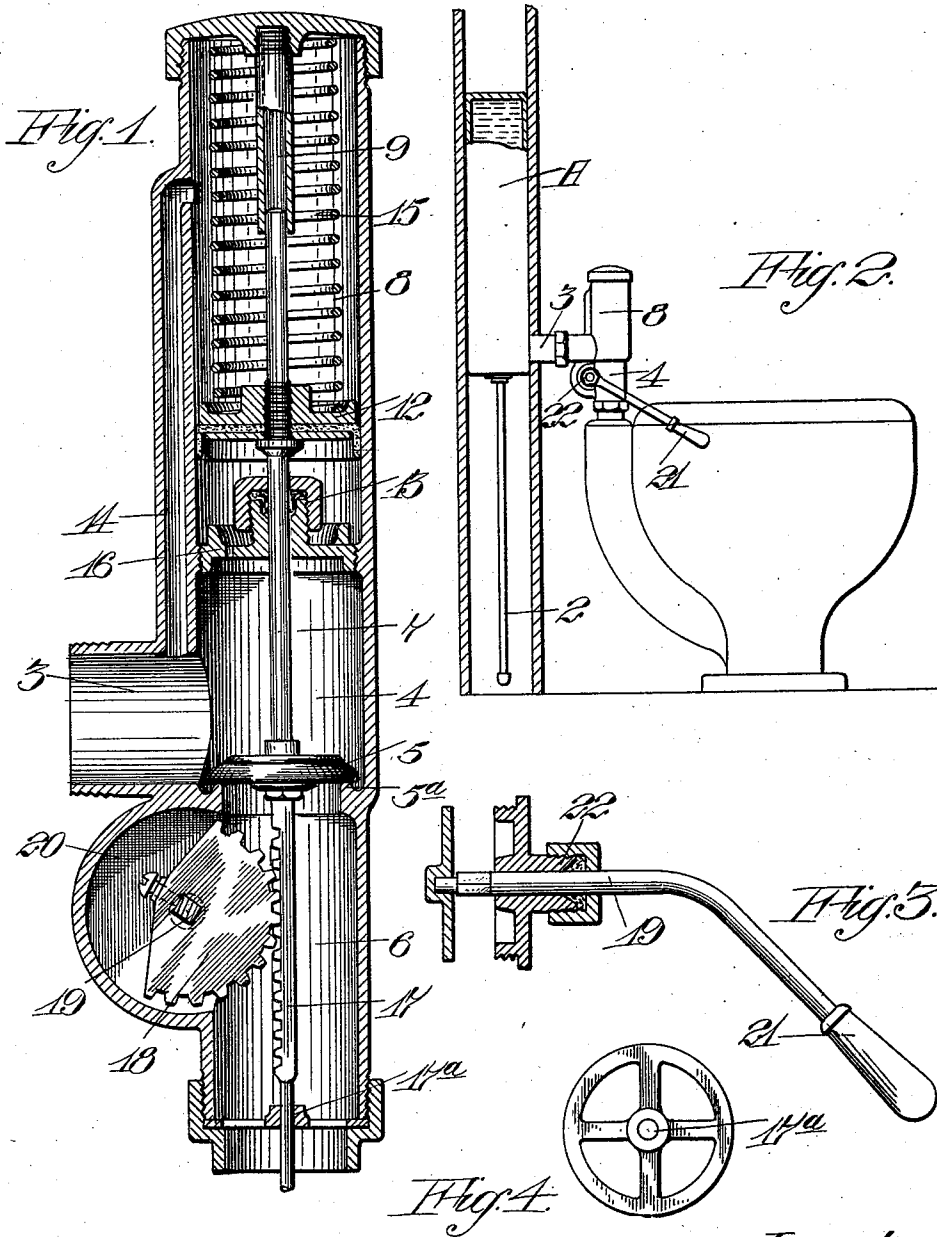


J. F. DIAZ.
PRESSURE-FLUSH VALVE.
APPLICATION FILED APR. 11, 1910.

1,001,256.

Patented Aug. 22, 1911.



Witnesses:
Chas. Eastberg
A. E. Maynard

Inventor:
Joseph F. Diaz
by
G. H. Strong
his atty.

UNITED STATES PATENT OFFICE.

JOSEPH F. DIAZ, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO PAUL SALINA, OF SAN FRANCISCO, CALIFORNIA.

PRESSURE FLUSH-VALVE.

1,001,256.

Specification of Letters Patent. Patented Aug. 22, 1911.

Application filed April 11, 1910. Serial No. 554,833.

To all whom it may concern:

Be it known that I, JOSEPH F. DIAZ, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Pressure Flush-Valves, of which the following is a specification.

My invention relates to an improvement in toilet flush valve and attachments.

It consists in the novel combination of parts, and details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of the valve and connections. Fig. 2 is a side view of the same, showing the application. Fig. 3 is a detail view of the operating lever. Fig. 4 is a plan view of the rack guide.

This invention relates to improvements in flushing valves and their connections such as are employed for toilets and the like, and for other purposes where a considerable body of water is to be discharged for a limited space of time.

