 to directly face towards the air inlet panel 11 and the two air inlet side plates 13, heat exchange of the indoor heat exchanger 30 with air entering from the air inlet 101 of the air inlet panel 11 and the air inlet 101 of the air inlet side plates 13 is facilitated, improving heat exchange efficiency. Therefore, it is beneficial to a reduction in energy consumption of the air conditioner indoor unit 100. In addition, when the size of the entire air conditioner indoor unit 100 is small, it is possible to increase a heat exchange area and ensure a cooling or heating effect by making the indoor heat exchanger 30 formed into the bent shape.

[0059] For example, an opening formed by the indoor heat exchanger 30 faces towards the air outlet panel 12. As illustrated in FIG. 7, the indoor heat exchanger 30 is provided in a "U" shape, and its "U"-shaped opening faces towards the air outlet panel 12, to facilitate defining an installation space by the indoor heat exchanger 30 and the air outlet panel 12. The indoor fan 40 is installed in the installation space, and a chassis component 15 is provided above the indoor fan 40, and the fan wheel 41 directly faces towards the air outlet 102. In this way, it is convenient for the fan wheel 41 to blow air out of the air outlet 102. Moreover, this arrangement makes the structure more compact, to make full use of the installation space, which is beneficial to a reduction in a length of the indoor heat exchanger 30 and thus in a length of the air conditioner indoor unit 100.

[0060] Further, as illustrated in FIG. 5, the air inlet panel 11 and the two air inlet side plates 13 may be integrally formed, and the air inlet panel 11 and the two air inlet side plates 13 may be arranged in a "U" shape to form a "U"-shaped air inlet 101. A side of the indoor heat exchanger 30 facing away from the air outlet panel 12 directly faces towards the air inlet panel 11, and left and right sides of the indoor heat exchanger 30 directly face towards the two air inlet side plates 13, which facilitates the improvement of the heat exchange efficiency, which is beneficial to the reduction of the energy consumption of the air conditioner indoor unit 100.

[0061] In some embodiments, as illustrated in FIG. 5, the air inlet 101 has a plurality of rectangular holes 1011 arranged at intervals.

[0062] That is, each of the air inlet panel 11 and the two air inlet side plates 13 has a plurality of rectangular holes 1011 arranged at intervals. Therefore, by forming the plurality of rectangular holes 1011 arranged at intervals, it is possible to enlarge the air inlet area by increasing a number of rectangular holes 1011 while ensuring a structural strength of each of the air inlet panel 11 and the two air inlet side plates 13.

[0063] Further, as illustrated in FIG. 5, the air inlet 101 further has a plurality of elongated air inlet through holes 1012. Each of the plurality of air inlet through holes 1012 is formed between adjacent rectangular holes 1011 of the

plurality of rectangular holes 1011.

[0064] That is, each of the air inlet panel 11 and the two air inlet side plates 13 has a plurality of air inlet through holes 1012. For example, the air inlet through hole 1012 may be configured as a waist-type hole. Therefore, the structural strength of each of the air inlet panel 11 and the two air inlet side plates 13 can be ensured while enlarging the air inlet area.

[0065] In some embodiments, an oil-repellent and hydrophobic coating is provided at the air outlet 102 of the air outlet panel 12.

[0066] Therefore, by providing the oil-repellent and hydrophobic coating, it is possible to prevent oil fumes from adhering to a surface of the air outlet panel 12. Therefore, the air outlet panel 12 is more easily wiped and cleaned, which further prevents the oil fumes from adhering to an internal air duct.

[0067] For example, the oil-repellent and hydrophobic coating may be an easy-to-clean, long-lasting hydrophobic and oleophobic nano-anti-fouling coating. The coating may be cured at a room temperature or baked at a low temperature for curing, i.e., curing conditions of the coating are simple to facilitate formation of the coating. Moreover, gloss and transparency of any previous coatings are unaffected after the coating is formed. The coating has advantages of easy cleaning, good stain-resistant performance, good hydrophobic and oleophobic properties, acid and alkali resistance, and good flexibility.

[0068] Therefore, the oil fumes are uneasily adhered to the coating, and dirt on the surface of the coating can be easily wiped, which is beneficial to a reduction in cleaning difficulty of the air outlet panel 12.

[0069] In other embodiments of the present disclosure, the oil-repellent and hydrophobic coating may also be configured as other coatings that satisfy oil-repellent and hydrophobic requirements, and is not limited herein.

[0070] In some embodiments, the fan wheel 41 is provided with an oil-repellent and hydrophobic coating.

[0071] Therefore, by providing the oil-repellent and hydrophobic coating, it is possible to prevent the oil fumes from adhering to a surface of the fan wheel 41. Therefore, the fan wheel 41 is more easily wiped and cleaned, which further prevents the oil fumes from adhering to the internal air duct.

[0072] For example, the oil-repellent and hydrophobic coating may be the easy-to-clean, long-lasting hydrophobic and oleophobic nano-anti-fouling coating. The coating may be cured at the room temperature or baked at the low temperature for curing, i.e., the curing conditions of the coating are simple to facilitate the formation of the coating. Moreover, the gloss and transparency of any previous coatings are unaffected after the coating is formed. The coating has the advantages of easy cleaning, good stain-resistant performance, good hydrophobic and oleophobic properties, acid and alkali resistance, and good flexibility.

[0073] Therefore, the oil fumes are uneasily adhered to the coating, and the dirt on the surface of the coating can

be easily wiped, which is beneficial to a reduction in cleaning difficulty of the fan wheel 41.

[0074] In other embodiments of the present disclosure, the oil-repellent and hydrophobic coating may also be configured as other coatings that satisfy the oil-repellent and hydrophobic requirements, and is not limited herein.

[0075] In some embodiments, the air conditioner indoor unit 100 further comprises a volute 43. The fan wheel 41 is disposed in the volute 43. The volute 43 is provided with an oil-repellent and hydrophobic coating.

[0076] Therefore, by providing the volute 43, it is possible to protect the fan wheel 41. Moreover, by providing the oil-repellent and hydrophobic coating, it is possible to prevent the oil fumes from adhering to a surface of the volute 43. Therefore, the volute 43 is more easily wiped and cleaned, which further prevents the oil fumes from adhering to the internal air duct.

