



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

(43) Date of publication:
18.07.2018 Bulletin 2018/29

(51) Int Cl.:
F24F 13/20^(2006.01) F24F 13/22^(2006.01)
F24F 13/10^(2006.01)

(21) Application number: **16843632.7**

(86) International application number:
PCT/CN2016/098202

(22) Date of filing: **06.09.2016**

(87) International publication number:
WO 2017/041694 (16.03.2017 Gazette 2017/11)

(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:
MA MD

(30) Priority: **11.09.2015 CN 201510579382**

(71) Applicant: **Gree Electric Appliances, Inc. of Zhuhai**
Qianshan
Zhuhai
Guangdong 519070 (CN)

(72) Inventors:
• **LI, Deqing**
Zhuhai, Guangdong 519070 (CN)
• **JIN, Haiyuan**
Zhuhai, Guangdong 519070 (CN)
• **MENG, Xianyun**
Zhuhai, Guangdong 519070 (CN)
• **QIU, Xiaohong**
Zhuhai, Guangdong 519070 (CN)
• **WANG, Chaoxin**
Zhuhai, Guangdong 519070 (CN)

- **PAN, Longteng**
Zhuhai, Guangdong 519070 (CN)
- **WU, Ge**
Zhuhai, Guangdong 519070 (CN)
- **YAO, Junhua**
Zhuhai, Guangdong 519070 (CN)
- **ZHANG, Yongcheng**
Zhuhai, Guangdong 519070 (CN)
- **CHEN, Shengwen**
Zhuhai, Guangdong 519070 (CN)
- **ZANG, Yunshu**
Zhuhai, Guangdong 519070 (CN)
- **LIN, Yuliang**
Zhuhai, Guangdong 519070 (CN)
- **ZENG, Qinghe**
Zhuhai, Guangdong 519070 (CN)
- **WEN, Li**
Zhuhai, Guangdong 519070 (CN)
- **YANG, Jie**
Zhuhai, Guangdong 519070 (CN)

(74) Representative: **V.O.**
P.O. Box 87930
Carnegieplein 5
2508 DH Den Haag (NL)

(54) **TOP COVER ASSEMBLY FOR AIR CONDITIONER ADJUSTMENT APPARATUS, AND AIR
CONDITIONER ADJUSTMENT APPARATUS**

(57) A top cover assembly of an air conditioning device is provided. The top cover assembly (100) is provided at a top opening (22) in an upper end of an air conditioning device body (200), a cavity (113) is provided in a position of an upper end of the top cover assembly (100), and an air outlet (5) is provided between the top cover assembly (100) and the upper end of the body (200). The air conditioning device is further provided. By such a structure, formation of dews at an upper part of the top cover assembly is reduced.

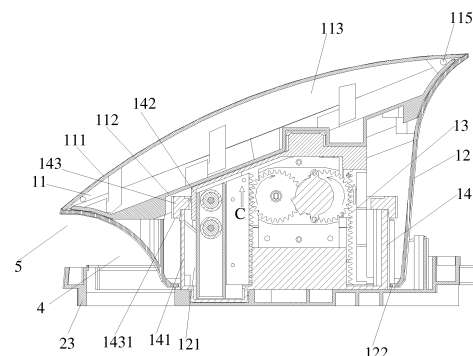


Fig. 2

Description

[0001] This application claims priority to Chinese Patent Application of International Application No. 201510579382.2, filed on 2015/09/11 and named after "top cover assembly of air conditioning device and air conditioning device", the entire contents of which are incorporated herein by reference.

Technical Field

[0002] The disclosure relates to a technical field of air conditioning devices, and particularly to a top cover assembly of an air conditioning device and the air conditioning device mounted with the top cover assembly.

Background

[0003] An air conditioning device, such as an air conditioner or an air purifier, usually comprises an air inlet and an air outlet. In most of existing air conditioning devices, top covers are fixed and platy, and air outlets are usually provided in sidewalls of the air conditioning devices, so that the appearance is stiff and unattractive. Moreover, when there exist temperature differences between temperatures of airflows formed by the air conditioning devices and temperatures of air in external environments, it is very likely to form dews on peripheries of the air outlets, and the dews drip to bring inconvenience to users and reduce user experiences.

[0004] A size of an air outlet of an existing air conditioning device is usually fixed, and a volume and direction of air discharged from the air outlet are regulated by rotating a grille, so that the structure is complicated; and moreover, an independent door structure is required to be additionally provided to close the air outlet, so that a control process and the whole process are complicated and difficult to control.

Summary

[0005] In view of this, the invention is intended to provide a top cover assembly of an air conditioning device and the corresponding air conditioning device, which may effectively reduce formation of dews around an air outlet.

[0006] According to a first aspect of the invention, a top cover assembly of an air conditioning device is provided, which is provided at a top opening in an upper end of an air conditioning device body, wherein a cavity is provided in a position of an upper end of the top cover assembly, and an air outlet is formed between the top cover assembly and the upper end of the body.

[0007] Preferably, the cavity is an airtight cavity.

[0008] Preferably, the top cover assembly comprises a top cover, the top cover comprises an upper cover and a dome, the dome is a cylinder of which upper and lower ends are open, the upper cover is provided at an upper end of the dome, and is provided to seal an upper end

opening of the dome, and the cavity is formed in the upper cover.

[0009] Preferably, a decorative structure and/or a display device are/is formed in the cavity.

5 **[0010]** Preferably, a heating device is provided at a radial edge position of the top cover assembly.

[0011] Preferably, the upper cover comprises an upper cover upper plate and an upper cover lower plate, the upper cover upper plate and the upper cover lower plate are buckled together, and the cavity is formed therein; and preferably, the upper cover upper plate and the upper cover lower plate are formed separately or formed as one structure.

