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(54) **FRESH AIR MODULE AND AIR CONDITIONER**

(57) The present disclosure provides a fresh air module and an air conditioner. The fresh air module includes: a housing, having a fresh air passage and a mounting port communicated with the fresh air passage; and a filter screen assembly, comprising a filter screen bracket and a filter screen mounted on the filter screen bracket; wherein the filter screen assembly is mounted in the fresh air passage by sliding through the mounting port.

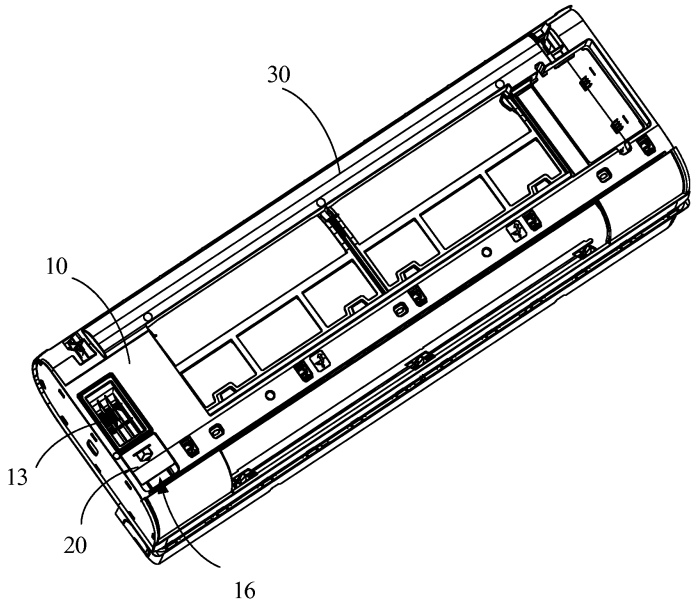

FIG. 1

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Description

[0001] The present disclosure claims the priority to Chinese Patent Application with No. 201920267865.2, filed March 3, 2019 with the National Intellectual Property Administration and entitled "fresh air module and air conditioner", the entirety of which is hereby incorporated herein by reference for all purposes. No new matter has been introduced.

FIELD

[0002] The present disclosure relates to the field of air conditioning device, and more particularly relates to a fresh air module and an air conditioner.

BACKGROUND

[0003] Generally, an air conditioner with a fresh air module has a filter screen, in order to filter outside air entering the indoor room. The filter screen is typically mounted in a mounting hole of the fresh air module. However, the filter screen is made of a soft material, and there may occur collisions between the filter screen and other components when drawing the filter screen, which easily results in deformation of the filter screen.

SUMMARY

[0004] It is an object of the present disclosure to provide a fresh air module and an air conditioner, aiming to avoid damage to the filter screen due to collisions.

[0005] In one aspect, the present disclosure provides a fresh air module, including:

a housing, having a fresh air passage and a mounting port communicated with the fresh air passage; and
a filter screen assembly, including a filter screen bracket and a filter screen mounted on the filter screen bracket; wherein the filter screen assembly is slidably mounted in the fresh air passage through the mounting port.

[0006] In some embodiments, the filter screen bracket includes: a cover member, arranged on an end of the filter screen bracket; wherein the cover member is configured to cover the mounting port.

[0007] In some embodiments, a peripheral edge of the cover member is provided with an annular flange extending outwards; and wherein the housing is provided with a protruding rib, extending along a circumferential direction of the mounting port and in an annular shape; and wherein a surface of the annular flange facing the filter screen is abutted against the protruding rib.

[0008] In some embodiments, the housing defines a sinking groove, and the mounting port is defined in the sinking groove; and wherein the cover member is disposed in the sinking groove, and at least one side of the cover member is spaced apart from a groove wall of the sinking groove to form a drawing gap therebetween.

[0009] In some embodiments, the filter screen bracket includes: a frame body, arranged to surround an outer peripheral surface of the filter screen; and wherein the cover member is defined as a part of the frame body.

[0010] In some embodiments, the cover member includes: a handle element, arranged on a surface of the cover member away from the filter screen.

[0011] In some embodiments, the filter screen bracket includes: a frame body, surrounding an outer circumferential surface of the filter screen, and including a mounting opening and a fixing opening opposite to the mounting opening; and a limiting member connected with frame body, and wherein the filter screen is mounted in the filter screen bracket through the mounting opening, the limiting member is arranged to the fixing opening and abutted against the filter screen.

[0012] In some embodiments, the limiting member includes: a limiting frame, extending along a circumferential direction of the filter screen bracket; and/or, wherein the limiting member includes: a limiting rib, arranged across opposite sides of the frame body.

[0013] In some embodiments, the filter screen bracket includes: a notch, defined in a side of the filter screen bracket where the mounting opening is located.

[0014] In some embodiments, one of the filter screen bracket and an inner wall of the fresh air passage is provided with a buckle, and the other one of the filter screen bracket and the inner wall of the fresh air passage is provided with a buckle groove for engaging the buckle; or,
one of the filter screen bracket and an inner wall of the fresh air passage is provided with an elastic push fastener, and the other one of the filter screen bracket and the inner wall of the fresh air passage is provided with a connecting member for fastening with the elastic push fastener; and wherein when the filter screen bracket is pushed inwards, the elastic push fastener is compressed and fastened with the connecting member; and when the filter screen bracket is again pushed inwards by an external force, the elastic push fastener is further compressed, and in response to that the external

force is removed, the elastic push fastener is back to an original state and detached from the connecting member, to allow the filter screen bracket to detach from the housing.

[0015] In some embodiments, the mounting port is defined in a front side of the fresh air module.

[0016] In some embodiments, the housing includes: a fresh air outlet communicated with the fresh air passage, defined in a front side of the housing.

[0017] In some embodiments, the filter screen includes: any one of an ABS filter screen, a HEPA filter screen, an activated carbon filter screen, and a photocatalyst filter screen, or a combination thereof.

[0018] In another aspect, the present disclosure provides an air conditioner, including a fresh air module. The fresh air module includes:

a housing, having a fresh air passage and a mounting port communicated with the fresh air passage; and
a filter screen assembly, including a filter screen bracket and a filter screen mounted on the filter screen bracket; wherein the filter screen assembly is slidably mounted in the fresh air passage through the mounting port.

[0019] In some embodiments, the filter net bracket includes: a cover member, arranged on an end of the filter screen bracket; wherein the cover member is configured to cover the mounting port.

[0020] In some embodiments, the filter screen bracket includes: a frame body, arranged to surround an outer peripheral surface of the filter screen; and wherein the cover member is defined as a part of the frame body.

[0021] In some embodiments, the filter screen bracket includes: a frame body, surrounding an outer circumferential surface of the filter screen, and including a mounting opening and a fixing opening opposite to the mounting opening; and a limiting member connected with frame body, and wherein the filter screen is mounted in the filter screen bracket through the mounting opening, the limiting member is arranged to the fixing opening and abutted against the filter screen.

[0022] In some embodiments, the limiting member includes: a limiting frame, extending along a circumferential direction of the filter screen bracket; and/or, wherein the limiting member includes: a limiting rib, arranged across opposite sides of the frame body.

[0023] In some embodiments, the air conditioner includes a wall-mounted unit, the wall-mounted unit includes a heat exchange module; and wherein the fresh air module and the heat exchange module are arranged in a lateral direction, and the fresh air module is arranged at an end of the wall-mounted unit.

