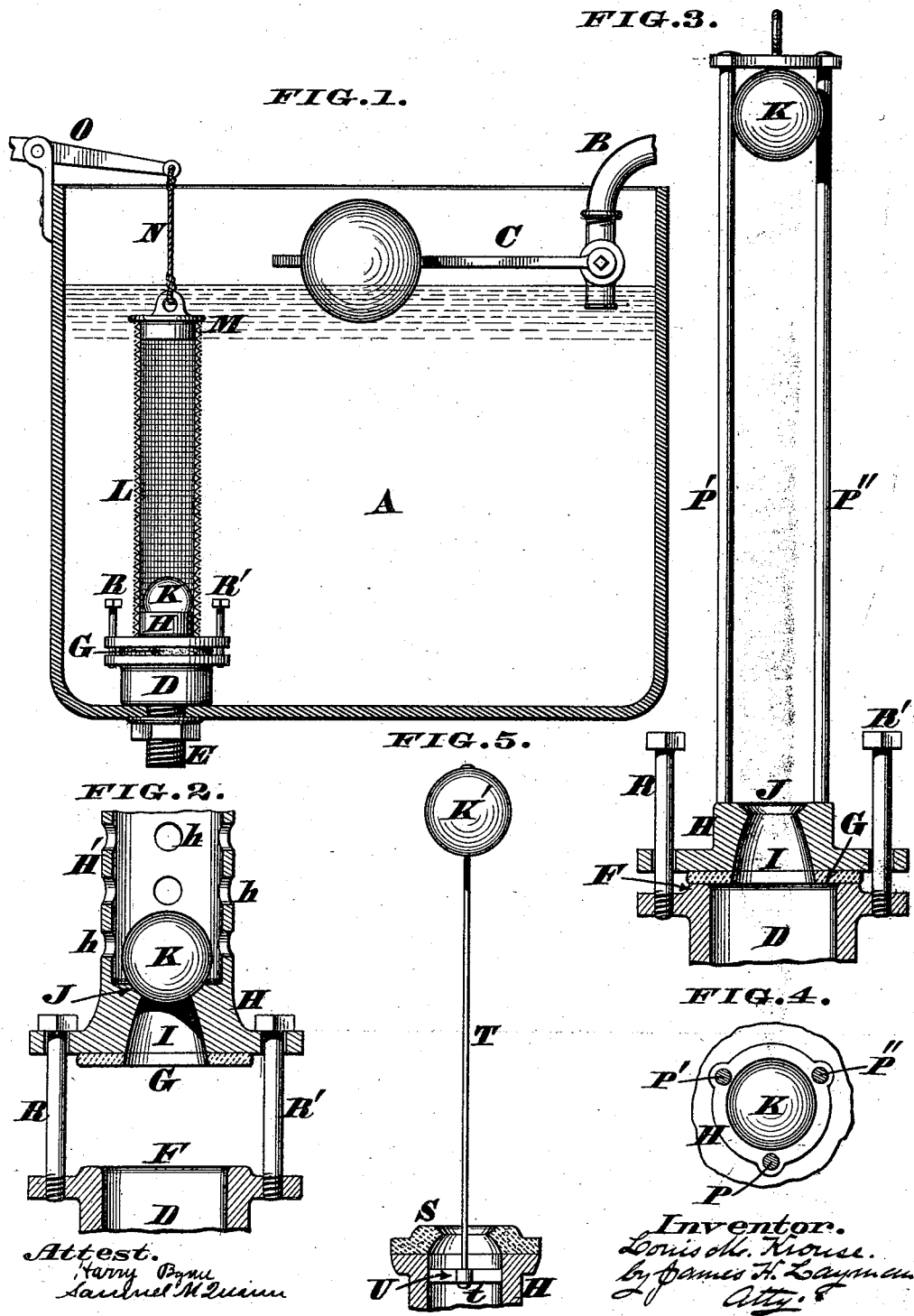


(No Model.)

L. M. KROUSE.
FLUSHING TANK.

No. 492,027.

Patented Feb. 21, 1893.



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UNITED STATES PATENT OFFICE.

LOUIS M. KROUSE, OF CINCINNATI, OHIO.

FLUSHING-TANK.

SPECIFICATION forming part of Letters Patent No. 492,027, dated February 21, 1893.

Application filed October 14, 1892. Serial No. 448,835. (No model.)

To all whom it may concern:

Be it known that I, LOUIS M. KROUSE, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Flushing-Tanks; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the annexed drawings, which form part of this specification.

My invention includes a peculiar construction of valve mechanism to be applied to those tanks or cisterns which contain water for flushing out water-closet basins, urinals, &c. Said mechanism consists of an ordinary main-valve that closes the outlet to the tank, and is adapted to be opened either automatically, or by a person using the closet, in which latter case, said valve is operated by a chain or other connection attached to a lever. This main valve is secured to the bottom of a suitable carrier, the top of which has a seat for a secondary valve composed of any material that will render it buoyant, and so guided as to ascend and descend freely, but guarded against any great lateral play. Owing, to this arrangement of parts, both valves are closed when the tank is filled, but when the main valve is momentarily raised from its seat to initiate the flushing operation, the secondary valve also rises, and as said valve is buoyant it now floats on the surface of the water, and descends as the latter falls. Consequently, as soon as the tank is emptied of its contents, the secondary valve re-seats itself, and then the above described operations are repeated, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a vertical section of a flushing tank embodying my improvements, the two valves of the same being seen in their normal or closed positions. Fig. 2 is an enlarged axial section showing the main valve elevated and the secondary valve closed, as they would appear in an empty tank. Fig. 3 shows the position the secondary valve assumes in a filled tank, when the main valve closes against its seat. Fig. 4 is a horizontal section of the cage seen in the preceding illustration. Fig. 5 shows a modification of my invention.