10 **[0012]** Preferably, the upper end of the dome is shaped obliquely, a rear side of the upper end of the dome is preferably higher than a front side, the upper cover is in an obliquely placed state, and its rear side may be higher than a front side.

[0013] Preferably, a longitudinal section of a sidewall of the dome is a horn shape which is gradually broadened from a lower end to an upper end, a large end opening of the horn shape is provided at the upper end of the air conditioning device, and a small end opening of the horn shape is provided close to the upper end of the body.

20 **[0014]** Preferably, the top cover can move up and down.

[0015] Preferably, a lifting mechanism is provided in a cavity in a lower side of the upper cover in the dome, and the lifting mechanism is provided to drive the top cover to ascend and descend.

25 **[0016]** Preferably, when the top cover moves to a position of a lowermost end, the top cover seals the top opening of the body.

[0017] Preferably, a lifting mechanism housing is provided on a radial inner side of the dome and a radial outer side of the lifting mechanism, and a small end opening of the dome sleeves an outer wall of the lifting mechanism housing.

30 **[0018]** Preferably, a sealing ring is provided between the small end opening of the dome and the outer wall of the lifting mechanism housing.

[0019] Preferably, a radial inner edge is provided at the small end opening of the dome, and the sealing ring is provided on a radial inner side of the radial inner edge.

35 **[0020]** Preferably, a sealing structure is provided on the lifting mechanism housing, the sealing structure is annular, and comprises an dome sealing part, a lifting mechanism housing sealing part and a fixing part which are sequentially connected, the fixing part is provided to fix the sealing structure on the lifting mechanism housing, the dome sealing part is provided at a lowermost end, and when the dome slides to an uppermost end, the dome sealing part and the lifting mechanism housing sealing part is provided to implement sealing between the lifting mechanism housing and the lower end of the dome.

40 **[0021]** Preferably, the lifting mechanism housing is formed separately, and comprises a lower part housing and an upper part housing which are connected with each

other, and the sealing structure is provided between the lower part housing and the upper part housing.

[0022] Preferably, the sealing structure comprises a lower sealing part, a fixing part and an upper sealing part which are sequentially connected, and the fixing part is connected with the lower part housing or the upper part housing, thereby fixing the sealing structure; and the upper part housing slides up and down along an inner wall of the upper sealing part sealedly, or, the lower part housing slides up and down along an inner wall of the lower sealing part sealedly.

[0023] According to a second aspect of the invention, an air conditioning device is provided, which comprises a top cover assembly and a body, wherein a top opening is provided in an upper end of the body, the top cover assembly is provided at the top opening, an air delivery passage is provided between the top cover assembly and the upper end of the body, and an air outlet is provided between the upper end of the body and a radial outer edge of the top cover assembly.

[0024] Preferably, the top opening and an upper end of the top cover assembly are provided at an oblique angle with the front side lower and the rear side higher.

[0025] Preferably, the air delivery passage is variable in size and/or the air outlet is variable in size.

[0026] In the invention, the independent cavity is provided in a position close to the upper end of the top cover assembly, and formation of the cavity may reduce cold air produced in the air conditioning device and even avoid the cold air produced in the air conditioning device entering the position close to the upper end of the top cover assembly, and may effectively reduce formation of dews at an upper part of the top cover assembly; and moreover, a heating device may further be provided in the cavity, so that formation of the dews may further be reduced. Furthermore, the decorative structure or the display device is further provided in the cavity, so that the appearance of the air conditioning device is more attractive, and a user may conveniently learn about a running state of the air conditioning device.

Brief Description of the Drawings

[0027] Embodiments of the invention are described below with reference to the drawings to make the above-mentioned and other purposes, characteristics and advantages of the invention clearer. In the drawings:

Fig. 1 is a structure diagram of a top cover assembly of an air conditioning device according to the invention;

Fig. 2 is a cross-sectional view of a top cover assembly of an air conditioning device according to the invention;

Fig. 3 is an exploded view of a top cover assembly of an air conditioning device according to the invention;

Fig. 4 is a structure diagram of connecting a top cover

assembly of an air conditioning device and a body according to the invention (a top cover is at an ascending position);

Fig. 5 is a structure diagram of an air conditioning device according to the invention (a top cover is at an ascending position); and

Fig. 6 is a structure diagram of an air conditioning device according to the invention (a top cover is at a descending position).

Detailed Description of the Embodiments

[0028] Each embodiment of the disclosure will be described below in more detail with reference to the drawings. In each drawing, the same assemblies are represented by the same or similar drawing reference signs. For clarity, each part in the drawings is not drawn to scale.

[0029] Notes: in the invention, upward and downward directions are defined as follows: an extending direction from a bottom of a body 200 to a top cover assembly 100 is the upward direction, and an opposite direction is the downward direction; and moreover, a side with a lowest position of a top opening 22 in Fig. 5 is defined as a front side, and a side with a highest position is defined as a rear side.

[0030] As shown in Fig. 5, a vertical air conditioning device comprises a top cover assembly 100 and a body 200, an air inlet 21 is provided in the body 200, and a main body air passage and an air generation device (not shown in the figure) are provided in the body 200. A top opening 22 is provided in an upper end of the body 200, the top cover assembly 100 in the invention is provided at the top opening 22 in the upper end of the body 200, and an air delivery passage 4 and an air outlet 5 (referring to Fig. 4) are provided between the top cover assembly 100 and the upper end of the body 200.

