W. L. HARROUN.

FLUSH VALVE.

APPLICATION FILED MAR. 12, 1920.

1,374,655. **Patented Apr. 12, 1921.**

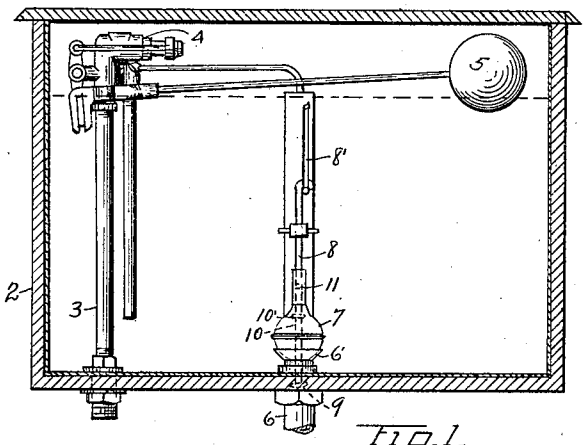


Fig. 1.



Fig. 4.

Fig. 5.



Fig. 6.

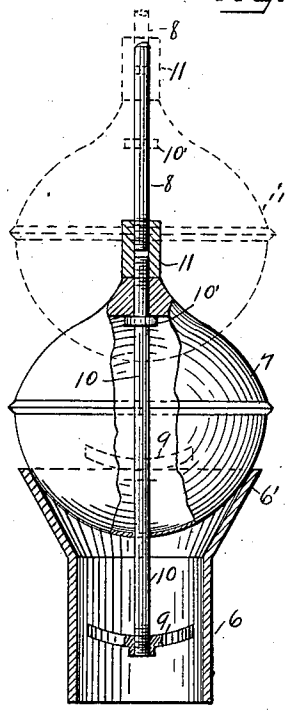


Fig. 2.

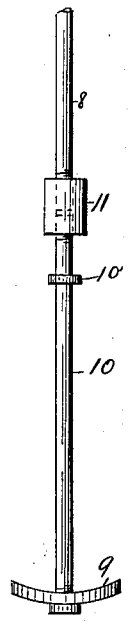


Fig. 3.

INVENTOR.
William L. Harroun.
BY Harry D. Wallace.
ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM L. HARROUN, OF ELLISBURG, NEW YORK.

FLUSH-VALVE.

1,374,655. Specification of Letters Patent. Patented Apr. 12, 1921.

Application filed March 12, 1920. Serial No. 365,200.

To all whom it may concern:

Be it known that I, WILLIAM L. HARROUN, a citizen of the United States, residing at Ellisburg, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Flush-Valves, of which the following is a specification.

This invention relates to improvements in flushing valves employed in connection with water closet flush tanks.

The object of the invention is to provide novel, simple and positive means for seating the flush valves following each flushing of the closets. A particular object is to provide a secondary valve in the form of a disk, which depends from the usual spherical hollow rubber valve, and loosely fits the bore of the flush pipe, and which during the flushing interval is disposed in the path, and is drawn downwardly by the strong suction of the flushing stream, thereby positively and truly seating the spherical valve. And a further object is to provide novel and simple means for securing the auxiliary valve and related parts to the flush valve.

I attain these objects by the means set forth in the detailed description which follows, and as illustrated by the accompanying drawing, in which—

Figure 1 is a sectional view of a flush tank, to which my improvement is applied. Fig. 2 is an enlarged view, partially in section, of the flush valve and flush pipe, showing by full and dotted lines the closed and open positions of the valve. Fig. 3 is an enlarged view of the auxiliary valve and related parts. Figs. 4 and 5 are respectively top and bottom views of the disk valve. Fig. 6 is a view of a modified form of disk.

