No. 645,662. Patented Mar. 20, 1900.

V. J. EMERY.

BALL COCK.

(Application filed Jan. 26, 1898.)

(No Model.)

Fig. 1.

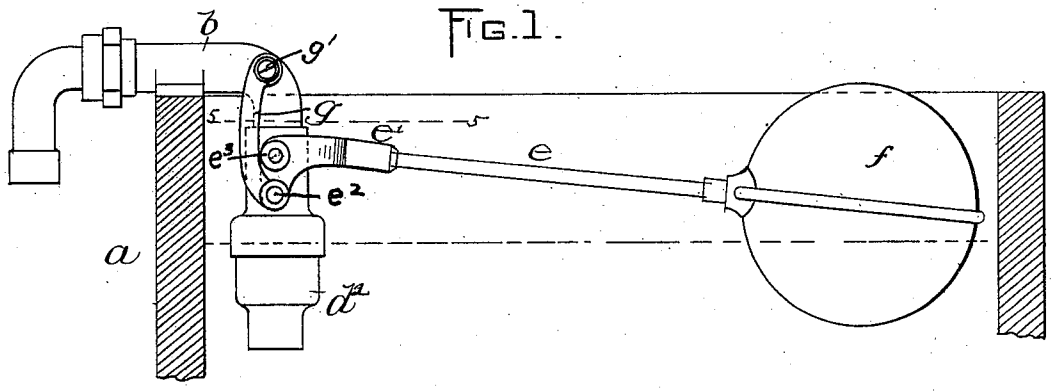


Fig. 2.

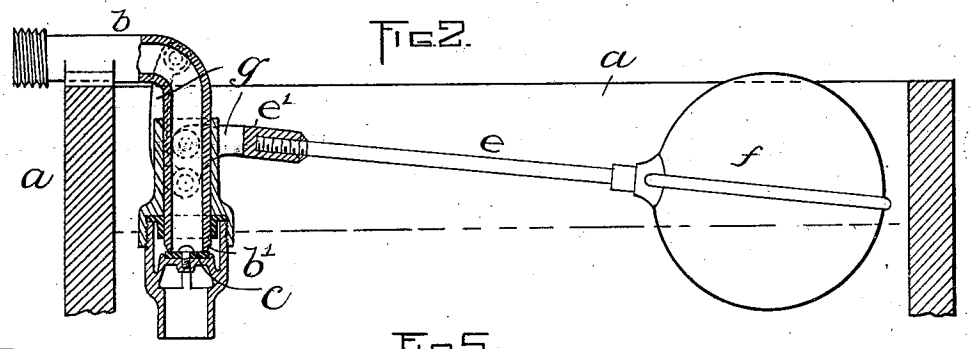


Fig. 3.

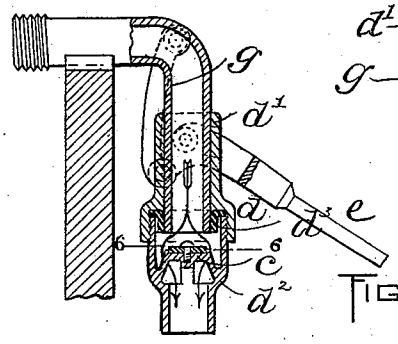


Fig. 5.

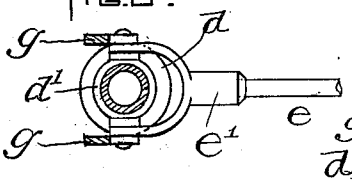


Fig. 4.

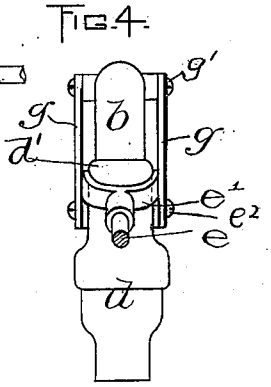
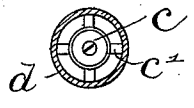


Fig. 6.



WITNESSES:
A. D. Harrison
E Baltzelden

INVENTOR:
Victor J. Emery
by Wright, Brown & Quinby
Att'ys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

VICTOR J. EMERY, OF WOLLASTON, MASSACHUSETTS, ASSIGNOR TO HENRY N. LIBBEY, OF BOSTON, MASSACHUSETTS.

BALL-COCK.

SPECIFICATION forming part of Letters Patent No. 645,662, dated March 20, 1900.

Application filed January 26, 1898. Serial No. 667,990. (No model.)

To all whom it may concern:

Be it known that I, VICTOR J. EMERY, of Wollaston, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Ball-Cocks, of which the following is a specification.

This invention has relation to ball-cocks, and has for its object to provide a device of the class named which may be employed for high-pressure service.

