Jan. 12, 1926. 1,569,252

J. A. BARNES

STOPCOCK

Filed Feb. 26, 1925

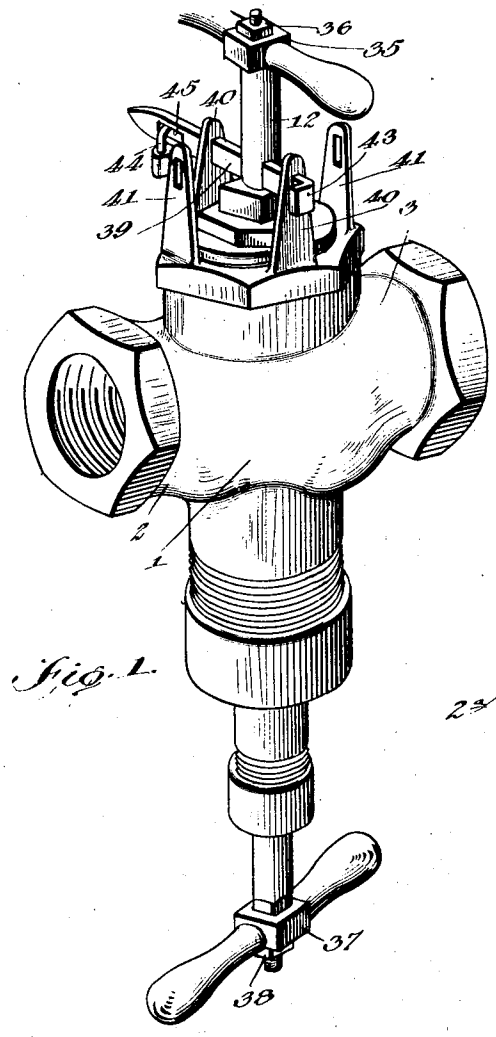


Fig. 1.

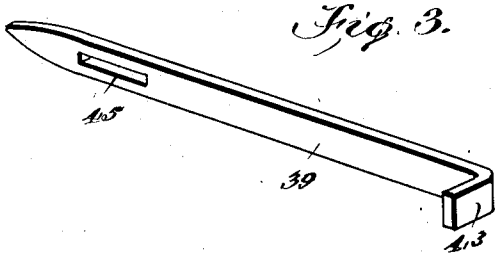


Fig. 3.

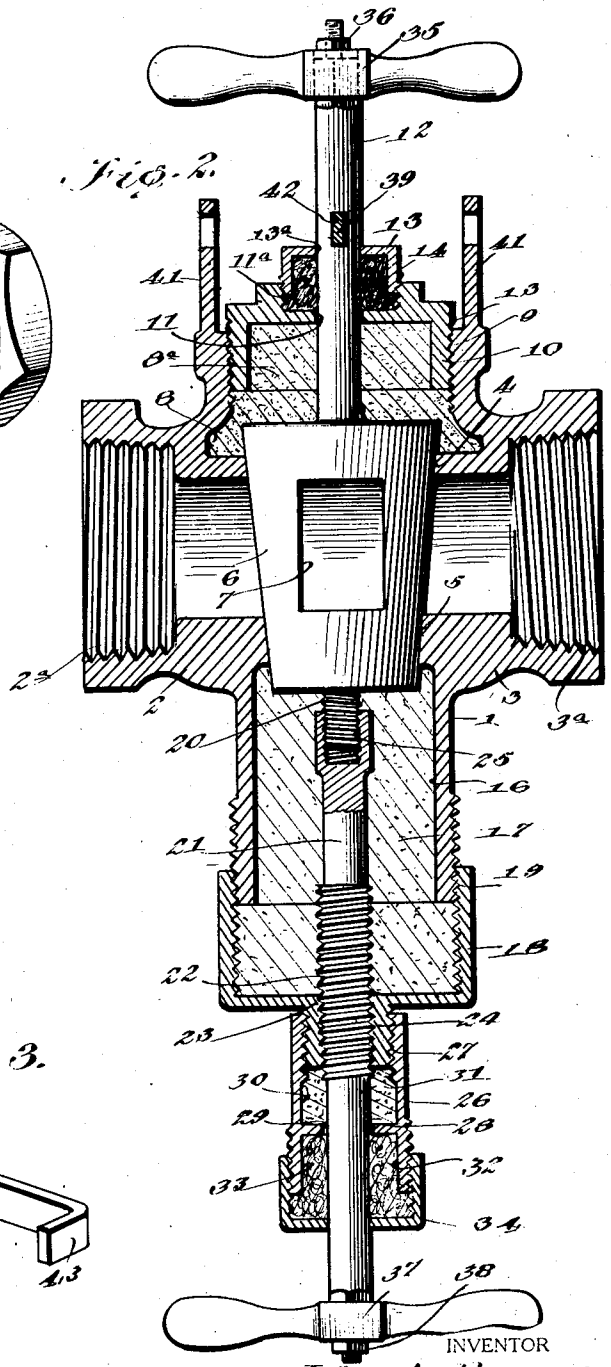


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN A. BARNES, OF BURKBURNETT, TEXAS.

