





# UNITED STATES PATENT OFFICE.

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## FLUSHING DEVICE FOR WATER-CLOSET FIXTURES.

SPECIFICATION forming part of Letters Patent No. 668,589, dated February 19, 1901.

Application filed May 24, 1900. Serial No. 17,881. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. SNIDER, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Flushing Devices for Water-Closet Fixtures; 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.

My invention relates to improvements in devices for flushing water-closet fixtures; and it consists in the novel devices hereinafter described and claimed.

My invention will be understood by reference to the accompanying drawings, wherein the same parts are indicated by the same letters throughout the several views.

Figure 1 is a vertical sectional view of the flushing-tank, parts being broken away and showing the interior mechanism; and Fig. 2 is a perspective view, on a much smaller scale, of the device as used.

A represents a tank, preferably of metal and of any suitable or convenient shape. This tank is provided with an upper opening  $A^0$ , screw-threaded at  $a^0$  and fitted with a screw-threaded disk or plug  $A^2$ , which when in place renders the tank air-tight. The said opening is contracted or provided at the inner portion with a surrounding flange  $a^2$ . A cylinder B, having an annular exterior flange  $b$  at its upper end, fits within the upper opening in the tank and is supported in a pendent position in said tank by means of the flange  $b$  on the cylinder, which rests on the flange  $a^2$  on the top of the tank. The bottom of the cylinder B does not extend to the bottom of the tank; but a sufficient space is left for the operation of the valve, as hereinafter more fully described. The cylinder B has a central opening  $B^0$  in its bottom, and within this opening is fitted one end of a tube  $B'$ , the said tube extending upwardly in said cylinder in an axial line something more than halfway the length of said cylinder. A smaller concentric tube C, somewhat longer than the tube  $B'$ , passes through the latter and has connected to its lower end a short and large tubular portion  $C^0$ , into the lower end of which is fitted a hollow screw-plug  $C'$ . A rubber or

other suitable elastic gasket or washer  $C^2$  of annular form is fitted over the screw-plug  $C'$  and by the latter compressed against the lower end of the tubular portion  $C^0$ , and thus retained securely in position. The lower plug  $C'$  is provided with a valve-seat  $c'$  at its upper end, and a relief-valve D, having a depending stem  $D'$ , which passes axially through said plug, is shaped to fit said seat, the lower end of the stem being provided with an enlargement  $D^0$ , having a beveled end  $d^0$ . The stem  $D'$  of the valve passes loosely through an opening  $c^3$  on the guide-frame  $C^3$ , and the enlargement  $D^0$  on the lower end of the valve-stem  $D'$  allows a sufficient amount of axial movement to the valve-stem  $D'$  to displace the relief-valve D from its seat when the stem is elevated to the limit of its upward movement.

The bottom of the tank A is provided with an outlet-opening  $A^3$ , having beveled sides, and the gasket  $C^2$  is centered over this opening, so as to fit accurately thereon, thus forming the main outlet-valve. The outlet-opening  $A^3$  is surrounded by a tubular connection  $A^4$ , which is adapted to be connected with the fixture to be flushed. Across this tubular connection  $A^4$  is diametrically mounted a shaft or spindle  $A^5$ , upon which is fixed a short curved arm or finger  $A^6$ . The shaft or spindle  $A^5$  is provided at one end, which extends outside of the tubular connection  $A^4$ , with a crank or handle  $A^7$ , by means of which the said shaft or spindle may be turned. Upon the crank or handle being turned upwardly the curved arm or finger  $A^6$  bears against the enlarged end of valve-spindle and, forcing the parts upwardly, first displaces the valve D from its seat and afterward upon continued upward pressure elevates the tube C and the gasket  $C^2$  with their connections.

E represents the supply-pipe, which enters the bottom of the tank A and extends into the upper portion thereof.

The cylinder B is provided with a number of openings  $b^0$  on the same circumference thereof near its upper end.  $B^2$   $B^2$  represent a pair of oppositely-disposed triangular catches, which are so pivoted as to have a tendency to fall inwardly toward each other. The said pivoted catches have each a projection or finger  $b^2$  upon its inner face, and these are ar-



ranged to enter openings  $b^3$   $b^3$  at opposite points in the tube  $B'$ .

The inner tube  $C$  is provided with concavities  $c^0$  for the engagement of said projections 5 when the said tube is elevated.

$H$  represents a hollow float which is mounted over the tubes  $B'$  and  $C$ , and  $b^4$   $b^4$  represent a pair of divergent arms on the catches  $B^4$   $B^4$ , arranged to be struck by the said float 10 and pressed outwardly when the latter falls, releasing the projections on the catches and allowing the tube  $C$  and the gasket carried thereby to fall and stop the outflow of water from the tank. This will not occur until the 15 level of the water in the cylinder has fallen considerably, and the water may flow out of the said cylinder only through the waste-cock  $B^8$ , provided with a turning plug  $b^8$  for regulating the rapidity of discharge of the water 20 from the said cylinder. Upon the tank refilling water enters the cylinder through the submerged waste-cock  $B^8$ , as well as through the openings  $b^0$ , and causes the float to rise, which allows the catches  $B^2$   $B^2$  to resume their 25 operative positions.

