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(54) ELECTRONIC CONTROL ASSEMBLY AND AIR CONDITIONER

(57) An electronic control assembly and an air conditioner are provided in the present invention. The electronic control assembly includes a base and an electronic control box assembly. A limiting member is disposed on the electronic control box assembly, a mounting member is disposed on the base, and the limiting member cooperates with the mounting member to limit the electronic control box assembly from moving relative to the base and to fix the electronic control box assembly and the base. The cooperation of the limiting member and the mounting member can restrict the movement of the electronic control box assembly relative to the base, and can fix the electronic control box assembly and the base. In this embodiment, the electronic control assembly is easy to detach, which reduces the cost of the electronic control assembly.

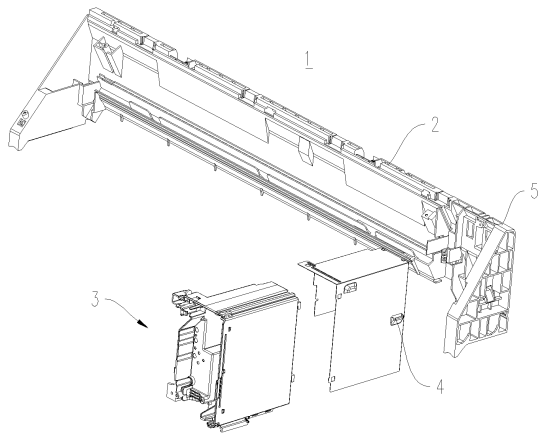

Fig. 1

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to the technical field of air conditioners, in particular to an electronic control assembly and an air conditioner.

BACKGROUND OF THE INVENTION

[0002] An air conditioner contains an electronic control box, which is used to control the start and stop and operation of the air conditioner. The electronic control box needs to be fixed to the base. Usually, the electronic control box is connected to the base through multiple screws, and the use of screws is prone to produce screw column to be striped and other phenomena with unreliable quality. With the use of screw connection, the whole is not easy to detach. And the production efficiency of the screwing is low, which increases the cost.

SUMMARY OF THE INVENTION

[0003] In view of this, an electronic control assembly is proposed in the present invention. The electronic control assembly is convenient to detach, which reduces the cost of the electronic control assembly.

[0004] To achieve the above purpose, the technical solution of the present invention is implemented as follows.

[0005] An electronic control assembly includes a base and an electronic control box assembly, wherein a limiting member is disposed on the electronic control box assembly, a mounting member is disposed on the base, and the limiting member cooperate with the mounting member to limit the electronic control box assembly from moving relative to the base and to fix the electronic control box assembly and the base.

[0006] Further, the limiting member includes a limit portion, and the limit portion is disposed on one side of the electronic control box assembly. An abut portion is disposed on the mounting member, and the limit portion abuts against the abut portion.

[0007] Further, the abut portion includes an abut surface, and the limit portion includes a limit surface. After the limit portion slides into position relative to the abut portion, the limit surface abuts against the abut surface to limit a displacement of the electronic control box assembly relative to the base.

[0008] Further, the limit portion includes a first guide surface, and the abut portion includes a second guide surface. After the first guide surface (8) slides into position relative to the second guide surface, the limit surface abuts against the abut surface.

[0009] Further, the limit portion includes a guide section and a limit section, the guide section is connected to the mounting member, and the limit section is connected to one end of the guide section and is disposed at an acute angle. The second guide surface is disposed on one side of the guide section away from the limit section, and the limit surface is disposed on one side of the limit section away from the guide section.

[0010] Further, the limit portion further includes a reset section, and one end of the reset section is connected to one end of the limit section away from the guide section. The reset section drives the limit section and the guide section to rotate, so that the limit surface is released from abutment with the abut surface.

[0011] Further, the limiting member includes a latching portion, a snap portion is disposed in the mounting member, and the latching portion is latched with the snap portion.