[0031] As shown in Fig. 2 and 4, an independent cavity 113 is formed in a position, close to an upper end of the top cover assembly 100, of the top cover assembly 100, and preferably, the cavity 113 is an airtight cavity. In such a manner, the cavity 113 effectively separates an inner side of an outer edge of the top cover assembly 100 from a cold/hot airflow, particularly the cold airflow, produced in the air conditioning device, and may effectively reduce formation of dews at a radial outer edge of the top cover assembly 100. A top end of the top cover assembly 100 is lower in front and higher in rear, that is, a height of a rear side of the top cover assembly 100 is larger than a height of a front side, so that an appearance of the air conditioning device may be optimized, and a user may conveniently operate or observe the device provided at the top end of the top cover assembly 100. Preferably, a longitudinal section of a sidewall of the top cover assembly 100 is a horn shape which is gradually broadened from a lower end to an upper end, a large end of the horn shape is provided at the top end of the air conditioning device, and a small end, i.e. a lower end of the top cover assembly 100, is connected with the upper end of the

body 200.

[0032] As shown in Fig. 2 and 4, in a preferred embodiment, a top cover of the top cover assembly 100 comprises an upper cover 11 and a dome 12, the dome 12 is wholly a cylinder of which upper and lower ends are open, and the upper cover 11 is provided at an upper end of the dome 12, and is provided to seal an upper end opening of the dome 12. Preferably, the upper cover 11 comprises an upper cover upper plate 111 and an upper cover lower plate 112, the upper cover upper plate 111 and the upper cover lower plate 112 are buckled together, the cavity 113 is formed therein, and the cavity 113 is preferably formed into an airtight cavity. Therefore, an upper end cover of the upper cover 11 and a part, close to the upper end, of the dome 12 are separated from a cold air in the air conditioning device, and formation of the dews on the top cover assembly 100 is effectively reduced. The upper cover upper plate 111 and the upper cover lower plate 112 are formed separately, and may also be formed as one structure.

[0033] In a preferred embodiment, a decorative structure (not shown in the figures) is formed in the cavity 113, and the decorative structure is a decorative structure in various forms such as a decorative painting, a decorative pattern and a decorative light, and may improve the aesthetics of the appearance of the air conditioning device. Or, a display device (not shown in the figures) is further provided in the cavity 113, and the display device may be a display screen or an illumination device or a combination thereof, so that some working and/or setting information related to the air conditioning device are/is displayed on the upper cover 11, and then the user may learn about a working condition of the air conditioning device more intuitively. When the cavity 113 is formed into the airtight cavity, aging or damage of these decorative structure and display device is effectively reduced, and influence of the cold air in the air conditioning device on structures of these decorative structure and display device is reduced; and in addition, the cold air or hot air produced by the air conditioning device is further prevented from entering the top cover assembly and further entering the inner side of the upper cover 11, and formation of the dews at the upper end of the air conditioning device is effectively prevented.

[0034] For further reducing formation of the dews, a heating device 115 is provided at a position of a radial edge of the top cover assembly 100, and the heating device 115 is a conventional heating structure such as an electric heating wire, and is provided to effectively remove the dews left on the edge of the top cover assembly 100 to improve a user experience. Specifically, the heating device 115 is provided at a position, on the radial edge, on an inner side of the upper cover upper plate 111, as shown in Fig. 2.

[0035] As shown in Fig. 1-3, in a preferred embodiment, a longitudinal section of a sidewall of the dome 12 is a horn shape which is gradually broadened from a lower end to an upper end, a large end opening of the horn

shape is provided at the upper end of the air conditioning device, and its small end opening is provided close to the upper end of the body 200. The upper end of the dome 12 is shaped obliquely, preferably with a rear side higher than a front side. In addition, the upper cover 11 is in an obliquely placed state, specifically a state that the rear side is higher and the front side is lower. Therefore, the user may conveniently observe the decorative pattern or displayed information on the upper cover upper plate 111, and meanwhile, the aesthetics of the appearance of the vertical air conditioning device may further be improved. Specifically, a mounting seat 23 is provided at the upper end of the body 200, and the lower end of the top cover assembly 100 in the invention is fixedly connected with the mounting seat 23.

[0036] As shown in Fig. 4, the air delivery passage 4 is provided between a sidewall of the dome 12 and the upper end of the body 200. For regulating a size of an opening of the air delivery passage 4, in a preferred embodiment, the top cover of the top cover assembly 100 is a lifting structure. A lifting mechanism 13 is provided in a cavity 121, positioned in a lower side of the upper cover 11, positioned in the dome 12, and the lifting mechanism 13 is a gear-rack structure or a nut-screw structure. By the lifting mechanism 13, the dome 12 drives the upper cover 11 to move up and down along a longitudinal axis of the vertical air conditioning device, so that a size of the external opening of the air delivery passage 4, i.e. the air outlet 5 of the vertical air conditioning device, is conveniently regulated, and an air volume and air direction of the vertical air conditioning device is conveniently regulated to meet different requirements. Preferably, the air outlet 5 is provided in the upper end of the body 200. In a preferred embodiment, when the dome 12 and the upper cover 11 move to a position of a lowermost end, the top cover 11 covers the top opening 22 of the body 200, and seals the top opening 22 of the body 200 (as shown in Fig. 6). When the vertical air conditioning device is in an out-of-service state, the top cover descends, and the top cover covers the top opening 22, so that the overall appearance of the air conditioning device is more complete, and meanwhile, the condition that dust, other foreign matters and the like fall into the air conditioning device to pollute the environment and even influence normal running of the air conditioning device may be avoided; and in a service state, the size of the air outlet of the air conditioning device may be regulated in real time to form different air supply speeds and directions to form more comfortable airflows like natural wind, and moreover, the air delivery passage 4 is in a longitudinally provided state, then the airflows upwards pass through the air delivery passage 4 from an interior of the body 200, foreign matters floating in an ambient environment does not fall into the air conditioning device, and the airflows blown out of the air delivery passage 4 turn at the air outlet 5, are blown into an indoor space at a higher position, and does not directly blown onto a body of the user, so that comfort of the user in use is effectively im-

proved.

