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(54) **MOUNTING BRACKET AND AIR CONDITIONER**

(57) The present application discloses an installation bracket (300) and an air conditioner. The installation bracket (300) is configured to be installed at a house (100), and the house (100) has a window structure (110). The installation bracket (300) includes a connection structure (311) and a load-bearing frame (320). The connection structure (311) is configured to connect to the window structure (110). The load-bearing frame (320) includes a frame body (330) extending in a first direction and an adjustment frame (340) connected to the frame body (330). The frame body (330) is connected to the connection structure (311). The adjustment frame (340) has an installation completion position (342) for connecting the air conditioner outdoor unit (200). In the first direction, one of the adjustment frame (340) and the frame body (330) is provided with a plurality of first adjustment positions (341) for the other to be selectively installed thereon, so as to adjust a distance between the installation completion position (342) and the connection structure (311).

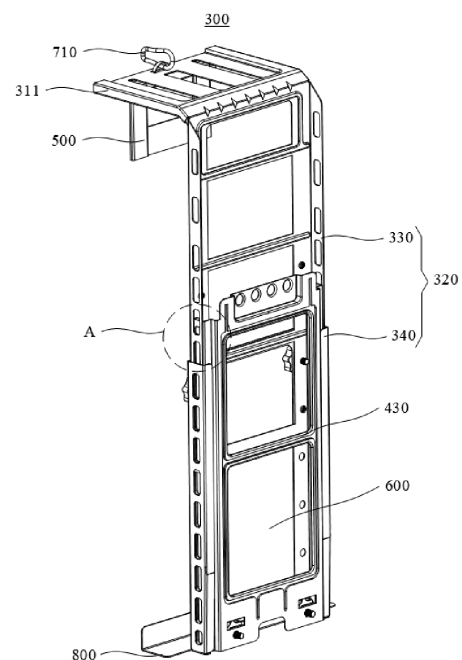


FIG. 1

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**Description****CROSS-REFERENCE TO RELATED APPLICATIONS**

**[0001]** The present application claims priority to Chinese Patent Application No. 202322945287.2, filed on October 31, 2023, Chinese Patent Application No. 202311438342.7, filed on October 31, 2023, and Chinese Patent Application No. 202420170402.5, filed on January 23, 2024, the entire contents of the above-mentioned applications are incorporated herein by reference.

**TECHNICAL FIELD**

**[0002]** The present application relates to the technical field of air conditioning installation, and in particular to an installation bracket and an air conditioner.

**BACKGROUND**

**[0003]** The building has windows, and a user can install an air conditioner outdoor unit using an installation bracket. Currently, the installation bracket comprises a connection structure for connecting to a window structure and an installation completion position for connecting the air conditioner outdoor unit. This installation completion position is fixed relative to the connection structure, ensuring a fixed distance between a center of gravity of the air conditioner outdoor unit and the installation bracket as a whole and the connection structure. However, the environments in which users' windows are located vary, which may result in the installation bracket and air conditioner outdoor unit being in environments with strong airflow. If the installation bracket and air conditioner outdoor unit are frequently subjected to strong airflow, the connection stability between the connection structure and the window structure will be reduced.

**SUMMARY**

**[0004]** The main purpose of the present application is to provide an installation bracket, designed to adjust the distance between the installation completion position and the connection structure, thereby shortening the distance between the center of gravity of the first whole and the connection structure, and improving the connection stability between the connection structure and the window structure. The first integral unit comprises an air conditioner outdoor unit and an installation bracket.

**[0005]** To achieve the above purpose, the installation bracket proposed in the present application, for installation at a building provided with a window structure, and the installation bracket comprises:

a connection structure, configured to connect to the window structure; and  
a load-bearing frame, comprising a frame body extending in a first direction and an adjustment frame connected to the frame body; the frame body is connected to the connection structure, and the adjustment frame is provided with an installation completion position for connecting an air conditioner outdoor unit; in the first direction, one of the adjustment frame or the frame body is provided with a plurality of first adjustment positions for the other of the adjustment frame or the frame body to be selectively installed at one of the plurality of first adjustment positions, to adjust a distance between the installation completion position and the connection structure.

**[0006]** The present application also proposes an air conditioner, comprising:

an air conditioner outdoor unit; and  
the installation bracket described above, where the installation bracket has an installation completion position for connecting to the air conditioner outdoor unit.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**[0007]** To more clearly illustrate the technical solutions in the embodiments of the present application or in the related art, accompanying drawings required for the description of the embodiments or the related art will be briefly introduced below. Obviously, the drawings described below are only some embodiments of the present application. For those skilled in the art, other drawings can be obtained based on the structures shown in these drawings without creative effort.

FIG. 1 is a schematic structural view of an installation bracket according to a first embodiment of the present application.

FIG. 2 is a partial enlarged view at portion A in FIG. 1.

FIG. 3 is an exploded view of the installation bracket in FIG. 1.

FIG. 4 is an enlarged view at portion B in FIG. 3.

FIG. 5 is an enlarged view at portion C in FIG. 3.

FIG. 6 is an enlarged view at portion D in FIG. 3.

FIG. 7 is an enlarged view at portion E in FIG. 3.

FIG. 8 is a schematic structural view of the installation bracket in FIG. 1 in a first direction.

FIG. 9 is an enlarged view at portion F in FIG. 8.

FIG. 10 shows another structure of a frame body and a connection structure in FIG. 3.

FIG. 11 is an enlarged view at portion G in FIG. 10.

FIG. 12 is a schematic structural view showing the installation bracket is connected to an air conditioner outdoor unit in FIG. 1.

FIG. 13 is a schematic structural view showing the installation bracket and the air conditioner outdoor unit are installed together in a building in FIG. 12.

FIG. 14 is an enlarged view at portion H in FIG. 13.

FIG. 15 is a schematic structural view showing the installation bracket and the air conditioner outdoor unit are installed together in the building in FIG. 12.

FIG. 16 is an enlarged view at portion I in FIG. 15.

FIG. 17 is a schematic structural view of the installation structure according to a second embodiment of the present application.

FIG. 18 is an enlarged view at portion J in FIG. 17.

FIG. 19 is an enlarged view at portion K in FIG. 17.

FIG. 20 is a schematic structural view showing the installation bracket is connected to the air conditioner outdoor unit in FIG. 17.

FIG. 21 is a schematic structural view showing the installation bracket and the air conditioner outdoor unit are installed together in the building in FIG. 20.

FIG. 22 is an enlarged view at portion M in FIG. 21.

FIG. 23 is a schematic structural view showing the installation bracket and the air conditioner outdoor unit are installed together in the building in FIG. 20.

FIG. 24 is an enlarged view at portion N in FIG. 23.

FIG. 25 is a partial schematic structural diagram showing an air conditioner is installed in the building according to the present application.

FIG. 26 is a partial enlarged view at portion P in FIG. 25.

FIG. 27 is an assembly view of the air conditioner outdoor unit and the installation bracket in FIG. 25.

FIG. 28 is a schematic structural view of the installation bracket in FIG. 27.

FIG. 29 is a partial enlarged view at portion Q in FIG. 28.

FIG. 30 is a partial enlarged view at portion R in FIG. 28.

FIG. 31 is an exploded view of the installation bracket in FIG. 28.

FIG. 32 is a partial enlarged view at portion S in FIG. 31.

FIG. 33 is a partial enlarged view at portion T in FIG. 31.

FIG. 34 is a partial enlarged view at portion U in FIG. 31.

FIG. 35 is a schematic structural view of a hanging structure and the frame body in FIG. 31.

FIG. 36 is a schematic structural view of the installation bracket in FIG. 28 along a hanging direction.

FIG. 37 is a partial enlarged view at portion V in FIG. 36.

Description of reference signs:

[0008]

| reference sign | name             | reference sign | name                      |
|----------------|------------------|----------------|---------------------------|
| 100            | building         | 343            | first abutment position   |
| 110            | window structure | 344            | second abutment position  |
| 120            | window frame     | 345            | first guide groove        |
| 130            | window door      | 346            | first groove bottom plate |
| 140            | railing          | 347            | first groove side plate   |

(continued)

| reference sign | name                             | reference sign | name                        |
|----------------|----------------------------------|----------------|-----------------------------|
| 200            | air conditioner outdoor unit     | 348            | first flange                |
| 300            | installation bracket             | 349            | positioning hole            |
| 311            | connection structure             | 430            | first adapter structure     |
| 313            | elongated hole                   | 431            | third groove bottom plate   |
| 315            | transition guide groove          | 432            | third groove side plate     |
| 316            | fourth guide groove              | 433            | third flange                |
| 320            | load-bearing frame               | 440            | second adapter structure    |
| 330            | frame body                       | 441            | third guide groove          |
| 331            | second guide groove              | 500            | third adapter structure     |
| 332            | second groove bottom plate       | 600            | air passage                 |
| 333            | second groove side plate         | 610            | first vent hole             |
| 334            | second flange                    | 620            | second vent hole            |
| 335            | first guiding section            | 630            | third vent hole             |
| 336            | second guide section             | 710            | buckle                      |
| 337            | positioning portion              | 800            | support base                |
| 340            | adjustment frame                 | 881            | support surface             |
| 341            | first adjustment position        | 900            | first installation position |
| 342            | installation completion position | 720            | cushion pad                 |
| 410            | hanging structure                | 800            | limit space                 |
| 420            | hanging channel                  | 910            | rope                        |
| 434            | first side                       | 930            | wire locker                 |
| 435            | first side wall                  | 443            | limit notch                 |
| 436            | third side wall                  | 444            | entry/exit section          |
| 437            | second side                      | 445            | connection section          |
| 438            | second side wall                 | 446            | limit section               |
| 442            | fourth side wall                 | 450            | channel bottom wall         |

**[0009]** The realization of the purpose, functional features and advantages of the present application will be further explained in conjunction with the embodiments and with reference to the accompanying drawings.

#### DETAILED DESCRIPTION OF THE EMBODIMENTS

**[0010]** The technical solutions of the embodiments of the present application will be clearly and completely described below with reference to the accompanying drawings. Obviously, the described embodiments are only some, rather than all, of the embodiments of the present application. Based on the embodiments of the present application, all other embodiments obtained by those skilled in the art without creative effort are within the scope of the present application.

**[0011]** It should be noted that all directional indications (such as up, down, left, right, front, back, etc. ) in the embodiments of the present application are only used to explain the relative positional relationship and movement of each component in a specific posture. If the specific posture changes, the directional indication will also change accordingly.

**[0012]** In the present application, unless otherwise expressly specified and limited, the terms "connection," "fixed," etc., should be interpreted broadly. For example, "fixed" can be a fixed connection, a detachable connection, or an integral part; it can be a mechanical connection or an electrical connection; it can be a direct connection or an indirect connection through an intermediate medium; it can also refer to abutment; it can be the internal communication of two elements or the

interaction between two elements, unless otherwise expressly limited. Those skilled in the art can understand the specific meaning of the above terms in the present application according to the specific circumstances.

**[0013]** Furthermore, if the embodiments of the present application involve descriptions such as "first" or "second," these descriptions are for descriptive purposes only and should not be construed as indicating or implying their relative importance or implicitly specifying the number of technical features indicated. Therefore, a feature defined with "first" or "second" may explicitly or implicitly comprise at least one of those features. Additionally, the meaning of "and/or" throughout the text comprises three parallel solutions; for example, "A and/or B" comprises solution A, solution B, or a solution where both A and B are satisfied simultaneously. Furthermore, the technical solutions of the various embodiments can be combined with each other, but this must be based on the ability of those skilled in the art to implement them. When the combination of technical solutions is contradictory or impossible to implement, it should be considered that such a combination of technical solutions does not exist and is not within the scope of the present application.

**[0014]** The building has a window structure, and the user can install the air conditioner outdoor unit at the building using an installation bracket. Currently, the installation bracket is provided with a connection structure for connecting to the window structure and an installation completion position for connecting the air conditioner outdoor unit. This installation completion position is fixed relative to the connection structure, making a distance between a center of gravity of the air conditioner outdoor unit and the installation bracket as a whole and the connection structure fixed. However, the environment of the user's window structure varies, which may lead to the installation bracket and the air conditioner outdoor unit being in the environment with strong airflow. If the installation bracket and the air conditioner outdoor unit are frequently subjected to strong airflow, the connection stability between the connection structure and the window structure will decrease. Therefore, the present application proposes an installation bracket designed to make the distance between the installation completion position and the connection structure adjustable, thereby shortening the distance between the center of gravity of the first whole and the connection structure, and improving the connection stability between the connection structure and the window structure. The first whole comprises the air conditioner outdoor unit and the installation bracket.

**[0015]** The first embodiment of the present application is shown in FIGS. 1 to 16, the second embodiment is shown in FIG. 17 to 24, and the third embodiment is not shown in the figure. Specifically, referring to FIGS. 1 to 3, 5 to 9, 12 to 16, 17, and 19 to 24, in the first and second embodiments of the present application, the installation bracket 300 is installed at a building 100, and the building 100 has a window structure 110. It should be noted that the building 100 can be a stationary building or a vehicle, such as a motorhome. The installation bracket 300 comprises a connection structure 311 for connecting to the window structure 110 and a load-bearing frame 320 for connecting the connection structure 311. Without loss of generality, the window structure 110 can be a window structure 110 installed on the sloping roof of the attic of the building 100. The window structure 110 comprises a window frame 120 and a window door 130 provided at the window frame 120. The window door 130 is configured to open and close the window frame 120. The connection structure 311 can be connected to the window sill of the window frame 120. The window structure 110 can also be a French window structure. The connection structure 311 can be connected to the railing 140 of the French window structure. The window structure 110 can also be in the form of other window structures for the connection structure 311 to connect to, which is not limited here. The load-bearing frame 320 comprises a frame body 330 extending along a first direction and an adjustment frame 340 connected to the frame body 330. The adjustment frame 340 has an installation completion position 342 for connecting the air conditioner outdoor unit 200. In the first direction, one of the adjustment frame 340 or the frame body 330 is provided with a plurality of first adjustment positions 341 for the other to be selectively installed thereon, so as to adjust the distance between the installation completion position 342 and the connection structure 311. Without loss of generality, the adjustment frame 340 is provided with first adjustment positions 341 as an example for introduction. Thus, for the environment where the window structure 110 is located, which has a high airflow intensity, the user can choose the first adjustment position 341 farther from the connection structure 311 for the frame body 330 to be installed, so that the distance between the installation completion position 342 and the connection structure 311 is closer. For ease of explanation, a first whole comprising the installation bracket 300 and the air conditioner outdoor unit 200 is defined. In this way, the distance between the center of gravity of the first whole and the connection structure 311 is shortened, reducing the impact of airflow on the first whole and thus improving the connection stability between the connection structure 311 and the window structure 110. Taking the example where the frame body 330 is provided with the first adjustment positions 341, the user can select the first adjustment position 341 closer to the connection structure 311 for the adjustment frame 340 to be installed, so that the distance between the installation completion position 342 and the connection structure 311 is closer. It should be specifically noted that the term "a plurality of" in this document refers to at least two.

**[0016]** In the first and second embodiments, adjacent first adjustment positions 341 are spaced apart. In this way, the plurality of first adjustment positions 341 are not continuously arranged, so that the load-bearing frame 320 can be adjusted in different positions, which helps to save the manufacturing cost of the installation bracket 300. However, this design is not limited to this; in other embodiments, adjacent first adjustment positions 341 are connected. Thus, the plurality of first adjustment positions 341 are continuously arranged as a whole, enabling the load-bearing frame 320 to

achieve stepless adjustment.

**[0017]** In the first and second embodiments, the adjustment frame 340 is provided with a first guide groove 345 that slides with the frame body 330, and the first guide groove 345 extends along a first direction. In this way, the user can slide the adjustment frame 340 relative to the frame body 330 through the first guide groove 345. Without loss of generality, taking the adjustment frame 340 with a first adjustment position 341 as an example, it can be understood that the frame body 330 is correspondingly provided with a first installation position 900 for selectively installing at one of the first adjustment positions 341. During the relative sliding process between the frame body 330 and the adjustment frame 340, the first installation position 900 can pass through all the first adjustment positions 341. The user can stop the first installation position 900 at the desired first adjustment position 341, so that the user can install the frame body 330 at that first adjustment position 341. This helps to reduce the alignment time between the first installation position 900 and the first adjustment position 341 to be installed. However, this design is not limited to this. In other embodiments, the frame body 330 may be provided with a first guide groove 345 that slides with the adjustment frame 340, and the first guide groove 345 extends along a first direction.