[0012] Further, the latching portion includes a first latching segment and a second latching segment that are connected to each other and are L-shaped. The first latching segment has one end connected to the electronic control box assembly (3), and the other end connected to the second latching segment.

[0013] Further, the snap portion is a snap hole, and the snap hole comprises a first section, a transition section, and a second section. The first section is connected to the second section through the transition section, and a width of the first section is larger than a width of the second section.

[0014] Compared with the prior art, the electronic control assembly of the present invention has the following advantages:

The electronic control assembly includes a base and an electronic control box assembly, wherein a limiting member is disposed on the electronic control box assembly, a mounting member is disposed on the base, and the limiting member cooperate with the mounting member to limit the electronic control box assembly from moving relative to the base and to fix the electronic control box assembly and the base. In the present invention, the cooperation of the limiting member and the mounting member can restrict the movement of the electronic control box assembly relative to the base, and can fix the electronic control box assembly and the base. In this embodiment, the electronic control assembly is easy to detach, which reduces the cost of the electronic control assembly.

[0015] Another object of the present invention is to provide an air conditioner, which is easy to disassemble and can reduce the cost of the electronic control assembly.

[0016] To achieve the above purpose, the technical solution of the present invention is implemented as follows.

[0017] An air conditioner includes an electronic control assembly. The electronic control assembly includes a base and an electronic control box assembly, wherein a limiting member is disposed on the electronic control box assembly, a mounting member is disposed on the base, and the limiting member cooperate with the mounting member to limit the electronic control box assembly from moving relative to the base and to fix the electronic control

box assembly and the base.

[0018] The advantages of the air conditioner and the above-mentioned electronic control assembly over the prior art are the same, and details are not repeated here.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] Aspects of the present invention are best understood from the following detailed description when read with the accompanying figures. The exemplary embodiments of the present invention and the description thereof are used to explain the present invention, and do not constitute improper limitations on the preset invention. In the drawings:

Fig. 1 is an exploded view of an electronic control assembly according to Embodiment 1 of the present invention.

Fig. 2 is a structural diagram of an electronic control box assembly of the electronic control assembly according to Embodiment 1 of the present invention.

Fig. 3 is a cross-sectional view of the electronic control assembly according to Embodiment 1 of the present invention.

Fig. 4 is a partial enlarged view of the electronic control assembly at location IV in Fig. 3 according to Embodiment 1 of the present invention.

Fig. 5 is a structural diagram of a base of the electronic control assembly according to Embodiment 1 of the present invention.

[0020] List of serial numbers in the figures:
1 - Electronic control assembly; 2 - Base; 3 - Electronic control box assembly; 4 - Limiting member; 5 - Mounting member; 6 - Limit portion; 7 - Limit surface; 8 - First guide surface; 9 - Latching portion; 10 - First latching segment; 11 - Second latching segment; 12 - Abut portion; 13 - Abut surface; 14 - Second guide surface; 15 - Guide section; 16 - Limit section; 17 - Reset section; 18 - Snap portion; 19 - First section; 20 - Transition section; 21 - Second section; 23 - Electronic control box; 24 - Protection plate.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] It should be noted that, in the case of no conflicts, the embodiments and features in the embodiments of the present invention can be combined mutually.

[0022] The present invention is described in detail with reference to drawings and with combination of embodiments.

Embodiment 1

[0023] With reference to Fig. 1, an electronic control assembly 1 is provided in this embodiment. The electronic control assembly 1 in this embodiment is easy to detach, which reduces the cost of the electronic control assembly 1.

[0024] In this embodiment, the electronic control assembly 1 includes a base 2 and an electronic control box assembly 3, wherein a limiting member 4 is disposed on the electronic control box assembly 3, a mounting member 5 is disposed on the base 2, and the limiting member 4 cooperates with the mounting member 5 to limit the electronic control box assembly 3 from moving relative to the base 2 and to fix the electronic control box assembly 3 and the base 2.

