J. SHANKS.

BALL COCK.

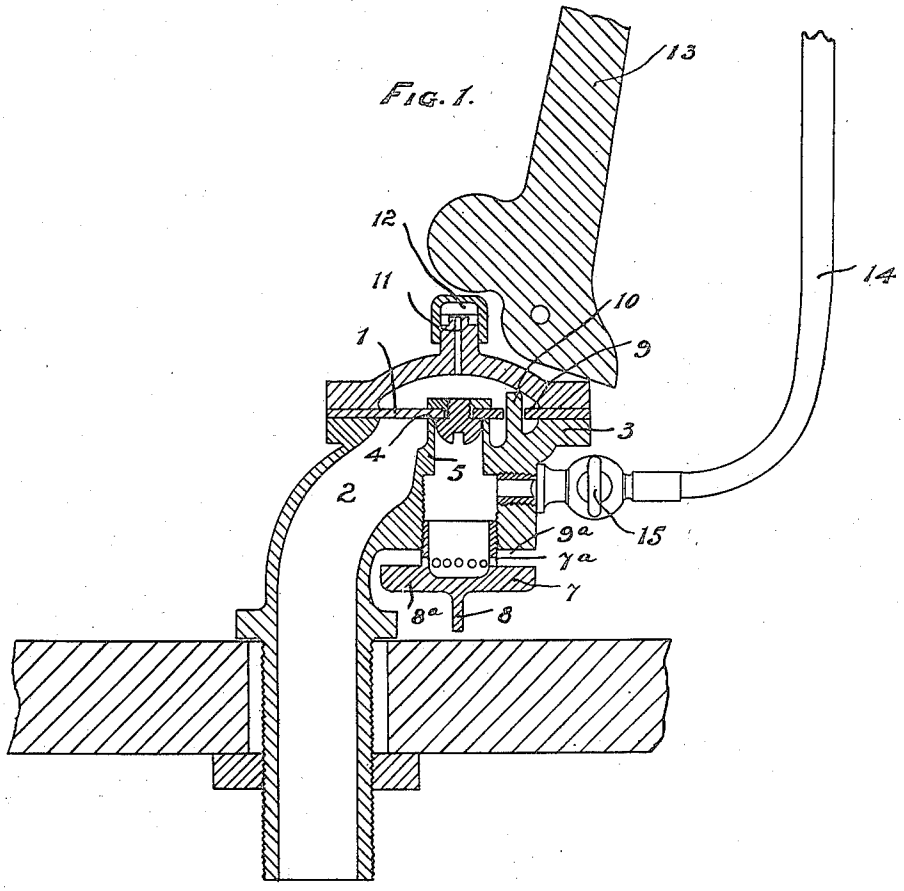
APPLICATION FILED JULY 3, 1914.

1,165,913.

Patented Dec. 28, 1915.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

M. E. Rathbun

L. M. Sweeney.

INVENTOR:

John Shanks

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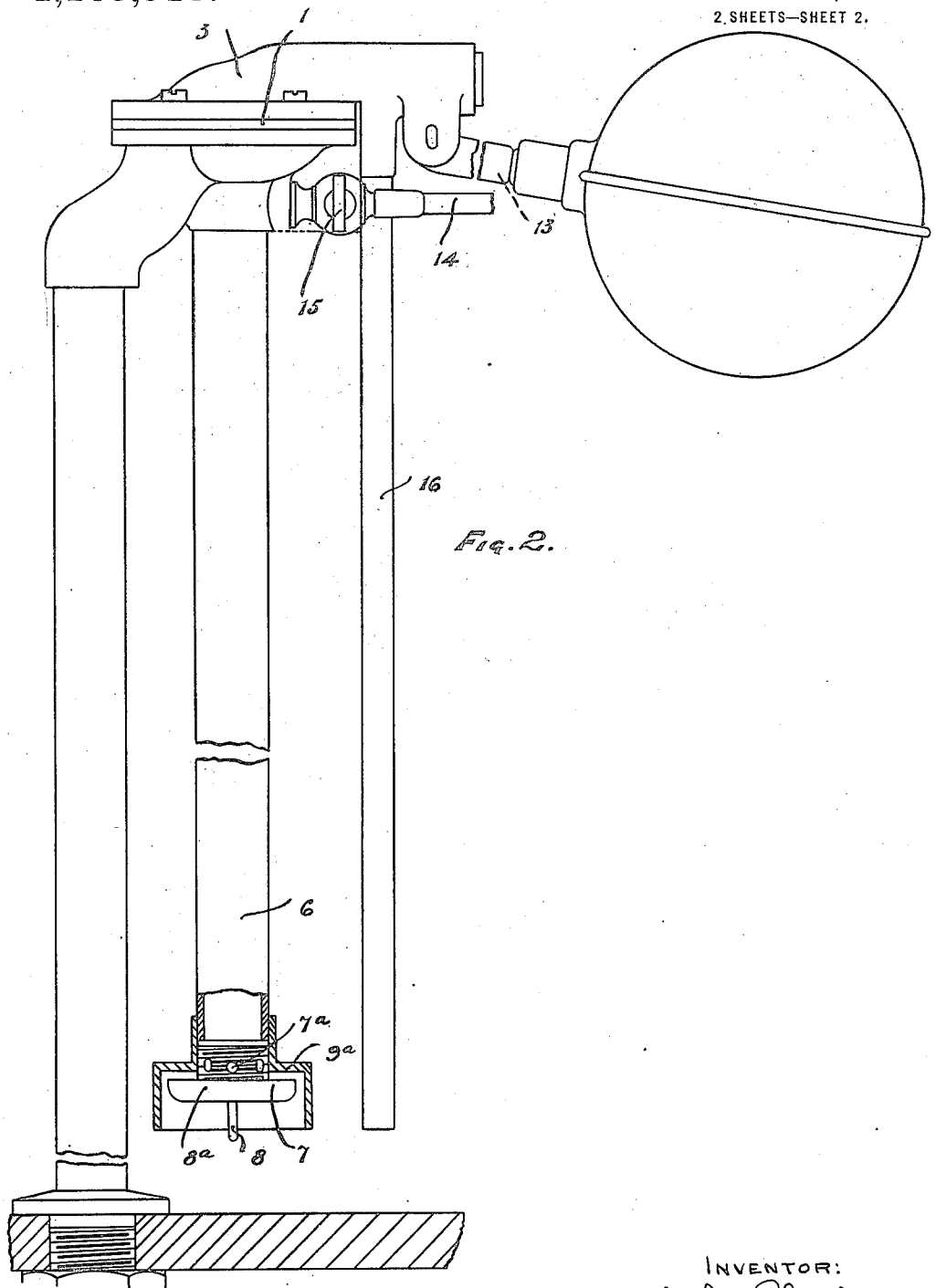


Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN SHANKS, OF BARRHEAD, SCOTLAND.

BALL-COCK.

1,165,913. Specification of Letters Patent. Patented Dec. 28, 1915.

Application filed July 3, 1914. Serial No. 848,710.

To all whom it may concern:

Be it known that I, JOHN SHANKS, a subject of the King of the United Kingdom of Great Britain and Ireland, and residing at Barrhead, Renfrewshire, Scotland, have invented a certain new and useful Improvement in Ball-Cocks, of which the following is a specification.

This invention relates to improvements in ball cocks for controlling the supply of water to cisterns or the like of the type wherein the valve proper is carried by a diaphragm, and has for its primary object to provide a fitting which insures silence of delivery following discharge irrespective of the water pressure.

The invention is illustrated in the accompanying drawing in which—

Figure 1 is a vertical section of a construction embodying the invention; Fig. 2 illustrates a form of deflector different from that shown in Fig. 1.

The same reference letters denote similar parts in the several views.

Referring to the drawing, 1 denotes the diaphragm which is so fitted in relation to the water inlet connection 2 that the water inlet to the diaphragm casing 3 is eccentric to the diaphragm 1, the valve part 4 being disposed centrally of the diaphragm 1. The diaphragm and the valve part 4 form a diaphragm valve which coöperates with a seating presented by the end face of an outlet connection 5 from which connection the water passing the diaphragm valve flows into the cistern or into a silencing tube 6 (Fig. 2) and thence into the cistern. Preferably fitted at the outlet of said connection 5, or at the flanged end of said silencing tube 6, is an adjustable ported tubular member 7 the ports 7^a of which may be more or less covered according to the position of said member. For example, said member 7 may be screw-threaded into the end of said connection 5 or silencing tube 6 and according to the position to which it is adjusted by rotation of a wing 8 formed on a disk 8^a on the end thereof, the ports may be more or less covered; the extent to which the ports are covered being varied to suit the pressure. The said disk 8^a is so positioned in relation to the end face 9^a or flanged end of the outlet connection or silencing tube that the water is deflected from a truly vertical path and passes into the cistern in the form of a thin film. The flanged part 9^a, attached to the lower end of the outlet connection or silencing tube 6, incloses the disk-like portion or member 7 which extends radially beyond the ported part of the adjustable deflector, so that said part 9^a serves as a hood to inclose the said disk-like portion 7 of said adjustable deflector, and thus acts to direct the discharging water downward. Alternatively, any suitable form of deflector may be employed.

