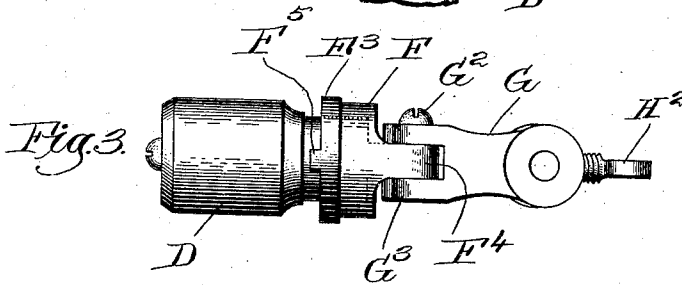
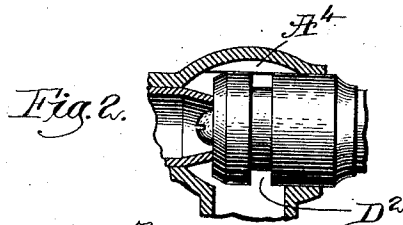
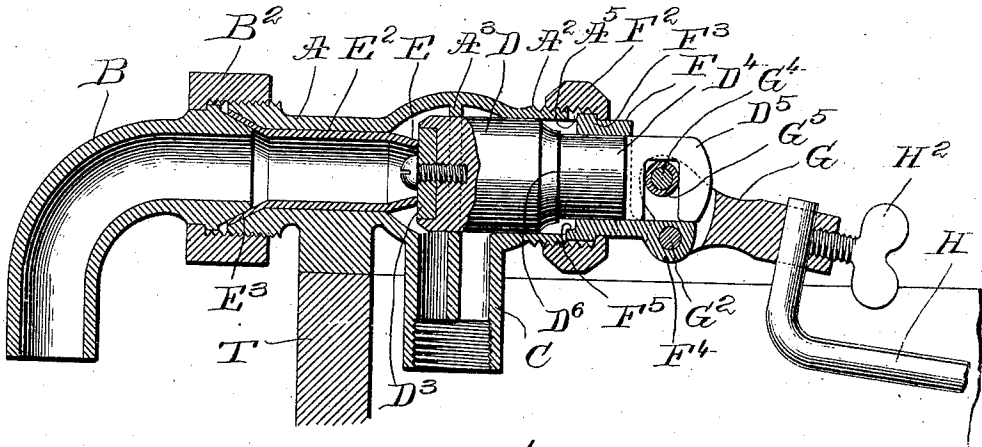


T. W. RYAN.
 BALL COCK.
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986,866.

Patented Mar. 14, 1911.

Fig. 1.



Witnesses.
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THOMAS W. RYAN, OF CONCORD JUNCTION, MASSACHUSETTS.

BALL-COCK.

986,866.

Specification of Letters Patent. Patented Mar. 14, 1911.

Application filed August 11, 1909. Serial No. 512,289.

To all whom it may concern:

Be it known that I, THOMAS W. RYAN, a citizen of the United States, residing at Concord Junction, county of Middlesex, and State of Massachusetts, have invented an Improvement in Ball-Cocks, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to a ball cock such as is used for controlling the supply of water to the tanks of water closets.

The object of the invention is to provide a device of this character which shall be of simple and efficient construction capable of being readily assembled and readily taken apart and re-assembled for repairs, and to provide a device which shall be accurate in its operation and in the control of the water supply.

The nature of the invention will more fully appear from the accompanying description and drawings and will be particularly pointed out in the claims.

The drawings represent the device in its preferred form and in full size for ordinary uses.

In the drawings Figure 1 shows the device chiefly in longitudinal, vertical cross-section in position on the tank. Fig. 2 is a view of a detail showing a slightly different form of construction. Fig. 3 is a bottom plan view of the plunger valve and connected parts, shown in Fig. 1, removed from the casing.

The device comprises a horizontally disposed casing A adapted to be secured in any suitable manner to the top of the water tank T. Water is admitted to the casing at one end through the supply pipe, the upper portion of which is shown at B. The end of this inlet pipe B is secured by an ordinary coupling B² to the casing. The casing is enlarged near its central portion and there provided with a downwardly projecting discharge pipe C. The flow of water from the inlet end of the casing to the discharge opening is controlled by a horizontally movable plunger valve D co-acting with an annular valve seat E. The valve seat E is pre-

erably formed on the end of a sleeve E² fitting into the casing and held in place by its flared end E³, being locked between the beveled ends of the inlet pipe B and the casing.

The plunger valve D is guided in its reciprocations by the extended end A² of the casing and by a transverse rib A³ projecting from the inner wall of the enlarged central section of the casing, but it may be guided in other ways, as illustrated in Fig. 2, where the enlarged central section of the casing is shown as provided with longitudinal ribs A⁴ for that purpose, the recess D² in the plunger valve allowing the water to pass readily to the discharge opening. The plunger valve is provided at its effective end with the usual leather or fiber washer D³ held in place by a screw.

The plunger valve D is extended to form a shank D⁴ and the end of the shank is flattened at D⁵ and provided with an open transverse slot. The shank D⁴ of the valve is mounted in an annular support F and this support is locked in position by a coupling F² engaging a flange F³ on the support F and drawing it into contact with the end of the end-portion A² of the casing.

