US 20210071906A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2021/0071906 A1

Chi et al. (43) Pub. Date: Mar. 11, 2021

(54) METHOD FOR MOUNTING AIR OUTLET STRUCTURE OF AIR CONDITIONER AND AIR OUTLET MOUNTING STRUCTURE OF AIR CONDITIONER

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(21) Appl. No.: **16/763,488**

(22) PCT Filed: **Sep. 3, 2018**

(86) PCT No.: **PCT/CN2018/103735**

§ 371 (c)(1),
(2) Date: **May 12, 2020**

(30) **Foreign Application Priority Data**

Dec. 22, 2017 (CN) 201711401437.6

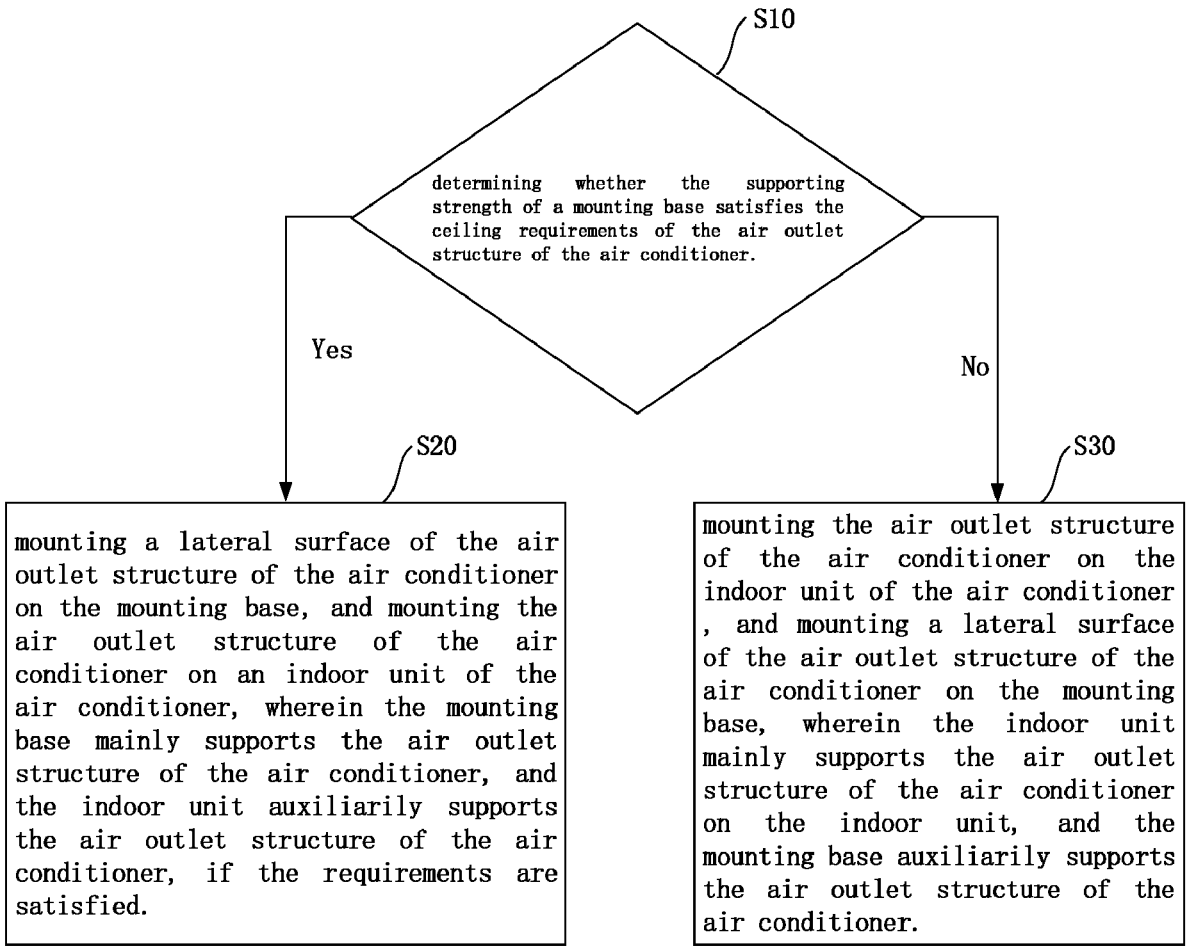
Publication Classification

(51) **Int. Cl.**
F24F 13/32 (2006.01)

(52) **U.S. Cl.**
CPC *F24F 13/32* (2013.01)

(57) **ABSTRACT**

The present disclosure discloses a method for mounting an air outlet structure of an air conditioner, comprises the steps of: determining whether the supporting strength of a mounting base satisfies the ceiling requirements of the air outlet structure of the air conditioner; mounting a lateral surface of the air outlet structure of the air conditioner on the mounting base and mounting the air outlet structure of the air conditioner on an indoor unit of the air conditioner if the requirements are satisfied, wherein the mounting base provides a main supporting and the indoor unit provides an auxiliary supporting; mounting the air outlet structure of the air conditioner on the indoor unit and mounting a lateral surface of the air outlet structure of the air conditioner on the mounting base if the requirements are not satisfied, wherein the mounting base provides an auxiliary supporting and the indoor unit provides a main supporting.



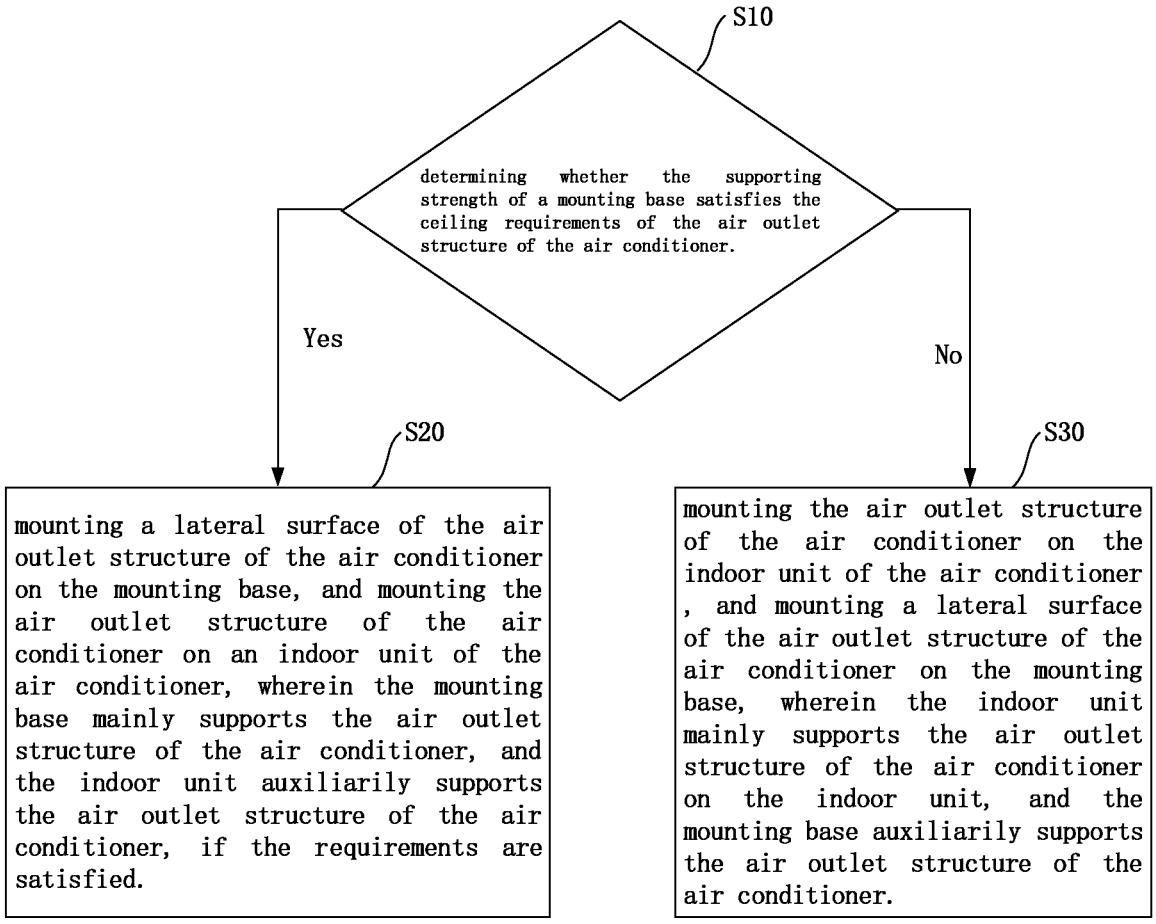

S10
determining whether the supporting strength of a mounting base satisfies the ceiling requirements of the air outlet structure of the air conditioner.
Yes
No
S20
S30
mounting a lateral surface of the air outlet structure of the air conditioner on the mounting base, and mounting the air outlet structure of the air conditioner on an indoor unit of the air conditioner, wherein the mounting base mainly supports the air outlet structure of the air conditioner, and the indoor unit auxiliarily supports the air outlet structure of the air conditioner, if the requirements are satisfied.
mounting the air outlet structure of the air conditioner on the indoor unit of the air conditioner, and mounting a lateral surface of the air outlet structure of the air conditioner on the mounting base, wherein the indoor unit mainly supports the air outlet structure of the air conditioner on the indoor unit, and the mounting base auxiliarily supports the air outlet structure of the air conditioner.