[0024] In some embodiments, the air conditioner includes a panel frame and a front panel; and wherein the front panel is configured to cover a forward opening of the panel frame and shield the mounting port; and wherein the fresh air module is mounted on the panel frame.

[0025] In accordance with the present disclosure, since the filter screen assembly includes the filter screen bracket, the filter screen can be mounted on the filter screen bracket, so as to strengthen the entire filter screen assembly. Therefore, even if there occur collisions between the filter screen assembly and other components when drawing the filter screen assembly, the deformation of the filter screen can be effectively reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] In order to illustrate the technical solution in the embodiments of the present disclosure or the prior art more clearly, brief description would be made below to the drawings required in the embodiments of the present disclosure or the prior art. Obviously, the drawings in the following description are merely some of the embodiments of the present disclosure, and those skilled in the art could obtain other drawings according to the structures shown in the drawings without any creative efforts.

FIG. 1 is a structural schematic view of an air conditioner according to an embodiment of the present disclosure;
FIG. 2 is a structural schematic view of a filter screen assembly in FIG. 1;
FIG. 3 is a front view of the air conditioner in FIG. 1;
FIG. 4 is a cross-sectional schematic view of the air conditioner in FIG. 3 along line A-A;
FIG. 5 is an enlarged schematic view of portion B in FIG. 4;
FIG. 6 is a cross-sectional schematic view of the air conditioner in FIG. 3 along line C-C;
FIG. 7 is an enlarged schematic view of portion D in FIG. 6;
FIG. 8 is an enlarged schematic view of portion E in FIG. 6;
FIG. 9 is a structural schematic view of a filter screen bracket in FIG. 2;
FIG. 10 is a top view of the filter bracket in FIG. 9;
FIG. 11 is a front view of the filter bracket in FIG. 9;
FIG. 12 is a structural schematic view of an elastic push fastener and a connecting member of the air conditioner in FIG. 1.

EXPLANATION OF REFERENCE NUMERAL:

[0027]

Reference numerals	Name	Reference numerals	Name
10	housing	2121	annual flange
11	fresh air passage	213	buckle
12	mounting port	214	limiting member
13	fresh air outlet	2141	limiting frame
14	protruding rib	2142	limiting rib
15	sinking groove	215	notch
16	drawing gap	216	mounting opening
17	buckle groove	217	elastic push fastener
18	connecting member	217	fixing opening
20	filter screen assembly	22	filter screen
21	filter screen bracket	30	panel frame
211	frame body	40	fresh air module
212	cover member	50	heat exchange module

[0028] The realizing of the aim, functional characteristics and advantages of the present disclosure are further described in detail with reference to the accompanying drawings and the embodiments.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0029] It should be understand that, all directional indications (such as "upper", "lower", "left", "right", "front", "back" ...) in the embodiments of the present disclosure are only used to explain the relative positional relationship, motion, and the like, between components in a certain posture. If the particular posture changes, the directional indication changes accordingly.

[0030] The present disclosure provides a fresh air module.

[0031] In an embodiment, as shown in FIGS. 1 to 5, the fresh air module includes:

a housing 10, having a fresh air passage 11 and a mounting port 12 communicated with the fresh air passage 11; and a filter screen assembly 20, including a filter screen bracket 21 and a filter screen 22 mounted on the filter screen bracket 21, the filter screen assembly 20 being slidably mounted in the fresh air passage 11 through the mounting port 12.

[0032] In this embodiment, the housing 10 has a fresh air inlet and a fresh air outlet 13, where the fresh air inlet is communicated with the outdoor, and the fresh air outlet is communicated with the indoor. The fresh air passage 11 communicates the fresh air inlet and the fresh air outlet 13, so as to introduce outside air into indoor. Optionally, the fresh air outlet 13 is formed in a front side of the housing 10, so as to vent air frontwards, so that users can intuitively feel the air. In addition, the filter screen assembly 20 is mounted in the fresh air passage 11 by sliding through the mounting port 12. It can be understood that the inner wall of the fresh air passage 11 may be provided with a sliding groove, for the filter screen assembly 20 to slide, as well as for guiding and limiting the filter screen assembly 20. In an embodiment, the sliding groove is a supporting protrusion formed on the inner wall of the fresh air passage 11, so as to support the bottom of the filter screen assembly 20. Alternatively, the sliding groove is a recessed groove formed in the inner wall of the fresh air passage 11.

[0033] The filter screen 22 may be any one of an Acrylonitrile Butadiene Styrene (ABS) filter screen, a High Efficiency Particulate Air (HEPA) filter screen, an activated carbon filter screen, or a photocatalyst filter screen, or a combination thereof. The filter screen 22 is adapted to a cross section of the fresh air passage 11, which better separates the fresh air passage 11, thereby ensuring the outdoor air entering the fresh air passage 11 to be filtered through the filter screen 22. For example, the filter screen 22 is generally square.

[0034] The filter screen bracket 21 may have various forms. For example, in an embodiment, the filter screen bracket 21 is generally in a form of a frame and surrounds the outer peripheral surface of the filter screen 22. In another embodiment, the filter screen bracket 21 is in a form of a grid and supports on one surface of the filter screen 22. In still another embodiment, the filter screen bracket 21 is in a form of a hollow box, to accommodate the filter screen 22 therein.

[0035] In the embodiments, since the filter screen assembly 20 includes the filter screen bracket 21, the filter screen 22 can be mounted on the filter screen bracket 21, so as to strengthen the entire filter screen assembly 20. Therefore, even if there occur collisions between the filter screen assembly 20 and other components when drawing the filter screen assembly 20, the deformation of the filter screen 22 can be effectively reduced.

[0036] In the related art, the housing 10 is generally provided with a rotatable cover plate to cover the mounting port. After mounting the filter screen 22, the mounting port 12 can be closed by rotating the cover plate. However, the cover plate is rotatably mounted, and accordingly there exists a relatively large mounting gap between the cover plate and the edge of the mounting port 12, which easily accumulates dust. To solve this problem, in an embodiment of the present disclosure, the filter screen bracket 21 includes a cover member 212 arranged at one end of the filter screen bracket 21, configured to cover the mounting port 12. Because the filter screen assembly 20 is cooperated with the housing 10 by means of pulling and pushing, the close attachment of the cover member 212 and the housing 10 does not affect the operation of drawing the filter screen assembly 20, so that there is no need to arrange a gap between the cover member 212 and the housing 10. During assembly by pushing the filter screen assembly 20 inwardly, the cover member 212 can be closely attached to the housing 10, so as to sealingly cover the mounting port 12. In this embodiment, the cover member 212 is generally plate-shaped.

[0037] In an embodiment, referring to FIG. 9, the cover member 212 is disposed at one end of the filter screen 22. Specifically, the filter screen bracket 21 includes a frame body 211 surrounding the outer circumferential surface of the filter screen 22, and the cover member 212 constitutes a part of the frame body 211. In this embodiment, the cover member 211 being a partial structure of the frame body 211 can simplify the overall structure, and thus there is no need to additionally provide a cover member 212. In another embodiment, the cover member 212 may be an additional baffle plate provided on the frame body 211. In an embodiment, the periphery of the cover member 212 extends outward to form a ring-shaped annular flange 2121, for a better cover effect. The annular flange 2121 is disposed beyond the edge of the mounting port 12, so as to provide for a complete covering of the mounting port 12.