A is the tank which is of sufficient dimensions to contain the necessary quantity of water, and this tank is of such shape that it may be conveniently located in the wall, between the studding thereof, if desired. The tank is supplied with water from any suitable source, through a pipe 2.

3 is a discharge pipe from the tank. This connects directly with the valve chamber 4, and thence when the valve 5 is opened, through the passage 6, to the point where the water is to be used.

The valve may be of rubber or any other suitable material, and seats, as here shown, upon a raised ledge 5^a, formed in the casting or construction of the valve chamber.

The valve has a stem 7 which extends centrally upward through the housing or chamber 8, and this stem is slidable in the tubular guide 9 which is secured to the closed top of the said chamber, and the valve may be lifted by any suitable or desired connection, a form of which will be hereafter described.

Within the housing or cylinder 8 is a plunger 12 having a peripheral cup leather which forms a tight joint with the inside of the cylinder, but which will yield when the plunger is forced upwardly to allow a portion of the water above the plunger to pass into the space between the plunger and the bottom of its cylinder. This plunger is secured to the

valve stem 7, and is movable with it. The valve stem 7 passes through a stuffing-box 13 in the bottom of the plunger chamber, and said bottom has a small opening 16 through which water may slowly escape when the plunger is forced down by its spring.

14 is a pipe or passage connecting the supply passage 3 with the chamber 8 above the plunger 12, so that when the valve 5 is seated, the chamber 4 will be filled with water above the valve, and through the passage 14, the chamber 8 will also be filled above the plunger 12.

15 is a spring of suitable tension which presses upon the top of the plunger 12 so that after the valve 5 has been opened, the spring 15 will act to gradually force the plunger 12 down, and with it the valve 5 which will thus be eventually seated. The water which has passed below the plunger is allowed to escape through the small opening 16 in the bottom of the plunger chamber, and its rate of escape retards the movement of the plunger and the closing of the valve so that efficient flushing is insured.

The operation of the valve will be as follows: When flushing, or discharge of water is desired, the valve 5 is lifted by a suitable mechanism, thus allowing water to pass out through the discharge passage. The plunger 12 is also raised at the same time, and the water above the plunger passes around the sides thereof and into the chamber below, the spring 15 being also compressed and the valve 5 being thus opened, the flushing water rushes through the pipe 3, through the valve opening, and down through the discharge 6. The mechanism by which the valve is opened being released, the spring acts upon the plunger 12, forcing it down slowly and the water between the plunger and the bottom of the plunger chamber will slowly escape through the small passage 16, thus allowing the spring to gradually close the valve upon its seat when the flushing operation is ended.

In order to open the valve I have shown a rack extension 17 below the valve, this rack being suitably guided at 17^a and its teeth engaging with the teeth of a circular segment 18 which is fixed to a shaft 19, and is turnable within a suitable segmental chamber 20 which is open upon the side contiguous to the rack.

Upon the end of the shaft 19 is formed or fixed a handle 21. This portion of the device may be conveniently formed by bending the shaft 19 to an angle with its jour-
 5 naled portion, which portion passes through a stuffing-box as at 22, and the handle 21 is within easy reach of the person by whom it is to be operated. A pull upon this handle will revolve the segment gear 18, and
 10 through the rack 17 will open the valve 5. The closure and return of the handle to its normal position is effected by the action of the spring 15 as previously described.

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

1. The combination, of a cylinder having a transverse partition dividing it into a plu-
 20 rality of chambers, one of said chambers having an inlet, a valve seat in said last named chamber having an opening through which water is discharged from the cylinder, a valve adapted to close against said seat, a
 25 plunger operable in the chamber of the cylinder above the partition, a stem connecting the valve and plunger so that they operate together in the same direction, a spring in the chamber above the partition and bearing
 30 against the plunger, said partition having a restricted opening through which water is allowed to slowly escape during the descent of the plunger and valve, whereby the valve seats slowly, and a by-pass hav-
 35 ing one portion connecting with the chamber in the cylinder above the plunger and having another portion connecting through

said inlet with the chamber in the cylinder below said partition.

2. The combination, of a cylinder having a transverse partition dividing it into a plu-
 40 rality of chambers, one of said chambers having an inlet, a valve seat in said last named chamber having an opening through which water is discharged from the cylin-
 45 der, a valve adapted to close against said seat, a plunger operable in the chamber of the cylinder above the partition; a stem connecting the valve and plunger so that they operate together in the same direction, a
 50 spring in the chamber above the partition and bearing against the plunger, said partition having a restricted opening through which water is allowed to slowly escape dur-
 55 ing the descent of the plunger and valve, whereby the valve seats slowly, and a by-pass having one portion connecting with the chamber in the cylinder above the plun-
 60 ger and having another portion connecting through said inlet with the chamber in the cylinder below said partition, said partition having a stuffing box through which said
 65 stem passes, and a rack and pinion connection with the stem for positively lifting the valve from its seat and coördinately raising the plunger and compressing the spring.

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

JOSEPH F. DIAZ.

Witnesses:

G. H. STRONG,
 CHARLES A. PENTFIELD.

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