

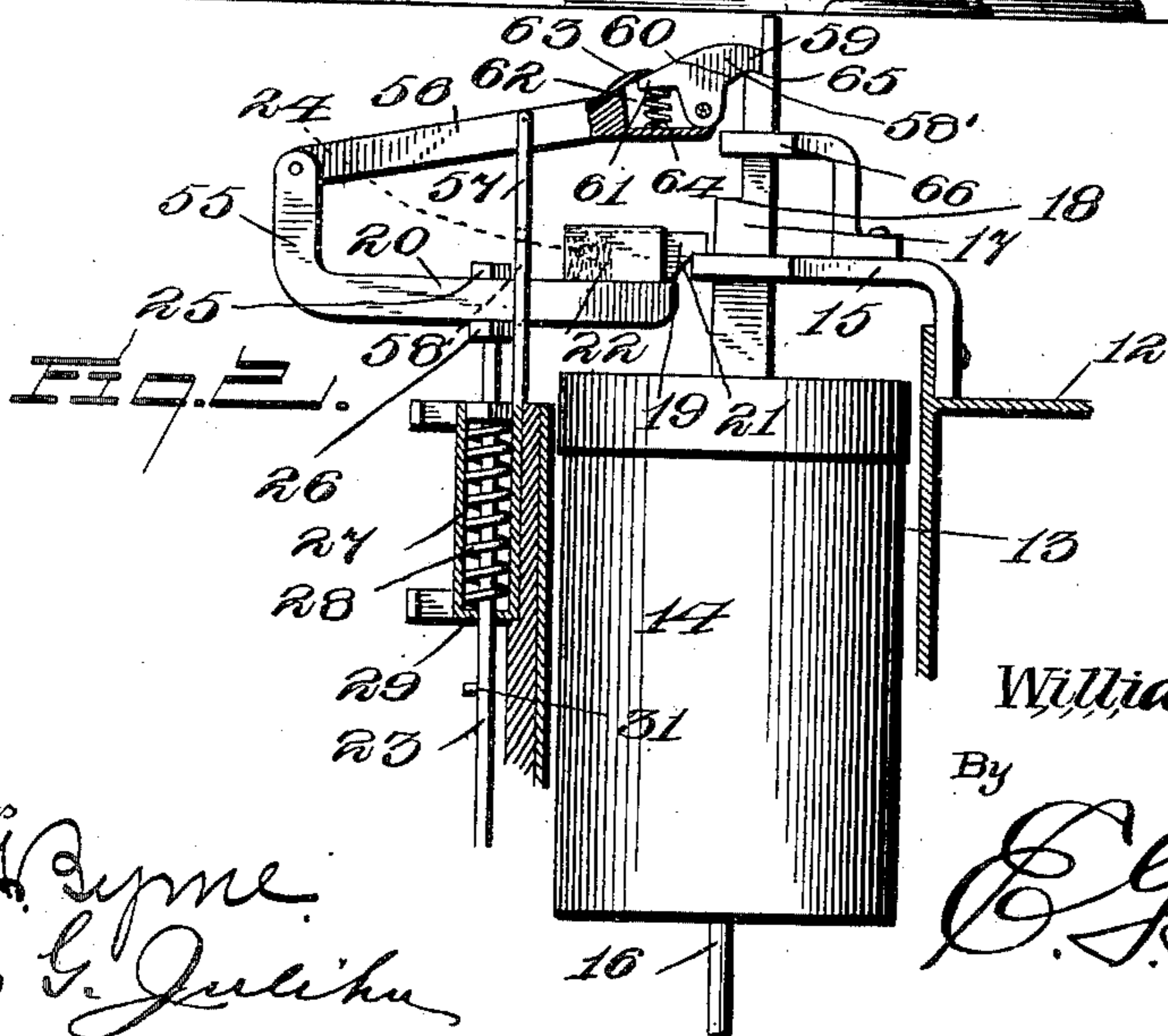