[0037] As shown in Fig. 2, preferably, a lifting mechanism housing 14 is provided on a radial inner side of the dome 12 around the cavity 121, the small end opening of the dome 12 sleeves an outer wall of the lifting mechanism housing 14, and a sealing ring 120 is preferably provided between the small end opening of the dome 12 and the outer wall of the lifting mechanism housing 14. The sealing ring 120 is fixed on the small end opening of the dome 12, and in such a manner, when the dome slides up and down, the cavity in the dome 12, comprising the cavity 121, is separated from the outside in a sealing manner, so as to be separated from the cold or hot airflow formed in the air conditioning device, then the cold or hot airflow formed in the air conditioning device is prevented from entering the cavity 121, and the cold or hot airflow is prevented from influencing electrical parts such as a motor and a travel switch in the lifting mechanism 13 to influence normal running of the lifting mechanism 13.

[0038] As shown in Fig. 2 and 3, in a preferred embodiment, a sealing structure 143 is provided on the lifting mechanism housing 14. The sealing structure 143 is annular, and comprises a dome sealing part 1431, a lifting mechanism housing sealing part 1432 and a fixing part 1433 which are sequentially connected, and the fixing part 1433 is provided to fix the sealing structure 143 on the lifting mechanism housing 14. The dome sealing part 1431 is provided at a lowermost end, and is preferably a lower end face of the sealing structure 14. A radial inner edge 122 is preferably provided on the small end opening of the dome 12, the radial inner edge 122 extends towards an interior of the dome 12, and under such a condition, the sealing ring 120 is provided on a radial inner side of the radial inner edge 122. When the dome 12 is driven by the lifting mechanism 13 to slide upwards to a position of an uppermost end, an upper end face of the radial inner edge 122 is pressed against the dome sealing part 1431, so that a space in the dome 12 may further be sealed. The lifting mechanism housing sealing part 1432 is provided on an inner wall of the sealing structure 143, and the dome sealing part 1431 and the lifting mechanism housing sealing part 1432 are provided to implement sealing between the lower end of the dome (12) and the lifting mechanism housing (14) together.

[0039] In a preferred embodiment, the lifting mechanism housing 14 is formed separately, and comprises a lower part housing 141 and an upper part housing 142 which are connected with each other, and the sealing structure 143 is provided between the lower part housing 141 and the upper part housing 142, and is fixed on the lower part housing 141. The upper part housing 142 is connected with the top cover assembly 100. Preferably, an upper end of the upper part housing 142 is connected with the lower end of the upper cover 11, the upper cover 11 is fixedly connected with the dome 12, and in such a manner, the lifting mechanism 13 provided in the lifting mechanism housing 14 may drive the upper part housing 142 to move up and down, thereby driving the upper cov-

er 11 and the dome 12 to move up and down to regulate the size of the air delivery passage 4, cause the top cover to ascend to open the air delivery passage 4 and the air outlet 5 when the air conditioning device runs and cause the top cover to descend to close the air outlet 5 to further close the air delivery passage 4 when the air conditioning device is turned off.

[0040] In a running process, particularly a cooling running process, of the air conditioning device, it is very likely to form dews in the vicinity of the air outlet, and even some waterdrops drip, so that the user experience of the user is influenced. In the invention, the independent cavity is provided in the upper end of the top cover assembly, and formation of the cavity may reduce cold air produced in the air conditioning device and even avoid the cold air produced in the air conditioning device entering a position close to the upper end of the top cover assembly, and may effectively reduce formation of dews at an upper part of the top cover assembly; and moreover, the heating device is further provided in the cavity, so that formation of the dews is further reduced. Furthermore, the decorative structure or the display device may further be provided in the cavity, so that the appearance of the air conditioning device is more attractive, and the user may conveniently learn about the running state of the air conditioning device.

[0041] At last, it is important to note that: obviously, the embodiment is intended not to limit the implementation modes but only to clearly describe examples made in the invention. Those skilled in the art may further make variations or modifications in other different forms on the basis of the above descriptions. It is unnecessary and also impossible to exhaust all the implementation modes here. Apparent variations or modifications extended thereby still fall within the scope of protection of the invention.

Claims

1. A top cover assembly of an air conditioning device, provided at a top opening (22) in an upper end of an air conditioning device body (200), wherein a cavity (113) is provided in a position of an upper end of the top cover assembly (100), and an air outlet (5) is formed between the top cover assembly (100) and the upper end of the body (200).
2. The top cover assembly of the air conditioning device as claimed in claim 1, wherein the cavity (113) is an airtight cavity.
3. The top cover assembly of an air conditioning device as claimed in claim 1, wherein the top cover assembly (100) comprises a top cover, the top cover comprises an upper cover (11) and a dome (12), the dome (12) is a cylinder of which upper and lower ends are open, the upper cover (11) is provided at

an upper end of the dome (12), and is provided to seal an upper end opening of the dome (12), and the cavity (113) is formed in the upper cover (11).