[0038] In an embodiment, referring to FIGS. 5 to 7, the housing 10 is provided with a protruding rib 14 that extends in the circumferential direction of the mounting port 12 and is in an annular shape. The surface of the annular flange 2121 facing the filter screen 22 abuts against the protruding rib 14. The arrangement of the protruding rib 14 can reduce the contact area between the cover member 212 and the housing 10, which ensures a better attachment of the cover member 212 and the protruding rib 14, thereby improving the sealing effect.

[0039] In an embodiment, the housing 10 is provided with a sinking groove 15. The mounting port 12 is formed in the sinking groove 15, and the cover member 212 is disposed in the sinking groove 15. At least one side of the cover member 212 is spaced apart from the groove wall of the sinking groove 15 to form a drawing gap 16, so that a user hand or a word piece can extend into the drawing gap 16 and act on the cover member 212 to draw the filter screen assembly 20. In addition, the cover member 212 is disposed in the sinking groove 15, thus the interference between the cover member 212 and an air conditioner panel can be avoided. In an embodiment, the surface of the cover member 212 away from the filter screen 22 is provided with a handle element. The handle element may be a recessed groove or a protrusion, which is convenient for users to operate.

[0040] In an embodiment, the filter screen assembly 20 and the inner wall of the fresh air passage 11 is provided with a fixing member therebetween for fixing the filter screen assembly 20 to the inner wall of the fresh air passage 11, so as to prevent the filter screen assembly 20 from loosening and falling. The fixing member may have various structures, such as a buckle connection structure or an elastic push-fitting structure.

[0041] In an embodiment, referring to FIG. 8, one of the filter screen bracket 21 and the inner wall of the fresh air passage 11 is provided with a buckle 213, and the other one is provided with a buckle groove 17 for engaging the buckle 213. For example, the buckle 213 is provided on the filter screen bracket 21, and the inner wall of the fresh air passage 11 is provided with the buckle groove 17 for engaging the buckle 213, which prevents the filter screen bracket 21 from being disengaged from the fresh air passage 11. Specifically, each of the buckles 213 is provided on each of the opposite side walls of the filter screen bracket 21, such that the filter screen bracket 21 can be more balanced, thereby improving the buckling effect.

[0042] In an embodiment, referring to FIG. 12, one of the filter screen bracket 21 and the inner wall of the fresh air passage 11 is provided with an elastic push fastener 217, and the other one is provided with a connecting member 18 for fastening with the elastic push fastener 217. When the filter screen bracket 21 is pushed inward, the elastic push fastener 217is in a compressed state and fastened with the connecting member 18; when the filter screen bracket 21 is again pushed inward by an external force, the elastic push fastener 217is further compressed, and in response to that the external force applied on the filter screen bracket 21 is removed, the elastic push fastener 217is back to an original state and detached from the connecting member 18, so as to allow the filter screen bracket 21 to detach from the housing

10. In this embodiment, the elastic push fastener 217 and the connecting member 18 are combined to form the push-fitting structure. By pushing the filter screen assembly 20, the filter screen assembly 20 is ejected under the action of the push-fitting structure, and by pushing the filter screen assembly 20 again, the filter screen assembly 20 is closely locked with the inner wall of the fresh air passage 11 under the action of the push-fitting structure. The push-fitting structure is similar to a push-fitting structure of a ballpoint pen.

[0043] In an embodiment, referring to FIGS. 9 to 11, the filter screen bracket 21 includes a frame body 211 and a limiting member 214 connected to each other, in order to prevent the filter screen 22 from falling. The frame body 211 is disposed around the outer circumference of the filter screen 22, which includes a mounting opening 216 and a fixing opening 217 arranged oppositely. The filter screen 22 is mounted in the filter screen bracket 21 through the mounting opening 216. The limiting member 214 is located in the fixing opening 217, and is abutted against the filter screen 22. During assembly, the mounting opening 216 is upward and the fixing opening 217 is downward, which corresponds to that the limiting member 214 supports the bottom surface of the filter screen 22, in order to prevent the filter screen 22 from falling. In addition, the limiting member 214 can also strengthen the entire structure, thereby reducing the deformation of the filter screen bracket 21.

[0044] Specifically, in an embodiment, the limiting member 214 includes a limiting frame 2141 extending along the circumferential direction of the filter screen bracket 21, which corresponds to that a circle of the bottom surface of the filter screen 22 is supported by the limiting member 214, thus realizing a better support effect. In another embodiment, the limiting member 214 includes a limiting rib 2142 disposed across the opposite side edges of the frame body 211. The limiting rib 2142 is generally disposed in the middle of the frame body 211, so as to support the middle of the filter screen 22. In still another embodiment, the limiting member 214 includes the limiting frame 2141 extending along the circumferential direction of the filter screen bracket 21, and the limiting rib 2142 disposed across the opposite side edges of the frame body 211.

[0045] In an embodiment, the filter screen bracket 21 is provided with a notch 215 formed on a side where the mounting opening 216 is located, in order to facilitate the removal of the filter screen 22. Specifically, the notch 215 is formed in the frame body 211, so that the filter screen 22 can be partially exposed outside the filter screen bracket 21 from the notch 215, which increases the contact area of the user with the filter screen 22, thereby facilitating the removal of the filter screen 22. Optionally, each of two notches 215 is formed on each of the opposite sides of the frame body 211, so that the opposite sides of the filter screen 22 can both be stressed for an easy removal.

[0046] In an embodiment, the mounting port 12 is disposed in the front side of the fresh air module, in order to facilitate the removal of the filter screen assembly 20. Generally, the front side is facing users and with no wall covering on, thus the mounting port 12 formed in the front side is advantageous for users to operate the filter screen assembly 20.

[0047] The present disclosure also provides an air conditioner, including a fresh air module and a heat exchange module. The specific structure of the fresh air module may refer to any of the above embodiments. It should be noted that since the air conditioner herein adopts all the technical solutions of the above embodiments, thus can achieve all the technical effects introduced by the above embodiments, which is not detailed herein. The heat exchange module includes components such as an indoor heat exchanger and a fan.

[0048] In an embodiment, the air conditioner is a wall-mounted air conditioner. The fresh air module 40 is disposed at an end of the wall-mounted air conditioner, that is, the fresh air module 40 and the heat exchange module 50 are disposed along a lateral direction. In an embodiment, the fresh air module 40 is disposed on an upper side or a lower side of the wall-mounted air conditioner, and arranged with the heat exchange module 50 along a vertical direction. In addition, the air conditioner may also be a cabinet type or an all-in-one type and the like.

[0049] The air conditioner includes a panel frame 30 and a front panel (not shown). The fresh air module 40 is mounted on the panel frame 30. The front panel covers the opening of the face frame 30 facing frontwards and shields the mounting port 12, so as to avoid the mounting port 12 from exposing outside. By this, the filter screen assembly 20 can be taken out after opening the front panel.

[0050] The foregoing description merely portrays some illustrative embodiments in accordance with the present disclosure and therefore is not intended to limit the patentable scope of the disclosure. Any equivalent structure or flow transformations that are made taking advantage of the specification and accompanying drawings of the present disclosure and any direct or indirect applications thereof in other related technical fields shall all fall in the scope of protection of the present disclosure.

Claims

1. A fresh air module **characterized by** comprising:

a housing, having a fresh air passage and a mounting port communicated with the fresh air passage; and
a filter screen assembly, comprising a filter screen bracket and a filter screen mounted on the filter screen bracket;

wherein the filter screen assembly is slidably mounted in the fresh air passage through the mounting port.

2. The fresh air module of claim 1, wherein the filter screen bracket comprises:

a cover member, arranged on an end of the filter screen bracket;
wherein the cover member is configured to cover the mounting port.

