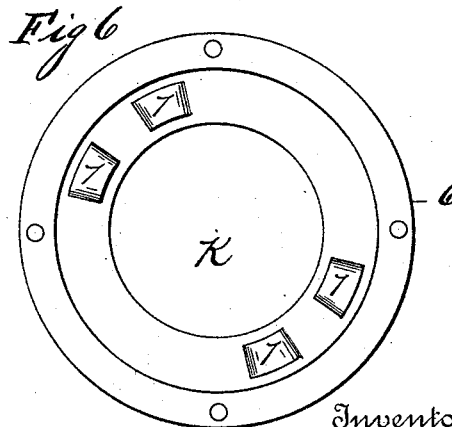
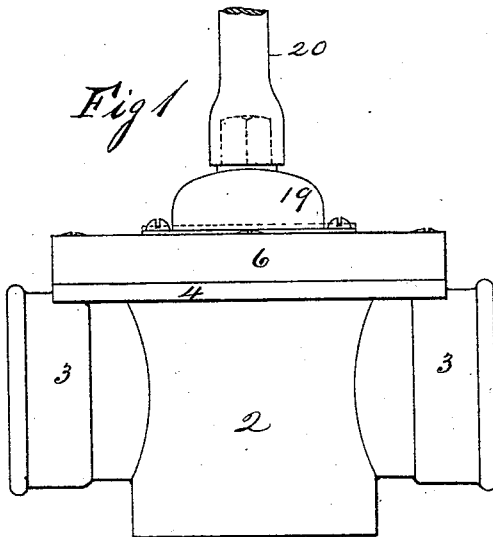
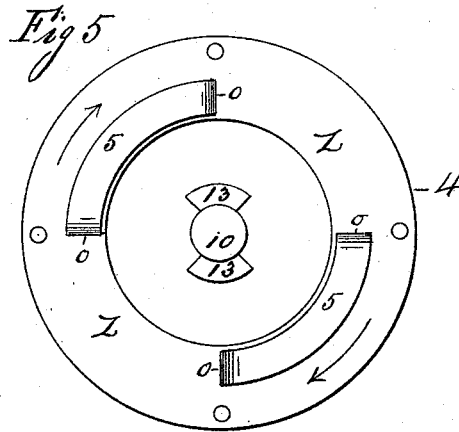
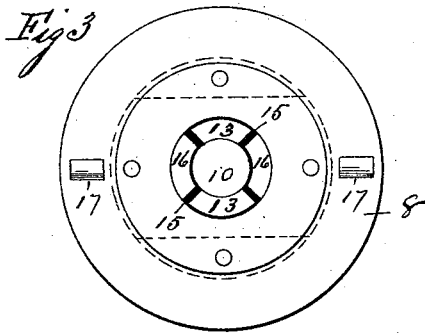
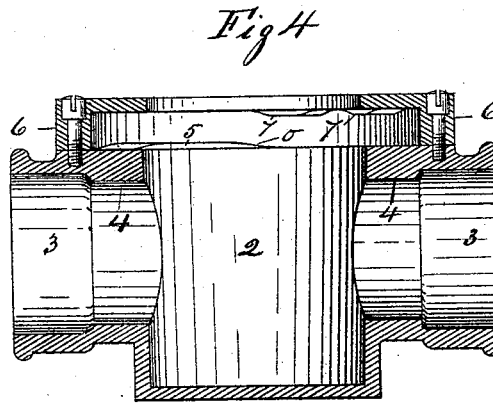
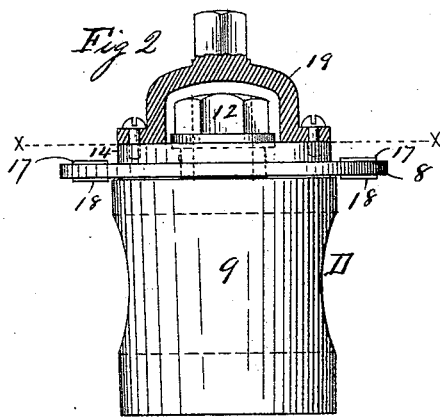


(No Model.)

R. PATTEE.  
VALVE.

No. 454,661.

Patented June 23, 1891.



Witnesses  
*G. M. Chamberlain*  
*Wm. H. Chapin*

Inventor  
*Richard Pattee*  
By *His Attorneys* *Chapin & Co.*

# UNITED STATES PATENT OFFICE.

RICHARD PATTEE, OF HOLYOKE, MASSACHUSETTS.

## VALVE.

SPECIFICATION forming part of Letters Patent No. 454,661, dated June 23, 1891.