Figure 1

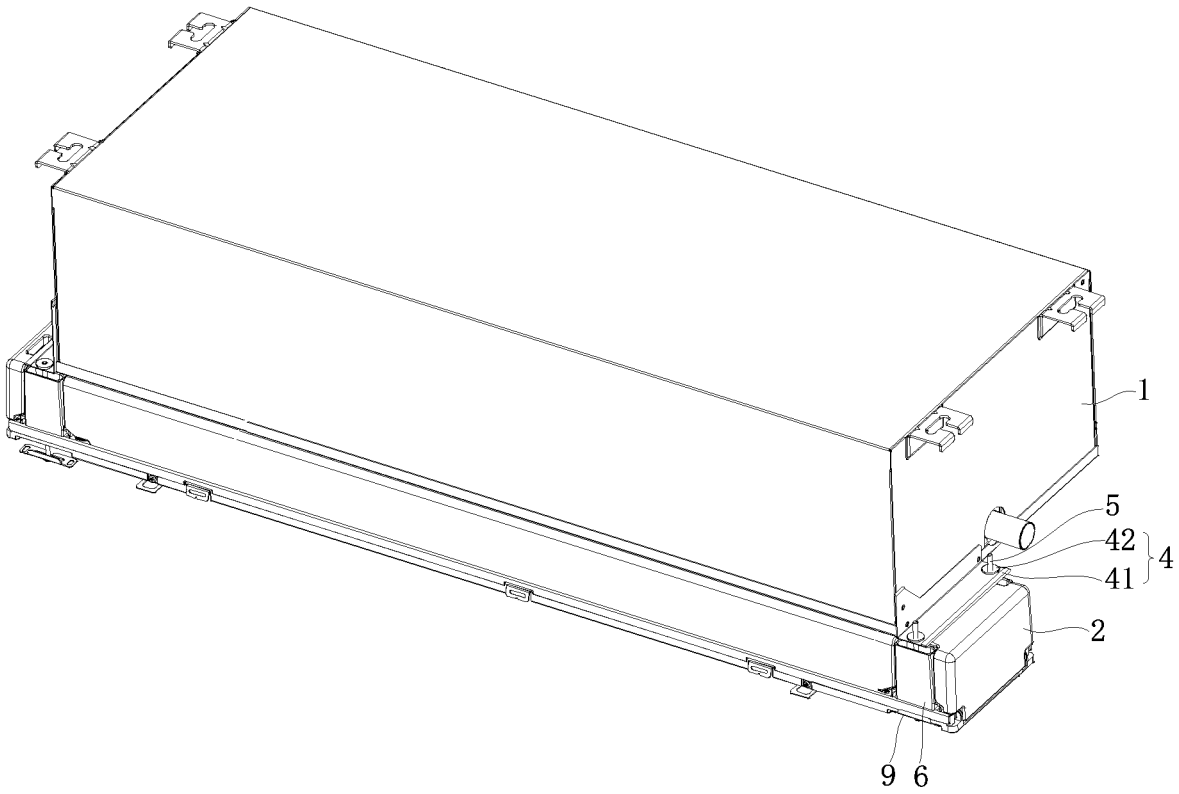


Figure 2

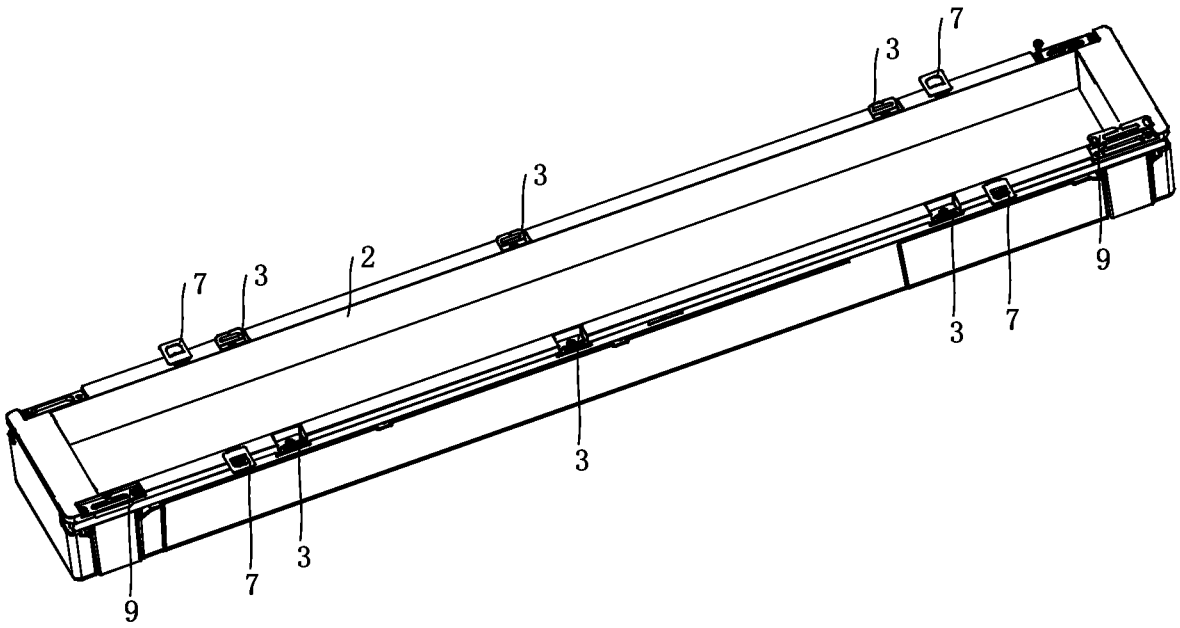


Figure 3

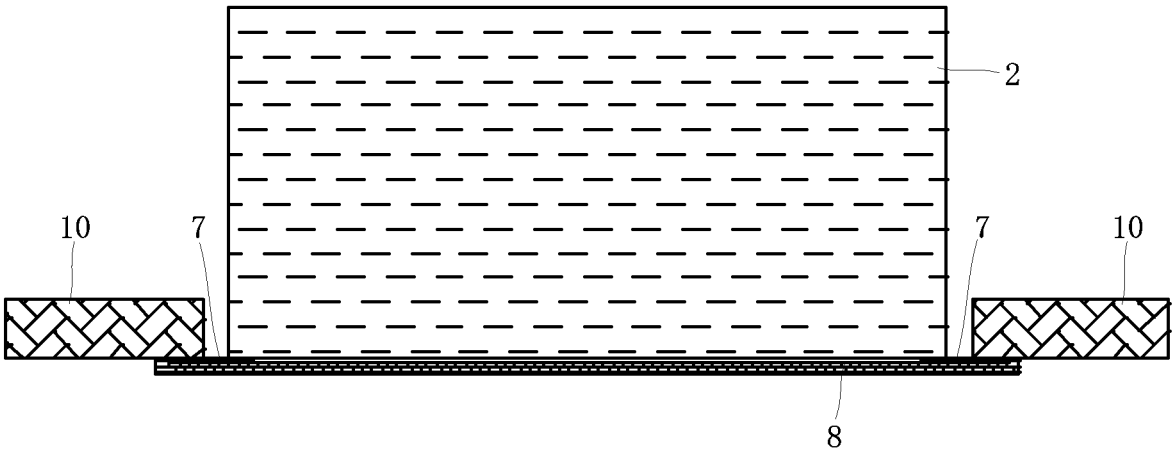


Figure 4

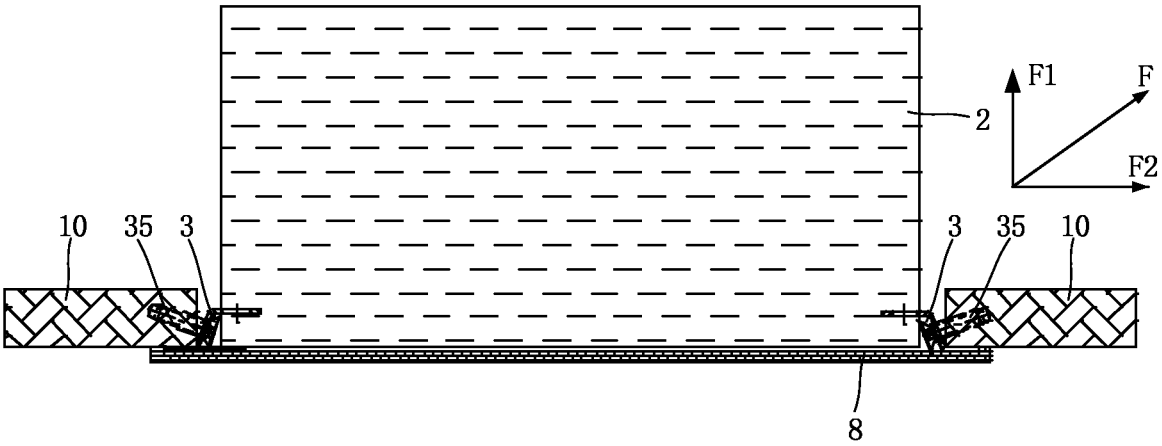


Figure 5

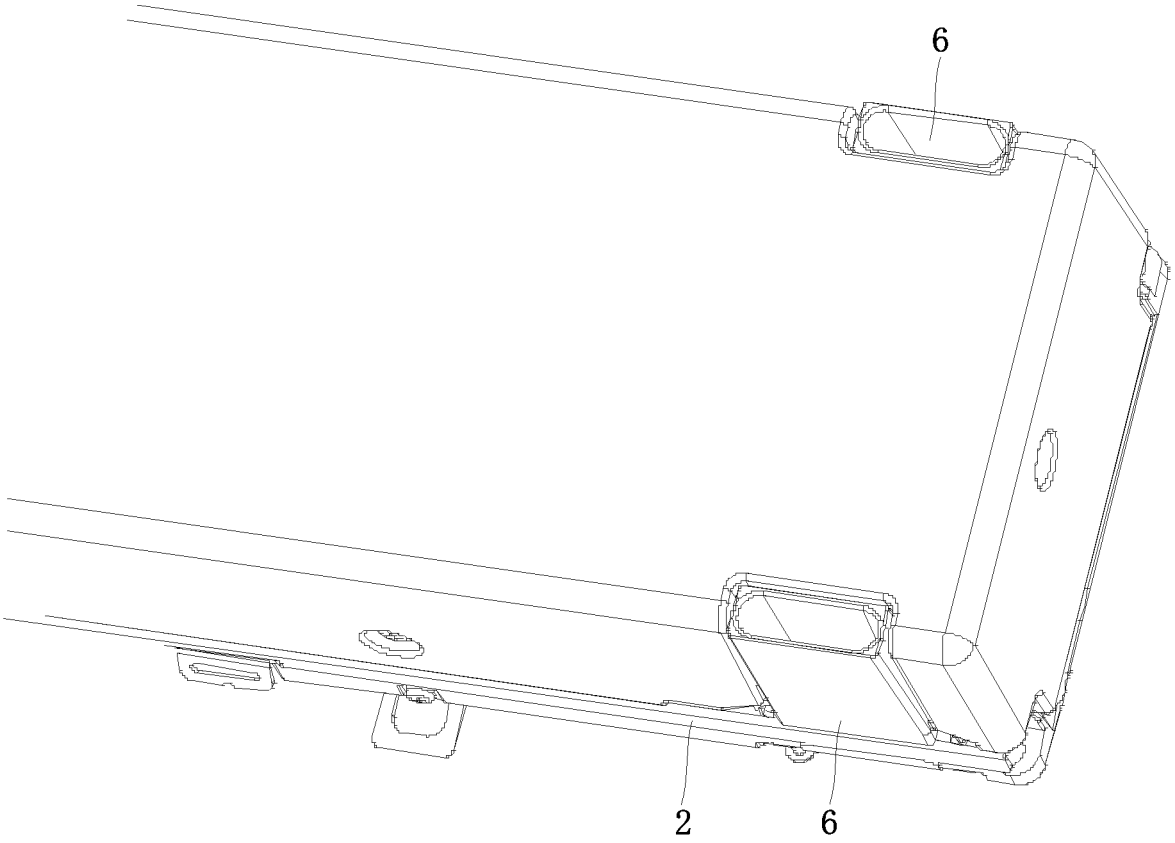


Figure 6

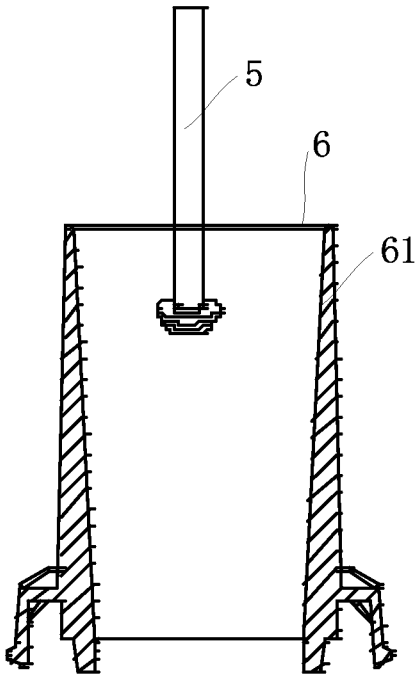


Figure 7

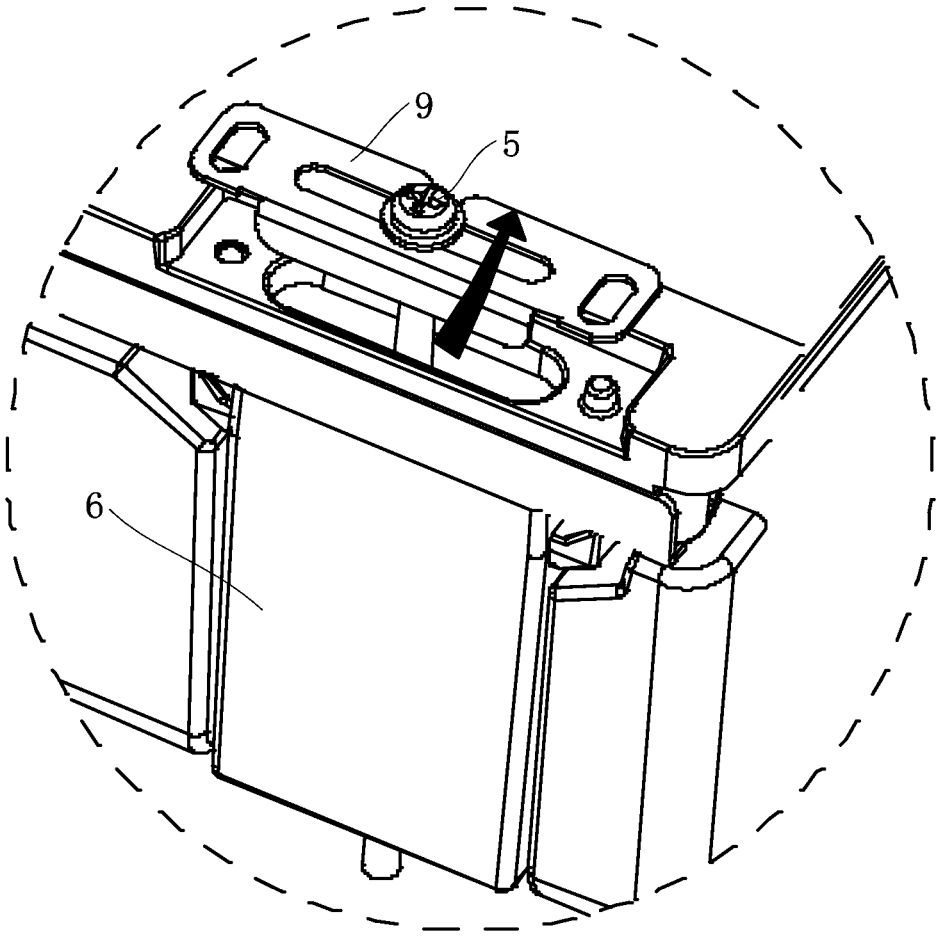


Figure 8

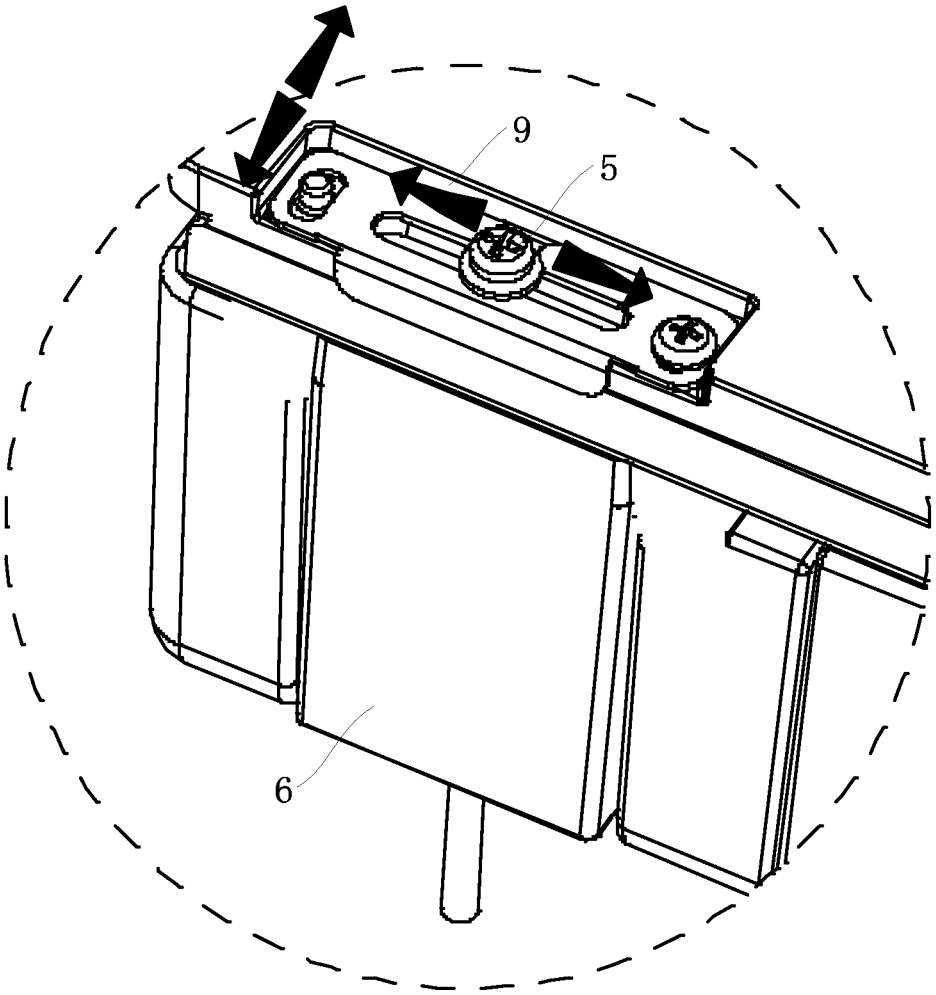


Figure 9

