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(54) **DRAIN VALVE SWITCH HAVING CLUTCH STRUCTURE, AND DRAIN VALVE**

ABLASSVENTILSCHALTER MIT KUPPLUNGSSTRUKTUR UND ABLASSVENTIL

COMMUTATEUR DE ROBINET DE VIDANGE DOTÉ D'UNE STRUCTURE D'EMBRAYAGE, ET ROBINET DE VIDANGE

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(73) Proprietor: **XIAMEN R&T PLUMBING TECHNOLOGY CO., LTD.**
Xiamen, Fujian 361028 (CN)

(72) Inventors:
• **WANG, Xingdong**
Xiamen, Fujian 361028 (CN)

• **HONG, Qicheng**
Xiamen, Fujian 361028 (CN)
• **ZHANG, Rongyu**
Xiamen, Fujian 361028 (CN)

(74) Representative: **Chung, Hoi Kan**
Mandarin IP Limited
7 Cherry Trees
Great Shelford
Cambridge CB22 5XA (GB)

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Description

BACKGROUND OF THE INVENTION

1. Technical Field

[0001] The present disclosure relates to a flushing valve actuator with a clutch structure, and a flushing valve.

2. Description of Related Art

[0002] The switch (button switch or wrench switch) of the flushing valve for the existing toilet is directly locked on the water tank cover through thread connection, and can be directly disassembled simply by rotating the switch body without the aid of special tools.

[0003] The drain valve switch used at home is safe and will not be disassembled and taken away at will. However, the switch installed in the public place is likely to be damaged or unscrewed and taken away by someone as it is very simple and easy to disassemble it, making it impossible to drive the drain valve in the water tank, and thereby resulting in the problem of extremely poor public health due to the toilet failure. US 2014/165280 A1 relates to an actuating device for a drain fitting, disclosing a clutch mechanism that allows the orientation of the button of a toilet flush to be adjusted. ES 2117903 A1 relates to a height adjustable uploader for toilet cisterns.

BRIEF SUMMARY OF THE INVENTION

[0004] To resolve the foregoing technical problem, the present disclosure provides a flushing valve actuator, including a switch body, a switch mounted in the switch body, a thread member, and a clutch structure comprising a linkage member movable between a first position and a second position; when the linkage member is located at the first position, the switch body drives the thread member to rotate through the linkage member, thus allowing locking or unlocking of the entire flushing valve actuator on an installation position of a water tank or another device; when the linkage member is located at the second position, the linkage member disconnects the linkage between the switch body and the thread member, the thread member cannot be driven to screw out of the installation position even if the switch body is rotated.

[0005] When the flushing valve actuator is assembled or disassembled, the linkage member is first placed at the first position, the switch body is made to link the thread member through the linkage member, and the thread member is driven to rotate when the switch body is rotated, thus locking or unlocking the entire flushing valve actuator on an installation position of a water tank or another device. In normal use, the linkage member is adjusted to the second position. At this time, the linkage between the switch body and the thread member is disconnected, and the thread member cannot be driven

to screw out of the installation position even if the switch body is rotated. As the disassembly method for the flushing valve actuator is unique and is different from the assembly method for the flushing valve actuator available on the market, thus ensuring that the flushing valve actuator is unlikely to be disassembled.

[0006] Optionally, the thread member and the switch body are rotatably mounted together, and the linkage member is movably mounted on the switch body or on the thread member.

[0007] Optionally, the linkage member includes a driving portion, and when the switch is located in an initial position, the switch covers the driving portion; the switch leaves the initial position after being driven and exposes the driving portion for driving, so that the linkage member moves between the first position and the second position. In this way, the linkage member is set in a hidden position, making it more difficult for a person who does not know the corresponding structure to completely disassemble the flushing valve actuator.

[0008] Optionally, the thread member is provided with a linkage fitting portion, and the linkage member is provided with a corresponding linkage portion; when the linkage member is located at the first position, the linkage portion and the linkage fitting portion are in circumferential transmission fit; when the linkage member is located at the second position, the linkage portion is separated from the linkage fitting portion.

[0009] Optionally, the switch is a button, and the switch body is a button body; an inner cavity with a top opening is formed inside the button body, and the bottom of the inner cavity is provided with a through hole; both the button and the linkage member are movably installed in the inner cavity, and the thread member rotatably penetrates through the through hole and is capable of being axially limited, and the linkage fitting portion on the thread member is located in the inner cavity, and a thread portion on the thread member is located outside the button body.

[0010] Optionally, the linkage member moves between the first position and the second position along the axial direction of the thread member; when the thread member is rotated, on a plane perpendicular to the axis of the thread member, a projection trajectory drawn by the linkage fitting portion partially overlaps with a projection of the linkage portion; when the linkage member is located at the first position, the linkage portion and the linkage fitting portion align in the axial direction of the thread member, and when the switch body is rotated, the linkage portion abuts against the linkage fitting portion to form circumferential transmission fit; when the linkage member is located at the second position, the linkage portion and the linkage fitting portion misalign in the axial direction of the thread member, and the thread member is able to rotate freely relative to the linkage member.

[0011] Optionally, the linkage member includes an adjusting piece and a spring pin, and the spring pin forms the linkage portion; a periphery of a portion of the thread member located inside the switch body is provided with a

boss, and the boss forms the linkage fitting portion.

[0012] Optionally, the adjusting piece is movably mounted inside a strip groove formed in the switch body, and the length direction of the strip groove is parallel to the axis of the thread member, the spring pin is elastically supported between the adjusting piece and the switch body through an elastic member; the adjusting piece and a side wall of the strip groove are respectively provided with a retaining protrusion and a retaining groove; when the linkage member is located at the first position, the adjusting piece is located at a position where the retaining protrusion and the retaining groove are separated from each other, and the spring pin and the boss are in circumferential transmission fit under the influence of the elastic member, when the linkage member is located at the second position, the adjusting piece is located at a position where the retaining protrusion and the retaining groove are in retaining fit, and the adjusting piece overcomes the elastic force of the elastic member so that the spring pin and the boss misalign in the axial direction of the thread member; and a driving portion for manual or tool driving is disposed on a position of the adjusting piece close to the button.

[0013] Optionally, the thread member has an end located in the inner cavity and having an end diameter greater than a diameter of the through hole; and the flushing valve actuator further includes a thread member retaining cover, where the thread member retaining cover is provided with a thread hole corresponding to a thread of the thread member, the thread member retaining cover is screwed into a portion of the thread member extending out of the switch body, and the thread member is relatively rotatably mounted on the switch body through the thread member retaining cover and the end of the thread member located in the inner cavity.

[0014] Optionally, the thread member is a hollow structure open at both ends; a transmission rod penetrates through the thread member and has an end connected to the switch.

[0015] Correspondingly, a flushing valve includes the flushing valve actuator.

[0016] It can be seen from the foregoing description of the present disclosure that, compared with the prior art, a flushing valve actuator and a flushing valve of the present disclosure both include a switch, a switch body, a thread member and a clutch structure comprising a linkage member with a linkage function; a connection relationship between the switch body and the thread member can be switched by changing a position of the linkage member; when the linkage member is located at a first position so that the switch body and the thread member are in a linkage relationship, the thread member is driven by rotating the switch body, thus allowing locking or unlocking of the entire flushing valve actuator on an installation position of a water tank or another device; when the linkage member is at a second position so that the linkage relationship between the switch body and the thread member is disconnected, the switch body and the thread

member are relatively independent of each other, and the installed thread member cannot be screwed out even if the switch body is rotated, ensuring that the entire flushing valve actuator cannot be easily removed and taken away.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0017] The accompanying drawings described here are intended to provide a further understanding of the present disclosure and constitute a part of the present disclosure. The exemplary embodiments of the present disclosure and the description thereof are intended to explain the present disclosure and do not impose improper limitation on the present disclosure.