Application filed November 20, 1890. Serial No. 372,101. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD PATTEE, a citizen of the United States, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Stop-Cocks, of which the following is a specification.

This invention relates to stop-cocks, and pertains to that class thereof having a rotatable plug, the object being to provide such improvements in the construction of plug-cocks as adapts them to be used on large water and gas mains without danger that the plug of the cock will become so set in the barrel as to render it difficult at times to turn it; and the invention consists in the peculiar construction of various parts of the stop-cock, all as hereinafter fully described, and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of a stop-cock embodying my improvements, said figure showing the lower end of a socket-wrench on the square end of the plug. Fig. 2 is a side elevation, partly in section, of the plug, its flange, and cap. Fig. 3 is a plan view of the plug and its flange on the line *x x*, Fig. 2. Fig. 4 is a vertical section of the barrel of the cock and its cap. Fig. 5 is a plan view of said barrel and the plug. Fig. 6 is a plan view of the interior of the barrel-cap.

The plug-cock herein shown belongs to that class thereof in which the plug does not project beyond both ends of the barrel, but in which the lower end of the latter is closed, and whatever pressure is required to keep the plug to its bearing in the barrel is obtained by means of devices attached to the upper end of the latter.

Heretofore plug-cocks have not been used on large gas and water mains except to a very limited extent, owing to the tendency of the plugs thereof to become so set from rust, dirt, or other causes in the barrel that they can be turned only with great difficulty; but by constructing said cocks with means for imparting a slight endwise movement to the plug thereof, as below described, preliminary to turning the same to open or shut the cock

the plug is easily turned in the barrel and the above-named inconvenience is obviated.

In the drawings, 2 is the barrel of the cock, made slightly tapering, as usual, and having sockets 3 thereon or other suitable means for connecting pipes thereto. A flange 4 is formed around the upper end of the barrel, and on the face of said flange are two segment-shaped cams 5, raised slightly above the face of the flange and having their ends beveled off in order to give said ends such a form that cam projections on another part of the cock can easily ride or slide over the ends of and onto the surface of the cams 5. A cap 6 (shown in section in Fig. 4 and in Fig. 6 in inner side plan view) is secured by screws to said flange 4 on the cock-barrel, as shown, said cap standing up sufficiently away from the flange 4 to leave a chamber therebetween, as shown in Fig. 4. Said cap 6 has fixed on its inner face, as shown in Figs. 4 and 6, four cam projections 7, which, like said segment-shaped cams 5 on the face of the flange 4, are also slightly raised above the face of the cap, as more clearly shown in Fig. 4, and the ends of the cams 7 are beveled off, as are those of cams 5 and for the same purpose. It will be seen by reference to Fig. 4 that the said cam-bearing faces of the barrel and of the cap 6 when in operative position are not opposite each other, but the cams 7 on the cap occupy positions opposite the spaces *z* (see Fig. 5) between the ends of the cams 5. Said cap 6 has a circular opening K through it to receive the hub of the plug-flange 8, as below described.

The plug 9, having the usual water-passage through it, is fitted into the barrel 2, and is rotatable therein in the usual way. On the upper end of said plug a stem 10 stands up, having its upper end screw-threaded to receive thereon the nut 12, (see Fig. 2,) said stem being indicated in dotted lines in said figure. The said stem 10 is flanked on opposite sides by segment or other suitably-formed wings 13, above which the said screwed portion of the stem projects to an extent equal to about the thickness of said nut 12.

The above-referred-to plug-flange 8 has a hub 14 and a central perforation through said

