(No Model.)

J. & G. DOUGLAS.

FLUSHING TANK FOR WATER CLOSETS.

No. 369,843. Patented Sept. 13, 1887.

Fig. 1.

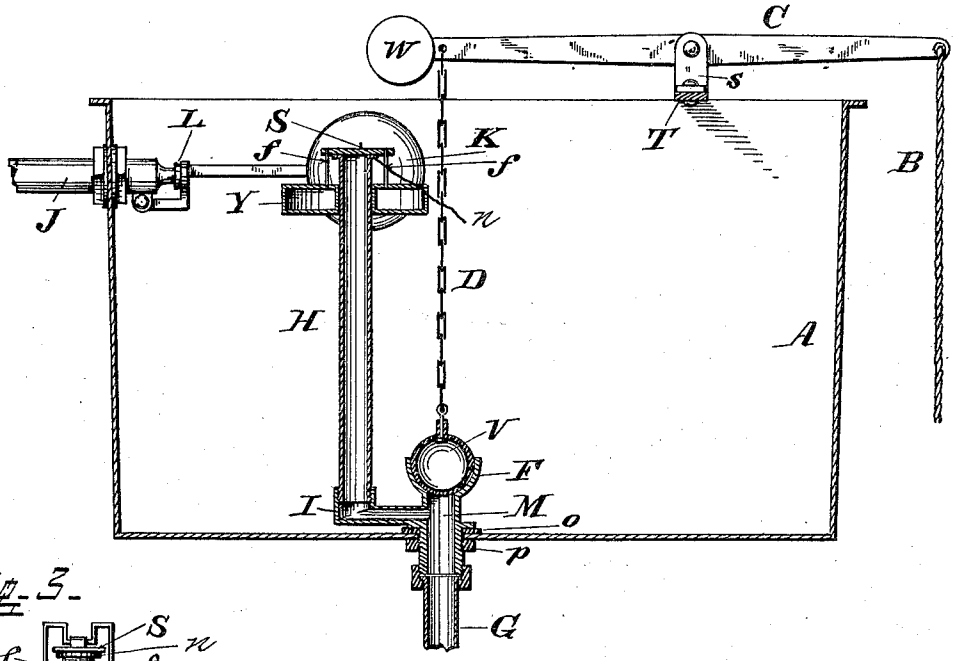


Fig. 3.

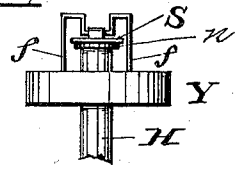
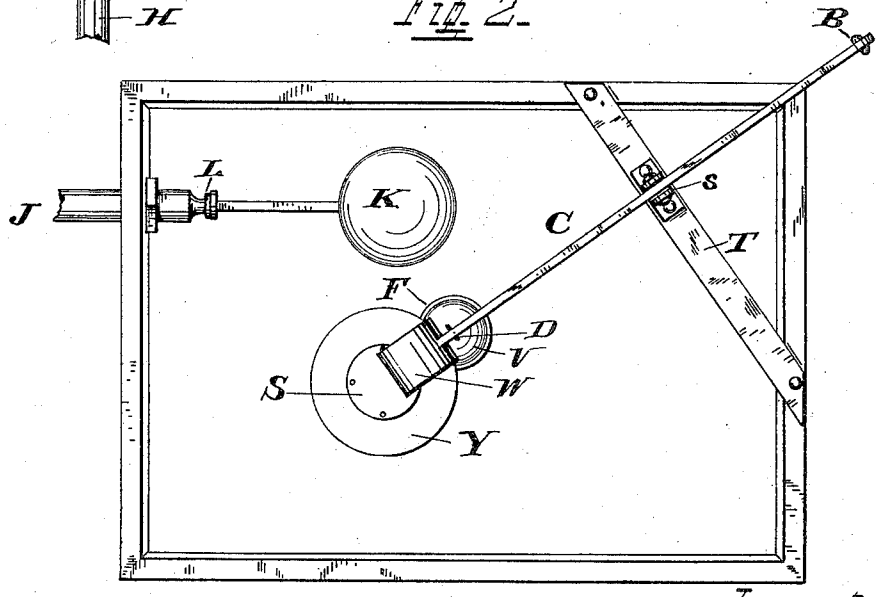


Fig. 2.



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JOHN DOUGLAS AND GEORGE DOUGLAS, OF CINCINNATI, OHIO.

FLUSHING-TANK FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 369,843, dated September 13, 1887.

Application filed February 25, 1887. Serial No. 228,833. (No model.)

To all whom it may concern:

Be it known that we, JOHN DOUGLAS and GEORGE DOUGLAS, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have jointly invented certain new and useful Improvements in Flushing-Tanks for Water-Closets, of which the following is a specification.

Our improvements relate more particularly to tanks which are usually elevated over the water-closet basin, whereby when the valve is opened to release the water the fluid acquires such an impetus as will readily remove from the basin any soil or other impurities which it may contain; and they consist, first, in the simplicity of constructing the valvular mechanism, whereby the water is held in the tank or released therefrom, and, second, in securing a noiseless flow of the water, the lack of which is at the present time a great annoyance in tanks of this character.

The improvements and the features thereof will be understood from the description which we will give and by reference to the accompanying drawings, forming part of our application, in which—

Figure 1 is a vertical central section taken through the water-tank, and shows our valvular mechanism, the overflow-pipe, the source of supplying the tank with water, and the exit-pipe through which the water flows to the closet-basin. Fig. 2 is a top or plan view of Fig. 1; and Fig. 3 is a view of a modified form of floating-cap for the overflow-pipe, differing from that shown in Fig. 1 in that instead of the cap being rigid it is loosely hung from its support, the object and advantage of which will be presently explained.

