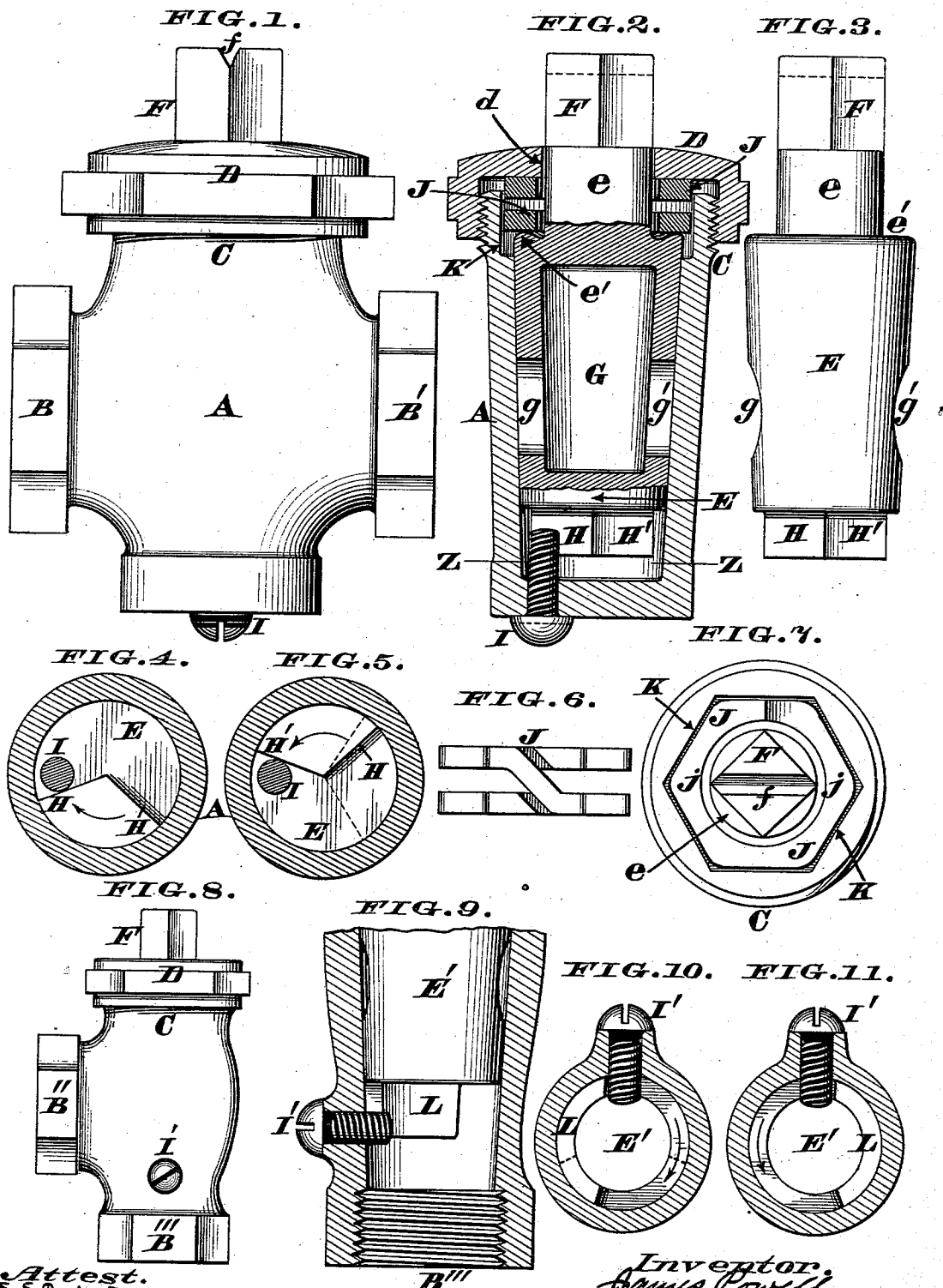


(No Model.)

J. POWELL.
PLUG COCK.

No. 379,244.

Patented Mar. 13, 1888.



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UNITED STATES PATENT OFFICE.

JAMES POWELL, OF CINCINNATI, OHIO.

PLUG-COCK.

SPECIFICATION forming part of Letters Patent No. 379,244, dated March 13, 1888.

Application filed March 25, 1887. Serial No. 232,363. (No model.)

To all whom it may concern.

Be it known that I, JAMES POWELL, a citizen of the United States, residing at Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Plug-Cocks, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to those cocks, faucets, or valves whose turning-plugs are retained within the shell or casing by a spring applied to the upper or larger end of the plug; and the object of my improvement is to prevent the motion of the plug being transmitted to the spring, and then imparted from the latter to the cap, thus causing said cap to work loose from the shell. To remedy this defect the spring that rests upon the turning-plug has an enlarged central bore to permit the free and unobstructed play of the plug-spindle, the periphery of said spring being preferably hexagonal or any other suitable non-circular shape. This spring fits within a hexagonal or other non circular chamber of the shell, and is held in place by the cap; consequently the spring cannot turn in either direction when the plug is opened and closed, and therefore the cap cannot work loose from the shell.