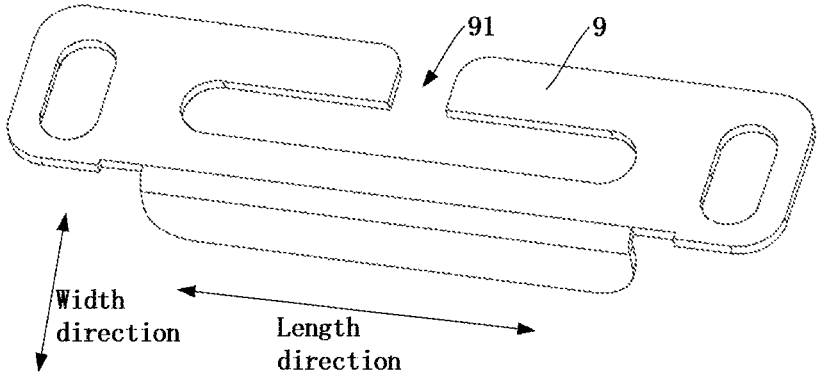


Figure 10

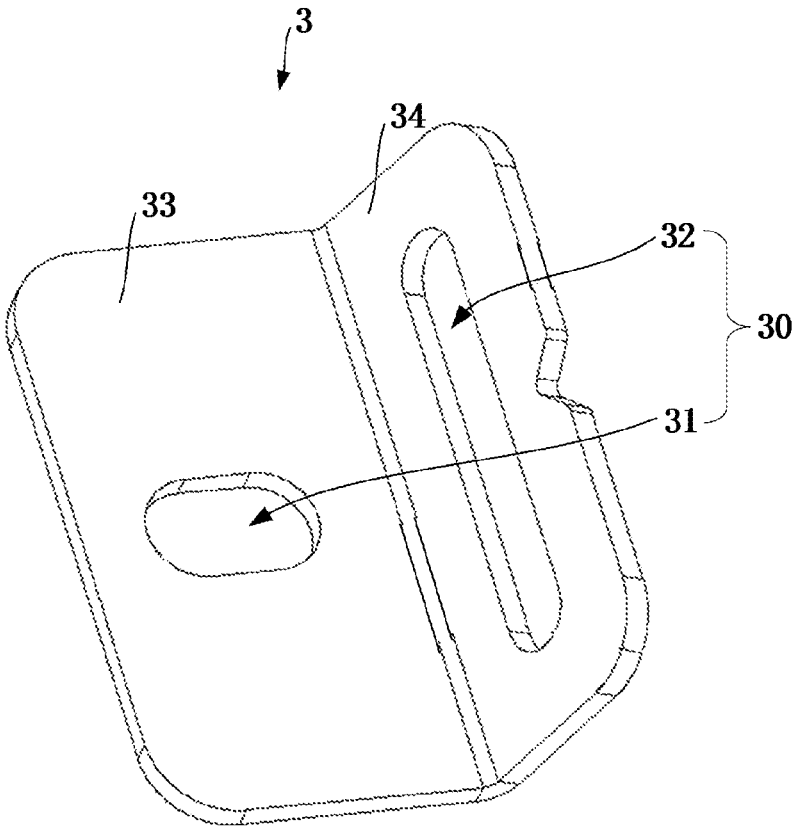


Figure 11

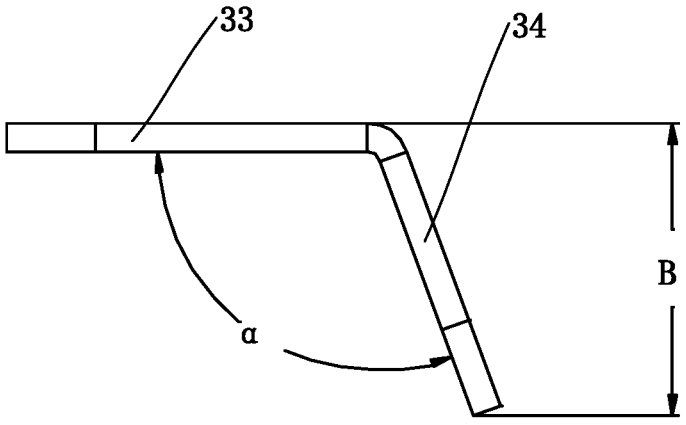


Figure 12

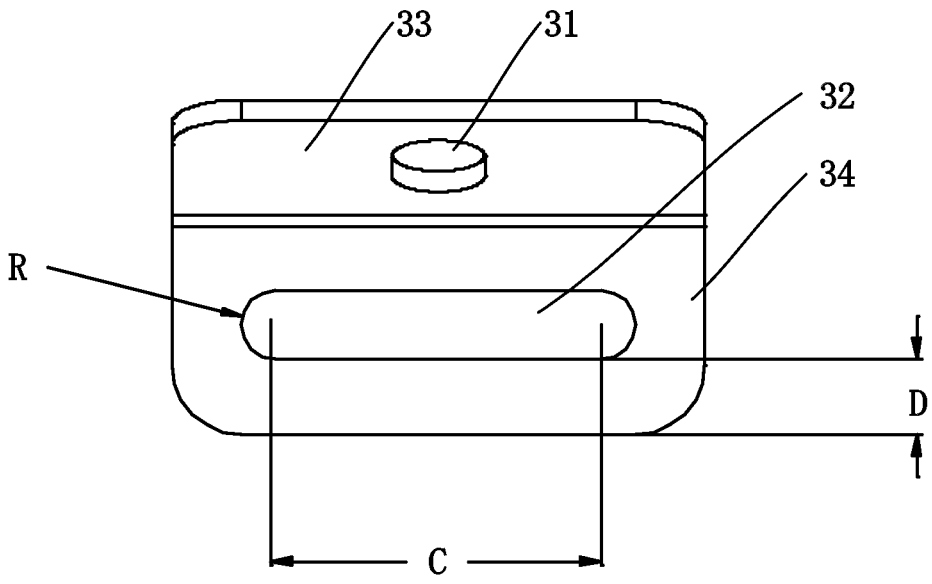


Figure 13

METHOD FOR MOUNTING AIR OUTLET STRUCTURE OF AIR CONDITIONER AND AIR OUTLET MOUNTING STRUCTURE OF AIR CONDITIONER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is the United States national phase of PCT/CN2018/103735 filed Sep. 3, 2018, and claims priority to Chinese Patent Application No. 201711401437.6 filed Dec. 22, 2017, the disclosures of which are hereby incorporated by reference in their entirety.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present disclosure relates to the field of an air conditioner device, and in particular, to a method for mounting an outlet structure of the air conditioner and a mounting structure of an air outlet of an air conditioner.

