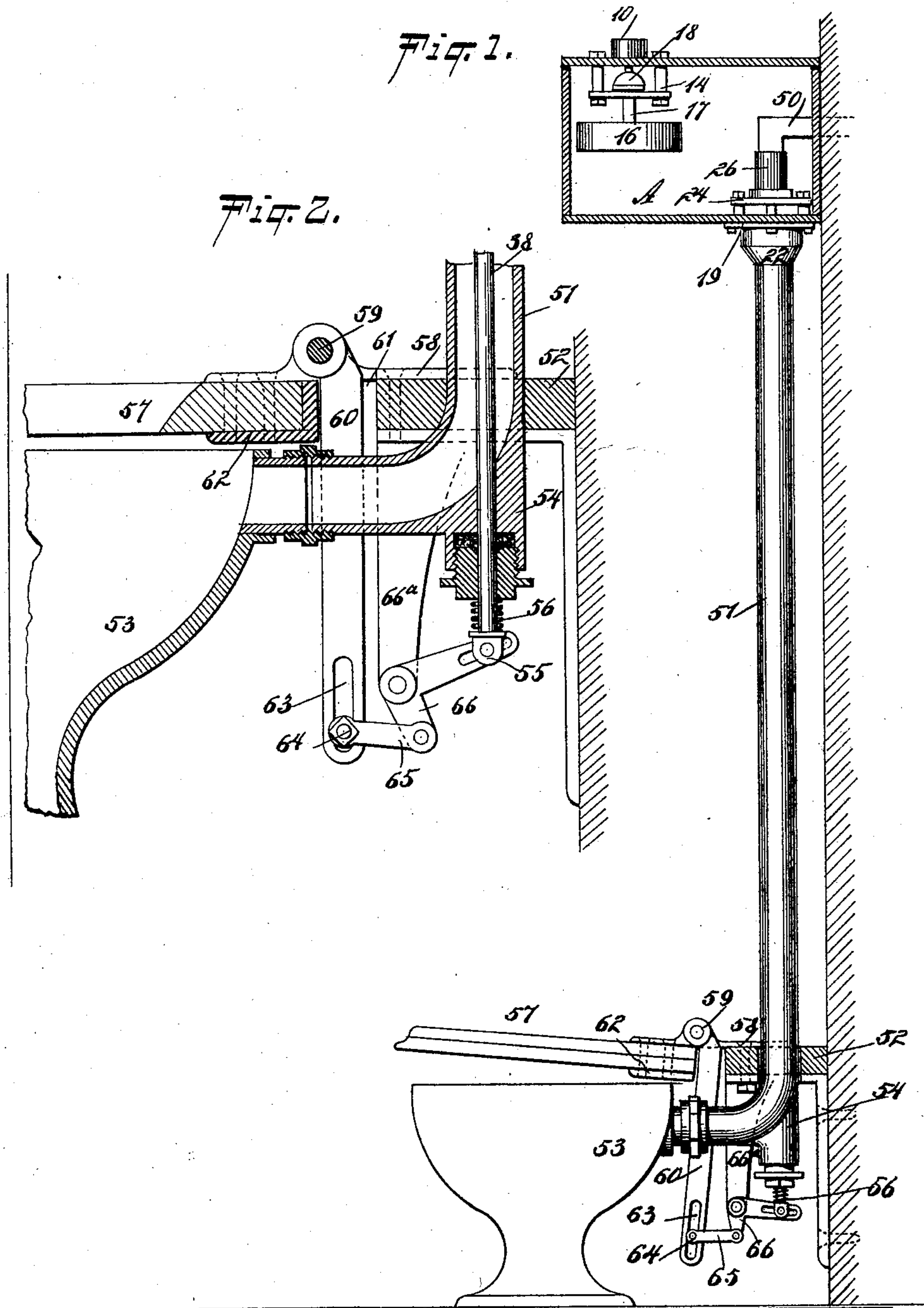


**2 Sheets—Sheet 1.**

No. 605,712.

Patented June 14, 1898.



**WITNESSES:**

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(No Model.)

2 Sheets—Sheet 2.

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FLUSHING APPARATUS.

No. 605,712.

Patented June 14, 1898.

Fig. 3.