[0018] Where:

FIG. 1 is a schematic structural diagram (axial side view) of a flushing valve actuator according to the present disclosure;

FIG. 2 is a schematic structural diagram (axial side view) of a button body and an internal structure of a flushing valve actuator according to the present disclosure;

FIG. 3 is a schematic structural diagram (top view) of a button body and an internal structure of a flushing valve actuator according to the present disclosure;

FIG. 4 is a schematic structural diagram (exploded view) of a flushing valve actuator according to the present disclosure;

FIG. 5 is a schematic structural diagram (section view) of a linkage member of a flushing valve actuator of the present disclosure at a first position;

FIG. 6 is a schematic structural diagram (section view) of a linkage member of a flushing valve actuator of the present disclosure at a second position; and FIG. 7 is a schematic structural diagram (section view) of a flushing valve actuator of the present disclosure when its button is pressed.

[0019] The reference signs in FIGs. 1-7 respectively indicate: 10-button, 20-button body, 21-inner cavity, 30-thread member, 31-boss, 40-linkage member, 41-adjusting piece, 42-spring pin, 43-driving portion, 44-elastic member, 50-transmission rod, 60-thread member retaining cover.

DETAILED DESCRIPTION OF THE INVENTION

[0020] To make the technical problem to be solved by the present disclosure, the technical solution and beneficial effects more comprehensible, the present disclosure will be further described in detail below with reference to the accompanying drawings and embodiments. It should be understood that the specific embodiments described herein are merely intended to explain the present disclosure, rather than to limit the present disclo-

sure.

[0021] Embodiment 1: a flushing valve actuator includes a switch body, a switch mounted in the switch body, a thread member 30, and a linkage member 40 movable between a first position and a second position; when the linkage member 40 is located at the first position, the switch body drives the thread member 30 to rotate through the linkage member, and the switch body is locked or unlocked through the thread member 30; when the linkage member 40 is located at the second position, the linkage member 40 disconnects the linkage between the switch body and the thread member 30, and the switch body cannot be locked or unlocked through the thread member 30. The flushing valve actuator of the present disclosure may be installed on a water tank, a toilet or the like that contains a drain valve. When the switch body is rotated forward, the switch body can be locked on the water tank or the toilet through the thread member 30, and when the switch body is rotated backward, the switch body can be unlocked from the water tank or the toilet through the thread member 30.

[0022] When the flushing valve actuator is assembled, the linkage member 40 is placed at the first position first, and the switch body links the thread member 30 through the linkage member 40. When the switch body is rotated, the thread member 30 is driven to rotate, thus locking the entire flushing valve actuator on the water tank, toilet or another device. After the installation is completed, the linkage member 40 is adjusted to the second position. At this time, the linkage between the switch body and the thread member 30 is disconnected, and the thread member 30 cannot be driven to screw out of the installation position even if the switch body is rotated, thereby ensuring uneasy assembly of the flushing valve actuator.

[0023] Embodiment 2: referring to FIG. 1, on the basis of Embodiment 1, in this embodiment, the thread member 30 and the switch body are rotatably mounted together, and the linkage member 40 is movably mounted on the switch body. It is easy to understand that the linkage member 40 can also be movably mounted on the thread member 30. Specifically, the switch is a button 10, the button 10 includes a button decorative piece, the switch body is a button body 20, and the thread member 30 is a hollow structure open at both ends; a transmission rod 50 penetrates through the thread member 30, and one end of the transmission rod 50 is connected to the switch. When the button 10 is pressed down, the button 10 drives the transmission rod 50 to move downward, and the lower end of the transmission rod 50 actuates an activation assembly (not shown) of the drain valve, thus opening the drain valve to drain water. The flushing valve actuator also includes a button elastic member. After an external force pressing the button 10 is removed, under the influence of the button elastic member, the button 10 drives the transmission rod 50 to reset to initial positions together.

[0024] In this embodiment, the linkage member includes a driving portion 43. When the button 10 is in

an initial position, the button 10 covers the driving portion 43; the button 10 leaves the initial position after being driven and exposes the driving portion 43 for driving, so that the linkage member moves between the first position and the second position.

[0025] Refer to FIG. 2, an inner cavity 21 with a top opening is formed inside the button body 20, and the bottom of the inner cavity 21 is provided with a through hole. Both the button 10 and the linkage member 40 are movably installed in the inner cavity 21, and the thread member 30 rotatably penetrates through the through hole and is capable of being axially limited. A linkage fitting member on the thread member 30 described below is located in the inner cavity 21, and a threaded portion on the threaded member is located outside the button body 20.

[0026] One end of the thread member 30 extends through the through hole into the inner cavity 21 and is close to the linkage member 40, and an end diameter of the thread member 30 at this end is greater than a diameter of the through hole to ensure that the thread member 30 will not fall off from the through hole.

[0027] A portion of the thread member 30 located in the inner cavity 21 is provided with a linkage fitting portion, and the linkage member 40 is provided with a corresponding linkage portion. When the linkage member 40 is located at the first position, the linkage portion and the linkage fitting portion are in circumferential transmission fit; when the linkage member 40 is located at the second position, the linkage portion is separated from the linkage fitting portion. Specifically, the linkage member 40 moves between the first position and the second position along the axial direction of the thread member 30. When the thread member 30 is rotated, on a plane perpendicular to the axis of the thread member 30, a projection trajectory drawn by the linkage fitting portion partially overlaps with a projection of the linkage portion (referring to FIG. 3). When the linkage member 40 is located at the first position, the linkage portion and the linkage fitting portion align in the axial direction of the thread member 30, and when the thread member 30 is rotated, the linkage portion abuts against the linkage fitting portion to form circumferential transmission fit. When the linkage member 40 is located at the second position, the linkage portion and the linkage fitting portion misalign in the axial direction of the thread member 30, and the thread member 30 can rotate freely relative to the linkage member 40.

[0028] In this embodiment, referring to FIGs. 2 to 6, the linkage member 40 includes an adjusting piece 41 and a spring pin 42, the spring pin 42 forms the linkage portion; a periphery of a portion of the thread member 30 located inside the inner cavity 21 of the switch body 20 is provided with a boss 31, and the boss 31 forms the linkage fitting portion. The adjusting piece 41 is movably mounted inside a strip groove formed in an inner wall of the inner cavity 21, the length direction of the strip groove is parallel to the axis of the thread member 30, the spring pin 42 is

elastically supported between the bottom of the adjusting piece 41 and the bottom wall of the inner cavity 21 through an elastic member 44, and the elastic member 44 is preferably a compression spring; the adjusting piece 41 and a side wall of the strip groove are respectively provided with a retaining protrusion and a retaining groove; when the linkage member 40 is located at the first position, the adjusting piece 41 is located at a position where the retaining protrusion and the retaining groove are separated from each other, the spring pin 42 and the boss 31 are in circumferential transmission fit under the influence of the elastic member 44; when the linkage member 40 is at the second position, the adjusting piece 41 is located at a position where the retaining protrusion and the retaining groove are in retaining fit, and the adjusting piece 41 overcomes the elastic force of the elastic member 44 so that the spring pin 42 and the boss 31 misalign in the axial direction of the thread member 30; and a driving portion 43 for manual or tool driving is disposed at a position of the adjusting piece 41 close to the button 10. Specifically, the driving portion 43 is a toggle groove. During installation or assembly, a position of the adjusting piece 41 is toggled by using the toggle groove, thereby changing the position of the spring pin 42 so that the spring pin 42 moves between positions corresponding to and misalign with the boss 31. Referring to FIGs. 5 and 6, when the button 10 is in an initial position, the button 10 covers the driving portion 43 of the linkage member 40; in order to toggle the adjusting piece 41 in the switch body, the button 10 needs to be driven so that the button 10 leaves the initial position (as shown in FIG. 7), thereby exposing the driving portion 43 of the linkage member 40. In this way, as a position of the linkage member 40 is hidden, a person who does not know the corresponding structure is unable to completely disassemble the flushing valve actuator.

