

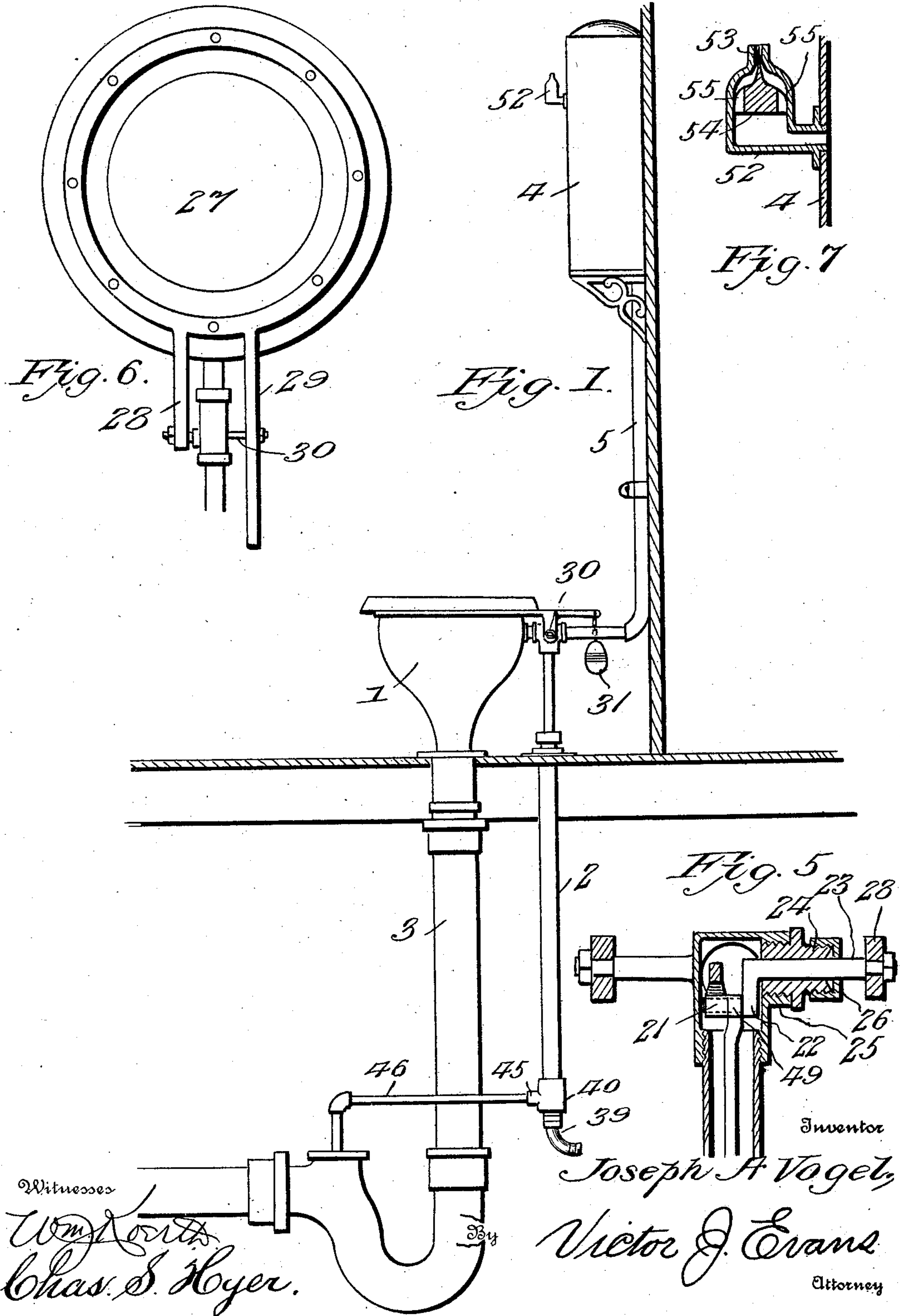
No. 762,853.

PATENTED JUNE 14, 1904.