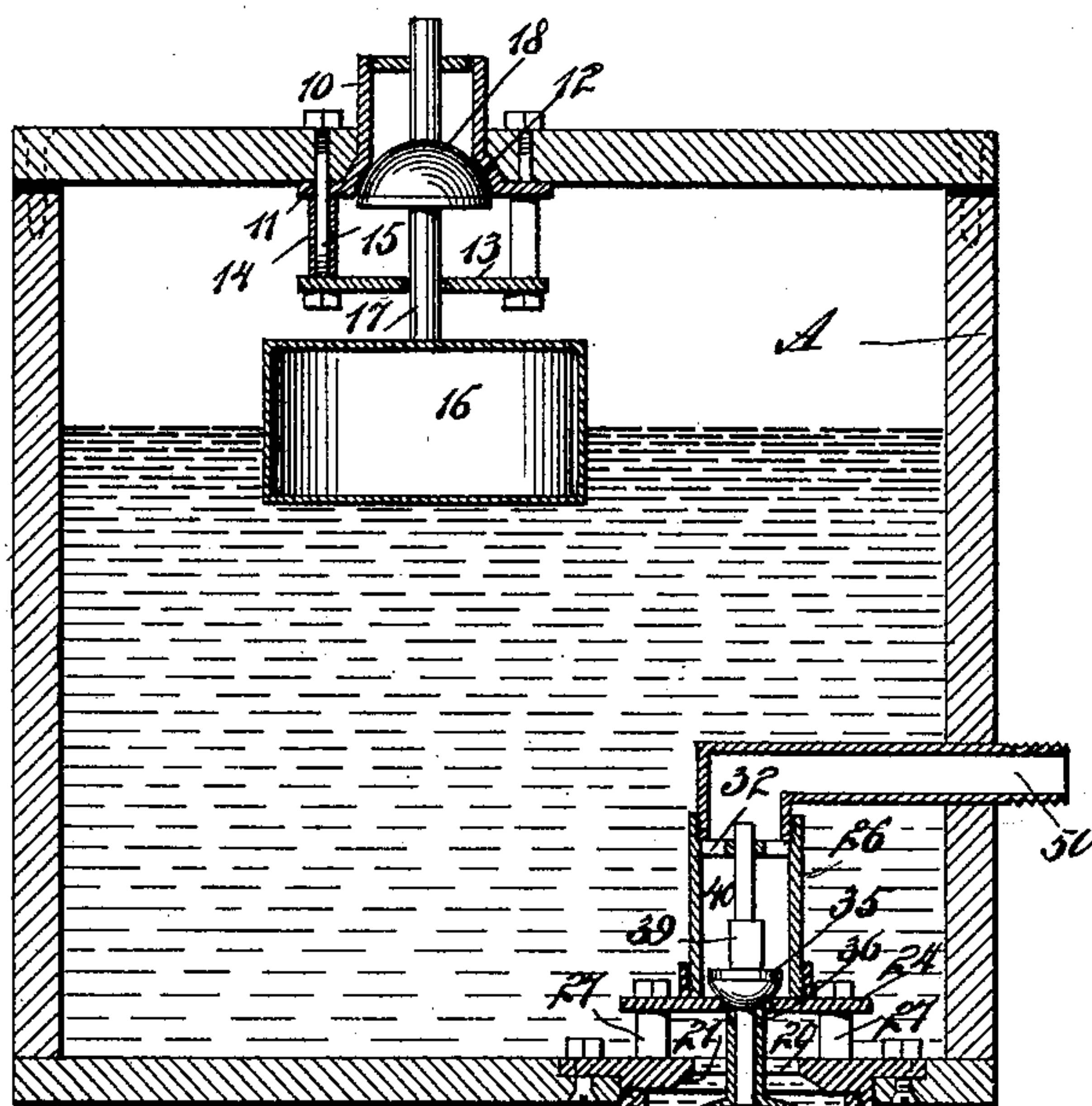


Fig. 4.

