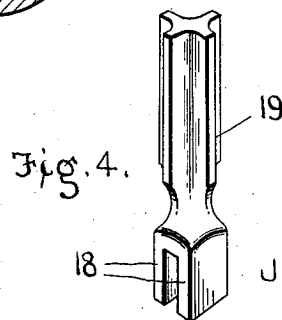
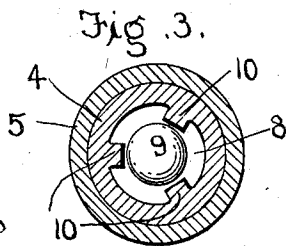
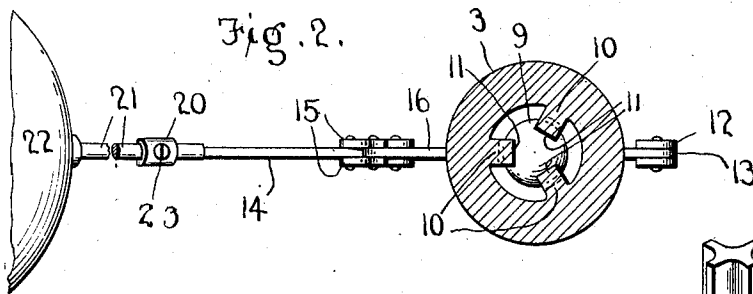
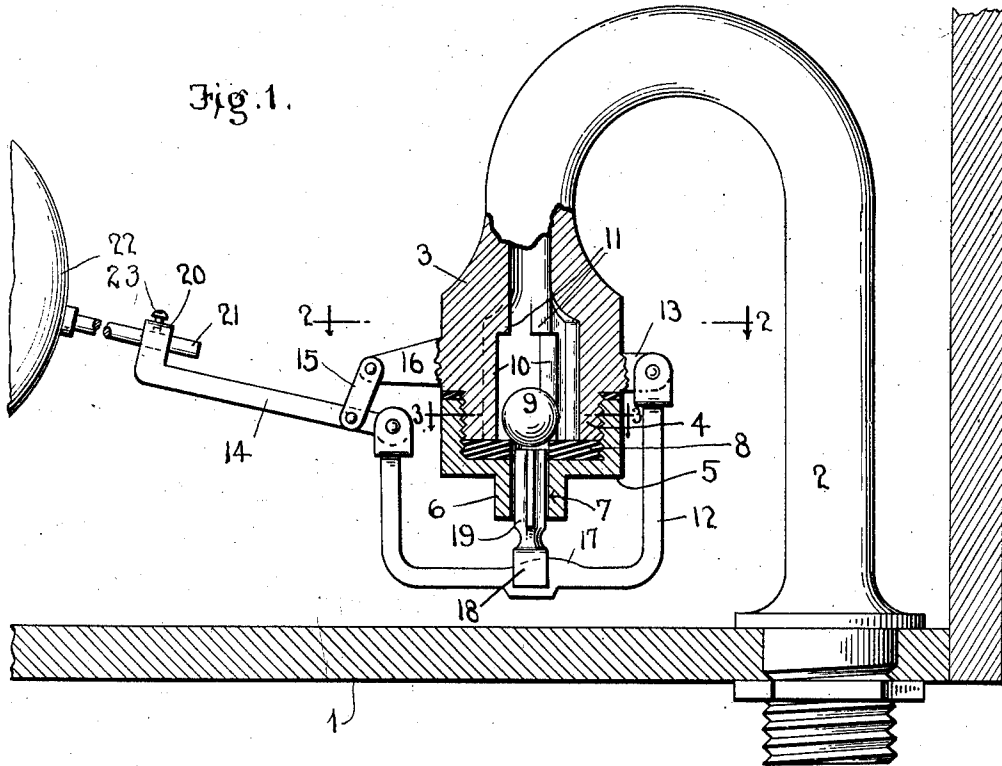


J. W. WALL.
 FLOAT OPERATED VALVE.
 APPLICATION FILED MAR. 14, 1912.

1,044,311.

Patented Nov. 12, 1912.



Witnesses
 L. B. James
 C. E. Hunt.

Inventor
 J. W. Wall
 by *A. B. Wilson & Co.*
 Attorneys

UNITED STATES PATENT OFFICE.

JOHN W. WALL, OF BISBEE, ARIZONA, ASSIGNOR OF ONE-THIRD TO LEONARD KOCH,
AND ONE-THIRD TO L. A. BROWN, BOTH OF BISBEE, ARIZONA.

FLOAT-OPERATED VALVE.

1,044,311.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed March 14, 1912. Serial No. 683,840.

To all whom it may concern:

Be it known that I, JOHN W. WALL, a citizen of the United States, residing at Bisbee, in the county of Cochise and State of Arizona, have invented certain new and useful Improvements in Float-Operated Valves; and I do 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 improvements in float operated ball valves.

One object of the invention is to improve the construction and arrangement of the levers and valve operating mechanism shown in United States Patent No. 1,005,044, granted October 3, 1911, whereby a stronger, more durable and efficient operating mechanism is provided.