4. The top cover assembly of an air conditioning device as claimed in any one of claims 1-3, wherein a decorative structure and/or a display device are/is formed in the cavity (113). 5
5. The top cover assembly of the air conditioning device as claimed in any one of claims 1-3, wherein a heating device (115) is provided at a radial edge position of the top cover assembly (100). 10
6. The top cover assembly of the air conditioning device as claimed in claim 3, wherein the upper cover (11) comprises an upper cover upper plate (111) and an upper cover lower plate (112), the upper cover upper plate (111) and the upper cover lower plate (112) are buckled together, and the cavity (113) is formed therein; and preferably, the upper cover upper plate (111) and the upper cover lower plate (112) are formed separately or formed as one structure. 15 20
7. The top cover assembly of the air conditioning device as claimed in claim 3, wherein the upper end of the dome (12) is shaped obliquely, a rear side of the upper end of the dome (12) is preferably higher than a front side, the upper cover (11) is in an obliquely placed state, and its rear side is higher than a front side. 25 30
8. The top cover assembly of the air conditioning device as claimed in claim 3, wherein a longitudinal section of a sidewall of the dome (12) is a horn shape which is gradually broadened from a lower end to an upper end, a large end opening of the horn shape is provided at the upper end of the air conditioning device, and a small end opening of the horn shape is provided close to the upper end of the body (200). 35 40
9. The top cover assembly of the air conditioning device as claimed in claim 3, wherein the top cover (11) can move up and down.
10. The top cover assembly of the air conditioning device as claimed in claim 3, wherein a lifting mechanism is provided in a cavity (121) in a lower side of the upper cover (11) in the dome (12), and the lifting mechanism (13) is provided to drive the top cover (11) to ascend and descend. 50
11. The top cover assembly of the air conditioning device as claimed in claim 9, wherein, when the top cover (11) moves to a position of a lowermost end, the top cover (11) seals the top opening (22) of the body (200). 55

12. The top cover assembly of the air conditioning device as claimed in claim 10, wherein a lifting mechanism housing (14) is provided on a radial inner side of the dome (12) and a radial outer side of the lifting mechanism, and a small end opening of the dome (12) sleeves an outer wall of the lifting mechanism housing (14).
13. The top cover assembly of the air conditioning device as claimed in claim 12, wherein a sealing ring (120) is provided between the small end opening of the dome (12) and the outer wall of the lifting mechanism housing (14).
14. The top cover assembly of the air conditioning device as claimed in claim 13, wherein a radial inner edge (122) is provided at the small end opening of the dome (12), and the sealing ring (120) is provided on a radial inner side of the radial inner edge (122).
15. The top cover assembly of the air conditioning device as claimed in claim 12, wherein a sealing structure (143) is provided on the lifting mechanism housing (14), the sealing structure (143) is annular, and comprises a dome sealing part (1431), a lifting mechanism housing sealing part (1432) and a fixing part (1433) which are sequentially connected, the fixing part (1433) is provided to fix the sealing structure (143) on the lifting mechanism housing (14), the dome sealing part (1431) is provided at a lowermost end, and when the dome (12) slides to an uppermost end, the dome sealing part (1431) and the lifting mechanism housing sealing part (1432) are provided to implement sealing between the lifting mechanism housing (14) and the lower end of the dome (12).
16. The top cover assembly of the air conditioning device as claimed in claim 15, wherein the lifting mechanism housing (14) is formed separately, and comprises a lower part housing (141) and an upper part housing (142) which are connected with each other, and the sealing structure (143) is provided between the lower part housing (141) and the upper part housing (142).
17. An air conditioning device, comprising a top cover assembly (100) and a body (200), wherein the top cover assembly (100) is the top cover assembly as claimed in any one of claims 1-16, a top opening (22) is formed in an upper end of the body (200), the top cover assembly (100) is provided at the top opening (22), an air delivery passage (4) is provided between the top cover assembly (100) and an upper end of the body (200), and an air outlet is provided between the upper end of the body (200) and a radial outer edge of the upper cover assembly (100). 45 50
18. The air conditioning device as claimed in claim 17, wherein the top opening (22) and an upper end of

the top cover assembly (100) are provided at an oblique angle with the front side lower and the rear side higher.

19. The air conditioning device as claimed in claim 17 or 18, wherein the air delivery passage (4) is variable in size and/or the air outlet (5) is variable in size.