3. The fresh air module of claim 2,
wherein a peripheral edge of the cover member is provided with an annular flange extending outwards; and
wherein the housing is provided with a protruding rib, extending along a circumferential direction of the mounting port and in an annular shape; and
wherein a surface of the annular flange facing the filter screen is abutted against the protruding rib.

4. The fresh air module of claim 2,
wherein the housing defines a sinking groove, and the mounting port is formed in the sinking groove; and
wherein the cover member is disposed in the sinking groove, and at least one side of the cover member is spaced apart from a groove wall of the sinking groove to form a drawing gap therebetween.

5. The fresh air module of claim 2, wherein the filter screen bracket comprises:

a frame body, arranged to surround an outer peripheral surface of the filter screen; and
wherein the cover member is defined as a part of the frame body.

6. The fresh air module of claim 2, wherein the cover member comprises:
a handle element, arranged on a surface of the cover member away from the filter screen.

7. The fresh air module of claim 1, wherein the filter screen bracket comprises:

a frame body, surrounding an outer circumferential surface of the filter screen, and comprising a mounting opening and a fixing opening opposite to the mounting opening; and a limiting member connected with frame body, and
wherein the filter screen is mounted in the filter screen bracket through the mounting opening, the limiting member is arranged to the fixing opening and abutted against the filter screen.

8. The fresh air module of claim 7, wherein the limiting member comprises:

a limiting frame, extending along a circumferential direction of the filter screen bracket; and/or,
wherein the limiting member comprises:
a limiting rib, arranged across opposite sides of the frame body.

9. The fresh air module of claim 7, wherein the filter screen bracket comprises:
a notch, defined in a side of the filter screen bracket where the mounting opening is located.

10. The fresh air module of claim 1, wherein one of the filter screen bracket and an inner wall of the fresh air passage is provided with a buckle, and the other one of the filter screen bracket and the inner wall of the fresh air passage is provided with a buckle groove for engaging the buckle; or,
one of the filter screen bracket and an inner wall of the fresh air passage is provided with an elastic push fastener, and the other one of the filter screen bracket and the inner wall of the fresh air passage is provided with a connecting member for fastening with the elastic push fastener; and
wherein when the filter screen bracket is pushed inwards, the elastic push fastener is compressed and fastened with the connecting member; and when the filter screen bracket is again pushed inwards by an external force, the elastic push fastener is further compressed, and in response to that the external force is removed, the elastic push fastener is back to an original state and detached from the connecting member, to allow the filter screen bracket to detach from the housing.

11. The fresh air module of claim 1, wherein the mounting port is defined in a front side of the fresh air module.

12. The fresh air module of claim 1, wherein the housing comprises:

a fresh air outlet communicated with the fresh air passage, defined in a front side of the housing.

13. The fresh air module of claim 1, wherein the filter screen comprises:
any one of an ABS filter screen, a HEPA filter screen, an activated carbon filter screen, and a photocatalyst filter screen, or a combination thereof.

14. An air conditioner **characterized by** comprising a fresh air module, wherein the fresh air module comprises:

a housing, having a fresh air passage and a mounting port communicated with the fresh air passage; and
a filter screen assembly, comprising a filter screen bracket and a filter screen mounted on the filter screen bracket;
wherein the filter screen assembly is slidably mounted in the fresh air passage through the mounting port.

15. The air conditioner of claim 14, wherein the filter net bracket comprises:

a cover member, arranged on an end of the filter screen bracket;
wherein the cover member is configured to cover the mounting port.

16. The air conditioner of claim 15, wherein the filter screen bracket comprises:

a frame body, arranged to surround an outer peripheral surface of the filter screen; and
wherein the cover member is defined as a part of the frame body.

17. The air conditioner of claim 14, wherein the filter screen bracket comprises:

a frame body, surrounding an outer circumferential surface of the filter screen, and comprising a mounting opening and a fixing opening opposite to the mounting opening; and
a limiting member, connected with frame body;
wherein the filter screen is mounted in the filter screen bracket through the mounting opening, the limiting member is arranged to the fixing opening and abutted against the filter screen.

18. The air conditioner of claim 17,
wherein the limiting member comprises:

a limiting frame, extending along a circumferential direction of the filter screen bracket; and/or,
wherein the limiting member comprises:
a limiting rib, arranged across opposite sides of the frame body.

19. The air conditioner of claim 14, wherein the air conditioner comprises a wall-mounted unit, the wall-mounted unit comprises a heat exchange module; and
wherein the fresh air module and the heat exchange module are arranged in a lateral direction, and the fresh air module is arranged at an end of the wall-mounted unit.

20. The air conditioner of claim 14, wherein the air conditioner comprises a panel frame and a front panel; and
wherein the front panel is configured to cover a forward opening of the panel frame and shield the mounting port; and
wherein the fresh air module is mounted on the panel frame.

