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(54) **FIXING DEVICE AND FAUCET INSTALLATION DEVICE**

(57) The present disclosure discloses a fixing device (B) for a faucet (A). The fixing device (B) comprises a base (1) and a pressing block mechanism (2). The pressing block mechanism (2) comprises two pressing plates (21), the two pressing plates (21) are respectively connected to a locking rod (31, 32). An inner side wall of the base (1) protrudes to define two connecting bases (11, 12). At least one of the locking rods (31, 32) is configured to move relative to the base (1) between a working state and a movable state. Movement of the at least one of the locking rods (31, 32) between the working state and the movable state cooperates with the change of the pressing block mechanism (2) between the unfolded state and the folded state. The change of the pressing block mechanism (2) drives the at least one locking rod (31, 32) to move, or the change of the pressing block mechanism (2) is driven by the movement of the at least one locking rod (31, 32). Therefore, the fixed device is convenient to assemble and disassemble.

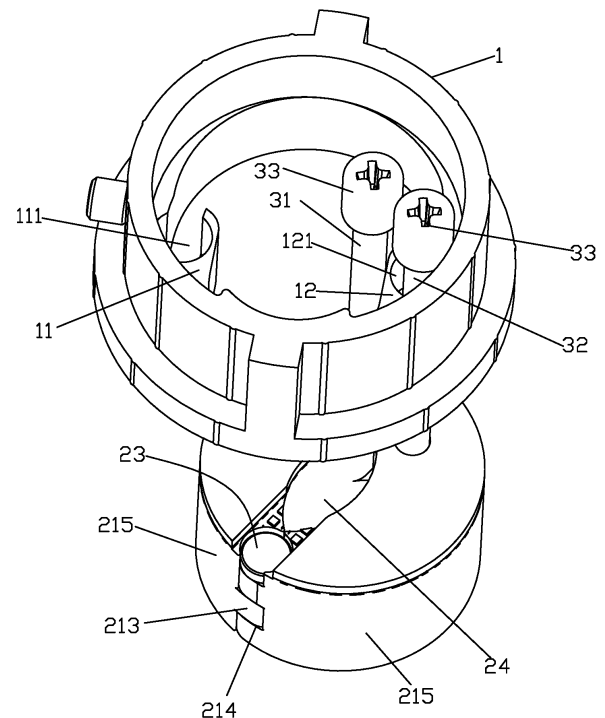


FIG. 3

Description

FIELD OF THE DISCLOSURE

[0001] The present disclosure relates to a fixing device, and in particular relates to a fixing device and a faucet installation device.

BACKGROUND OF THE DISCLOSURE

[0002] CN206607638U discloses a fixing device for fixing bathroom fixtures. A fixing base of the fixing device has a bolt opening, reverse holding elements, and a fixing bolt. The reverse holding elements are respectively configured to be attached to an inner side of the fixing base, and the fixing bolt is inserted through the bolt opening. A head of the fixing bolt is kept in this position and a rear side of the fixing bolt is obliquely screwed into the reverse holding elements. When the fixing device is assembled, an assembly free space is formed between the corresponding bolt opening and the inserted fixing bolt. Therefore, the reverse holding elements pre-assembled at the fixing bolt can move towards each other into an assembly position when the fixing bolt inclines, and the reverse holding element couples with and passes through the fixing opening in the assembly position. In addition, the fixing device comprises a flexible bow that connects at least two of the reverse holding elements in such a way that the reverse holding element itself can move back from the reverse holding position into the assembly position. Because the flexible bow is made of a flexible material, the deformation of the flexible bow needs to be manually controlled during assembly to enable the flexible bow to pass through a mounting hole of a countertop. Further, two ends of the flexible bow may be elastically deformed, thereby making it difficult to ensure that the two ends of the flexible bow are on a same plane and locked under the countertop, and therefore the connection strength is not high. The technical solution of JP4968629B2 also has the above-mentioned shortcomings.

[0003] CN208152161U discloses a quick installation structure on a faucet countertop, comprising a fixing base with a diameter larger than the mounting hole of the countertop, a locking mechanism, and a bolt. The fixing base is disposed with an installation channel for pipes to pass through and an installation hole for bolts to pass through. An outer circumference of the fixing base is matched with a valve body of the faucet. The fixing base is also provided with a limit mechanism for restricting rotation of the locking mechanism. The locking mechanism comprises a bracket that can pass through the mounting hole of the countertop and at least one elastic mechanism rotatably arranged on one side of the bracket. The bracket is provided with a bolt hole matched with the bolt. One end of the limit mechanism is connected to the fixing base, and the other end of the limit mechanism is connected to the bracket. In this technical solution, the bracket and the

fixing base are connected by the bolt to be clamped to the countertop to achieve a fixed connection. As the locking mechanism and the fixing base are only connected by a bolt and the elastic mechanism is connected to the bracket, the elastic mechanism is driven by the bracket and is pressed under the countertop. In an actual connection process, it is impossible to ensure that the elastic mechanism and the bracket are tightly pressed against the countertop, so the connection strength is not high.

[0004] CN208169679U discloses a faucet base installed on a countertop. The faucet base comprises a base body arranged on the mounting hole of the countertop and used for fixing a faucet. The faucet base also comprises a guide column, a blocking block, a screw, and a locking block. An upper end of the guide column is fixed with the base body, and the base body is provided with a first through hole. The screw can rotatably penetrate the first through hole, and an upper end of the screw is disposed with a nut. The blocking block can be moved up and down through the guide column, the locking block is screwed on the screw. When the screw rotates in a first direction, the locking block is blocked at a first position by the blocking block, and the locking block and the blocking block move away from the base body. When the screw moves in a second direction, the locking block is blocked by the blocking block in a second position, and the locking block and the blocking block move close to the base body until the locking block is locked under the countertop. When the locking block is in the first position, the guide column, the blocking block, the screw, and the locking block form a hole having a maximum outer diameter that is smaller than a diameter of the mounting hole. In this technical solution, the screw not only constitutes a rotation shaft connecting the blocking block and the locking block, but the screw also connects the blocking block, the locking block, and the base body to be clamped to the countertop to achieve a fixed connection. However the faucet base is only connected by the screw, and the screw is connected to ends of the blocking block and the locking block, so the connection strength is not high.

BRIEF SUMMARY OF THE DISCLOSURE

[0005] The present disclosure provides a fixing device and a faucet installation device to overcome the deficiencies of the faucet installation devices in existing techniques.

[0006] In order to solve the technical problem, a first technical solution of the present disclosure is as follows.

[0007] A fixing device comprises a base and a pressing block mechanism. The base and the pressing block mechanism are disposed in a first direction. The base comprises an inner side wall. The pressing block mechanism comprises two pressing plates, the two pressing plates are respectively connected to a locking rod, and the two pressing plates are rotatably connected together to change between an unfolded state and a folded state. A rotation axis of the two pressing plates is disposed in

the first direction. Outlines of the pressing block mechanism in the unfolded state and the folded state are different. The inner side wall of the base protrudes to define two connecting bases. At least one of the locking rods is configured to move relative to the base between a working state and a movable state. Movement of the at least one of the locking rods between the working state and the movable state cooperates with the change of the pressing block mechanism between the unfolded state and the folded state. The locking rods, when in the working state, cooperate with the two connecting bases to enable a fixed object to be clamped between the two pressing plates and the base to achieve a fixed connection through the locking rods.

[0008] In a preferred embodiment, the locking rods comprises two locking rods, and the two locking rods are configured to move relative to the base between the working state and the movable state.

[0009] In a preferred embodiment, the locking rods comprise a first locking rod and a second locking rod. The two connecting bases comprise a first connecting base and a second connecting base. The first locking rod is configured to move relative to the base between the working state and the movable state. The second locking rod is connected to the second connecting base and is always in the working state. When the first locking rod is in the working state, the first locking rod is connected to the first connecting base.

[0010] In a preferred embodiment, the fixing device comprises a rotation shaft. The two pressing plates are rotatably connected together by the rotation shaft.

[0011] In a preferred embodiment, an area of the outline of the pressing block mechanism in the unfolded state is larger than an area of the outline of the pressing block mechanism in the folded state.

[0012] In a preferred embodiment, the at least one of the locking rods configured to move relative to the base between the working state and the movable state is a first locking rod. The connecting base coupling with the first locking rod is a first connecting base. The first locking rod is configured to move on a plane perpendicular to the first direction to control the first locking rod to be in the working state and the movable state.

[0013] In a preferred embodiment, the locking rods, when in the working state, are configured to move in the first direction to control a distance between the two pressing plates and the base to enable the fixed object to be clamped between the two pressing plates and the base.

[0014] In a preferred embodiment, the second connecting base comprises a connecting hole, and the second locking rod passes through the connecting hole and is connected to a corresponding one of the two pressing plates.

[0015] In a preferred embodiment, the first connecting base comprises an inlet slot, and the first locking rod, when in the working state, is disposed in the inlet slot.

[0016] In a preferred embodiment, the inlet slot extends through in the first direction, and an opening of the

inlet slot is disposed on an outer side wall of the first connecting base.

[0017] In a preferred embodiment, the locking rods are screw rods. The screw rods comprise threaded portions. The threaded portions are screwed to the two pressing plates.

[0018] In a preferred embodiment, the screw rods comprise screw heads, and the screw heads about a top surface of the two connecting bases.

[0019] In a preferred embodiment, inner sides of the two pressing plates comprise locking holes. The inner sides of the two pressing plate are embedded with nuts. The nuts are aligned with the locking holes. The threaded portions are screwed to the nuts.

[0020] In a preferred embodiment, positions of the nuts of the two pressing plates are staggered in the first direction.

[0021] In a preferred embodiment, the two pressing plates comprise first ends and second ends. The rotation shaft is connected to the first ends of the two pressing plates. The locking rods are connected to the second ends of the two pressing plates.

[0022] In a preferred embodiment, the two pressing plates comprise a first pressing plate and a second pressing plate. The first end of the first pressing plate protrudes to define a protrusion. The first end of the second pressing plate extends inward to define a coupling groove. The protrusion cooperates with and is disposed in the coupling groove. The rotation shaft passes through the first end of the second pressing plate and the protrusion.

[0023] In a preferred embodiment, the two pressing plate comprise semicircular plates, and two arc ends of the semicircular plates are respectively the first ends and the second ends.

