



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
17.03.2021 Bulletin 2021/11

(51) Int Cl.:
F24F 13/20 (2006.01) F24F 13/30 (2006.01)

(21) Application number: **18931949.4**

(86) International application number:
PCT/CN2018/119864

(22) Date of filing: **07.12.2018**

(87) International publication number:
WO 2020/042422 (05.03.2020 Gazette 2020/10)

(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 MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(30) Priority: **28.08.2018 CN 201810990827**

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(54) **BOTTOM SHELL ASSEMBLY AND AIR CONDITIONER HAVING SAME**

(57) The invention discloses a bottom housing assembly and an air conditioner with the bottom housing assembly. The bottom housing assembly includes an electric box (10); a base (20), wherein the base (20) is provided with an installing end, the electric box (10) is

detachably installed on the installing end, a pipe-layout structure is formed between the installing end and the electric box (10), and the pipe-layout structure is used for leading a gas-liquid pipe (30) out of the base (20).

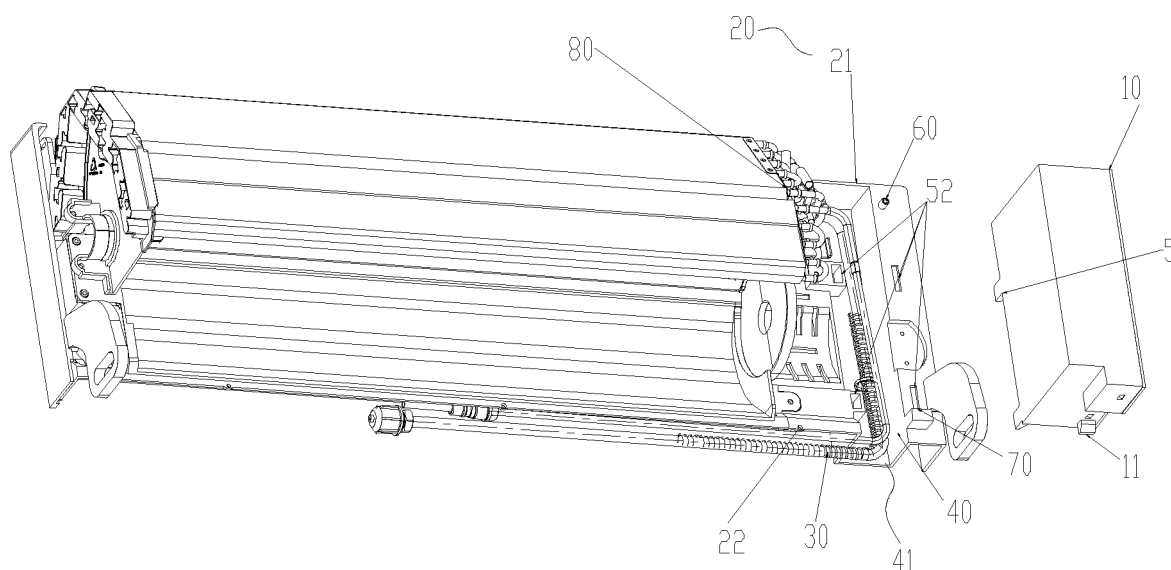


Fig. 1

Description

Technical Field

[0001] The invention relates to the technical field of air conditioner equipment, and in particular to a bottom housing assembly and an air conditioner with the bottom housing assembly.

Background

[0002] A pipe passing mode of an evaporator component of an air conditioner in a related art is pipe passage from the back of a whole machine, such a pipe passing mode needs to manually overturn a bottom housing during production assembly, and then evaporator refrigerant inlet and outlet pipes are assembled in a pipe groove, such a production process increases labor intensity of a worker on the one hand, time and labor are consumed, and it is not beneficial to automatic assembly of production on the other hand.

Summary

[0003] Some embodiments of the invention provide a bottom housing assembly and an air conditioner with the bottom housing assembly, as to solve a problem in a related technology that the air conditioner does not achieve automatic assembly.

[0004] According to some embodiments of the invention, a bottom housing assembly is provided, including: an electric box; a base, wherein the base is provided with an installing end, the electric box is detachably installed on the installing end; and a pipe-layout structure formed between the installing end and the electric box, wherein the pipe-layout structure is used for leading a gas-liquid pipe out of the base.