hub conforming substantially in plan view to the united outline form of the stem 10 and wings 13, (shown in Figs. 5 and 3,) whereby a central passage is formed in said hub, through which said stem projects, and on opposite sides of said central stem-passage are formed recesses 15 (indicated in black in Fig. 3) between the inwardly-projecting segment-shaped parts 16 of said flange-hub, said recesses 15 receiving said wings 13 on the end of the plug. Said recesses 15 are somewhat longer than are the wings 13 on the plug, as shown by the black spaces in Fig. 3 between the ends of the parts 13 and 16, in order that the flange 8 may have a free rotary motion on the head of the plug 9 before it engages with said wings 13 to carry the plug with it. The flange 8, as shown in Figs. 2 and 3, has two cams 17 (similar to the said cams 7 on the cap 6) secured on the upper side, and two cams 18 secured opposite cams 17 on the under side thereof. Said flange 8 is secured on the end of the plug 9 in the position shown in Fig. 2 by the said nut 12, which screws against the said projections 13 on said plug, the surfaces of the wings being somewhat below those of said projections, so that the flange 8 may be free to move under the nut 12 or on the end of the plug, as aforesaid. A cap 19, having a squared apex on which to place a wrench 20 (the lower end of one being shown in Fig. 1) or other tool for turning the said plug, is secured on the hub 14 of the flange 8 by screws, as shown. Said cap 19 serves to cover the nut 12 and the central portion of the end of the plug and protect it from dirt or other matter that might prevent its proper operation. The said parts having been attached to the plug, as shown in Fig. 2, the cap 6 is removed from the barrel or body of the stop-cock and said plug is inserted in the barrel, and if placed in the latter with its water-way D in a line with the sockets 3 the cams 18 under the flanges 8 will be brought opposite the ends of the cams 5 on the flange 4. The cap 6 is then secured to the flange 4 on the cock-body, having been placed over the flange 8, as shown in Fig. 1, the cap 19 standing above the plane of cap 6; but flange 8 is left free to be turned in the space or chamber between the face of said flange 4 and the inner side of the cap 6. When the cap 6 is placed on the flange 4, as above described, the cams 7 thereon are brought over the said spaces *z* between the ends of the said cams 5.

The operation of the above-described parts, whereby the plug of the cock is raised from its seat in the barrel before being turned and dropped and forced back to its seat or bearing in the barrel, is as follows: The flange 8 being turned in the direction indicated by the arrows in Fig. 5, the cams 18 thereon will move up on the ends of the cams 5, slightly lifting flange 8 and the plug 9, and then the

engagement of said wings 13 on the plug and the projections 16 on the flange takes place and the plug rotates with flange 8 until the plug shall have been turned sufficiently to shut the water-way of the cock, and at this point the cams 18 move off from cams 5 and cams 17 encounter the cams 7 on the under side of cap 6, thereby forcing flange 8 against the end of the plug and the latter tightly into the barrel 2, whereby it is again brought to a tight fit therein. Thus it is seen that flange 8 and plug 9 being lifted by said cam action, the plug is easily turned and at the end of its rotary movement it is by contrary cam action forced back into the barrel of the cock. Two of cams 7 on cap 6 are provided for the said spaces between the ends of the cams 5, in order to bring a cam near each of the ends of the cams 5, so that the said endwise motion of the plug in the barrel will be effected regardless of the direction in which the plug is turned.

In stop-cocks of large size, in which the plug is heavy, it will drop of its own weight into its place in the barrel after being lifted by the engagement of said cams 18 and 5 and turned, as aforesaid, and therefore the cams 7 on cap 6 and the cams 17 on the upper side of the flange 8 are not always essential to the proper endwise action of the plug, and may under some circumstances be omitted.

What I claim as my invention is—

1. The barrel of a plug-cock, having a flange 4 at its larger end, said flange having raised cams 5 on its surface, combined with a plug 9, a flange 8, loosely connected to said plug, whereby it is capable of a certain degree of reciprocating rotary motion thereon and of rotating with said plug, having cams on one side thereof capable of engagement with said cams 5, substantially as set forth.

2. The barrel of a plug-cock, having a flange 4 at its larger end, said flange having raised cams 5 on its surface, combined with a cap 6, secured over said flange 4 and having cams 7 thereon opposite the cam-bearing face of said flange, a plug 9, a flange 8, loosely connected to said plug, whereby it is capable of a certain degree of reciprocating rotary motion thereon and of rotating with said plug, having cams on its opposite sides capable of engagement with the cams on said flange 4 and cap 6, substantially as set forth.

3. The plug 9, having the wings 13 on one end, the flange 8, having cams 18 thereon, and recesses 15 therein to receive said wings, which recesses are of greater length than said wings, combined with the cock-barrel having the flange 4 thereon, and raised cams 5 on the surface of said flange, substantially as set forth.

4. The barrel of a plug-cock, having a flange 4 at its larger end, said flange having raised cams 5 on its surface, combined with a cap 6, secured over said flange 4 and having cams 7

thereon opposite the cam-bearing face of said flange, a plug 9, a flange 8, loosely connected to said plug, whereby it is capable of a certain degree of reciprocating rotary motion thereon and of rotating with said plug, having cams on its opposite sides capable of engagement with the cams on said flange 4 and cap 6, a nut 12, having a screw engagement with a stem on the end of said plug and covering said wings 13, and the cap 19, attached to said flange 8 and inclosing said nut, substantially as set forth. 10

RICHARD PATTEE.

Witnesses:

H. A. CHAPIN,

G. M. CHAMBERLAIN.