No. 829,462. PATENTED AUG. 28, 1906.

A. F. CURTIN.

BALL COCK.

APPLICATION FILED JUNE 16, 1905.

Fig. 1.

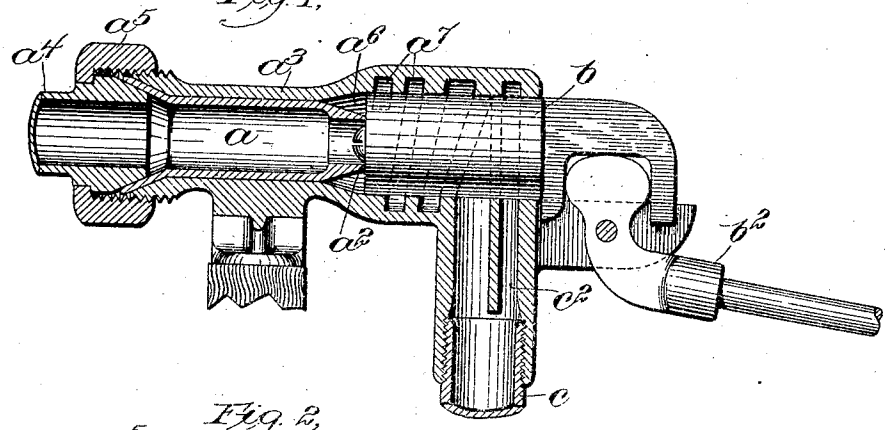


Fig. 2.

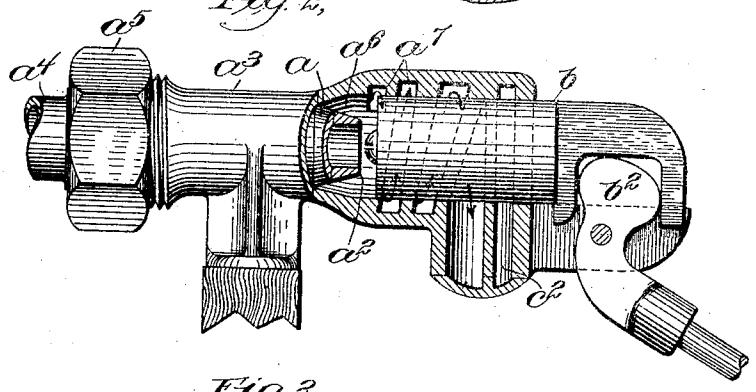


Fig. 3.

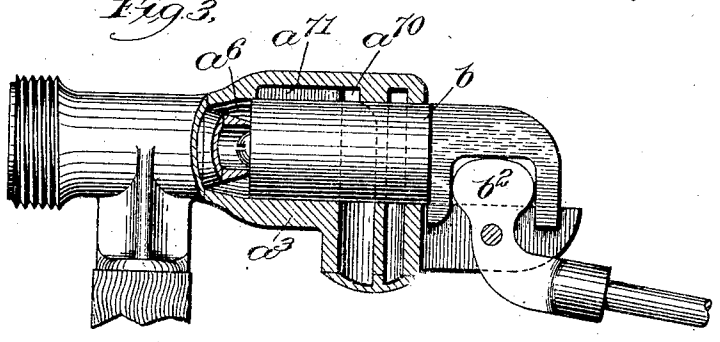
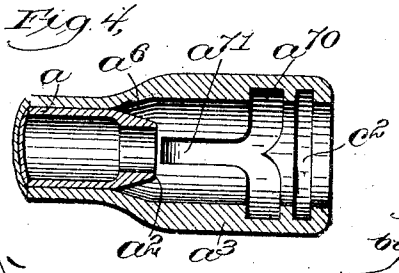


Fig. 4.



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UNITED STATES PATENT OFFICE.

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BALL-COCK.

No. 829,462. Specification of Letters Patent. Patented Aug. 28, 1906.

Application filed June 16, 1905. Serial No. 265,618.

To all whom it may concern:

Be it known that I, ANDREW F. CURTIN, a citizen of the United States, residing in Medford, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Ball-Cocks, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a ball-cock, the object of the invention being to prevent so far as possible the disagreeable hissing sound caused by the outflowing water, as well as the sound due to the throttling of the water as the valve approaches its seat.