**[0018]** In the first and second embodiments, the connection structure 311 extends along a second direction, which is different from the first direction. In the first direction, the connection structure 311 has a connection surface located near the installation completion position 342, and the connection surface is used to connect the window structure 110. If the window structure 110 comprises a window frame 120 and a window door 130 rotatably provided at the window frame 120, the window door 130 is used to control the opening and closing of the window frame 120. The user can connect the connection surface of the connection structure 311 to the window sill of the window frame 120. It can be understood that since the second direction is different from the first direction, the connection structure 311 and the frame body 330 have an angle, which is beneficial for the installation completion position 342 to be away from the window frame 120, thereby benefiting the air conditioner outdoor unit 200 to be away from the window frame 120. This is beneficial for reducing the opening degree of the window door 130, thereby improving the cooling or heating effect of the air conditioner on the building 100. If the window structure 110 is a French window structure, the user can connect the connection surface to a upper surface of the railing 140 of the French window structure. It is worth mentioning that the user can also select the first adjustment position 341 to increase the distance between the installation completion position 342 and the connection structure 311, thereby moving the installation completion position 342 away from the window frame 120. This helps to move the air conditioner outdoor unit 200 away from the window frame 120. In this way, it is beneficial to reduce the opening degree of the window 130, thereby improving the cooling or heating effect of the air conditioner on the building 100.

**[0019]** In the first and second embodiments, in the second direction, the installation bracket 300 further comprises a support base 800 provided at the side of the load-bearing frame 320 near the connection surface, and the installation completion position 342 is provided at the side of the load-bearing frame 320 away from the connection surface. The support base 800 is provided with a support surface 881 on the side away from the load-bearing frame 320 for abutting against the building 100. In the second direction, the load-bearing frame 320 is used to partially block the air intake area of the air conditioner outdoor unit 200 in the direction away from the connection surface. Thus, the support base 800 supports the load-bearing frame 320, so that an air duct is formed between the load-bearing frame 320 and the building 100, to allow the air intake area of the air conditioner outdoor unit 200 not blocked by the load-bearing frame 320 to communicate with the air duct in the second direction, thereby allowing the air conditioner outdoor unit 200 to still have a large air intake volume. However, this design is not limited to this. In other embodiments, the support base 800 may not be provided, and the support surface 881 may be provided at the side of the load-bearing frame 320 near the connection structure 311.

**[0020]** In the first and second embodiments, after the air conditioner outdoor unit 200 is connected to the installation completion position 342, the size of the air intake area of the air conditioner outdoor unit 200 is larger than the size of the load-bearing frame 320 in the width direction. Thus, the load-bearing frame 320 partially blocks the air intake area of the air conditioner outdoor unit 200.

**[0021]** In an embodiment and the second embodiment, the frame body 330 is provided with a first vent hole 610, and the adjustment frame 340 is provided with a second vent hole 620. When the frame body 330 and the adjustment frame 340 are engaged in any first adjustment position 341, the first vent hole 610 and the second vent hole 620 are at least partially opposite in the second direction to limit an air channel 600 for exposing at least a portion of the air intake area. Specifically, projections of the first vent hole 610, the second vent hole 620, and the air intake area in the second direction at least partially overlap.

**[0022]** In the first and second embodiments, the support base 800 is rotatably connected to the load-bearing frame 320 to adjust the angle between the connection surface and the support surface 881. The adjustable angle between the connection surface and the support surface 881 of the installation bracket 300 facilitates adaptation to more types of buildings 100. Without loss of generality, taking the attic of the building 100 as an example, the sloping roof of the attic of the building 100 is provided with a window structure 110. The connection surface is connected to the lower window edge of the window frame 120 of the window structure 110, and the support surface 881 is provided at the outer side of the sloping roof of the attic. The angle between the lower window edge and the outer side of the sloping roof may differ for different attics. This installation bracket 300 can rotate relative to the load-bearing frame 320 by the support base 800 to make the

connection surface more closely fitted to the lower window edge and the support surface 881 more closely fitted to the outer side of the sloping roof. Similarly, the installation bracket 300 can also adapt to the railing 140 of a French window structure, which is not repeated here. Of course, taking cost into consideration, in other embodiments, the support base 800 is fixedly connected to the load-bearing frame 320.

**[0023]** In the first and second embodiments, the support base 800 is provided at the adjustment frame 340. Thus, the support base 800 is relatively far from the connection structure 311, providing better support for the support frame and making the structure of the installation bracket 300 more stable. However, this design is not limited to this; in other embodiments, the support base 800 is provided at the frame body 330.

**[0024]** In the first and second embodiments, the installation bracket 300 further comprises a third adapter structure 500 for connecting the window structure 110. One of the third adapter structure 500 or the connection surface has at least two second adjustment positions in the second direction for selective installation of the other. Thus, the connection structure 311 is connected to the window structure 110 via the third adapter structure 500. Since the window sill structure may have uneven areas in the second direction that are difficult for the connection structure 311 to connect to, the installation bracket 300 can avoid these uneven areas by adjusting the position of the third adapter structure 500 in the second direction.

**[0025]** There are many ways to adjust the third adapter structure 500 to the connection structure 311. In the first and second embodiments, the connection surface has an elongated hole 313 extending in the second direction, and the elongated hole 313 has a second adjustment position. The third adapter structure 500 is bolted to the connection surface through the elongated hole 313. However, this design is not limited to this. In other embodiments, the connection surface has a second adjustment position, and the second adjustment position has an adjustment hole for the third adapter structure 500 to engage.

**[0026]** In the first and second embodiments, the window structure 110 has a lower window edge, and the third adapter structure 500 is provided with an adhesive layer for bonding the lower window edge. This makes the connection between the installation bracket and the window structure 110 more convenient, allowing users to install the air conditioner themselves at home without having to wait a long time for an installer. Furthermore, since it's self-installed, it saves on installation fees. In addition, it eliminates the need for drilling into the window structure 110, preventing damage to the window structure.

**[0027]** In the first and second embodiments, the window structure 110 comprises a railing 140, and the third adapter structure 500 and the frame body 330 are provided at the front and rear sides of the railing 140. This makes the connection between the installation bracket and the window structure 110 more convenient, allowing users to install the air conditioner themselves at home without having to wait a long time for an installer. Furthermore, since it's self-installed, it saves on installation fees. In addition, it eliminates the need for drilling into the railing 140, preventing damage to the window structure 110.

**[0028]** In the first and second embodiments, the installation bracket 300 further comprises a pull rope, one end of the pull rope is connected to the load-bearing frame 320, and the other end of the pull rope is used to connect to the building 100. This improves the safety of the air conditioner outdoor unit 200; even if the connection structure 311 detaches from the window sill structure, the load-bearing frame 320 can still be connected to the building 100 via the pull rope, preventing the air conditioner outdoor unit 200 from falling. The pull rope can be, but is not limited to, connecting to the security grille of the window structure 110, or the air conditioner indoor unit inside the room.

**[0029]** There are many ways to connect the pull rope to the load-bearing frame 320. In the first and second embodiments, the pull rope is connected to the frame body 330. However, this design is not limited to this. In other embodiments, the pull rope is connected to the adjustment frame 340.

**[0030]** In the first and second embodiments, the connection structure 311 or the load-bearing frame 320 is provided with a buckle hole, and the installation bracket 300 further comprises a buckle ring 710 that is fastened to the buckle hole. The other end of the pull rope is connected to the connection structure 311 or the load-bearing frame 320 through the buckle ring 710. This improves the efficiency of connecting the pull rope to the connection structure 311 or the load-bearing frame 320.

**[0031]** The first embodiment and the second embodiment are described below.

**[0032]** In the first embodiment, the adjustment frame 340 comprises a first groove bottom plate 346 and two first groove side plates 347 provided at the first groove bottom plate 346. The first groove bottom plate 346 and the two first groove side plates 347 are enclosed to form a first guide groove 345, thus requiring less material to form the adjustment frame 340. In the first embodiment, one of the first groove side plates 347 is provided with a first flange 348 extending toward the other first groove side plate 347. The frame body 330 is provided between the first groove bottom plate 346 and the first flange 348. Thus, the first groove bottom plate 346 and the first flange 348 provide a limit for the frame body 330 in a depth direction of the first guide groove 345, so that the frame body 330 can slide relatively stably in the first guide groove 345. In addition, the first flange 348 is provided to prevent the first groove side plate 347 from injuring the user's hands during the assembly or disassembly of the installation bracket 300.

**[0033]** In the first embodiment, the installation bracket 300 further comprises bolts provided at the first adjustment position 341 for passing through the frame body 330 and the adjustment frame 340. This allows the frame body 330 and the adjustment frame 340 to be relatively fixed, which helps improve the structural stability of the installation bracket 300.

Furthermore, the bolts are readily available components, and can be easily replaced when damaged. Without loss of generality, taking the adjustment frame 340 with the first adjustment position 341 as an example for further explanation, it can be understood that the frame body 330 is correspondingly provided with a first installation position 900 for installation at a selected first adjustment position 341. The first adjustment position 341 has an adjustment hole, and the first installation position 900 has an installation hole. The bolt passes through the adjustment hole and the installation hole to connect the frame body 330 and the adjustment frame 340. It is worth noting that the bolts may be, but are not limited to, hand-tightening bolts.

**[0034]** In the first embodiment, the installation bracket 300 further comprises a first adapter structure 430 for connecting to the air conditioner outdoor unit 200. One of the frame body 330 or the first adapter structure 430 is provided with a second guide groove 331 extending in a first direction. The second guide groove 331 allows the other one of the frame body 330 or the first adapter structure 430 to slide into. Thus, the air conditioner outdoor unit 200 can be connected to the frame body 330 via the first adapter structure 430. The first adapter structure 430 provides users with options. If the building 100 has a shelf for placing the air conditioner outdoor unit 200, the user can choose not to connect the first adapter structure 430 to the air conditioner outdoor unit 200 and directly move the air conditioner outdoor unit 200 to the shelf, which helps reduce the weight borne by the user when moving the air conditioner outdoor unit 200. If the building 100 does not have a shelf for placing the air conditioner outdoor unit 200, the user can choose to connect the air conditioner outdoor unit 200 to the frame body 330 via the first adapter structure 430. Furthermore, without loss of generality, taking the frame body 330 with a second guide groove 331 as an example, the user can first move the installation bracket 300 to the window structure 110, and then move the air conditioner outdoor unit 200 so that the first adapter structure 430 slides into the second guide groove 331. In this way, the installation bracket 300 and the air conditioner outdoor unit 200 are moved separately, which helps to reduce the difficulty for the user to complete the installation of the air conditioner outdoor unit 200. Moreover, the sliding fit between the first adapter structure 430 and the second guide groove 331 also facilitates the user to complete the installation of the air conditioner outdoor unit 200. The installation completion position 342 is configured as a first abutment position 343. The first adapter structure 430 is slidable between the connection structure 311 and the first abutment position 343. The first abutment position 343 is configured for the air conditioner outdoor unit 200 to abut against through the first adapter structure 430. In this way, the user can push the air conditioner outdoor unit 200 to make the first adapter structure 430 slide toward the first abutment position 343. When the first adapter structure 430 abuts against the first abutment position 343, the installation of the air conditioner outdoor unit 200 is completed. However, this design is not limited to this. In other embodiments, the adjustment frame 340 is provided with a shelf, and the shelf is provided with an installation completion position 342.

**[0035]** In the first embodiment, the connection structure 311 extends along a second direction, which is different from the first direction. In the first direction, the connection structure 311 comprises a connection surface located near the installation completion position 342, and the connection surface is used to connect the window structure 110. Thus, if the window structure 110 is a window structure 110 provided at the sloping roof of the attic of the building 100, the connection surface can be provided at the lower edge of the window frame 120. Since the installation bracket is connected to the connection structure 311, and the user can stand in the attic to install the air conditioner outdoor unit 200, the second guide groove 331 is closer to the user, making it easier for the user to move the air conditioner outdoor unit 200 along with the first adapter structure 430 to the frame body 330. This allows the first adapter structure 430 to be easily aligned with the second guide groove 331, and thus allows the first adapter structure 430 to slide into the second guide groove 331 more easily. In addition, the air conditioner outdoor unit 200 can slide the first adapter structure 430 into the second guide groove 331 by its own weight. If the window structure 110 is a French window structure, the connection surface can be provided at the upper surface of the railing 140 of the French window structure. In this way, the air conditioner outdoor unit 200 can slide the first adapter structure 430 into the second guide groove 331 by its own weight.

**[0036]** In the first embodiment, the frame body 330 comprises a second groove bottom plate 332 and two second groove side plates 333 provided at the second groove bottom plate 332. The second groove bottom plate 332 and the two second groove side plates 333 are enclosed to form a second guide groove 331. Thus, less material is required to form the frame body 330.

**[0037]** In the first embodiment, one of the two second groove side plates 333 is provided with a second flange 334 extending toward the other second groove side plate 333. A first adapter structure 430 is provided between the first groove bottom plate 346 and the first flange 348. Thus, the second groove bottom plate 332 and the second flange 334 provide a limit for the first adapter structure 430 in the depth direction of the second guide groove 331, so that the first adapter structure 430 can slide relatively stably in the second guide groove 331. In addition, the second flange 334 is provided to prevent the second groove side plate 333 from injuring the hands during the assembly and disassembly of the installation bracket 300.

**[0038]** Referring to FIG. 4, in the first embodiment, in terms of the orientation of the connection surface, the second guide groove 331 has a first guide section 335 close to the connection structure 311 and a second guide section 336 away from the connection structure 311. The second guide section 336 is connected to the first guide section 335, and the second flange 334 is provided at the second guide section 336. It can be understood that the user will usually abut the first adapter

structure 430 against the connection between the connection structure 311 and the frame body 330 to gain leverage, to adjust the position of the first adapter structure 430, thereby facilitating the smooth sliding of the first adapter structure 430 into the second guide groove 331. Since the second flange 334 is provided in the second guide section 336 instead of the first guide section 335, the first adapter structure 430 will not be interfered with by the second flange 334 during the adjustment of its position, so that the first adapter structure 430 can quickly enter the first guide section 335. During the sliding process of the second guide section 336, the first adapter structure 430 gradually slides along the first direction, so that the first adapter structure 430 can smoothly slide into the second guide section 336.

**[0039]** In the first embodiment, the first adapter structure 430 comprises a sliding part that slides with the second guide groove 331. The sliding part is groove-shaped and comprises a third groove bottom plate 431 and two third groove side plates 432 provided at the third groove bottom plate 431. Thus, less material is required to form the sliding part.

**[0040]** In the first embodiment, one of the two third groove side plates 432 is provided with a third flange 433 extending toward the other third groove side plate 432. The third flange 433 is abutted against the second groove bottom plate 332, and the third groove bottom plate 431 is abutted against the second flange 334. In this way, the sliding part can slide relatively stably in the second guide groove 331. In addition, the third flange 433 is provided to prevent the sliding part from injuring the hands during the installation and disassembly of the installation bracket 300.

**[0041]** Referring to FIGS. 10 and 11, in the first embodiment, the frame body 330 is provided with a second guide groove 331, and the connection structure 311 is provided with a transition guide groove 315 communicating with the second guide groove 331. In this way, the transition guide groove 315 is closer to the indoor space of the building 100. When the user carries the air conditioner outdoor unit 200 and the first adapter structure 430 together, and aligns the first adapter structure 430 with the transition guide groove 315, the user's forward lean can be reduced, and the user's arms may not even need to be stretched too far, so that the user will not be too tired when installing the outdoor unit 200. After the first adapter structure 430 is engaged with the transition guide groove 315, the user can push the air conditioner outdoor unit 200 so that the first adapter structure 430 slides from the transition guide groove 315 into the second guide groove 331. This avoids the user directly carrying the air conditioner outdoor unit 200 and the first adapter structure 430 to the second guide groove 331, which greatly improves the safety of the installation process of the air conditioner outdoor unit 200. If the connection structure 311 is provided at the lower edge of the window frame 120, the first adapter structure 430 can leverage the lower edge of the window frame after cooperating with the transition guide groove 315, thus reducing the burden on the user. If the connection structure 311 is provided at the upper surface of the railing 140, the first adapter structure 430 can leverage the railing 140 after cooperating with the transition guide groove 315, thus reducing the burden on the user.