[0005] In some embodiments, the pipe-layout structure includes a pipe groove formed between the installing end and a bottom of the electric box.

[0006] In some embodiments, the pipe groove is disposed on a surface of the installing end, the pipe groove is extended to be configured along a width direction of the base, and a groove wall, along a long side direction of the base, of the pipe groove is provided with a pipe-layout notch.

[0007] In some embodiments, the pipe groove is disposed on a bottom surface of the electric box, the pipe groove is extended to be configured along a width direction of the base, and a groove wall, along a long side direction of the base, of the pipe groove is provided with a pipe-layout notch.

[0008] In some embodiments, the pipe groove includes: a first groove body, the first groove body is installed on the base, and the first groove body is extended to be configured along a width direction of the base; and a second groove body, the second groove body is installed on a bottom surface of the electric box, the second

groove body is extended to be configured along the width direction of the base, the first groove body and the second groove body are oppositely provided and enclosed to form a pipe-layout structure, a side, close to the base, of the first groove body and/or the second groove body is provided with a pipe-layout notch.

[0009] In some embodiments, the bottom housing assembly further includes: a latching assembly, the latching assembly includes mutually cooperated locking buckle and locking groove, one of the locking buckle and the locking groove is disposed on the base, and the other of the locking buckle and the locking groove is disposed on the electric box, the electric box is detachably connected with the base through the latching assembly.

[0010] In some embodiments, there are a plurality of locking assemblies, the plurality of locking assemblies are provided at intervals along a width direction of the base.

[0011] In some embodiments, the base is provided with a first installing side and a second installing side provided opposite to the first installing side, the first installing side and the second installing side are provided along the long side direction of the base, the second installing side is provided with the pipe-layout notch, when the base is installed on an installing foundation, the second installing side is positioned below the first installing side.

[0012] In some embodiments, the bottom housing assembly further includes: a connecting column, the connecting column is disposed on the base, the electric box is connected with the base through the connecting column.

[0013] In some embodiments, the bottom housing assembly further includes: a stop bulge, the stop bulge is connected with the base and provided opposite to the connecting column, a surface, towards the connecting column, of the stop bulge is provided with a limiting groove, and the electric box is provided with a limiting bulge cooperated with the limiting groove.

[0014] According to some embodiments of the invention, an air conditioner is provided, including a bottom housing assembly, the bottom housing assembly is the above bottom housing assembly.

[0015] A technical scheme of the invention is applied, the pipe-layout structure for leading out the gas-liquid pipe is disposed between the electric box and the installing end of the base, such a configuration is capable of conveniently leading a gas inlet pipe and a liquid inlet pipe communicated with a heat exchanger out of the base, effectively optimizing the pipe passing mode of the bottom housing assembly, and enabling the bottom housing assembly with the structure to achieve the automatic assembly.

Brief Description of the Drawings

[0016] The accompanying drawings, which constitute a part of the present application, are used to provide a further understanding of the invention, and the exemplary

embodiments of the invention and the description thereof are used to explain the invention, but do not constitute improper limitations to the invention. In the drawings:

Fig. 1 shows a structure schematic diagram of a first embodiment of a bottom housing assembly according to the invention;

Fig. 2 shows a structure schematic diagram of a second embodiment of the bottom housing assembly according to the invention; and

Fig. 3 shows a structure schematic diagram of an embodiment of an air conditioner according to the invention.

[0017] Herein, the above drawings include the following drawing reference signs:

10. Electric box; 11. Limiting bulge;
20. Base; 21. First installing side; 22. Second installing side; 23. Housing module; 24. Air outlet frame module; 25. Air deflector assembly module;
30. Gas-liquid pipe;
40. Pipe groove; 41. Pipe-layout notch;
51. Locking buckle; 52. Locking groove;
60. Connecting column; 70. Stop bulge; and 80. Evaporator assembly.

Detailed Description of the Embodiments

[0018] It should be noted that the embodiments in the present application and the features in the embodiments may be combined with each other without conflict. The invention will be described in detail below with reference to the accompanying drawings and in conjunction with the embodiments.

