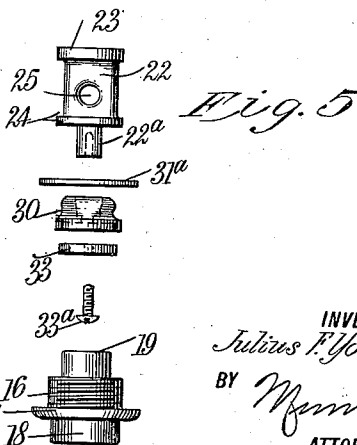
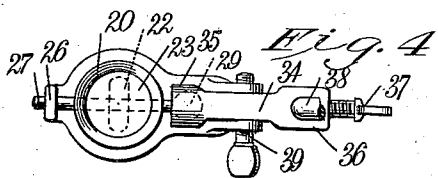
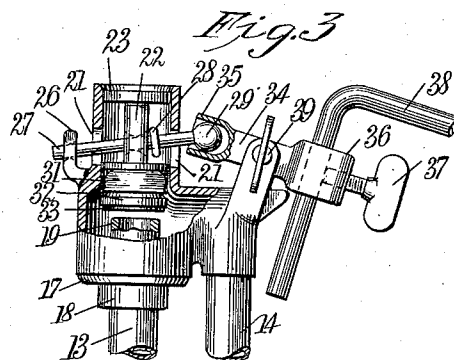
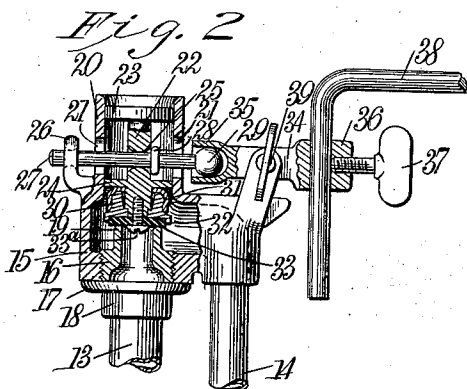
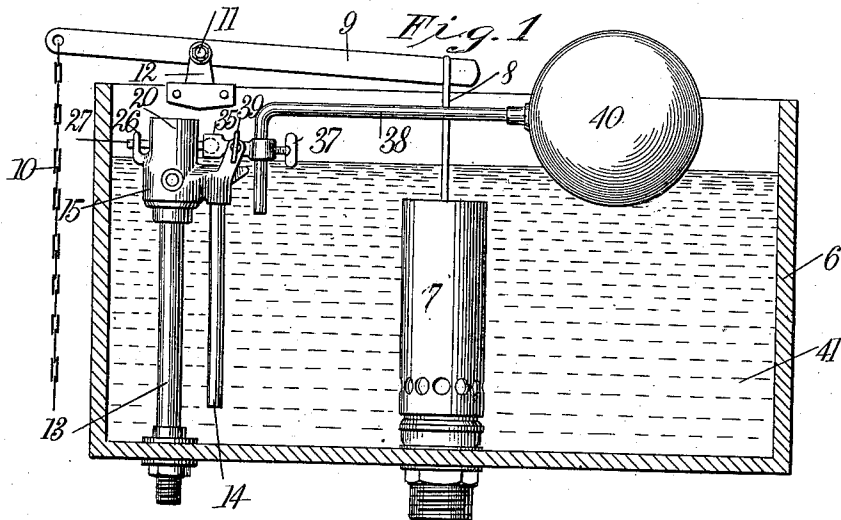


J. F. YOUNG.
 FLOAT CONTROLLED VALVE.
 APPLICATION FILED JULY 28, 1911.

1,027,965.

Patented May 28, 1912.



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JULIUS FREDERICK YOUNG, OF OWATONNA, MINNESOTA.

FLOAT-CONTROLLED VALVE.

1,027,965.

Specification of Letters Patent.

Patented May 28, 1912.

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To all whom it may concern:

Be it known that I, JULIUS F. YOUNG, a citizen of the United States, and a resident of Owatonna, in the county of Steele and State of Minnesota, have invented a new and Improved Float-Controlled Valve, of which the following is a full, clear, and exact description.

My invention relates to float controlled valves such as are suitable for use in connection with toilets, my more particular purpose being to provide an inlet valve which is sure in action as well as noiseless, and which presents a number of distinct advantages.

Reference is to be had to the accompanying drawing forming a part of this specification in which like characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a cross section through a flushing tank equipped with my improved float controlled valve and adapted more particularly for household use; Fig. 2 is a detail showing, partly in elevation and partly broken away, the mechanism of the inlet valve, the valve being now closed; Fig. 3 is a view somewhat similar to Fig. 2, but showing the parts in a different position, the inlet valve being now open; Fig. 4 is a fragmentary plan view of the mechanism shown in Figs. 2 and 3; and Fig. 5 shows certain interdependent parts of the inlet valve, these parts being assembled and occupying their respective relative positions but not as yet being connected together.