In the drawing, 2 designates a flush tank, which receives its supply of water through a pipe 3, the inflowing water being controlled by a ball-cock 4, and a float 5. 6 designates the usual flush pipe, by which the water is discharged from the tank, the upper end 6′ of said pipe comprising the seat for the usual flush valve 7, the latter being seated by gravity, and unseated, for discharging the tank, by means of rods 8 and 8′. The flush valve preferably consists of a spherical hollow rubber part, which when lifted, as shown by the dotted lines in Fig. 2, owing to its buoyant nature is held away from its seat until near the close of the flushing period, when the suction of the outflowing water draws the ball 7 toward its seat. Heretofore, more or less trouble has been experienced with the proper seating of the flush valves, due to the tendency of the valves, when approaching their seats, to gyrate with the eddying and swirling flushing stream. This frequently causes the ball 7 to impinge against one side or the other of the seat and to become canted to such extent that the flushing is either prolonged, or else the discharge continues like a leak until the valve is righted. To overcome this trouble, I provide an auxiliary valve, consisting of a disk 9, which is adjustably mounted on the lower threaded end of a rod 10, the latter extending upwardly through the ball 7, and its upper end also being threaded and screwed into the lower end of a sleeve 11, which bears against the reduced top of the ball 7. The rod 10 is of such a length that the disk 9 may be positioned an inch or more below the valve 7, and preferably extends some distance into the normal bore of the flush pipe 6, when the valve 7 is seated (see full lines in Fig. 2). Near its upper end the rod 10 is provided with a collar or annular flange 10′, which bears against the inner top wall of the ball and coacts with the sleeve 11, for holding the said rod firmly in place. The operating rod 8 is screwed into the upper end of the sleeve 11.

Fig. 6 shows a slight modification which consists of forming the disk 9′ flat, instead of concave, as shown in the other views.

The operation of my improvement is as follows: When the user of the closet manipulates the flush-valve operating parts, the flush valve 7 is lifted, as from the full line to the dotted line position shown in Fig. 2. This allows the water held by the tank 2 to gravitate through the flush pipe 6 in the usual manner. When the flush valve is in its open position (see dotted lines in Fig. 2), the disk 9 is positioned on or slightly above the level of the top of the flush pipe, so that the flushing stream may flow freely around the disk and into the pipe 6. When the flush-valve is released, the valves 7 and 9 gravitate toward the seat 6′ until the force of the suction on the disk 9 draws the valve 7 into the closed position shown by the full lines in Fig. 2. The action of this suction is such that the disk 9 is drawn downwardly substantially in the line of the axis of the pipe 6, with the result that the

ball 7 is also drawn truly into its seat. The pull of the outflowing stream on the disk 9 is strong enough to steady the valve 7, and prevents it from gyrating with the eddying stream, as described, and the said valve seats positively and truly following each flushing of the closet. This saves a lot of trouble and annoyance, and also effects a great saving of water and materially reduces the water bills. The diameter of the disk 9 relatively to that of the flush pipe 6, should be such that the suction referred to may continue until the valve 7 is firmly seated and the pipe 6 below the seat 6′ entirely emptied.

Having thus described my invention, what I claim, is—

1. The combination with the flush pipe and the hollow flush valve, of a disk having a diameter smaller than the normal bore of the flush pipe, a rod passing through the flush valve, its lower end extending below the flush valve and adjustably secured to said disk, its upper end threaded and extending above the top of the flush valve, and a sleeve mounted on top of the flush valve and receiving the upper end of said rod.

2. The combination with the flush pipe and a hollow spherical flush valve, of a rod, the opposite ends of said rod being threaded, said rod passing axially through said flush valve, a collar carried by said rod and engaging the inner top surface of the flush valve, a sleeve engaging the end of said rod adjacent said collar, and a concave disk adjustably mounted on the opposite end of said rod and spaced from said flush valve a sufficient distance to partially close the normal bore of the flush pipe when the flush valve is seated.

In testimony whereof I affix my signature.

WILLIAM L. HARROUN.