In the annexed drawings, Figure 1 is a side elevation of a cock or valve embodying my improvements, the plug being turned to shut off the flow. Fig. 2 is a vertical transverse section of said cock, taken in the plane of the screw-threaded stop. Fig. 3 is an elevation of the turning-plug detached from the shell. Figs. 4 and 5 are horizontal sections of the valve, taken at the line Z Z of Fig. 2. Fig. 6 is a side elevation of the spring detached from the shell. Fig. 7 is a plan of the upper end of the cock, the cap being detached therefrom. Fig. 8 is a side elevation of a modification of my invention applied to an angle-valve. Fig. 9 is an enlarged axial section through the lower portion of said valve. Figs. 10 and 11 are horizontal sections thereof in the plane of the stop.

A represents the shell or casing of a cock, valve, faucet, or other similar devices for controlling the flow of steam, gases, or fluids, and B B' are the customary pipe-connections of said shell.

C is the screw-threaded neck of the cock, and

D is the cap engaged with said neck. Cap D has a central circular orifice, *d*, through which passes the spindle *e* of the turning-plug E, the outer end of said spindle being so shaped as to form a square or other non-circular arbor, F, which is nicked at *f* to indicate the position of the ports of said plug. Plug E is chambered out at G, and has a pair of diametrically-opposite ports, *g g'*, that permit a direct flow through the valve when said ports are in line with the pipe-connections B B'. The extreme lower end of said plug has a pair of annular shoulders, H H', either of which is adapted to come in contact with a screw, I, inserted in the lower end of the shell. The upper end of plug E has a convex seat or bearing, *e'*, for the split spring J to rest upon, the peculiar construction of this spring being more clearly seen in Figs. 6 and 7. Reference to these illustrations shows that the outer periphery of the spring is hexagonal, while its inner periphery is a circular bore, *j*, of such diameter as to avoid contact with spindle *e* of the turning-plug. This non-circular spring J fits snugly within a hexagonal chamber, K, of the neck of the cock. In fitting together this cock or valve the plug E is inserted in the conical bearing of the shell or casing, and the spring J is then dropped into the hexagonal chamber K of said shell, thus causing said spring to rest upon the convex seat *e'* of said plug, as seen in Fig. 2. Cap D is then screwed to the neck C until the desired stiffness is imparted to the spring J, and when this is effected the cock is ready for use. When the plug E is turned in the direction of the arrow seen in Fig. 4, the angular shoulder H comes in contact with the screw I, thereby arresting said plug in such a position as to close the valve; but when this plug is turned in an opposite direction, as indicated by the arrow in Fig. 5, the other shoulder, H', comes in contact with said screw and again closes the valve. It will thus be seen that said screw and shoulders coact to secure the proper closure of the valve when the plug E is turned either to the right or left; but when said plug is turned to bring these shoulders to the position indicated by the dotted lines in Fig. 5, the ports *g g'* will then be in line with the pipe connections B B', and a free flow will be permitted through the valve. This turning of the plug produces but very

little friction, because the portion *e'* of said plug has but a limited bearing against the under side of spring J. Furthermore, as this spring J is confined within the non-circular chamber K it is evident the plug may be turned indefinitely in either direction without shifting the position of said spring. The ring being thus locked in position, it is apparent there is no method of communicating the motion of the plug G to cap D, and therefore the latter will always remain where it has been set; but if the spring should become weak by constant use a slight turning of the cap D will again impart the desired stiffness to said device J. The spring and plug can be detached at any time by simply unscrewing the cap D and without disturbing the stop-pin I.

In the modification of my invention seen in Fig. 8 the pipe-connections B'' B''' are at right angles to each other, and on this account the plug E' must be hollow, as represented in Figs. 10 and 11, and have at its lower open end a depending annular flange, L, whose sides may come in contact with a screw, I', inserted through the shell. When this plug is turned in the direction of the arrow seen in Fig. 10, one side of the flange L comes in contact with the screw I', and thus closes the valve, while an opposite turning of said plug, as indicated by the arrow in Fig. 11, brings the other side of said flange against said screw and again

closes the valve; but when this plug is turned so as to bring said flange to the position indicated by the dotted lines in Fig. 10 the valve will be wide open.

It is to be understood that this valve is to be furnished with a spring, non-circular chamber, and screw-cap, precisely like the devices seen in Figs. 2 and 7.

I claim as my invention—

1. The combination, in a cock, valve, or faucet, of a spring having a non-circular periphery and a central bore, a turning plug having a spindle that passes freely through said bore, a non-circular chamber that retains said ring, and a cap that compresses the latter against said plug, for the purpose described.

2. The combination, in a cock, valve, or faucet, of a turning-plug, E *e*, having a convex bearing, *e'*, and suitable ports, as *g g'*, the spring J, having a non-circular periphery and a central bore, *j*, the non circular chamber K in the neck of the valve, and an adjustable cap, D, for imparting the desired pressure to said spring, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES POWELL.

Witnesses:

JAMES H. LAYMAN,
SAML. S. CARPENTER.