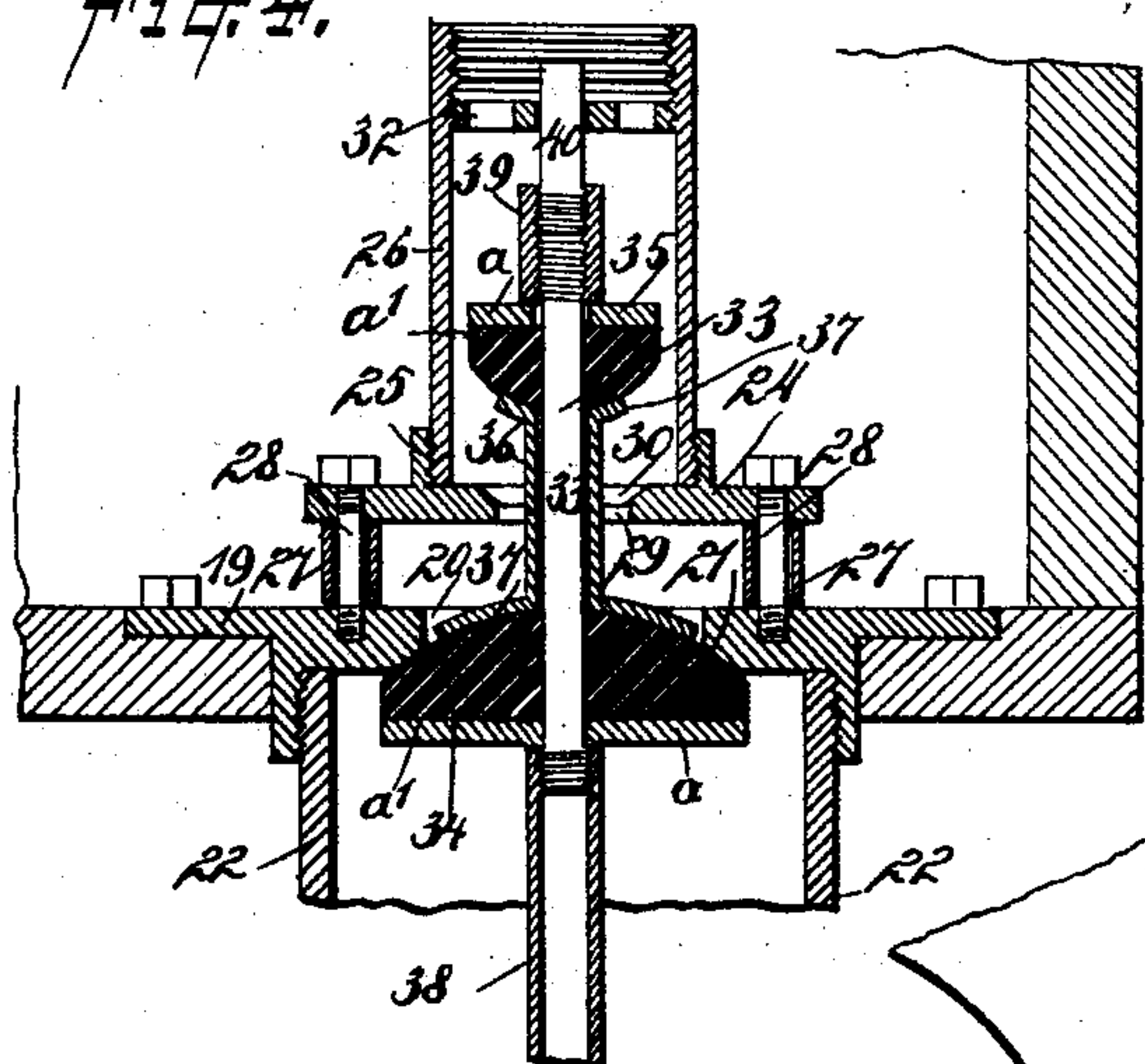
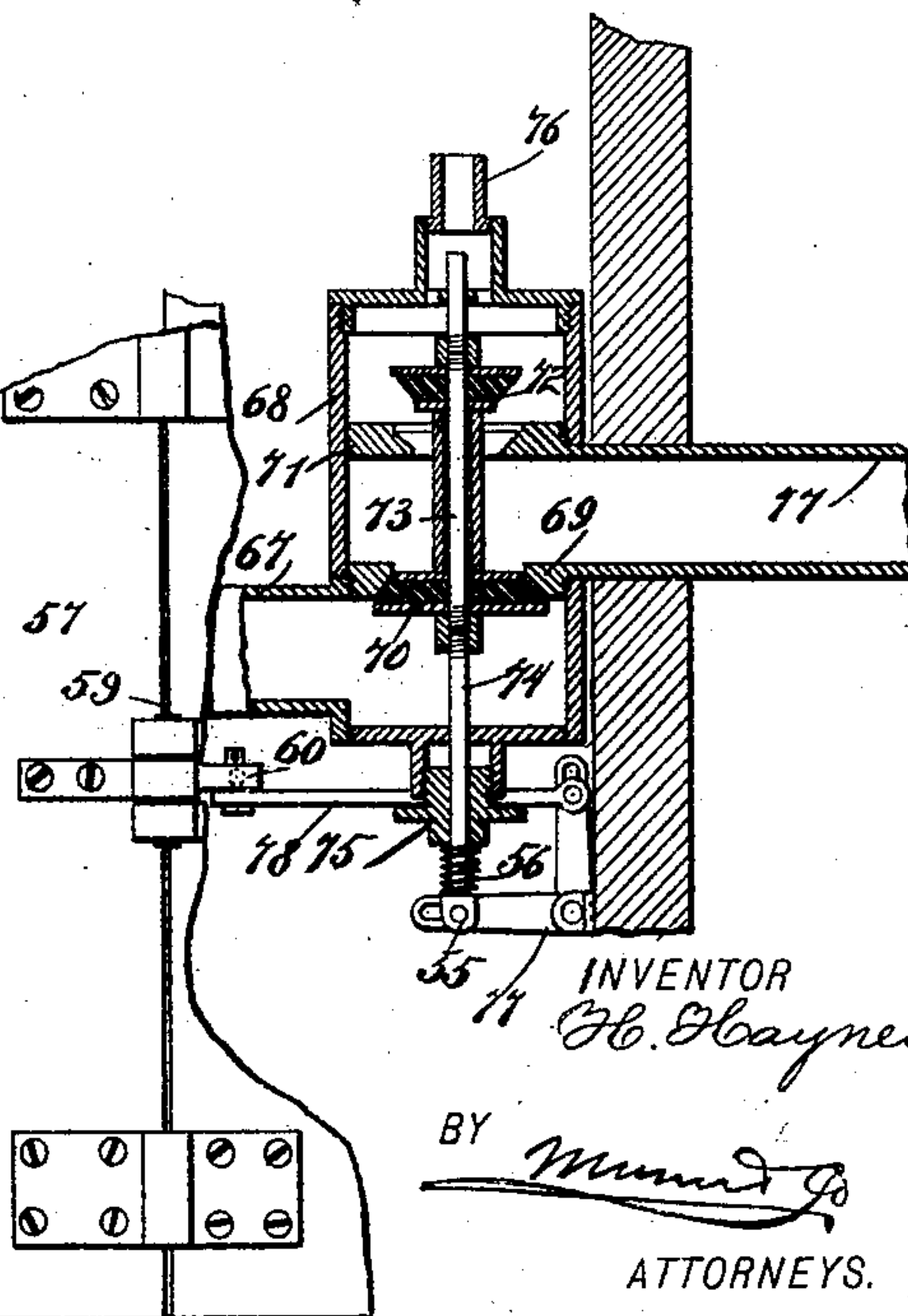