A lever G to which the rod H from the ball is connected by a suitable set screw H² is fulcrumed on a horizontal, transverse, removable fulcrum pin G² carried in a projection F⁴ from the annular support F. The lever G is provided with a forked arm G³, and a pin G⁴ carrying an anti-friction roll G⁵ is mounted in the forked arm and engages the shank of the plunger valve in the transverse slot thereof.

The position of the annular support to insure the movement of the lever G in a vertical plane is secured by forming diametrically opposite notches A⁵ in the end of the end-portion A² of the casing, and in providing the annular support F with a lug F⁵ adapted to enter one of said notches when the parts are locked in position. As shown in Fig. 1, the lug F⁵ is seated in and fills the lower notch and in this position the ball cock is in operative position for controlling the supply of water to the tank. If for any reason it is desired to repair the tank or shut off the water supply the cou-

pling F^2 is loosened until the annular support F can be moved to release the lug F^5 from the notch and then the annular support F is given a half rotation until the lug F^5 is opposite the upper notch A^5 , whereupon the coupling F^2 is tightened up and the weight of the ball will act to hold the plunger valve up against the valve seat, shutting off the water.

10 The provision of the open transverse slot in the end-portion D^5 of the shank of the plunger valve, and the provision of the removable fulcrum pin G^2 enables the plunger valve and its operative lever and the annular support to be readily assembled, taken apart, and re-assembled. Upon removing the fulcrum pin the lever and plunger valve may be rotated with respect to the support until the pin G^4 and its roll can be slipped out from the slot of the shank of the valve, and in a similar manner the parts may be replaced. Thus the anti-friction roll G^5 is not disturbed and the pin G^4 can be firmly riveted in place. When the parts are in operative position the rearward or opening movement of the plunger valve is limited by the shoulder D^6 thereon contacting with the flange F^3 of the annular support.

It will thus be seen that an extremely simple and efficient construction is provided by means of which the flow of water may be accurately controlled. The leverage is such as to insure the power necessary to force the valve against its seat to cut off the water upon the rising of the ball. The plunger valve is guided practically throughout its length so that there can be no binding of the parts. The valve seat being formed on the movable sleeve can be readily re-ground when necessary. The danger of any rotary movement of the valve support is eliminated, and the movement of the ball-carrying lever in a vertical plane is insured, while the means for reversing the position of this lever and holding it locked in reversed position enables the water to be shut off and maintained shut off at any time required. The connection between the ball-carrying lever and the plunger valve shank enables the ready assembling, taking apart and re-assembling of the parts.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is:

55 1. A ball cock comprising, a horizontal casing provided at one end with diametrically opposite notches, a plunger valve reciprocating in said casing, an annular support surrounding the plunger shank and provided with a lug adapted to engage either of said notches, a ball carrying lever fulcrumed on said support and operatively engaging the shank of the plunger, the said lug when in engagement with one of said

notches insuring the position of the fulcrum axis in a horizontal plane to allow free movement of the ball carrying lever in reciprocating the plunger valve and when in engagement with the other of said notches insuring the reversal of position of the ball carrying lever to cause it by its weight to maintain the plunger valve closed, and means for locking said support to the said casing with the lug in engagement with either of said notches.

2. A ball cock comprising, a horizontal casing provided with diametrically opposite notches at the end thereof, a plunger valve reciprocating in said casing, an annular support surrounding the plunger shank and provided with an annular flange, a ball carrying lever fulcrumed on said support and operatively engaging the shank of the plunger, a lug projecting from said flange and adapted to engage either of said notches, the said lug when in engagement with one of said notches insuring the position of the fulcrum axis in a horizontal plane to allow free movement of the ball carrying lever in reciprocating the plunger valve and when in engagement with the other of said notches insuring the reversal of position of the ball carrying lever to cause it by its weight to maintain the plunger valve closed, a coupling fitting over said annular support against said flange and threading onto the end of the casing whereby the support may be locked by said coupling with the said lug in engagement with either of said notches.

3. In a ball cock an annular support provided with a rearward projection, a valve shank rotatable and longitudinally movable in said support having a shoulder adapted to contact with the inner end of said support, and also provided with an open transverse slot, a lever having one arm engaging the shank in said slot, a removable fulcrum pin for connecting the lever to the projection of the support, whereby the rearward movement of the valve shank is limited by the engagement of the shoulder thereon with the forward end of the said support, and whereby the lever and valve shank may be readily disengaged by removing the fulcrum pin and rotating the valve shank and lever with relation to the support.

4. In a ball cock an annular support provided with a rearward projection, a valve shank rotatable and longitudinally movable in said support having a shoulder adapted to contact with the inner end of said support, and also provided with an open transverse slot, a lever carrying on one arm an anti-friction roll engaging the shank in said slot, a removable fulcrum pin for connecting the lever to the projection of the support, whereby the rearward movement of the valve shank is limited by the engage-

ment of the shoulder thereon with the forward end of the said support, and whereby the lever and valve shank may be readily disengaged by removing the fulcrum pin
5 and rotating the valve shank and lever with relation to the support.

name to this specification, in the presence of two subscribing witnesses.

THOMAS W. RYAN.

Witnesses:

EMILY C. HODGES,

THOMAS J. DRUMMOND.

In testimony whereof, I have signed my

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