[0019] It should be noted that terms used here are only used for describing specific implementation modes, and are not intended to limit the exemplary implementation modes according to the present application. As used herein, unless clearly specified otherwise in the context, a singular form is also intended to include a plural form. In addition, it should also be understood that when the terms "comprising" and/or "including" are used in the description, it is indicated that there are features, steps, operations, devices, components and/or combinations thereof.

[0020] It should be noted that the terms "first", "second", and the like in the specification and claims of the present application and in the above drawings are used to distinguish similar objects and are not necessarily used to describe a specific sequence or order. It will be appreciated that the data used in this way may be interchanged where appropriate, so that the implementation manners of the present application described herein can be implemented, for example, in an order other than those illustrated or described herein. In addition, the terms "include" and "have" and any variations thereof are intended to cover non-exclusive inclusions. For example, a proc-

ess, method, system, product, or equipment that comprises a series of steps or units need not be limited to those steps or units that are explicitly listed, and may instead include other steps or units that are not explicitly listed or inherent to these processes, methods, products or equipment.

[0021] For ease of description, spatially relative terms such as "on", "over", "on an upper surface", "above", etc. may be used herein to describe a spatial position relationship between one device or feature as shown in the figures and other devices or features. It will be appreciated that the spatially relative terms are intended to comprise different orientations of the device in use or operation in addition to the orientation of the device described in the figures. For example, if the device in the figures is turned upside down, the device described as "over other devices or configurations" or "on other devices or configurations" will be positioned "below other devices or configurations" or "under other devices or configurations". Thus, the exemplary term "over" may include both "above" and "below". The device may also be positioned in other different manners (rotated for 90 degrees or at other orientations), and the spatially relative descriptors used herein are interpreted accordingly.

[0022] Now, the exemplary implementation modes according to the present application are described in more detail with reference to the drawings. However, these exemplary implementation modes may be implemented in multiple different forms, and should not be interpreted to be limited to the implementation modes described here. It should be understood that these implementation modes are provided to make the invention of the present application thorough and complete, and adequately convey concepts of these exemplary implementation modes to those of ordinary skill in the art, in the drawings, for clarity, thicknesses of layers and regions may be enlarged, and the same reference sign is used to show the same device, therefore the description of them may be omitted.

[0023] As shown in Fig. 1 to Fig. 3, according to an embodiment of the invention, a bottom housing assembly is provided.

[0024] In an embodiment, as shown in Fig. 1, the bottom housing assembly includes an electric box 10 and a base 20. The base 20 is provided with an installing end, the electric box 10 is detachably installed on the installing end, a pipe-layout structure is formed between the installing end and the electric box 10, and the pipe-layout structure is used for leading a gas-liquid pipe 30 out of the base 20.

[0025] In the present embodiment, the pipe-layout structure for leading out the gas-liquid pipe 30 (including a gas inlet pipe and a liquid inlet pipe) is disposed between the electric box and the installing end of the base, such a configuration is capable of conveniently leading the gas inlet pipe and the liquid inlet pipe communicated with a heat exchanger, especially an evaporator assembly 80, out of the base, effectively optimizing the pipe-

layout mode of the bottom housing assembly, and enabling the bottom housing assembly with the structure to achieve the automatic assembly.

[0026] In some embodiments, the pipe-layout structure includes a pipe groove 40 formed between the installing end and the bottom of the electric box 10. Such a configuration is capable of limiting the gas-liquid pipe between the base and the electric box well.

[0027] In some embodiments, the pipe groove 40 is disposed on a surface of the installing end, the pipe groove 40 is extended to be configured along a width direction of the base 20, and a groove wall, along a long side direction of the base 20, of the pipe groove 40 is provided with a pipe-layout notch 41. Such a configuration is capable of conveniently leading the gas-liquid pipe out of the base.

[0028] According to another embodiment of the present application, the pipe groove 40 is disposed on a bottom surface of the electric box 10, the pipe groove 40 is extended to be configured along a width direction of the base 20, and a groove wall, along a long side direction of the base 20, of the pipe groove 40 is provided with a pipe-layout notch 41. Such a configuration is capable of similarly enabling the gas-liquid pipe to be limited between the bottom of the electric box 10 and the base well.