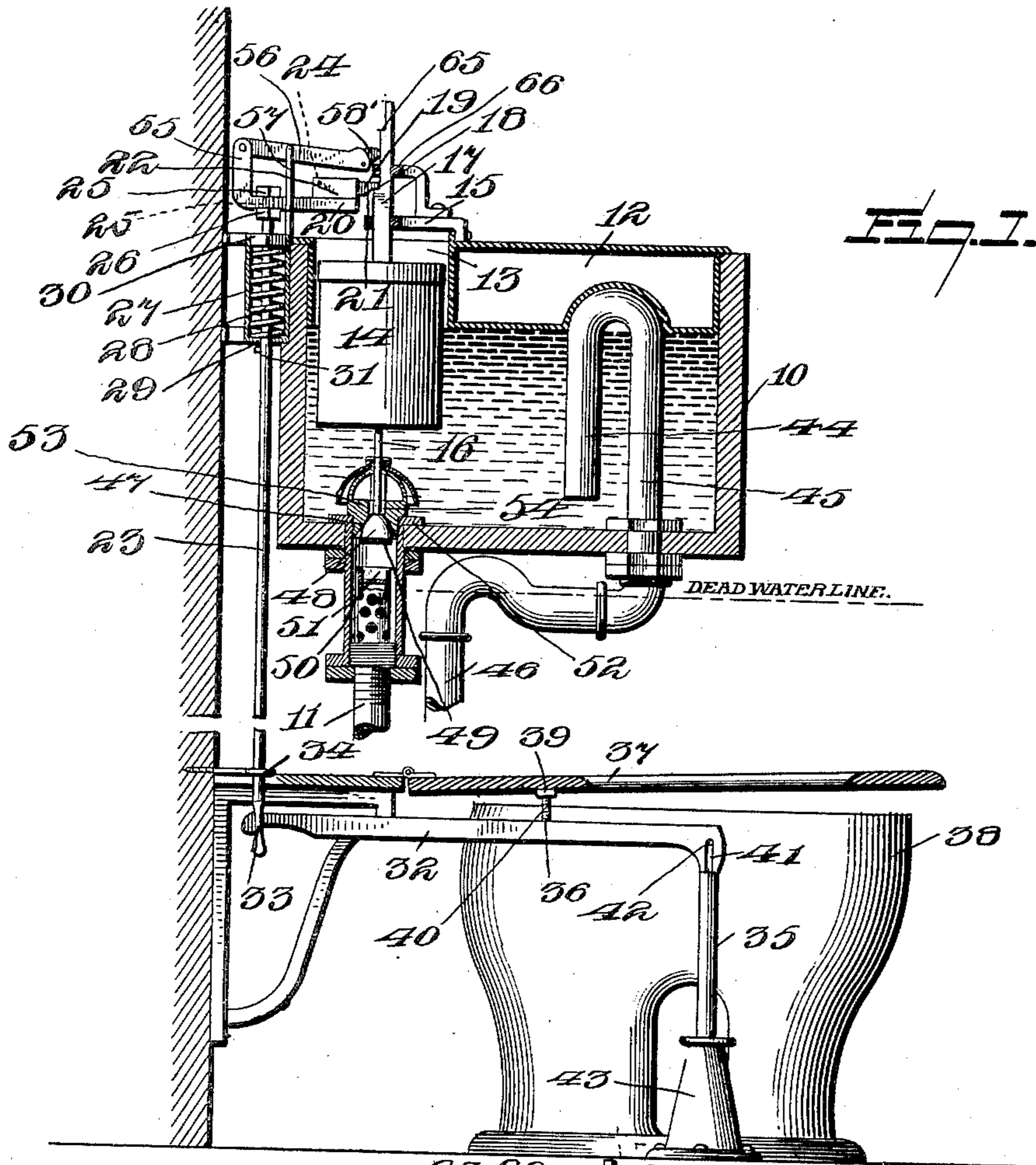
No. 667,878.