[0029] The flushing valve actuator further includes a thread member retaining cover 60. The bottom of the thread member retaining cover 60 is provided with a thread hole corresponding to a thread of the thread member 30, and the thread member retaining cover 60 is screwed into a portion of the thread member 30 extending out of the switch body, and the thread member 30 is rotatably mounted on the switch body through the thread member retaining cover 60 and an end of the thread member 30 located in the inner cavity 21.

[0030] When the flushing valve actuator is assembled, the switch is placed to expose a driving portion of the adjusting piece 41, and the adjusting piece 41 is toggled upward so that the adjusting piece 41 is located at a position where the retaining protrusion and the retaining groove are separated from each other. The spring pin 42 moves upward under the influence of the elastic member to circumferentially transmission-fit with the boss 31 (referring to FIG. 5). At this time, the button body 20 is rotated to drive the thread member 30 through the adjusting piece 41, the spring pin 42 and the boss 31, thus assembling or disassembling the flushing valve actuator,

that is, locking or unlocking the drain switch. After the installation is complete, the adjusting piece 41 is toggled downward so that the adjusting piece 41 is located at a position where the retaining protrusion and the retaining groove are in retaining fit, and the adjusting piece 41 overcomes the elastic force of the elastic member so that the spring pin 42 and the boss 31 misalign in the axial direction of the thread member 30 (referring to FIG. 6), thereby releasing a linkage relationship between the button body 20 and the thread member 30.

[0031] Embodiment 3: a flushing valve actuator with a clutch structure in the foregoing embodiment.

[0032] It can be seen from the foregoing description of the present disclosure that, compared with the prior art, a flushing valve actuator comprising a clutch structure, and a flushing valve of the present disclosure both include a switch, a switch body, a thread member and a clutch structure comprising a linkage member with a linkage function; a connection relationship between the switch body and the thread member can be switched by changing a position of the linkage member; when the linkage member is located at a first position, the switch body and the thread member are in a linkage relationship, the thread member is driven by rotating the switch body, to lock or unlock the thread member, thereby realizing the locking or unlocking of the switch body; when the linkage member is at a second position so that the linkage relationship between the switch body and the thread member is disconnected, the switch body and the thread member are relatively independent of each other, that is, the switch body cannot be locked or unlocked through the thread member, and the installed thread member cannot be screwed out even if the switch body is rotated, ensuring that the entire drain valve switch cannot be easily removed and taken away.

Claims

1. A flushing valve actuator comprising a switch body (20), a switch (10) mounted in the switch body (20), a thread member (30), and a clutch structure comprising a linkage member (40), **characterised in that** in use the linkage member (40) is movable between a first position and a second position; when the linkage member (40) is located at the first position, the switch body (20) drives the thread member (30) to rotate through the linkage member (40), thus allowing locking or unlocking of the entire flushing valve actuator on an installation position of a water tank or another device; when the linkage member (40) is located at the second position, the linkage member (40) disconnects the linkage between the switch body (20) and the thread member (30), thus the thread member (30) cannot be driven to screw out of the installation position even if the switch body (20) is rotated.
2. The flushing valve actuator according to claim 1,

characterized in that the thread member (30) and the switch body (20) are rotatably mounted together, and the linkage member (40) is movably mounted on the switch body (20) or on the thread member (30).

3. The flushing valve actuator according to claim 1, **characterized in that** the linkage member (40) comprises a driving portion (43), and when the switch (10) is located in an initial position, the switch (10) covers the driving portion (43); the switch (10) leaves the initial position after being driven and exposes the driving portion (43) for driving, so that the linkage member (40) moves between the first position and the second position.
4. The flushing valve actuator according to any one of claims 1 to 3, **characterized in that** the thread member (30) is provided with a linkage fitting portion, and the linkage member (40) is provided with a corresponding linkage portion; when the linkage member (40) is located at the first position, the linkage portion and the linkage fitting portion are in circumferential transmission fit; when the linkage member (40) is located at the second position, the linkage portion is separated from the linkage fitting portion.
5. The flushing valve actuator according to claim 4, **characterized in that** the switch (10) is a button, and the switch body (20) is a button body; an inner cavity (21) with a top opening is formed inside the button body (20), and a bottom of the inner cavity is provided with a through hole; both the button (10) and the linkage member (40) are movably installed in the inner cavity (21), and the thread member (30) rotatably penetrates through the through hole and is capable of being axially limited, and the linkage fitting portion on the thread member (30) is located in the inner cavity (21), and a thread portion on the thread member (30) is located outside the button body (20).
6. The flushing valve actuator according to claim 4, **characterized in that** the linkage member (40) moves between the first position and the second position along an axial direction of the thread member (30); when the thread member (30) is rotated, on a plane perpendicular to an axis of the thread member (30), a projection trajectory drawn by the linkage fitting portion partially overlaps with a projection of the linkage portion; when the linkage member (40) is located at the first position, the linkage portion and the linkage fitting portion align in the axial direction of the thread member (30), and when the switch body (20) is rotated, the linkage portion abuts against the linkage fitting portion to form circumferential transmission fit; when the linkage member (40) is located at the second position, the linkage portion and the linkage fitting portion misalign in the axial direction of

the thread member (30), and the thread member (30) is able to rotate freely relative to the linkage member (40).

7. The flushing valve actuator according to claim 5, **characterized in that** the linkage member (40) comprises an adjusting piece (41) and a spring pin (42), and the spring pin (42) forms the linkage portion; a periphery of a portion of the thread member (30) located inside the switch body (20) is provided with a boss (31), and the boss (31) forms the linkage fitting portion.
8. The flushing valve actuator according to claim 7, **characterized in that** the adjusting piece (41) is movably mounted inside a strip groove formed in the switch body (20), and a length direction of the strip groove is parallel to the axis of the thread member (30), the spring pin (42) is elastically supported between the adjusting piece (41) and the switch body (20) through an elastic member (44); the adjusting piece (41) and a side wall of the strip groove are respectively provided with a retaining protrusion and a retaining groove; when the linkage member (40) is located at the first position, the adjusting piece (41) is located at a position where the retaining protrusion and the retaining groove are separated from each other, and the spring pin (42) and the boss (31) are in circumferential transmission fit under the influence of the elastic member (44), when the linkage member (40) is located at the second position, the adjusting piece (41) is located at a position where the retaining protrusion and the retaining groove are in retaining fit, and the adjusting piece overcomes the elastic force of the elastic member so that the spring pin (42) and the boss (31) misalign in the axial direction of the thread member (30); and a driving portion (43) for manual or tool driving is disposed on a position of the adjusting piece (41) close to the button.
9. The flushing valve actuator according to claim 5, **characterized in that** the thread member (30) has an end located in the inner cavity (21) and having an end diameter greater than a diameter of the through hole; and the drain valve switch further comprises a thread member retaining cover (60), wherein the thread member retaining cover (60) is provided with a thread hole corresponding to a thread of the thread member (30), the thread member retaining cover (60) is screwed into a portion of the thread member (30) extending out of the switch body (20), and the thread member (30) is relatively rotatably mounted on the switch body (20) through the thread member retaining cover (60) and the end of the thread member (30) located in the inner cavity (21).