**[0042]** In the first embodiment, the first adapter structure 430 mentioned herein is provided with a third vent hole 630. The first vent hole 610, the second vent hole 620, and the third vent hole 630 are at least partially opposite in the second direction to limit the air passage 600 for exposing at least a portion of the air intake area. Specifically, the projections of the first vent hole 610, the second vent hole 620, the third vent hole 630, and the air passage area in the second direction at least partially overlap.

**[0043]** In the second embodiment, in the first direction, the first guide groove 345 is provided with a plurality of positioning holes 349, one positioning hole 349 corresponds to one first adjustment position 341, and the frame body 330 has a positioning portion 337 that engages with one of the positioning holes 349. Without loss of generality, taking the adjustment frame 340 with a first adjustment position 341 as an example for further explanation, it can be understood that the frame body 330 is correspondingly provided with a first installation position 900 for installation at the first adjustment position 341. When the positioning portion 337 engages with the positioning hole 349, the first installation position 900 and the corresponding first adjustment position 341 are aligned, to facilitate the user's installation of the frame body 330 and the adjustment frame 340.

**[0044]** In the second embodiment, the positioning hole 349 is provided at the bottom wall of the first guide groove 345, and the positioning portion 337 is configured as a positioning hook. The positioning hook engages with the positioning hole 349. However, this design is not limited to this. In other embodiments, the positioning hole 349 is provided at the side wall of the first guide groove 345, and the positioning portion 337 is configured as a positioning telescopic part, having a compressed state and an extended state. When the positioning telescopic part slides against the side wall of the groove, it is in the compressed state. When the positioning telescopic part slides to the positioning hole 349, it changes from the compressed state to the extended state, to extend into the positioning hole 349, thereby engaging with the positioning hole 349.

**[0045]** In the second embodiment, the installation bracket 300 further comprises a pin provided at the first adjustment position 341 for passing through the frame body 330 and the adjustment frame 340. This allows the frame body 330 and the adjustment frame 340 to be relatively fixed, which helps improve the structural stability of the installation bracket 300. Furthermore, the pin is a readily available component, and it is easy to obtain a replacement if the pin is damaged. Without loss of generality, taking the adjustment frame 340 with the first adjustment position 341 as an example for further explanation, it can be understood that the frame body 330 is correspondingly provided with a first installation position 900 for selectively installation at the first adjustment position 341. The first adjustment position 341 is provided with an adjustment hole, and the first installation position 900 is provided with an installation hole. The pin passes through the

adjustment hole and the installation hole to connect the frame body 330 and the adjustment frame 340.

**[0046]** In the second embodiment, the installation bracket 300 further comprises a second adapter structure 440 for connecting to the air conditioner outdoor unit 200. One of the adjustment frame 340 or the second adapter structure 440 is provided with a third guide groove 441 extending along a first direction. The third guide groove 441 allows the other of the adjustment frame 340 or the second adapter structure 440 to slide into. In this way, the air conditioner outdoor unit 200 can be connected to the adjustment component via the second adapter structure 440. The second adapter structure 440 provides users with options. If the building 100 has a shelf for placing the air conditioner outdoor unit 200, the user can choose not to connect the second adapter structure 440 to the air conditioner outdoor unit 200 and directly move the air conditioner outdoor unit 200 to the shelf, which helps reduce the weight borne by the user when moving the air conditioner outdoor unit 200. If the building 100 does not have a shelf for placing the air conditioner outdoor unit 200, the user can choose to connect the air conditioner outdoor unit 200 to the adjustment frame 340 via the second adapter structure 440. Furthermore, without loss of generality, taking the second adapter structure 440 with a third guide groove 441 as an example, the user can first move the installation bracket 300 to the window structure 110, and then move the air conditioner outdoor unit 200 so that the adjustment frame 340 slides into the third guide groove 441. In this way, the installation bracket 300 and the air conditioner outdoor unit 200 are moved separately, which helps to reduce the difficulty for the user to complete the installation of the air conditioner outdoor unit 200. Moreover, the sliding fit between the second adapter structure 440 and the third guide groove 441 also facilitates the user to complete the installation of the air conditioner outdoor unit 200. The installation completion position 342 is configured as a second abutment position 344. The space between the second abutment position 344 and the connection structure 311 is configured for the second adapter structure 440 to slide, and the second abutment position 344 is used for the air conditioner outdoor unit 200 to abut against. In this way, the user can push the air conditioner outdoor unit 200 to slide towards the second abutment position 344. When the air conditioner outdoor unit 200 abuts against the second abutment position 344, the installation of the air conditioner outdoor unit 200 is completed.

**[0047]** Referring to FIG. 18, in the second embodiment, the connection structure 311 is provided with a fourth guide groove 316 extending along the second direction, and the installation bracket is slidably engaged with the fourth guide groove 316, thereby facilitating the adjustment of the position of the installation bracket in the second direction.

**[0048]** Considering the existence of a current installation bracket, which comprises a load-bearing frame with an installation completion position, a connection part connecting the load-bearing frame, and an adjustment part arranged parallel to the load-bearing frame. The adjustment part is connected to the load-bearing frame via the connection part, and the adjustment part, the connection part, and the load-bearing frame restrict a hanging channel for the window structure to enter. In the direction from the adjustment part to the load-bearing frame, the connection part is provided with a plurality of first adjustment positions for the adjustment part to be locked with a screw, to adjust the width of the hanging channel, so that the installation bracket can be hung on window structures of various sizes. However, when using this installation bracket, the user needs to select the first adjustment position for the adjustment part to be locked in accordance with the width of the part of the window structure that is used for the hanging channel. The adjustment part and the connection part may detach from each other due to unstable locking by the user, which may cause the air conditioner outdoor unit to fall and cause a safety accident.

**[0049]** Therefore, referring to FIGS. 25 to 29, and also to FIGS. 31 and 33, in an embodiment of the present application, the installation bracket 300 is used to install the air conditioner outdoor unit 200 at the building 100 as described in the above embodiment, which will not be described again here.

**[0050]** The installation bracket 300 comprises a hanging structure 410 and a load-bearing frame 320. The hanging structure 410 has a hanging channel 420 for the window structure 110 to enter. It should be noted that the window structure 110 can be a window structure 110 provided at the sloping roof of the attic of the building 100. This window structure 110 comprises a window frame 120 and a window door 130 provided at the window frame 120. The window door 130 is used to open and close the window frame 120. The hanging structure 410 can be hung on the window edge of the window frame 120, and the hanging channel 420 is configured for the window edge to enter. The window structure 110 can also be a French window structure, and the hanging structure 410 can be hung on the railing 140 of the French window structure. The hanging channel 420 is configured for the railing 140 to enter. The window structure 110 can also be in other window structures for the hanging structure 410 to be hung on, which is not limited here. In the hanging direction of the hanging structure 410, the width of the hanging channel 420 tends to increase. Thus, the hanging channel 420 can accommodate window sills, railings 140, and other parts of the window structure 110 that are used for hanging the hanging structure 410, with varying widths. Here, the portion of the window structure 110 for the hanging structure 410 to hang on is defined as an attached portion. In this way, the user does not need to adjust the width of the hanging channel 420 according to the attached portion; the hanging structure 410 is readily available and very convenient. This also reduces the likelihood of the air conditioner outdoor unit 200 falling due to user installation, thus reducing the occurrence of installation accidents.

**[0051]** The load-bearing frame 320 is connected to the hanging structure 410, and the load-bearing frame 320 is provided with an installation completion position 342 for installing the air conditioner outdoor unit 200. In this way, the user can install the air conditioner outdoor unit 200 in the installation completion position 342 and hang the hanging structure

410 on the window structure 110 to complete the installation of the air conditioner outdoor unit 200.

**[0052]** It is worth mentioning that the hanging structure 410 makes it very convenient for users to install the installation bracket 300 on the building 100, so that after purchasing the air conditioner, users no longer need to spend a long time waiting for an installer to come to their home, and can install it themselves at home. Moreover, since it is installed by themselves, it also saves the cost of paying an installer. In addition, since the installation bracket 300 is installed on the building 100 by hanging, it can eliminate the need for drilling windowsills or railings 140 in the window structure 110, avoiding damage to the window structure 110.

**[0053]** There are many structural forms for the hanging structure 410. In an embodiment, in the width direction of the hanging channel 420, the hanging channel 420 has a first side 434 and a second side 437 opposite to the first side 434. The first side 434 comprises a first side wall 435 connected to the load-bearing frame 320, and the second side 437 comprises a second side wall 438 arranged at an angle to the first sidewall 435. In this way, the first side wall 435 and the second side wall 438 are planar, which facilitates the manufacture of the hanging structure 410. It can be understood that the distance between the first side wall 435 and the second side wall 438 in the width direction of the hanging channel 420 gradually increases in the hanging direction. However, this design is not limited to this. In other embodiments, the first side wall 435 and/or the second side wall 438 are arc-shaped.

**[0054]** There are many structural forms for the hanging structure 410. In an embodiment, the hanging channel 420 also has a channel bottom wall 450 connecting the first side 434 and the second side 437, and a normal of the channel bottom wall 450 is parallel to the hanging direction. In this way, the minimum width dimension of the hanging channel 420 is the dimension of the channel bottom wall 450 in the width direction of the hanging channel 420. It can be understood that this dimension is not zero. The attached portion, such as a windowsill and railing 140, typically has a minimum width dimension that is not zero. This improves the space utilization of the hanging channel 420. However, this design is not limited to this. In other embodiments, the first side 434 is directly connected to the second side 437; for example, the first side 434 and the second side 437 are arranged at an angle, or the connection between the first side 434 and the second side 437 is a smooth transition.

**[0055]** In an embodiment, the second side wall 438 is connected to the bottom wall 450 of the channel, and the first side 434 further comprises a third side wall 436. The first side wall 435 is connected to the bottom wall 450 of the channel via the third side wall 436. In the hanging direction, the third side wall 436 and the first side wall 435 are arranged sequentially. In the hanging direction, the increasing trend of the distance between the third side wall 436 and the second side wall 438 is greater than the increasing trend of the distance between the first side wall 435 and the second side wall 438. Thus, the first side wall 435 transitions to the groove bottom wall via the third side wall 436, making the transition between the first side wall 434 and the bottom wall 450 of the channel smoother, thereby preventing users from injuring their hands when picking up the hanging structure 410. However, this design is not limited to this. In other embodiments, the first side wall 435 is directly connected to the bottom wall 450 of the channel.

**[0056]** In an embodiment, the second side 437 further comprises a fourth side wall 442 parallel to the first side wall 435. In the hanging direction, the fourth side wall 442 and the second side wall 438 are sequentially arranged, and the fourth side wall 442 is connected to the channel bottom wall 450 via the second side wall 438. If the engaged part has two side surfaces parallel to each other in its width direction, and the distance between the two side surfaces is the same as the distance between the fourth side wall 442 and the first side wall 435. Therefore, the first side wall 435 and the fourth side wall 442 will abut against these two side surfaces respectively, making the hanging structure 410 more securely connected to the attached portion. Furthermore, if the width of the attached portion is small, when the hanging structure 410 is hung on the attached portion, if the second side 437 slides relative to the attached portion due to the influence of external airflow, the hanging structure 410 and the attached portion will tend to separate. It can be understood that the angle between the second side wall 438 and the fourth side wall 442 is an obtuse angle. When the attached portion slides to the fourth side wall 442, the fourth side wall 442 helps to suppress the tendency of the attached portion to separate from the hanging structure 410, which makes the installation bracket 300 more securely connected to the attached portion.

**[0057]** In an embodiment, the installation bracket 300 further comprises a rope 910, which is used to pass through the first side 434 and the second side 437 in the width direction of the hanging channel 420, to define a limit space 800 with the first side 434, the second side 437, and the bottom wall 450 of the channel. The window structure 110 comprises a railing 140, and the limit space 800 is for the railing 140 to pass through. In this way, even in relatively bad weather, such as in a storm, the hanging structure 410 is not easy to detach from the railing 140 due to the limitation of the limit space 800, which helps to improve the safety performance of the installation bracket 300. However, this design is not limited to this. In other embodiments, the rope 910 passes through the load-bearing frame 320 and the second side 437, to define the limit space 800 together with the load-bearing frame 320 and the hang part. In the hanging direction, the rope 910 is located below the limit space 800.

**[0058]** In an embodiment, the rope 910 has a first end for connecting to the building 100 and a second end for connecting to the first side 434. Thus, under the tension of the rope 910, the installation bracket 300 is less likely to fall from the building 100, which improves the safety performance of the installation bracket 300. Furthermore, the second side 437 has a limit notch 443 for the rope 910 to pass through. Thus, the rope 910 can easily enter the limit notch 443 through the notch.

However, this design is not limited to this. In other embodiments, the rope 910 has a first end for connecting to the building 100 and a second end for connecting to the first side 434, and the second side 437 is provided with a limit hole for the rope 910 to pass through. It is worth mentioning that the first end of the rope 910 may, but is not limited to, connect to the security bars of the window structure 110, or the air conditioner indoor unit in the room.

**[0059]** Referring to FIG. 30, in an embodiment, the limit notch 443 comprises an entry/exit section 444 for the rope 910 to enter in the direction opposite to the hanging direction, a limit section 446 for the rope 910 to enter in the hanging direction, and a connection section 445 connecting the entry/exit section 444 and the limit section 446. It can be understood that if the hanging structure 410 is to disengage from the attached portion, the hanging structure 410 needs to move in the direction opposite to the hanging direction. Since the limit section 446 allows the rope 910 to enter in the hanging direction, relative to the rope 910 already in the limit section 446, the more the hanging structure 410 moves in the direction opposite to the hanging direction, the more the rope 910 enters the limiting section 446 in the hanging direction. That is, the rope 910 will not detach from the limit section 446, which helps improve the connection stability between the hanging structure 410 and the hooked part. Furthermore, even if rope 910 detaches from the limit section 446, for rope 910 to completely detach from the limit notch 443, the rope 910 still needs to enter the entry/exit section 444 from the connection section 445. That is, the rope 910 still needs to move along the length direction of the hooking channel 420 in the connection section 445, and finally needs to move along the hanging direction in the entry/exit section 444, so that the rope 910 can detach from the limit notch 443. This makes it more difficult for the rope 910 to detach from the limit notch 443, which helps improve the connection stability between the installation bracket 300 and the attached portion. However, this design is not limited to this. In other embodiments, the limit notch 443 can also be other shapes, as long as it can prevent the rope 910 from detaching from the limit notch 443, which is not limited here.

**[0060]** In an embodiment, the first end of the rope 910 is connected to the building 100 via a wire locker 930. For example, the first end is connected to an air conditioner indoor unit inside the building 100, or a security grille of the building 100, via the wire locker 930. In this way, the rope 910 can be connected to the building 100 more securely.

**[0061]** In an embodiment, the second end of the rope 910 is connected to the first side 434 via a buckle 710, which facilitates the user to connect the rope 910 to the first side 434.

**[0062]** Referring to FIGS. 35 to 37, in an embodiment, the load-bearing frame 320 comprises a frame body 330 connected to the hanging structure 410 and an adjustment frame 340 connected to the frame body 330. The frame body 330 extends along the hanging direction, and the adjustment frame 340 is provided with an installation completion position 342. In the hanging direction, one of the adjustment frame 340 or the frame body 330 is provided with a plurality of first adjustment positions 341 for the other to be installed, thereby adjusting the distance between the installation completion position 342 and the hanging structure 410. Without loss of generality, an example is described in which the adjustment frame 340 is provided with the first adjustment positions 341. Thus, in an environment with high airflow intensity where the window structure 110 is located, the user can choose the first adjustment position 341, which is farther away from the hanging structure 410, for the frame body 330 to be installed, so that the distance between the installation completion position 342 and the hanging structure 410 is closer. For ease of explanation, a first integral comprising the installation bracket 300 and the air conditioner outdoor unit 200 is defined. In this way, the distance between the center of gravity of the first whole and the hanging structure 410 is shortened, reducing the impact of airflow on the first whole and thus improving the connection stability between the hanging structure 410 and the window structure 110. Taking the first adjustment position 341 provided at the frame body 330 as an example, the user can select the first adjustment position 341, which is closer to the hanging structure 410, for the adjustment frame 340 to be installed, so that the distance between the installation completion position 342 and the hanging structure 410 is closer. It should be noted that the "a plurality of" mentioned in this article refers to at least two. Furthermore, the user can select the desired first adjustment position 341 to make the distance between the installation completion position 342 and the hanging structure 410 farther, so that the installation completion position 342 is farther from the window frame, thus facilitating the air conditioner outdoor unit 200 to be farther from the window frame. This helps to avoid interference between the air conditioner outdoor unit 200 and the window door, and helps to reduce the opening of the window door, thus improving the cooling or heating effect of the air conditioner on the building 100.

