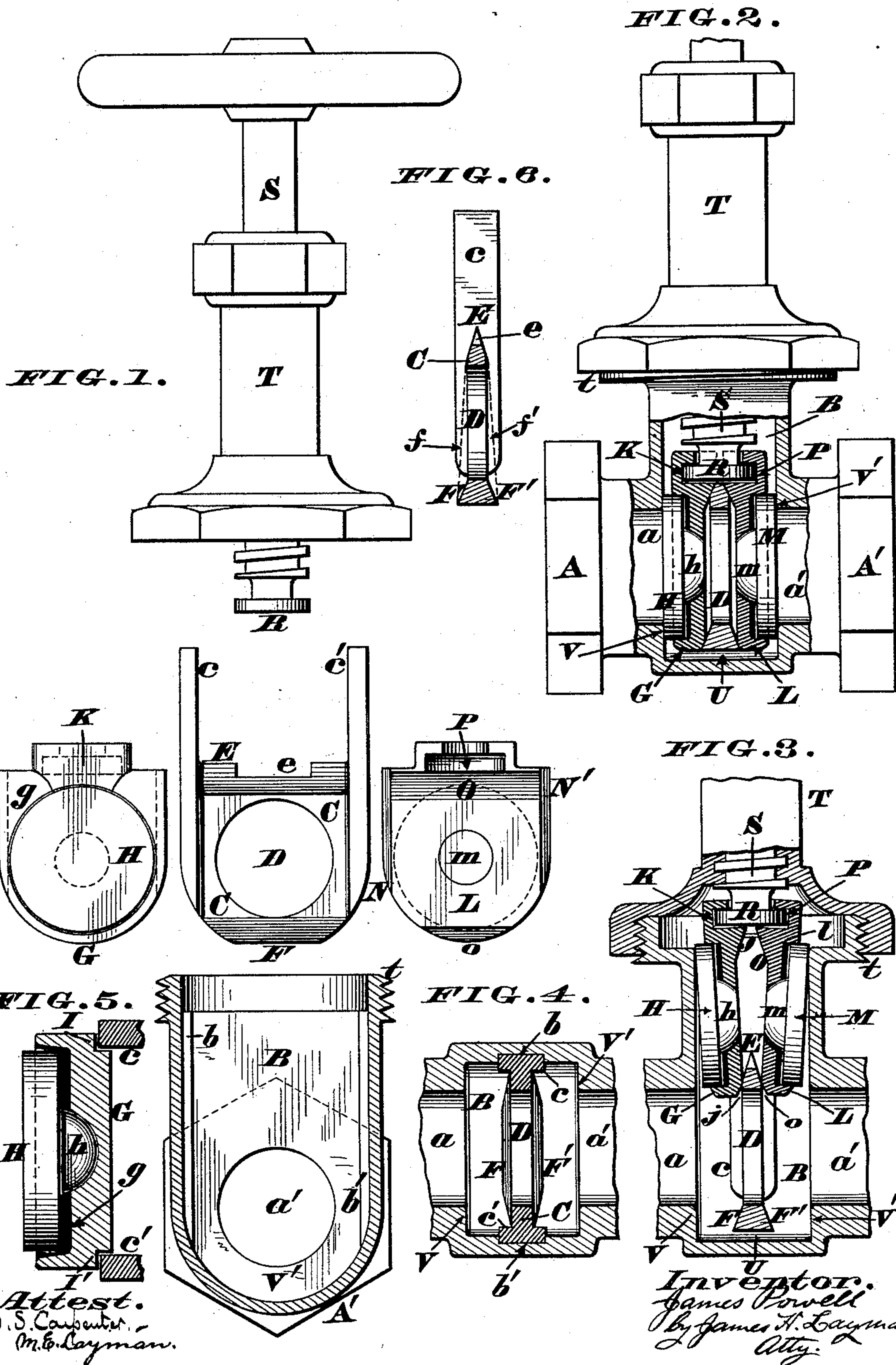


(No Model.)

J. POWELL.
COCK OR VALVE.

No. 409,334.

Patented Aug. 20, 1889.



UNITED STATES PATENT OFFICE.

JAMES POWELL, OF CINCINNATI, OHIO.

COCK OR VALVE.

SPECIFICATION forming part of Letters Patent No. 409,334, dated August 20, 1889.

Application filed August 31, 1888. Serial No. 284,229. (No model.)

To all whom it may concern:

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

10 This invention relates to those cocks or other similar appliances which are provided with a pair of valves that wedge against opposing seats in the act of being advanced or closed, and are retracted or drawn back within
15 a chamber when open, so as to afford a straight and uninterrupted passage through the inclosing shell or housing, to which latter the pipes or other conduits are secured; and my improvement comprises a novel combination
20 of devices for producing such a wedging action of the valves. Of these devices the principal member is a removable expansion-plate fitted within the valve-chamber of the shell and provided with a port of practically the
25 same diameter as the channels of said shell and in line with said channels. This expansion-plate is generally furnished with a ridge above the port and a pair of inclined bearings below said port, which ridge and bearings co-
30 act in simultaneously wedging the valves against their respective seats, each valve being loosely coupled to a carrier actuated by an ordinary valve-stem. The stem is operated either by a screw or lever or cam, or
35 other convenient instrumentality, in order that these carriers may be either advanced or retracted for the purpose of either closing or opening the valves, as hereinafter more fully described.

40 In the annexed drawings, Figure 1 shows the various parts of my cock separated from each other, the cap, expansion-plate, valves, and carriers being seen in elevation and the shell being sectioned transversely. Fig. 2 is
45 a vertical section of the cock, the valves being closed against their respective seats. Fig. 3 is a similar section of a portion of the cock, the valves being completely retracted. Fig. 4 is a horizontal section through the expansion-plate and a portion of the shell. Fig. 5
50 is an enlarged horizontal section through a

modification of the valve and carrier. Fig. 6 is a vertical section of the expansion-plate.