Description of Related Art

[0003] In order to embed the air outlet structure of the air conditioner for the existing ceiling air conditioner into an interior of the ceiling, the air outlet structure of the air conditioner is required to be mounted in the following ten steps: step 1: forming an opening in the ceiling; step 2: providing a sunken platform at the edge of the ceiling; step 3: pasting a masking tape on the inner edge of the air outlet nest; step 4: brushing the glue at the joint between the air outlet nest and the sunken platform at the edge of the ceiling; step 5: fixing the air outlet nest to the ceiling using a nail gun; step 6: supplementing high-strength putty on a periphery of the air outlet nest and the sunk platform of the ceiling; step 7: pasting the jointing paper on the air outlet nest and the edge of the ceiling; step 8: brushing the putty to polish and brushing the paint to level; step 9: removing the masking tape at the inner edge of the air outlet nest and leveling the edge by restoration; step 10: fixing the air outlet member on the air outlet nest with screws.

[0004] The inventor has found that, the related art is with at least the following problems: the air outlet member in the related art which uses the above-mentioned mounting manner in a complicated mounting process, involves a number of steps, and a long mounting cycle, so that an emergent engineering project is not satisfied; different steps involve different workers who often have to cooperate with each other, so that it is difficult to ensure the mounting reliability.

SUMMARY OF THE INVENTION

[0005] In the present disclosure, a method for mounting an outlet structure of the air conditioner and a mounting structure of an air outlet of an air conditioner are provided. Wherein, the mounting method comprises the steps of:

[0006] determining whether the supporting strength of a mounting base satisfies the ceiling requirements of the air outlet structure of the air conditioner;

[0007] mounting a lateral surface of the air outlet structure of the air conditioner on the mounting base and mounting the air outlet structure of the air conditioner on an indoor unit of the air conditioner if the requirements are satisfied, so that the mounting base provides a main support for the air outlet structure of the air conditioner, and the indoor unit provides an auxiliary support for the air outlet structure of the air conditioner; mounting the air outlet structure of the air conditioner on the indoor unit and mounting a lateral surface of the air outlet structure of the air conditioner on the mounting base if the requirements are not satisfied, so that the mounting base provides an auxiliary support for the air outlet structure of the air conditioner and the indoor unit provides a main support for the air outlet structure of the air conditioner.

[0008] In one or more embodiments, the step of mounting a lateral surface of the air outlet structure of the air conditioner on the mounting base comprises the following steps:

[0009] mounting a fixing member on the lateral surface of the air outlet structure of the air conditioner; wherein the fixing member comprises a first opening and a second opening, and at least one of the first opening and the second opening is an oblong hole; the fixing member is fixed to the lateral surface of the air outlet structure of the air conditioner through the first opening; and

[0010] fixing the air outlet structure of the air conditioner with the mounting base by passing a fastener through the second opening.

[0011] In one or more embodiments, the first opening and the second opening are both oblong holes; a length direction of the first opening is along the first direction of the air outlet structure of the air conditioner; a length direction of the second opening is along the second direction of the air outlet structure of the air conditioner, wherein one of the first direction and the second direction is a longitudinal direction of the air outlet structure of the air conditioner, and the other is a transverse direction of the air outlet structure of the air conditioner.

[0012] In one or more embodiments, the step of mounting the air outlet structure of the air conditioner on an indoor unit of the air conditioner comprises the following steps:

[0013] mounting a hanging assembly on the indoor unit of the air conditioner; and

[0014] fixing the air outlet structure of the air conditioner to the hanging assembly.

[0015] In some embodiments, an air outlet mounting structure of an air conditioner is provided. The air outlet mounting structure comprises an indoor unit, a mounting base and an air outlet structure of the air conditioner. The air outlet structure of the air conditioner is jointly supported by the indoor unit and the mounting base.

[0016] In one or more embodiments, a fixing member connecting with the mounting base is mounted on the lateral surface of the air outlet structure of the air conditioner, and a position where the fixing member is connected with the mounting base is adjustable.

[0017] In one or more embodiments, the fixing member is configured by an oblong hole to cause the position adjustable.

[0018] In one or more embodiments, the fixing member comprises a first opening and a second opening, and at least one of the first opening and the second opening is an oblong hole; the fixing member is fixed to the lateral surface of the air outlet structure of the air conditioner through the first opening; a length direction of the first opening is along the first direction of the air outlet structure of the air conditioner, and a length direction of the second opening is along the second direction of the air outlet structure of the air conditioner, wherein one of the first direction and the second direction is a longitudinal direction of the air outlet structure

of the air conditioner, and the other is a transverse direction of the air outlet structure of the air conditioner.

[0019] In one or more embodiments, the indoor unit is fixed with a hanging assembly, and the air outlet structure of the air conditioner is fixed to the hanging assembly through a connecting piece.

[0020] In one or more embodiments, two opposite sides of the air outlet structure of the air conditioner are mounted on the mounting base, and the other two opposite sides of the air outlet structure of the air conditioner are fixedly connected to the indoor unit through the hanging assembly.

[0021] In one or more embodiments, the hanging assembly comprises a connection plate and a nut. The connection plate is detachably connected to the indoor unit. The air outlet structure of the air conditioner is connected to the connection plate through the connecting piece and the nut.

[0022] In one or more embodiments, a guide structure is provided on the air outlet structure of the air conditioner to guide a mounting direction of the connecting piece.

[0023] In one or more embodiments, the air outlet mounting structure of the air conditioner comprises a stopper disposed on the air outlet structure of the air conditioner, and having a plane clamping the bottom end of the mounting base.

[0024] In one or more embodiments, the air outlet mounting structure of the air conditioner comprises a panel disposed on one side of the air outlet structure of the air conditioning facing away from the indoor unit.

[0025] In one or more embodiments, the fixing member comprises: a first plate fixed to the air outlet structure of the air conditioner; and a second plate fixed to the first plate and the mounting base.

[0026] In one or more embodiments, the comprised angle between the first plate and the second plate is 95 degrees to 140 degrees.

[0027] In one or more embodiments, the total height of the fixing member is 7 mm to 12 mm.

[0028] In one or more embodiments, the length of the second opening is 8 mm to 20 mm.

[0029] In one or more embodiments, the mounting base comprises a ceiling.

[0030] Based on the above-described technical solution, the embodiments of the present disclosure at least have the following technical effects:

[0031] the method for mounting an air outlet structure of the air conditioner provided by the present disclosure has a favorable versatility in installation; the mounting requirements are still satisfied even when there is a certain deviation in the opening of the mounting base so that there is no need to rework or re-open the mounting base; the ceiling is reliable and the air outlet structure of the air conditioner is adequately attached to the mounting base; and the installation is simple, and after the opening of the mounting base is accomplished, the installation is performed immediately so that the installation is efficient. The above-described method for mounting the air outlet structure of the air conditioner simplifies the mounting process of the air outlet structure of the air conditioner and reduces the complexity of the mounting operation.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] FIG. **1** is a schematic flow chart of a method for mounting an outlet structure of an air conditioner according to some embodiments of the present disclosure;

[0033] FIG. **2** is a schematic view of fixing an air outlet structure of an air conditioner with an indoor unit according to some embodiments of the present disclosure;

[0034] FIG. **3** is a schematic structural view of an air outlet structure of an air conditioner in FIG. **2**;

[0035] FIG. **4** is a schematic side sectional view at a stopper in FIG. **3**;

[0036] FIG. **5** is a schematic side sectional view at a fixing member in FIG. **3**;

[0037] FIG. **6** is a schematic view of mounting an air outlet structure of the air conditioner to a guide structure in FIG. **2**;

[0038] FIG. **7** is a schematic cross-sectional view of a guide structure in FIG. **6**;

[0039] FIG. **8** is a schematic view of mounting a guide structure to a fixing member in FIG. **7**;

[0040] FIG. **9** is a schematic view of an adjustable direction of a fixing plate in FIG. **8**;

[0041] FIG. **10** is a schematic structural view of a fixing plate in FIG. **8**;

[0042] FIG. **11** is a first structural schematic view of a fixing member in FIG. **3**;

[0043] FIG. **12** is a second structural schematic view of a fixing member in FIG. **3**;

[0044] FIG. **13** is a third structural view of a fixing member in FIG. **3**.

DESCRIPTION OF THE INVENTION

[0045] The technical solution provided by the present disclosure will be described in more detail below in conjunction with FIGS. **1** to **13**.