[0024] In a preferred embodiment, surfaces of the semicircular plates of the two pressing plates facing each other extend inward to define a given space.

[0025] In a preferred embodiment, end faces of the two pressing plates facing the base are aligned.

[0026] In a preferred embodiment, the two pressing plates comprise pressing blocks and anti-skid pads fixed on the pressing blocks.

[0027] In a preferred embodiment, the anti-skid pads surround outer sides of the locking rods.

[0028] In a preferred embodiment, the base comprises a sleeve, and an inner side wall of the sleeve protrudes to define the two connecting bases.

[0029] In order to solve the technical problem, a second technical solution of the present disclosure is as follows.

[0030] A fixing device comprises a base and a pressing block mechanism. The base and the pressing block mechanism are disposed in a first direction. The base comprises an inner side wall. The pressing block mechanism comprises two pressing plates, the two pressing plates are respectively connected to a locking rod, and the two pressing plates are rotatably connected together to change between an unfolded state and a folded state.

A rotation axis of the two pressing plates is disposed in the first direction. Outlines of the pressing block mechanism in the unfolded state and the folded state are different. The inner side wall of the base protrudes to define two connecting bases. The locking rods are configured to move relatively to enable the locking rods to move following the change of the pressing block mechanism between the unfolded state and the folded state. The locking rods cooperate with the two connecting bases to enable a fixed object to be clamped between the two pressing plates and the base to achieve a fixed connection through the locking rods.

[0031] In order to solve the technical problem, a third technical solution of the present disclosure is as follows.

[0032] A fixing device comprises a base and a pressing block mechanism. The base and the pressing block mechanism are disposed in a first direction. The base comprises an inner side wall. The pressing block mechanism comprises two pressing plates, the two pressing plates are respectively connected to a locking rod, and the two pressing plates are rotatably connected together to change between an unfolded state and a folded state. A rotation axis of the two pressing plates is disposed in the first direction. Outlines of the pressing block mechanism in the unfolded state and the folded state are different. The inner side wall of the base protrudes to define two connecting bases. At least a part of a movement track of one of the locking rods relative to the base is disposed in a plane perpendicular to the first direction to enable the locking rods to move following the change of the pressing block mechanism between the unfolded state and the folded state. The locking rods cooperate with the two connecting bases to enable a fixed object to be clamped between the two pressing plates and the base to achieve a fixed connection through the locking rods.

[0033] In order to solve the technical problem, a fourth technical solution of the present disclosure is as follows.

[0034] A fixing device comprises a base and a pressing block mechanism. The base and the pressing block mechanism are disposed in a first direction. A fixed object is clamped between the base and the pressing block mechanism in the first direction to achieve a fixed connection. The base comprises an inner side wall. The pressing block mechanism comprises a plurality of pressing plates, at least two pressing plates of the plurality of pressing plates are respectively connected with a locking rod, and each two adjacent pressing plates are rotatably connected together to change between an unfolded state and a folded state. A rotation axis of each two adjacent pressing plates is disposed in the first direction. Outlines of the pressing block mechanism in the unfolded state and the folded state are different. The inner side wall of the base protrudes to define two connecting bases. At least one of the locking rods is configured to move relative to the base between a working state and a movable state, and movement of at least one of the locking rods between the working state and the movable state cooperates with

the change of the pressing block mechanism between the unfolded state and the folded state. The locking rods, when in the working state, cooperate with the two connecting bases to enable the fixed object to be clamped between the plurality of pressing plates and the base through the locking rods.

[0035] In order to solve the technical problem, a fifth technical solution of the present disclosure is as follows.

[0036] A faucet installation device comprises a faucet, a countertop, and the fixing device. The fixed object comprises the countertop. The countertop comprises a through hole. The base and the faucet are fixed together. The locking rods pass through the through hole. The countertop is clamped between the base and the two pressing plates to enable the faucet to be fixed on the countertop.

[0037] Compared with existing techniques, the technical solution of the present disclosure has the following advantages.

[0038] The two pressing plates are respectively connected with a locking rod, two connecting bases protrude from the inner side wall of the base, at least one locking rod can move between the working state and the movable state relative to the base, and the movement of the at least one locking rod between the working state and the movable state is configured to enable the change of the pressing block mechanism between the unfolded state and the folded state. The change of the pressing block mechanism can drive the at least one locking rod to move, or the movement of the at least one locking rod can drive the pressing block mechanism to change. The assembly and the disassembly is convenient. Each pressing plate is connected by a locking rod, and the locking rod can drive each pressing plate against a back of the fixed object, which can enhance the connection strength. Each pressing plate has at least two stress points. One stress point is the connection of the locking rod, and the other stress point is the connection of the two pressing plates. The two pressing plates can therefore have three stress points forming a triangular structure, and the connection strength is stable and reliable and the triangular structure can also help to avoid deformation of the pressing plate due to stress.

[0039] The first locking rod can move relative to the base between the working state and the movable state. When in the working state, the first locking rod is connected to the first connecting base. The second locking rod is connected to the second connecting base and is always in working state. The disassembly is convenient.

[0040] The two locking rods can move relative to each other so that the two locking rods can move when the pressing block mechanism changes between the unfolded state and the folded state. The two locking rods can be driven to move through the change of the pressing block mechanism, or the movement of the two locking rods drive the change of the pressing block mechanism. Therefore, the assembly and the disassembly is convenient.

[0041] At least one part of the movement track of at least one locking rod relative to the base is located in a plane perpendicular to the first direction, so that the two locking rods can move when the pressing block mechanism changes between the unfolded state and the folded state. The change of the pressing block mechanism drives the at least one locking rod to move, or the change of the pressing block mechanism is driven by the movement of the at least one locking rod. Therefore, the assembly and the disassembly is convenient.

BRIEF DESCRIPTION OF THE DRAWINGS

[0042] The present disclosure will be further described below in combination with the accompanying drawings and embodiments.

FIG. 1 illustrates a schematic view of a fixing device of an embodiment.

FIG. 2 illustrates a perspective exploded view of the fixing device.

FIG. 3 illustrates a first perspective view of the fixing device of the embodiment in a first installation step of a faucet when a pressing block mechanism is in a closed state.

FIG. 4 illustrates a second perspective view of the fixing device of the embodiment in a second installation step of the faucet when two locking rods are relatively open.

FIG. 5 illustrates a third perspective view of the fixing device of the embodiment in a third installation step of the faucet when a first locking rod is locked.

FIG. 6 illustrates a fourth perspective view of the fixing device of the embodiment in a fourth installation step of the faucet when a second locking rod is locked.

FIG. 7 illustrates a fifth perspective view of the fixing device of the embodiment in a fifth installation step of the faucet when a pipe is put.

FIG. 8 illustrates a sixth perspective view of the fixing device of the embodiment in a sixth installation step of the faucet when a faucet body is installed.

FIG. 9 illustrates a seventh perspective view of the fixing device of the embodiment in a seventh installation step of the faucet when the faucet body and a base are locked.

FIG. 10 illustrates a perspective view of a faucet body of the kitchen faucet and the fixing device.

FIG. 11 illustrates a perspective view of a kitchen faucet installed on a countertop.

FIG. 12 illustrates a top view of the fixing device.

FIG. 13 illustrates a perspective view of a basin faucet and the fixing device.

FIG. 14 illustrates a perspective view of another basin faucet and the fixing device.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0043] Referring to FIGS. 1-12, a faucet installation device comprises a faucet A, a countertop C, and a fixing device B. The countertop C comprises a through hole penetrating in an upper and lower direction (i.e., in a vertical direction). The fixing device B comprises a base 1 and a pressing block mechanism 2. The base 1 and the pressing block mechanism 2 are disposed in a first direction, and the first direction is the upper and lower direction (i.e., the vertical direction). In this embodiment, the faucet A is a kitchen faucet. In an example, the faucet A comprises a faucet body A1, a control valve A6 disposed in the faucet body A1, a handle A3 movably connected to the faucet body A1 and operatively connected to the control valve A6 to drive the control valve A6 to achieve waterway control, a water supply pipe A2 disposed on the faucet body A1, and a water outlet portion A4 disposed on an end of the water supply pipe A2.

[0044] The base 1 comprises a sleeve. The sleeve comprises an inner side wall, and the inner side wall of the sleeve protrudes to define two connecting bases 11 and 12. Positions of the two connecting bases 11 and 12 are radially and symmetrically arranged, and an outer diameter of the sleeve is larger than an inner diameter of the through hole. The two connecting bases 11 and 12 define a first connecting base 11 and a second connecting base 12, respectively. The first connecting base 11 comprises an inlet slot 111 penetrating in the first direction, and an opening of the inlet slot 111 is disposed on an outer side wall of the first connecting base 11 to enable a first locking rod 31 to be disposed in the inlet slot 111 from an outer side of the inlet slot 111 in an inner side of the sleeve. The second connecting base 12 comprises a connecting hole 121 penetrating in the upper and lower direction (i.e., in the first direction).

[0045] The pressing block mechanism 2 comprises two pressing plates 21. The two pressing plates 21 are rotatably connected together to enable the pressing block mechanism 2 to change between an unfolded state and a folded state. A rotation axis of the two pressing plates 21 is in the first direction, and outlines of the pressing block mechanism 2 in the unfolded state and the folded state are different. An area of the outline of the pressing block mechanism 2 in the unfolded state is larger than an area of the outline of the pressing block mechanism 2 in the folded state to enable the pressing block mechanism 2 in the folded state to freely pass through the through hole of the countertop C and to enable the pressing block mechanism 2 in the unfolded state not to pass through the through hole of the countertop C.

[0046] The two pressing plates 21 are respectively connected with two locking rods 31 and 32. Each of the two locking rods 31 and 32 is a screw rod and comprises a screw head 33 and a threaded portion. The two locking rods 31 and 32 define the first locking rod 31 and a second locking rod 32, respectively. The threaded portion of the first locking rod 31 is screwed to one of the two pressing

plate 21, and the first locking rod 31 is configured to move relative to the base 1 between a working state (i.e., a working position) and a movable state (i.e., a movable position). The first locking rod 31, when in the working state, is connected to the first connecting base 11, and the first locking rod 31, when in the working state, is disposed in of the inlet slot 111. As required, the first locking rod 31, when in the working state, can be disposed in a whole of the inlet slot 111 or a deepest part of the inlet slot 111. Since the first locking rod 31 is configured to move relative to the base 1 between the working state and the movable state, the movement of the first locking rod 31 comprises movement along a plane perpendicular to the first direction. That is, the first locking rod 31 is configured to move relative to the base 1 in a horizontal direction. The threaded portion of the second locking rod 32 is screwed to the other one of the two pressing plates 21, and the second locking rod 32 passes through the connecting hole 121 of the second connecting base 12. That is, the second locking rod 32 always remains in a working state. With respect to the two locking rods 31 and 32, the first locking rod 31 is configured to move in the horizontal direction, so that the first locking rod 31 moves between the working state and the movable state to drive the pressing block mechanism 2 to change between the unfolded state and the folded state.