A represents a flushing-tank of any suitable

material and capacity, and B is an inlet pipe to the same, the supply of water through said pipe being regulated by an ordinary ball-cock C. Secured within this tank is a cylinder D, 55 from the bottom of which projects a screw-threaded neck E, the latter being designed to have an ordinary waste-pipe coupled to it. The upper end of this cylinder has a seat F, for a main-valve G, which usually consists of 60 a disk of rubber or leather attached to a carrier H, a central bore I being made through these two devices G, H, to permit a free flow of water. The upper end of carrier H has a continuous or uninterrupted concave seat J 65 that affords a water-tight bearing for a secondary valve K, which latter must be made of some buoyant material. I prefer, however, to use a hollow india-rubber ball for this purpose, although said device may be composed 70 of sheet metal, or glass, if desired, but whichever construction is adopted, the valve must be free to move vertically, and yet guarded against any very material lateral play. As seen in Fig. 1, this result is accomplished by 75 confining the secondary valve within a wire cylinder L, the lower end of which is attached to the carrier H, while its upper end is secured to a cap M. N is a chain or wire cord that couples this cap to an operating lever O. 80

As represented in Fig. 2, the carrier is integral with a tube H', perforated at h to permit a free flow of water. But in Fig. 3 the ball K is guided by a cage composed of three vertical rods P, P', P'', arranged as seen in 85 Fig. 4, and said cage has provision at top for coupling to an operating lever. Projecting vertically from the cylinder D, are bolts R, R', which serve as guides for the valve carrier, and also act as stops that limit its up- 90 ward stroke.

My valve mechanism is operated in the following manner. When the tank A, is filled, as seen in Fig. 1, the pressure of water keeps both of the valves G, K, securely closed against 95 their respective seats F, J, thereby preventing any discharge at the neck E, and its attached waste-pipe. To discharge the water from the tank, the lever O is so operated as to raise the carrier H as far as the stop R, R', will permit, 100 thereby opening the two valves G, and K, and allowing a free flow to take place through the

bore I, which flow will continue as long as the main valve is kept open, but usually the lever is held only for a minute or two, and when it is released said valve instantly descends and
 5 seats upon the cylinder D. This closing of the main-valve does not stop the flow, because the secondary valve K, has ascended as far as the cap or cage will permit, as seen in Fig. 3. As the water falls within the tank the float
 10 valve descends accordingly, and when a proper level is reached said valve automatically seats itself on the uninterrupted water-tight bearing J, and thus stops any further discharge. The regulating valve C then opens and fills
 15 the tank, which is again in a proper condition to be operated, as above described.

In the modification of my invention seen in Fig. 5, the valve carrier H, is provided with a water-tight rubber seat S, to hold a hollow
 20 metallic-ball K', the ascent whereof is limited by a wire T, securely soldered to said ball, and having a head t , on its lower end, the wire being free to traverse a central hole in a bar U, disposed across the bore of said carrier.
 25 When this ball is seated, the wire may run down into the waste-pipe, if necessary to allow for the desired vertical play. When a soft seat is fitted to the carrier, the secondary valve may consist of a hollow glass-ball guided
 30 by any suitable means, although my invention is not confined to a spherical shape for said valve. Finally, in this specification where the expression "water-tight" is applied to the special part J, it is to be understood as
 35 defining a seat or bearing, which is free from channels or grooves capable of admitting water under the secondary valve K when it is closed, as such an admission of water, at this moment, would defeat the very object of my
 40 invention.

I am aware it is not new to attach the main discharge-valve of a flushing tank to a vertically-acting siphon and provide the latter
 45 against an interrupted or channeled seat, but

which is released the instant said channels serve as the only outlets to the tank. Therefore, I expressly disclaim the broad idea of combining a buoyant secondary-valve with the main valve of a flushing-tank, and limit
 50 my invention to the construction herein shown and described—that is to say, to a buoyant secondary-valve closing against a water-tight seat or bearing at the upper end of a hollow carrier, to whose lower end is applied a main
 55 valve that controls the tank-outlet.

I claim as my invention—

1. The combination, in a flushing-tank, of an outlet, a main valve that closes the same, a hollow carrier to whose lower end said main-
 60 valve is applied, a water-tight seat at the upper end of said carrier, a buoyant secondary-valve, which is free to play up and down, but guarded against any material lateral play, and means for operating said carrier, the arrange-
 65 ment of these parts being such as to cause the secondary-valve to ascend when the main valve is lifted, and to descend and rest upon said water-tight seat when the tank is almost
 70 emptied, thereby stopping the entire flow, substantially as herein described.

2. The combination, in a flushing-tank, of the cylinder D, having an outlet E at bottom and seat F at top, the hollow valve-carrier H I, having the main valve G secured to its lower
 75 end and a water-tight seat J at its upper end, a buoyant secondary-valve K, that closes against this water-tight seat, a cage within which said secondary-valve plays, means for operating said hollow-carrier, and a guide
 80 which confines the latter to a proper path, so as to compel the main valve G to close said outlet E, all as herein described, and for the purpose stated.

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

LOUIS M. KROUSE.

Witnesses:

JAMES H. LAYMAN,
 ALFRED M. DAVIES.