10. The flushing valve actuator according to claim 1,

characterized in that the thread member (30) is a hollow structure open at both ends; a transmission rod (50) penetrates through the thread member (30) and has an end connected to the switch (10).

11. A flushing valve, comprising the flushing valve actuator according to any one of claims 1 to 10.

Patentansprüche

1. Spülventilbetätiger, umfassend einen Schalterkörper (20), einen in dem Schalterkörper (20) montierten Schalter (10), ein Gewindeelement (30) und eine Kupplungsstruktur, die ein Gestängeelement (40) umfasst, **dadurch gekennzeichnet, dass** das Gestängeelement (40) im Gebrauch zwischen einer ersten Position und einer zweiten Position beweglich ist; wenn sich das Gestängeelement (40) in der ersten Position befindet, treibt der Schalterkörper (20) das Gewindeelement (30) an, um sich durch das Gestängeelement (40) zu drehen, wodurch die Verriegelung oder Entriegelung des gesamten Spülventilbetätigers an einer Installationsposition eines Wassertanks oder einer anderen Vorrichtung ermöglicht wird; wenn sich das Gestängeelement (40) in der zweiten Position befindet, unterbricht das Gestängeelement (40) die Verbindung zwischen dem Schalterkörper (20) und dem Gewindeelement (30), so dass das Gewindeelement (30) nicht angetrieben werden kann, um aus der Installationsposition herauszuschrauben, selbst wenn der Schalterkörper (20) gedreht wird.
2. Spülventilbetätiger nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gewindeelement (30) und der Schalterkörper (20) drehbar miteinander verbunden sind und das Gestängeelement (40) beweglich am Schalterkörper (20) oder am Gewindeelement (30) angebracht ist.
3. Spülventilbetätiger nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gestängeelement (40) einen Antriebsabschnitt (43) umfasst, und dass der Schalter (10) den Antriebsabschnitt (43) abdeckt, wenn der Schalter (10) sich in einer Ausgangsposition befindet; der Schalter (10) die Ausgangsposition verlässt, nachdem er angetrieben wurde, und den Antriebsabschnitt (43) zum Antrieb freigibt, so dass sich das Gestängeelement (40) zwischen der ersten Position und der zweiten Position bewegt.
4. Spülventilbetätiger nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** das Gewindeelement (30) mit einem Gestängepassabschnitt versehen ist und das Gestängeelement (40) mit einem entsprechenden Gestängeabschnitt versehen ist; wenn sich das Gestängeelement (40) in der ersten

Position befindet, der Gestängeabschnitt und der Gestängepassabschnitt in Umfangsübertragungspassung sind; wenn sich das Gestängeelement (40) in der zweiten Position befindet, ist der Gestängeabschnitt vom Gestängepassabschnitt getrennt.

5. Spülventilbetätiger nach Anspruch 4, **dadurch gekennzeichnet, dass** der Schalter (10) ein Knopf ist und der Schalterkörper (20) ein Knopfkörper ist; ein innerer Hohlraum (21) mit einer oberen Öffnung innerhalb des Knopfkörpers (20) ausgebildet ist und ein Boden des inneren Hohlraums mit einem Durchgangsloch versehen ist; sowohl der Knopf (10) als auch das Gestängeelement (40) beweglich in dem inneren Hohlraum (21) installiert sind, und das Gewindeelement (30) drehbar durch das Durchgangsloch hindurchgeht und axial begrenzt werden kann, und der Gestängepassabschnitt an dem Gewindeelement (30) in dem inneren Hohlraum (21) angeordnet ist und ein Gewindeabschnitt an dem Gewindeelement (30) außerhalb des Knopfkörpers (20) angeordnet ist.
6. Spülventilbetätiger nach Anspruch 4, **dadurch gekennzeichnet, dass** sich das Gestängeelement (40) zwischen der ersten Position und der zweiten Position entlang einer axialen Richtung des Gewindeelements (30) bewegt; wenn das Gewindeelement (30) gedreht wird, auf einer Ebene senkrecht zu einer Achse des Gewindeelements (30), eine Projektionsbahn, die durch den Gestängepassabschnitt gezeichnet wird, teilweise mit einer Projektion des Gestängeabschnitts überlappt; wenn das Gestängeelement (40) an der ersten Position angeordnet ist, fluchten der Gestängeabschnitt und der Gestängepassabschnitt in der axialen Richtung des Gewindeelements (30), und wenn der Schalterkörper (20) gedreht wird, stößt der Gestängeabschnitt an den Gestängepassabschnitt, um eine Umfangsübertragungspassung zu bilden; wenn sich das Gestängeelement (40) in der zweiten Position befindet, fluchten der Gestängeabschnitt und der Gestängepassabschnitt in der axialen Richtung des Gewindeelements (30) falsch, und das Gewindeelement (30) kann sich relativ zum Gestängeelement (40) frei drehen.
7. Spülventilbetätiger nach Anspruch 5, **dadurch gekennzeichnet, dass** das Gestängeelement (40) ein Einstellstück (41) und einen Federstift (42) umfasst, und der Federstift (42) den Gestängeabschnitt bildet; ein Umfang eines Abschnitts des Gewindeelements (30), der sich innerhalb des Schalterkörpers (20) befindet, ist mit einer Nabe (31) versehen, und die Nabe (31) bildet den Gestängepassabschnitt.
8. Spülventilbetätiger nach Anspruch 7, **dadurch gekennzeichnet, dass** das Einstellstück (41) beweg-

lich in einer im Schalterkörper (20) ausgebildeten Streifennut angebracht ist und eine Längsrichtung der Streifennut parallel zur Achse des Gewindeelements (30) verläuft, der Federstift (42) zwischen dem Einstellstück (41) und dem Schalterkörper (20) über ein elastisches Element (44) elastisch gelagert ist; das Einstellstück (41) und eine Seitenwand der Streifennut jeweils mit einem Haltevorsprung und einer Haltenut versehen sind; wenn sich das Gestängeelement (40) in der ersten Position befindet, das Einstellstück (41) sich in einer Position befindet, in der der Haltevorsprung und die Haltenut voneinander getrennt sind, und der Federstift (42) und die Nabe (31) unter dem Einfluss des elastischen Elements (44) in Umfangsübertragungspassung sind, wenn sich das Gestängeelement (40) in der zweiten Position befindet, befindet sich das Einstellstück (41) in einer Position, in der der Haltevorsprung und die Haltenut in Haltepassung sind, und das Einstellstück die elastische Kraft des elastischen Elements überwindet, so dass sich der Federstift (42) und die Nabe (31) in der axialen Richtung des Gewindeelements (30) verschieben; und ein Antriebsabschnitt (43) für den manuellen Antrieb oder den Antrieb eines Werkzeugs ist an einer Position des Einstellstücks (41) in der Nähe des Knopfes angeordnet.

9. Spülventilbetätiger nach Anspruch 5, **dadurch gekennzeichnet, dass** das Gewindeelement (30) ein Ende hat, das sich im inneren Hohlraum (21) befindet und einen Enddurchmesser hat, der größer ist als ein Durchmesser des Durchgangslochs; und der Ablassventilschalter ferner eine Gewindeelement-Halteabdeckung (60) umfasst, wobei die Gewindeelement-Halteabdeckung (60) mit einem Gewinde Loch versehen ist, das einem Gewinde des Gewindeelements (30) entspricht, wobei die Gewindeelement-Halteabdeckung (60) in einen Abschnitt des Gewindeelements (30) geschraubt wird, der sich aus dem Schalterkörper (20) heraus erstreckt, und das Gewindeelement (30) durch die Gewindeelement-Halteabdeckung (60) und das Ende des Gewindeelements (30), das sich in dem inneren Hohlraum (21) befindet, relativ drehbar an dem Schalterkörper (20) angebracht ist.
10. Spülventilbetätiger nach Anspruch 1, **dadurch gekennzeichnet, dass** das Gewindeelement (30) eine an beiden Enden offene Hohlstruktur ist; eine Übertragungsstange (50) das Gewindeelement (30) durchdringt und ein mit dem Schalter (10) verbundenes Ende aufweist.
11. Spülventil, umfassend den Spülventilbetätiger nach einem der Ansprüche 1 bis 10.