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 605,712, dated June 14, 1898.

Application filed July 30, 1897. Serial No. 646,501. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY HAYNES, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Flushing Apparatus, of which the following is a full, clear, and exact description.

The object of my invention is to provide a flushing apparatus especially adapted for use with water-closets; and the object of the invention is to provide an apparatus of such description in which the water will be admitted to the tank while the seat of the closet is pressed down or during the period that the closet is in use and whereby when the seat is relieved from pressure the water will immediately flow from the tank into the bowl.

Another object of the invention is to provide a system of valves for controlling the supply of water to the tank and the discharge of water from the tank to the bowl, which system of valves will be exceedingly simple, durable, and economic, and, furthermore, to provide a simple means for operating the said valves by raising and lowering the closet-seat.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section through a flushing-tank having the improvement applied and a side elevation of the valve-casing, the discharge-pipe, and the connections between the said pipe and bowl and the pull-rod and seat. Fig. 2 is an enlarged vertical section through a portion of the bowl and through that portion of the apparatus which is adjacent to the bowl. Fig. 3 is an enlarged transverse section through the tank, the float, and air-valve casing for the tank, and likewise a vertical section through the casing for the supply and discharge valves of the tank and through the water inlet and discharge pipes. Fig. 4 is an enlarged vertical section through a portion of the tank, the discharge and supply valves, and their casings; and Fig. 5 is a horizontal section through a slightly-modified

form of the valve mechanism adapted to be placed in a position removed from the flushing-tank and under the seat, which is shown in plan.

The flushing-tank A may be made of any suitable material and is air-tight. An opening is made in the top of the tank, which opening receives a casing 10. The bottom portion of the casing is of greater diameter than the top and is provided with flanges 11, arranged for attachment to the inner face of the top of the tank, and slightly above the flanged portion of the casing an annular and preferably concaved valve-seat 12 is produced. Below the casing within the tank a guide-plate 13 is horizontally supported and spaced from the casing 10 by bolts 15 and sleeves 14. A float 16, preferably flat, is provided with a stem 17, which extends upward through an opening in the guide-plate 13 and the top of the casing 10. A valve 18 is secured on this stem, adapted to control the supply of air to the flushing-tank, and this valve usually consists of a disk, which is secured on the stem, and a semispherical elastic body adapted when the valve is closed to engage with the aforesaid seat 12 in an air-tight manner.