[0077] For example, the oil-repellent and hydrophobic coating may be the easy-to-clean, long-lasting hydrophobic and oleophobic nano-anti-fouling coating. The coating may be cured at the room temperature or baked at the low temperature for curing, i.e., the curing conditions of the coating are simple to facilitate the formation of the coating. Moreover, the gloss and transparency of any previous coating are unaffected after the coating is formed. The coating has the advantages of easy cleaning, good stain-resistant performance, good hydrophobic and oleophobic properties, acid and alkali resistance, and good flexibility.

[0078] Therefore, the oil fumes are uneasily adhered to the coating, and the dirt on the surface of the coating can be easily wiped, which is beneficial to a reduction in cleaning difficulty of the volute 43.

[0079] In other embodiments of the present disclosure, the oil-repellent and hydrophobic coating may also be configured as other coatings that satisfy the oil-repellent and hydrophobic requirements, and is not limited herein.

[0080] In some embodiments, as illustrated in FIG. 3 and FIG. 4, the air conditioner indoor unit 100 is further provided with a refrigerant input tube 82 and a refrigerant output tube 83.

[0081] The refrigerant input tube 82, the refrigerant output tube 83, and the drainage connector 81 are all provided at one side of the air conditioner indoor unit 100. In this way, it is convenient to reduce their installation difficulty.

[0082] Embodiments of the present disclosure also provide a kitchen air conditioner set 1000.

[0083] The kitchen air conditioner set 1000 according to the embodiments of the present disclosure comprises an air conditioner indoor unit 100, a return air panel 300, and an air outlet tube 400.

[0084] In an exemplary embodiment of the present disclosure, as illustrated in FIG. 1 and FIG. 2, the air conditioner indoor unit 100 is the air conditioner indoor unit 100 according to any of the above embodiments. The air conditioner indoor unit 100 is adapted to be disposed above a ceiling 200. The ceiling 200 has an air outlet

region 201. The return air panel 300 is provided at the ceiling 200 and separated from the air conditioner indoor unit 100. The air outlet tube 400 is connected to an air outlet 102 and extends towards the air outlet region 201 to guide air towards the air outlet region 201.

[0085] It should be understood that the air conditioner indoor unit 100 is disposed above the ceiling 200, i.e., the air conditioner indoor unit 100 is embedded and hidden in the ceiling 200. In this way, the air conditioner indoor unit 100 is not directly visible outside of the ceiling 200, facilitating saving of an indoor installation space. Moreover, indoor air can enter the air conditioner indoor unit 100 through the return air panel 300 and the air inlet 101, and is blown to the indoor space through the air outlet 102 and the air outlet region 201 after exchanging heat with the indoor heat exchanger 30. The return air panel 300 is separated from the air conditioner indoor unit 100, to facilitate removal of the return air panel 300, which is beneficial to easy later cleaning and replacement of the return air panel 300. In addition, the air outlet pipe 400 is connected between the air outlet 102 and the air outlet region 201, which allows the air outlet region 201 to be flexibly positioned based on different kitchen spaces. Therefore, versatility of the air conditioner indoor unit 100 is enhanced.

[0086] For example, as illustrated in FIG. 1 and FIG. 2, the air conditioner indoor unit 100 is installed at a ceiling 200 of the kitchen, and a plurality of joists 204 and a plurality of plate bodies 203 are provided at the ceiling 200. The ceiling 200 has a return air region 202 and an air outlet region 201. The return air region 202 and the air outlet region 201 are each configured as a square hole, and the return air region 202 is formed at a rear side of the air conditioner indoor unit 100. In another embodiment, the return air region 202 is formed at each of left and right sides of the air conditioner indoor unit 100, and the air outlet region 201 is formed at a front side of the air conditioner indoor unit 100 and located above a gas cooker. The air outlet region 201 may be provided with an air deflector. The air deflector is configured to realize vertical swing and horizontal swing. In this way, air blown out from the air outlet region 201 can close a cooking site and a food preparation site, and thus targeted air supply and enhanced user comfort is realized.

[0087] It should be noted that the return air region 202 has two square holes formed therein, and the two square holes may be jointed and installed side by side. In addition, the formation of the two square holes may be realized by removal of two adjacent plate bodies 203, facilitating a reduction in design difficulty of the return air region 202. A size of each square hole may be 300mm*300mm. Since the formation of the square hole is realized by removing the ceiling panel 203, a shape size of the ceiling panel 203 is substantially the same as a shape size of the square hole.

[0088] Further, as illustrated in FIG. 1, when the air conditioner indoor unit 100 in this embodiment is installed at the ceiling 200, a dimension of the air conditioner

indoor unit 100 in the length direction of the air conditioner indoor unit 100 is greater than or equal to a total length of two adjacent plate bodies 203, and a dimension of the air conditioner indoor unit 100 in the width direction of the air conditioner indoor unit 100 is smaller than a width of a single ceiling panel 203.

[0089] For example, as illustrated in FIG. 3, the length of the air conditioner indoor unit 100 in this embodiment is a , where $629\text{mm} \leq a \leq 631\text{mm}$, and the width of the air conditioner indoor unit 100 is b , where $260\text{mm} \leq b \leq 265\text{mm}$.

[0090] For example, a is 629 mm and b is 260 mm, or a is 630 mm and b is 262 mm, or a is 631 mm and b is 263 mm, i.e., when the length and width of the air conditioner indoor unit 100 satisfy the above value range, the air conditioner indoor unit 100 does not need to be installed before the dropped ceiling is installed. Instead, the air conditioner indoor unit 100 may be installed by removing the ceiling panel 203 of the ceiling 200 corresponding to the air conditioner indoor unit 100 after the dropped ceiling is installed. In this way, it is beneficial to reducing installation difficulty and installation costs of the air conditioner indoor unit 100. Meanwhile, after the air conditioner indoor unit 100 is used for a long time, the air conditioner indoor unit 100 may be maintained, repaired, and cleaned by removing the ceiling panel 203 of the ceiling 200 corresponding to the air conditioner indoor unit 100, which is beneficial to reducing the maintenance and cleaning difficulty.