[0025] In this embodiment, the limiting member 4 cooperates with the mounting member 5 to limit the electronic control box assembly 3 from moving relative to the base 2 and to fix the electronic control box assembly 3 and the base 2. In this embodiment, the electronic control assembly 1 is easy to detach, which reduces the cost of the electronic control assembly 1.

[0026] With reference to Fig. 2, in this embodiment, the limiting member 4 includes a limit portion 6, and the limit portion 6 is disposed on one side of the electronic control box assembly 3. The limit portion 6 abuts against the mounting surface 5 to limit a displacement of the electronic control box assembly 3 relative to the base 2.

[0027] In this embodiment, the limit portion 6 has a limit surface 7. After the limit portion 6 slides into position relative to the mounting member 5, the limit surface 7 abuts against the mounting member 5 to limit a displacement of the electronic control box assembly 3 relative to the base 2.

[0028] In this embodiment, the limit portion 6 has a guide surface 8. After the guide surface 8 is slid into position relative to the mounting member 5, the limit surface 7 abuts against the mounting member 5.

[0029] In this embodiment, the limit portion 6 is a triangular prism, and the triangular prism has three side surfaces and two end surfaces, wherein one side surface is connected to a side wall of the electronic control box assembly 3. In another two side surfaces, one side surface is the abut surface 13, and the other is the first guide surface 8. Both the abut surface 13 and the first guide surface 8 extend to the side wall of the electronic control box assembly 3.

[0030] In this embodiment, the abut surface 13 is perpendicular to the side wall of the electronic control box assembly 3, and the first guide surface 8 is disposed at an acute angle with the side wall of the electronic control box assembly 3.

[0031] It should be noted that in this embodiment, the abut surface 13 is perpendicular to the side wall of the electronic control box assembly 3, and the first guide surface 8 is disposed at an acute angle with the side wall of the electronic control box assembly 3. But this is not limited to this, in other embodiments of the present invention, the abut surface 13 is disposed at an acute angle with the side wall of the electronic control box assembly 3, the first guide surface 8 is perpendicular to the side wall of the electronic control box assembly 3, or both the abut

surface 13 and the first guide surface 8 is disposed at an acute angle with the side wall of the electronic control box assembly 3. Any solutions equivalent to this embodiment that may achieve the effects of this embodiment is within the protection scope of the present invention.

[0032] In this embodiment, the limiting member 4 further includes a latching portion 9, and the latching portion 9 is latched with the mounting member 5 for fixing the base 2 and the limiting member 4.

[0033] In this embodiment, the latching portion 9 is disposed at a bottom wall of the electronic box assembly 3 adjacent to the limit portion 6.

[0034] In this embodiment, the latching portion 9 includes a first latching segment 10 and a second latching segment 11 that are connected to each other and are L-shaped. The first latching segment 10 has one end connected to the electronic control box assembly 3, and the other end connected to the second latching segment 11.

[0035] In this embodiment, the second latching section 11 passes through the mounting member 5, and the first latching section 10 and the second latching section 11 move relative to the mounting member 5, so that the first latching section 10 abuts against the second latching section for fixing the base 2 and the electronic box assembly 3.

[0036] In this embodiment, the electronic box assembly 3 includes an electronic control box 23 and a protection plate 24, wherein the protection plate 24 is disposed outside the electronic control box 23, and in this embodiment, the limit portion 6 is disposed on the protection plate 24.

[0037] It should be noted that in this embodiment, the electronic control box assembly 3 includes the electronic control box 23 and the protection plate 24, which is not limited herein. In other embodiments of the present invention, the electronic box assembly 3 may only include the electronic control box 23, and the limit portion 6 is disposed on the electronic control box 23. Any solutions equivalent to this embodiment that may achieve the effects of this embodiment is within the protection scope of the present invention.