[0047] The screw heads 33 of the two locking rods 31 and 32, when in the working state, abut top surfaces of the two connecting bases 11 and 12. The threaded portions of the two locking rods 31 and 32 are screwed to the two pressing plates 21, and the two locking rods 31 and 32 rotate to drive the two pressing plates 21 to move upward. That is, a distance between the two pressing plates 21 and the base 1 can be controlled, and the two pressing plates 21 and the base 1 are configured to be clamped to the countertop C to achieve a fixed connection due to the two locking rods 31 and 32.

[0048] In this embodiment, the two pressing plates 21 comprise locking holes 211, and inner sides of the two pressing plates 21 are embedded with nuts 22. Each of the nuts 22 is aligned with a corresponding the locking hole 211. The threaded portions of the two locking rods 31 and 32 are screwed to the nuts 22. In some embodiments, side walls of the two pressing plates 21 extend inward to define mounting grooves 212 in communication with the locking holes 211, and the nuts 22 are disposed in the mounting grooves 212. The mounting grooves 212 are configured to restrict axial positioning and rotation of the nuts 22 to facilitate processing and assembly and to enhance threaded connection strength. Positions of the nuts 22 of the two pressing plates 21 are staggered in the first direction to facilitate assembly, compact the structure, and provide more space for an installation of a water pipe of the faucet A.

[0049] In this embodiment, the fixing device B further comprises a rotation shaft 23, and the two pressing plates 21 are rotatably connected together by the rotation shaft 23. In some embodiments, each of the two pressing

plates 21 comprises a semicircular plate, and two arc ends of the semicircular plate define a first end and a second end, respectively. The rotation shaft 23 is connected to the first ends of the two pressing plates 21, and the two locking rods 31 and 32 are respectively connected to the second ends of the two pressing plates 21. A connection strength between the two locking rods 31 and 32 and the two pressing plates 21 is enhanced to ensure the two pressing plates 21 tightly abut a lower side of the countertop C to improve a connection strength and to facilitate the first locking rod 31 moving to drive the pressing block mechanism 2 to change between the unfolded state and the folded state. Moreover, the configuration provides more space for the installation of the water pipe of the faucet A. Further, the first end of one pressing plate 21 of the two pressing plates 21 protrudes to define a protrusion 213, and the first end of the other pressing plate 21 of the two pressing plates 21 extends inward to define a coupling groove 214. The protrusion 213 cooperates with and is disposed in the coupling groove 214. The rotation shaft 23 passes through the first end of the other pressing plate 21 and the protrusion 213 to enhance the connection strength between the two pressing plates 21, compact the structure, and provide more space for the installation of the water pipe of the faucet A. As needed, one end of the rotation shaft 23 is fixed with a plug, and the other end of the rotation shaft 23 cooperates with a buckle 231 to enable the rotation shaft 23 to be rotatably connected to the two pressing plates 21. In some embodiments, surfaces of the semicircular plates of the two pressing plates 21 facing each other extend inward to define given spaces 24 to provide a larger space for the installation of the water pipe of the faucet A.

[0050] In this embodiment, each of the two pressing plate 21 comprises a pressing block 215 and an anti-skid pad 216 fixedly disposed on the pressing block 215. End surfaces of the two anti-skid pads 216 are aligned to ensure that the two pressing plates 21 tightly abut the countertop C, so that a friction coefficient between the two anti-skid pads 216 and the countertop C is increased, a friction force is increased, and a connection strength is increased. In some embodiments, top surfaces of the pressing blocks 215 extend inward to define slots, and lower ends of the two anti-skid pads 216 are disposed with posts 217. The posts 217 couple with and are disposed in the slots. The anti-skid pads 216 surround outer sides the two locking rods 31 and 32.

[0051] The base 1 is fixedly assembled to the faucet A. For example, a bottom portion of the faucet A cooperates with and is disposed in the base 1. A screw A5 is configured to enable the base 1 to be fixedly assembled to the faucet A. The faucet A is fixedly disposed on the countertop C through the fixing device B.

[0052] An assembly method of the faucet installation device is as follows. Step 1, referring to FIG. 3, the pressing block mechanism 2 is in the folded state, and the pressing block mechanism 2 passes through the through hole of the countertop C in a downward direction. Step

2, referring to FIG. 4, the second locking rod 32 moves to enable the second locking rod 32 and the first locking rod 31 to be unfolded, and the first locking rod 31 moves to drive the two pressing plates 21 of the pressing block mechanism 2 to be unfolded. The first locking rod 31, when in the working state, is disposed in the inlet slot 111, the two pressing plates 21 of the pressing block mechanism 2 are in the unfolded state. Step 3, referring to FIG. 5, the first locking rod 31 is tightened. Step 4, referring to FIG. 6, the second locking rod 32 is tightened. Step 5, referring to FIG. 7, water pipes A7 pass through the faucet installation device, and the water pipes A7 are in communication with the control valve A6. Step 6, referring to FIG. 8, the faucet A surrounds an outer side of the base 1. Step 7, referring to FIG. 9, the base 1 is locked to the faucet A through the screw A5. Compared with traditional installations, the faucet installation device of the present disclosure can be installed on the countertop C directly, and the user need not lie on the ground for installation. The simple installation method gives a better user experience. Further, stress points of the two pressing plates 21 of the pressing block mechanism 2 comprise the second ends of the two pressing plates 21 respectively connected to the two locking rods 31 and 32 and the first ends of the two pressing plates 21 connected to the rotation shaft 23. That is, the stress points of the pressing block mechanism 2 comprise the three positions, the three positions define a triangular structure, so the fixing device B can endure greater rotation torque and push-pull torque to ensure installation stability. Moreover, a three-point surface is the most reliable. In this embodiment, F (left and right rotation torque) ≥ 4.5 N.M (Newton-meter); F (forward and backward push-pull torque) ≥ 16.5 N.M. Still further, in this embodiment, the faucet installation device has a larger scope of application. With respect to kitchen faucets, three hoses with joints (i.e., a diameter of 10 mm, a size of 3/8") (D2 in FIG. 12) and a drawing pipe with an outer diameter of 20 mm (D1 in FIG. 12) pass through the faucet installation device. Also, two hoses with joints (i.e., a size of G1/2) pass through the faucet installation device. According to basin faucets, two hoses with joints (i.e., a diameter of 10 mm, a size of 3/8") pass through the faucet installation device.

[0053] A disassembly method of the faucet installation device is as follows. Step 1, loosening the screw A5 locked to the base 1 and the faucet A. Step 2, taking out the faucet A. Step 3, removing the hoses (i.e., the water pipes A7). Step 4, loosening the second locking rod 32. Step 5, loosening the first locking rod 31. Step 6, moving the first locking rod 31 to the movable state to drive the pressing block mechanism 2 to be in the folded state. Step 7, taking out the pressing block mechanism 2 from the through hole of the countertop C and taking out a basin. The disassembly method is simple and convenient to provide the user with a better experience.

[0054] The fixing device B of this embodiment has the following advantages. First, the fixing device B is not lim-

ited by a height of the basin and has strong torsion strength and push-pull strength, provides a large space for pipes to pass through, and can achieve quick assembly and quick disassembly. Second, the structure is simple, and the assembly is easy. Third, the components are few, the structure is stable, and the fixing device B has cost advantages. Fourth, the space is large (such that the three hoses with joints (i.e., a diameter of 10 mm, a size of 3/8") and the drawing pipe with the outer diameter of 18 mm can fit therein). Fifth, development cost is reduced.

[0055] FIGS. 13 and 14 are schematic views of the two basin faucets using the fixing device B.

[0056] The aforementioned embodiments are merely some embodiments of the present disclosure, and the scope of the disclosure of is not limited thereto. Thus, it is intended that the present disclosure cover any modifications and variations of the presently presented embodiments provided they are made without departing from the appended claims and the specification of the present disclosure.

Claims

1. A fixing device (B), comprising

a base (1), and
a pressing block mechanism (2),
the base (1) and the pressing block mechanism (2) are disposed in a first direction,
the base (1) comprises an inner side wall,
the pressing block mechanism (2) comprises two pressing plates (21), **characterized in that**

the two pressing plates (21) are respectively connected to a locking rod (31, 32),
the two pressing plates (21) are rotatably connected together to change between an unfolded state and a folded state,
a rotation axis of the two pressing plates (21) is disposed in the first direction,
outlines of the pressing block mechanism (2) in the unfolded state and the folded state are different,
the inner side wall of the base (1) protrudes to define two connecting bases (11, 12),
at least one of the locking rods (31, 32) is configured to move relative to the base (1) between a working state and a movable state,
movement of the at least one of the locking rods (31, 32) between the working state and the movable state cooperates with the change of the pressing block mechanism (2) between the unfolded state and the folded state, and
the locking rods (31, 32), when in the work-