[0046] Referring to FIGS. **1** to **13**, the embodiments of the present disclosure provide a method for mounting an air outlet structure of an air conditioner, which comprises the following steps:

[0047] Step S**10**: determining whether the supporting strength of a mounting base **10** satisfies the ceiling requirements of the air outlet structure **2** of the air conditioner.

[0048] The mounting base **10** is specifically a ceiling. Whether the mounting base **10** meets the ceiling requirements depends on the material, thickness, shape, structure and the like of the mounting base **10**. In actual use, after the air outlet structure **2** of the air conditioner is mounted onto the mounting base **10**, the entire structure has to be stable and satisfy normal use.

[0049] Step S**20**: mounting a lateral surface of the air outlet structure **2** of the air conditioner on the mounting base **10**, wherein the mounting base **10** mainly supports the air outlet structure **2** of the air conditioner; and mounting the air outlet structure **2** of the air conditioner on an indoor unit **1** of the air conditioner, wherein the indoor unit **1** auxiliarily supports the air outlet structure **2** of the air conditioner, if the requirements are satisfied. Wherein, the operation of mounting the lateral surface of the air outlet structure **2** of the air conditioner on the mounting base **10** and the operation of mounting the air outlet structure **2** of the air conditioner on the indoor unit **1** of the air conditioner is, for example, performed sequentially or simultaneously. More operators are required in simultaneous operation, while less operators are required in sequential operation.

[0050] In the above-described step S**20**, the support strength of the mounting base **10** satisfies the requirements. The air outlet structure **2** of the air conditioner is mounted in two manners: directly mounted laterally of the mounting

base **10** and directly mounted on the indoor unit **1** of the air conditioner. These two manners are used independently, or combined with other mounting manners to jointly support the weight of the air outlet structure **2** of the air conditioner.

[0051] The mounting manner of the lateral surface of the air outlet structure **2** of the air conditioner means that the lateral surface of the air outlet structure **2** of the air conditioner is directly mounted on the mounting base **10** without nesting. Specifically, the lateral surface of the air outlet structure **2** of the air conditioner is directly fixed to the mounting base **10** with screws and plates. The mounting manner described in the embodiments of the air outlet mounting structure of the air conditioner provided below are also used here.

[0052] Step S**30**: mounting the air outlet structure **2** of the air conditioner on the indoor unit **1** of the air conditioner, wherein the indoor unit **1** mainly supports the air outlet structure **2** of the air conditioner on the indoor unit **1**; and mounting a lateral surface of the air outlet structure **2** of the air conditioner on the mounting base **10**, wherein the mounting base **10** auxiliarily supports the air outlet structure **2** of the air conditioner if the requirements are not satisfied.

[0053] In the method for mounting the air outlet structure of the air conditioner provided by the above-described technical solution, the mounting manner of the air outlet structure **2** of the air conditioner is determined based on whether the supporting capacity of the mounting base **10** itself satisfies the requirements; if the supporting capacity of the mounting base **10** satisfies the requirements, the air outlet structure **2** of the air conditioner is mainly supported by lateral installation (i.e. mounting the lateral surface), so that the weight of the air outlet structure **2** of the air conditioner is dispersed with a number of locations for the mounting site. Moreover, even when the air outlet structure **2** of the air conditioner is long enough, there will be no problems such as deformation. If the supporting capacity of the mounting base **10** does not satisfy the ceiling requirements of the air outlet structure **2** of the air conditioner, the air outlet structure **2** of the air conditioner is mainly supported by the indoor unit **1**. The above-described two mounting manners which both eliminate nesting, and thus eliminate complicated steps required in the nested mounting process, simplify the mounting process of the air outlet structure **2** of the air conditioner and improve the mounting efficiency.

[0054] The air outlet structure **2** of the air conditioner is supported by the mounting base **10** and the indoor unit **1** at the same time. The above-described mounting manner reduces the number of mounting sites during lateral installation.

[0055] The step S**20** introduced above specifically comprises the following steps:

[0056] First: mounting a fixing member **3** on the lateral surface of the air outlet structure **2** of the air conditioner. Referring to FIGS. **3** and **11**, the fixing member **3** comprises a first opening **31** and a second opening **32**, and at least one of the first opening **31** and the second opening **32** is an oblong hole **30**. The fixing member **3** is fixed to the lateral surface of the air outlet structure **2** of the air conditioner through the first opening **31**. If the first opening **31** and the second opening **32** are both oblong holes **30**, the length direction of the first opening **31** is along the first direction of the air outlet structure **2** of the air conditioner, and the length direction of the second opening **32** is along the second direction of the air outlet **2** of the air conditioner. One of the first direction and the second direction is a longitudinal direction of the air outlet structure **2** of the air conditioner, and the other is a transverse direction of the air outlet structure **2** of the air conditioner. The first opening **31** and the second opening **32** are both oblong holes **30**, for adjusting the mounting positions of the fixing member **3** with respect to the mounting base **10** and the air outlet structure **2** of the air conditioner.

[0057] Second: fixing the lateral surface of the outlet structure **2** of the air conditioner with the mounting base **10** by passing the fastener **35** through the second opening **32**. Referring to FIG. **5**, the fastener **35** is, for example, a bolt or the like.

[0058] The above-described step S**30** specifically comprise the following steps:

[0059] First: mounting the hanging assembly **4** on the indoor unit **1** of the air conditioner. There are multiple structures of the hanging assembly **4**, such as a plate-like or frame-like structure, and specific structural forms will be given later.

[0060] Second: fixing the air outlet structure **2** of the air conditioner to the hanging assembly **4**. Referring to FIG. **2**, for example, the air outlet structure **2** of the air conditioner is fixed to the hanging assembly **4** by passing a connecting piece **5** from the bottom to the top of the air outlet structure **2** of the air conditioner. Referring to FIG. **2**, the connecting piece **5** is a long screw.

[0061] The specific embodiments of the above-described method for mounting an air outlet structure of an air conditioner will be introduced below.

[0062] First, the lateral installation manner will be introduced. The air outlet structure **2** of the air conditioner introduced is fixed to the mounting base **10** through laterally mounted screws. The air outlet structure of the air conditioner is mounted to the mounting base **10** from bottom to top, and the stopper (designed to be thin, and have sufficient strength) **7** abuts against the lower end surface of the mounting base **10** (see FIG. **4**), so that the air outlet structure of the air conditioner is flush with the bottom surface of the mounting base **10**. At this time, the fastener (specifically, a laterally mounted screw) **35** is fixed to the mounting base **10** through the second opening **32** (FIG. **11**) in the fixing member **3**. In some embodiments, the fixing member **3** is also provided with a first opening **31** in a long-waist shape, for the purpose of adjusting the position of the fixing member **3** according to the actual size of the opening of the mounting base **10**, so that the laterally mounted screws does not cause deformation of the air outlet structure **2** of the air conditioner when the laterally mounted screws are fastened, thereby ensuring that the shape is not affected.

[0063] Next, the ceiling manner will be introduced. The indoor unit **1** is mounted with a hanging assembly **4** (the hanging assembly **4** is provided with a screw hole) in advance, on which a nut **42** for ceiling has been welded in advance. The air outlet structure **2** of the air conditioner is provided with a guide structure **6** which is fixed in many ways, such as snap-fit, screw fixing, and glue adhering. Of course, it is also possible to directly design features that produce a similar guiding effect on the air outlet structure **2** of the air conditioner. The air outlet structure of the air conditioner is fixed with a stopper **7**. The air outlet structure **2** of the air conditioner is fixed with a fixing plate **9** with an adjustable mounting position. The fixing plate **9** is provided

with a notch **91** through which the fixing plate **9** is clamped onto the connecting piece **5**. See FIGS. **3**, **9** and **10**.

[0064] The specific mounting steps are as follows:

[0065] (1) first removing the fixing screws on fixing plate **9** (see FIG. **8**) with an adjustable position, and placing the fixing plate **9** with an adjustable position into the pocket of an installer for spare use, prior to mounting.

[0066] (2) fixing the two ceiling assemblies **4** by screws on both sides of the indoor unit **1** along a length direction of the indoor unit **1**, see FIG. **2**.

[0067] (3) fixing the connector **5** (specifically a long screw) to the hanging assembly **4** by screwing several threads in advance, when the ceiling screw head is exposed on the bottom surface of the mounting base **10**, and the air outlet structure **2** of the air conditioner enables the ceiling screw head to smoothly pass through the inside surface of the guide structure **6** by a guide bevel **61** of the guide structure **6**, see FIGS. **6** to **8**.

[0068] (4) abutting the air outlet structure **2** of the air conditioner upwards by hand so that the stopper **7** is attached to the lower end surface of the mounting base **10**, after the head of the connecting piece **5** passes through the guide structure **6**.