STOPCOCK.

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To all whom it may concern:

Be it known that I, JOHN A. BARNES, a citizen of the United States, and a resident of Burkburnett, in the county of Wichita and State of Texas, have invented certain new and useful Improvements in Stopcocks, of which the following is a specification.

My invention relates to improvements in stop cocks, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of the invention is the provision of a stop cock having facilities for keeping the relatively moving parts thereof well lubricated so that operation of the cock can be easily effected.

A further object of the invention is the provision of a stop cock having novel and efficient packing means for preventing escape of fluid between the relatively moving parts of the stop cock without hindering or making difficult the operation of the cock.

A still further object of the invention is the provision of a cock having simple and reliable means for positively locking the cock in either closed or opened position as desired.

Other objects and advantages of the invention will be apparent from the following description, considered in conjunction with the accompanying drawings, in which,

Figure 1 is a perspective view of the improved stop cock.

Figure 2 is a relatively enlarged central vertical section through the stop cock.

Figure 3 is a perspective view of a locking pin which is comprised in the device.

The improved stop cock comprises a tubular shell or casing 1 formed with integrally opposite tubular extensions 2 and 3 respectively, which are merged into the tubular body at opposite sides of the body. The tubular extensions 2 and 3 are enlarged internally adjacent to their outer ends as indicated at 2^a and 3^a, respectively, the internally enlarged portions thereof being provided with screw threads for connection with lengths of pipe, not shown.

The tubular body 1 is reduced internally at 4 at substantially the level of the upper part of the bores of the tubular extensions 2 and 3 and also is reduced internally at 5 at substantially the level of the lower part of the bores of the tubular extensions 2 and 3 to provide a seat for the upper and lower portions, respectively of a tapering plug or core 6. The inner wall of the internally reduced portion 5 of course is smaller diametrically than the inner wall of the reduced portion 4 and the plug 6 and the seat therefor at 4 and 5 preferably are ground to assure close contact of the core with its seat.

The plug 6 is movable vertically upward from its position as shown in Figure 2 and from contact with the inner walls of the reduced portions 4 and 5 and therefore can be turned with relatively great ease when in raised position to position a transverse port or opening 7 which extends through the plug 6 either in register with or out of communication with the bores of the tubular extensions 2 and 3.

The space within the upper end portion of the tubular shell above the internally reduced portion 4 is enlarged slightly as indicated at 8 to provide a chamber or space for grease 8^a or like heavy lubricant. The upper end portion of the shell 1 is provided with internal screw threads at 9 for engagement with the screw threads on a packing plug 10. The packing plug 10 has a central opening 11 through which the upper stem 12 of the plug 6 extends. The opening 11 is enlarged at the inner end of the plug 10 so that the chamber at 8 for grease is relatively large. The opening 11 also is enlarged or counterbored at its outer end as at 11^a and the wall of such enlarged outer end portion is formed with screw threads for engaging with a packing plug 13. The packing plug 13 has a central opening 13^a through which the stem 12 extends. The opening 13^a is enlarged at its inner end and cooperates with the enlarged outer end portion of the bore of the plug 10 to form a chamber for the reception of packing 14. The packing will be compressed about the stem 12 when the packing plug 13 is screwed into the counterbore 11^a.

The space within the portion of the tubular body 1 below the internally reduced portion 5 is indicated at 16 and constitutes a chamber for the reception of grease 17 or other relatively heavy lubricant. A cap 18 for retaining the lubricant in the chamber 16 is in threaded engagement at 19 with the lower end portion of the tubular shell 1.

It will be manifest that pressure may be applied on the lubricant in the chamber 16 by adjusting the cap 18 on the lower end portion of the tubular shell 1.