A flushing tank is shown at 6. Mounted within the flushing tank is an outlet valve 7. Connected with this outlet valve for the purpose of actuating it is a rod 8 which is connected with one end of a lever 9. A chain 10 is connected with the opposite end of this lever and is operated by hand for the purpose of tilting the lever and thus controlling the outlet valve 7. The lever 9 is mounted upon a pivot 11, the latter being supported by a bracket 12.

Extending upwardly into the flushing tank 6 is an inlet pipe 13, and supported by this inlet pipe is a nozzle 14 through which water is admitted into the flushing tank at intervals. Mounted upon the upper end of the inlet pipe 13 is a valve casing 15, the construction of which can best be understood from Figs. 2 and 3. A threaded sleeve 16 is fitted into the bottom of the cas-

ing 15 and is concentric to the same. The sleeve 16 carries a collar 17 integral with it and also carries a smooth portion 18 of annular form, the portion fitting neatly upon the upper end of the inlet pipe 13. The sleeve 16 is further provided with an annular bead 19 integral with it and constituting a valve seat.

The casing 15 is provided with a neck 20 extending upwardly from it and having its upper edge slightly rounded internally. The neck 20 is provided with slots 21 in registry with each other. A flat core 22 is disposed within the neck 20 and carries two enlarged disk-like portions 23 and 24. These disk-like portions 23, 24, fitting neatly into the neck 20, serve as guides for centering the core 22 and for maintaining the same in proper working position. The core 22 is provided with a hole 25, the diameter of this hole being greater at its ends than at its middle, as will be understood from Fig. 2. Adjacent to the slot 21 and in registry therewith is an eye 26. Extending through this eye and through the hole 25 is a pin 27 which is provided with an annular bead 28 and with a ball 29, the annular bead being adapted to fit against the core 22 and the ball 29 being located outside of the neck 20.

The core 22 is provided with a reduced cylindrical portion 22^a, and encircling the latter is an annular collar 30, the upper surface of which is rounded. Fitting upon this collar is an annular washer 31 of leather. This washer fits around the portion 22^a of the core. The collar 30 carries an annular bead 32 integral with it, and disposed within this bead is a packing 33 of rubber, leather, or similar material. A screw 33^a extends through the packing 33 and into the lower end of the reduced cylindrical portion 22^a. The collar 30 and washer 31 being smooth are simply slipped over, or fitted around, the reduced portion 22^a, and when the packing 33 is secured in position by aid of the screw 33^a, the collar 30 and its washer 31 are held securely in position. The washer 31 curves over the collar 30 in such manner as to allow the valve, when repacking is needed, to be easily removed from and replaced within the rounded end of the neck 20. When water enters the valve casing, the leather washer opens upwardly and prevents the water from splashing out of the slots and the neck of the valve casing. While the

washer is purposely made of leather, it may be made of any flexible material suitable for the purpose.

An arm is shown at 34 and is provided with an enlarged end 35, the latter being made hollow and fitting loosely over the ball 29. The arm 34 carries a sleeve 36 integral with it, and extending radially into this sleeve is a thumb screw 37. A rod 38 bent substantially into L-shape extends through the sleeve 36, and is, by aid of the thumb screw 37, adjusted relatively to this sleeve. The arm 34 is journaled upon a wing bolt 39, and the rod 38 carries at its outer or free end a ball float 40. By loosening the thumb screw 37 and moving the rod 38 bodily upward or downward, and then tightening the screw 37, the float may be, within reasonable limits, adjusted relatively to the arm 34, this adjustment serving to control the sensitiveness of the valve relatively to the upper level reached by the water in the tank when the inlet valve closes.

In order to form the washer 31, I merely cut out a thin ring 31^a of leather and form this ring to fit the top of the collar 30. After doing this I secure the collar 30 and the washer 31 upon the reduced portion 22^a of the core. Owing to the fact that the collar 30 and the washer 31 are not rigidly secured to the reduced portion 22^a, the collar 30 has an infinitesimal movement, or at least a slight looseness which enables it to adjust itself relatively to the valve seat 19. Then by aid of the packing 33 the collar 30 has no trouble in making a neat water-tight fit relatively to the valve seat.

It will be noted that whenever the ball float 40 is raised, the arm 34 is rocked upon the bolt 39 as a center and that it forces the ball 29 downwardly so that the pin 27, serving as a lever, forces the packing 33 down against the valve seat 19.

The arm 34 and pin 27 fitting together as above described, constitute a very effective joint, and, moreover, the connection between the arm and pin is a universal ball joint especially suited for high pressure tanks.

When the parts are in normal position as indicated in Fig. 2, the eye 26, the pin 27, the ball 29, and the longitudinal axis of the arm 34, and the axis of the bolt 39, are all in alinement with each other. By this arrangement the parts are rendered not only sensitive, but also positive in action. If, for instance, the pin 27 happens to be turned slightly, this is a matter of no consequence, as the tilting of the arm 34 into the position indicated in Fig. 3 will necessarily raise the ball 29 and this in turn will lift the valve off its seat. The parts are bound to center themselves when the valve is again closed.