[0091] Further, as illustrated in FIG. 3, FIG. 6, and FIG. 8, the air outlet panel 12 is provided with an air outlet connector 1021, and the air outlet 102 is in communication with the air outlet tube 400 through the air outlet connector 1021. The air outlet panel 12 may be in a snap-fit connection with the air outlet connector 1021, or the air outlet panel 12 may be connected to the air outlet connector 1021 in an insertion manner. For example, the air outlet panel 12 has a plurality of engagement grooves 121, and the air outlet connector 1021 has a plurality of snaps 1022. The plurality of engagement grooves 121 are in one-to-one correspondence with the plurality of snaps 1022, and the snaps 1022 are engaged and fixed into the engagement grooves 121, facilitating a reduction in disassembly difficulty of the air outlet connector 1021.

[0092] The air outlet connector 1021 is in communication with the air outlet region 201 through the air outlet tube 400, and a length of the air outlet tube 400 may be designed as the installation space of the kitchen. In this way, the installation of the air conditioner indoor unit 100 is not limited by the kitchen space, i.e., the air conditioner indoor unit 100 may be flexibly installed based on the different kitchen spaces.

[0093] Meanwhile, without removing the entire air conditioner indoor unit 100, the electric control device 50, the water pump assembly 60, the detection device 70, and the like may be replaced by removing the ceiling panel 203 of the ceiling 200 corresponding to the air conditioner indoor unit 100.

[0094] With the kitchen air conditioner set 1000 according to the embodiments of the present disclosure, the electric control device 50 of the air conditioner indoor unit 100 of the kitchen air conditioner set 1000 is provided above or below the motor assembly 42, to reduce the overall length and width of the air conditioner indoor unit 100. Further, when the air conditioner indoor unit 100 is installed at the ceiling 200, the air conditioner indoor unit 100 may be installed by removing the ceiling panel 203 of the ceiling 200 corresponding to the air conditioner indoor unit 100 after the dropped ceiling is installed. Therefore, it is beneficial to the reduction of the installation difficulty of the air conditioner indoor unit 100 and the easy later maintenance and cleaning of the air conditioner indoor unit 100.

[0095] In some embodiments, as illustrated in FIG. 2, the return air panel 300 comprises a return air grille 301 and a return air filtering mesh 302 provided above the return air grille 301. An air flowing direction is denoted by a hollow arrow.

[0096] Therefore, by providing the return air grille 301, the return air filtering mesh 302 is disposed above the return air grille 301, to provide a supporting for the return air filtering mesh 302. Moreover, the return air grille 301 and the return air filtering mesh 302 may sequentially provide a filtering for the oil fumes in the kitchen, to prevent the oil fumes from directly entering the air conditioner indoor unit 100.

[0097] The return air grille 301 and the ceiling 200 may be in a snap-fit connection with each other, or be connected in an insertion manner, or be connected by bolts, or be magnetically engaged with each other, which is not limited herein. The return air grille 301 and the return air filtering mesh 302 may be in a snap-fit connection with each other, or be connected in an insertion manner, or be connected by bolts, or be magnetically engaged with each other, which is not limited herein. Therefore, it is convenient to reduce removing difficulty of the return air panel 30, and it is beneficial to the removal of the return air panel 300 in the later stage, to clean or replace the return air panel 300.

[0098] And/or, the air outlet tube 400 is provided with an oil-repellent and hydrophobic coating. Therefore, by providing the oil-repellent and hydrophobic coating, it is possible to prevent the oil fumes from adhering to a surface of the air outlet tube 400. Therefore, the air outlet tube 400 is more easily wiped and cleaned, which further prevents the oil fumes from adhering to the internal air duct.

[0099] For example, the oil-repellent and hydrophobic coating is provided at each of an outer peripheral wall and an inner peripheral wall of the air outlet tube 400. Moreover, the oil-repellent and hydrophobic coating may be the easy-to-clean, long-lasting hydrophobic and oleophobic nano-anti-fouling coating. The coating may be cured at the room temperature or baked at the low temperature for curing, i.e., the curing conditions of the coating are simple to facilitate the formation of the coat-

ing. Moreover, the gloss and transparency of any previous coatings are unaffected after the coating is formed. The coating has the advantages of easy cleaning, good stain-resistant performance, good hydrophobic and oleophobic properties, acid and alkali resistance, and good flexibility.

[0100] Therefore, the oil fumes are uneasily adhered to the coating, and the dirt on the surface of the coating can be easily wiped, which is beneficial to a reduction in cleaning difficulty of the air outlet tube 400.

[0101] In other embodiments of the present disclosure, the oil-repellent and hydrophobic coating may also be configured as other coatings that satisfy the oil-repellent and hydrophobic requirements, and is not limited herein.

[0102] In the description of the present disclosure, it needs to be understood that, orientation or position relationship indicated by terms such as "central", "longitudinal", "lateral", "length", "width", "thickness", "over", "below", "front", "back", "left", "right", "vertical", "horizontal", "top", "bottom", "in", "out", "clockwise", "anti-clockwise", "axial", "radial" and "circumferential" is based on the orientation or position relationship shown in the accompanying drawings, and is merely for the convenience of describing the present disclosure and simplifying the description, rather than indicating or implying that the associated device or element must have a specific orientation, or be constructed and operated in a specific orientation, and therefore cannot be understood as a limitation on the present disclosure.

[0103] In addition, the terms "first" and "second" are only used for descriptive purposes, and cannot be understood as indicating or implying relative importance or implicitly indicating the number of indicated technical features. Therefore, the feature associated with "first" and "second" may include one or more this feature distinctly or implicitly. In the description of the present disclosure, the term "plurality" means two or more, unless defined otherwise explicitly and specifically.

[0104] In the present disclosure, unless otherwise clearly specified and limited, terms such as "install," "connect," "connect to," "fix," and the like should be understood in a broad sense. For example, it may be a fixed connection or a detachable connection or connection as one piece; mechanical connection or electrical connection or communication; direct connection or indirect connection through an intermediate; internal communication of two components or the interaction relationship between two components. For those of ordinary skill in the art, the specific meanings of the above terms in the present disclosure can be interpreted depending on specific situations.