Another object is to provide an improved construction and arrangement of valve casing whereby the ball will be guided to its seat after being lifted by the operating mechanism and released therefrom.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

Figure 1 is a vertical sectional view of a portion of a flush tank showing my improved valve operating mechanism applied to the valve seat and supply pipe thereof, parts of the supply pipe and valve casing being shown in section; Fig. 2 is a horizontal section through the pipe and valve casing taken on the line 2—2 of Fig. 1 and showing the operating mechanism in plan view; Fig. 3 is a cross sectional view of the valve casing on the line 3—3 of Fig. 1; Fig. 4 is a detail perspective view of the valve lifting plunger.

In the accompanying drawings, 1 denotes a portion of a flush tank in which is arranged in any suitable manner a water inlet pipe 2. The upper or inner end of the pipe 2 is curved or turned downwardly in the form of a semi-circular bend, said downwardly curved end of the pipe terminating in an enlarged valve casing 3. The valve casing 3 has a reduced threaded lower end 4 on which is screwed a cap 5 having on its lower side a boss 6 in which and in the lower

side of the cap is a combined plunger guiding and water discharging passage 7. Arranged in the cap 5 and secured thereby on the lower end of the valve casing is a valve seat 8 which is preferably in the form of a centrally apertured rubber disk. The aperture in the disk 8 is arranged in line with and forms a continuation of the water discharging passage 7 in the cap.

Arranged in the valve casing is a ball valve 9 which is normally held in engagement with its seat 8 by the pressure of the water in the valve casing 3 and tube 2 thereby closing the discharge passage in the valve seat and cap. On the inner walls of the valve casing are formed a series of vertically disposed radially projecting valve guiding ribs 10 which guide the valve to its seat in the cap of the valve casing and on the upper ends of said ribs 10 are inwardly extending stop lugs 11 which prevent the ball from entering and clogging the discharge end of the inlet pipe 2. Said ribs 10 and lugs 11 thus forming an integral valve cage within the valve casing.

In order to automatically open the valve after the water has been drawn from the tank, I provide an improved float actuated valve operating mechanism comprising a yoke shaped valve supporting bar 12, one end of which is pivotally connected to a lug 13 formed on the side of the valve casing 3 adjacent to the inlet pipe 2. The opposite end of the yoke shaped bar 12 is pivotally connected to the inner end of a short lever 14 which is fulcrumed between the lower ends of a pair of links 15 the upper ends of which are pivotally connected to an ear or lug 16 formed on the adjacent or outer side of the valve casing as shown.

In the lower horizontal portion of the yoke shaped bar 12 is an inclined or beveled plunger receiving extension 17 with which is loosely engaged the bifurcated lower end 18 of a valve opening plunger 19, the upper portion of which is slidably and loosely engaged with the combined plunger guiding and water discharging passage 7 in the cap 5 and boss 6. The upper portion of the plunger 19 which engages the guide passage 7 is preferably cross shaped in transverse section as clearly shown in Fig. 4 of the drawings.

On the outer end of the lever 14 is formed

a right angular offset apertured lug 20 which is adapted to receive the inner end of the rod or stem 21 of a hollow float 22, said rod or stem of the float being adjustably secured in the apertured lug of the lever by a set screw 23.

By constructing and arranging my improved valve operating mechanism as herein shown and described it will be seen that when the water is drawn from the tank and the float lowers, the lever 14 will be rocked on its pivotal support between the links 15 thereby lifting this end of the yoke shaped bar 12 upwardly, said yoke thereby forcing the plunger upwardly and causing the same to lift the valve 9 from its seat 8 and to hold the valve in an elevated position until sufficient water has run into the tank to raise the float, which action will swing the outer end of the lever 14 upwardly and the inner end downwardly thereby lowering the plunger operating bar 12. When the bar 12 is thus lowered the plunger will be permitted to drop in the guide passage 7 until the upper end of the plunger is below the valve seat whereupon the pressure of water in the valve casing and inlet pipe 2 will force the valve in fluid tight engagement with its seat thereby stopping the flow of the water into the tank.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation. Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as claimed.

Having thus described my invention, what I claim is;

A valve of the character described comprising a water inlet pipe having a downwardly turned end, a valve casing arranged on said end, said casing having therein valve guiding ribs, stop lugs on the upper ends of said ribs, a removable cap on the lower end of said valve casing, a valve seat clamped between said cap, and the lower end of the valve casing, a ball valve to engage said seat, said valve being held in position in the casing by the ribs and stop lugs therein, a plunger operating yoke pivotally connected at one end to one side of said valve casing, a valve lifting plunger slidably mounted in the cap on said valve casing and adapted to lift the valve out of engagement with its seat, a bifurcated yoke engaging member on the lower end of said plunger, said member having a loose engagement with said yoke, a lug on the outer side of said valve casing, a pair of lever supporting links pivotally connected to said lug, a yoke operating lever fulcrumed between the lower portion of said links and having its inner end pivotally connected with the adjacent end of said yoke, an apertured lug on the outer end of said lever, a float having a stem engaged with said apertured lug, and means to adjustably fasten the stem of the float in said lug.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN W. WALL.

Witnesses:

S. K. WILLIAMS,
LESLIE A. BROWN.

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