

E. J. KIVELL.
BALL COCK.
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1,037,638.

Patented Sept. 3, 1912.

FIG. 1.

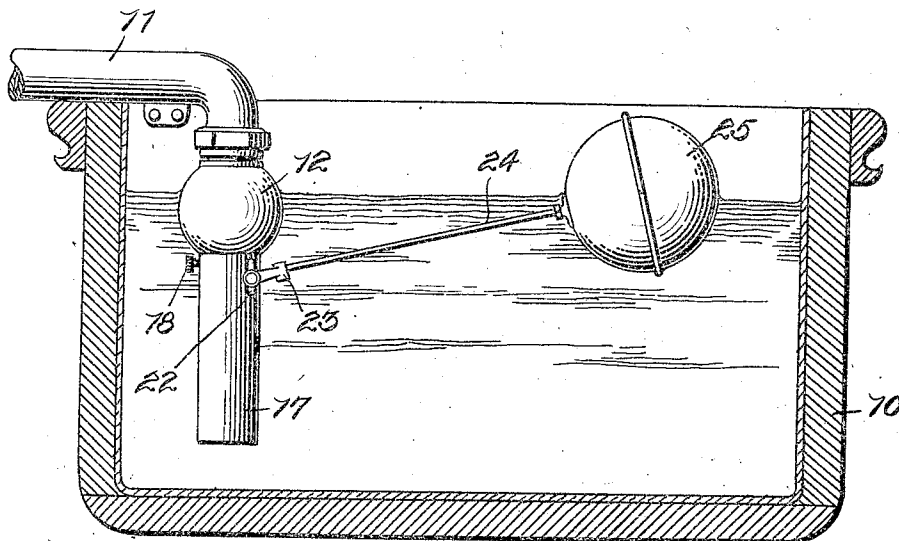
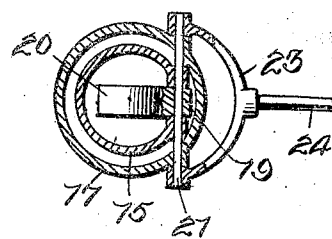
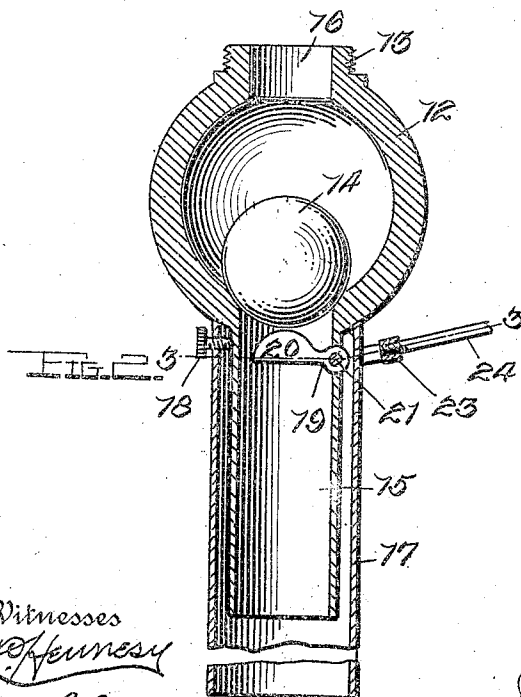


FIG. 2.



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BALL-COCK.

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To all whom it may concern:

Be it known that I, EDWARD J. KIVELL, a citizen of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Ball-Cocks; and I do hereby declare the following to be a full, clear and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to valves for flush tanks, and has for its objects to provide a means whereby the water inlet of the latter may be automatically operated from the float in such a manner that the flowing of the water will be inaudible.

It also contemplates the construction of a flush tank wherein the float will readily operate the valve, and to provide a valve operated in this manner which will close the inlet pipe automatically, the float being in no way permanently connected to the valve.

With the above and other objects in view, this invention consists in the construction, combination and arrangement of parts, all as hereinafter more fully described, claimed and illustrated in the accompanying drawings, wherein:

Figure 1 is a central section taken through the flush tank, illustrating the present invention as applied thereto; Fig. 2 is a central, vertical section of a valve and casing forming the subject matter of the present invention; Fig. 3 is a section taken along line 3—3 of Fig. 1.