In accordance with the invention the valve-shell, which is provided with an an inlet and a valve-seat at said inlet and with a lateral outlet beyond the said seat, is further provided with a transverse passage which extends around the valve itself, the valve having a close but not absolutely water-tight fit in the shell and being longitudinally movable toward and from the seat under the influence of the float. The valve proper, whether seated or unseated, occupies a portion of the space in the shell between the inlet and the outlet, so that the water in passing from the inlet to the outlet flows along the valve and also through the transverse passage, the main volume of water taking the latter course. The two streams, however, are at an angle to each other, so that each breaks the force of the other, and the transverse passage terminates in substantial alinement with the outlet-tube, so that when the water finally reaches the said outlet-tube the force of the flow is not only broken, but the direct flow of water is not in any way retarded or influenced, so that the water will escape silently and without the noise produced in the ordinary ball-cock, where the water impinges against the end of the valve or other abutment and is deflected thereby into the outlet.

Figure 1 is a vertical section of a ball-cock embodying the invention, showing the valve seated. Fig. 2 is a similar view showing the valve open; Fig. 3, a similar view showing a modification; and Fig. 4, a horizontal section through the valve-shell with the valve-plunger removed, the section showing the upper inner surface of the shell.

In the construction shown in Fig. 1 the valve-seat a^2 is formed at the end of a detachable member a, which is inserted in the inlet-passage to the valve-shell a^3 and held in position by means of the inlet-pipe a^4, which is coupled to the inlet portion of the shell by means of a coupling-nut a^5. The valve b, which is in the form of a longitudinally-movable plunger controlled by the ball member b^2, is fitted in the valve-shell a^3 and held against the valve-seat a^2 by the upward pressure of the float. The fit of the valve, however, is not absolutely water-tight, and when the valve is unseated part of the water will flow along the valve. The main volume of water, however, is deflected into a transverse passage around the valve b, the said passage in the construction shown in Figs. 1 and 2 being spiral in shape and gradually increasing in capacity until it reaches the outlet-tube c. The stream of water flowing through the passage mingles with the water which flows along past the body of the valve b, and tends to deflect such water into the transverse passage, the two streams checking each other, while the main body of water is finally delivered into the outlet-tube in substantial alinement therewith.

In order to prevent any water from escaping through the valve-opening in the shell, a supplemental passage c^3 is formed around the valve b between the main outlet-passage and the end of the valve-shell a^3 where the valve enters the shell, this supplemental passage collecting substantially all the excess of water and deflecting it into the main outlet-passage. As the valve b leaves its seat the water passes into the annular space a^6 around the valve-seat a^2 and thence downward through the spiral passage a^7 and up and around in the direction of the arrow, Fig. 2, finally discharging into the outlet-pipe c in substantial alinement therewith. The area of the valve is considerably larger than the area of the opening through the seat, so that as the valve approaches the seat in closing, thus throttling the flow of water, the pressure upon the face of the valve will be gradually reduced, causing the valve to close quickly and easily. It is not essential that the transverse passage should be spiral in form, and, as shown in Figs. 3 and 4, a single annular passage a^{70} may be formed around the valve b, the water being admitted to said annular passage, when the valve is unseated, through

a longitudinal channel a^{71}, which extends from the space around the valve-seat to the channel a^{70}.

What I claim is—

1. In a ball-cock, a valve-shell and valve longitudinally movable therein; a valve-seat within said shell; an outlet-tube leading from said shell; and a spiral passage leading around said valve from said valve-seat to said outlet-tube, substantially as described.

2. In a ball-cock, a valve-shell and valve longitudinally movable therein; a valve-seat within said shell; an outlet-tube leading from said shell; and a spiral passage leading around said valve from said valve-seat to said outlet-tube, said passage increasing in capacity as it approaches the outlet, substantially as described,

3. In a ball-cock, a valve-shell provided with an inlet-passage and an outlet-passage at an angle to each other; a valve controlling the inlet-passage and substantially occupying the space within said inlet-passage, but affording a small supplemental water-outlet passage around said valve; and a main water-outlet passage at an angle to said supplemental passage and terminating in substantial alinement with the outlet.

4. In a ball-cock a valve-shell provided with a valve-seat; a valve movable in said shell toward and from said seat; an outlet-passage from said shell; said valve being located between said seat and said outlet-passage; and main and supplemental water-passages through said shell past the valve between said seat and said outlet-passage.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANDREW F. CURTIN.

Witnesses:

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