The shell, housing, globe, or casing of the cock, valve, or other similar appliance for
55 controlling the flow of water, steam, gas, &c., consists, essentially, of a pair of pipe ends A A' and a central valve-chamber B, said pipe ends being traversed by the customary channels *a a'*, which are axially in line with each
60 other. The opposite sides of chamber B are grooved at *b b'* to admit guides *c c'* of the expansion-plate C, the latter being pierced with a port D of practically the same diameter as the channels *a a'*, said plate having a ridge
65 E above said port and a pair of inclined bearings F F' below it, as more clearly seen in Fig. 6. Furthermore, this ridge E is cut away, as at *e*, for a purpose that will presently appear.

70 G represents one of the pair of valve-carriers, the outer face of said carrier being chambered cylindrically at *g* to permit free play of a disk-valve H, loosely coupled to said carrier by a ball-bearing *h*. The rear edges
75 of this carrier are grooved vertically, as at I I' in Fig. 5, to allow said carrier to travel along the guides *c c'* of the expansion-plate C. Moreover, the back of this carrier has at
80 top an inclined bearing J and at bottom a chamfered edge *j*, as more clearly seen in Fig. 3.

K is a semicircular socket in the upper part of this carrier. The other carrier L has a precisely similar chamber *l*, disk-valve M, ball-bearing *m*, vertical grooves N N', inclined bearing O, chamfered edge *o*, and semicircular socket P, the sockets K P of these carriers being adapted to grasp a disk or button R at the inner end of the valve-stem S, which
90 is here shown as having a screw-threaded connection with the cap T. This cap engages with a thread *t* on the upper end of valve-chamber B. When this cock is fitted together, the expansion-plate C is simply
95 dropped into the valve-chamber B, the contact of the guides *c c'* with the lower ends of the grooves *b b'* serving to arrest said plate where its port D will be in line with the channels *a a'*. The valves H M are then ap-
100 plied to their respective carriers G L, and the sockets K P of the latter are engaged around

the button R. These parts are now held together and lowered within the chamber B, care being taken to cause the grooves I I' and N N' of the carriers to slide along the guides c c' of plate C, after which act the cap T is attached to the shell or casing. When the valve-stem S is elevated or retracted, as seen in Fig. 3, the carriers G L depend freely from the disk R, the valves H M being now raised so far as to permit a direct unobstructed passage through the channels a a' and port D. To shut off the flow, the stem S is lowered or advanced, as seen in Fig. 2, during which movement the chamfered edges j o of the carriers come in contact with the inclined bearings F F' of plate C at the same time that the inclined bearings J O of said carriers are sliding down the ridge E. Consequently the valves H M are simultaneously and uniformly forced outwardly, and by the time the carriers have completed their stroke said valves are firmly wedged against their respective seats V V'. In this closed condition of the cock the button R enters the notch e of ridge E, thereby enabling a snug fitting of all the parts and causing the shell to be as small and compact as possible. The valves automatically adjust themselves, provided the seats are not exactly parallel or in case the cock is not accurately fitted together, which action is due to the fact that said valves are loosely coupled to their carriers, and therefore they will shift in any direction.

Reference to Figs. 2 and 3 shows that a passage U is left between the bottom of the expansion-plate and the chamber B, which passage allows a flow of steam or water to occur when the valves are first opened, and thus prevents "cutting" of the port D. Again, these illustrations show the ball-bearings h m as passing completely through the carriers; but in Fig. 5 the socket for the ball h is comparatively shallow, and therefore said ball does not project beyond the back of the carrier G.

While I have described the expansion-plate as occupying grooves in the opposite sides of the valve-chamber, it is to be distinctly understood that the invention is not confined to this specific construction, but the right is reserved of retaining said plate in position by any other suitable means, or of allowing it to be loose in a certain class of cocks, as the closing of the valves will cen-

tralize the plate immediately. In another modification the sides of the plate C may slope from top to bottom, as indicated by the dotted lines f f' in Fig. 6, which construction will be especially desirable when the carriers are omitted and the valves arranged to act directly against said plate.

I claim as my invention—

1. The combination, in a cock or valve, of a shell having a pair of channels and opposing valve-seats, inclined bearings within the shell above and below the axis of said valve-seats, and a pair of valves which are forced outwardly against said seats by sliding contact with said inclined bearings, substantially as described.

2. The combination, in a cock or valve, of a shell having a pair of channels and opposing valve-seats, a removable expansion-plate fitted within a chamber of said shell and provided with a port, a ridge, and a pair of inclined bearings, and a pair of valves which are forced outwardly against said seats by contact with said ridge and inclined bearings, substantially as described.

3. The combination, in a cock or valve, of a shell having a pair of channels and opposing valve-seats, a removable expansion-plate fitted within a chamber of said shell and provided with a port, a ridge, and a pair of inclined bearings, a pair of valves loosely coupled to carriers having inclined bearings and chamfered edges, and means for coupling said carriers to the operating-stem, substantially as described.

4. The combination, in a cock or valve, of a shell having a pair of channels a a' and opposing seats V V', a removable expansion-plate C c c', fitted within a valve-chamber B of said shell and provided with a port D, ridge E, and inclined bearings F F', a pair of valves H M, loosely coupled to carrier G L, having inclined bearings J O and chamfered edges j o, and means, as the sockets K P, for coupling said carriers to the disk R of an operating-stem, substantially as herein described.

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

JAMES POWELL.

Witnesses:

JAMES H. LAYMAN,
SAML. S. CARPENTER.