Patented Feb. 12, 1901.

W. P. HASTINGS.
FLUSHING APPARATUS.

(Application filed Apr. 30, 1900.)

(No Model.)



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FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 667,878, dated February 12, 1901.

Application filed April 30, 1900. Serial No. 14,915. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. HASTINGS, a citizen of the United States, residing at New York, (West New Brighton,) in the county of Richmond and State of New York, have invented a new and useful Flushing Apparatus, of which the following is a specification.

My invention relates to flushing apparatus for water-closets, and more particularly to an improvement upon the apparatus shown and described in my concurrent application for Letters Patent, Serial No. 700,820, filed December 30, 1898.

The application above recited describes a simple, compact, and efficient construction and arrangement of parts whereby the closet-bowl may be controlled by depression of the seat or intermittently during the occupation of the seat or at intervals continuously, according to the adjustment of the parts to suit the conditions of use.

The object of my present invention is to combine with such structure a simple and efficient improvement which will automatically effect the flushing of the bowl when the occupant rises from the closet-seat, as well as when the seat is first occupied and depressed.

To this end the invention consists in mounting a pair of dogs or latches in operative relation with the float or valve-stem and seat and in effecting the depression of the float and the unseating of the valve by the movement of one of the dogs when the seat is depressed and by the other dog or latch when the seat rises to its normal position upon the removal of the occupant.

Further objects of the invention will hereinafter appear as the necessity for their accomplishment is developed in the succeeding description.

In the accompanying drawings, in which I have illustrated a preferred form of my improved apparatus, Figure 1 is a general sectional elevation of the apparatus complete, the parts being shown in position to effect the flushing upon the depression of the seat. Fig. 2 is a sectional elevation, on a somewhat enlarged scale, illustrating the positions of the latches for effecting a second flushing upon the rising of the seat.

Referring to the numerals of reference em-

ployed to designate corresponding parts in both views, 10 designates a tank, and 11 a supply-pipe for conveying water thereto, said tank being fitted with a depressed cover 12, which is insecurely but removably fastened to the walls of the tank to prevent leakage of water and which is provided, in alinement, preferably, with the supply-pipe, with a well 13, forming an upward extension of the interior of the tank for the reception of a float 14, said float fitting loosely in the well (which forms a guide therefor) to allow water which is rising to the plane of the lower side of the cover 12 to pass between the side surfaces of the float and the walls of the well. The upper end of the well 13 is open and is spanned by a cross-bar 15, forming a trip, and the valve-stem 16, to which the float is attached, extends upward through a guide-opening in the center of said cross-bar and is fitted with a catch-block 17. This catch-block is shouldered, as shown at 18, near its upper end for engagement by a latch 19 upon one end of a cross-head 20, said latch being provided below and just behind its beak with an inclined or cam face 21, designed under certain conditions to impinge against the cross-bar or trip 15 to effect the retraction of the catch or dog from engagement with the catch-block. The cross-head 20 also carries a latch-operating spring 24, which bears against the tail of the latch to yieldingly hold the latch in operative relation with the shoulder of the catch-block, the rear end of said spring being coiled within a latch-casing 22, carried by the cross-head.

The cross-head 20 is carried by an operating-rod 23, which extends through the eye of said cross-head and is threaded for engagement by upper and lower adjusting-nuts 25 and 26, arranged in contact with the upper and lower sides, respectively, of said eye. As the operating-rod descends the latch by contact with the shoulder 18 depresses the valve-stem 16 and the float 14, which is secured thereto, until the cam-face 21 on said latch comes in contact with the trip 15, whereupon the latch is thrown rearward at its free end to release the shoulder 18, and the valve-stem and float are free to rise independently of the latch, and hence of the operating-rod. The return of the operating-rod to its normal or elevated position causes the reengagement of the latch with the shoulder 18 in prepara-

tion for a succeeding depression of the valve-stem. The operating-rod 23 is preferably arranged in rear of the tank 10 or in any other convenient position with relation to the apparatus and extends at a suitable point through a tubular guide 27, in which is incased a return-spring 28, coiled upon the rod. One end of this spring—namely, the lower end—bears upon the lower partly-closed end of the guide or upon fixed inturned flanges 29, with which the lower end of said guide is provided, and bears at its upper end against an adjustable collar 30, threaded upon the rod, the tension of said spring being adjustable by means of said collar and the exterior diameter of the collar being such as to fit snugly in the bore of the guide 27 to insure the accurate reciprocatory movement of the rod without lateral vibration or displacement. Also to limit the upward movement of the operating-rod under the tension of the return-spring 28 I employ a suitable stop 31, consisting, in the construction illustrated, of a transverse pin fitted in the rod and adapted to come in contact with the lower end of the guide.