[0029] In an embodiment, the pipe groove 40 includes a first groove body and a second groove body. The first groove body is installed on the base 20, and the first groove body 20 is extended to be configured along a width direction of the base. The second groove body is installed on a bottom surface of the electric box 10, the second groove body is extended to be configured along the width direction of the base 20, the first groove body and the second groove body are oppositely provided and enclosed to form a pipe-layout structure, one side, close to the base 20, of the first groove body and/or the second groove body is provided with the pipe-layout notch. Certainly, in some embodiments, the first groove body and the second groove body are configured to be provided with a pipeline through which the gas-liquid pipe passes at the same time.

[0030] In order to further improve the connection stability between the electric box 10 and the base, in an embodiment, the bottom housing assembly is further provided with a latching assembly. The latching assembly includes mutually cooperated locking buckle 51 and locking groove 52, one of the locking buckle 51 and the locking groove 52 is disposed on the base 20, and the other of the locking buckle 51 and the locking groove 52 is disposed on the electric box 10, the electric box 10 is detachably connected with the base 20 through the latching assembly. Such a configuration is capable of conveniently performing washing and installing operations on a bottom housing.

[0031] In an embodiment, there are a plurality of latching assemblies, the plurality of latching assemblies are provided at intervals along a width direction of the base 20. Such a configuration is capable of improving the con-

nection stability between the electric box and the base.

[0032] In some embodiments, the base 20 is provided with a first installing side 21 and a second installing side 22 opposite to the first installing side 21, the first installing side 21 and the second installing side 22 are provided along the long side direction of the base 20, the second installing side 22 is provided with the pipe-layout notch 41, when the base 20 is installed on an installing foundation, the second installing side 22 is positioned below the first installing side. In some embodiments, the installing foundation is an indoor cavity wall, namely the air conditioner is a wall-mounted air conditioner.

[0033] In order to further improve the connection stability between the electric box and the base, the bottom housing assembly further includes a connecting column 60 and a stop bulge 70. The connecting column 60 is disposed on the base 20, the electric box 10 is connected with the base 20 through the connecting column 60. The stop bulge 70 is connected with the base 20 and provided opposite to the connecting column 60, a surface, towards the connecting column 60, of the stop bulge 70 is provided with a limiting groove, and the electric box 10 is provided with a limiting bulge 11 cooperated with the limiting groove. Such a configuration is capable of enabling the electric box to be installed on the base well.

[0034] The bottom housing assembly in the above embodiment may also be used in the technical field of air conditioner equipment, namely according to some embodiments of the invention, an air conditioner is provided, including a bottom housing assembly, the bottom housing assembly is the bottom housing assembly in the above embodiment.

[0035] Specifically, the bottom housing assembly using the structure is capable of solving the problems that the production and assembly of the evaporator component and the bottom housing assembly are difficult and it is not easy to achieve the automatic assembly. The bottom housing assembly in the invention is capable of enabling the evaporator component to be positioned in front of the base integrally, simplifying an assembly working procedure of the evaporator, and conveniently automatic-assembling the evaporator component later.

[0036] In some embodiments, the pipe groove is disposed on the base, the electric box is assembled above the pipe groove, refrigerant inlet and outlet pipes passes through the pipe groove between the base and the electric box, and the evaporator component is conveniently assembled. After the air conditioner is used for a long time, a lot of dust is able to accumulate on a filter screen at an air inlet of the air conditioner, if it is not cleaned regularly, the air conditioner becomes a potential source of pollution in the home, so the health of a consumer is endangered. The air conditioner is cleaned conveniently by using the structure.

[0037] In some embodiments, the whole air conditioner includes a housing module 23, the base 20, an air outlet frame module 24, and an air deflector assembly module 25, as shown in Fig. 3, the bottom housing and the hous-

ing are detachably detached from the housing module in a mode of a fastener and a bolt. An air outlet is disposed on the air outlet frame module, an air outlet frame is fixed on the housing module in the mode of the fastener and the bolt, and closes a detaching channel of a bottom housing component. An air deflector assembly includes an air deflector and an air sweeping blade, the air sweeping blade is fixed on the air deflector in a mode of the fastener, and the air deflector is pushed out of the whole machine to perform upper-lower and left-right air sweeping.