[0069] (5) At this time, the installer takes the fixing plate **9** out of the pocket with an adjustable position removed in step 1 (see FIGS. **8**, **9** and **10**). The fixing plate **9** is designed with a notch **91** for clamping a screw, into which the connecting piece **5** is clamped (see the arrow in FIG. **8** for the clamping direction of the fixing plate **9**). The fixing plate **9** is designed with a through-hole in a long-waist shape with an adjustable position to ensure that the head of the connecting piece **5** does not pass through the through-hole, and the rod of the connecting piece **5** slides inside the through-hole in a long-waist shape, so as to ensure deviation of the air outlet structure **2** of the air conditioner in a length direction. In addition, for example, a hole in a long-waist shape for adjustment is also provided in a width direction of the fixing plate **9** to ensure that the air outlet structure **2** of the air conditioner is also slightly adjusted in width. For the length and width directions, see the arrows shown in FIG. **10**.

[0070] (6) finally tightening the connecting piece **5** so that the air outlet structure **2** of the air conditioner is attached to the mounting base **10**.

[0071] Since the opening of the mounting base **10** is not necessarily adequately aligned with the air outlet of the air conditioner in the indoor unit **1** during the actual application of construction and installation, the above structure ensures that the ceiling fixation is adapted to most of the construction requirements by delicate designs.

[0072] The above is a detailed description of the ceiling mounting manner. During actual application, this ceiling method is suitable for the circumstance that the air outlet structure **2** of the air conditioner itself is very thick. If the air outlet structure **2** of the air conditioner is thin, for example the following mounting manner is specifically used:

[0073] (1) The hanging assembly **4** is fixed on the indoor unit **1**.

[0074] (2) The air outlet structure of the air conditioner **2** is mounted against the bottom surface of the mounting base **10**. That is, the stopper **7** is attached to the bottom surface of the mounting base **10**.

[0075] (3) The connecting piece (specifically including a long screw) **5** is directly aligned with the nut of the hanging assembly **4**, and then tightened so that the air outlet structure **2** of the air conditioner is effectively attached to the mounting base **10**, and fixed on the indoor unit **1**.

[0076] It should be noted that, in the above-described ceiling fixing manner, the connecting piece **5** is provided only in a length direction. If the air outlet structure **2** of the air conditioner is long, the air outlet structure **2** of the air conditioner is deformed, which results in deformation of the middle area to expose a gap. Thus, the air outlet structure **2** of the air conditioner is also auxiliarily fixed in the middle position in a laterally mounted screw manner.

[0077] In the method for mounting an air outlet structure of an air conditioner provided by the above-described embodiments of the present disclosure, only one mounting manner is used or two mounting manners are used at the same time according to actual demands. The above-described mounting method has a favorable versatility in installation; the installation is still satisfied even when there is a certain deviation in the opening of the mounting base **10** so that there is no need to rework or re-open the mounting base **10**. The ceiling is reliable and the air outlet structure **2** of the air conditioner is adequately attached to the mounting base **10**; and the installation is simple, and after the opening of the mounting base **10** is accomplished, the installation is performed immediately so that the installation is efficient.

[0078] Referring to FIG. **2** to FIG. **11**, in some embodiments of the present disclosure, an air outlet mounting structure of an air conditioner is provided. The air outlet mounting structure is used to implement the method for mounting an air outlet structure of the air conditioner provided by the above-described embodiments. The air outlet mounting structure of the air conditioner comprises an indoor unit **1** and an air outlet structure **2** of the air conditioner. The air outlet structure **2** of the air conditioner is jointly supported by the indoor unit **1** and the mounting base **10**.

[0079] The mounting base **10** specifically comprise a ceiling. The indoor unit **1** is ceiled on the roof (or referred to as ceiling). According to different actual conditions, the air outlet structure **2** of the air conditioner is supported in one of the following manners: mainly supported by the mounting base **10** and auxiliarily supported by the indoor unit **1**; mainly supported by the indoor unit **1** and auxiliarily supported by the mounting base **10**.

[0080] The air outlet structure **2** of the air conditioner is supported by the indoor unit **1**, which avoids problems such as complicated process and required more labor resulting from having to mount the air outlet structure **2** of the air conditioner on the nest fixed to the mounting base **10** in the related art.

[0081] In some embodiments, a fixing member **3** for connecting with the mounting base **10** is mounted on the lateral surface of the air outlet structure **2** of the air conditioner, and the position where the fixing member **3** is connected with the mounting base **10** is adjustable.

[0082] The fixing member **3** is alternatively mounted to the mounting base **10** by providing a plurality of mounting structures according to actual demands. Alternatively, the fixing member **3** is provided with a hole with an adjustable mounting position, such as an oblong hole **30**, so as to realize an alternative mounting position.

[0083] Referring to FIG. **11**, in some embodiments, the fixing member **3** comprises a first opening **31** and a second opening **32**. At least one of the first opening **31** and the

second opening **32** is an oblong hole **30**. Here, take an oblong hole **30** as an example. The fixing member **3** is fixed to the lateral surface of the air outlet structure **2** of the air conditioner through the first opening **31**; the length direction of the first opening **31** is along the first direction of the air outlet structure **2** of the air conditioner; the length direction of the second opening **32** is along the second direction of the air outlet structure **2** of the air conditioner, wherein one of the first direction and the second direction is a longitudinal direction of the air outlet structure **2** of the air conditioner, and the other is a transverse direction of the air outlet structure **2** of the air conditioner.

[0084] By providing the first opening **31** and the second opening **32** in different length directions, the mounting position is adjusted in the transverse and longitudinal directions of the air outlet structure **2** of the air conditioner, so that the installation is more convenient.

[0085] Referring to FIG. **11**, the fixing member **3** comprises a first plate **33** and a second plate **34** which are fixed to each other. The first plate **33** is fixed to the air outlet structure **2** of the air conditioner and the second plate **34** is fixed to the mounting base **10**. In some embodiments, by way of the above-described structure, the fixing member **3** enables the mounting base **10** to provide an obliquely upward action force on the second plate **34** by using the fastener **35** that normally passes through the second opening **32**. The vertical component comprised in the action force cooperates with the stopper **7** so that the ground of the air outlet structure **2** of the air conditioner is flush with the bottom surface of the mounting base **10**. The normally mounted fastener **35** referred thereto means that, with the fastener **35** using a screw as an example, the length direction of the fastener **35** is perpendicular to the second plate **34**.

[0086] Referring to FIG. **12**, the comprised angle a between the first plate **33** and the second plate **34** is 95 degrees to 140 degrees, for example 95 degrees, 100 degrees, 105 degrees, 110 degrees, 120 degrees, 130 degrees, 140 degrees, or the like. The comprised angle a makes it possible that, when the fastener **35** is mounted, the fixing force F of the fastener **35** is obliquely upward, with an upward component force F**1**, and at the same time, the bottom surface of the air outlet structure **2** of the air conditioner is flush with the bottom surface of the mounting base **10** in the case where the stopper **7** limits a position.

[0087] Referring to FIG. **12**, the total height B of the fixing member **3** is 7 mm to 12 mm. The above-described height satisfies the general thickness of the mounting base, and ensure that it is not too high or exposed to below the mounting base **10**.

[0088] Referring to FIG. **13**, the length C of the second opening **32** is 8 mm to 20 mm. The above-described length ensure that the fastener **35** is mounted nearby when it is not mounted in the original fixing site where it is damaged after the air outlet of the air conditioner is removed.

[0089] Referring to FIG. **13**, the diameter R of the second opening **32** is 2.5 mm to 4 mm. The diameter R satisfies the size of the screw that is used in the existing construction and installation, whilst ensuring that the screw is not loosely mounted.

[0090] Referring to FIG. **13**, the distance D from the bottom of the second opening **32** to the bottom is 2 mm to 5 mm, which provides space for the installation of the fastener **35** without interfering with the air outlet structure **2** of the air conditioner.

[0091] In some embodiments, the indoor unit **1** is fixed with a hanging assembly **4**, and the air outlet structure **2** of the air conditioner is fixed to the hanging assembly **4** through the connecting piece **5**. The connecting piece **5** is specifically a long bolt.

[0092] Referring to FIG. **2**, alternatively, the lateral end surface of the indoor unit **1** is fixedly connected to the air outlet structure **2** of the air conditioner by a hanging assembly **4**. The hanging assembly **4** is provided to facilitate the connection between the indoor unit **1** and the air outlet structure **2** of the air conditioner. The hanging assembly **4** is disposed on the transverse end surface of the indoor unit **1**, which adequately considers the structural characteristics and the convenient installation of the indoor unit **1**.