At 41 in Fig. 1 is shown a quantity of water filling the tank 6.

The operation of my device is as follows:

The parts being made and put together as above described, and the movable parts being brought into position as indicated in Fig. 1, the device is ready for use. The chain 10 being pulled down by the operator, actuates the outlet valve 7 so that most of the water in the tank is discharged in the manner well known in this art. The chain 10 being released, the lever 9 rocks to normal position. The exit of the water from the tank 6 causes the float 40 to descend so that the movable parts appear as indicated in Fig. 3. The inlet valve is now open; that is to say, the packing 33 is raised from the seat 19. Water, under pressure, (which may be very high) now flows upwardly from the inlet pipe 13 into the casing 15 and downwardly through the nozzle 14, being discharged into the tank 6, as shown at 41. As the upper level of the water rises, the float 40 is carried upwardly. The arm 34 rocks upon the bolt 39 as a center and in so doing draws down the ball 29 and the adjacent end of the pin 27. This forces the packing 33 downwardly against the valve seat 19. This closes the valve and prevents further ingress of water.

It will be noted that the movable parts shown in Fig. 2 are so thoroughly self-adjusting that the closure of the inlet valve is rendered positive and is not attended with any singing or vibratory noise, or by any water hammering.

I do not limit myself to the use of any particular materials for the construction of the various parts. Neither do I limit myself in all instances to the exact arrangement of the mechanism, the scope of my invention being commensurate with my claims.

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

1. A device of the character described comprising a valve casing, a valve seat mounted therein, a valve member movable into and out of engagement with said seat for the purpose of controlling the flow of a liquid through said seat, a pin extending through slots in the walls of said casing and through said valve member and provided with a ball at one end, an arm mounted to swing and provided with an enlarged hollow portion fitting over said ball, fixed means loosely engaged by the other end of said pin to permit the ball end of the pin to be swung so as to raise and lower the valve, when the said arm is swung, and float controlled mechanism for shifting the position of said arm.

2. In a float controlled valve, the combination of an inlet pipe, a valve casing connected therewith, a valve seat mounted within said valve casing, a valve member slidably mounted within said valve casing and provided with

a portion for engaging and disengaging said valve seat in order to control the flow of a liquid through said valve seat, said valve member being provided with a core and with
5 a hole through said core, said hole having greater diameters at its ends than at its middle, a pin extending through the casing and said hole, an eye mounted upon said valve casing and loosely engaging said pin
10 at one end, a bead carried by said pin and adapted to engage said core in order to limit the travel of said pin in one of the general directions parallel to its own length, an arm disposed adjacent to said pin at the opposite end and substantially in alinement therewith, said arm and said pin being connected together by a universal joint, means for supporting said arm so as to allow said arm to swing to different angles, and a float connected with said arm for actuating the same.

3. A device of the character described, comprising a valve casing having oppositely disposed slots and provided with a valve seat, a valve member slidably mounted
25 within said valve casing and provided at its lower end with a packing for engaging said seat, the said valve member having a transverse opening enlarged at its ends, a pin extending through the opening in said
30 valve member and through the slots in said casing, means for loosely engaging one end of said pin, and a pivoted float controlled member connected with the other end of said pin.

35 4. A device of the character described comprising a valve casing provided with a pair of oppositely disposed slots and with an eye in registry with said slots, a pin extending through said slots and through said
40 eye, a movable valve member slidably mounted within said casing, and provided with a portion through which said pin extends so that angular movements of said pin may actuate said member, a valve seat disposed
45 within said casing and adapted to be engaged and disengaged by said valve member, an arm pivotally connected with one end

of said pin, said arm being journaled at a point adjacent to said casing, and a float connected with said arm for the purpose of
50 turning the same to different angles as said float moves upward or downward.

5. In a device of the character described, a valve casing having an upwardly extending neck provided with oppositely arranged
55 slots, a valve seat disposed within said casing, a sliding valve member mounted within said casing and provided at its lower end with a packing for engaging said valve seat, the said valve member having at its upper
60 portion a flat core disposed within the neck of the casing and carrying disk like portions fitting within the said neck, the said core having a transverse opening, a pin extending through the opening in the core and
65 through the slots in said casing, an eye on the casing engaging one end of said pin, an arm mounted to swing, a universal joint connection between the said arm and the other end of said pin, and a float connected with
70 said arm.

6. In a device of the class described, a valve seat, a valve member mounted to move up and down and adapted to engage said
75 seat, a pin extending transversely through the valve member, and provided with a ball at one end, an arm mounted to swing up and down and having a hollow portion at one end fitting over said ball, a fixed eye loosely engaged by the other end of said
80 pin, the said arm, pin and eye being normally in alinement with each other and the said arm when swung being adapted to raise and lower the ball end of said pin to actuate the valve member, a stop on said
85 pin engaging one side of the valve member, and a float connected with said arm.

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

JULIUS FREDERICK YOUNG.

Witnesses:

W. A. SPERRY,
F. C. CARLTON.