[0105] In the present disclosure, unless expressly stipulated and defined otherwise, the first feature "on" or "under" the second feature may mean that the first feature is in direct contact with the second feature, or the first and second features are in indirect contact through an intermediate. Moreover, the first feature "above" the second feature may mean that the first feature is directly

above or obliquely above the second feature, or simply mean that the level of the first feature is higher than that of the second feature. The first feature "below" the second feature may mean that the first feature is directly below or obliquely below the second feature, or simply mean that the level of the first feature is smaller than that of the second feature.

[0106] In descriptions of the present disclosure, descriptions with reference to the terms "an embodiment", "some embodiments", "examples", "specific examples", or "some examples" etc., mean that specific features, structure, materials, or characteristics described in conjunction with the embodiment or example are comprised in at least one embodiment or example of the present disclosure. In this specification, the schematic representations of the above terms do not necessarily refer to the same embodiment or example. Moreover, the described specific features, structures, materials or characteristics may be combined in any one or more embodiments or examples in a suitable manner. In addition, those skilled in the art may combine the different embodiments or examples and the features of the different embodiments or examples described in this specification without contradicting each other.

[0107] Although the embodiments of the present disclosure have been shown and described above, it can be understood by those of ordinary skill in the art that various changes, modifications, replacements, and variations can be made to these embodiments without departing from the principles and ideas of the present disclosure. The scope of the present disclosure is defined by the claims as appended and their equivalents.

Claims

1. An air conditioner indoor unit, comprising:

a housing having an air inlet and an air outlet;
a water receiving tray having a water receiving region and located above a bottom plate of the housing;
an indoor heat exchanger provided on the water receiving tray and directly facing towards the water receiving region;
an indoor fan comprising a fan wheel and a motor assembly, the motor assembly being connected to the fan wheel to drive the fan wheel to rotate; and
an electric control device configured to control an operation state of the air conditioner indoor unit, the electric control device being electrically connected to the motor assembly, and the electric control device being provided above or below the motor assembly.

2. The air conditioner indoor unit according to claim 1, wherein the water receiving tray has an avoidance

region, the electric control device being disposed in the avoidance region and located below the motor assembly.

3. The air conditioner indoor unit according to claim 1 or 2, wherein:

the bottom plate is detachable; and
the water receiving tray has a drainage hole, a blocking element being provided at the drainage hole, and the blocking element being configured to open or close the drainage hole.

4. The air conditioner indoor unit according to any one of claims 1 to 3, further comprising a water pump assembly configured to guide condensed water in the water receiving region to an exterior of the housing.

5. The air conditioner indoor unit according to claim 4, wherein the water pump assembly is located directly above the water receiving tray.

6. The air conditioner indoor unit according to claim 4 or 5, wherein two fan wheels are provided and spaced apart from each other, the water pump assembly being located between the two fan wheels.

7. The air conditioner indoor unit according to any one of claims 4 to 6, further comprising a detection device configured to detect a water level in the water receiving region, the detection device being connected to the electric control device, wherein the electric control device is configured to control the air conditioner indoor unit to stop operating when the detection device detects that the water level has reached a predetermined value.

8. The air conditioner indoor unit according to any one of claims 1 to 7, wherein:

the housing comprises an air inlet panel, an air outlet panel, and two air inlet side plates, the two air inlet side plates being opposite to each other, two ends of each of the two air inlet side plates being respectively connected to the air inlet panel and the air outlet panel, each of the air inlet panel and the two air inlet side plates having the air inlet, and the air outlet panel having the air outlet; and
the indoor heat exchanger is formed into a bent shape having an opening facing towards the air outlet panel, and directly faces towards the air inlet panel and the two air inlet side plates, respectively.

9. The air conditioner indoor unit according to any one of claims 1 to 8, wherein the air inlet has a plurality of

rectangular holes arranged at an interval.

10. The air conditioner indoor unit according to claim 9, wherein the air inlet further has a plurality of air inlet through holes, wherein the plurality of air inlet through holes are elongated in shape, air inlet through holes being formed between adjacent rectangular holes.

11. The air conditioner indoor unit according to any one of claims 1 to 10, wherein the fan wheel is provided with an oil-repellent and hydrophobic coating.

12. The air conditioner indoor unit according to claim 11, further comprising a volute provided with the oil-repellent and hydrophobic coating, the fan wheel being disposed in the volute.

13. A kitchen air conditioner set, comprising:

an air conditioner indoor unit according to any one of claims 1 to 12, the air conditioner indoor unit being adapted to be disposed above a ceiling, the ceiling having an air outlet region; a return air panel provided at the ceiling and separated from the air conditioner indoor unit; and
an air outlet tube connected to an air outlet and extending towards the air outlet region to guide air towards the air outlet region.

14. The kitchen air conditioner set according to claim 13, wherein:

the return air panel comprises a return air grille and a return air filtering mesh provided above the return air grille; and/or
the air outlet tube is provided with an oil-repellent and hydrophobic coating.