- ing state, cooperate with the two connecting bases (11, 12) to enable a fixed object to be clamped between the two pressing plates (21) and the base (1) to achieve a fixed connection through the locking rods (31, 32).
2. The fixing device according to claim 1, **characterized in that**
- the locking rods (31, 32) comprises two locking rods (31, 32), and
the two locking rods (31, 32) are configured to move relative to the base (1) between the working state and the movable state.
3. The fixing device according to claim 1, **characterized in that**
- the locking rods (31, 32) comprise a first locking rod (31) and a second locking rod (32),
the two connecting bases (11, 12) comprise a first connecting base (11) and a second connecting base (12),
the first locking rod (31) is configured to move relative to the base (1) between the working state and the movable state,
the second locking rod (32) is connected to the second connecting base (12) and is always in the working state, and
when the first locking rod (31) is in the working state,
the first locking rod (31) is connected to the first connecting base (11).
4. The fixing device according to claim 1, **characterized in that**
- the fixing device further comprises a rotation shaft (23), wherein
the two pressing plates (21) are rotatably connected together by the rotation shaft (23).
5. The fixing device according to claim 1, **characterized in that** an area of the outline of the pressing block mechanism (2) in the unfolded state is larger than an area of the outline of the pressing block mechanism (2) in the folded state.
6. The fixing device according to claim 1, **characterized in that**
- the at least one of the locking rods (31, 32) configured to move relative to the base (1) between the working state and the movable state is a first locking rod (31),
the first locking rod (31) cooperates with a first connecting base (11) of the two connecting bases (11, 12), and
the first locking rod (31) is configured to move
- on a plane perpendicular to the first direction to control the first locking rod (31) to be in the working state and the movable state.
7. The fixing device according to claim 1, **characterized in that** the locking rods (31, 32), when in the working state, are configured to move in the first direction to control a distance between the two pressing plates (21) and the base (1) to enable the fixed object to be clamped between the two pressing plates (21) and the base (1).
8. The fixing device according to claim 3, **characterized in that**
- the second connecting base (12) comprises a connecting hole (121), and
the second locking rod (32) passes through the connecting hole (121) and is connected to a corresponding one of the two pressing plates (21).
9. The fixing device according to claims 3 or 6, **characterized in that**
- the first connecting base (11) comprises an inlet slot (111), and
the first locking rod (31), when in the working state, is disposed in the inlet slot (111).
10. The fixing device according to claim 9, **characterized in that**
- the inlet slot (111) penetrates in the first direction, and
an opening of the inlet slot (111) is disposed on an outer side wall of the first connecting base (11).
11. The fixing device according to claim 1, **characterized in that**
- the locking rods (31, 32) are screw rods,
the screw rods comprise threaded portions, and
the threaded portions are screwed to the two pressing plates (21).
12. The fixing device according to claim 4, **characterized in that**
- the two pressing plates (21) comprise first ends and second ends,
the rotation shaft (23) is connected to the first ends of the two pressing plates (21), and
the locking rods (31, 32) are connected to the second ends of the two pressing plates (21).
13. The fixing device according to claim 12, **characterized in that**

the two pressing plates (21) comprise a first pressing plate (21) and a second pressing plate (21),
 the first end of the first pressing plate (21) protrudes to define a protrusion (213),
 the first end of the second pressing plate (21) extends inward to define a coupling groove (214),
 the protrusion (213) cooperates with and is disposed in the coupling groove (214), and
 the rotation shaft (23) passes through the first end of the second pressing plate (21) and the protrusion (213).

14. The fixing device according to claim 1, characterized in that

the base (1) comprises a sleeve, and
 an inner side wall of the sleeve protrudes to define the two connecting bases (11, 12).

15. A fixing device, comprising

a base (1), and
 a pressing block mechanism (2),
 the base (1) and the pressing block mechanism (2) are disposed in a first direction,
 the base (1) comprises an inner side wall,
 the pressing block mechanism (2) comprises two pressing plates (21), **characterized in that**

the two pressing plates (21) are respectively connected to a locking rod (31, 32),
 the two pressing plates (21) are rotatably connected together to change between an unfolded state and a folded state,
 a rotation axis of the two pressing plates (21) is disposed in the first direction,
 outlines of the pressing block mechanism (2) in the unfolded state and the folded state are different,
 the inner side wall of the base (1) protrudes to define two connecting bases (11, 12),
 the locking rods (31, 32) are configured to move relatively to enable the locking rods (31, 32) to move following the change of the pressing block mechanism (2) between the unfolded state and the folded state, and
 the locking rods (31, 32) cooperate with the two connecting bases (11, 12) to enable a fixed object to be clamped between the two pressing plates (21) and the base (1) to achieve a fixed connection through the locking rods (31,32).

16. A faucet installation device comprising:

a faucet (A),

a countertop (C), and
 the fixing device (B) according to any one of claims 1 or 15, wherein

the fixed object comprises the countertop (C),
 the countertop (C) comprises a through hole,
 the base (1) and the faucet (A) are fixed together,
 the locking rods (31, 32) passes through the through hole, and
 the countertop (C) is clamped between the base (1) and the two pressing plates (21) to enable the faucet (A) to be fixed on the countertop (C).