Revendications

1. Actionneur de soupape de rinçage comprenant un corps d'interrupteur (20), un interrupteur (10) monté dans le corps d'interrupteur (20), un élément fileté (30) et une structure d'embrayage comprenant un élément de liaison (40), **caractérisé en ce que** l'élément de liaison (40) en utilisation est mobile entre une première position et une seconde position ; lorsque l'élément de liaison (40) est situé à la première position, le corps d'interrupteur (20) entraîne l'élément fileté (30) à tourner à travers l'élément de liaison (40), permettant ainsi un verrouillage ou un déverrouillage de l'actionneur de soupape de rinçage dans son intégralité à une position d'installation d'un réservoir d'eau ou d'un autre dispositif ; lorsque l'élément de liaison (40) est situé à la seconde position, l'élément de liaison (40) déconnecte le corps d'interrupteur (20) de l'élément fileté (30), de sorte que l'élément fileté (30) ne puisse pas être entraîné à dévisser de la position d'installation même si le corps d'interrupteur (20) est tourné.
2. Actionneur de soupape de rinçage selon la revendication 1, **caractérisé en ce que** l'élément fileté (30) et le corps d'interrupteur (20) sont montés ensemble de manière rotative, et l'élément de liaison (40) est monté de manière mobile sur le corps d'interrupteur (20) ou sur l'élément fileté (30).
3. Actionneur de soupape de rinçage selon la revendication 1, **caractérisé en ce que** l'élément de liaison (40) comprend une portion d'entraînement (43), et lorsque l'interrupteur (10) est situé à une position initiale, l'interrupteur (10) recouvre la portion d'entraînement (43) ; l'interrupteur (10) quitte la position initiale une fois qu'il est entraîné et expose la portion d'entraînement (43) pour l'entraînement, de sorte que l'élément de liaison (40) se déplace entre la première position et la seconde position.
4. Actionneur de soupape de rinçage selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** l'élément fileté (30) est pourvu d'une portion d'ajustement de liaison, et l'élément de liaison (40) est pourvu d'une portion de liaison correspondante ; lorsque l'élément de liaison (40) est situé à la première position, la portion de liaison et la portion d'ajustement de liaison sont en ajustement de transmission circonférentielle ; lorsque l'élément de liaison (40) est situé à la seconde position, la portion de liaison est séparée de la portion d'ajustement de liaison.
5. Actionneur de soupape de rinçage selon la revendication 4, **caractérisé en ce que** l'interrupteur (10) est un bouton, et le corps d'interrupteur (20) est un corps de bouton ; une cavité interne (21) ayant une

ouverture supérieure est formée à l'intérieur du corps de bouton (20), et un fond de la cavité interne est pourvu d'un trou traversant ; le bouton (10) et l'élément de liaison (40) sont tous deux installés de manière mobile dans la cavité interne (21), et l'élément fileté (30) pénètre de manière rotative à travers le trou traversant et peut être limité axialement, et la portion d'ajustement de liaison sur l'élément fileté (30) est située dans la cavité interne (21), et une portion filetée sur l'élément fileté (30) est située à l'extérieur du corps de bouton (20).

6. Actionneur de soupape de rinçage selon la revendication 4, **caractérisé en ce que** l'élément de liaison (40) se déplace entre la première position et la seconde position le long d'une direction axiale de l'élément fileté (30) ; lorsque l'élément fileté (30) est tourné sur un plan perpendiculaire à un axe de l'élément fileté (30), une trajectoire de projection tracée par la portion d'ajustement de liaison chevauche partiellement une projection de la portion de liaison ; lorsque l'élément de liaison (40) est situé à la première position, la portion de liaison et la portion d'ajustement de liaison s'alignent dans la direction axiale de l'élément fileté (30), et lorsque le corps d'interrupteur (20) est tourné, la portion de liaison est aboutée contre la portion d'ajustement de liaison pour former un ajustement de transmission circonférentielle ; lorsque l'élément de liaison (40) est situé à la seconde position, la portion de liaison et la portion d'ajustement de liaison se désalignent dans la direction axiale de l'élément fileté (30), et l'élément fileté (30) est capable de tourner librement par rapport à l'élément de liaison (40).
7. Actionneur de soupape de rinçage selon la revendication 5, **caractérisé en ce que** l'élément de liaison (40) comprend une pièce de réglage (41) et une goupille à ressort (42), et la goupille à ressort (42) forme la portion de liaison ; une périphérie d'une partie de l'élément fileté (30) située à l'intérieur du corps d'interrupteur (20) est pourvue d'un bossage (31), et le bossage (31) forme la portion d'ajustement de liaison.
8. Actionneur de soupape de rinçage selon la revendication 7, **caractérisé en ce que** la pièce de réglage (41) est montée de manière mobile à l'intérieur d'une rainure en forme de bande formée dans le corps d'interrupteur (20), une direction de longueur de la rainure en forme de bande est parallèle à l'axe de l'élément fileté (30), la goupille à ressort (42) est soutenue de manière élastique entre la pièce de réglage (41) et le corps d'interrupteur (20) par l'intermédiaire d'un élément élastique (44) ; la pièce de réglage (41) et une paroi latérale de la rainure en forme de bande sont respectivement pourvues d'une saillie de retenue et d'une rainure de retenue ;

lorsque l'élément de liaison (40) est situé à la première position, la pièce de réglage (41) est située à une position à laquelle la saillie de retenue et la rainure de retenue sont séparées l'une de l'autre, et la goupille à ressort (42) et le bossage (31) sont en ajustement de transmission circonférentielle sous l'action de l'élément élastique (44), lorsque l'élément de liaison (40) est situé à la seconde position, la pièce de réglage (41) est située à une position à laquelle la saillie de retenue et la rainure de retenue sont en ajustement de retenue, et la pièce de réglage surmonte la force élastique de l'élément élastique de sorte que la goupille à ressort (42) et le bossage (31) se désalignent dans la direction axiale de l'élément fileté (30) ; et une portion d'entraînement (43) pour entraînement manuelle ou mécanique est disposée à une position de la pièce de réglage (41) proche du bouton.

9. Actionneur de soupape de rinçage selon la revendication 5, **caractérisé en ce que** l'élément fileté (30) a une extrémité située dans la cavité interne (21) et ayant un diamètre d'extrémité supérieur à un diamètre du trou traversant ; et l'interrupteur de soupape de drainage comprend en outre un couvercle de retenue d'élément fileté (60), dans lequel le couvercle de retenue d'élément fileté (60) est pourvu d'un trou fileté correspondant à un filetage de l'élément fileté (30), le couvercle de retenue de l'élément de filetage (60) est vissé dans une partie de l'élément fileté (30) s'étendant hors du corps d'interrupteur (20), et l'élément fileté (30) est monté de manière relativement rotative sur le corps d'interrupteur (20) à travers le couvercle de retenue de l'élément fileté (60) et l'extrémité de l'élément fileté (30) située dans la cavité interne (21).
10. Actionneur de soupape de rinçage selon la revendication 1, **caractérisé en ce que** l'élément fileté (30) est une structure creuse ouverte à deux extrémités ; une tige de transmission (50) pénètre à travers l'élément fileté (30) et a une extrémité reliée à l'interrupteur (10).
11. Soupape de rinçage, comprenant l'actionneur de soupape de rinçage selon l'une quelconque des revendications 1 à 10.