**[0063]** In an embodiment, the frame body 330 and the hanging structure 410 are integrally formed. This results in high overall structural strength for the frame body 330 and the hanging structure 410. Furthermore, the user can attach the installation bracket 300 to the window structure 110 without additional tools.

**[0064]** In an embodiment, two adjacent first adjustment positions 341 are spaced apart as described in the above embodiment, and will not be repeated here.

**[0065]** In an embodiment, the adjustment frame 340 is provided with a first guide groove 345 that slides with the frame body 330. The first guide groove 345 extends along the hanging direction. Its specific implementation details and effects have been described in detail in the foregoing embodiments and will not be repeated here.

**[0066]** In an embodiment, the adjustment frame 340 comprises a first groove bottom plate 346 and two first groove side plates 347 provided at the first groove bottom plate 346. The first groove bottom plate 346 and the two first groove side plates 347 are enclosed to form a first guide groove 345. The specific implementation details and effects have been

described in detail in the foregoing embodiments and will not be repeated here.

**[0067]** Referring to FIG. 32, in an embodiment, the installation bracket 300 further comprises bolts provided at the first adjustment position 341 for passing through the frame body 330 and the adjustment frame 340. The specific implementation details and effects have been described in detail in the foregoing embodiments and will not be repeated here.

**[0068]** In an embodiment, the installation bracket 300 further comprises a first adapter structure 430 for connecting to the air conditioner outdoor unit 200. The frame body 330 is provided with a second guide groove 331 extending along the hanging direction, and the second guide groove 331 is configured for the first adapter structure 430 to slide into. The first adapter structure 430 provides users with options. If the building 100 has a shelf for placing the air conditioner outdoor unit 200, the user can choose not to connect the first adapter structure 430 to the air conditioner outdoor unit 200 and directly move the air conditioner outdoor unit 200 to the shelf, which helps reduce the weight borne by the user when moving the air conditioner outdoor unit 200. If the building 100 does not have a shelf for placing the air conditioner outdoor unit 200, the user can choose to connect the air conditioner outdoor unit 200 to the frame body 330 via the first adapter structure 430. The sliding fit between the first adapter structure 430 and the second guide groove 331 also facilitates the user's installation of the air conditioner outdoor unit 200. The installation completion position 342 is configured as a first abutment position 343. The first adapter structure 430 is slidable between the hanging structure 410 and the first abutment position 343. The first abutment position 343 is configured for the air conditioner outdoor unit 200 to abut against through the first adapter structure 430. In this way, the user can push the air conditioner outdoor unit 200 to make the first adapter structure 430 slide toward the first abutment position 343. When the first adapter structure 430 abuts against the first abutment position 343, the installation of the air conditioner outdoor unit 200 is completed. However, this design is not limited to this. In other embodiments, the adjusting bracket 340 is provided with a shelf, and the shelf is provided with the installation completion position 342.

**[0069]** In an embodiment, the implementation details and effects of the frame body 330 and the second flange 334 have been specifically described in the foregoing embodiments and will not be repeated here.

**[0070]** In an embodiment, in the hanging direction, the second guide groove 331 comprises a first guide segment 335 and a second guide segment 336 arranged sequentially. The first guide segment 335 is connected to the second guide segment 336, and a second flange 334 is provided at the second guide segment 336. It can be understood that users typically abut the first adapter structure 430 against the connection between the hanging structure 410 and the frame body 330 to gain leverage, to adjust the position of the first adapter structure 430, thereby the smooth sliding of the first adapter structure 430 into the second guide groove 331. Since the second flange 334 is provided at the second guide segment 336 rather than the first guide segment 335, the first adapter structure 430 will not be interfered with by the second flange 334 during position adjustment, so that the first adapter structure 430 can quickly enter the first guide segment 335. During the sliding process of the second guide segment 336, the first adapter structure 430 gradually slides along the hanging direction, so that the first adapter structure 430 can smoothly slide into the second guide segment 336.

**[0071]** Referring to FIG. 34, in the first embodiment, the first adapter structure 430 comprises a sliding part that slides with the second guide groove 331. The sliding part is groove-shaped and comprises a third groove bottom plate 431 and two third groove side plates 432 provided at the third groove bottom plate 431. Thus, less material is required to form the sliding part.

**[0072]** In the first embodiment, one of the two third groove side plates 432 is provided with a third flange 433 extending toward the other third groove side plate 432. The third flange 433 is abutted against the second groove bottom plate 332, and the third groove bottom plate 431 is abutted against the second flange 334. In this way, the sliding part can slide relatively stably in the second guide groove 331. In addition, the third flange 433 is provided to prevent the sliding part from injuring the hands during the installation and disassembly of the installation bracket 300.

**[0073]** In an embodiment, one of the two third groove side plates 432 is bent toward the other third groove side plate 432, and the distance between the two third groove side plates 432 tends to decrease in the direction from the third groove bottom plate 431 to the third flange. Thus, the bent portion of the third groove side plate 432 can be used in conjunction with the second groove side plate 333 to facilitate the entry of the first adapter structure 430 into the second guide groove 331.

**[0074]** In an embodiment, the second guide groove 331 is provided at the side of the frame body 330 opposite to the hanging channel 420. The side of the hanging structure 410 opposite to the hanging channel 420 is provided with a transition guide groove 315 communicating with the second guide groove 331, so that the first adapter structure 430 can slide from the transition guide groove 315 into the second guide groove 331. In this way, the transition guide groove 315 is closer to the indoor space of the building 100. Without loss of generality, the user can carry the air conditioner outdoor unit 200 and the first adapter structure 430 together. When aligning the first adapter structure 430 with the transition guide groove 315, the user's forward lean can be reduced, and the user's arms may not even need to be stretched too far, so that the user will not be too tired when installing the air conditioner outdoor unit 200. When the first adapter structure 430 is engaged with the transition guide groove 315, the window can provide support for the air conditioner outdoor unit 200, which helps to reduce the burden on the user. Then, the user can push the air conditioner outdoor unit 200 so that the first adapter structure 430 slides from the transition guide groove 315 into the second guide groove 331.

**[0075]** In an embodiment, the installation bracket 300 further comprises a support base 800 for abutting against the

building 100. In the width direction of the hanging channel 420, the support base 800 is provided at one side of the adjustment frame 340, and the other side of the adjustment frame 340 is opposite to the air conditioner outdoor unit 200. The frame body 330 is provided with a first vent hole 431, the adjustment frame 340 is provided with a second vent hole 432, and the first adapter structure 430 is provided with a third vent hole 630. In the width direction of the hanging channel 420, the first vent hole 431, the second vent hole 432, and the third vent hole 630 together expose the air intake area of the air conditioner outdoor unit 200. Thus, the support base 800 supports the load-bearing bracket 320, forming an air duct between the load-bearing bracket 320 and the building 100. The air passage 600 communicates with the first vent hole 431, the second vent hole 432, and the third vent hole, thereby allowing the air conditioner outdoor unit 200 to have a larger air intake volume. Since the first vent hole 431, the second vent hole 432, and the third vent hole 630 are used to jointly expose the air intake area of the air conditioner outdoor unit 200, the path from the air passage 600 to the air intake area is less obstructed, which helps to improve the smoothness of air intake in the air intake area.

**[0076]** In an embodiment, the support base 800 and the adjustment frame 340 are integrally formed. This provides a more stable connection between the support base 800 and the adjustment frame 340. However, this design is not limited to this. In other embodiments, the support base 800 is rotatably connected to the adjustment frame 340, and a rotation axis of the support base 800 is parallel to the hanging channel 420. Thus, the angle between the load-bearing frame 320 and the building 100 can be adjusted by rotating the support base 800, thereby increasing the air passage 600 between the installation frame and the building 100. Without loss of generality, taking the attic of building 100 as an example, the sloping roof of the attic of the building 100 is provided with a window structure 110, and the connection surface is connected to the lower window edge of the window frame 120 of the window structure 110. The support base 800 is provided at the outer side of the sloping roof of the attic. For the same lower window edge and the outer side of the sloping roof at different angles to the lower window edge, the installation bracket 300 can rotate relative to the adjustment frame 340 through the support base 800 to make the air passage 600 between the load-bearing frame 320 and the outer side of the sloping roof larger, so that the air intake area has a larger air intake volume.

**[0077]** In an embodiment, the installation bracket 300 further comprises a cushion pad 720, and the support base 800 is abutted against the building 100 through the cushion pad 720. This reduces the risk of damage to the building 100 caused by the installation bracket 300.

**[0078]** In an embodiment, the cushion pad 720 is configured as a rubber pad. Thus, the cushion pad 720 not only reduces damage to the building 100 caused by the installation bracket 300, but also increases the friction between the installation bracket 300 and the building 100, which helps improve the connection stability between the installation bracket 300 and the building 100. However, this design is not limited to this. In other embodiments, the cushion pad 720 can also be configured as a silicone pad.

**[0079]** The present application also proposes an air conditioner, which comprises an air conditioner outdoor unit 200 and the aforementioned installation bracket 300. The specific structure of the installation bracket 300 is as described in the above embodiments. Since this air conditioner adopts all the technical solutions of all the above embodiments, it has at least all the beneficial effects brought about by the technical solutions of the above embodiments, and will not be described in detail here. The installation completion position 342 of the installation bracket 300 is used to connect and install with the air conditioner outdoor unit 200.

**[0080]** In the above embodiment, the air conditioner also comprises an air conditioner indoor unit provided with a compressor. Thus, the compressor is located in the indoor unit rather than the outdoor unit 200, which helps reduce the force exerted on the outdoor unit 200 by the installation bracket 300, and also helps reduce the force on the connection structure 311 or the hanging structure 410, thereby improving the connection stability between the connection structure 311 or the hanging structure 410 and the window structure 110.

**[0081]** The above are merely some embodiments of the present application and do not limit the scope of the present application. Based on the inventive concept of the present application, equivalent structural transformations made by using the contents of the specification and drawings of the present application, or direct/indirect applications in other related technical fields, are comprised within the scope of the present application.

## Claims

1. An installation bracket, for installation at a building provided with a window structure, comprising:

a connection structure, configured to connect to the window structure; and

a load-bearing frame, comprising a frame body extending in a first direction and an adjustment frame connected to the frame body;

wherein the frame body is connected to the connection structure, and the adjustment frame is provided with an installation completion position for connection to an air conditioner outdoor unit; in the first direction, one of the adjustment frame or the frame body is provided with a plurality of first adjustment positions for an other of the

adjustment frame or the frame body to be selectively installed at one of the plurality of first adjustment positions (341), to adjust a distance between the installation completion position and the connection structure.

2. The installation bracket according to claim 1, wherein two adjacent first adjustment positions are arranged at an interval.
3. The installation bracket according to claim 2, wherein the adjustment frame is provided with a first guide groove in sliding fit with the frame body, and the first guide groove extends in the first direction.
4. The installation bracket according to claim 3, wherein in the first direction, the first guide groove is provided with a plurality of positioning holes, and one positioning hole corresponds to one first adjustment position; and the frame body is provided with a positioning portion selectively cooperating with one of the positioning holes.
5. The installation bracket according to claim 2, further comprising:  
a pin or a bolt provided at the first adjustment position to pass through the frame body and the adjustment frame.
6. The installation bracket according to claim 1, further comprising:  
a first adapter structure configured for connecting to the air conditioner outdoor unit, wherein one of the frame body or the first adapter structure is provided with a second guide groove extending along the first direction, and the second guide groove is configured for an other of the frame body or the first adapter structure to slide into; the installation completion position is configured as a first abutment position, and the first adapter structure is slidable between the connection structure and the first abutment position; and the first abutment position is configured for the air conditioner outdoor unit to abut against the first abutment position (343) through the first adapter structure.
7. The installation bracket according to claim 6, wherein the frame body is provided with the second guide groove, and the connection structure is provided with a transition guide groove communicating with the second guide groove, to allow the first adapter structure to slide from the transition guide groove into the second guide groove.
8. The installation bracket according to claim 1, further comprising:  
a second adapter structure for connecting to the air conditioner outdoor unit, wherein one of the adjustment frame or the second adapter structure is provided with a third guide groove extending along the first direction, and the third guide groove is configured for an other of the adjustment bracket or the second adapter structure to slide into; the installation completion position is configured as a second abutment position, and a space between the second abutment position and the connection structure is configured for the second adapter structure to slide; and the second abutment position is configured for the air conditioner outdoor unit to abut against the second abutment position (344).
9. The installation bracket according to any one of claims 1 to 8, wherein the connection structure extends along a second direction, and the second direction is different from the first direction; in the first direction, the connection structure comprises a connection surface provided proximate to the installation completion position, and the connection surface is configured to connect to the window structure.
10. The installation bracket according to claim 9, wherein in the second direction, the installation bracket further comprises a support base provided at a side of the load-bearing frame proximate to the connection surface, and the installation completion position is provided at a side of the load-bearing frame away from the connection surface; the support base is provided with a support surface for abutting against the building on a side away from the load-bearing frame, and in the second direction, the load-bearing frame is configured to at most partially block an air intake region of the air conditioner outdoor unit in a direction away from the connection surface.
11. The installation bracket according to claim 10, wherein the support base is rotatably connected to the load-bearing frame to adjust an angle between the connection surface and the support surface.
12. The installation bracket according to claim 9, further comprising:  
a third adapter structure for connecting the window structure, wherein one of the third adapter structure or the connection surface is provided with a plurality of second adjustment positions in the second direction, for an other of the third adapter structure or the connection surface to be selectively installed at one of the plurality of second adjustment positions;.
13. The installation bracket according to claim 12, wherein the connection surface is provided with an elongated hole

extending along the second direction; the elongated hole is provided with a second adjustment position, and the third adapter structure is fastened to the connection surface through the elongated hole by a bolt;.

14. The installation bracket according to claim 12, wherein the window structure has a lower window edge, and the third adapter structure is provided with an adhesive layer for bonding to the lower window edge; or the window structure comprises a railing, and the third adapter structure and the frame body are provided at a front side and a rear side of the railing.

15. The installation bracket according to claim 1, further comprising:  
a pull rope with an end connected to the load-bearing frame and an other end connected to the building .

16. The installation bracket according to claim 1, further comprising:

a hanging structure provided with a hanging channel, wherein the hanging channel is configured for the window structure to enter, and a width of the hanging channel tends to increase in a hanging direction of the hanging structure; and  
a load-bearing frame connected to the hanging structure, and provided with an installation completion position for installing the air conditioner outdoor unit.

17. The installation bracket according to claim 16, wherein in a width direction of the hanging channel, the hanging channel has a first side and a second side opposite to the first side; the first side comprises a first side wall connecting the load-bearing frame, and the second side comprises a second side wall arranged at an angle to the first side wall.

18. The installation bracket according to claim 17, wherein the hanging channel further comprises a channel bottom wall connecting the first side and the second side, and a normal of the channel bottom wall is parallel to the hanging direction.

19. The installation bracket according to claim 18, wherein the second side wall is connected to the channel bottom wall, and the first side further comprises a third side wall; the first side wall is connected to the channel bottom wall through the third side wall, and the third side wall and the first side wall are arranged sequentially in the hanging direction; in the hanging direction, a increasing trend of a distance between the third side wall and the second side wall is greater than a increasing trend of a distance between the first side wall and the second side wall; and/or  
the second side further comprises a fourth side wall parallel to the first side wall; the fourth side wall and the second side wall are arranged sequentially in the hanging direction, and the fourth side wall is connected to the channel bottom wall through the second side wall.

20. The installation bracket according to claim 18, further comprising:  
a rope configured to pass through the first side and the second side in the width direction of the hanging channel so as to define a limit space together with the first side, the second side, and the channel bottom wall, wherein the window structure comprises a railing, and the limit space is configured for the railing to pass through.

21. The installation bracket according to claim 20, wherein the rope has a first end for connecting to the building and a second end for connecting to the first side, and the second side is provided with a limit notch for the rope to pass through.