A plate 19 is placed over an opening in the bottom of the tank, the said plate being provided with a downwardly-extending and preferably interiorly-threaded flange, as shown in Fig. 4. The plate 19 has an opening 20 in its central portion, and the bottom edge of the said opening is cut away to form a concaved annular valve-seat 21. (Shown also in Fig. 4.) A casing 22 is attached to the valved portion of the plate 19, and the bottom portion of said casing is contracted, forming a neck 23, exteriorly threaded, as shown in Fig. 3. A second plate 24 is located above the plate 19, attached to the flushing-tank. This plate 24 is provided with an upwardly-extending flange 25, which receives the lower end of an upwardly-extending casing 26; this latter casing being entirely within the tank. The plate 24 is separated from the plate 19 and is held in position by bolts 28 and sleeves 27. (Best shown in Fig. 4.)

An opening 29 is made in the central portion of the upper plate 24, and the upper edge



of the said opening is cut away to form an annular concaved valve-seat 30. A spider-guide 31 is secured at the neck portion of the lower casing 22, and a similar guide 32 is placed  
 5 within the upper casing 26 near its top. A valve-stem 33 extends within the lower casing and practically through the upper casing, passing likewise through the openings in the two plates 19 and 24. This valve-stem carries a lower discharge-valve 34 and an upper  
 10 supply-valve 35, one being adapted to open when the other closes. The lower or discharge valve 34 is larger than the upper or supply valve 35, but both valves are practically of  
 15 the same construction, each comprising a metal disk *a*, which may be connected with the valve-stem, and a semispherical elastic body *a'*. The lower discharge-valve 34 seats when carried upward, and the upper or supply  
 20 valve 35 seats when it is carried downward. A sleeve 36 is slipped over the valve-stem 33, being placed between the two valves, and at each end of the sleeve a flange 37 is made, one of the flanges engaging with the discharge-  
 25 valve and the other flange with the supply-valve, as shown in Fig. 4.

A pull-rod 38 is screwed upon the lower end of the valve-rod 33 to an engagement with the lower or discharge valve, holding the latter  
 30 in place, and a union 39 is screwed upon the upper end of the valve-stem 33, serving to hold the upper or supply valve in place. A second section 40 of the valve-stem 33 is screwed into the union 39 and passes through  
 35 the upper guide 32, the pull-rod 38 passing through the lower guide 31, as shown in Fig. 3. This lower guide 31 insures the valves sliding through to their seats.

The water-supply pipe 50 is passed usually  
 40 through a side of the tank and is secured in the upper end of the valve-casing 26, as illustrated in Fig. 3. A discharge-pipe 51 is secured to the lower end of the lower valve-casing 22. This discharge-pipe is of any de-  
 45 sired diameter and extends downward, usually through a support 52, attached to a wall or adjacent to the closet-bowl 53. The lower end of the discharge-pipe 51 is suitably shaped to enter the bowl. At the bend of the dis-  
 50 charge-pipe 51 a stuffing-box 54 is formed, through which stuffing-box the pull-rod 38 passes. The lower end of the pull-rod is provided with a head 55, and a spring 56 is coiled around the pull-rod, having bearing against  
 55 the said head and against the stuffing-box. This spring serves to keep the upper or supply valve from leaking during low pressure in the water-main, and the spring likewise serves to assist in holding up the front of the  
 60 closet-seat when the latter is not in use.

The seat 57 is connected with the support 52 or with an equivalent support by means of a hinge 58 of suitable construction, and the seat is so mounted upon the support that it  
 65 will have normally at least an inch play to and from the bowl. The pivot 59 of the hinge is above the level of the seat, and the upper

end of a lever 60 is loosely mounted on the pivot-pin of the hinge, extending downward through an opening in the hinge and an open-  
 70 ing 61, provided between the rear of the seat 57 and the support 52, as shown in Fig. 2. The upper end of the lever 60 is preferably at an angle to its body, and the straight-for-  
 75 ward edge of the lever just beneath the angular top is adapted for engagement with the back of the seat 57, and in order that the lever shall not mar the seat a protecting-plate 62 is attached to the seat opposite the lever,  
 80 as is also shown in Fig. 2. The lower end of the lever 60 is provided with a longitudinal slot 63, in which a pin 64 is adjustably secured, and said pin is connected with a link 65, the link being pivotally attached to an arm  
 85 of a bell-crank lever 66, the opposite arm of the lever being pivotally attached to the head of the pull-rod.