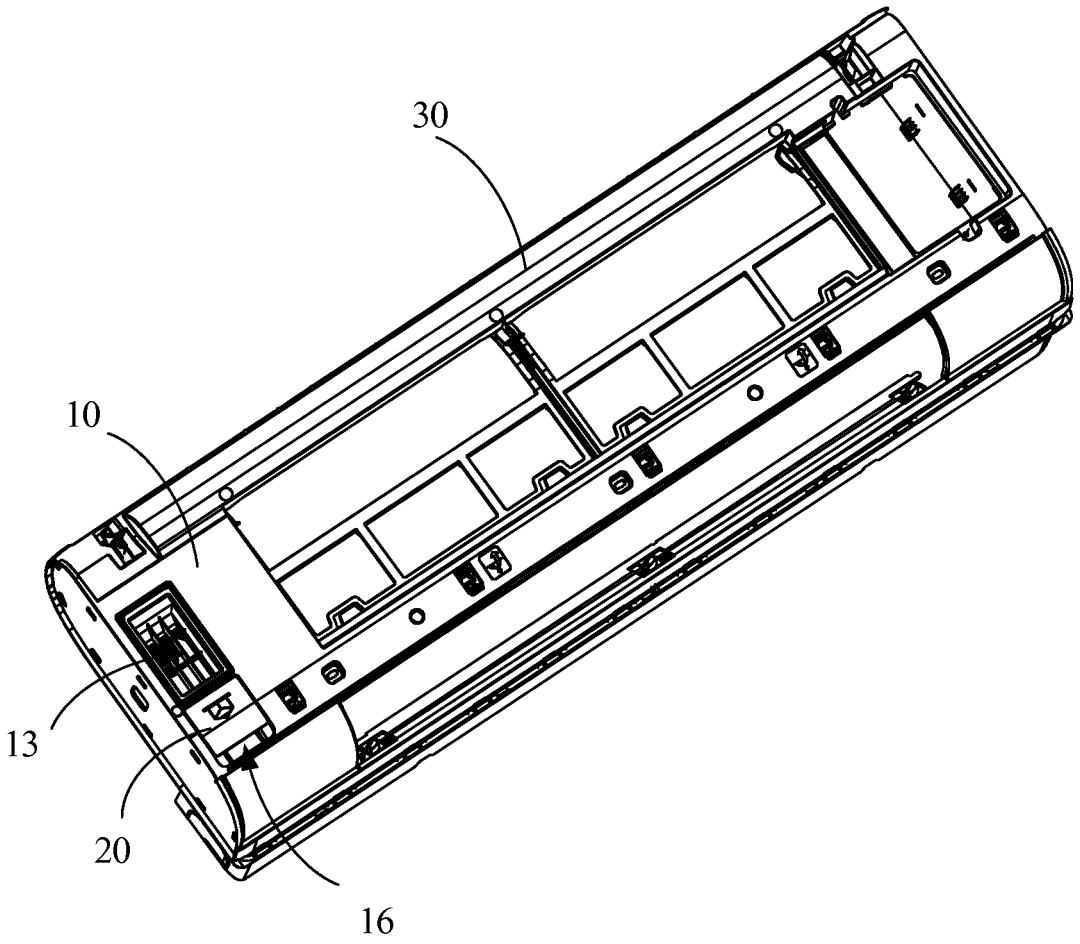

FIG. 1

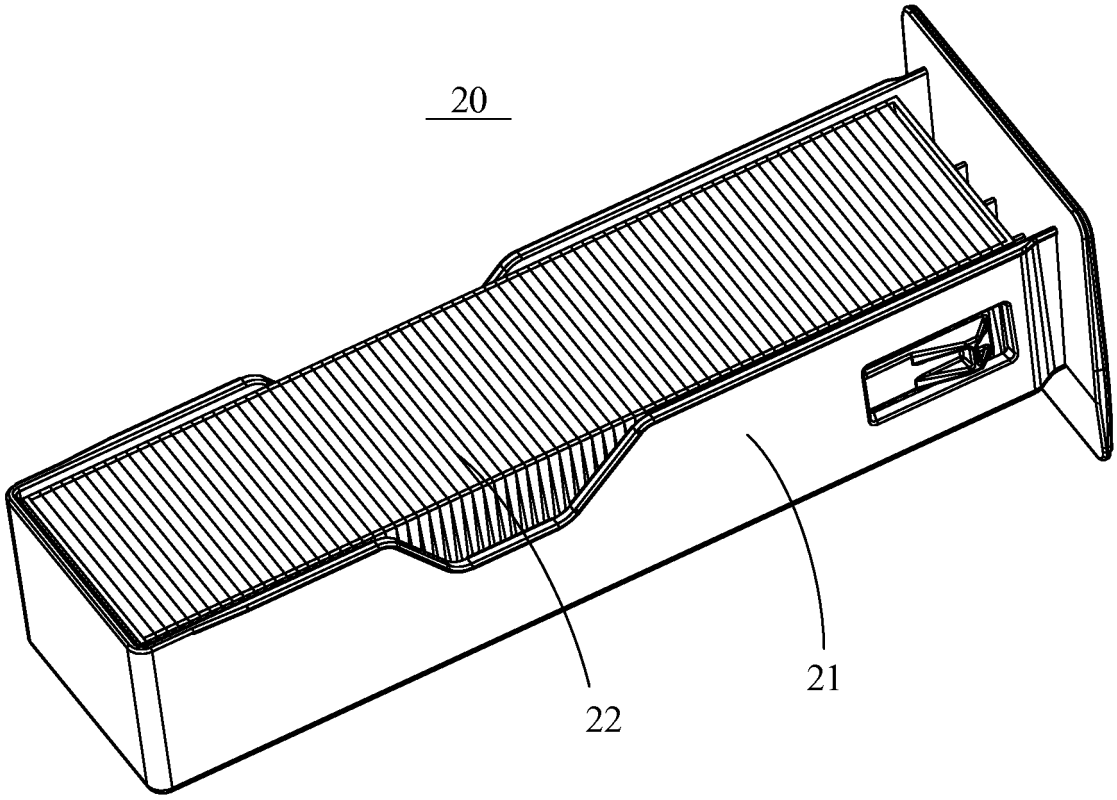

FIG. 2

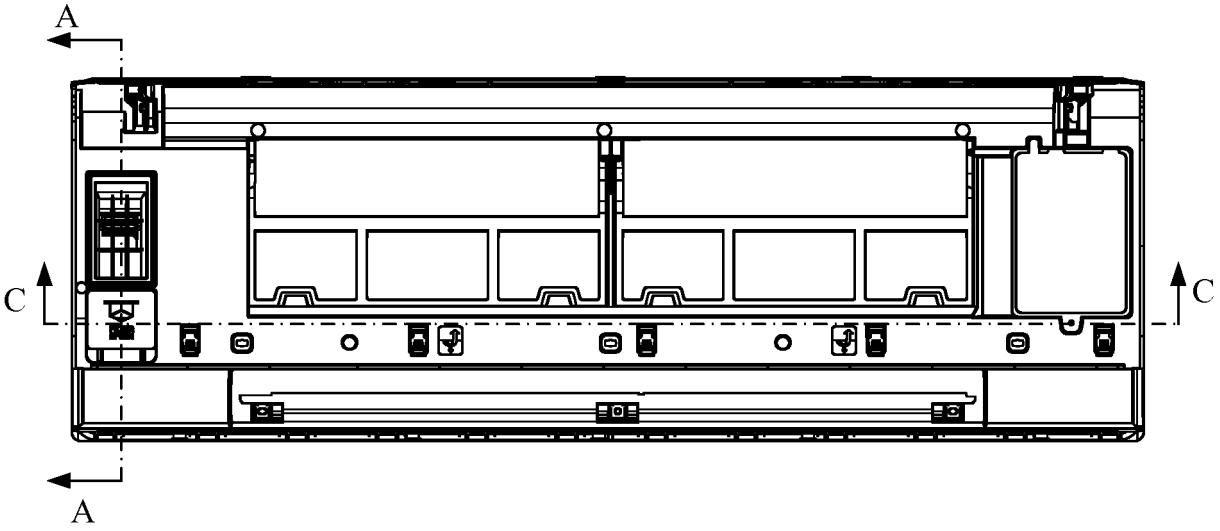

FIG. 3

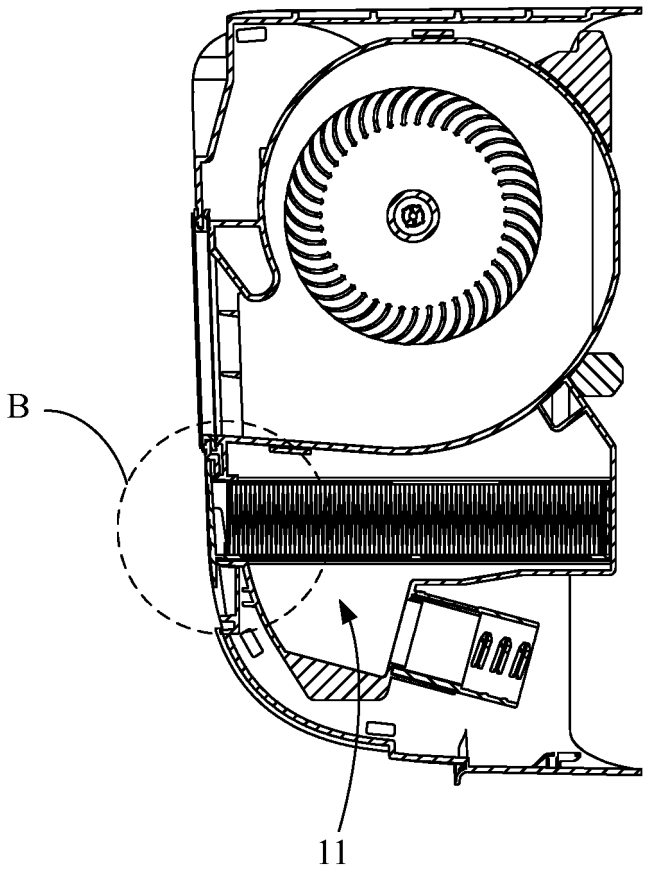

FIG. 4

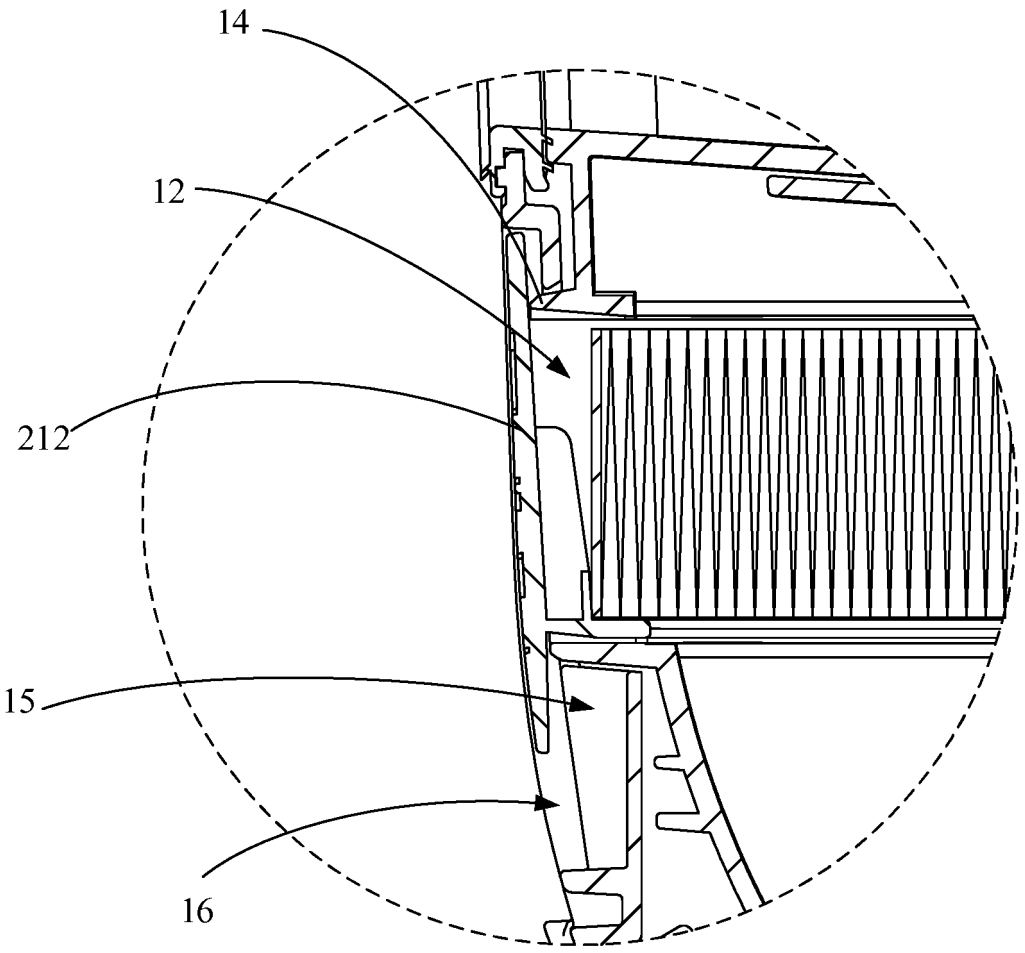

FIG. 5

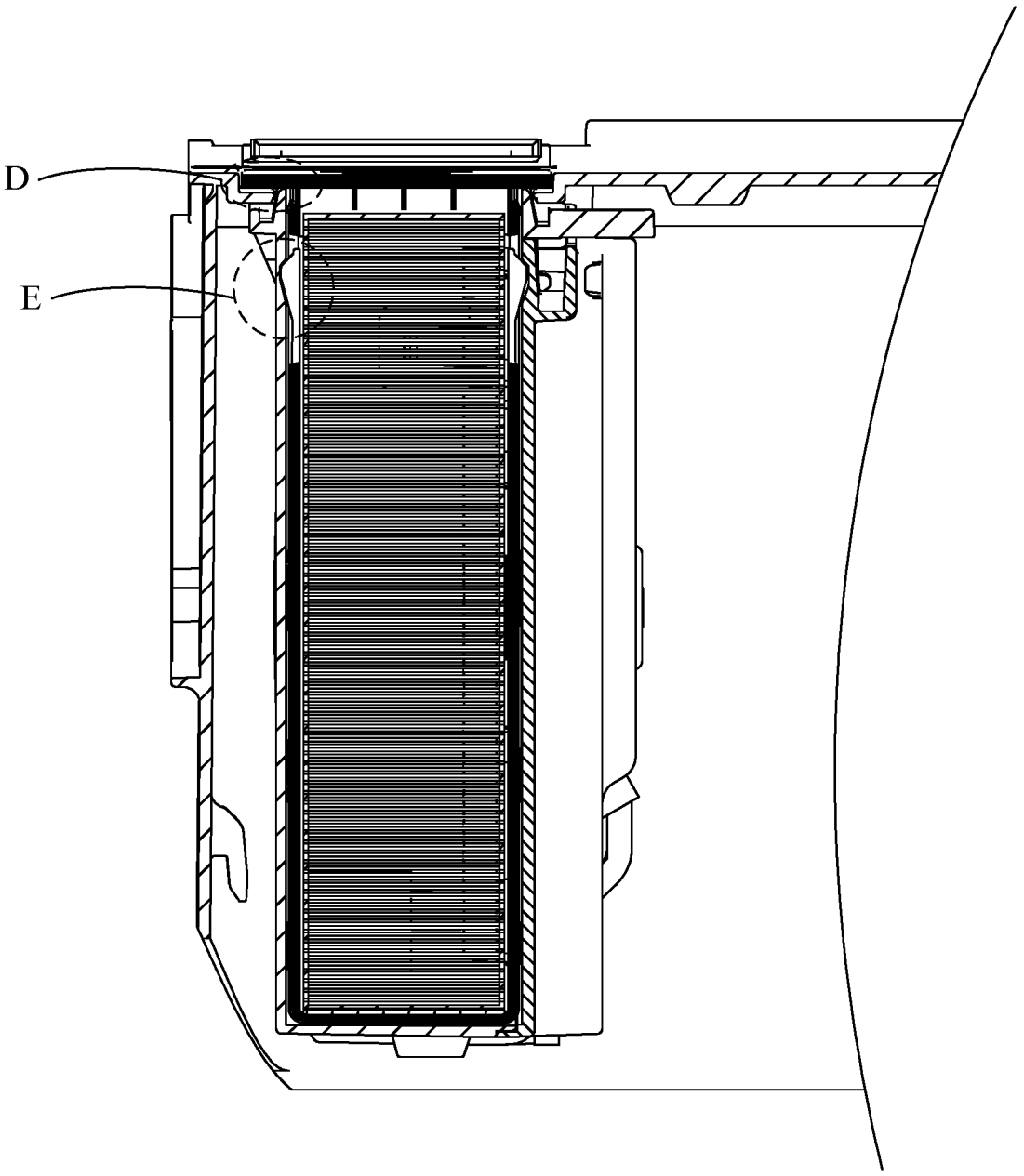

FIG. 6

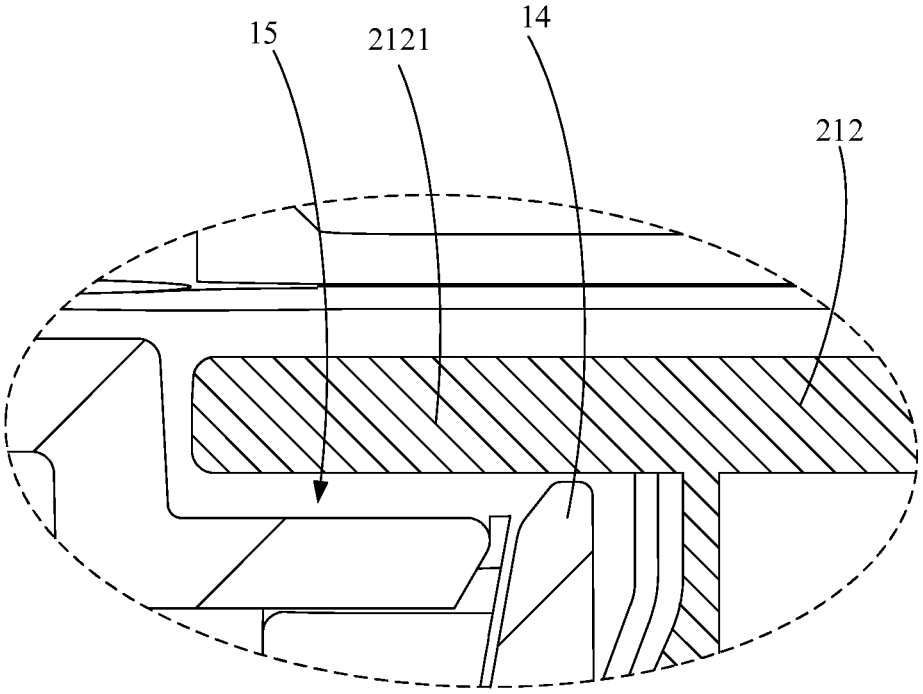

FIG. 7

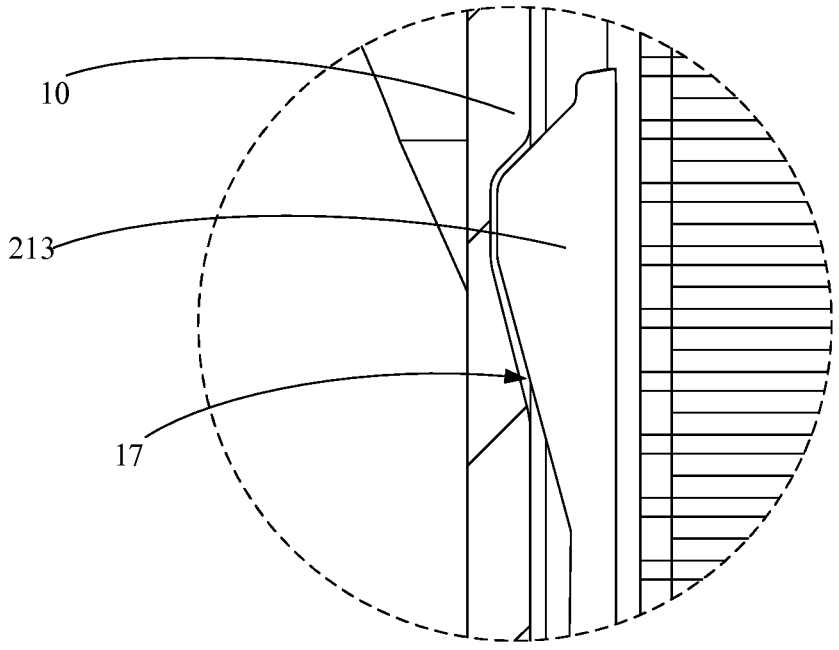

FIG. 8

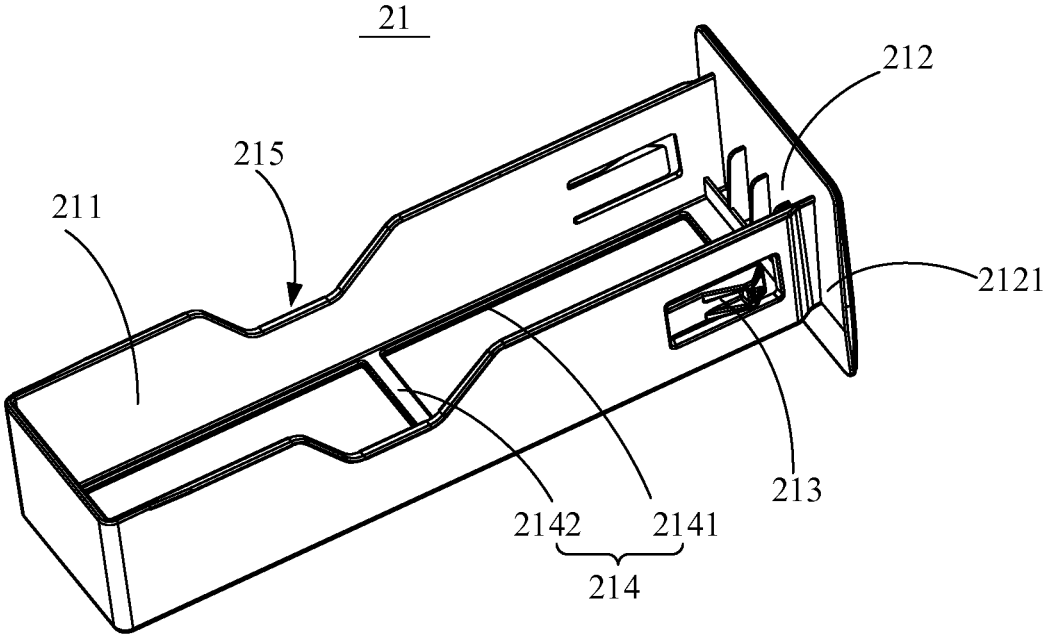

FIG. 9

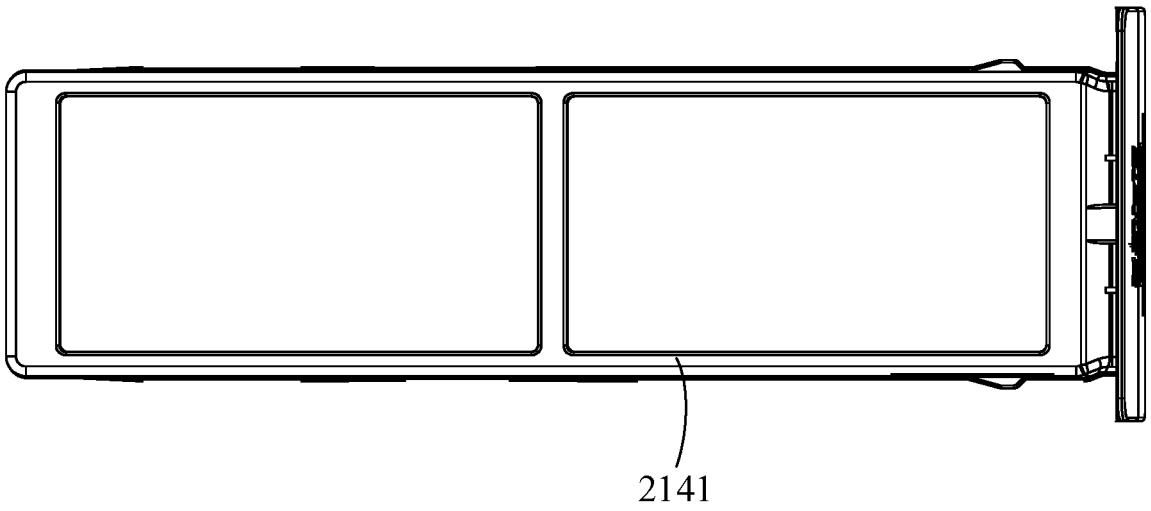

FIG. 10

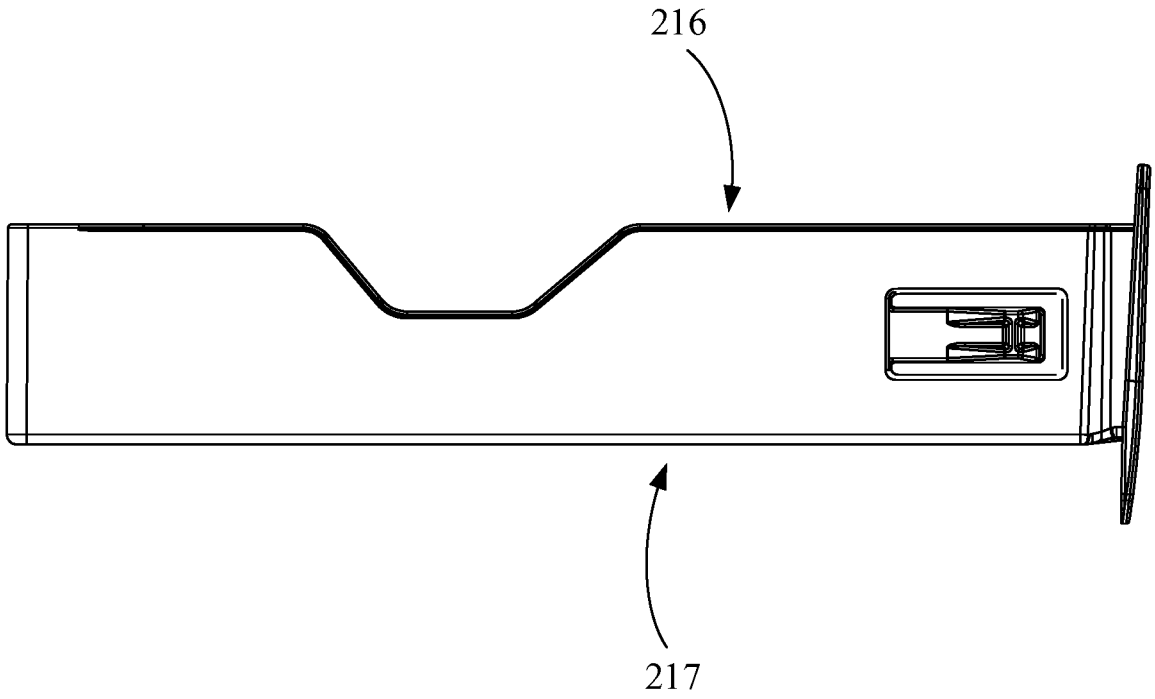

FIG. 11

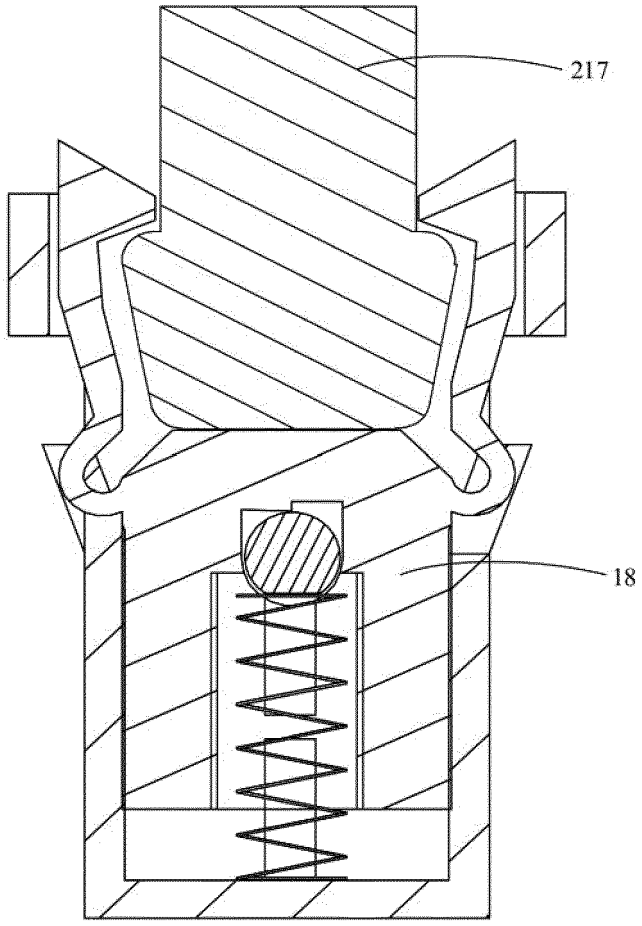

FIG. 12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/113407

A. CLASSIFICATION OF SUBJECT MATTER