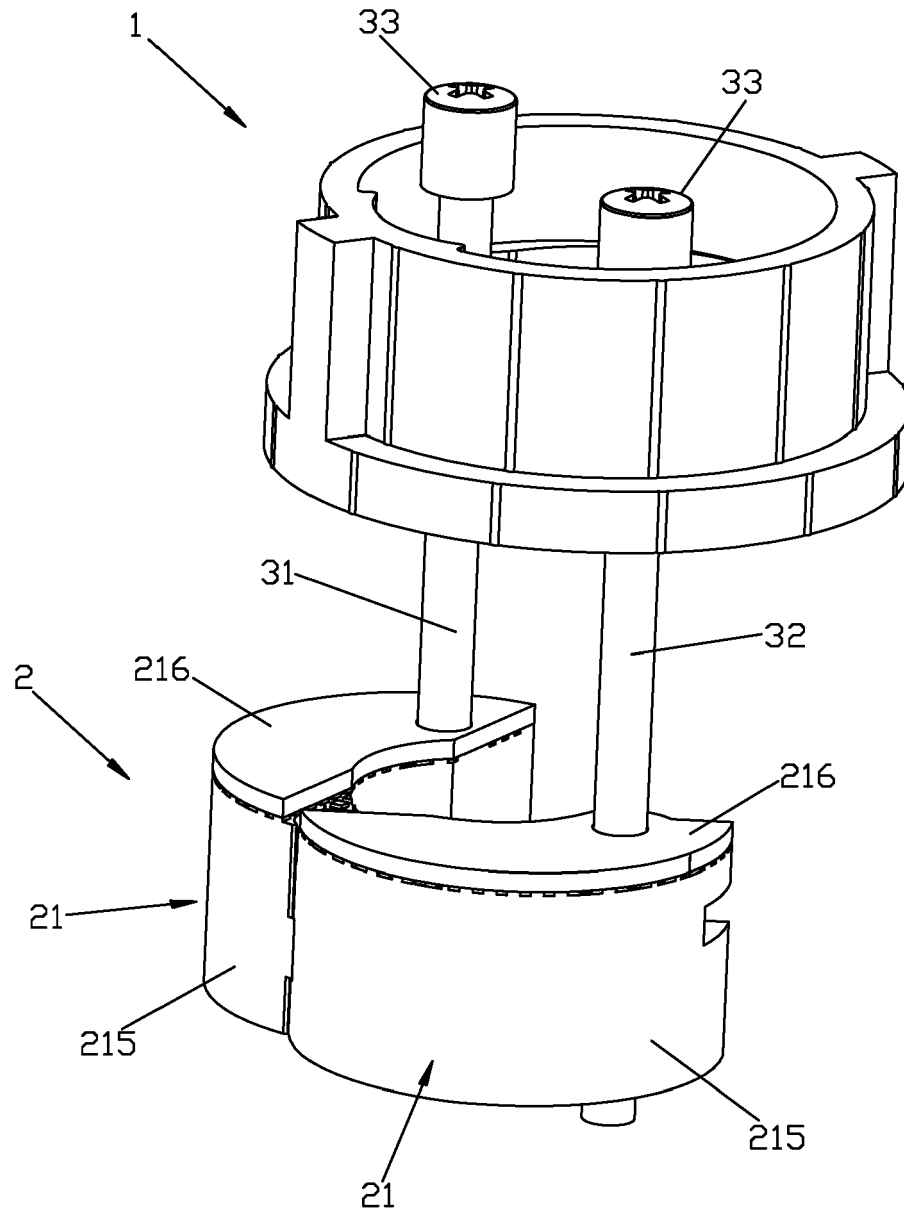


FIG. 1

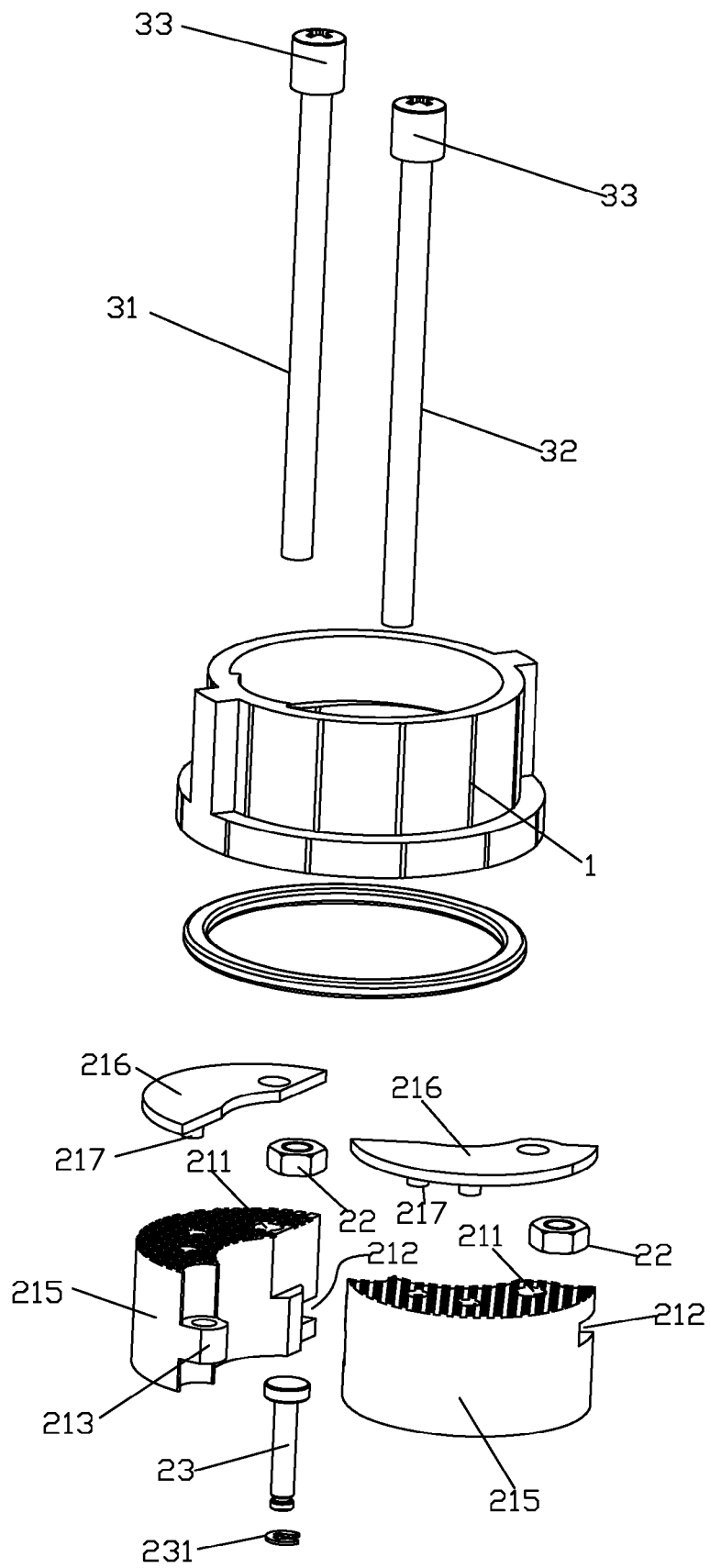


FIG. 2

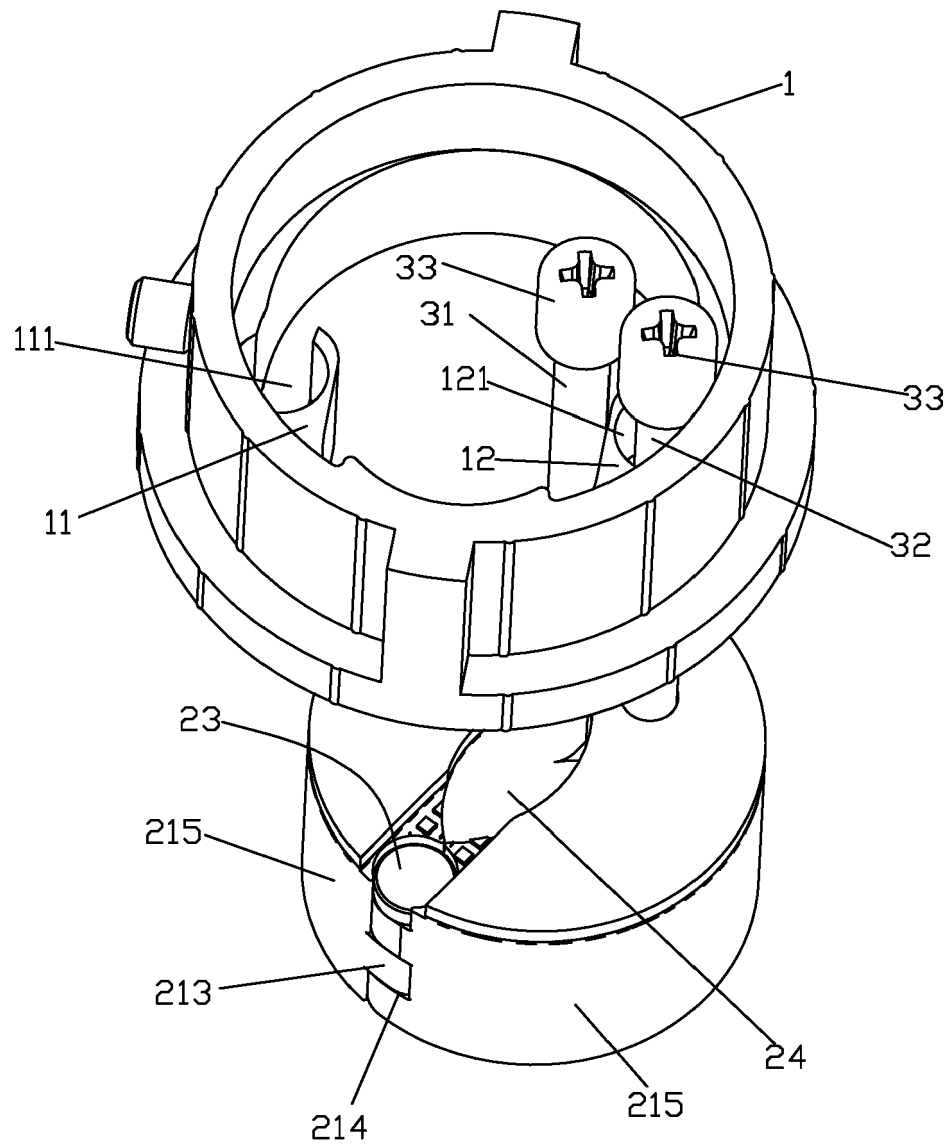


FIG. 3

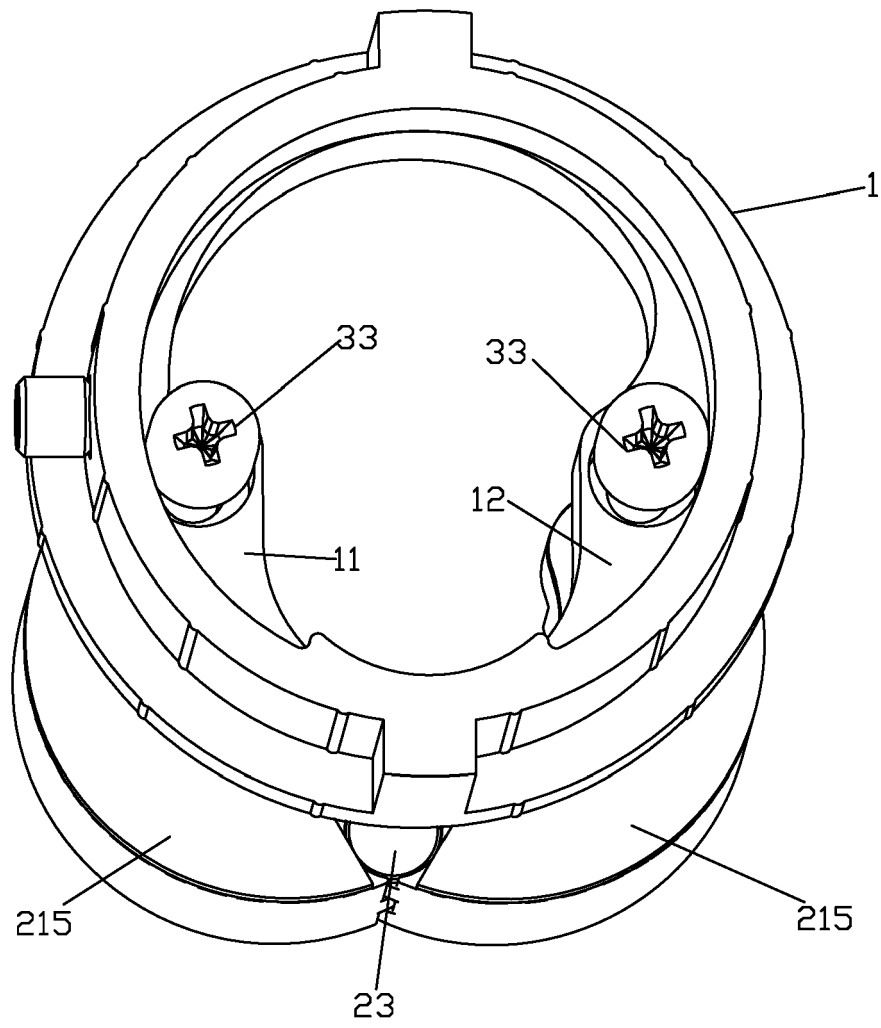


FIG. 4

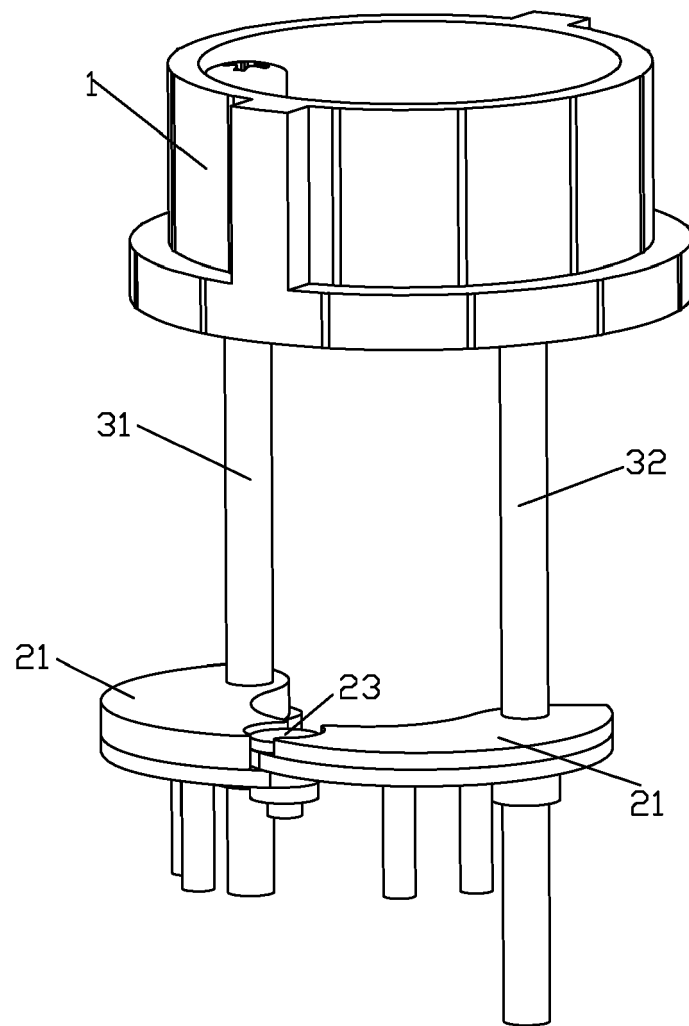


FIG. 5

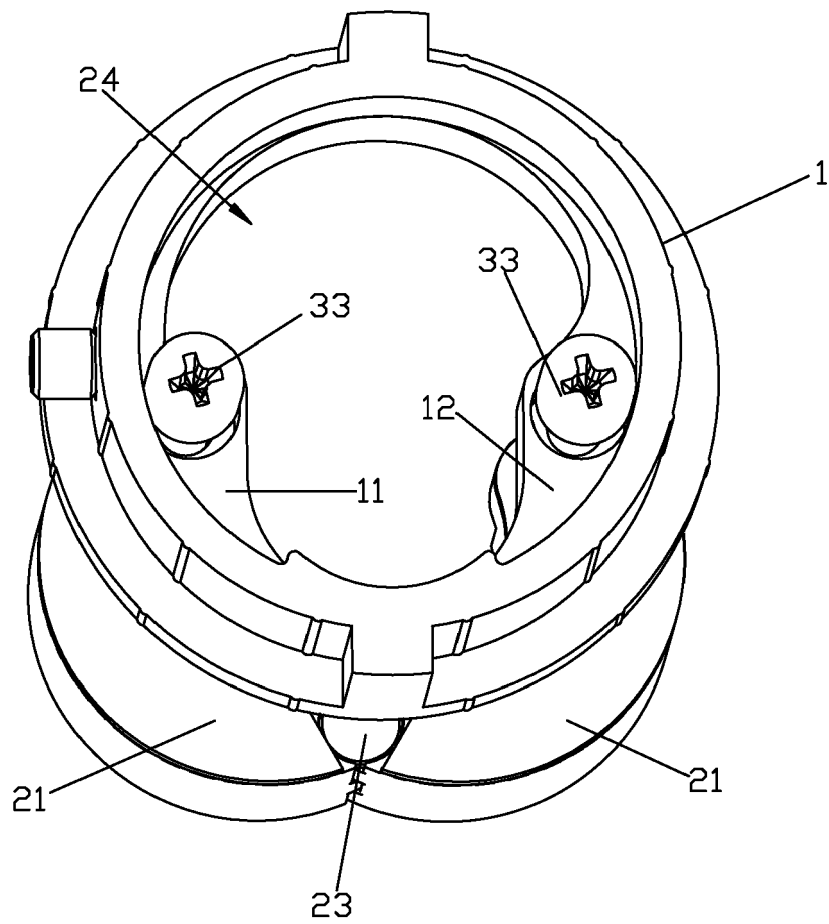


