

G. T. STARK.  
STOP COOK.

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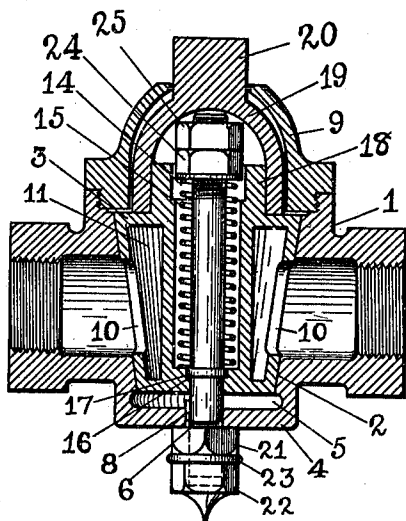


Fig. 1 -

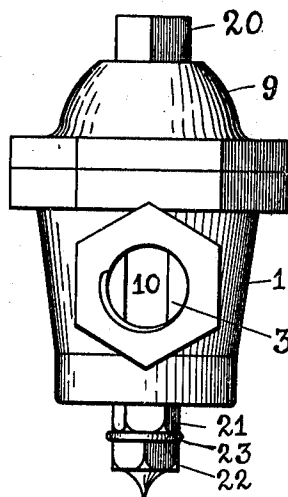


Fig. 2 -

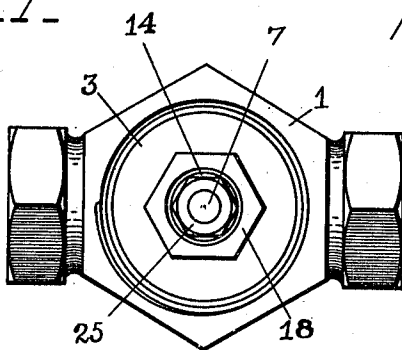


Fig. 3 -

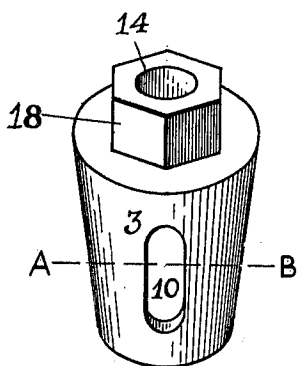


Fig. 4 -

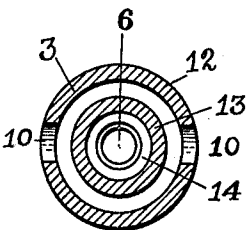


Fig. 5 -

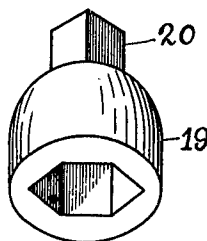


Fig. 6 -

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# UNITED STATES PATENT OFFICE.

GEORGE T. STARK, OF LOUISVILLE, KENTUCKY.

## STOP-COCK.

953,067.

Specification of Letters Patent.

Patented Mar. 29, 1910.

Application filed January 6, 1909. Serial No. 471,011.

*To all whom it may concern:*

Be it known that I, GEORGE T. STARK, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Stop-Cock, of which the following is a specification.

This invention relates to stop-cocks, and the objects of my improvement are, to provide means in a stop-cock for automatic adjustment to take up wear, to provide that the plug may be easily turned and not become locked, effectiveness, and durability.

The stop-cock or plug-cock is generally recognized as a very desirable and efficient valve. On account of the elongated ports, it is not subject to erosion of its exposed surfaces on account of wiredrawing and the action of liquids in rapid motion. When this class of valve is closed, a blank wall is presented to the fluid under pressure and when the valve is open, the effective surface is protected in the seat of the body. This is not the case with the globe-valve, in which delicate internal parts, such as the stem, with its screw, and the valve member, as well as the seat, which must generally be accurately ground, are exposed to the running fluid while passing through the valve. Difficulty has, however, been experienced with the conventional plug-cock in adjusting the plug and from the plug becoming locked. As the plug becomes worn slightly it begins to leak and therefore must be tightened up. In tightening it is difficult to screw up the nut just sufficiently to tighten it without locking the plug so that it cannot be turned in operation. The effective surface which is exposed to the fluid stopped off, also, becomes somewhat corroded, so that the plug will not start without great difficulty. Under these circumstances it has been found necessary to unscrew the nut and drive the plug upward with a hammer or other suitable tool and then readjust the plug. I have overcome these difficulties by providing a generously long spring to hold the plug down to its work yieldingly, and yet have preserved the proper compactness and symmetry. These objects I attain by means of the device illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal sectional view; Fig. 2, an end elevation; Fig.