Referring in detail to the drawings, A represents the water-tank, which, as before stated, is held by brackets or other suitable means above the closet-basin a sufficient height as that the fall of water will have the requisite force to thoroughly flush and cleanse the receptacle.

B is the chain attached to the arm C at its outer end, the inner or rear end being provided with a weight, W, as also a chain, D. The arm C is fulcrumed in a forked standard, *s*, supported on the bridge T in any suitable way, as by being riveted thereto, as shown in the drawings. To the lower end of the chain is affixed a spherical plug or valve, V, composed of some flexible or elastic material—such as rubber.

F is the valve cup or seat in the interior of the tank for receiving the valve V. This seat is made deep enough so that it will permit the valve to enter and be embraced for more than half its size, as shown. The diameter of the seat, also, is less than the diameter of the valve itself, so that when the latter is in position it will be wedged and prevented from becoming disengaged except when pulled out. The seat may be integral with the escape-joint M, and of course has an aperture in its bottom connecting with the passage-way of said joint. This joint is fastened to the bottom of the tank by means of washer *o* and lock-nut *p*.

G is the discharge-pipe attached to the joint M. This discharge-pipe conducts the water to the basin.

H is the overflow-pipe, connected to the joint M through the intermediate joint, I. This overflow-pipe is of such height within the tank as will permit a sufficiency of water to be contained therein for practical purposes, while if the supply becomes too great the surplus can pass out through the top and into the discharge-pipe G, thus insuring against damage or inconvenience. Loosely encircling the top portion of the overflow-pipe is a float Y, which may be a hollow metal disk, as shown, or constructed of any material possessing the characteristics of buoyancy. On the upper surface of this float is attached a standard, *f*, made of wire, which supports a cap, S. This cap may be rigidly secured to the support, as seen in Fig. 1, or it may be hung loosely therefrom, as seen in Fig. 3. We prefer the latter construction, for when the rise of water takes place sufficient to take the cap from off the the top of the pipe—in other words, unseat it—permitting the surplus to escape, the current created in the downward flow will exert a sucking or attractive influence, which will tilt the cap from a horizontal to an angular position. This will have a tendency to limit the opening for the passage of the fluid, and as the amount is diminished, so as to bring it to its normal height, the cap will be assuming its horizontal attitude, until finally it will rest or be seated on top of the overflow, as formerly. The air is thus prevented from gaining access

to that portion of the structure, and a vacuum is created which, when the water is flowing into the basin to cleanse it, will render the flow noiseless. The rise of the float Y is limited by the flange *n* on top of the overflow.

J is the pipe which supplies the tank with water, and K is the floating ball whereby the water is automatically admitted to or shut off from the tank through the cock L. This ball is connected to a lever which is fulcrumed to the supply-duct, as shown, and as the water rises and falls the ball acts similarly, thereby closing or opening the supply-orifice.

Having described in detail the various parts, we will now explain the operation.

The requisite quantity of water being in the tank, and it is desired to flush the closet-basin, the chain B is pulled down, elevating the rear end of arm C, which carries with it the chain D and its affixed valve V. The valve-seat being uncovered, the water passes into the joint M to the discharge-pipe G, which conducts it into the basin, where it performs the cleaning operation and finds an outlet, as in ordinary cases. It will be observed that while this operation is taking place the overflow-orifice is covered by the cap S, thus preventing the admission of air thereto and allowing the water to pass noiselessly down. Just as soon as the pull is released, the arm C, through the weight W, drops back into its horizontal or normal position. The valve V will then float in the water until the latter is about exhausted in the tank, when the downward current, caused by the pressure of the atmosphere from above and the created vacuum beneath, will exert such an influence as will draw the valve into its seat and deposit it thereon, and the seat being smaller in diameter than the valve the latter will be drawn or wedged into it so snugly as to stop the passage-way and prevent any more of the liquid reaching the discharge-pipe until the valve is forced up again by the pull. As the water is exhausted in the tank, the ball K, floating in the liquid, follows the downward course and opens the cock L of the supply-pipe J, permitting the water to flow in, and as the flow to the basin is checked and the liquid rises in the tank the said ball will follow and shut off the supply. The valve V may be thickened at the sides, as shown, to allow for any frictional wear that may take place.

As before stated, should the supply of water to the tank become so great as to endanger an overflow, the surplus can find an exit through the pipe H, and from thence to the discharge-pipe G; and it may be repeated that the top of this pipe H is always kept covered by the cap S to prevent the admission of air, (which, when the water is released by the valve V, causes that gurgling and rushing noise which is so disagreeable,) except in the case of an overflow, when the float Y rises with the liquid and unseats the cap, permitting the surplus to escape.

We thus provide a flushing-tank for water-closets the mechanism of which is simple in construction, inexpensive, and effective in operation.

What we claim is—

1. The pull B, connected to the fulcrumed and weighted arm C, and chain D holding elastic valve V, in combination with the valve-seat F over the discharge-aperture, the seat being slightly smaller in diameter than the valve and cupped to receive the valve for more than half its size, substantially as shown and described.

2. In a flushing-tank, the discharge-pipe M, provided with a seat, F, for the reception of an elastic valve, V, the seat being slightly smaller in diameter than the valve, which is operated by a pull, in combination with the overflow-pipe H, and float Y, which supports the swinging cap S, together with stop *n*, all arranged substantially as shown and described, and for the purposes specified.

3. In a flushing-tank, the cap S, loosely mounted on frame *f*, in combination with overflow-pipe H and float Y, which encircles said overflow-pipe and supports frame *f*, substantially as shown and described, and for the purposes specified.

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Witnesses:
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GEORGE A. KENDRICK.