The plug 6 is provided with a rigid depending axial extension 20 which preferably is integral with the plug and is in the nature of a stud having left hand screw threads thereon. This depending projection 20 may be considered the upper section of a lower stem having a lower section 21 which has the intermediate portion thereof, indicated at 22, in threaded engagement with the wall of a central opening 23 in the head of the cap 18, said cap being formed with a tubular boss 24 which depends from the opening 23 and has screw threads in engagement with the threads on the intermediate portion of the lower section 21 of the lower stem. It will be observed at this point that the threads on the intermediate portion of the lower section of the lower stem are right hand screw threads and that the lower section of the lower stem is formed with a socket 25 in the enlarged upper end portion thereof having left hand screw threads for engagement with the screw threads of the upper section 20.

A tubular member 26 surrounds the outer end portion of the lower section 21 of the lower stem and has the inner end portion thereof in threaded engagement at 27 with the boss 24. The tubular member 26 is provided with a transverse partition 28 having a central opening 29 through which the lower section of the lower stem extends, whereby a space 30 is defined within the inner end portion of the tubular member 26 for the reception of grease or like heavy lubricant, indicated at 31, and a space surrounding the lower section of the valve stem is defined within the outer end portion of the tubular member 26 as indicated at 32 for the reception of packing 33 which can be compressed about the stem by means of a packing cap 34 which is in threaded engagement with the outer end portion of the tubular member 26.

The upper end portion of the upper stem 12 is squared for engagement with a correspondingly configured opening in the intermediate portion of an upper handle 35. A nut 36 is in engagement with the reduced and screw-threaded extreme upper end portion of the upper stem for retaining the handle in place on the squared portion of the upper stem. A handle 37 is retained on a squared lower end portion of the lower section 21 of the lower stem by a nut 38 which is in threaded engagement with the reduced and threaded extreme lower end portion of the lower stem.

The operation of the device as described so far is substantially as follows:

Communication between the bores of the tubular sections 2 and 3 of course is controlled by the plug 6 which can be turned about its axis by means of the upper handle 35. Since the threads of the upper section 20 of the lower stem are left hand threads while the threads on the intermediate portion of the lower section of the lower stem are right hand threads, it will be manifest that turning of the lower handle 37 and of the lower stem in a clockwise direction from the position shown in Figure 2 will raise the plug 6 slightly out of contact with the walls of the internally reduced portions 4 and 5 of the tubular body and therefore from its seat. The upper handle 35 then may be turned clockwise to turn the plug 6 until the transverse passage 7 is in communication at its opposite ends with the bores of the tubular extensions or pipe connections 2 and 3, respectively. Turning of the handle 37 anti-clockwise when the plug 6 is in position to permit flow of air, steam or any other fluid between the tubular extensions 2 and 3 will result in pulling the plug 6 downward until in close contact with the inner walls of the internally reduced portions 4 and 5 of the tubular body. When it is desired to turn the plug 6 anti-clockwise through 90° to closed position as shown in Figure 2, the handle 37 is turned clockwise to raise the plug 6 from its seat, the handle 35 then is turned anti-clockwise through 90°, and finally the handle 37 is turned anti-clockwise to pull the plug down until tightly against its seat.

The plug 6 can be locked in either closed or opened position through the use of a locking pin 39 which can be projected through alined openings in diametrically opposite upstanding ears or lugs 40—40 or 41—41 at the upper end of the tubular body 1 and through a transverse opening 42 in the upper stem 12 just above the plug 10. The respective pairs of diametrically opposite upstanding lugs are so positioned with respect to each other that the opening 42 will be in alinement with the openings of the upstanding lugs of one pair when the plug 6 is in position to permit communication between the tubular extensions 2 and 3 and the transverse opening 42 will be in alinement with the openings of the upstanding lugs of the other pair when the plug 6 is in the position shown in Figure 2, in which position communication between the tubular extensions 2 and 3 to the transverse passage 7 is prevented.

The locking pin 39 is releasably held in locking position by means of a laterally turned portion 43 at one end thereof and by having a suitable stop member, such as a shackle of a padlock 44, secured in an aperture 45 in the opposite end portion of the locking pin, the stop member 44 and the laterally turned end portion 43 of the locking

pin then being disposed outwardly from the respective lugs having the openings through which the body of the pin 39 extends. The locking pin 39 may be tapered at the end thereof which is opposite that provided with the lateral extension 43 so that the locking pin can be conveniently extended through alined apertures in the upstanding lugs and in the upper end portions of the stem 12.

Obviously, the invention is susceptible of embodiment in forms other than that which is illustrated in the accompanying drawings, and I therefore consider as my own all such modifications and adaptations thereof as fairly fall within the scope of the appended claims.