Various means may be employed in depressing the operating-rod to actuate the float as above indicated; but in the construction illustrated these operating means consist of a lever 32, engaged at one extremity with an eye 33 at the lower end of the operating-rod 23, said rod, adjacent to the eye 33, extending through a guide-eye 34 and an upright or support 35, upon which the other extremity of said lever is fulcrumed, the lever being provided at an intermediate point with a bearing 36, adapted to receive the downward pressure of the closet-seat 37, said lever being arranged to extend forward at one side of the bowl 38. This bearing, in the construction illustrated, consists of a head 39, provided with a stem 40, which is threaded or otherwise adjustably mounted upon the lever to provide for varying the position of the bearing with relation to the lever, and hence the stroke of the lever or the amplitude of its movement when actuated by the depression of the seat. Also to facilitate disengagement of the lever from the support or upright 35 the former is provided at its fulcrumed end with a transverse slot 41 to engage a transverse fulcrum pin or bolt 42, arranged in a bifurcation of said upright 35. Also the upright may be suitably braced, as by a trunco-conical thimble 43, and may be threaded or otherwise firmly secured at its extremity in the floor.

Communicating with the interior of the tank is a siphon having an inlet or short leg 44, of which the inlet end is located near the floor or bottom of the tank, and an outlet or long leg 45, communicating with a flush-pipe 46, designed to convey the contents of the tank to the interior of the bowl.

The communication of the supply-pipe 11 with the interior of the tank is controlled by

a supply-valve carried by the stem 16 and arranged to operate in connection with a valve-seat 47. In the construction illustrated in Fig. 1 the valve 48 is normally held seated by means of the float 14 when the tank is full, and carried by the valve-stem below the plane of the valve is a restraining disk or piston 49 to fit in a cylindrical receptacle 50 when the valve is unseated or depressed, the function of the cooperating parts 49 and 50 being somewhat similar to that of a dash-pot, as fully described in my concurrent application.

The upper end of the valve-casing 51 is flanged, as shown at 52, to bear upon the inner surface of the floor or bottom of the tank, and the valve-seat block 53 is threaded into the upper end of the casing and is counter-bored in communication with the passage to form the above-described valve-seat 47, which is of trunco-conical construction. The valve 48, which may be of rubber or similar yielding material, is also approximately of trunco-conical construction.

With the parts arranged as described the depression of the closet-seat serves to correspondingly actuate the operating-rod 23 through the medium of the lever 32, which is of the third order, and this downward movement of the operating-rod communicates a corresponding movement to the valve-stem to unseat the valve 48 and depress the float 14. When the parts reach the limit of their downward movement, the piston 49 having entered the dash-pot or receptacle 50, the latch 19 is tripped from the catch-block to release the valve. The immediate return of the float to its elevated position, due to the buoyant effect of the water, is prevented, however, by the resistance offered to the piston by the contents of the valve-casing. The unseating of the valve is accompanied by an influx into the tank of a quantity of water sufficient to complete the siphon, and hence before the piston 49 can be withdrawn from the dash-pot or receptacle 50 the level of the water in the tank has been lowered by the flow through the siphon sufficiently to prevent the rise of the float to an elevation to seat the valve. Therefore the water flows through the siphon until the tank is empty and the siphon broken, whereupon the filling of the tank by the inflow through the supply-pipe 11 is accomplished as in the ordinary practice. As the level of the water in the tank rises the float is correspondingly moved and finally brings the valve 48 into contact with the seat to cut off further supply.

The construction and arrangement of the apparatus as thus far described is substantially identical with that described in my application above recited; but I shall now proceed with a description of my present improvement, which, as stated, comprehends means for effecting the flushing of the bowl when the seat is elevated by the removal of the occupant.

The cross-head 20 is extended rearwardly

beyond the rod 23, and its end 55 is upturned and pivoted to the rear end of a latch-lever 56, medially fulcrumed at the upper end of a standard 57, carried by the tank 10 or other fixed part and having a slot 58 to accommodate the free movement of the cross-head 20, which projects through said slot.