[0038] In the present embodiment, all pipelines of the evaporator component are assembled at the same side of the housing through such a pipe-layout mode, the assembling and detaching of the evaporator component is convenient, at the same time, the automatic assembly of the evaporator component is improved. The pipe-layout mode of the evaporator is shown in Fig. 2, it is observed from the figure that the inlet and outlet gas-liquid pipes of the evaporator component are at the same side of the base, namely the front side, the inlet and outlet gas-liquid pipes pass through the space between the base and the electric box for example. In an embodiment, as shown in Fig. 1, multiple locking groove structures, one limiting groove structure and a connecting column are disposed on the base in the figure 1. In some embodiments, the connecting column is a bolt column structure. At the same time, the pipe groove (the pipe groove is in a lower portion of the electric box or the pipe groove is formed by the base and the electric box together) through which the inlet and outlet gas-liquid pipes pass is further disposed on the base, and a locking buckle structure is disposed on the electric box. The electric box is fixed on the base through cooperation between locking buckles and cooperation between bolt columns.

[0039] The inlet and outlet gas-liquid pipes of the evaporator component pass through the space between the electric box and the base and are positioned in the front side of the same side of the base, the assembling and detaching of the evaporator component is convenient, and the automatic assembly of the evaporator component is improved.

[0040] In addition to the above, it should be noted that "one embodiment", "another embodiment", "embodiment" and the like mentioned in the description refer that specific features, structures or characteristics described in combination with the embodiment are included in at least one embodiment generally described in the present application. The same expression occurring in multiple places in the description does not necessarily refer to the same embodiment. Furthermore, when one specific feature, structure or characteristic is described in combination with any one embodiment, it is claimed that such feature, structure or characteristic achieved in combination with other embodiments also falls within a scope of the invention.

[0041] In the above embodiments, the description of each embodiment has own emphasis, and a part that is

not described in detail in a certain embodiment may reference to related descriptions of other embodiments.

[0042] The foregoing descriptions are merely some embodiments of the invention and are not intended to limit the invention. For those skilled in the art, the invention may have various changes and modifications. Any modifications, equivalent replacements and improvements made within the spirit and principle of the invention shall fall within the protection scope of the invention.

Claims

1. A bottom housing assembly, comprising:

an electric box (10);
a base (20), wherein the base (20) is provided with an installing end, the electric box (10) is detachably installed on the installing end; and
a pipe-layout structure formed between the installing end and the electric box (10), wherein the pipe-layout structure is used for leading a gas-liquid pipe (30) out of the base (20).

2. The bottom housing assembly as claimed in claim 1, wherein the pipe-layout structure comprises a pipe groove (40) formed between the installing end and a bottom of the electric box (10).

3. The bottom housing assembly as claimed in claim 2, wherein the pipe groove (40) is disposed on a surface of the installing end, the pipe groove (40) is extended to be configured along a width direction of the base (20), and a groove wall, along a long side direction of the base (20), of the pipe groove (40) is provided with a pipe-layout notch (41).

4. The bottom housing assembly as claimed in claim 2, wherein the pipe groove (40) is disposed on a bottom surface of the electric box (10), the pipe groove (40) is extended to be configured along a width direction of the base (20), and a groove wall, along a long side direction of the base (20), of the pipe groove (40) is provided with a pipe-layout notch (41).

5. The bottom housing assembly as claimed in claim 2, wherein the pipe groove (40) comprises:

a first groove body, the first groove body is installed on the base (20), and the first groove body is extended to be configured along a width direction of the base (20); and
a second groove body, the second groove body is installed on a bottom surface of the electric box (10), the second groove body is extended to be configured along the width direction of the base (20), the first groove body and the second

groove body are oppositely provided and enclosed to form a pipe-layout structure, a side, close to the base (20), of the first groove body and/or the second groove body is provided with a pipe-layout notch (41).