FIG. 6

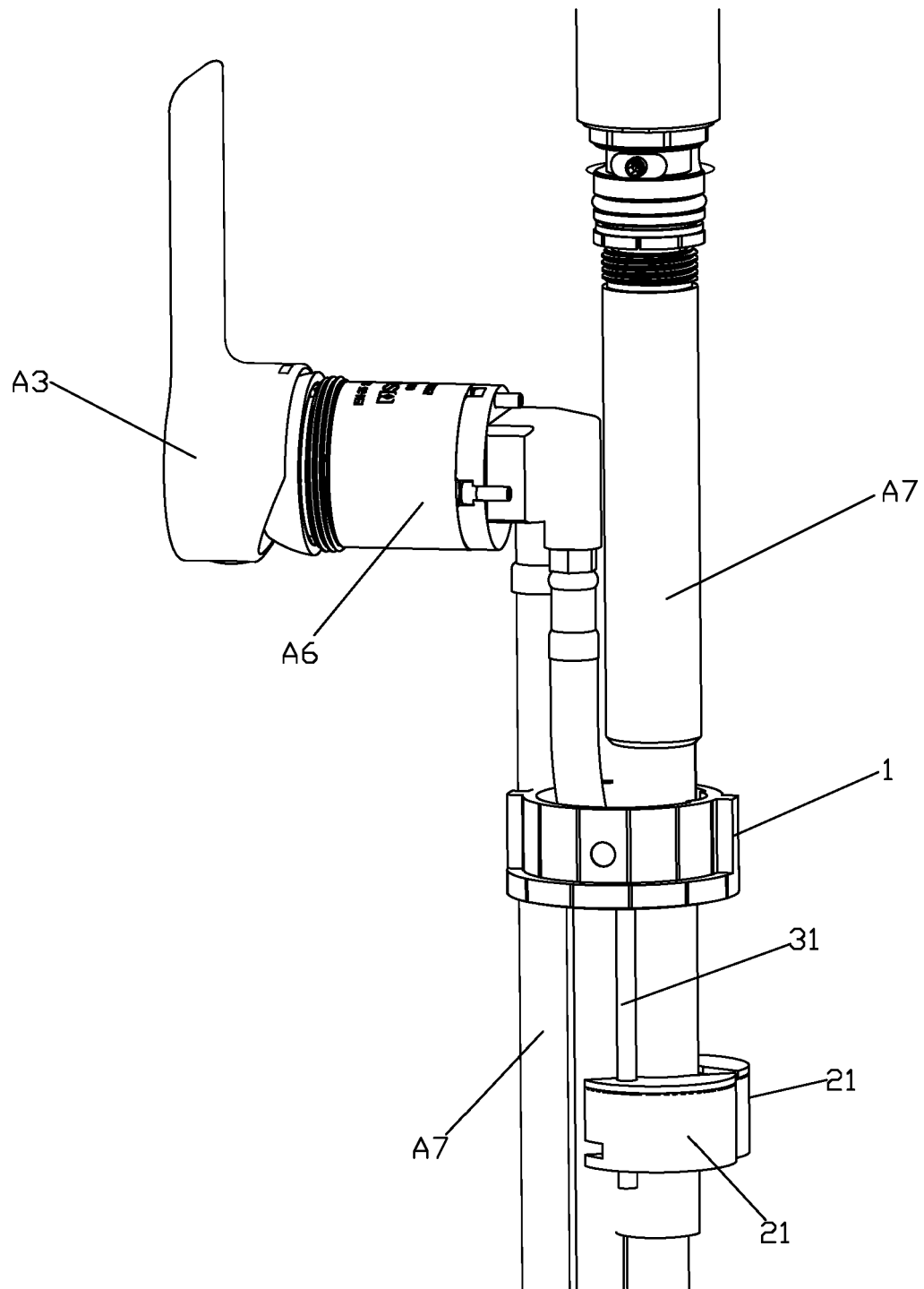


FIG. 7

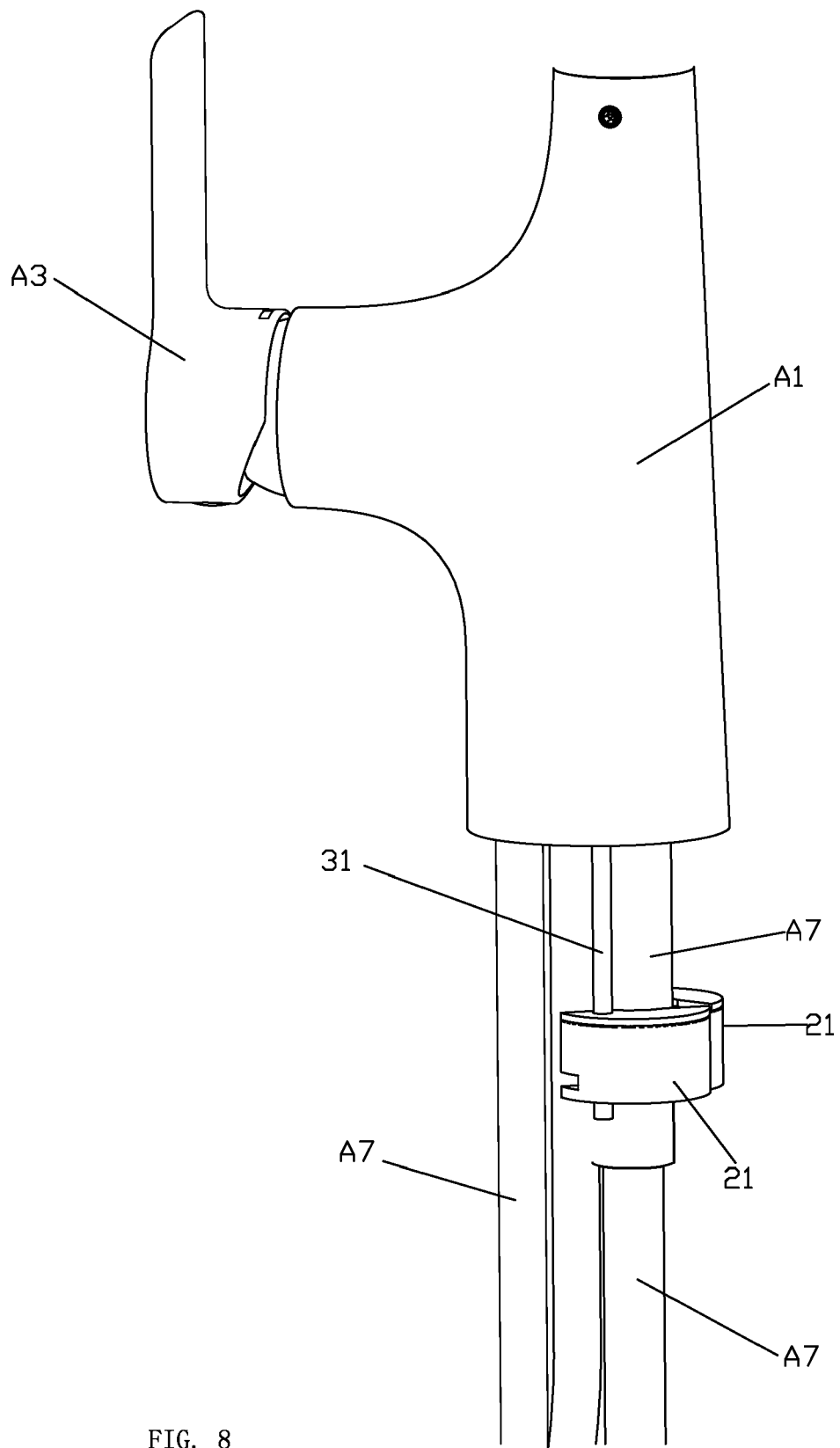


FIG. 8

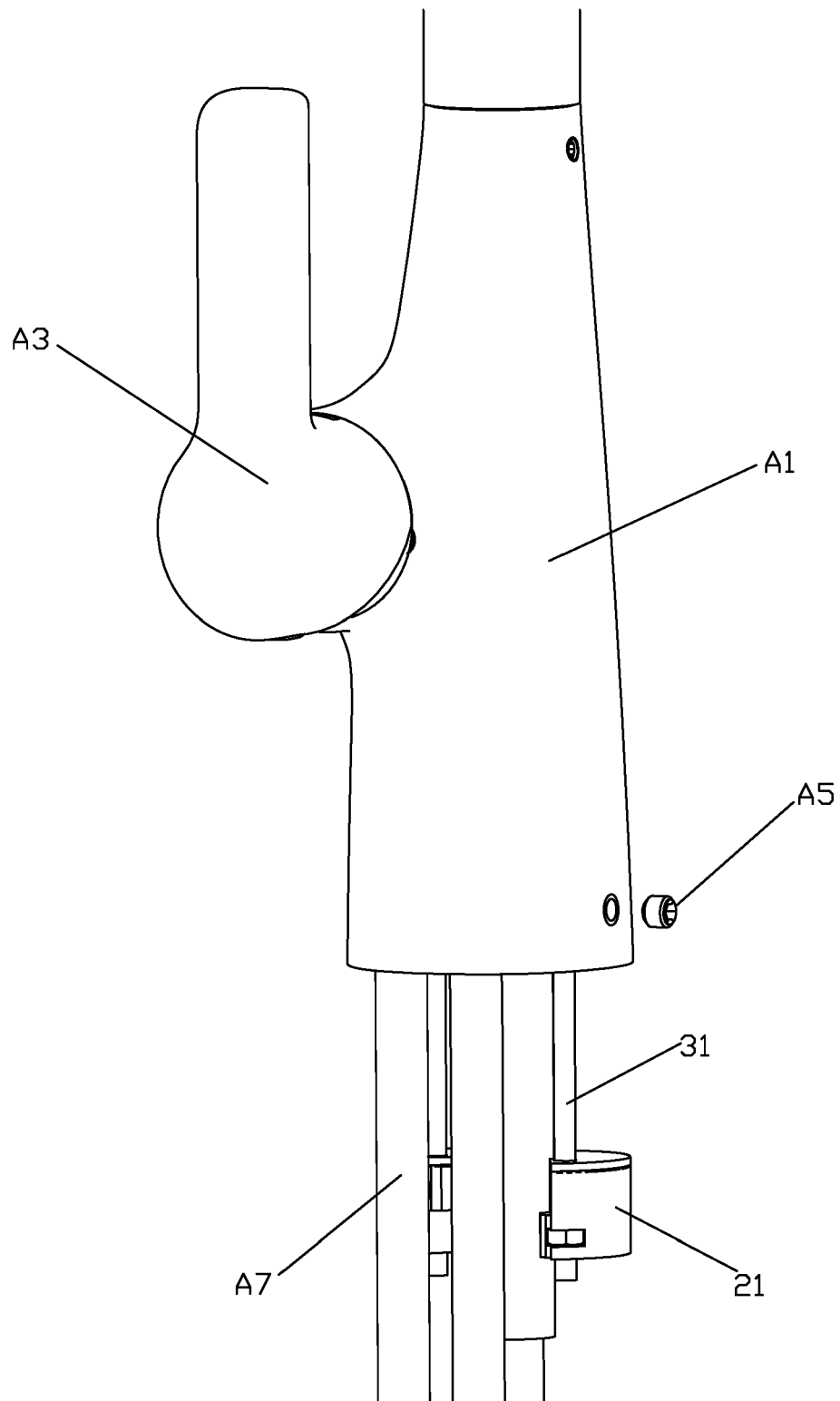


FIG. 9

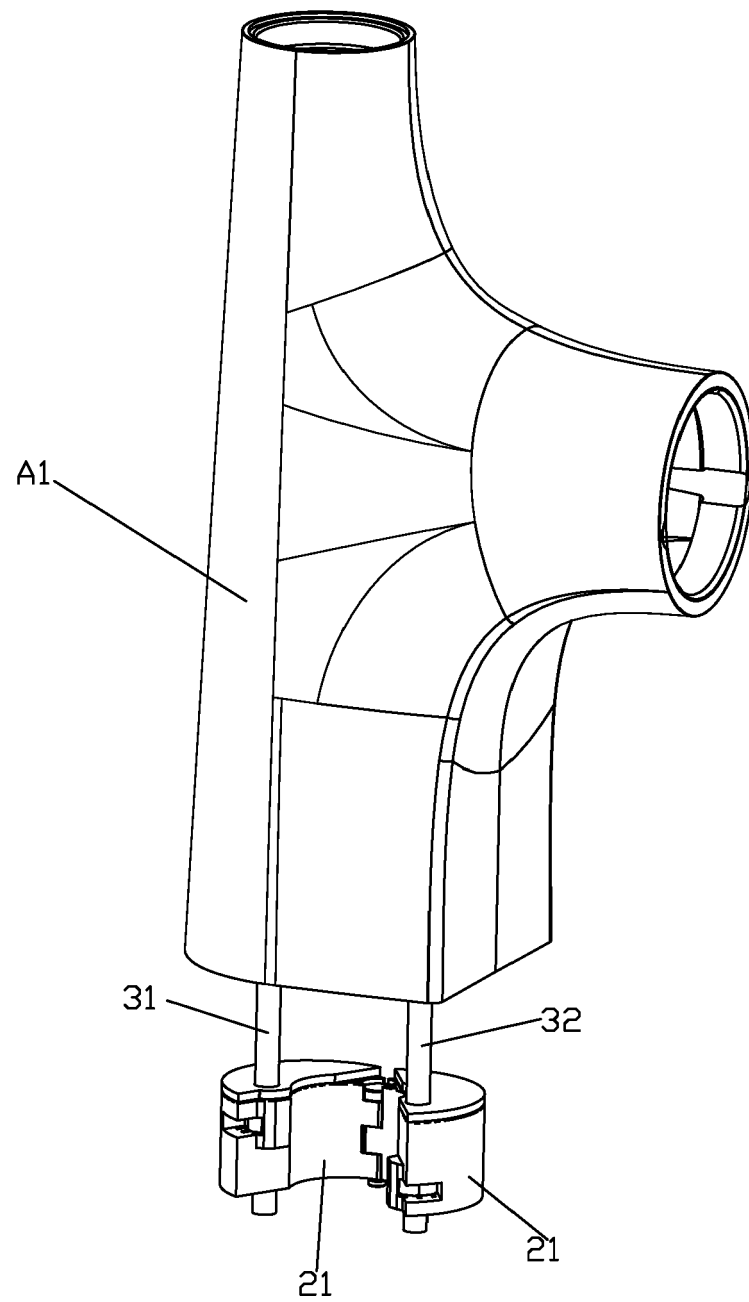


FIG. 10

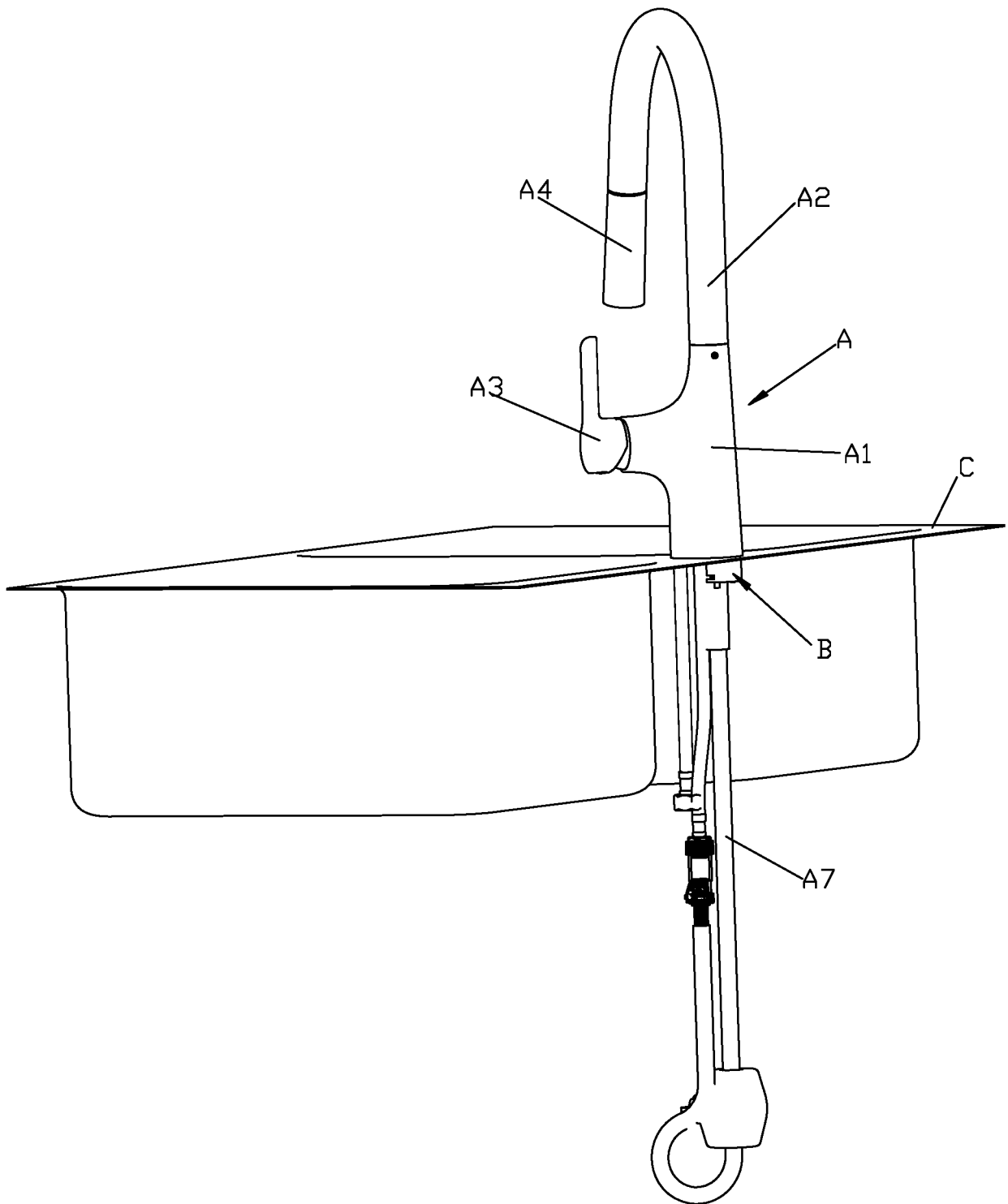


FIG. 11