At the front end of the latch-lever 56 is carried a pivoted latch or dog 58', formed with a beak 59, an inclined or cam face 60, and a tailpiece 61. This latch 58' is pivoted within a recess 62 in the lever 56, and its tailpiece 61 is overhung by a stop-flange 63 at the rear end of the recess. Normally the latch is urged toward the catch-block 17 by a spring 64, located between the tailpiece 61 and the bottom of the recess. The catch-block 17 is extended upwardly and is provided with a second shoulder 65 for engagement with the beak of the latch 58', a second trip 66 being supported above the trip 15 for engagement with the cam-face 60 of the latch 58'.

In Fig. 1 of the drawings I have shown the parts in the positions they assume under ordinary conditions—that is to say, the valve is closed or seated, the catch 19 is in engagement with the shoulder 18, the latch 58' is in contact with the trip 66 and out of engagement with the block 17, and the closet-seat is in its normal elevated position, the closet and its seat being fully illustrated in this figure.

As soon as the seat is occupied its depression will draw down the cross-head 20 and cause the depression of the float and the opening of the valve in the manner described. During this movement of the cross-head the latch-lever 56 will be rocked to elevate the latch 58' to a position considerably above the trip 66. As the float and valve reach their depressed positions the latch 19 will be retracted against the resistance of its spring by the riding of the cam-face 21 upon the trip 15 to release the catch-block. The tank will now be emptied to flush the bowl, and the float and valve will gradually rise to their normal positions. This will present the shoulder 65 of the catch-block 17 immediately under the beak of the latch 58'. As soon now as the seat is relieved of its occupant the spring 28 will raise the seat and cross-head 20 to their normal positions, swinging the latch-rod and causing the latch 58' to depress the float and valve to again flush the bowl as the occupant leaves the seat. As the latch 19 is thus moved upward to its original position the latch 58' will be tripped, the float will again rise to present the shoulder 18 to the latch 19, and the apparatus will be ready for successive actuations in the manner noted.

From the foregoing it will be noted that I have produced a simple and effective apparatus which will accomplish the object stated; but while the present embodiment of the invention is deemed at this time to be preferable I do not desire to limit myself to the details defined, but reserve the right to change,

modify, and vary the structure within the scope of the protection prayed.

What I claim is—

1. In a flushing apparatus, the combination 70 with a tank, a discharge-siphon, a valve and valve-stem, of an operating-rod, means for reciprocating said rod, a latch movable with the rod for operating the valve-stem, a second latch arranged for engagement with the stem, 75 and means for operating said last-named latch through movement of the rod but in an opposite direction.

2. In a flushing apparatus, the combination with a tank, a discharge-siphon, a valve and 80 valve-stem, of an operating-rod, means for reciprocating said rod, a cross-head carried by the rod, a latch-lever operatively related to the cross-head, latches carried by the cross-head and latch-lever respectively, and a trip 85 located in the path of each latch.

3. In a flushing apparatus, the combination with a tank, a discharge-siphon, a valve and valve-stem, of a seat, a spring-retained operating-rod operated in one direction by the 90 seat, a cross-head carried by the rod, a latch-lever operatively related to the cross-head, latches carried by the cross-head and latch-lever, respectively, and arranged for engagement with the valve-stem, and a trip located 95 in the path of each latch.

4. In a flushing apparatus, the combination with a tank, a valve and valve-stem, and trip devices constituting bearings for said stem, of latches arranged for engagement with the 100 stem above each of the trip devices, and means for actuating said latches simultaneously in opposite directions.

5. In a flushing apparatus, the combination with a tank, a discharge-siphon, a valve and 105 a valve-stem provided with shoulders, of a plurality of trip devices constituting bearings for the valve-stem, a reciprocating rod provided with a latch engaging one of the shoulders of the stem, a latch-lever, and a second 110 latch operated by the rod and engaging another shoulder of the valve-stem.

6. In a flushing apparatus, the combination with a tank, a discharge-siphon, a valve and valve-stem, of a seat, a spring-retained operating-rod operated in one direction by the 115 seat, a cross-head carried by the rod, a latch-lever operatively related to the cross-head, latches carried by the cross-head and latch-lever, respectively, and arranged for engagement 120 with the valve-stem, and trip devices located one above the other and constituting bearings for the valve-stem, said trips being located in the paths of the latches.

In testimony that I claim the foregoing as 125 my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM P. HASTINGS.

Witnesses:

ERNEST RUTZ,
JAMES WHITFORD.