The operation of the device is as follows: Water is supplied continuously to the tank  $A$  through the pipe  $E$ , and the cylinder  $B$  is supplied from the tank through the openings 30  $b^0$  and also through the waste-cock  $B^8$ . The level of the water in the cylinder falls as the level of the water in the tank falls, though not nearly so fast, inasmuch as the water can escape from the cylinder only through the 35 waste-cock  $B^8$  after the water in the tank has fallen below the openings  $b^0$  in the cylinder. The float  $H$  in the cylinder rises and falls with the water in the latter. In order to flush the fixture  $X$ , the crank-arm  $A^7$  is raised, causing 40 the arm or finger  $A^6$  to engage the end  $d^0$  of the projection  $D^0$  on the valve-stem  $D'$ . This first elevates the valve  $D$  from its seat  $c'$ , thus relieving the pressure in the tank, and then raises the tube  $C$  and its connections  $C^0$   $C'$  45 and the gasket or main valve  $C^2$ , displacing the latter from its seat in the opening  $A^3$ , allowing water to rush down through this opening and flush the fixture. When the tube  $C$  has thus been raised to its uppermost position, as indicated in dotted lines in Fig. 1, 50 the points  $b^2$  on the pivoted gravity-catches  $B^2$  engage the recesses  $c^0$  in said tube and hold the said tube and its connections aforesaid elevated. Upon the arm  $A^7$  now being 55 released it will fall to its normal pendent position, and the arm or finger  $A^6$  will also fall out of engagement with the end of the stem of the valve  $D$ , the latter falling by its own weight. Water will continue to run out of 60 the tank through the opening  $A^3$  until the level in cylinder  $B$  falls sufficiently to let the float drop to the position indicated in dotted lines in Fig. 1, in which position said float engages the divergent arms  $b^4$  on the gravity-catches  $B^2$  and, forcing them apart slightly, 65 as also indicated in dotted lines, disengages the points  $b^2$  of said catches from the tube  $C$ ,

releasing the latter and causing it to fall and the gasket or main valve  $C^2$  to close the outlet-opening  $A^3$ . The tank  $A$  and cylinder  $B$  70 now refill.

By means of the plug  $b^8$  in the waste-cock  $B^8$  the "flush" of the fixture may be prolonged or shortened, as desired.

Having thus described my invention, what 75 I claim, and desire to secure by Letters Patent of the United States, is—

1. In a flushing device, the combination with a tank, a supply-pipe leading thereinto, and an outlet leading to the fixture to be 80 flushed, of a cylinder mounted in the said tank and provided with inlet and discharge openings communicating with the interior of said tank, a main valve for closing the outlet from said tank, a stem on said main valve 85 entering the bottom of said tank, a relief-valve in said main valve, a depending stem on said relief-valve, a shaft journaled beneath said stem, an arm on said shaft arranged to engage said stem, a handle for turning 90 said shaft to elevate the valves, and open said outlet, catches within said cylinder for engaging said stem on said main valve when moved to open said outlet, and a float in said cylinder arranged to fall on said catches and 95 release said stem when the water within said cylinder falls to a predetermined level and allow said device to close the said outlet, substantially as described.

2. In a flushing device, the combination 100 with the tank, a supply-pipe, an outlet leading to the fixture to be flushed, and a chamber in said tank provided with a restricted discharge-opening communicating with the interior of said tank, of a main valve mounted 105 over said outlet-opening in the tank, a stem on said main valve entering said chamber a relief-valve in said main valve, a depending stem on said relief-valve, a shaft journaled below said stem, an arm on said 110 shaft arranged to engage said stem, a handle for turning said shaft to elevate the valves, pivoted catches within said chamber arranged to engage said stem on said main valve and hold said valves in their raised position, and 115 a float in said chamber arranged to engage and release said catches by falling and allow said main valve to drop and close the outlet-opening of the tank, substantially as described. 120

3. In a flushing device, the combination with a tank, a supply-pipe leading thereinto, and an outlet leading to the fixture to be 125 flushed, of a cylinder mounted in the said tank and provided with inlet-openings in its upper portion, and a discharge-opening at its bottom, communicating with the interior of said tank, means for regulating the rapidity 130 of discharge from said cylinder, a main valve for closing the outlet from said tank, a stem on said main valve entering the bottom of said cylinder, a relief-valve in said main valve, a depending stem on said relief-valve, a shaft journaled below said stem, an arm on

said shaft arranged to engage said stem, a handle for turning said shaft to elevate the valves, and open said outlet, catches pivoted within said cylinder for engaging said stem  
5 on said main valve when moved to open said outlet, and a float in said cylinder arranged to fall on said catches and release said stem when the water within said cylinder falls to a predetermined level and allow said device

to close the said outlet, substantially as described.

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

JOHN W. SNIDER.

Witnesses:

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CHARLES SCHNEIDAN.