22. The installation bracket according to claim 21, wherein the limit notch comprises an entry/exit section for the rope to enter in a direction opposite to the hanging direction, a limit section for the rope to enter in the hanging direction, and a connection section connecting the entry/exit section and the limit section.

23. The installation bracket according to any one of claims 16 to 22, wherein the load-bearing frame comprises a frame body connected to the hanging structure and an adjustment frame connected to the frame body, and the frame body extends along the hanging direction; the adjustment frame is provided with an installation completion position, and in the hanging direction, one of the adjustment frame or the frame body is provided with a plurality of first adjustment positions for an other of the adjustment frame and the frame body to be selectively installed at one of the plurality of second adjustment positions, to adjust a distance between the installation completion position and the hanging structure.

24. The installation bracket according to claim 23, wherein two adjacent first adjustment positions are arranged at an

interval; and/or

the adjustment frame is provided with a first guide groove in sliding fit with the frame body, and the first guide groove extends along the hanging direction.

**25.** The installation bracket according to claim 23, further comprising:

a first adapter structure for connecting to the air conditioner outdoor unit, wherein the frame body is provided with a second guide groove extending along the hanging direction, and the second guide groove is configured for the first adapter structure to slide into; the installation completion position is configured as a first abutment position, and the first adapter structure is slidable between the hanging structure and the first abutment position; the first abutment position is configured for the air conditioner outdoor unit to abut against the first abutment position (343) through the first adapter structure.

**26.** The installation bracket according to claim 25, wherein the second guide groove is provided at a side of the frame body away from the hanging channel, and the hanging structure is provided with a transition guide groove communicating with the second guide groove on a side away from the hanging channel, for the first adapter structure to slide from the transition guide groove into the second guide groove.

**27.** The installation bracket according to claim 25, further comprising:

a support base configured to abut against the building, wherein:

in the width direction of the hanging channel, a side of the adjustment frame is provided with the support base, and an other side of the adjustment frame is opposite to the air conditioner outdoor unit; the frame body is provided with a first vent hole, and the adjustment frame is provided with a second vent hole; the first adapter structure is provided with a third vent hole, and in the width direction of the hanging channel, the first vent hole, the second vent hole, and the third vent hole are configured to jointly expose an air inlet region of the air conditioner outdoor unit.

**28.** The installation bracket according to claim 27, wherein the support base is rotatably connected to the adjustment frame, and a rotation axis of the support base is parallel to the hanging channel; and/or the installation bracket further comprises a cushion pad, and the support base is abutted against the building through the cushion pad.

**29.** An air conditioner, comprising:

an air conditioner outdoor unit; and

an installation bracket according to any one of claims 1 to 28, wherein an installation completion position of the installation bracket is configured to connect to the air conditioner outdoor unit.