In operation when the seat 57 is unoccupied it will be raised at its outer end, as the spring 56, pressing downward on the horizontal mem-  
 90 ber of the elbow-lever 66, will cause the said elbow-lever to force the lever 60 forward and thereby carry the seat to an upward inclination at its forward edge, and the spring 56 will likewise serve at that time to keep the sup-  
 95 ply-valve 35 closed and the discharge-valve 34 open, so that all the water that may have been contained in the tank will have flowed out through the discharge-pipe 51 into the bowl. The adjustable pin 64, connecting the  
 100 link 65 with the lever 60, is made adjustable in order that the throw of the valves may be controlled from said lever. When the seat is pressed downward onto the bowl, the seat as  
 105 thus forced downward will force the lever 60 rearward and cause the elbow-lever 66 to force the pull-rod 38 upward against the tension of the spring 56, thereby causing the discharge-  
 110 valve 34 to close and the inlet-valve 35 to open, as shown in Fig. 4. The result will be that while the lid is held down the water will flow into the tank until it has reached such a level as to cause the float to close the air-valve 18, and in a short time the air-pressure in the  
 115 tank will become equal to the water-pressure in the supply-pipe and the supply of water will cease. As soon as the lid is released from pressure the spring 56 acts on the lever 60 to throw the seat up and unseat the discharge-  
 120 valve 34, closing the supply-valve 35, and, as stated in the first place, all the water in the tank will flow downward to the bowl.

In the construction shown in Fig. 5 the arrangement of the valves is especially adapted to admit of the valves being placed at a point  
 125 below the seat and at the rear of the bowl. This construction embraces a valve-casing 68, into which the discharge-pipe 67 enters near one end and is connected with the bowl. Within the casing, just in front of the en-  
 130 trance of the discharge-pipe 67, a vertical partition 69 is formed, having an opening therein, at which opening a discharge-valve 70 is adapted to be seated. Parallel with the par-



tion 69 a second vertical partition 71 is formed in the casing, having an opening at which the inlet-valve 72 is to be seated, the inlet or supply valve being at the outside of the partition 71, while the discharge-valve 70 is at the outside of the partition 69. The pipe 77, which is connected with the tank, is connected with the casing between the two partitions 69 and 71, and the water-supply pipe 76 is connected with the casing at that end near which the inlet-valve 72 is placed. The two valves are secured upon the same stem 73, and this stem is coupled to a pull-rod 74, passed through a bushing 75 at the end of the casing, the pull-rod terminating in a head 55 the same as the pull-rod in the other views heretofore described. The outer portion of the pull-rod is surrounded by a spring 56, acting in the same manner as the spring designated by the same reference-numeral in the other views. The head portion of the pull-rod is connected with a bell-crank lever 77, and the said bell-crank lever is connected by a link 78 with a seat-lever 60.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a flushing apparatus, the combination, with a tank, a water-supply pipe leading into the tank, the said tank being provided with an opening in its bottom, and a plate having a valve-seat supported within the tank above the opening, forming a cap for the outlet end of the supply-pipe, of a discharge-pipe fitted in the opening in the tank and provided at its top with an apertured

cap having a valve-seat formed therein, connected valves, one valve being arranged to close the outlet for the water-supply pipe and the other valve being arranged to close the inlet of the discharge-pipe, one valve seating when the other is unseated, and a pull-rod connected with the valve, whereby the valves are operated, for the purpose specified.

2. In a flushing apparatus, the combination, with a tank, a water-supply pipe leading into the tank, the said tank being provided with an opening in its bottom and a plate having a valve-seat supported within the tank above the opening, forming a cap for the outlet end of the supply-pipe, of a discharge-pipe fitted in the opening in the tank and provided at its top with an apertured cap having a valve-seat formed therein, connected valves, one valve being arranged to close the outlet for the water-supply pipe and the other valve being arranged to close the inlet of the discharge-pipe, one valve seating when the other is unseated, a pull-rod connected with the valve whereby the valves are operated, a tension device normally holding the pull-rod in a downward direction, causing the supply-valve to be normally seated, a lever, and a connection between the said lever and pull-rod, whereby the said rod may be forced upward against the resistance of the said tension device, as and for the purpose specified.

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Witnesses:

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