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6. The bottom housing assembly as claimed in claim 1, wherein the bottom housing assembly further comprises:
a latching assembly, the latching assembly comprises mutually cooperated locking buckle (51) and locking groove (52), one of the locking buckle (51) and the locking groove (52) is disposed on the base (20), and the other of the locking buckle (51) and the locking groove (52) is disposed on the electric box (10), the electric box (10) is detachably connected with the base (20) through the latching assembly.

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7. The bottom housing assembly as claimed in claim 6, wherein there are a plurality of latching assemblies, the plurality of latching assemblies are provided at intervals along a width direction of the base (20).

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8. The bottom housing assembly as claimed in any one of claims 3 to 5, wherein the base (20) is provided with a first installing side (21) and a second installing side (22) provided opposite to the first installing side (21), the first installing side (21) and the second installing side (22) are provided along the long side direction of the base (20), the second installing side (22) is provided with the pipe-layout notch (41), when the base (20) is installed on an installing foundation, the second installing side (22) is positioned below the first installing side (21).

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9. The bottom housing assembly as claimed in claim 1, wherein the bottom housing assembly further comprises:
a connecting column (60), the connecting column (60) is disposed on the base (20), the electric box (10) is connected with the base (20) through the connecting column (60).

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10. The bottom housing assembly as claimed in claim 9, wherein the bottom housing assembly further comprises:
a stop bulge (70), the stop bulge (70) is connected with the base (20) and provided opposite to the connecting column (60), a surface, towards the connecting column (60), of the stop bulge (70) is provided with a limiting groove, and the electric box (10) is provided with a limiting bulge (11) cooperated with the limiting groove.

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11. An air conditioner, comprising the bottom housing assembly as claimed in any one of claims 1 to 10.