J. A. VOGEL.  
FLUSHING APPARATUS.  
APPLICATION FILED JUNE 17, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



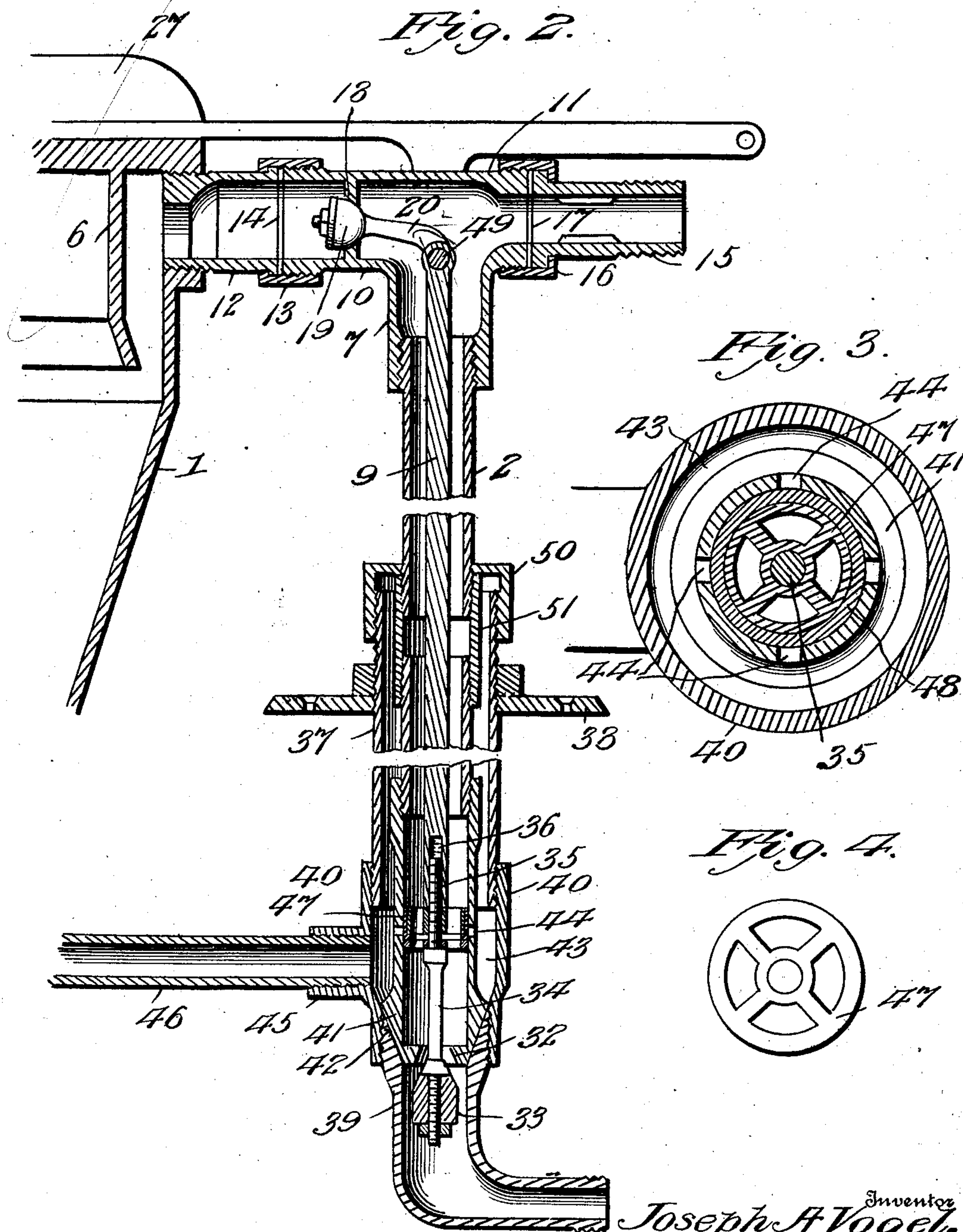
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Witnesses

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# UNITED STATES PATENT OFFICE.

JOSEPH A. VOGEL, OF WILMINGTON, DELAWARE.

## FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 762,853, dated June 14, 1904.

Application filed June 17, 1903. Serial No. 161,926. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH A. VOGEL, a citizen of the United States, residing at Wilmington, in the county of Newcastle and State of Delaware, have invented new and useful Improvements in Flushing Apparatus, of which the following is a specification.

This invention relates to flushing apparatus, and has for its object to provide simple, reliable, and effective means for flushing a closet, the flushing apparatus being automatically controlled and influenced by a swinging seat, which is itself controlled or influenced by a weight.

The invention hereinafter set forth is in the nature of an improvement upon the construction illustrated and described in my application Serial No. 123,765, filed September 17, 1902, the principal feature of the improvement residing in doing away with the valve-seating spring described in my said former application and providing a different form of flushing-valve and means for controlling the same.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination, and arrangement of parts, as hereinafter fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is an elevation of the complete flushing apparatus constructed in accordance with the present invention. Fig. 2 is a vertical sectional view taken through the water-supply pipe, bowl, and adjacent parts and illustrating the operation of the valves. Fig. 3 is an enlarged cross-section through the water-supply pipe and jacket, taken in line with the ring-valve which controls the drain-ports. Fig. 4 is a plan view of the ring-valve. Fig. 5 is an enlarged detail vertical section showing the crank-shaft and its connection with the flushing-valve stem and the valve-rod. Fig. 6 is a plan view of the bowl-seat. Fig. 7 is a detail vertical section showing the automatic air or check valve connected with the tank.

Like reference-numerals designate corresponding parts in all the figures of the drawings.

The general arrangement of the flushing apparatus contemplated in this invention is similar to that shown and described in my said prior application, 1 designating the bowl; 3, the waste-pipe; 2, the water-supply pipe; 4, the tank, and 5 the flushing-pipe leading from tank to the bowl.