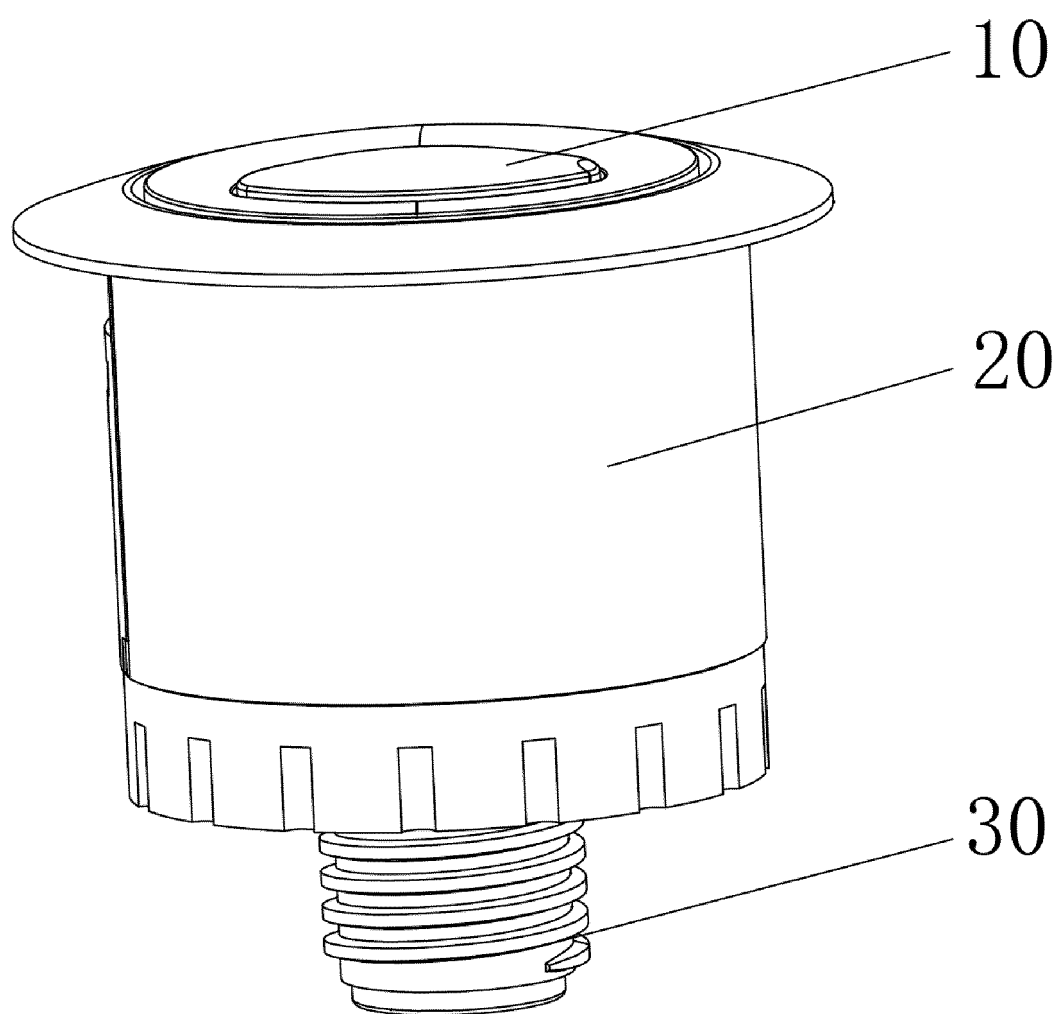


Fig. 1

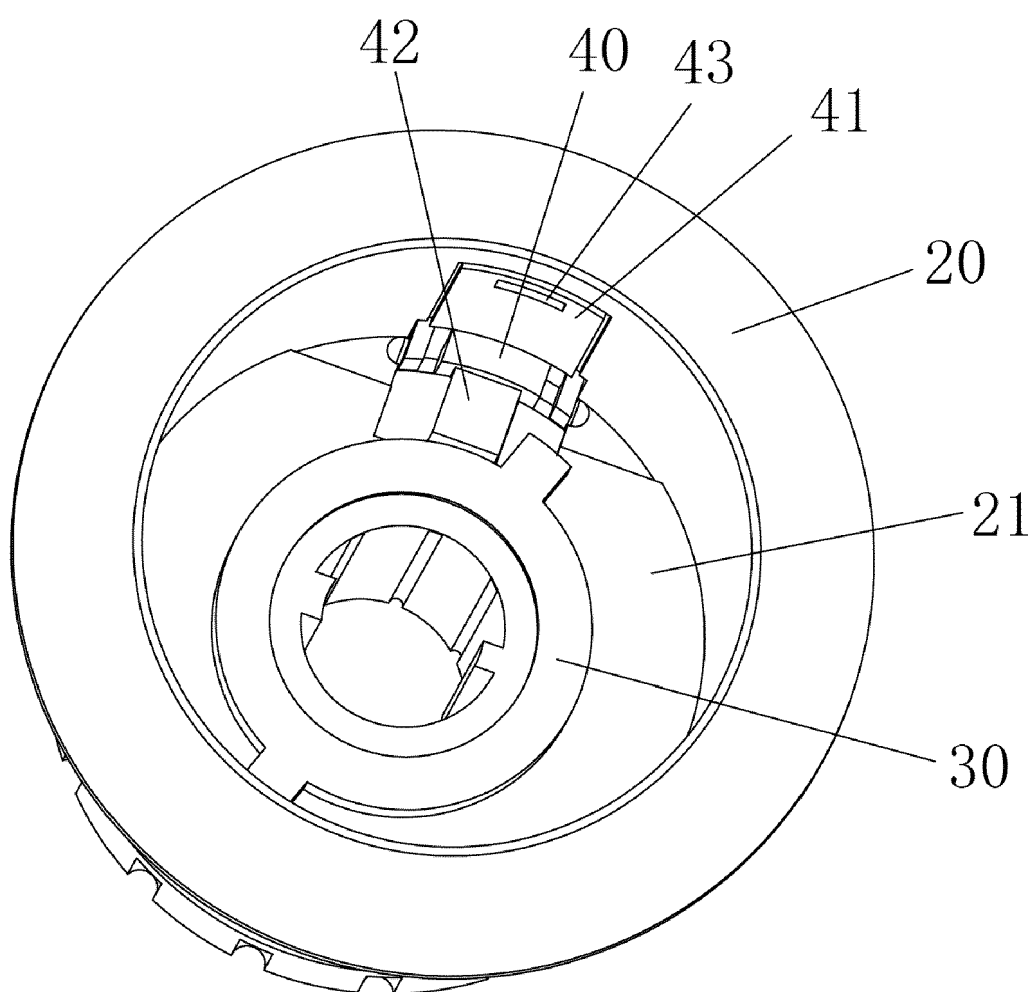


Fig. 2

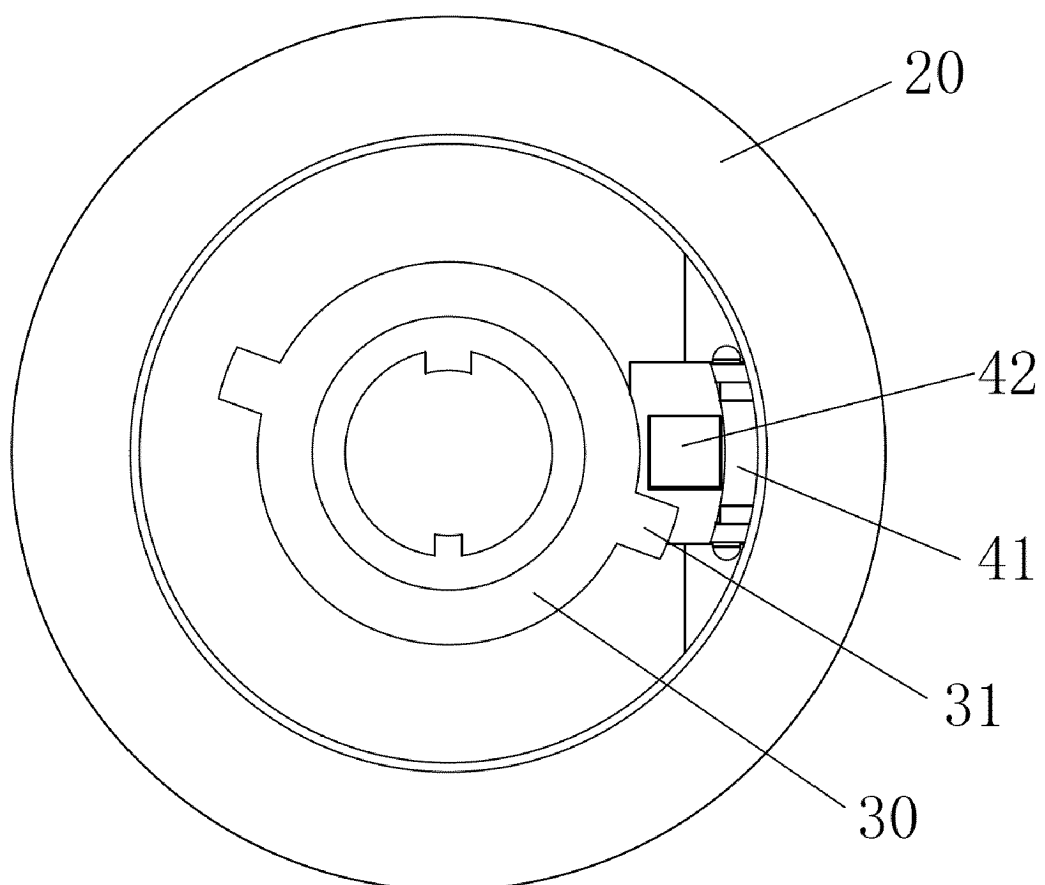


Fig. 3