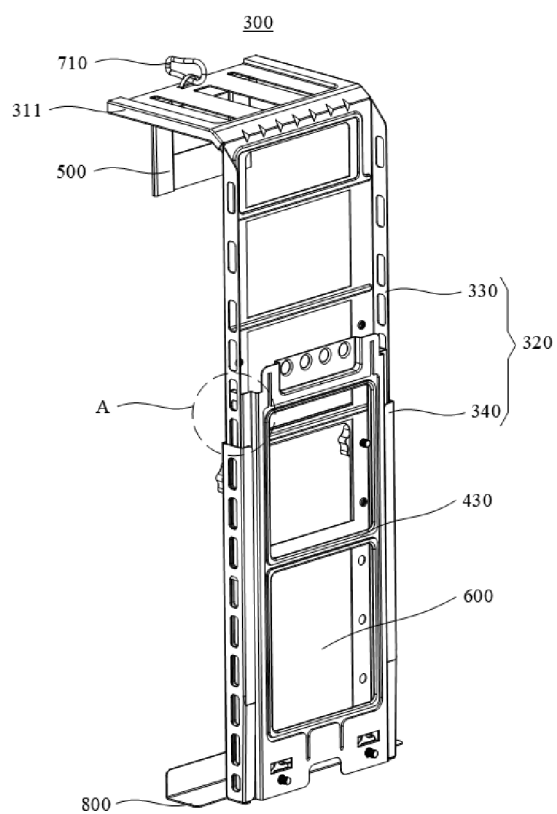


FIG. 1

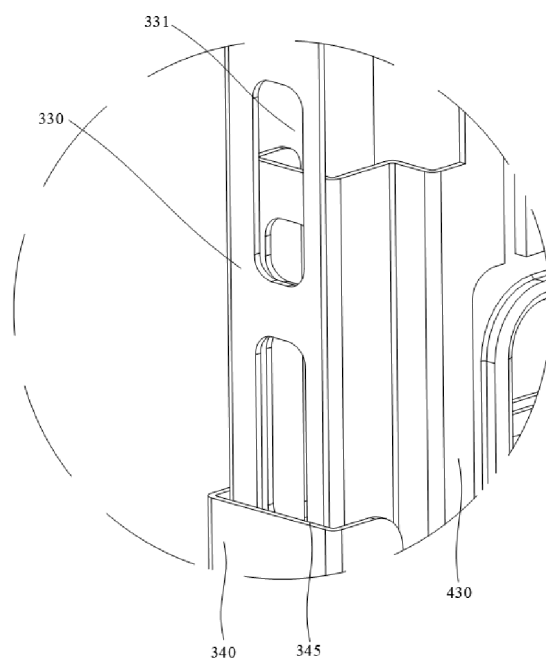


FIG. 2

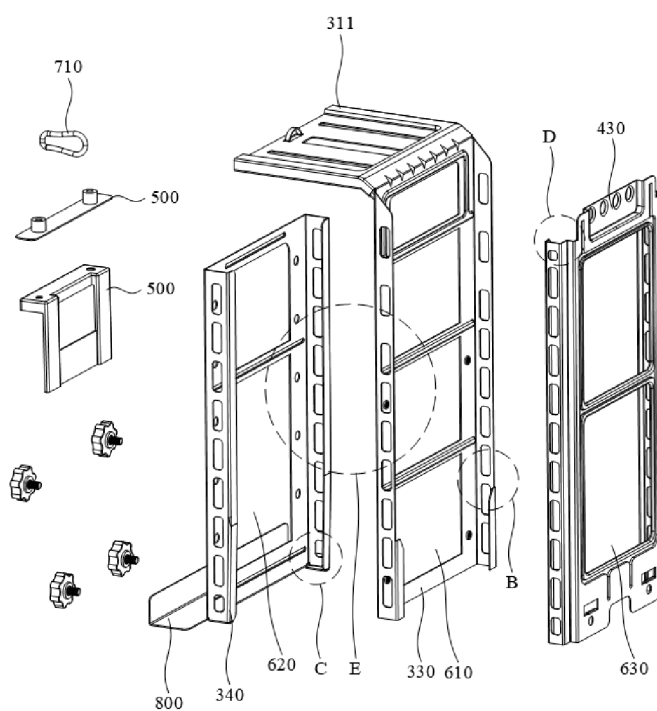


FIG. 3

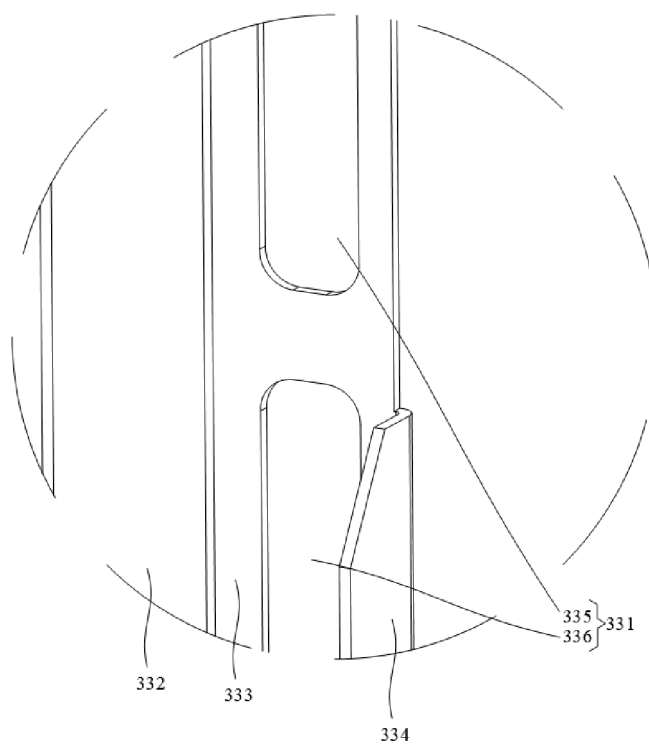


FIG. 4

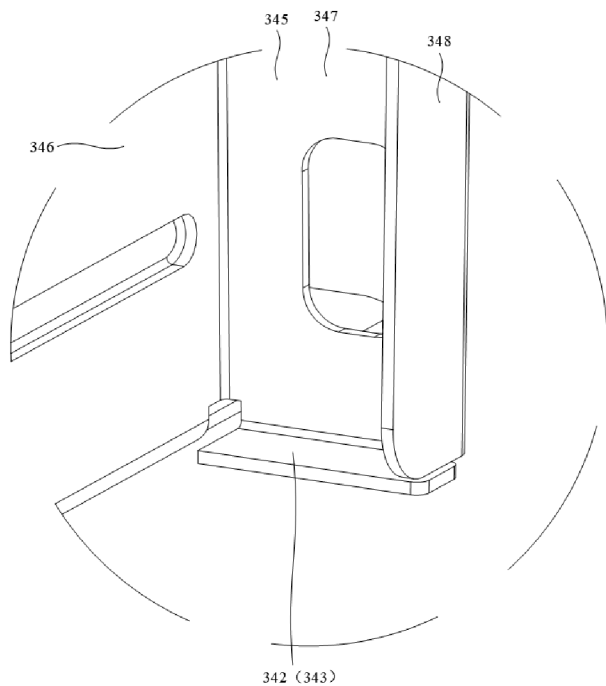


FIG. 5

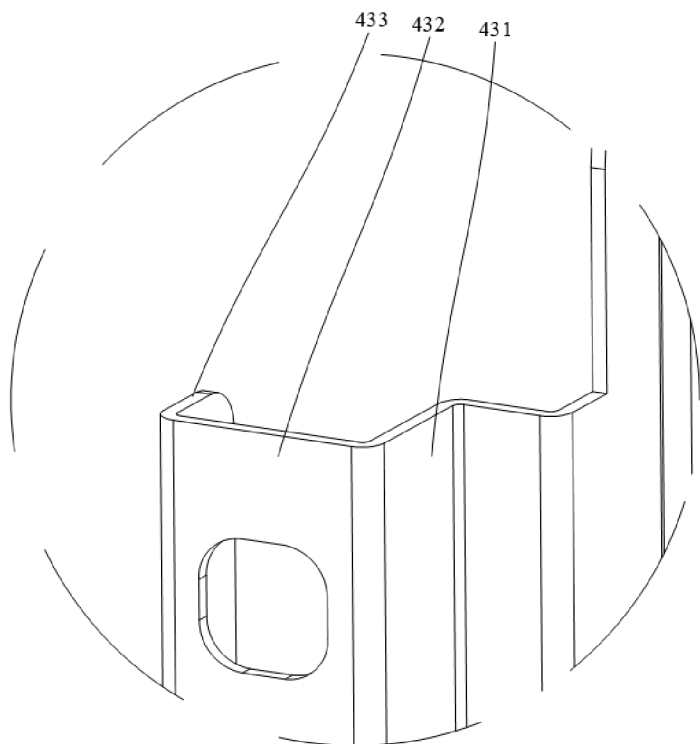


FIG. 6

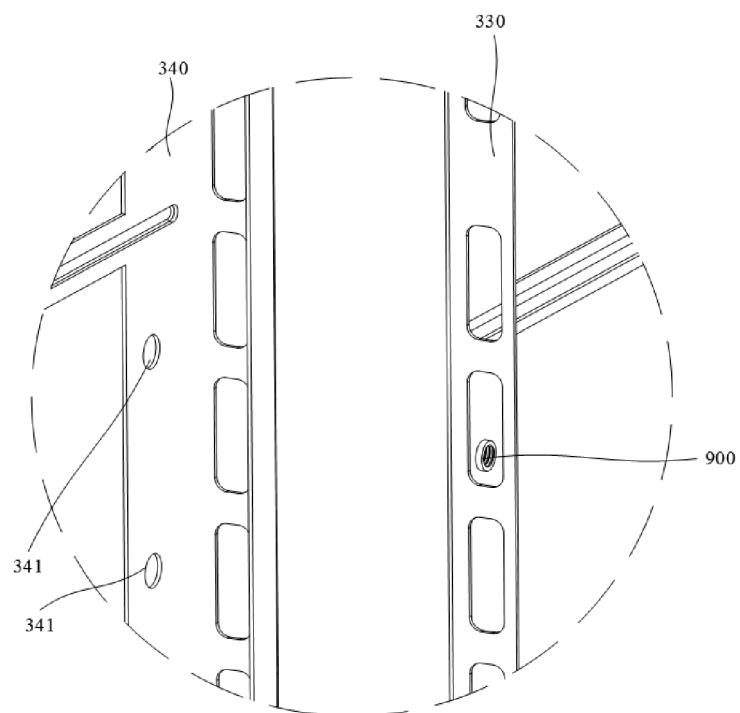


FIG. 7

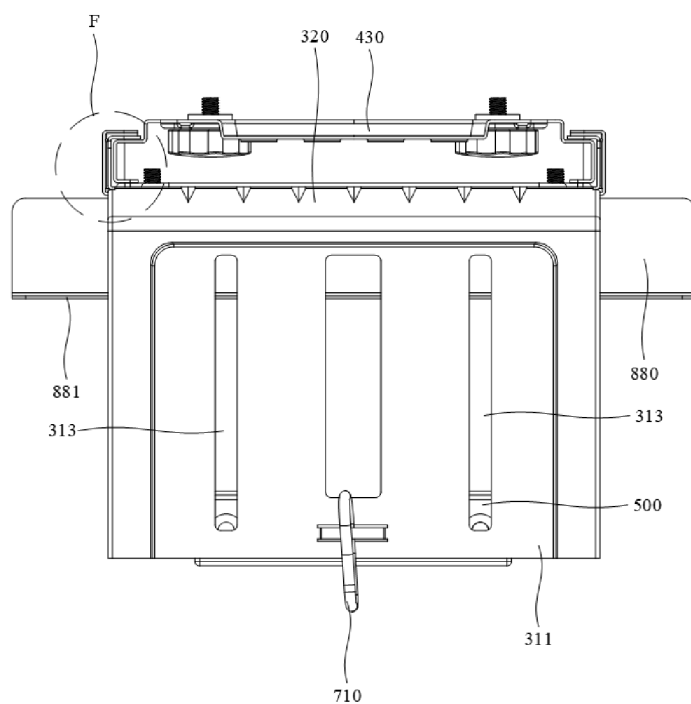


FIG. 8

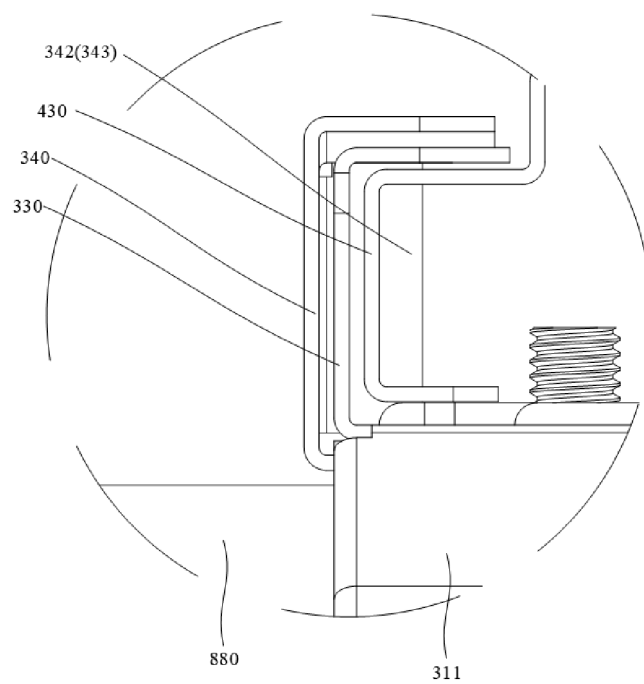


FIG. 9

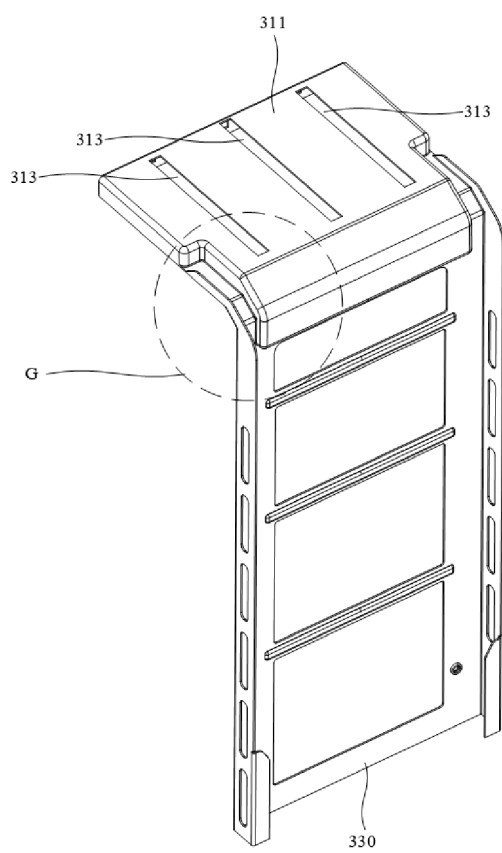


FIG. 10

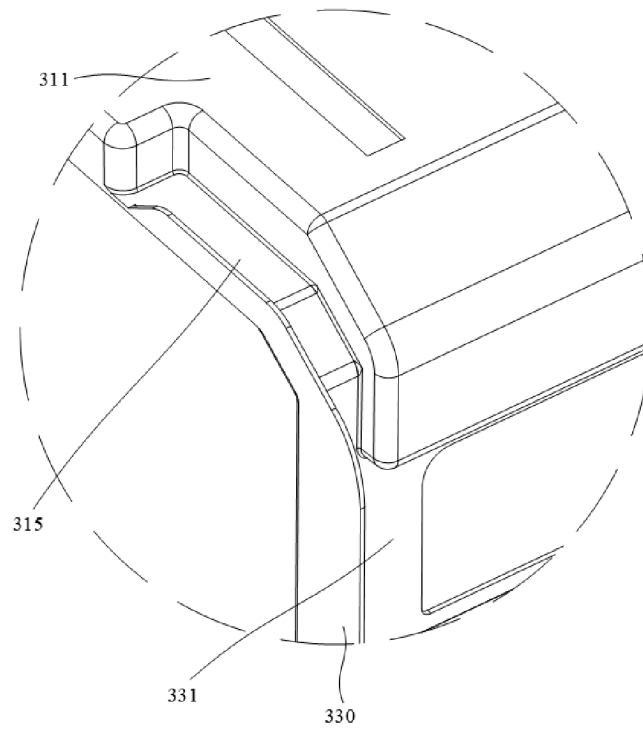


FIG. 11

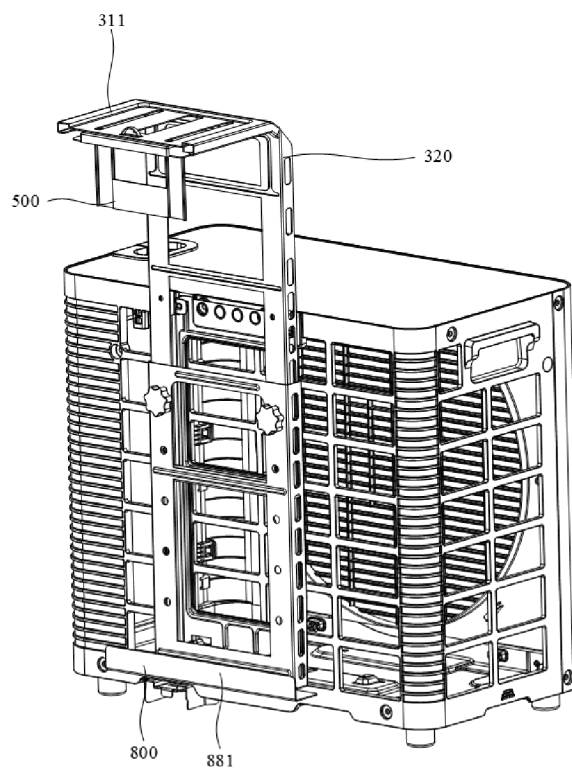


FIG. 12

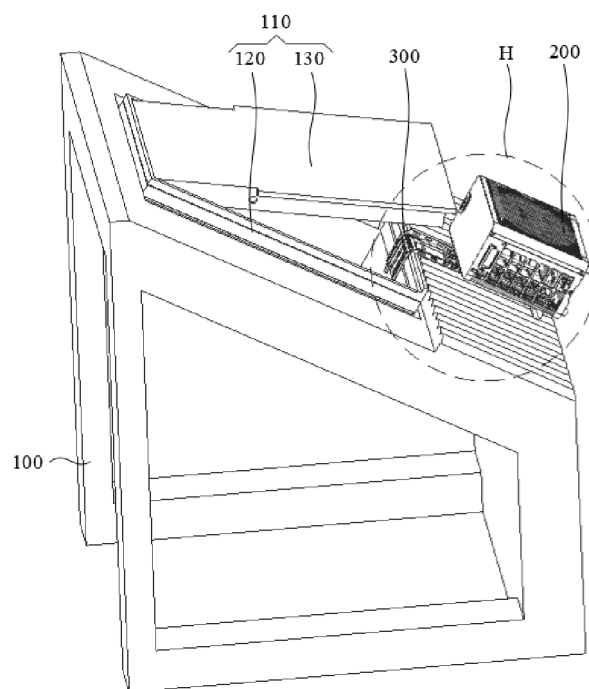


FIG. 13

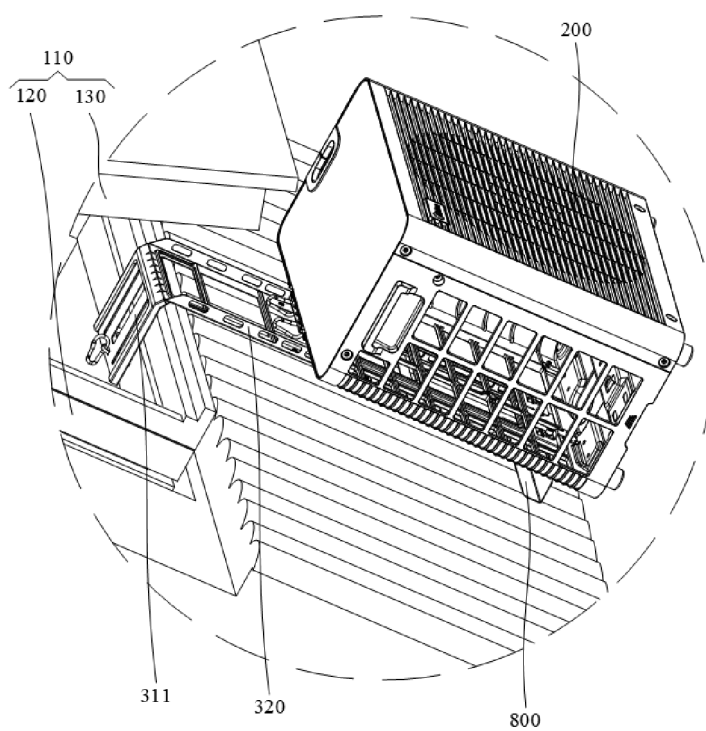


FIG. 14

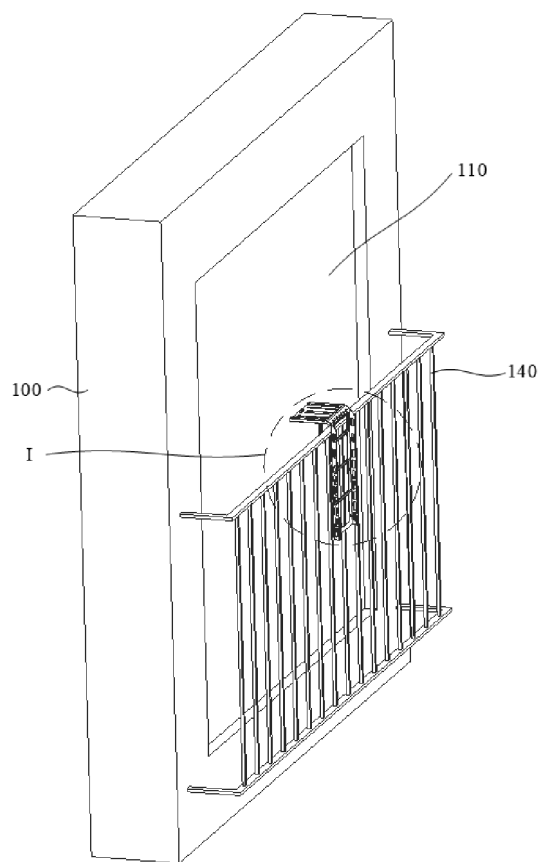


FIG. 15

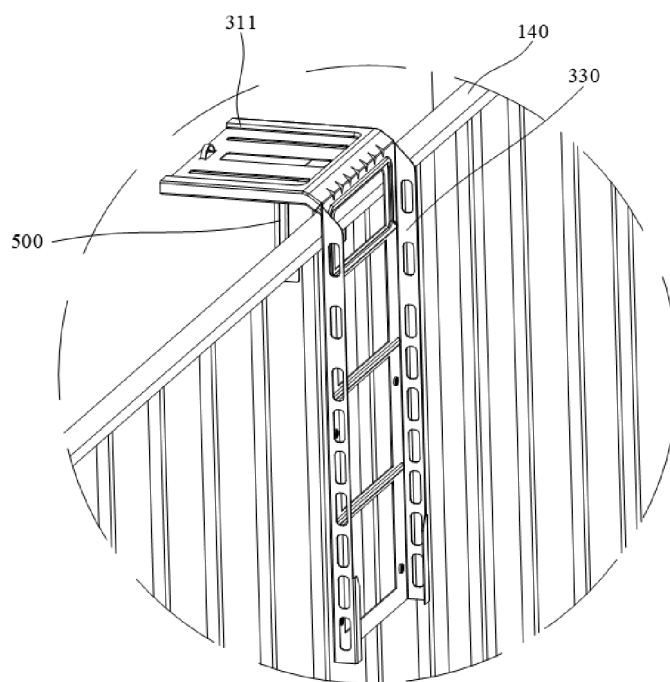


FIG. 16

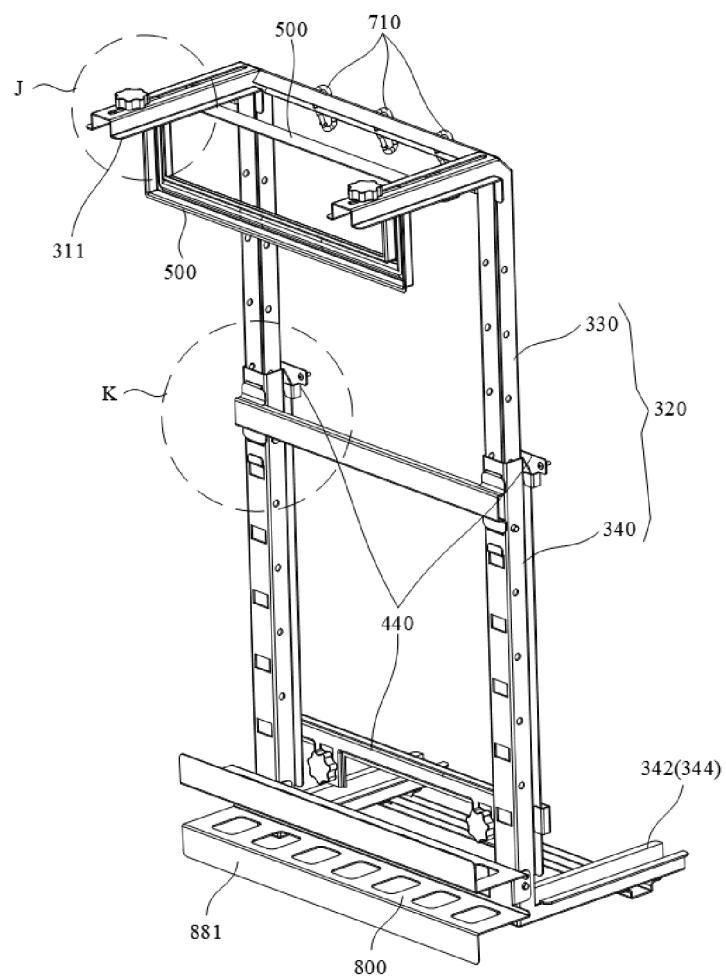


FIG. 17

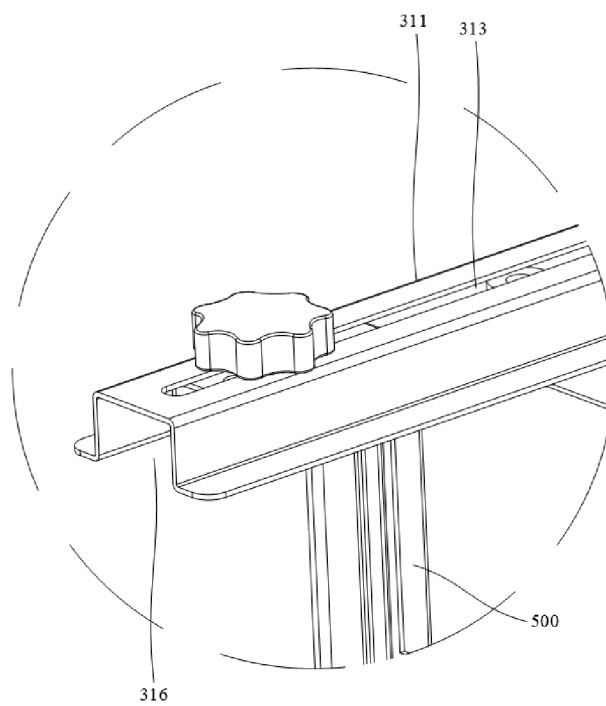


FIG. 18

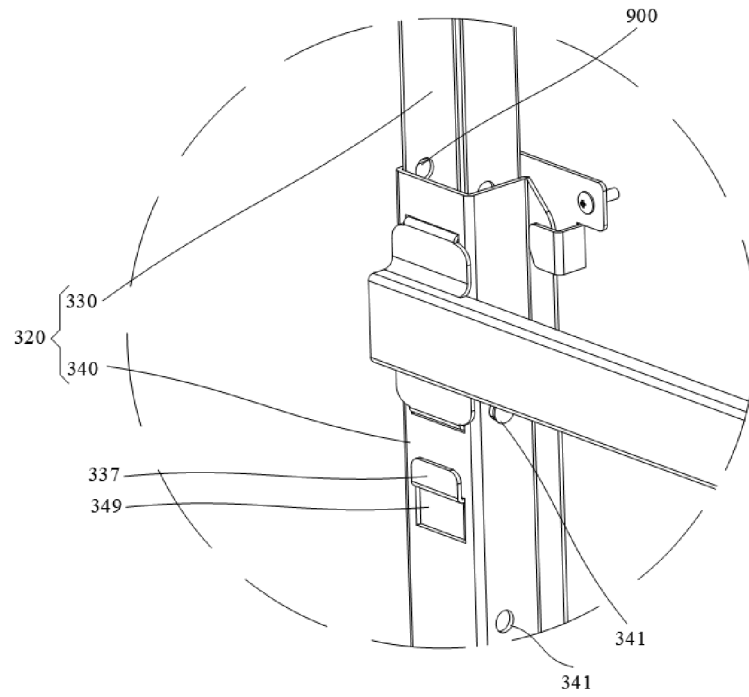


FIG. 19

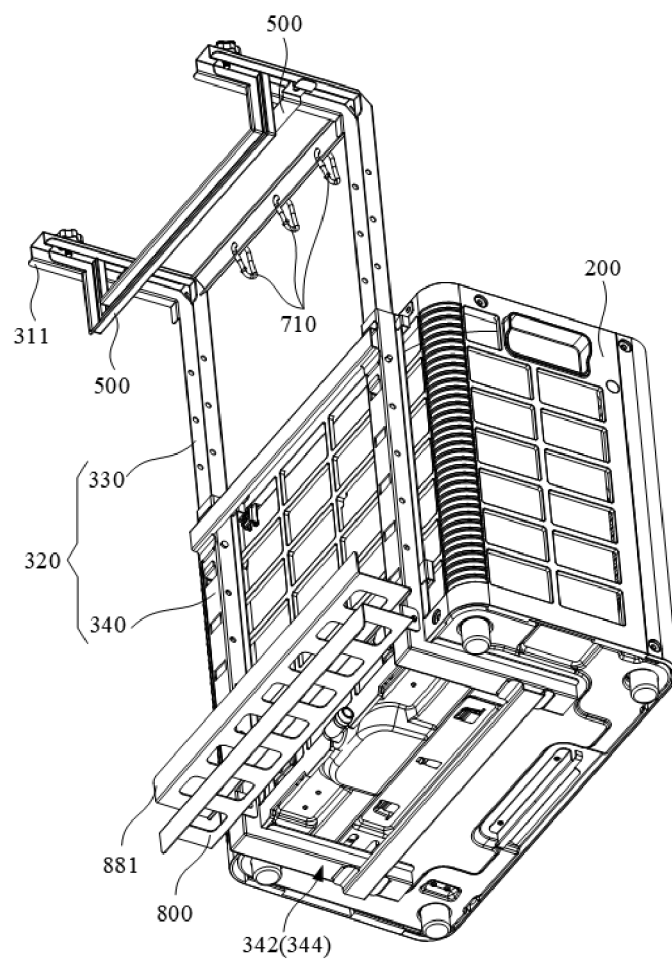


FIG. 20

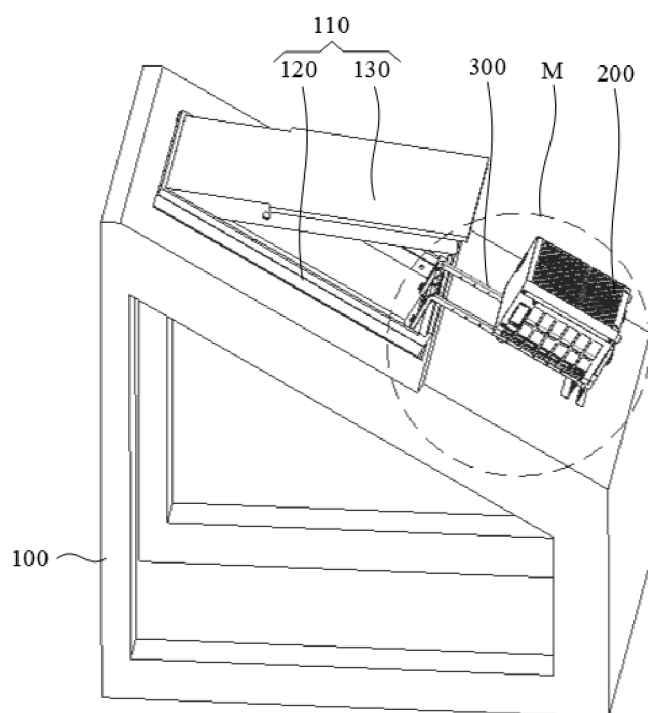


FIG. 21

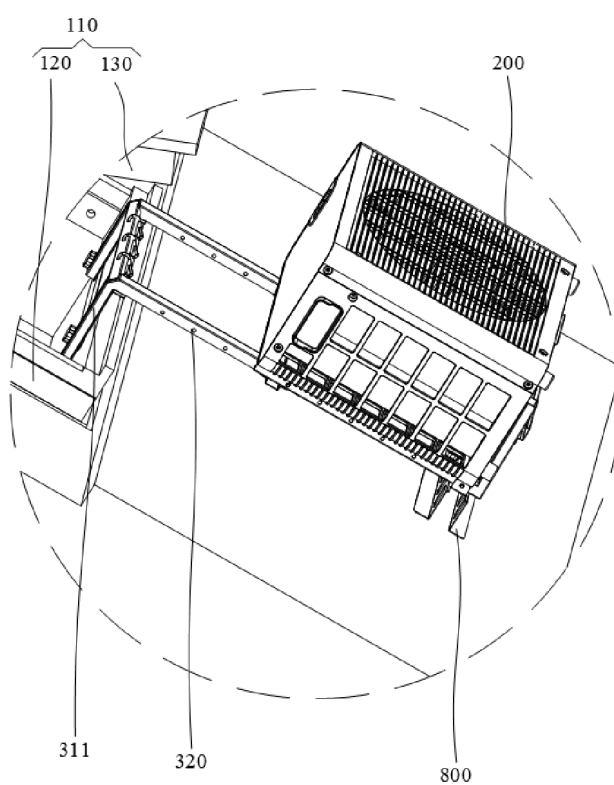


FIG. 22

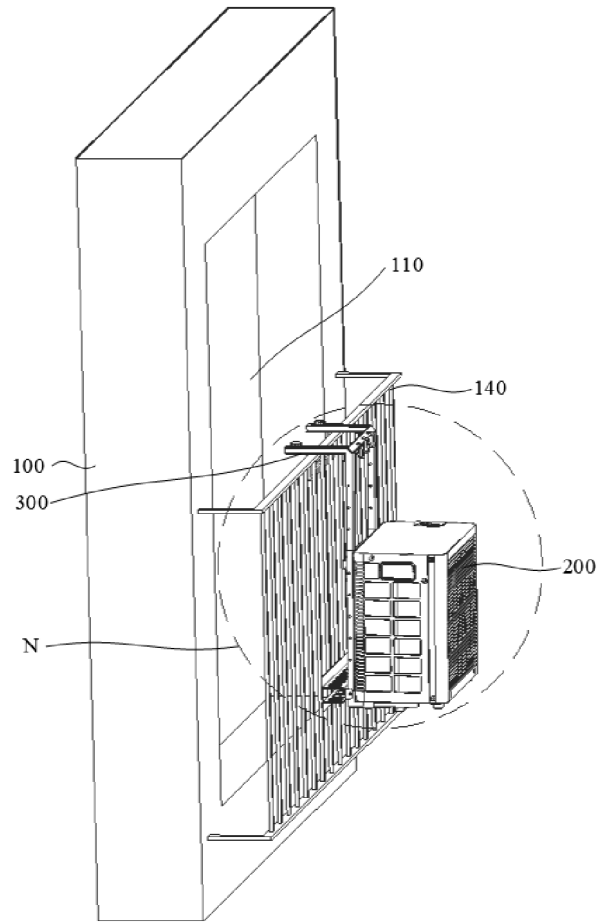


FIG. 23

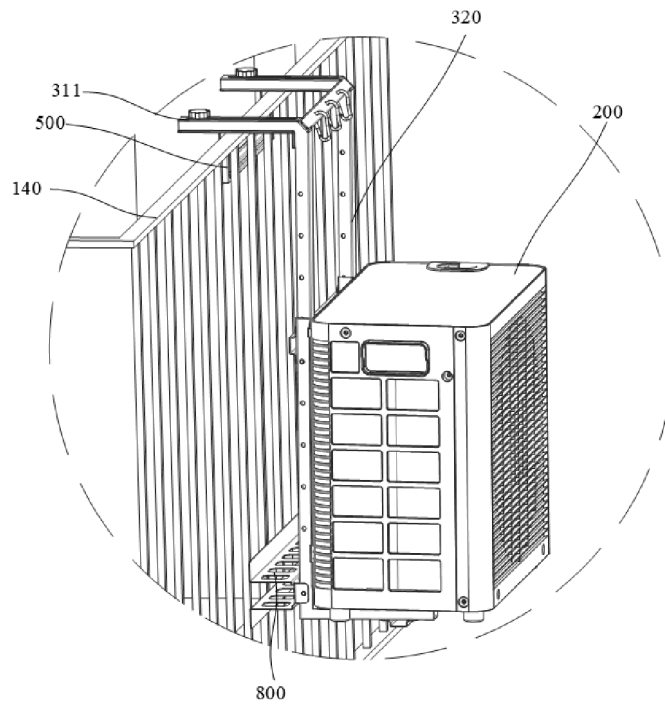


FIG. 24

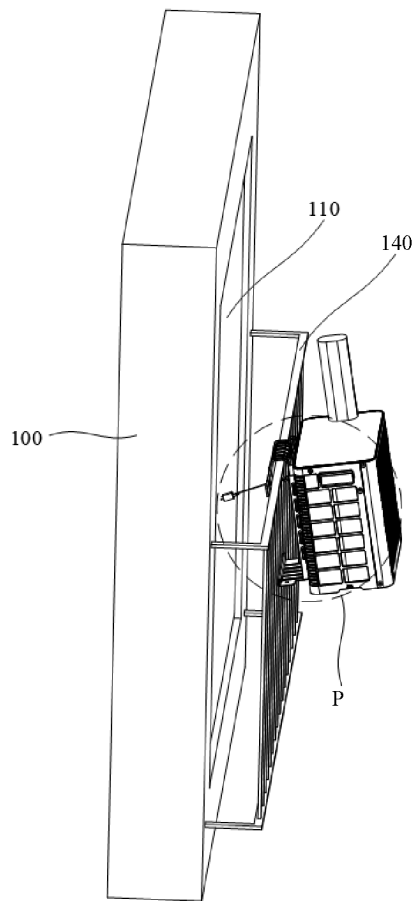


FIG. 25

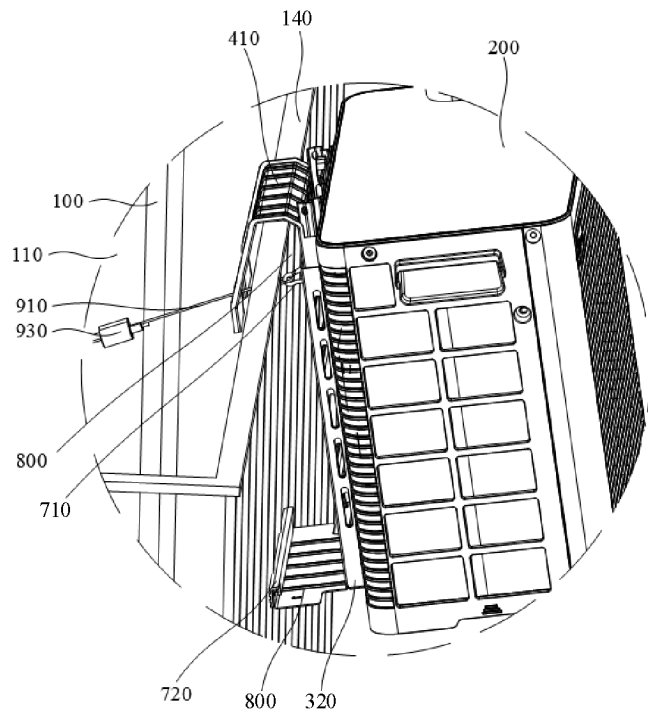


FIG. 26

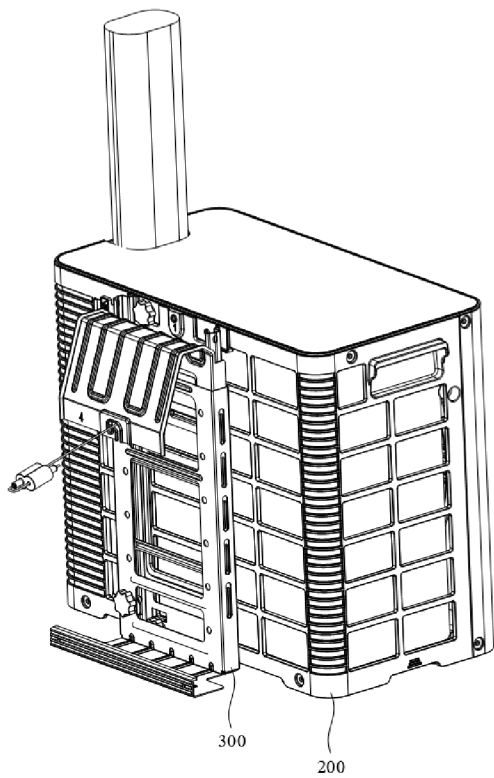


FIG. 27

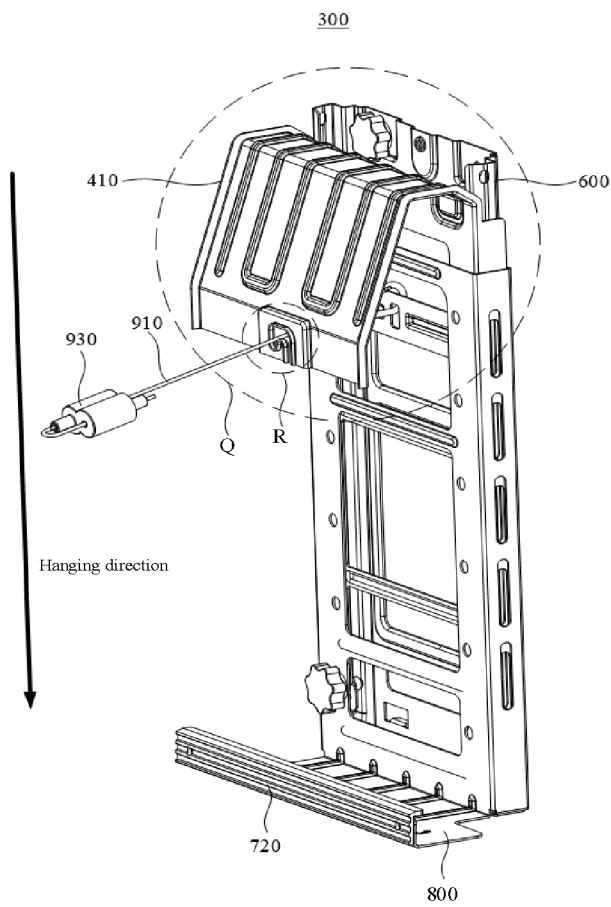


FIG. 28

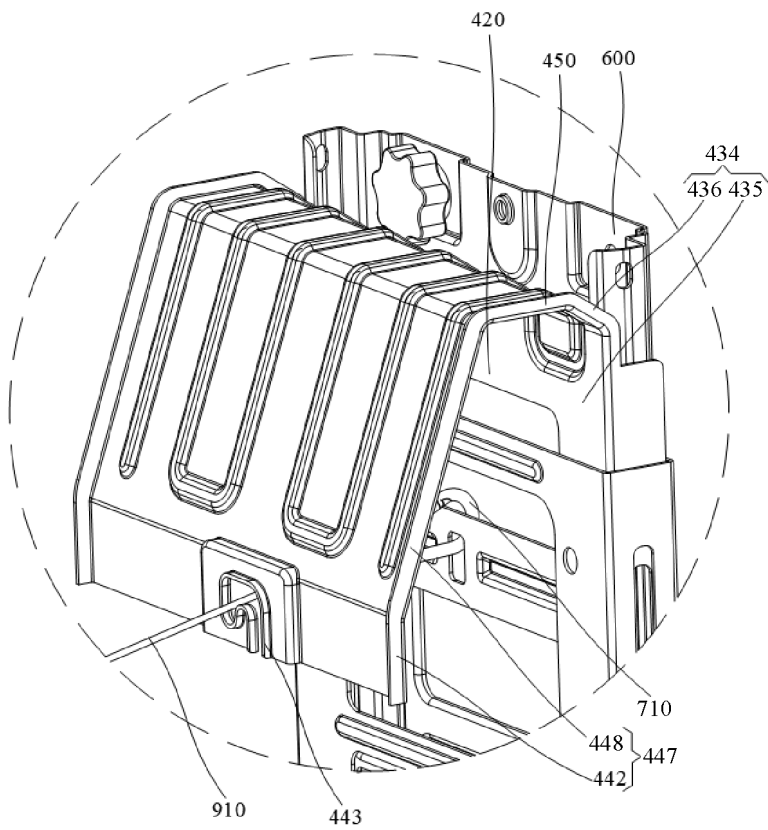


FIG. 29

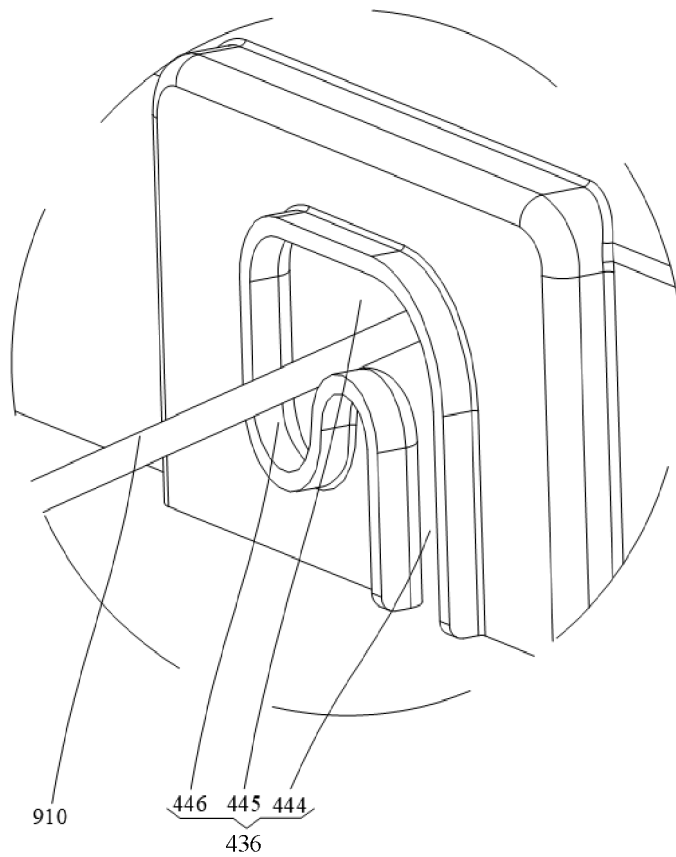


FIG. 30

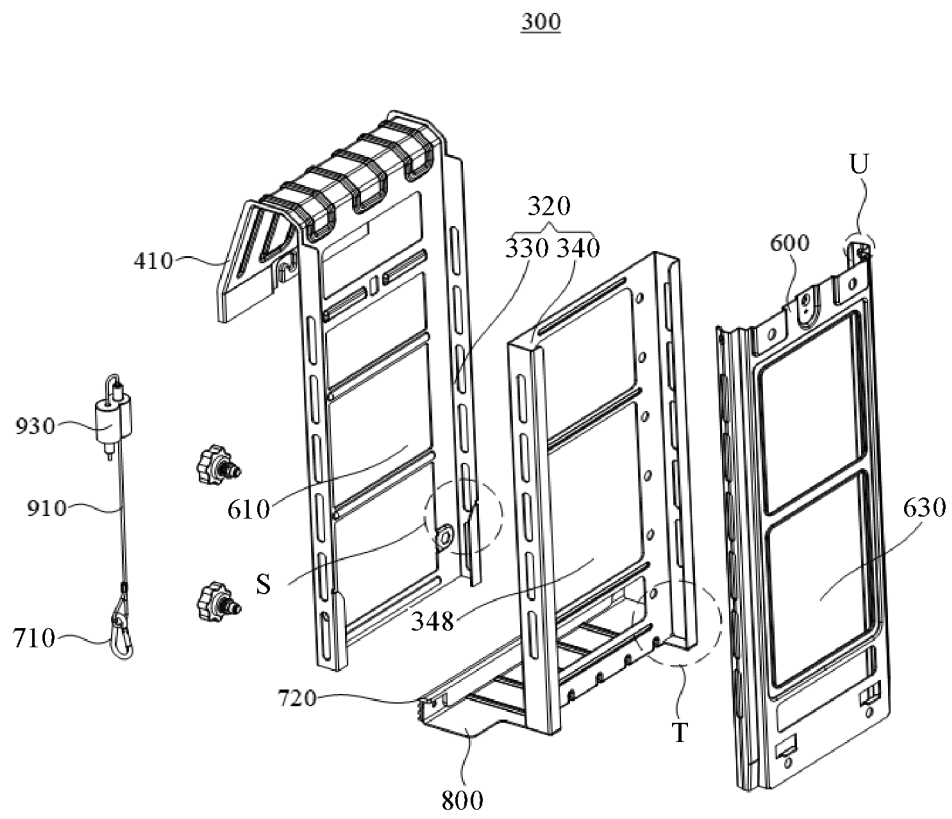


FIG. 31

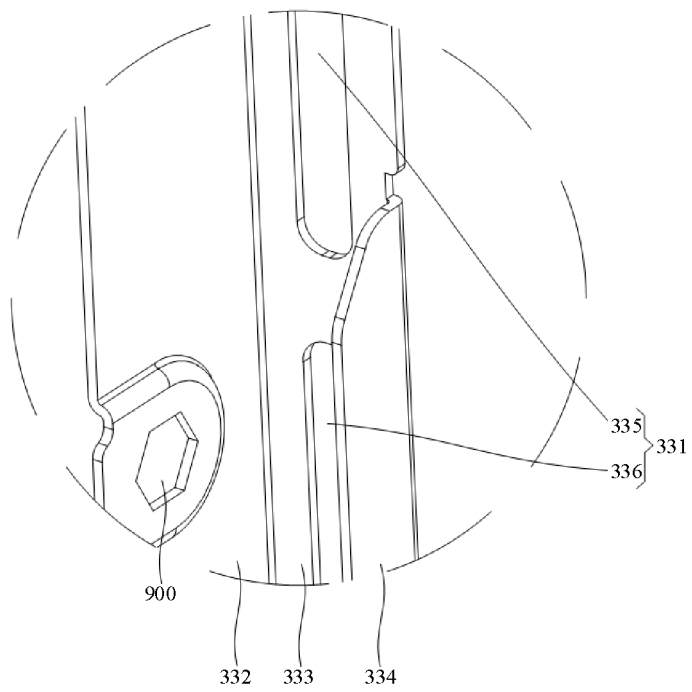


FIG. 32

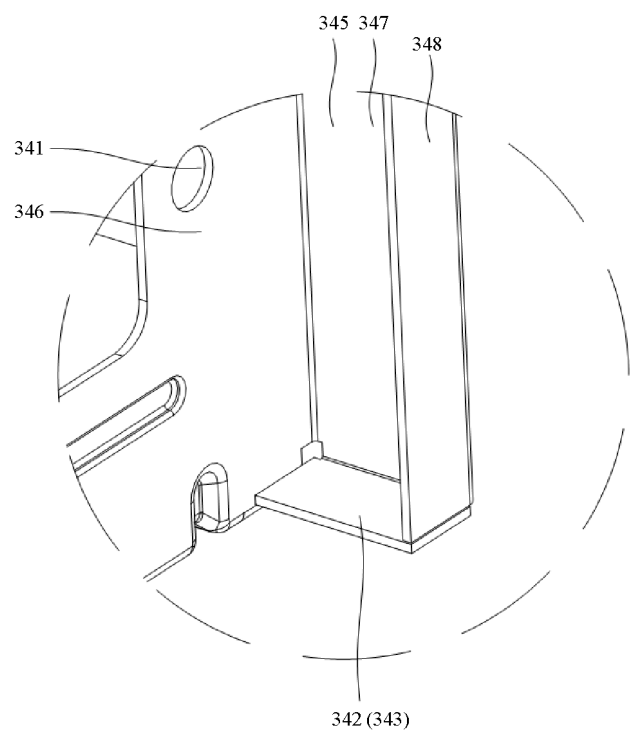


FIG. 33

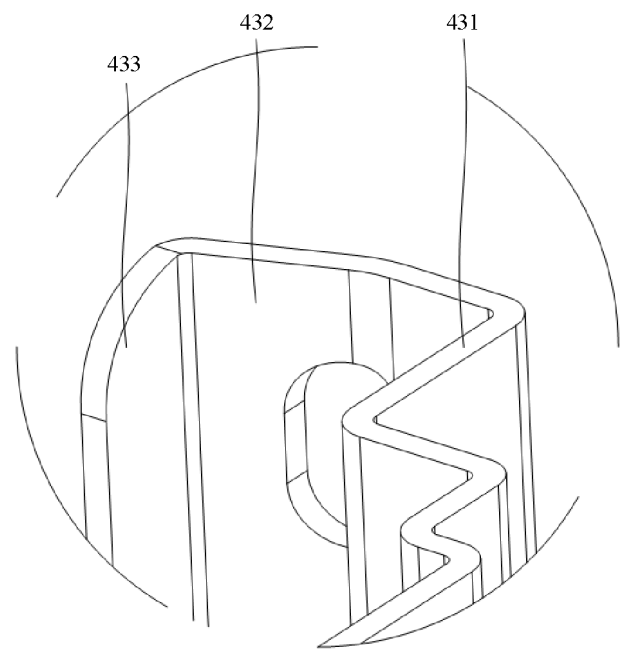


FIG. 34

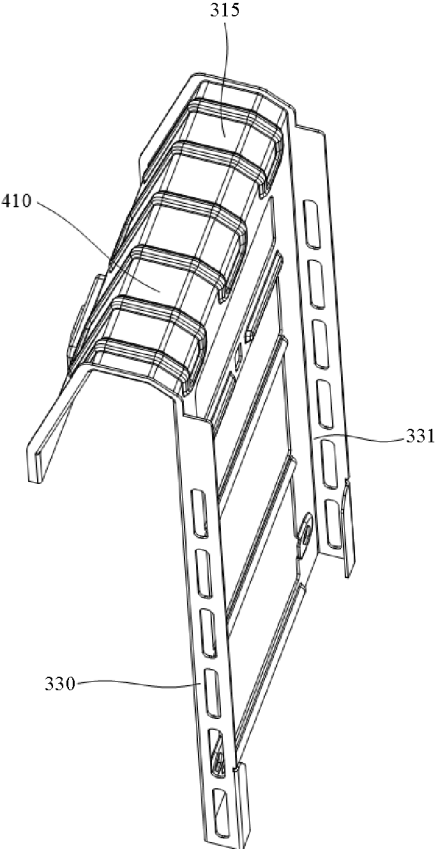


FIG. 35

300

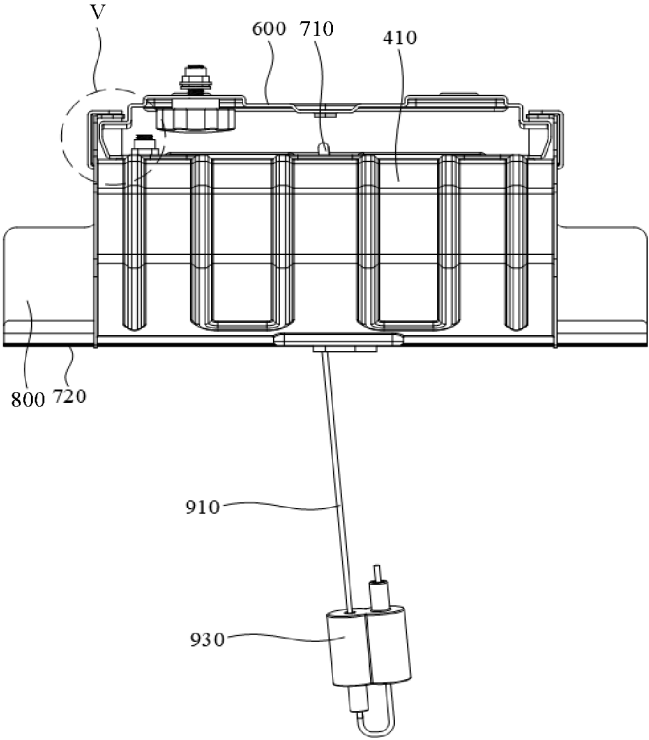


FIG. 36

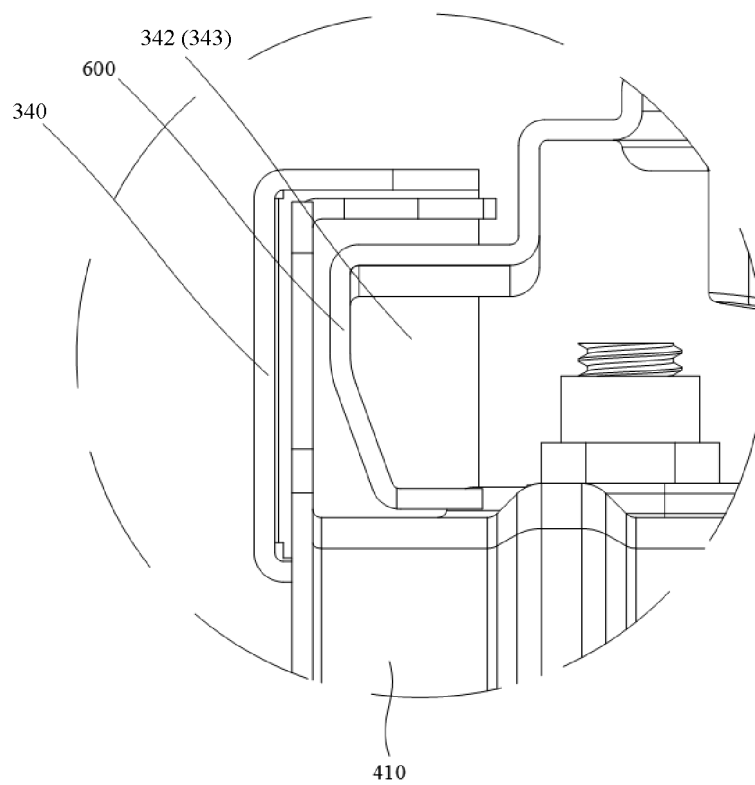


FIG. 37

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/079035

**A. CLASSIFICATION OF SUBJECT MATTER**

F24F1/60(2011.01)i; F24F13/32(2006.01)i

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

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC: F24F

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

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

CNTXT, ENTXTC, ENTXT, VEN: 空调, 室外机, 安装, 支架, 窗, 调节, 距离, 转接, 绳, 挂接, air conditioner, outdoor unit, mounting, bracket, window, adjust, distance, transition, connect, rope, cord, hang, hitch