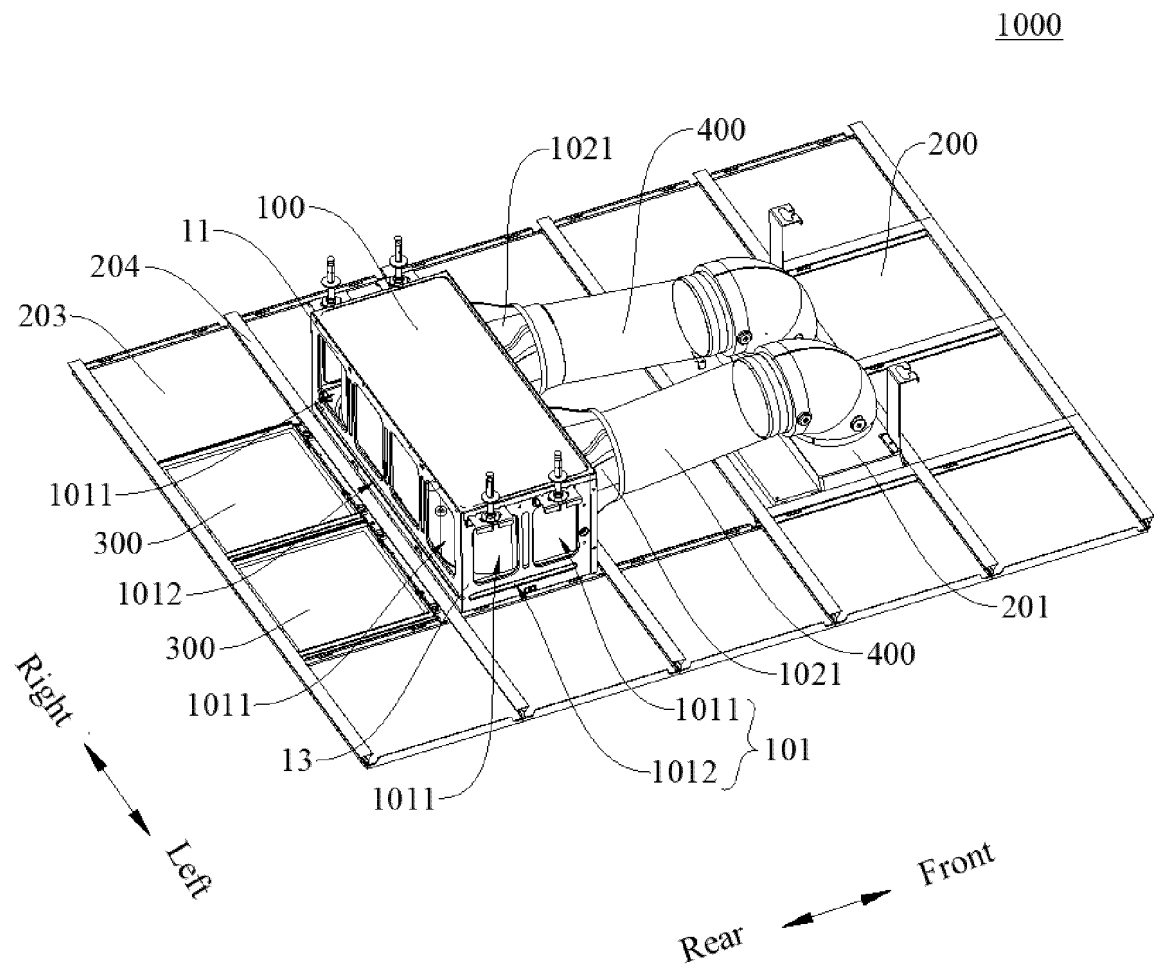


FIG. 1

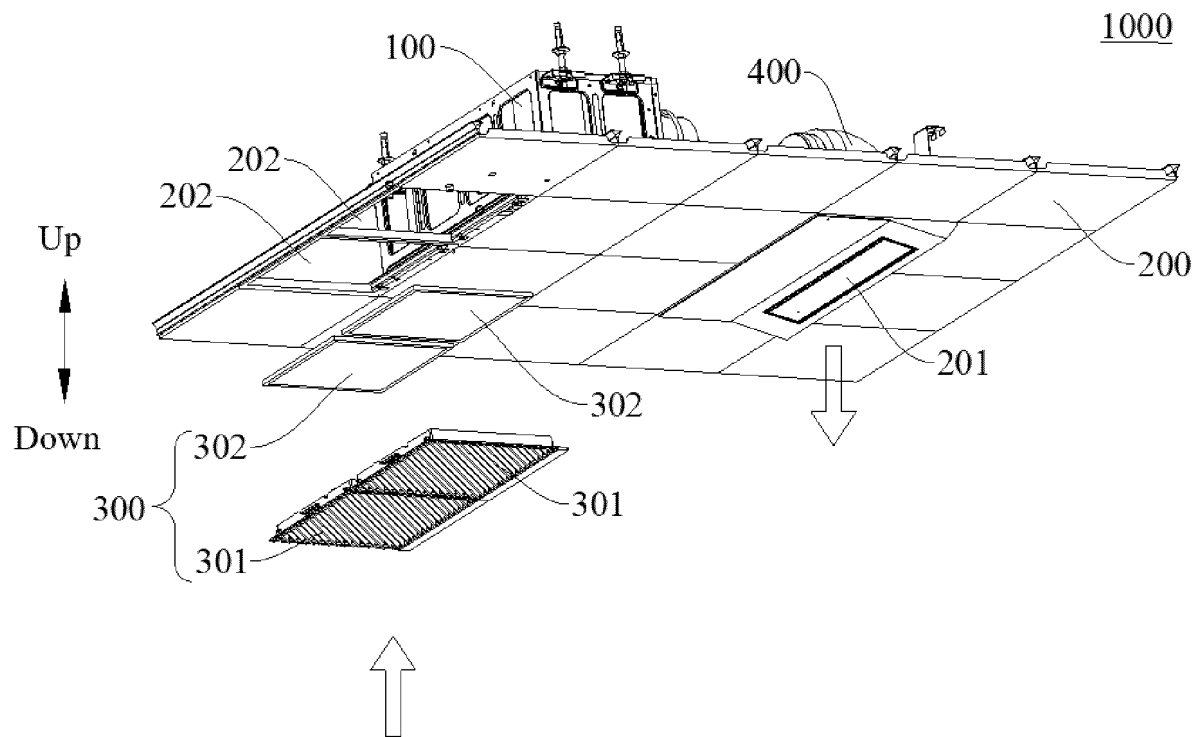


FIG. 2

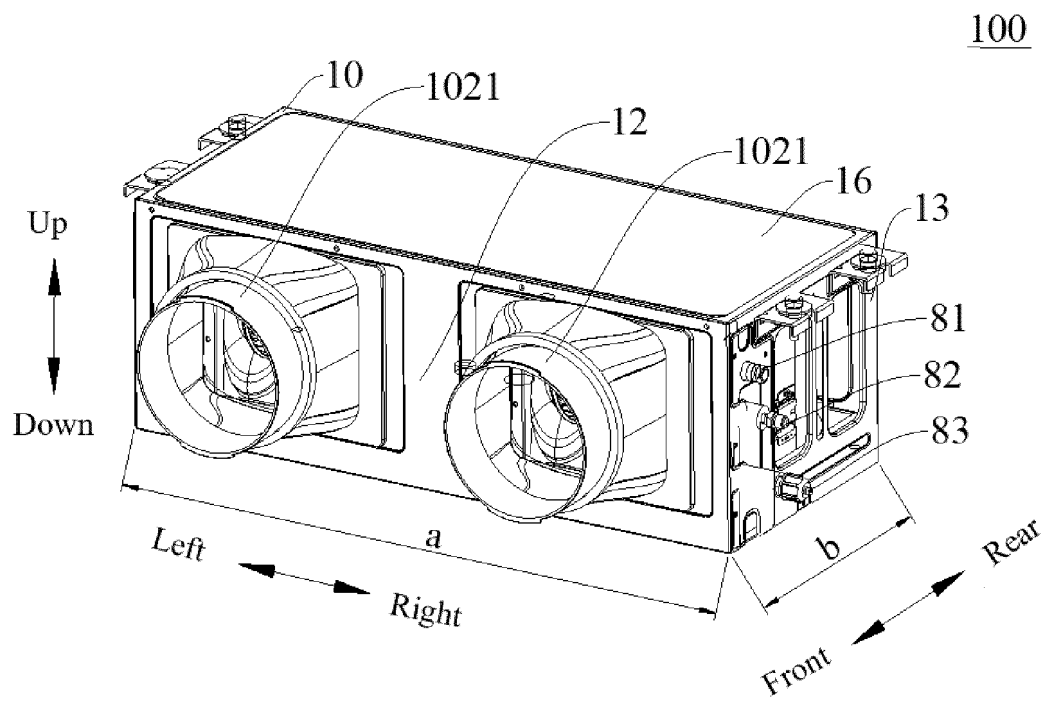


FIG. 3

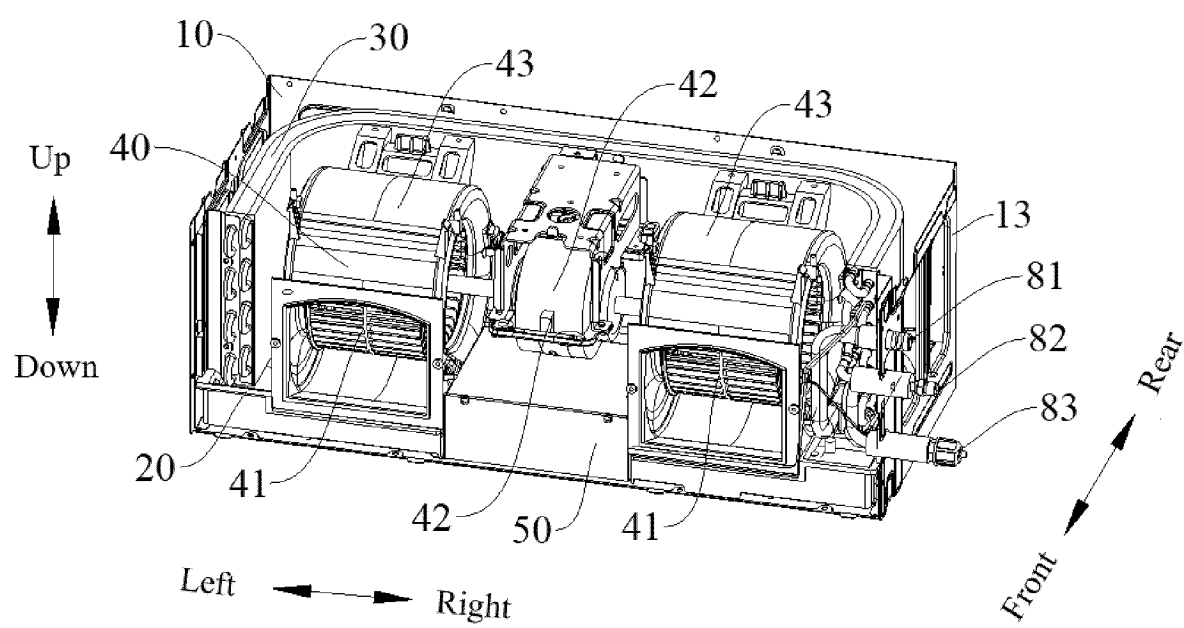


FIG. 4

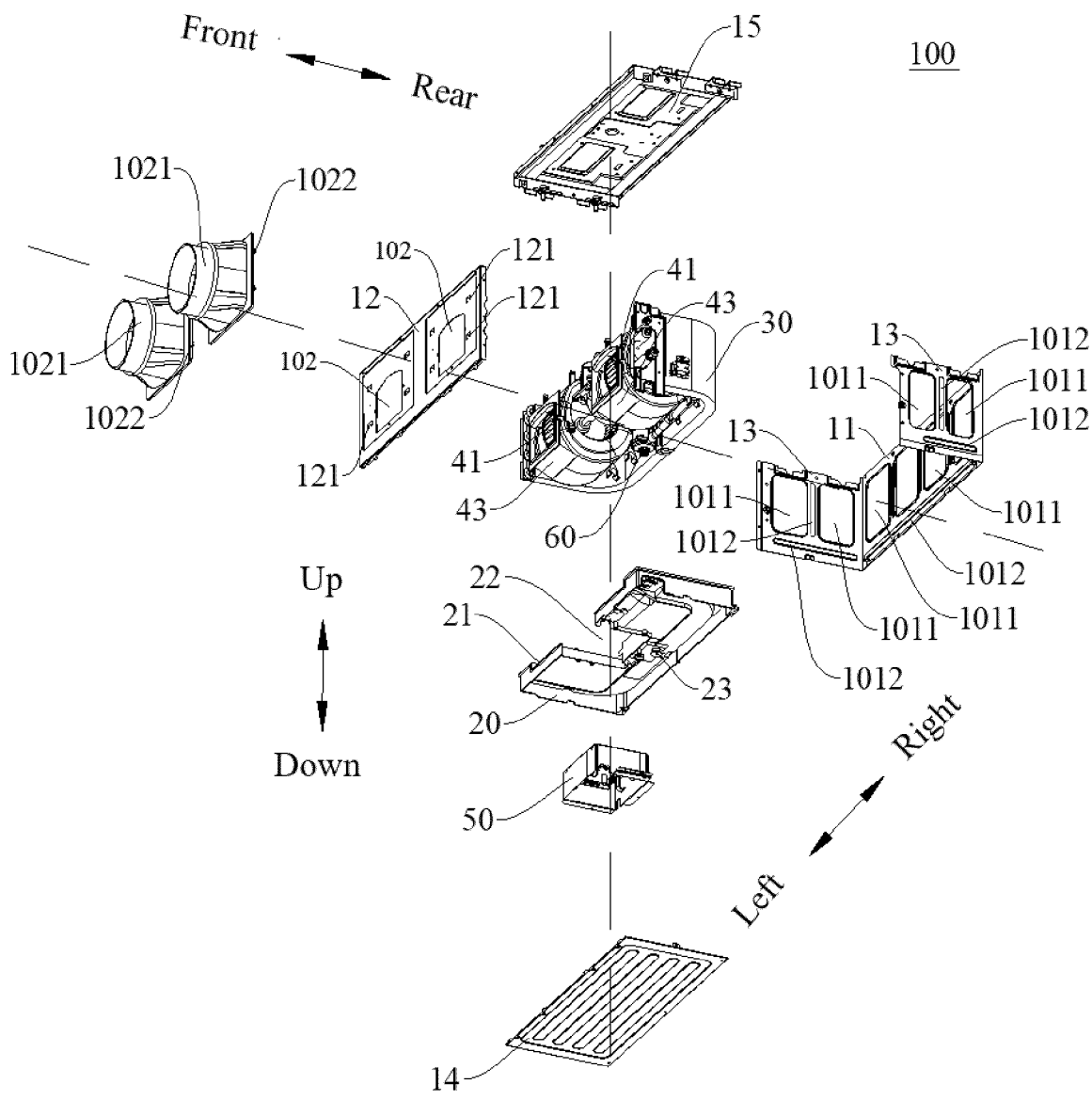


FIG. 5

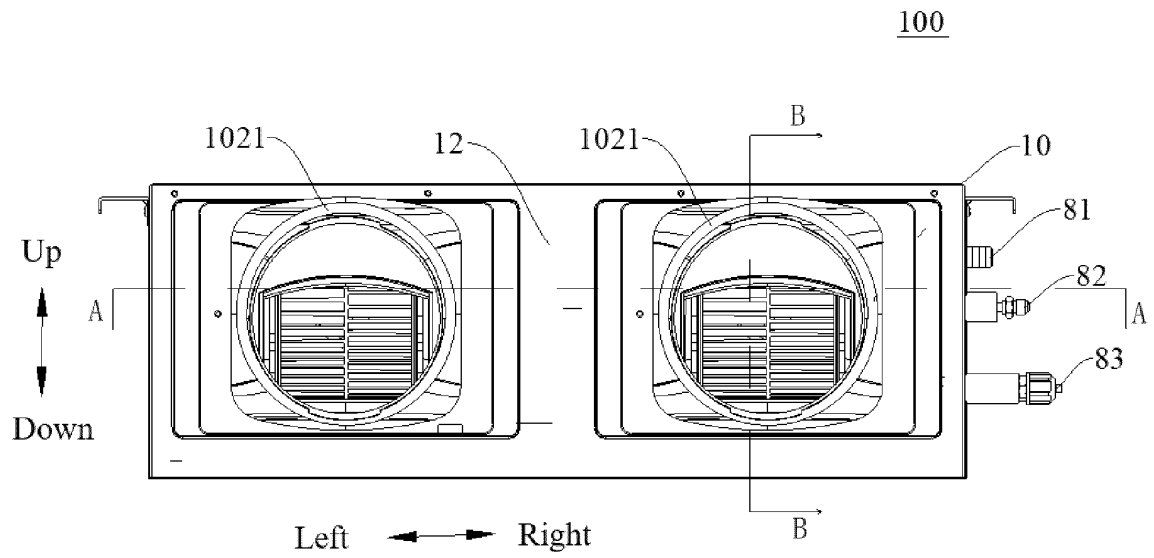


FIG. 6

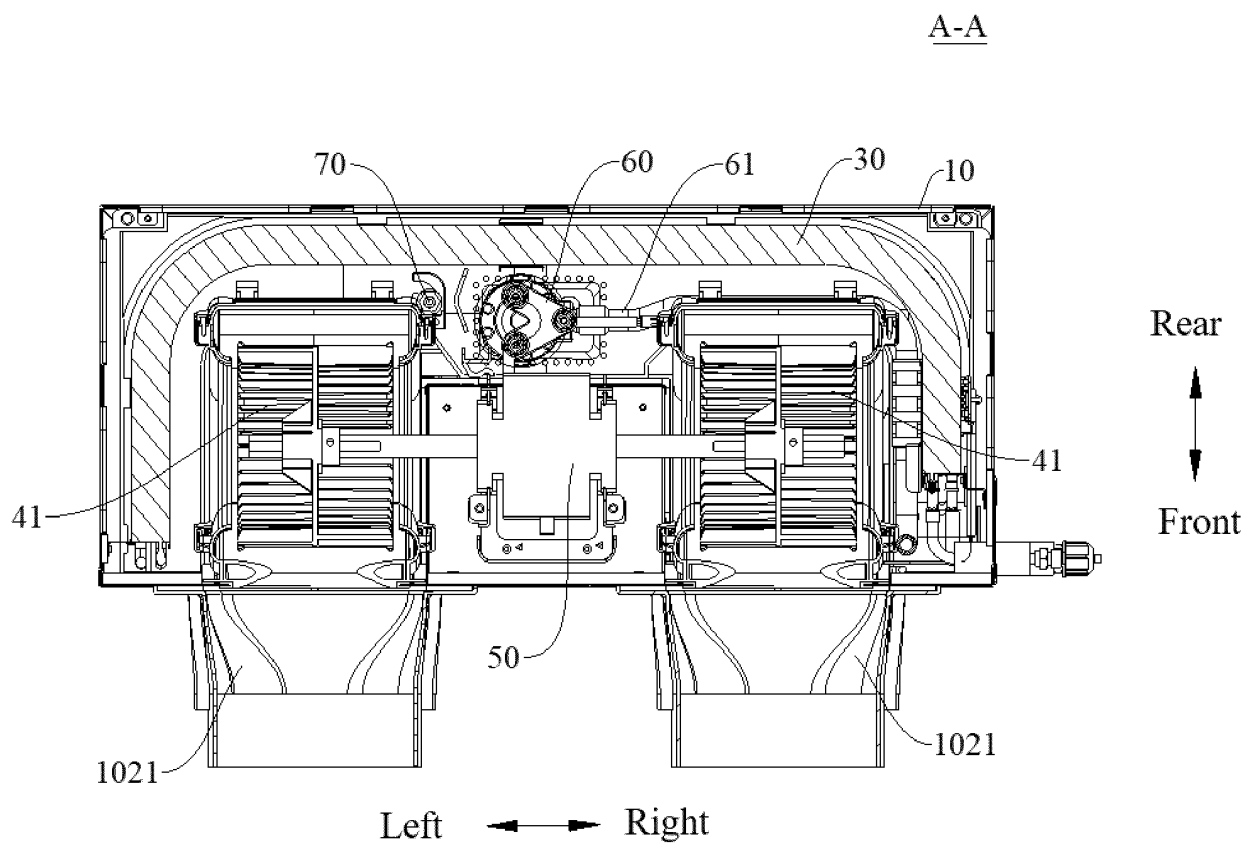


FIG. 7

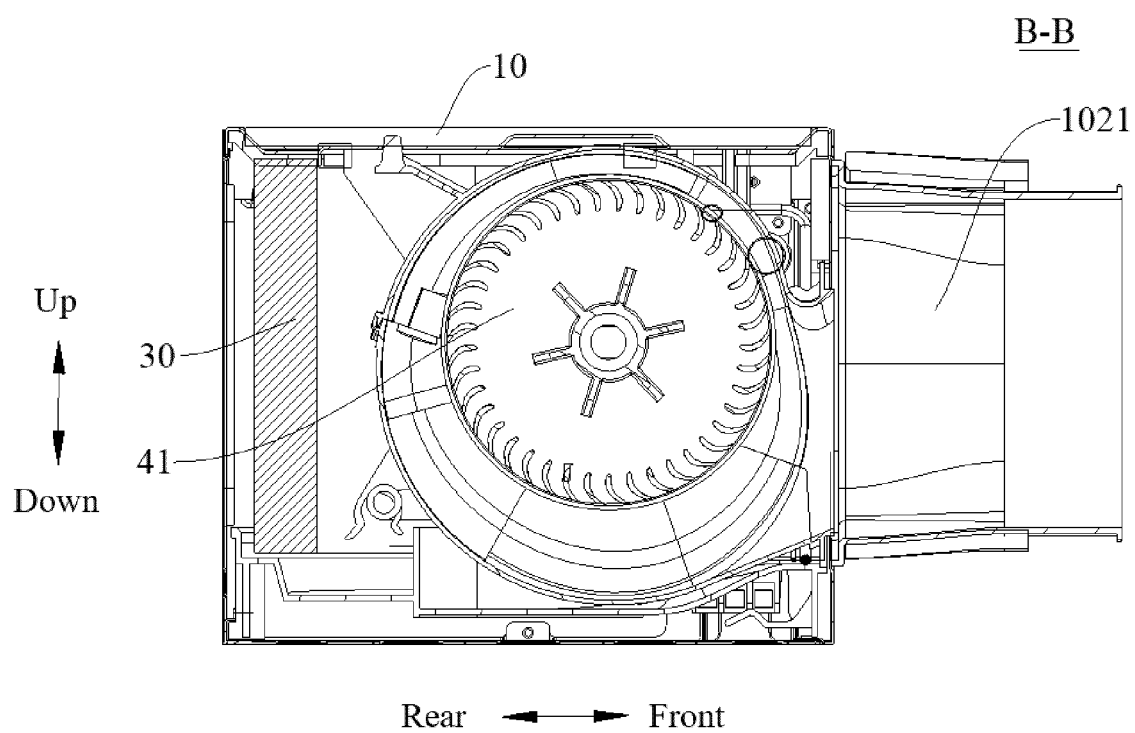


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/127761

A. CLASSIFICATION OF SUBJECT MATTER