Many of the ball-cocks heretofore proposed and employed are of little use where the water is delivered at a high pressure because of the inability of the ball to hold the valve against its seat without permitting an escape and wastage of water and because of the "hammering" of the valve against its seat.

This invention consists of a cock in which the valve is moved toward its seat by the ball through the medium of a lever fulcrumed in such a way as to exert force against the valve sufficiently great to overcome the pressure of the water. The valve is held within a sleeve sliding on the discharge end of the pipe or casing, and the ball-rod is pivoted near its rear end to the sleeve and is fulcrumed at its extremity upon two swinging links pivoted to the pipe or casing, all as I shall now proceed to describe and claim.

Reference is to be had to the accompanying drawings and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 represents in side elevation a ball-cock embodying the invention. Figs. 2 and 3 represent sections through the same, showing, respectively, the valve closed and opened. Fig. 4 represents the ball-cock in front view. Figs. 5 and 6 represent cross-sections.

Referring to the drawings, *a* indicates the walls of the tank to which the pipe or casing *b* is secured. The last-mentioned part is bent at an angle of ninety degrees, so as to have a discharge end projecting down into the tank, and its extremity is formed into a valve-seat *b'*. The valve *c* is formed or secured in a sleeve *d*, being supported by radial arms *c'*, between which there is sufficient space to permit the free escape of water from the pipe or casing *b*. The sleeve is formed with an upper portion *d'*, internally threaded at its lower end and screwed onto the externally-threaded end of the lower portion d^2, which is reduced in cross-diameter below the valve *c*. Between the meeting ends of the two portions of the sleeve and held in place by the same is a cup-packing having its lip or skirt projecting downwardly and pressing against the outer periphery of the pipe or casing. The socket-piece *e'* for the rear end of the rod *e*, on the outer end of which the ball *f* is secured, is bifurcated, so as to extend on either side of the sleeve, and its forked ends are downwardly curved and pivoted at e^2 to the ends of links *g*, in turn pivoted at *g'* at their upper ends to the casing *a*. The bifurcated ends of the socket-piece are pivoted at e^3 to the sleeve, and it will be noticed that when the valve is closed the pivot-points are substantially in alinement.

When water is allowed to flow out of the tank, the ball drops, and the valve is thrust away from its seat, and when the escape of water from the tank is stopped and enough water flows from the inlet-pipe to raise the ball the latter through the rod or lever raises the sleeve and presses the valve against its seat with considerable force because of the powerful leverage exerted against the sleeve by the ball. Any escape of water between the sleeve and the pipe when the valve is being thrust against the seat is prevented by the cup-packing.

In order to prevent lateral movement of the lower ends of the links when the valve is closing to such extent as to carry them beyond the point of alinement with the pivotal points *g'* e^3, it is desirable that means shall be afforded for stopping such lateral movement at the proper point. Without stops for this purpose there would be a liability of the valve opening by a slight rise of the float above its normal elevation and result in an overflow of the tank. It is desirable of course that the seating of the valve shall not be depended upon for this purpose, for a valve and its seat are subject to wear, particularly when either or both are of elastic material.

As most clearly shown in Fig. 1 of the drawings, the construction is such that when the

three pivotal points are in substantial alinement and the valve is closed the inner sides or edges of the links contact with stops carried by the sleeve, which stops may be portions of the lever adjacent to the pivot e^3 or may be the projecting ends of said pivot. In order that the three pivotal points may be in substantial alinement when the valve is closed, the links are curved, as shown.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A ball-cock comprising a pipe or casing having a valve-seat formed on its end, a sleeve sliding on said pipe and having an internally-arranged valve, links pivoted to the pipe or casing, a valve rod or lever fulcrumed at its bifurcated end in the free ends of the links, and pivoted to the sleeve, and means for limiting the lateral movement of the links when the valve is closed, substantially as set forth.

2. A ball-cock comprising a pipe or casing having a valve-seat formed on its end, a sleeve sliding on said pipe and having an internally-arranged valve, links pivoted to the pipe or casing, a valve rod or lever fulcrumed at its bifurcated end in the free ends of the links and pivoted to the sleeve, stops carried by the sleeve for limiting lateral movement of the links when the valve is closed, and a cup-packing interposed between the sleeve and the pipe or casing.

3. In a ball-cock the combination with a pipe or casing having a valve-seat formed on its end, of a sleeve sliding on said pipe and having an internally-arranged valve, curved links pivoted to the pipe or casing, a bifurcated valve rod or lever having its end bent and pivoted to the links, said rod being likewise pivoted to the sleeve and the pivots being all substantially in alinement when the valve is closed, and stops carried by the sleeve to limit the lateral movement of the curved links when the valve is closed.

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

VICTOR J. EMERY.

Witnesses:
E. BATCHELDER,
A. D. HARRISON.