What I claim is:

1. A stop cock having a tubular body provided with spaced internally reduced portions and with oppositely extending tubular connections between such internally reduced portions, a tapering rotary plug adapted to seat against the walls of said internally reduced portions of the tubular shell, said plug having a transverse passage therethrough adapted to establish communication between said opposite tubular extensions when the plug has been turned to a certain position in respect to said extensions, means adjustably engageable with the opposite end portions of said tubular body to retain lubricant within the opposite end portions of the tubular body, said retaining means having central openings, stems extending from the opposite ends of said plug through the openings of said retaining means, and means carried by said retaining means for compressing packing against said stems.

2. A stop cock comprising a tubular shell having oppositely extending tubular members adapted for connection with pipe sections, a rotary plug in said tubular shell, said plug having a transverse opening for establishing communication between said oppositely extending tubular members when the plug is in a certain position, a stem rigid with said plug for turning the latter, said stem extending beyond one end of the tubular body and having the extending end portion thereof formed with a transverse opening, said body having pairs of diametrically opposite lug extensions at said one end of the body, said opposite lug extensions having alined openings located substantially in the plane of the transverse opening of said stem, and a locking pin adapted to be extended through said alined openings of said opposite lugs and said stem to hold said stem against rotation with relation to said tubular body.

3. A stop cock comprising a tubular shell having oppositely extending tubular members adapted for connection with the pipe, a rotary plug in said tubular shell, said plug having a transverse opening for establishing communication between said oppositely extending tubular members when the plug is in a certain position, a stem rigid with said plug for turning the latter, said stem extending beyond one end of the tubular body and having the extended end portion thereof formed with a transverse opening, said body having pairs of diametrically opposite lug extensions at said one end of the body, said opposite lug extensions having alined openings located substantially in the plane of the transverse opening of said stem, and a locking pin adapted to be extended through said alined openings of said opposite lugs and said stem to hold said stem against rotation with relation to said tubular body, said locking pin having a laterally turned end portion constituting a stop, and having the opposite end portion thereof formed with a slot for engagement with a padlock or like locking device.

4. A stop cock comprising a tubular shell having oppositely extending tubular members adapted for connection with the pipe, a rotary plug in said tubular shell, said plug having a transverse opening for establishing communication between said oppositely extending tubular members when the plug is in a certain position, a stem rigid with said plug for turning the latter, said stem extending beyond one end of the tubular body and having the extended end portion thereof formed with a transverse opening, said body having pairs of diametrically opposite lug extensions at said one end of the body, said opposite lug extensions having alined openings located substantially in the plane of the transverse opening of said stem, a locking pin adapted to be extended through said alined openings of said opposite lugs and said stem to hold said stem against rotation with relation to said tubular body, said locking pin and said lugs being adapted to retain said stem against turning with relation to the tubular body from any one of a plurality of positions.

5. A stop cock comprising a tubular body having spaced internally reduced portions intermediate its length and having oppositely extending lateral pipe connections between said internally reduced portions, a plug adapted to seat against the inner walls of said internally reduced portions and having a transverse opening located between the planes of said internally reduced portions, a stud projection integral with said plug and extending axially from the lower end of the plug, said stud projection having left hand screw threads constituting the upper section of a lower stem, a cap in threaded engagement with the lower end portion of said tubular body and having a central opening provided with right hand

screw threads, the lower section of said lower stem having the intermediate portion thereof provided with screw threads for engaging the screw threaded central opening of said cap and having the upper end portion thereof formed with a threaded socket for engaging said depending screw threaded stud projection, whereby turning of the lower section of said stem will cause axial movement of said plug.

6. A stop cock comprising a tubular body having spaced internally reduced portions intermediate its length and having oppositely extending lateral pipe connections between said internally reduced portions, a plug adapted to seat against the inner walls of said internally reduced portions and having a transverse opening located between the planes of said internally reduced portions, a stud projection integral with said plug and extending axially from the lower end of the plug, said stud projection having left hand screw threads constituting the upper section of a lower stem, a cap in threaded engagement with the lower end portion of said tubular body and having a central opening provided with right hand screw threads, the lower section of said lower stem having the intermediate portion thereof provided with screw threads for engaging the screw threaded central opening of said cap and having the upper end portion thereof formed with a threaded socket for engaging said depending screw threaded stud projection, whereby turning of the lower section of said stem will cause axial movement of said plug, said lower end portion of the tubular body being adapted for the reception of suitable lubricant, a tubular extension at the lower end of said cap having a space within the inner end portion thereof for the reception of the lubricant and having a space in the outer end portion thereof for the reception of packing, and means at the outer end of said last named tubular member for compressing said packing against said stem.

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