F24F1/00(2019.01);F24F13/22(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)

IPC: 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)

VEN, SIPOABS, CNABS, CNTXT, CNKI: 空调, 风机, 接水, 冷凝水, 水泵, 换热器, 水位, 进风, 出风, 电机, 电控, 吊顶, 天花板, 室内机, air, conditioning, fan, water, receiving, condensing, pump, heat, exchanger, level, inlet, outlet, electric, motor, control, ceiling, indoor, unit

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	CN 104329728 A (GUANGDONG EUROKLIMAT AIR-CONDITIONING & REFRIGERATION CO., LTD.) 04 February 2015 (2015-02-04) description, paragraphs [0046]-[0052], and figures 1-9	8-14
Y	CN 114046564 A (GREE GREEN REFRIGERATION TECHNOLOGY CENTER CO., LTD. OF ZHUHAI) 15 February 2022 (2022-02-15) description, paragraphs [0036]-[0059], and figures 1-2	8-14
Y	CN 102147130 A (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD.) 10 August 2011 (2011-08-10) description, paragraph [0021], and figure 3	8-14
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☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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“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

23 March 2023

Date of mailing of the international search report

29 March 2023

Name and mailing address of the ISA/CN

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Facsimile No. (86-10)62019451

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/127761

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Information on patent family members

International application No.

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