This valve forming the subject matter of the present invention comprises a spherical casing detachably secured to the inlet pipe and located within the flush tank of any suitable construction. This spherical casing is provided with a dependent tubular member or pipe, which is adapted to be closed by the ball operable within said spherical casing. An auxiliary casing or pipe surrounds, and is adapted to move longitudinally on the dependent tubular member of the spherical casing, and is adapted to be retained in various positions thereon, said casing being of such construction that the lower terminal thereof is located adjacent to the bottom of the flush tank. This construction of the inner tubular member and outer tubular casing deadens the noise of

the water flowing from the spherical casing heretofore referred to, to the flush tank. The valve operating mechanism connected with the float is mounted in the casing for raising the ball when it is desired to fill the flush tank with water, as will hereinafter be more fully described.

Reference being had more particularly to the drawings, 10 indicates a flush tank of any suitable construction having the water inlet pipe 11 cooperating therewith, at the top of said flush tank. A spherical valve casing 12 is detachably secured to the pipe 11, through the instrumentality of the threaded projection 13 of the said casing, said spherical casing being provided with the ball valve 14 loosely mounted therein. An outlet pipe 15 is oppositely disposed to the inlet opening 16, which is surrounded by the threaded projection 13, and is adapted to be closed by the ball valve 14. A sleeve 17 surrounds and is mounted for reciprocation upon the outlet pipe 15, and is adapted to retain the various positions thereon by the screw 18 threaded into the sleeve, and bearing against the outlet pipe 15. From this construction it will readily be seen that as the water flows through the casing 12 and the pipe 15, to the flush tank 10, the sleeve 17, the lower terminal of which is located adjacent to the bottom of the flush tank, will deaden the noise of the water flowing from the pipe 15.

In order to provide a means whereby the ball valve 14 may be raised to permit the water to flow through the pipe 15, an arm 19 is mounted in the pipe 15 adjacent to the connection between said pipe and the casing 12. This arm projects into the pipe 15 and is provided with a semi-circular upwardly extending enlargement 20, which is adapted to bear against the ball. By the provisions of this semi-circular enlargement 20, it is possible for the arm 19 to readily engage the ball upon the upward movement of the said arm, which will force the ball upwardly into the casing 12. A transverse rod 21 operates in the slots 22 of the sleeve 17, and passes through the arm 19 and the pipe 15, thereby pivotally securing the arm to the said pipe. This rod is rigidly secured to the arm, and projects beyond the sleeve 17 at the terminals thereof, said projecting terminals having rigidly secured thereto the U-shaped actuating member 23,

to which is centrally and detachably secured the rod 24. This rod 24 has secured thereto the usual float 25.

The operation of the present invention is as follows: Assuming that the flush tank is primarily empty, float 25 rests adjacent to the bottom thereof, causing the enlarged terminal 20 of the arm 19 to raise the ball valve 14, thus permitting the water to flow from the inlet pipe 11 through the casing 12, the pipe 15, and into the tank 10. As the water enters the tank 10, the float will gradually be raised as the level of the water in the tank increases, thereby permitting the valve 14 to gradually drop by gravity and close the opening between the pipe 15 and the casing 12.

It will clearly be understood that the present invention may be attached to flush tanks of various sizes, and at the same time be provided with the sound-deadening sleeve 17, which may be adjusted upon the pipe 15 through the instrumentality of the slots 22 and the screw 18.

Having thus described my invention, what I claim as new, and desire to secure by U. S. Letters Patent, is:

1. The combination with a flush tank, of an inlet pipe cooperating therewith, of a valve casing secured to said inlet pipe, a dependent outlet pipe secured to said valve casing, a ball valve operating within said valve casing, an arm pivoted to said outlet pipe adjacent to said valve casing, a semi-

circular bearing projection formed on said arm adapted to engage said ball valve, a semi-circular actuating member secured to said arm, a float secured to said actuating member, an auxiliary pipe mounted for reciprocation on said outlet pipe and having slots therein for the reception of the pivot of said arm and means for retaining said auxiliary pipe in a fixed position.

2. The combination with a flush tank, of an inlet pipe cooperating therewith, a valve casing connected thereto, a gravity ball valve mounted in said valve casing, a dependent outlet pipe connected to said casing, a shaft mounted in said outlet pipe, an arm rigidly mounted on said shaft provided with a semi-circular projection at its inner terminal to provide a bearing surface for said ball valve, a semi-circular actuating member keyed to said shaft, a rod secured to said actuating member, a float carried by the outer end of said rod, a muffler pipe mounted for reciprocation upon said outlet pipe, having slots formed therein for the reception of the terminals of said shaft, and a set screw adapted to retain said muffler pipe in a fixed position.

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

EDWARD J. KIVELL.

Witnesses:

MARY L. DONAHOE,
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