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                    | Relevant to claim No. |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| X         | CN 217402706 U (WUHU MEIZHI AIR CONDITIONING EQUIPMENT CO., LTD. et al.)<br>09 September 2022 (2022-09-09)<br>description, paragraphs [0039]-[0065], and figures 1-10 | 1-29                  |
| A         | CN 108488930 A (GUANGDONG MEDIA REFRIGERATION EQUIPMENT CO., LTD. et al.)<br>04 September 2018 (2018-09-04)<br>entire document                                        | 1-29                  |
| A         | CN 117190335 A (WUHU MEIZHI AIR CONDITIONING EQUIPMENT CO., LTD. et al.)<br>08 December 2023 (2023-12-08)<br>entire document                                          | 1-29                  |
| A         | CN 217402705 U (WUHU MEIZHI AIR CONDITIONING EQUIPMENT CO., LTD. et al.)<br>09 September 2022 (2022-09-09)<br>entire document                                         | 1-29                  |
| A         | CN 218096553 U (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD.)<br>20 December 2022 (2022-12-20)<br>entire document                                                | 1-29                  |

☒ 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                                                                | "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                                                                     |
| "D" document cited by the applicant in the international application                                                                                                    | "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 |
| "E" earlier application or patent but published on or after the international filing date                                                                               | "&" document member of the same patent family                                                                                                                                                                                                    |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) |                                                                                                                                                                                                                                                  |
| "O" document referring to an oral disclosure, use, exhibition or other means                                                                                            |                                                                                                                                                                                                                                                  |
| "P" document published prior to the international filing date but later than the priority date claimed                                                                  |                                                                                                                                                                                                                                                  |

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| Date of the actual completion of the international search<br><b>22 March 2024</b>                                                                                                              | Date of mailing of the international search report<br><b>09 April 2024</b> |
| Name and mailing address of the ISA/CN<br><b>China National Intellectual Property Administration (ISA/CN)<br/>China No. 6, Xitucheng Road, Jimenqiao, Haidian District,<br/>Beijing 100088</b> | Authorized officer<br><br><br><br>Telephone No.                            |

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INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/CN2024/079035**

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| C. DOCUMENTS CONSIDERED TO BE RELEVANT |                                                                                                                       |                       |
| Category*                              | Citation of document, with indication, where appropriate, of the relevant passages                                    | Relevant to claim No. |
| A                                      | CN 218210056 U (GUANGDONG MIDEA REFRIGERATION EQUIPMENT CO., LTD.)<br>03 January 2023 (2023-01-03)<br>entire document | 1-29                  |

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### Information on patent family members

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**REFERENCES CITED IN THE DESCRIPTION**

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