10

15

20

25

30

35

40

45

50

55

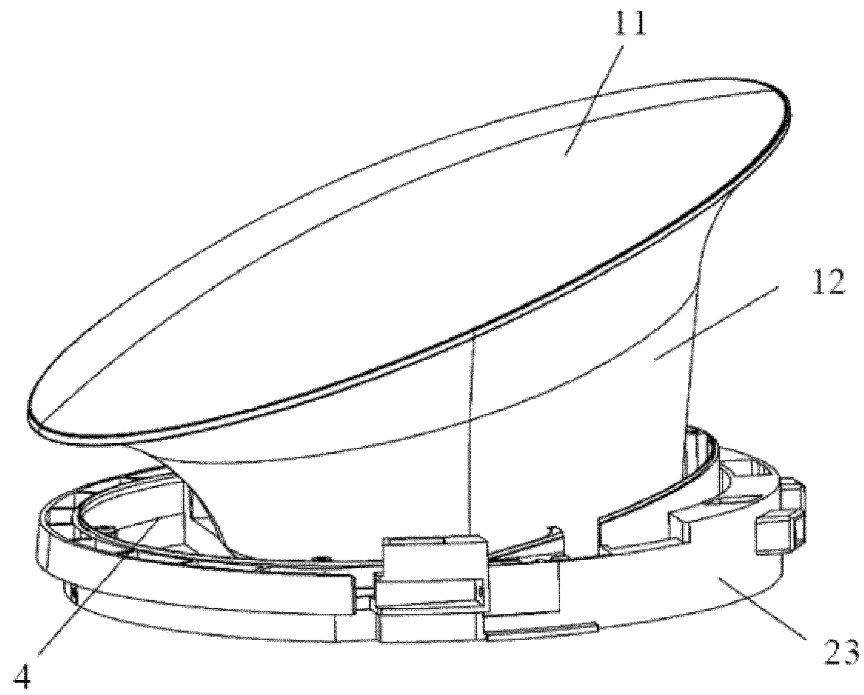


Fig. 1

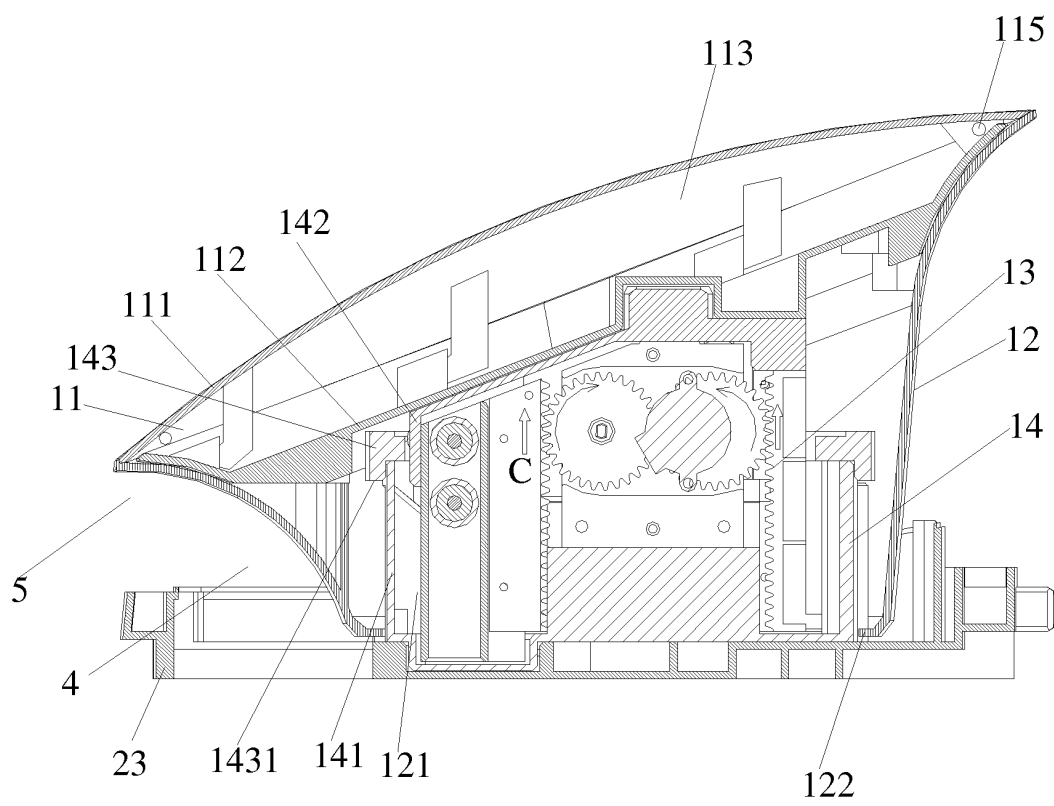


Fig. 2

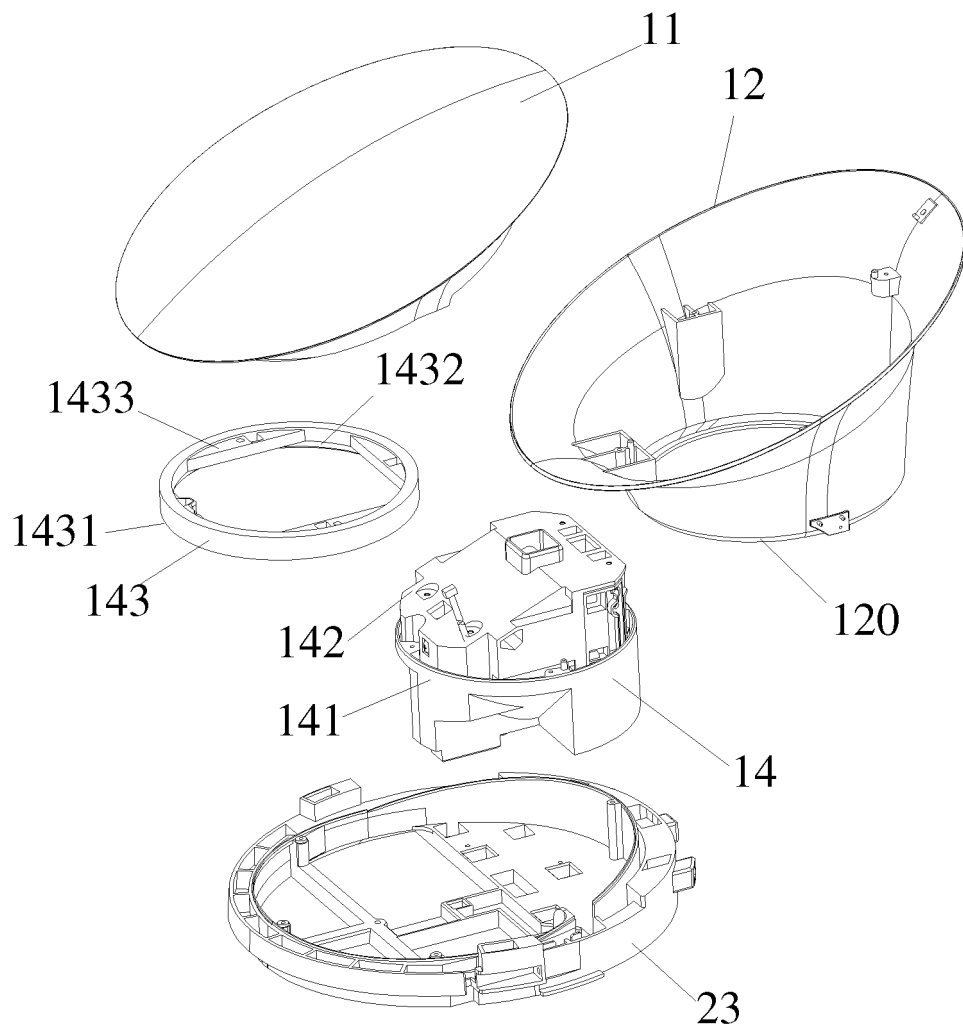


Fig. 3

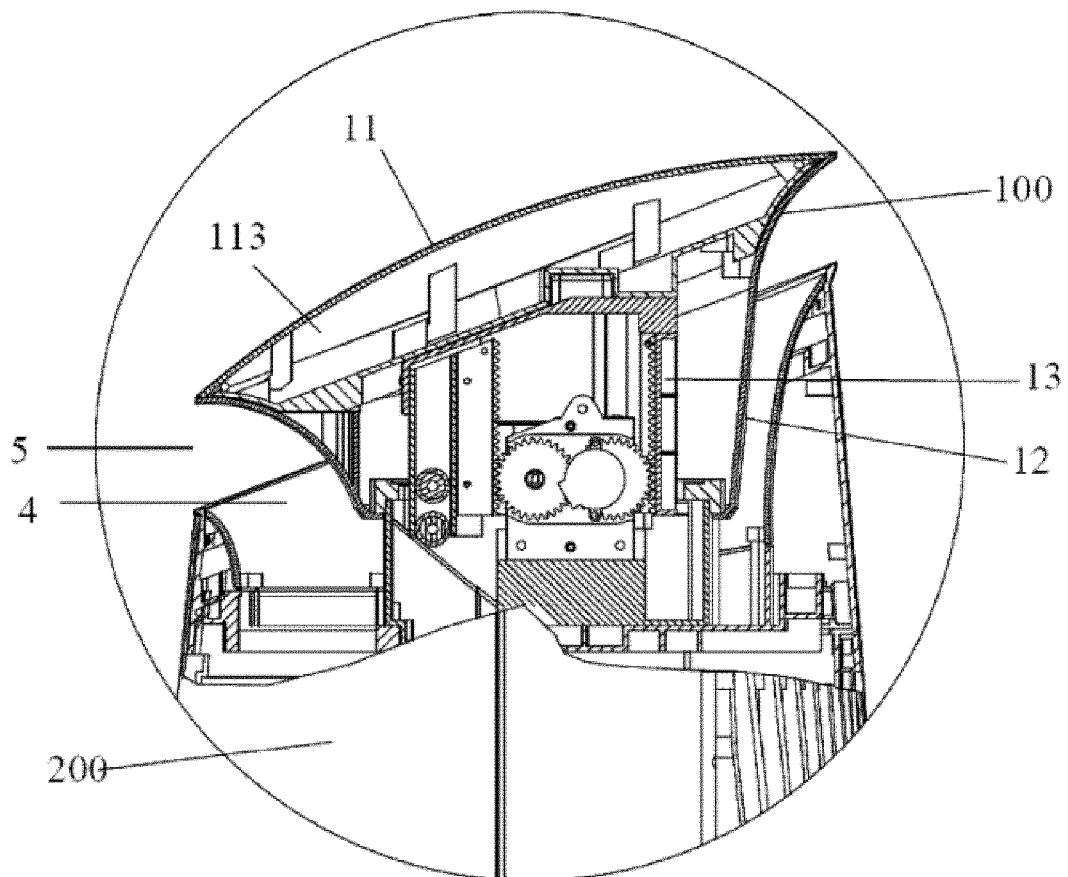


Fig. 4

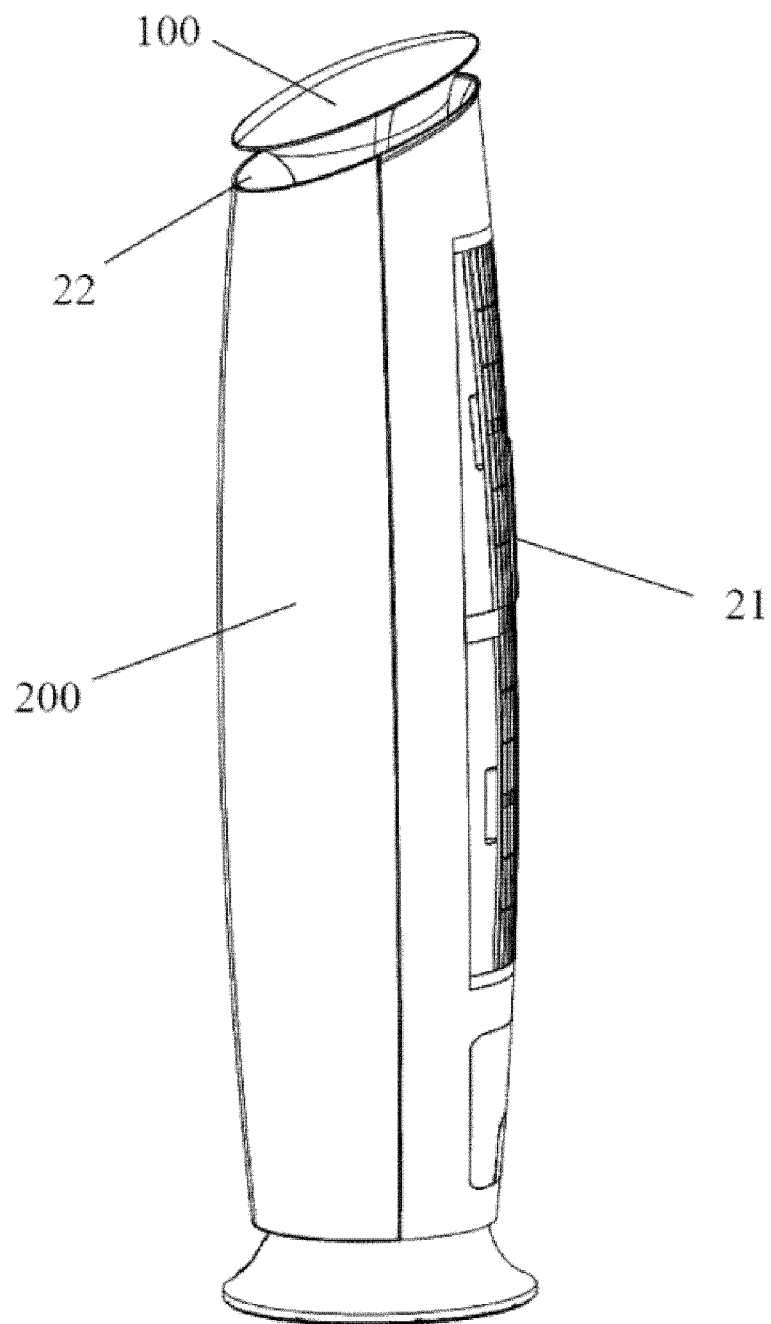


Fig. 5

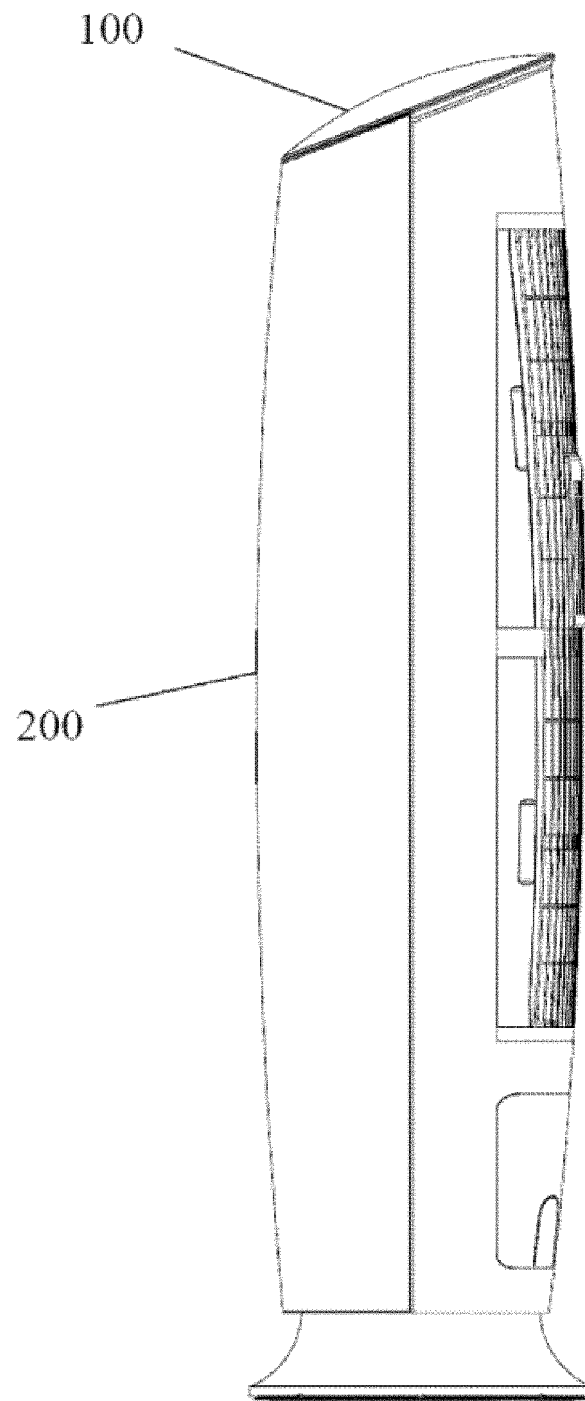


Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2016/098202

A. CLASSIFICATION OF SUBJECT MATTER

F24F 13/20 (2006.01) i; F24F 13/22 (2006.01) i; F24F 13/10 (2006.01) i
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F24F

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPODOC, WPI, CNPAT, CNKI: airtight, loudspeaker; air conditioning, cap, cavity, airproof, condensation, cover, bell-mouthed

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 105115134 A (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI), 02 December 2015 (02.12.2015), claims 1-19	1-19
PX	CN 205048684 U (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI), 24 February 2016 (24.02.2016), claims 1-15, description, paragraphs [0034]-[0045], and figures 1-6	1-19