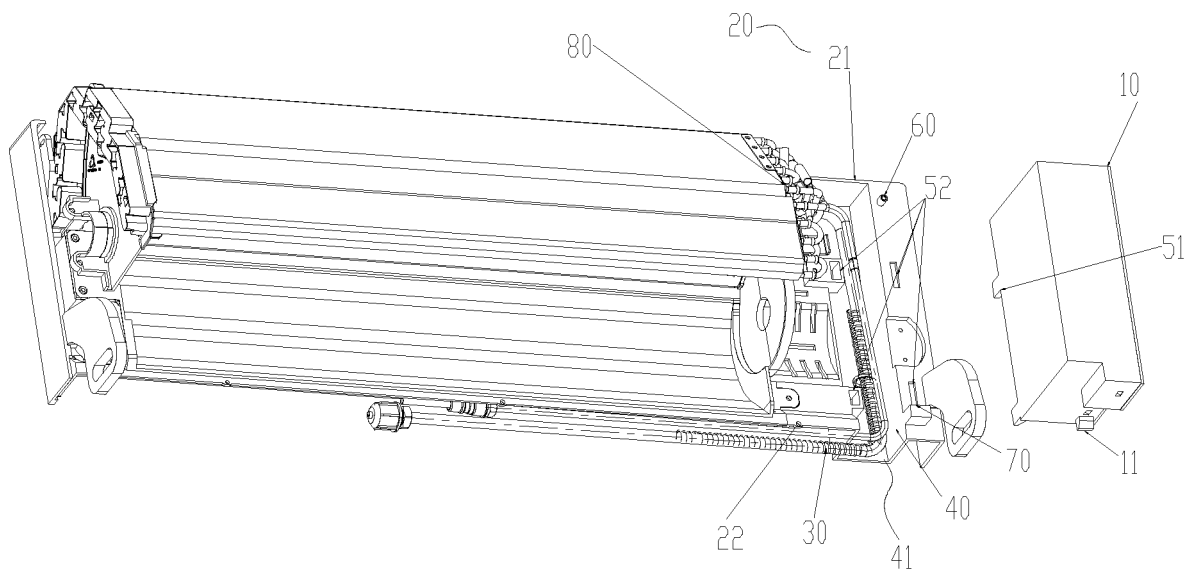


Fig. 1

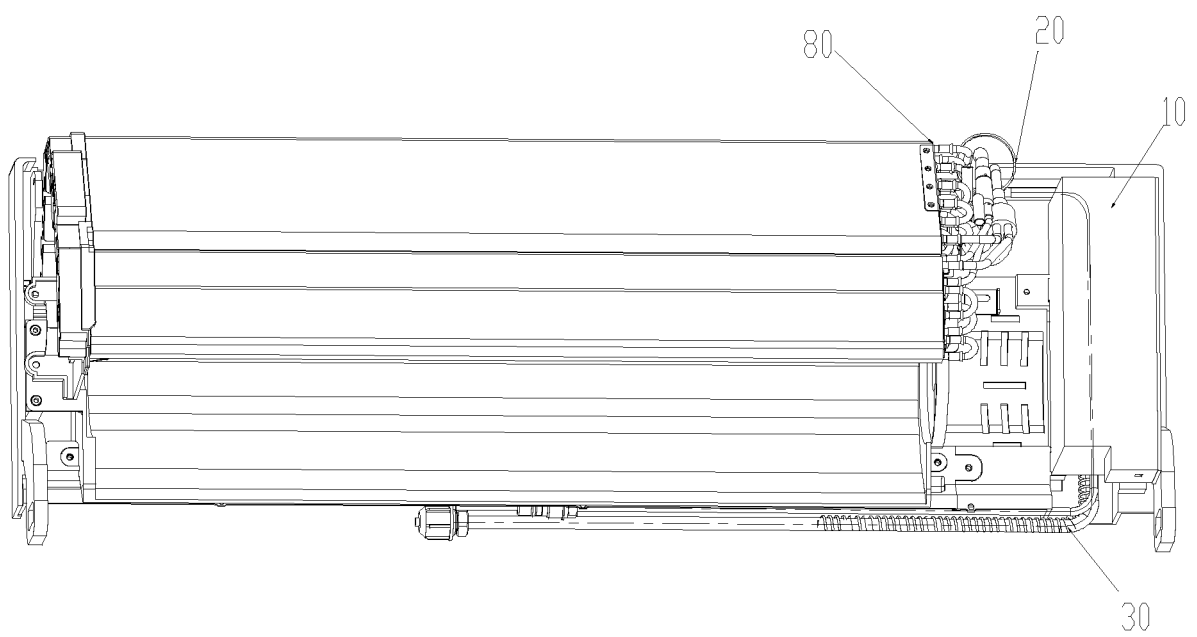


Fig. 2

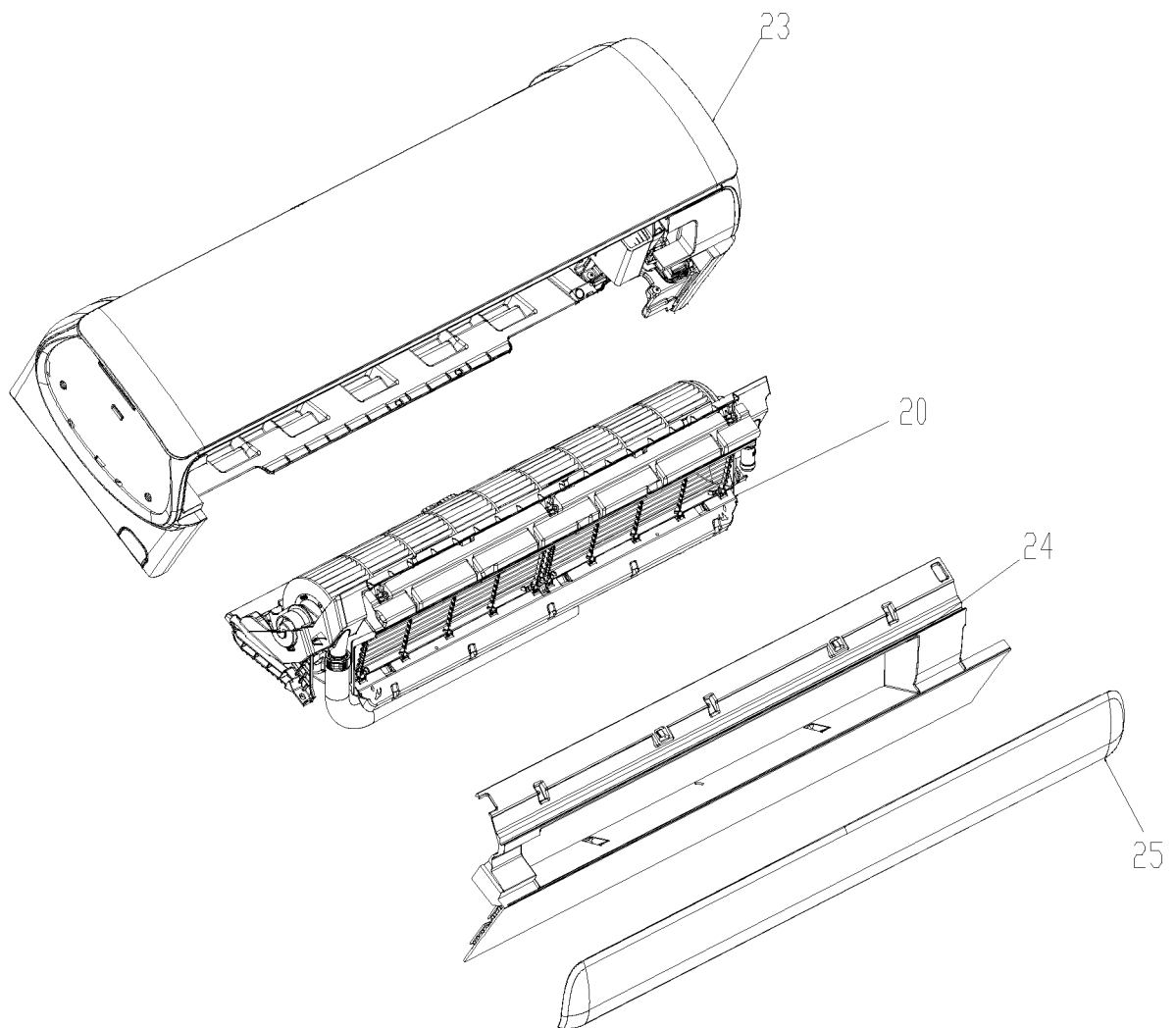


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2018/119864

5	A. CLASSIFICATION OF SUBJECT MATTER		
	F24F 13/20(2006.01)i; F24F 13/30(2006.01)i		
	According to International Patent Classification (IPC) or to both national classification and IPC		
	B. FIELDS SEARCHED		
10	Minimum documentation searched (classification system followed by classification symbols)		
	F24F		
	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
15	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
	CNABS; DWPI; SIPOABS; CNKI: 底壳, 底盘, 电控盒, 电器盒, 电装盒, 走管, 槽, 孔, 冷媒, 制冷剂, 致冷剂, 管, 配管, 气液管, base, underpan, chassis, frame, electric box, refrigerant, coolant, groove, trough, slot, aperture, hole, orifice, pipe, gas liquid pipe		
	C. DOCUMENTS CONSIDERED TO BE RELEVANT		
20	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Y	CN 201666626 U (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI) 08 December 2010 (2010-12-08) description, paragraphs [0023]-[0030], and figures 1-2	1-11
25	Y	CN 204335267 U (GD MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD.) 13 May 2015 (2015-05-13) description, paragraphs [0023]-[0040], and figures 1-2	1-11
	Y	CN 204629841 U (GD MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD. ET AL.) 09 September 2015 (2015-09-09) description, paragraphs [0039]-[0068], and figures 1-7	1-11
30	A	CN 108151187 A (QINGDAO HISENSE HITACHI AIR-CONDITIONING SYSTEMS CO., LTD.) 12 June 2018 (2018-06-12) entire document	1-11
35	A	CN 204902041 U (GUANGDONG MIDEA HEATING & VENTILATION EQUIPMENT CO., LTD. ET AL.) 23 December 2015 (2015-12-23) entire document	1-11
	☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
40	* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed		
45	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
	Date of the actual completion of the international search		Date of mailing of the international search report
	19 April 2019		30 April 2019
50	Name and mailing address of the ISA/CN		Authorized officer
	State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088 China		
55	Facsimile No. (86-10)62019451		Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2018/119864

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

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