[0093] Referring to FIG. **2**, in some embodiments, two opposite sides of the air outlet structure **2** of the air conditioner are mounted on the mounting base **10**, and the other two opposite sides of the air outlet structure **2** of the air conditioner are fixedly connected to the indoor unit **1** through the hanging assembly **4**. In some embodiments, the two longitudinal sides of the air outlet structure **2** of the air conditioner are mounted on the mounting base **10**, and the two transverse sides are hanged on the indoor unit **1**.

[0094] Referring to FIG. **2**, in some embodiments, the hanging assembly **4** comprises a connection plate **41** and a nut **42**. The connection plate **41** is detachably connected to the indoor unit **1**. The air outlet structure **2** of the air conditioner is connected to the connection plate **41** through the connecting piece **5** and a nut **42**. The hanging assembly **4** in the above-described structure has the advantages of compact structure and convenient installation.

[0095] Referring to FIG. **2**, in order to facilitate mounting the connecting piece **5**, the air outlet structure **2** of the air conditioner is provided with a guide structure **6** for guiding a mounting direction of the connecting piece **5**. The guide structure **6** is, for example, a bevel or other structure to help the connecting piece **5** locate the screw holes.

[0096] Referring to FIG. **7**, in some embodiments, the guide structure **6** is provided with, for example, a guide bevel **61** to provide guidance for the connecting piece **5** to locate the connecting plate **41** and the nut **42**. The structure which is simple and compact, facilitates the machining and manufacturing.

[0097] Referring to FIG. **4**, in some embodiments, the air outlet mounting structure of the air conditioner comprises a stopper **7**, wherein the stopper **7** is disposed on the air outlet structure **2** of the air conditioner, and the stopper **7** has a plane for clamping the bottom end of the mounting base **10**. The stopper **7** is specifically plate-like, wherein one lateral surface of the stopper **7** is mounted to the air outlet structure **2** of the air conditioner, and the other side that is exposed out of the air outlet structure **2** of the air conditioner, is configured to abut against the mounting base **10**, and produce a position limiting effect over the installation of the air outlet structure **2** of the air conditioner in a longitudinal direction when the air outlet structure **2** of the air conditioner is mounted, so that the air outlet structure **2** of the air conditioner is not excessively retracted inside the mounting base body **10**.

[0098] Referring to FIG. **4** or FIG. **5**, in some embodiments, the air outlet mounting structure of the air conditioner comprises a panel **8** provided on a lateral side of the air outlet structure **2** of the air conditioner facing away from the indoor unit **1**.

[0099] The size of the panel **8** is greater than or equal to that of the opening of the mounting base **10**, so that the panel **8** blocks the mounting position of the air outlet structure **2** of the air conditioner and makes a lower accuracy of the mounting position.

[0100] In the description of the present disclosure, it is necessary to understand that, the azimuth or positional relations indicated by the terms "center", "longitudinal", "transverse", "front", "rear", "left", "right", "vertical", "horizontal", "top", "bottom", "within", "outside", which are based on the azimuth or positional relations illustrated by the drawings, are only for facilitating description of the present disclosure, rather than indicating or implying that the device or element referred thereto has to present a particular azimuth, and be constructed and operated in a particular azimuth, so that it does not understand as limiting the protection scope of the present disclosure.

[0101] Finally, it should be explained that: the aforementioned embodiments are only used to describe the technical solution of the present disclosure rather than limiting the same; although detailed explanations are made to the present disclosure by referring to preferred embodiments, a common technical person in the art should understand that: it is still possible to make amendments to the embodiments of the present disclosure or make equivalent replacements to part of the technical features; without departing from the spirit and scope of the present disclosure, they should all be covered in the scope of the technical solution for which protection is sought in the present disclosure.

1. A method for mounting an air outlet structure of an air conditioner, comprising steps of:

determining whether a supporting strength of a mounting base satisfies ceiling requirements of the air outlet structure of the air conditioner;

mounting a lateral surface of the air outlet structure of the air conditioner on the mounting base and mounting the air outlet structure of the air conditioner on an indoor unit of the air conditioner if the requirements are satisfied, so that the mounting base provides a main support for the air outlet structure of the air conditioner, and the indoor unit provides an auxiliary support for the air outlet structure of the air conditioner; mounting the air outlet structure of the air conditioner on the indoor unit and mounting the lateral surface of the air outlet structure of the air conditioner on the mounting base if the requirements are not satisfied, so that the mounting base provides an auxiliary support for the air outlet structure of the air conditioner and the indoor unit provides a main support for the air outlet structure of the air conditioner.

2. The method for mounting an air outlet structure of an air conditioner according to claim **1**, wherein the step of mounting a lateral surface of the air outlet structure of the air conditioner on the mounting base comprises:

mounting a fixing member on the lateral surface of the air outlet structure of the air conditioner; wherein the fixing member comprises a first opening and a second opening, and at least one of the first opening and the second opening is an oblong hole; the fixing member is fixed to the lateral surface of the air outlet structure of the air conditioner through the first opening; and

fixing the air outlet structure of the air conditioner with the mounting base by passing a fastener through the second opening.

3. The method for mounting an air outlet structure of an air conditioner according to claim **2**, wherein the first opening and the second opening are both oblong holes; a length direction of the first opening is along a first direction of the air outlet structure of the air conditioner; a length direction of a second opening is along the second direction of the air outlet structure of the air conditioner, wherein one of the first direction and the second direction is a longitudinal direction of the air outlet structure of the air conditioner, and the other is a transverse direction of the air outlet structure of the air conditioner.

4. The method for mounting an air outlet structure of an air conditioner according to claim **1**, wherein the step of mounting the air outlet structure of the air conditioner on an indoor unit of the air conditioner comprises:

mounting a hanging assembly on the indoor unit of the air conditioner; and

fixing the air outlet structure of the air conditioner to the hanging assembly.

5. An air outlet mounting structure of an air conditioner, characterized by comprising:

an indoor unit;

a mounting base; and

an air outlet structure of the air conditioner, which is jointly supported by the indoor unit and the mounting base.

6. The air outlet mounting structure of the air conditioner according to claim **5**, wherein a fixing member connecting with the mounting base is mounted on a lateral surface of the air outlet structure of the air conditioner, and a position where the fixing member is connected with the mounting base is adjustable.

7. The air outlet mounting structure of the air conditioner according to claim **6**, wherein the fixing member is configured by an oblong hole to cause the position adjustable.

8. The air outlet mounting structure of the air conditioner according to claim **7**, wherein the fixing member comprises a first opening and a second opening, and at least one of the first opening and the second opening is an oblong hole; the fixing member is fixed to a lateral surface of the air outlet structure of the air conditioner through the first opening; a length direction of the first opening is along a first direction of the air outlet structure of the air conditioner, and a length direction of the second opening is along a second direction of the air outlet structure of the air conditioner, wherein one of the first direction and the second direction is a longitudinal direction of the air outlet structure of the air conditioner, and the other is a transverse direction of the air outlet structure of the air conditioner.

9. The air outlet mounting structure of the air conditioner according to claim **5**, wherein the indoor unit is fixed with a hanging assembly, and the air outlet structure of the air conditioner is fixed to the hanging assembly through a connecting piece.

10. The air outlet mounting structure of the air conditioner according to claim **9**, wherein two opposite sides of the air outlet structure of the air conditioner are mounted on the mounting base, and an other two opposite sides of the air outlet structure of the air conditioner are fixedly connected to the indoor unit through the hanging assembly.

11. The air outlet mounting structure of the air conditioner according to claim **10**, wherein the hanging assembly comprises:

a connection plate detachably connected to the indoor unit; and

a nut, wherein the air outlet structure of the air conditioner is connected to the connection plate through the connecting piece and the nut.

12. The air outlet mounting structure of the air conditioner according to claim **5**, wherein a guide structure is provided on the air outlet structure of the air conditioner to guide a mounting direction of a connecting piece.

13. The air outlet mounting structure of the air conditioner according to claim **5**, comprises:

a stopper disposed on the air outlet structure of the air conditioner, and having a plane clamping a bottom end of the mounting base.

14. The air outlet mounting structure of the air conditioner according to claim **5**, comprises:

a panel disposed on one side of the air outlet structure of the air conditioning facing away from the indoor unit.

15. The air outlet mounting structure of the air conditioner according to claim **6**, wherein the fixing member comprises:

a first plate fixed to the air outlet structure of the air conditioner; and

a second plate fixed to the first plate and the mounting base.

16. The air outlet mounting structure of the air conditioner according to claim **15**, wherein an included angle between the first plate and the second plate is 95 degrees to 140 degrees.

17. The air outlet mounting structure of the air conditioner according to claim **6**, wherein a total height of the fixing member is 7 mm to 12 mm.

18. The air outlet mounting structure of the air conditioner according to claim **8**, wherein a length of the second opening is 8 mm to 20 mm.

19. The air outlet mounting structure of the air conditioner according to claim **5**, wherein the mounting base comprises a ceiling.

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