Y	CN 104329786 A (QINGDAO HAIER AIR CONDITIONER CO., LTD.), 04 February 2015 (04.02.2015), description, paragraphs [0022]-[0040], and figures 1-3	1-9, 11, 17-19
Y	CN 203893380 U (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI), 22 October 2014 (22.10.2014), description, paragraph [0031], and figures 1-7	1-9, 11, 17-19
A	CN 104329734 A (QINGDAO HAIER AIR CONDITIONER CO., LTD.), 04 February 2015 (04.02.2015), the whole document	1-19
A	JP 2007010212 A (TOYOTOMI KOGYO CO., LTD.), 18 January 2007 (18.01.2007), the whole document	1-19

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

* Special categories of cited documents:	"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
"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	"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
"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)	"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
"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	"&" document member of the same patent family

Date of the actual completion of the international search
01 December 2016 (01.12.2016)

Date of mailing of the international search report
15 December 2016 (15.12.2016)

Name and mailing address of the ISA/CN:
State Intellectual Property Office of the P. R. China
No. 6, Xitucheng Road, Jimenqiao
Haidian District, Beijing 100088, China
Facsimile No.: (86-10) 62019451

Authorized officer
WANG, Ying
Telephone No.: (86-10) 62084886

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/CN2016/098202

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 105115134 A	02 December 2015	None	
CN 205048684 U	24 February 2016	None	
CN 104329786 A	04 February 2015	WO 2016041260 A1	24 March 2016
CN 203893380 U	22 October 2014	None	
CN 104329734 A	04 February 2015	WO 2016041263 A1	24 March 2016
JP 2007010212 A	18 January 2007	JP 4747695 B2	17 August 2011

Form PCT/ISA/210 (patent family annex) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 201510579382 [0001]