[0038] With reference to Figs. 3 and 4, in this embodiment, an abut portion 12 is disposed on the mounting member 5, and the limit portion 6 abuts against the abut portion 12. The abut portion 12 has an abut surface 13. After the limit portion 6 is slid into position relative to the abut portion 12, the limit surface 7 abuts against the abut surface 13 to limit a displacement of the electronic control box assembly 3 relative to the base 2.

[0039] In this embodiment, the abut portion 12 has a second guide surface 14. After the first guide surface 8 is slid into position relative to the second guide surface 14, the limit surface 7 abuts against the abut surface 13.

[0040] In this embodiment, when the second latching section 11 passes through the mounting member 5 and moves relative to the mounting member 5, the first guide surface 8 abuts against the second guide surface 14 and slides relative to the second guide surface 14. When the first guide surface 8 slides into position relative to the second guide surface 14, the abut surface 13 abuts against the limit surface 7 to limit a displacement of the electronic control box assembly 3 relative to the base 2.

[0041] In this embodiment, the first guide surface 8 abuts against the second guide surface 14 and slides relative to the second guide surface 14. When the first guide surface 8 slides relative to the second guide surface 14 to disengage from the second guide surface 14, indicating that the first guide surface 8 slides into position relative to the second guide surface 14.

[0042] In this embodiment, the limit portion 6 includes a guide section 15 and a limit section 16, wherein the guide section 15 is connected to the mounting member 5, the limit section 16 is connected to one end of the guide section 15 away from the mounting member 5 and disposed at an acute angle. The guide surface is disposed at one side of the guide section 15 away from the limit section 16, and the limit surface 7 is disposed at one side of the limit section 16 away from the guide section 15.

[0043] In this embodiment, the limit portion 6 further includes a reset section 17, and one end of the reset section 17 is connected to one end of the limit section 16 away from the guide section 15. The reset section 17 may drive the limit section 16 and the guide section 15 to rotate, so that the limit surface 7 is released from abutment with the abut surface 13.

[0044] In this embodiment, when the electronic box assembly 3 is required to fix with the base 2, the limit surface 7 abuts against the abut surface 13 after the first guide surface 8 slides into position relative to the second guide surface 14 to limit a displacement of the electronic control box assembly 3 relative to the base 2. When disassembly is required, the reset section 17 is pushed, and the reset section 17 drives the limit section 16 and the guide section 15 to move close to the electronic control box assembly 3 relative to the base 2, so that the abut surface 13 is released from abutment with the limit surface 7, and the electronic control box assembly 3 is released from limit with the base 2, so as to remove the electronic control box assembly 3.

[0045] With reference to Fig. 5, in this embodiment, a snap portion 18 is disposed on the mounting member 5, and the latching portion 9 is latched with the snap portion 18.

[0046] In this embodiment, the snap portion 18 is a snap hole, and the snap hole includes a first section 19, a transition section 20, and a second section 21. The first section 19 is connected to the second section 21 through the transition section 20, and a width of the first section 19 is larger than a width of the second section 21.

[0047] In this embodiment, the transition section 20 is transitionally connected to the first section 19 and the second section 21. A width of the first section 19 is greater than a width of the second section 21. The first section 19 is used as a guide section 15 and the second section 21 is a fixed section. After the second latching section 11 enters into the second section 21 through the transi-

tion section 20 by the guide of the first section 19, the second latching section 11 abuts against a side wall of the mounting member 5 to limit a displacement of the electronic control box assembly 3 in a direction perpendicular to the mounting member 5, and the first latching section 10 abuts against the second section 21 for cooperating with the second section 21 to limit displacements of the electronic control box assembly 3 in three directions in a plane parallel to the mounting member 5. Except for the direction in which the second section 21 is communicated with the first section 19, displacements in other directions are limited.

[0048] In this embodiment, the width of the first section 19 is greater than the width of the second section 21, the second latching section 11 passes through the first section 19, and the first latching section 10 and the second latching section 11 move close to the second section 21. After the first latching section 10 and the second latching section 11 move to the second section 21, the first latching section 10 abuts against the second section 21 to fix the electronic box assembly 3.