F24F 1/0073(2019.01)i; F24F 13/28(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)

F24F1/-; F24F3/-; F24F13/-

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)

CNKI; CNABS; CNTXT; DWPI; SIPOABS; USTXT; EPTXT: 广东美的, 空调, 新风, 滤网 or 滤芯 or 过滤, 滑动 or 插入 or 嵌入 or 滑入, 滑槽 or 滑块, 支架 or 框架 or 框体, 卡 or 扣, air w conditioner, fresh???, filter???, screen, slid???, slip????, insert???, embed????, guid???, chute, frame, barcket, holder, lock???, seize

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 108826475 A (GD MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD. et al.) 16 November 2018 (2018-11-16) see description, paragraphs [0049]-[0077], and figures 1-8	1-5, 7-9, 11-20
Y	CN 108826475 A (GD MIDEA AIR-CONDITIONING EQUIPMENT CO., LTD. et al.) 16 November 2018 (2018-11-16) see description, paragraphs [0049]-[0077], and figures 1-8	6, 10
Y	CN 206073426 U (GUANGDONG FORYOU PURIFICATION OF ELECTRICAL AND MECHANICAL CO., LTD.) 05 April 2017 (2017-04-05) description, paragraph [0012], and figure 1	6
Y	CN 206160432 U (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI) 10 May 2017 (2017-05-10) description, specific embodiment, and figures 1-5	10
A	CN 106016566 A (FUJIAN ALLEN ELECTRONICS CO., LTD.) 12 October 2016 (2016-10-12) entire document	1-20

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
08 January 2020	**23 January 2020**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	Authorized officer
Facsimile No. **(86-10)62019451**	Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/113407

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 02223740 A (MITSUBISHI ELECTRIC CORPORATION) 06 September 1990 (1990-09-06) entire document	1-20
A	KR 100580288 B1 (CHEILTECH CO., LTD.) 15 May 2006 (2006-05-15) entire document	1-20

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/113407

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 108826475 A	16 November 2018	None	
CN 206073426 U	05 April 2017	None	
CN 206160432 U	10 May 2017	None	
CN 106016566 A	12 October 2016	None	
JP 02223740 A	06 September 1990	JP H02223740 A	06 September 1990
KR 100580288 B1	15 May 2006	None	

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 201920267865 **[0001]**