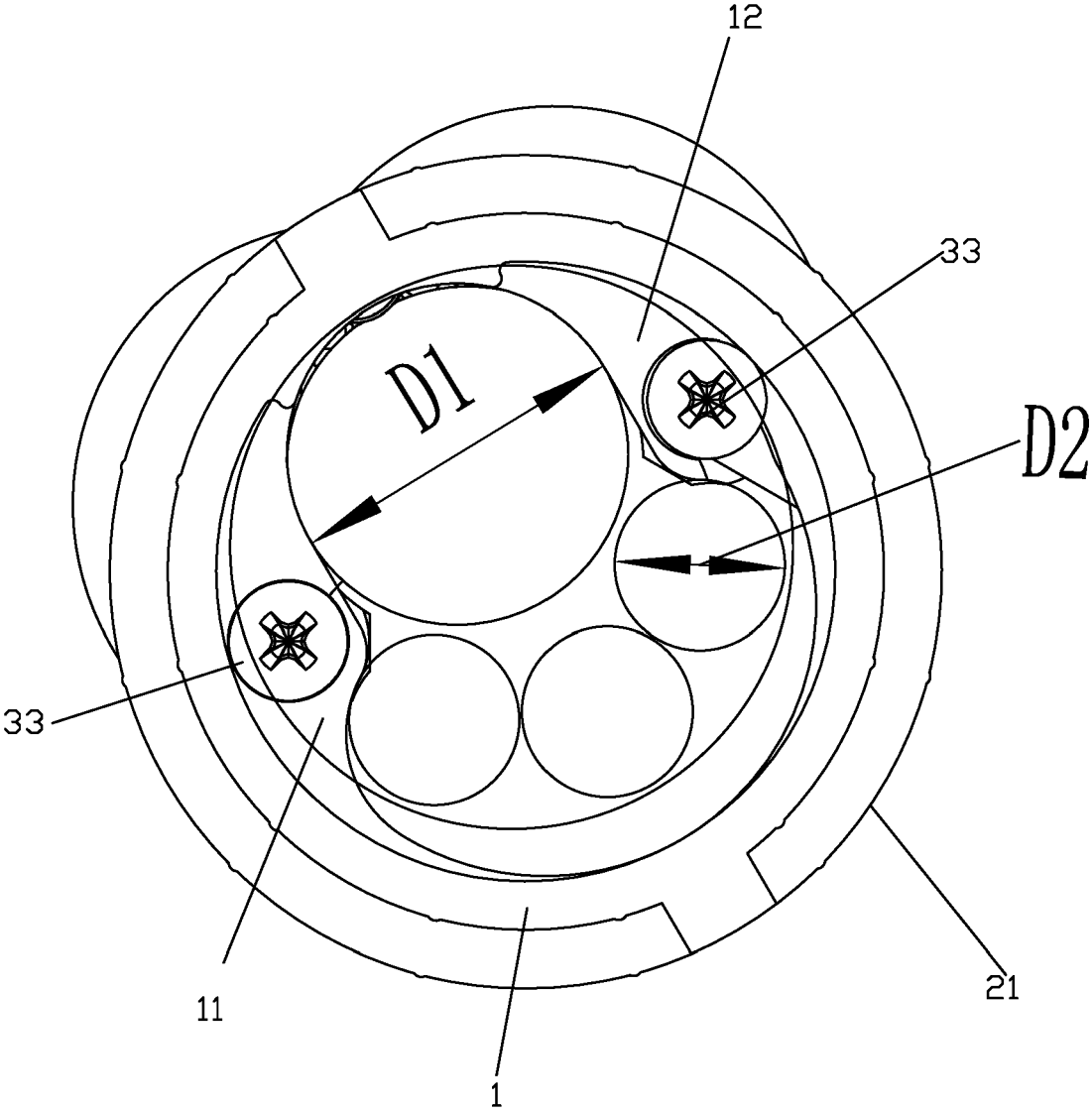


FIG. 12

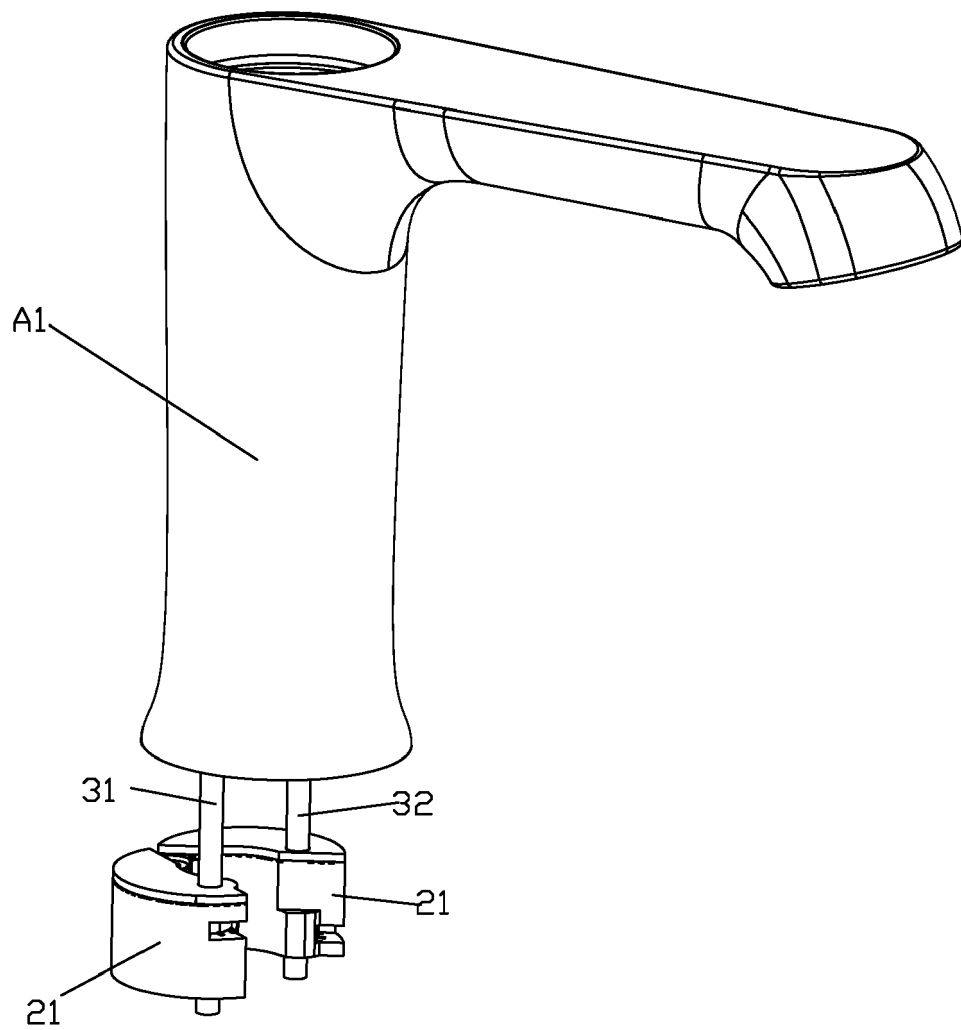


FIG. 13

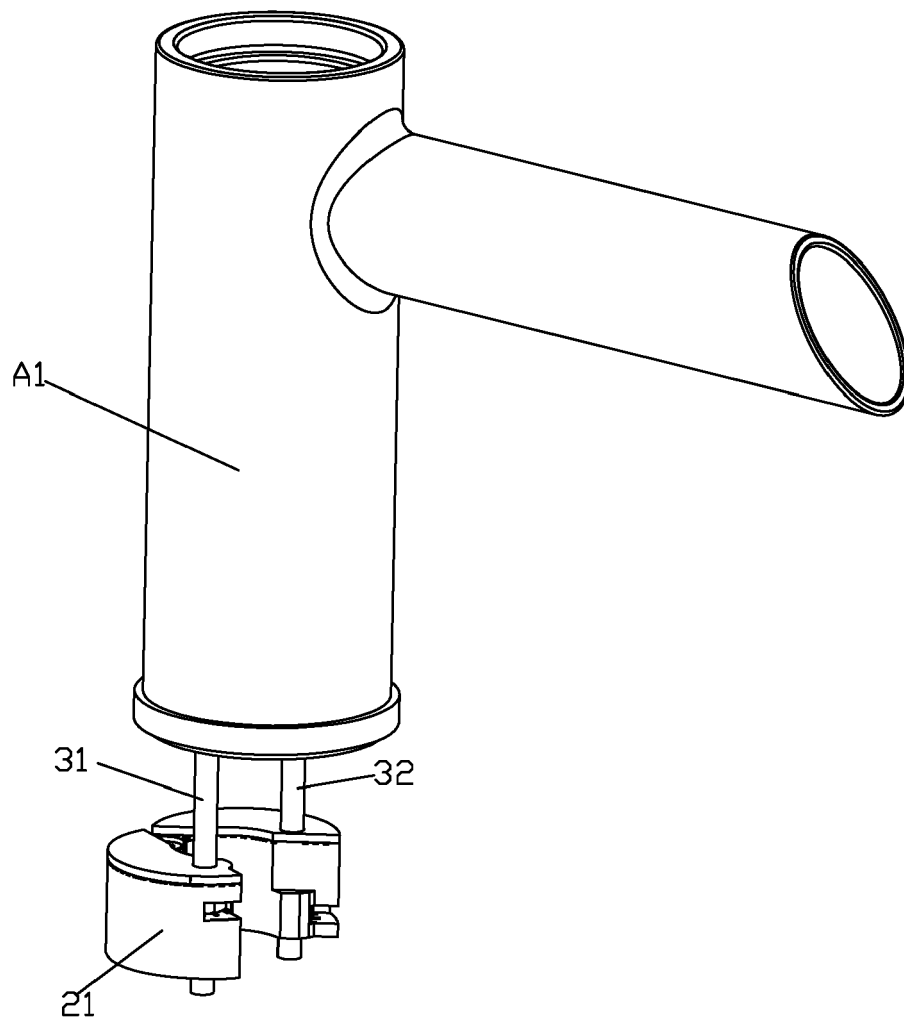


FIG. 14



EUROPEAN SEARCH REPORT

Application Number
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A	----- DE 20 2012 104488 U1 (GLOBE UNION IND CORP [TW]) 3 December 2012 (2012-12-03) * the whole document *	1	
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			E03C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 January 2021	Examiner Horst, Werner
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