By-water passes to the side of the diaphragm 1 remote from the inlet by way of a perforation presented by an eyelet 9, and to insure that such perforation shall not be choked by grit, etc., the eyelet is entered by a needle-like projection 10 formed on or fixed to the casing 3 on either side of the diaphragm, said projection 10 serving on fluctuation of the diaphragm to dislodge any obstruction tending to choke the perforation.

On the side of the diaphragm casing remote from the inlet is a port 11 adapted to be closed by a movable cap member or release valve 12 or the like dependent for its actuation on the movement of the float controlled lever 13.

As shown in Figs. 1 and 2, there is fitted to the outlet connection an after-service tube 14 for refilling the closet pan after discharge. To prevent the possibility of undue waste of water, the said after-service tube 14 is preferably fitted with a manually adjustable cock 15 controlling the flow of water through said tube 14.

As shown in Fig. 2, a release tube 16 may be fitted to the diaphragm casing, said release tube serving to conduct excess water from the side of the diaphragm adjacent to the member 12.

The ball cock may be fitted so that the diaphragm is located in a horizontal plane or a vertical plane or any intermediate plane.

The pressure of the water in the chamber of the valve through the inlet connection 2 on the diaphragm 1 is equal, per unit area, owing to the by-water communication to the lower surface of said diaphragm permitted by the port 9 in said diaphragm. As the upper surface of the diaphragm valve is of greater effective area than the lower surface thereof the water pressure in the valve chamber will normally hold the said valve in engagement with its seat on the outlet connection 5 through which water is dis-

charged into the cistern, to fill the same. The release valve 12, which in the construction herein shown has a sliding fit on the nipple through which the port 11 is formed, will, when the cistern tank is filled with water, be held to its seat by an elbow or projection on the float-controlled lever 13. When, however, water is discharged from the cistern, for the flushing operation, and the float-controlled lever 13 falls so that it no longer holds the release valve 12 to its seat, the said release valve 12 will be lifted by the pressure of water in the valve chamber, thereby opening the port 11 and releasing the water pressure from the upper side of the diaphragm valve, thus permitting the latter to be lifted from its seat on the outlet connection 5, so that water will flow through the passage in the said outlet connection to fill the cistern. As the level of the water rises in the cistern the float-controlled lever 13 will be operated to close the said release valve 12, thus restoring the normal pressure in the valve chamber so as to close the diaphragm valve and to shut off the flow of water to the cistern.

I claim:—

1. In a ball cock cistern water-supply valve, in combination, a valve casing having an eccentric inlet and a central outlet connection, a release valve on said casing, a float-controlled member for operating said release valve, a movable diaphragm valve located in said casing and controlling said outlet connection, a freely movable part of the diaphragm portion of said valve having an eccentric perforation for passage of by-water, and a fixed member penetrating said perforation and serving to remove obstructions tending to choke said perforation.

2. In a water supply valve, the combination with a valve casing provided with an outlet connection to the cistern, of an adjustable deflector located at the discharge end of said outlet connection and consisting of a member comprising a ported tubular part having an adjustable connection with the discharge end of said outlet connection, so as to vary the exposed area of the ports thereof, and a disk-like portion closing one end of said ported tubular part and extending radially beyond the ported portion thereof, said ports being between said disk-like portion and the end wall of said outlet connection so as to discharge water into the cistern in the form of a thin film.

3. In a water supply valve, the combination with a valve casing provided with an outlet connection to the cistern, of an adjustable deflector located at the discharge end of said outlet connection and consisting of a member comprising a ported tubular part having an adjustable connection with the discharge end of said outlet connection, so as to vary the exposed area of the ports thereof, and a disk-like portion closing one end of said ported tubular part and extending radially beyond the ported portion thereof, said ports being between said disk-like portion and the end wall of said outlet connection so as to discharge water into the cistern in the form of a thin film, and a hood on said outlet connection inclosing the said adjustable deflector.

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

JOHN SHANKS.

Witnesses:

WALLACE CRANSTON FAIRWEATHER,

JOHN TRAILL STEVENSON.