[0049] In this embodiment, the abut surface 13 is parallel to the opposite side walls of the first section 19 and the second section 21. The abut surface 13 abuts against the limit surface 7, so that a displacement in a direction in which the first section 19 is communicated with the second section 21 is limited to fix the electronic control box assembly 3.

[0050] The working principle of the electronic control assembly 1 provided by the embodiment of the present invention is: in this embodiment, when the second latching section 11 moves close to the second section 21 through the mounting member 5 by the first section 19, the first guide surface 8 abuts against the second guide surface 14, and the first guide surface 8 slides relative to the second guide surface 14. After the first guide surface 8 slides into position relative to the second guide surface 14, the abut surface 13 abuts against the limit surface 7. And the first latching section 10 slides into a region where the second section 21 is located.

[0051] When the electronic control box assembly 3 is required to disassemble, the reset section 17 is pushed, and the reset section 17 drives the guide section 15 and the abut section to move close to the electronic control box assembly 3 relative to the base 2, so that the abut surface 13 is released from abutment with the limit surface 7. After the abut surface 13 is released from abutment with the limit surface 7, the electronic control box assembly 3 moves away from the second section 21, and the second latching section 11 is removed from the first section 19, so as to disassemble the electronic control box assembly 3.

[0052] In summary, the electronic control assembly 1 is this embodiment may limit the displacement of the electronic control box assembly 3 relative to the base 2 for fixing the electronic control box assembly 3. In this embodiment, the electronic control box assembly 3 and the base 2 are easy to disassemble, which reduces the cost of the electronic control assembly 1.

Embodiment 2

[0053] This embodiment provides an air conditioner (not shown). The air conditioner in this embodiment is easy to disassemble, which may reduce the cost of the air conditioner.

[0054] For a brief description, reference may be made to the first embodiment for the places not mentioned in this embodiment.

[0055] In this embodiment, the air conditioner includes the electronic control assembly 1 is the embodiments and a housing (air conditioner), wherein the base 2 is connected to the housing.

Claims

1. An electronic control assembly, **characterized in that**, the electronic control assembly comprises a base (2) and an electronic control box assembly (3), wherein a limiting member (4) is disposed on the electronic control box assembly (3), a mounting member (5) is disposed on the base (2), and the limiting member (4) cooperates with the mounting member (5) to limit the electronic control box assembly (3) from moving relative to the base (2) and to fix the electronic control box assembly (3) and the base (2).

2. The electronic control assembly according to claim 1, wherein the limiting member (4) comprises a limit portion (6), and the limit portion (6) is disposed on one side of the electronic control box assembly (3); an abut portion (12) is disposed on the mounting member (5), and the limit portion (6) abuts against the abut portion (12).

3. The electronic control assembly according to claim 2, wherein the abut portion (12) comprises an abut surface (13), and the limit portion (6) comprises a limit surface (7); after the limit portion (6) slides into position relative to the abut portion (12), the limit surface (7) abuts against the abut surface (13) to limit a displacement of the electronic control box assembly (3) relative to the base (2).

4. The electronic control assembly according to claim 3, wherein the limit portion (6) comprises a first guide surface (8), and the abut portion (12) comprises a second guide surface (14); after the first guide surface (8) slides into position relative to the second guide surface (14), the limit surface (7) abuts against the abut surface (13).

5. The electronic control assembly according to claim 4, wherein the limit portion (6) comprises a guide

section (15) and a limit section (16), the guide section (15) is connected to the mounting member (5), and the limit section (16) is connected to one end of the guide section (15) and is disposed at an acute angle; the second guide surface (14) is disposed on one side of the guide section (15) away from the limit section (16), and the limit surface (7) is disposed on one side of the limit section (16) away from the guide section (15).