3, a top plan view with the bonnet removed; 55 Fig. 4, a detail perspective view of the plug; Fig. 5, a horizontal section on line A—B of Fig. 4; and, Fig. 6, is a perspective view of the socket extension of the plug.

Similar reference numerals refer to similar parts throughout the several views of the drawings.

The body, 1, is of the usual construction, and provided with the usual taper hole, 2, in which a plug, 3, is seated. The small end of the taper hole 2 in the body, however, is not open as usual, but preferably closed by a bottom-wall, 4, and the lower end of the taper hole is preferably expanded as at 5, just above the bottom-wall 4. The bottom-wall 4 is provided with a hole, 6, adapted to receive a stem, 7. The hole 6 is provided with a keyway adapted to receive a key, 8, in stem 7, to prevent the stem from turning. The body 1 is shown internally threaded at the top to receive a correspondingly threaded bonnet, 9.

The plug 3 is provided with the usual ports, 10, on each side, to permit the fluid to pass through when the ports register with the fluid-passage in the valve body. The plug is, however, not formed solid, as usual, with the port 10 passing diametrically through the plug, but is formed with an annular passage, 11, between the outer tapered wall, 12, of the plug, and a cylindrical wall, 13, which is concentric with the wall 12. Within wall 13 is provided a well, 14, adapted to receive stem 7 and a spring, 15. The bottom of the well 14 is provided with a hole adapted to receive stem 7 snugly, and with a shoulder, 16, adapted to receive a collar, 17, on stem 7, and also to form an abutment for the lower end of spring 15. It will be observed that, when the valve is open, fluid may pass through ports 10 and annular passage 11 on each side of wall 13 (Fig. 6).

The upper end of plug 3 is provided with a hexagon top, 18, adapted to receive a socket-wrench extension, 19, which in turn is provided with a hexagon socket corresponding to the top 18 of the plug. The socket-wrench extension 19 is preferably provided with a square top, 20, adapted to receive a wrench or key for operating the plug.

The stem 7 is threaded on its lower end

and thus adapted to receive adjusting nuts, 21 and 22, and is provided with a flat, so as to adapt it to receive a D washer, 23, not shown in detail in the drawing because well known in the art. The upper end of stem 7 is provided with a nut, 24, and a lock-nut, 25, for adjusting the pressure of spring 15 which abuts against nut 24 underneath.

In assembling the cock, plug 3 is inserted in the taper seat in body 1, stem 7, with spring 15 placed thereon, is inserted through the hole in the bottom of well 14 and through the opening 6 in the bottom of body 1. The adjusting nuts 21 and 22 are screwed up to such a position that collar 17 comes a little short of bearing upon shoulder 16, and plug 3 has therefore a little vertical play. Nuts 24 and 25 are adjusted, so that spring 15 bears with the requisite pressure upon the bottom of plug 3 to keep the plug seated, notwithstanding the upward pressure of the fluid against the upper wall of passage 11 when the valve is open in case there should be back pressure. The plug 3 will now be held down in its seat yieldingly, so that if it should have a tendency to stick in the seat, it will readily yield to the force applied to turn it. The spring 15 is always ready to press the plug down into its seat and take up any wear that may occur. It will be observed that the well 14 provides a long opening for a generous compression spring 15, which provides for uniform pressure upon the plug. It is obvious also that the spring 15 and stem 7 with its threads and other comparative delicate parts are protected from the fluid by the wall 13 around which the fluids pass while passing through the valve.

40 Having now described my invention so that any one skilled in the art pertaining

thereto may make it and understand its use, I claim—

1. A stop-cock, comprising a body provided with a fluid-channel, a transverse tapered plug-opening, a tapered valve-plug extending through said transverse opening, said valve-plug being provided with an axial cylindrical portion and an annular passage between said cylindrical portion and its tapered wall which is closed at its ends and provided with antipodal openings adapted to permit the passage of fluid through said plug on both sides of said cylindrical portion.

2. A stop-cock, comprising a body portion, a tapered plug in said body portion, said plug being provided with an axial aperture, a post extending through said aperture, a long helical spring surrounding said post adapted to yieldingly press said plug into its socket, and means on said post for adjusting the compression of said spring.

3. A stop-cock, comprising a body, a tapered plug, said tapered plug provided with a central well, wrench faces on its upper end, a socket-wrench extension, and a concentric fluid passage between the wall of said central well and the tapered wall of the plug, a post in the center of said well, adjusting means on the upper end of said post, a spring surrounding said post adapted to press against said adjusting means and hold said plug down yieldingly in its seat, and said body provided with a bonnet adapted to partly cover and hold in place said socket-wrench extension.

GEORGE T. STARK.

Witnesses:

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