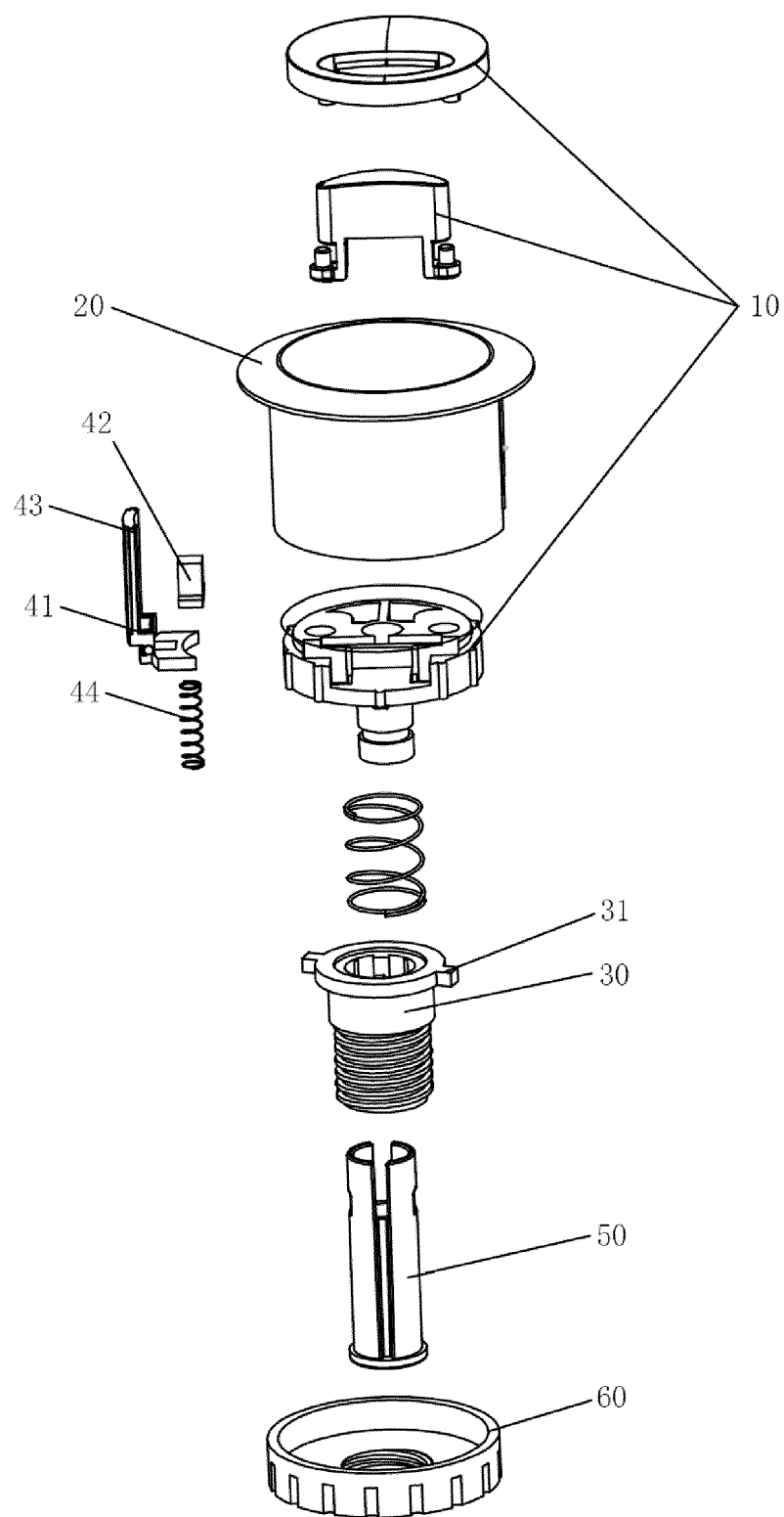


Fig. 4

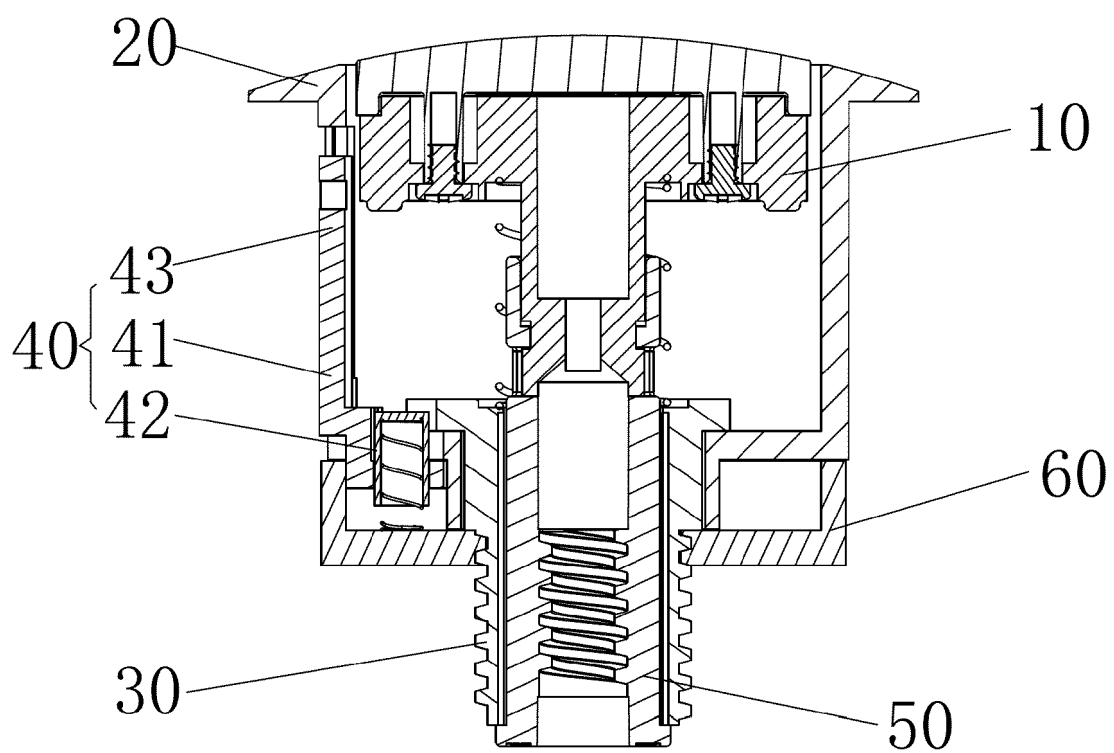


Fig. 5

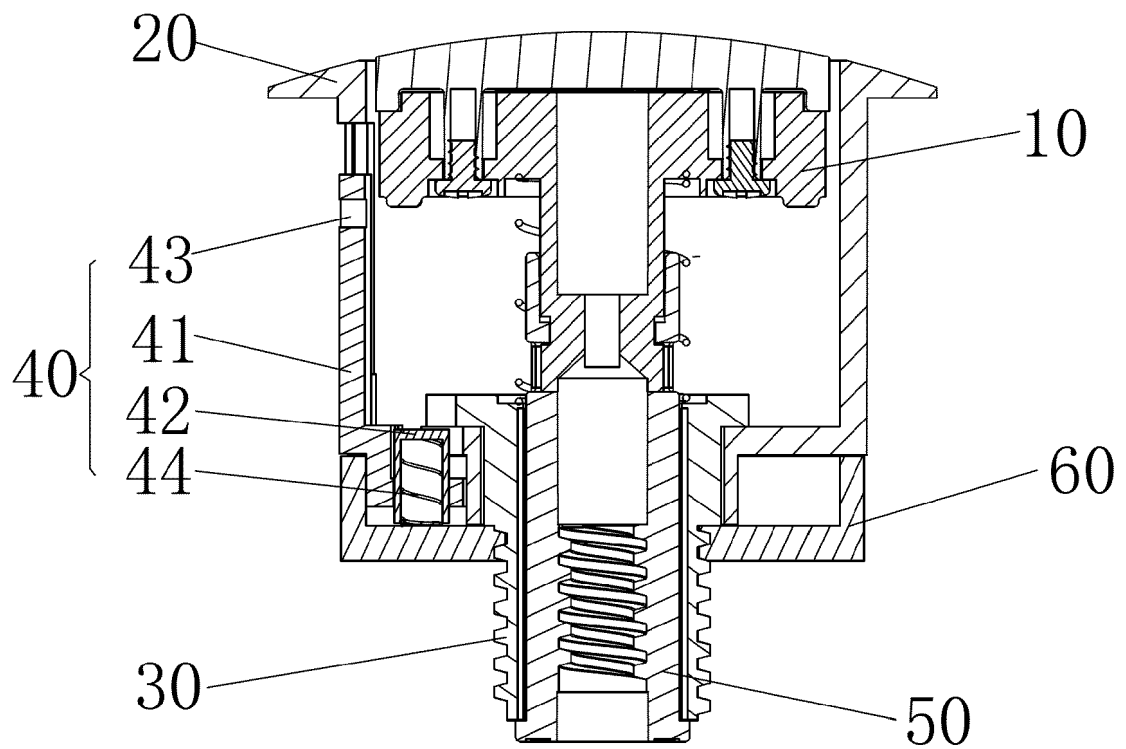


Fig. 6