6. The electronic control assembly (1) according to claim 5, wherein the limit portion (6) further comprises a reset section (17), and one end of the reset section (17) is connected to one end of the limit section (16) away from the guide section (15); the reset section (17) drives the limit section (16) and the guide section (15) to rotate, so that the limit surface (7) is released from abutment with the abut surface (13).

7. The electronic control assembly (1) according to claim 1, wherein the limiting member (4) comprises a latching portion (9), a snap portion (18) is disposed in the mounting member (5), and the latching portion (9) is latched with the snap portion (18).

8. The electronic control assembly (1) according to claim 7, wherein the latching portion (9) comprises a first latching segment (10) and a second latching segment (11) that are connected to each other and are L-shaped; the first latching segment (10) has one end connected to the electronic control box assembly (3), and the other end connected to the second latching segment (11).

9. The electronic control assembly (1) according to claim 7, wherein the snap portion (18) is a snap hole, and the snap hole comprises a first section (19), a transition section (20), and a second section (21); the first section (19) is connected to the second section (21) through the transition section (20), and a width of the first section (19) is larger than a width of the second section (21).

10. An air conditioner, **characterized in that**, the comprises air conditioner the electronic control assembly (1) according to any one of claims 1 to 9.

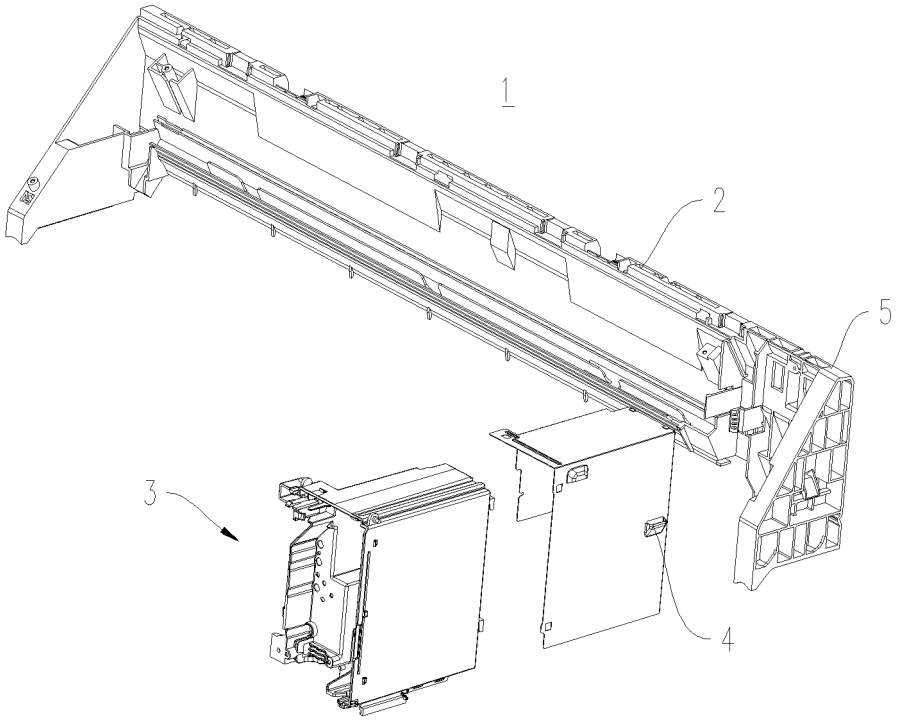

Fig. 1

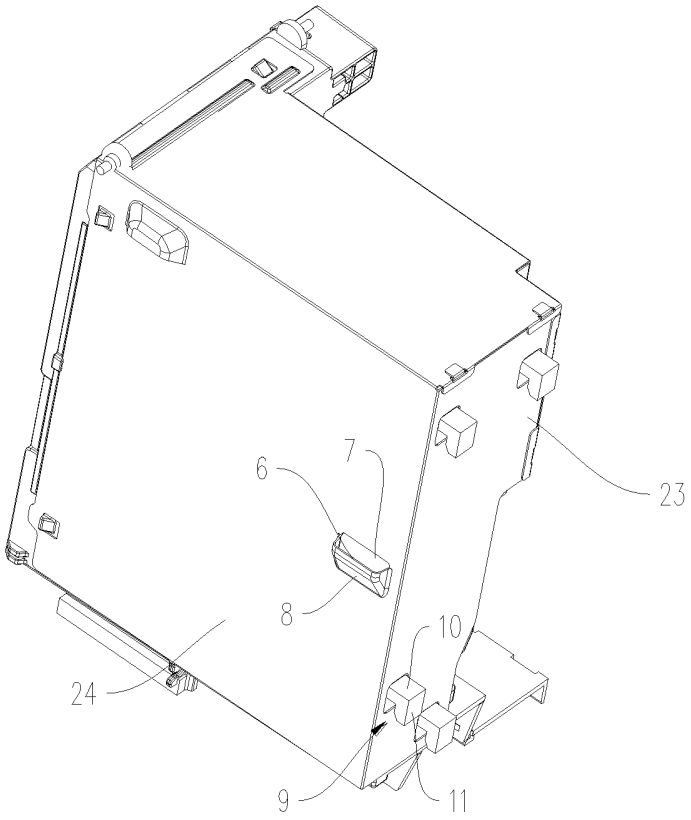

Fig. 2

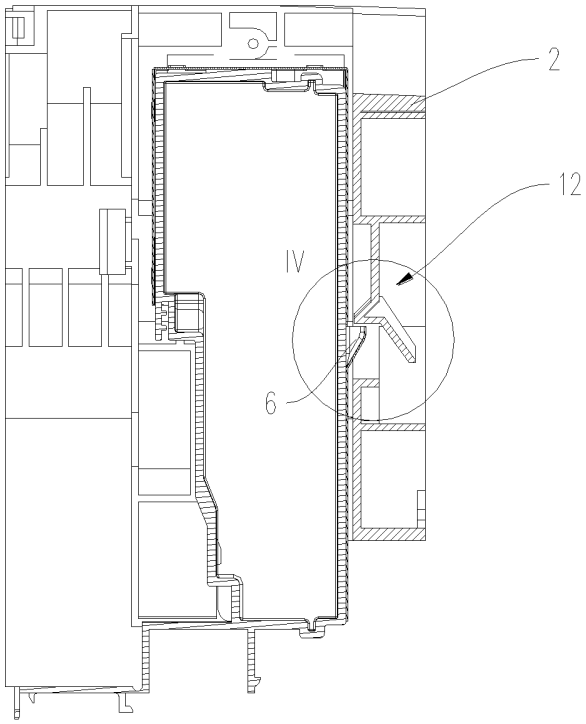

Fig. 3

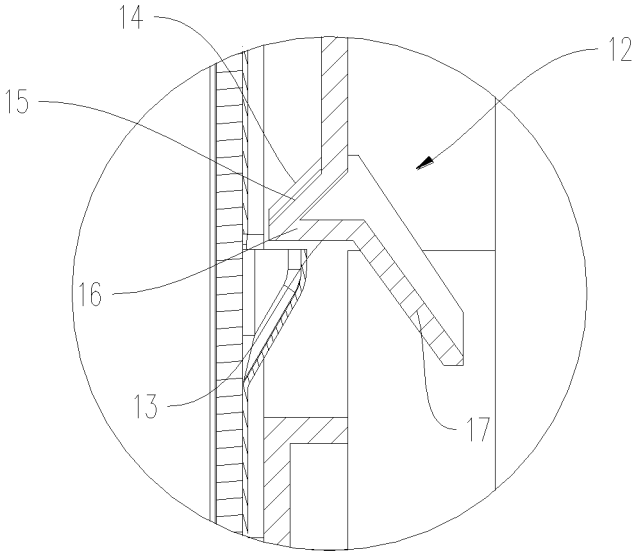

Fig. 4

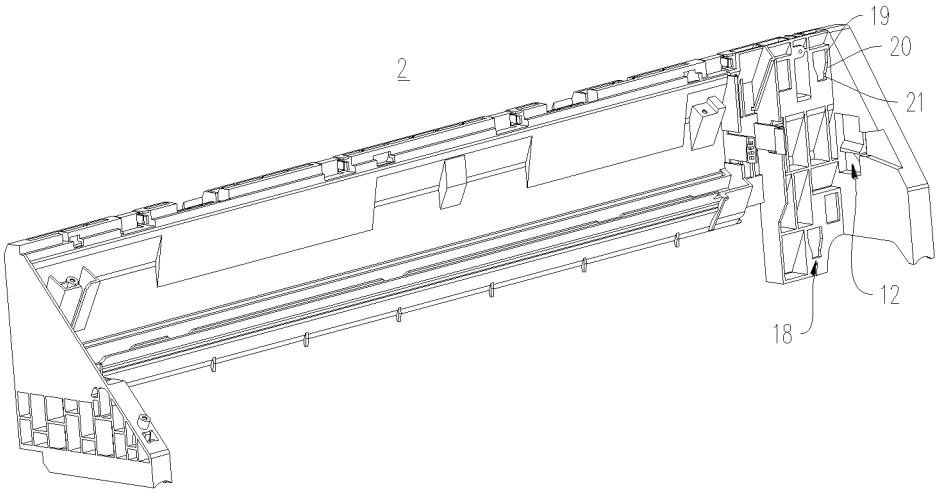

Fig. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/125494

A. CLASSIFICATION OF SUBJECT MATTER

F24F 11/89(2018.01)i; F24F 13/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNTXT; CNABS; DWPI; SIPOABS; 中国期刊网全文数据库, CHINA JOURNAL FULL-TEXT DATABASE: 奥克斯空调, 电控盒, 底座, 空调, electric, control+, disassemb+, knock+, strip+, tak+ 3d down, tear+ 3d down, air conditioner

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 207741276 U (AUX AIR CONDITIONING CO., LTD.) 17 August 2018 (2018-08-17) claims 1-10	1-10
X	CN 206073295 U (JIANGSU SHINCO ELECTRICAL APPLIANCE CO., LTD.) 05 April 2017 (2017-04-05) description, paragraphs [0003-0017], and figures 1-3	1-9
Y	CN 206469429 U (GUANGDONG MIDEA HEATING AND VENTILATION EQUIPMENT CO., LTD. ET AL.) 05 September 2017 (2017-09-05) description, paragraphs [0004]-[0062]	10
Y	CN 206073295 U (JIANGSU SHINCO ELECTRICAL APPLIANCE CO., LTD.) 05 April 2017 (2017-04-05) description, paragraphs [0003-0017], and figures 1-3	10
A	DE 3034007 A1 (DREIZLER, W. ING.(GRAD.)) 15 April 1982 (1982-04-15) entire document	1-10
A	CN 205842855 U (NINGBO AUX AIR-CONDITION CO., LTD.) 28 December 2016 (2016-12-28) entire document	1-10

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

* Special categories of cited documents:

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Date of the actual completion of the international search	Date of mailing of the international search report
08 March 2019	**19 March 2019**

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**	
Facsimile No. **(86-10)62019451**	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/125494

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 204494640 U (GUANDONG MIDEA HVAC EQUIPMENT ET AL.) 22 July 2015 (2015-07-22) entire document	1-10
A	CN 107518854 A (FOSHAN SHUNDE MIDEA WASHING APPLIANCES MFG. CO., LTD. ET AL.) 29 December 2017 (2017-12-29) entire document	1-10

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2018/125494

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 207741276 U	17 August 2018	None	
CN 206073295 U	05 April 2017	None	
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