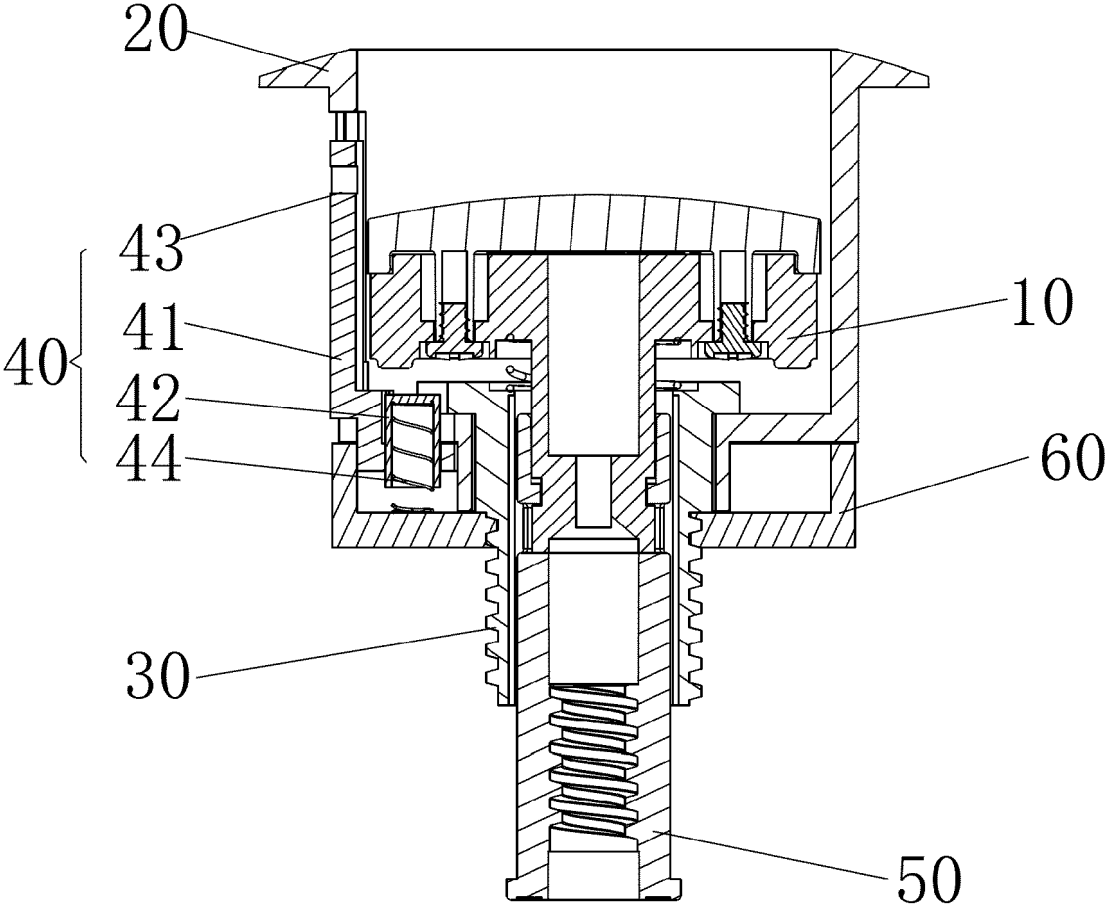


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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