The bowl is preferably constructed with an inner circular partition 6, depending from the top thereof, as shown in Fig. 2, the water entering the bowl above the bottom of said partition 6, as shown. The water-supply pipe 2 is composed of a number of sections connected by suitable couplings, so that the pipe may be taken apart for giving access to the valves and other devices contained therein. The upper section of the water-supply pipe 2 comprises a T-shaped member 7, provided with oppositely-extending branches or elbows 10 and 11, the branch 10 being connected to an end section 12 by means of a coupling-sleeve 13 and the joint between said parts being made tight by means of a packing-washer 14, interposed between the abutting edges of the sections and compressed by means of the coupling-sleeves 13. The opposite branch 11 has connected therewith the terminal section 15 of the flushing-pipe 5, the connection being made in a manner similar to that just described by the employment of a coupling-sleeve 16 and interposed packing-washer 17.

The branch 10 is provided with an internal valve-seat 18, formed to correspond with the shape of a valve 19, which is in the nature of a ball-valve which is carried by a valve-stem 20, which extends approximately to the center of the valve-casing formed by the upper member 7 of the water-supply pipe, where said stem is provided with a sleeve 21, in which is received the crank-pin 22 of a crank-shaft 23. (Best illustrated in Fig. 5.) The crank-shaft 23 is journaled in a plug 24, which is screwed into a hollow internally-threaded boss 25, extending laterally from one side of the valve-casing, the bearing of said shaft being made liquid-tight by means of a stuffing-box 26, which screws upon the outer portion of the plug 24, as shown in Fig. 5.

The crank-shaft 23 is operated by the bowl-seat, (shown at 27,) said seat being provided



with a pair of rearwardly-extending arms 28 and 29. The arm 28 is provided with a flattened opening to receive the correspondingly-flattened end of the crank-shaft 23, so that as the seat swings the crank-shaft is turned. The other arm 29 of the seat is journaled loosely upon a laterally-extending stud-shaft 30, projecting from the opposite side of the member 7 and in line with the crank-shaft 23, as shown in Figs. 5 and 7. The arm 29 extends beyond the stud-shaft 30 and has attached to its projecting extremity a weight 31 sufficient to automatically swing the seat upward when relieved of weight, the weight 31 being also sufficient to operate the crank-shaft 23 and unseat the flushing-valve 19 and also operate the valve which controls the flow of water through the pipe 2.

At or near the lower end of the standing part of the water-supply pipe 2 is a valve-seat 32, in connection with which a water-supply controlling-valve 33 operates. The valve 33 is mounted upon the lower end of a stem 34, the upper end of which is threaded, as shown at 35, into an internally-threaded socket 36 in the lower end of the valve-rod 9, thus enabling the proper relative adjustment to be obtained between the valves 19 and 33, so that as one valve is closed the other is opened, and vice versa.

Extending around the sectional water-supply pipe 2 is an exterior jacket-pipe 37, having mounted thereon at a suitable point a floor-bracket 38, by means of which the pipe may be supported from a floor. The lower member 39 of the water-supply pipe is enlarged sufficiently, as shown at 40, to receive the threaded lower end of the jacket-pipe 37, while the adjacent or next upper section of the pipe 2 has a cone-shaped lower extremity, as shown at 41, which is fitted with a ground-joint in the correspondingly-bored portion 42 of the member 39. This leaves an annular drain-chamber 43 within the jacket-pipe, which drain-chamber is placed in communication with the interior of the pipe 2 by means of a plurality of drain-ports 44. The jacket-pipe is also provided with a lateral extension 45, to which is connected a drain-pipe 46, leading to the waste-pipe.

47 designates a ring-valve, which is mounted upon the lower portion of the valve-rod 9 and provided with a suitable surrounding packing 48. The ring-valve 47 is movable up and down within the water-supply pipe and is adapted to close or open the drain-ports 44 when raised and lowered by the valve-rod 9 as the latter is in turn operated by the crank-shaft 23, said valve-rod being provided at its upper end with an eye or bearing 49, which receives the crank-pin of the shaft 23.

50 designates a cap which screws over the upper end of the jacket-pipe 37 and acts to force the conical part 41 to its seat in the member 39.

The tank 4 is provided at a suitable height with a valve-chamber 52 in communication therewith, said valve-chamber having a reduced upper end or nozzle 53, which is controlled or, in other words, closed and opened by means of a float-valve 54, arranged within the chamber 52 and influenced by the rise and fall of water in the tank 4. The valve 54 is provided with one or more passages 55, which allow the air to escape from the upper portion of the tank as the water rises therein. When the water, however, attains a sufficient level, it lifts the valve 54 and prevents the further escape of air. Consequently the further rise of water in the tank creates an air-cushion by compressing the air in the top portion of the tank, which assists materially in the flushing operation when the valve 19 is unseated by the means hereinabove described.

The operation of the apparatus is as follows: When the seat 27 is lowered and held down, the crank-shaft 23 is turned in a direction which will seat or close the flushing-valve 19 and depress the valve-rod 9 and open the valve 33. Water now flows through the supply-pipe 2 and flushing-pipe 5 into the tank 4, filling the latter as far as the air-cushion will permit, said air-cushion serving to equalize the water-pressure, and consequently stop the flow thereof. When the seat 27 is allowed to swing upward, it turns the crank-shaft 23 in the opposite direction, which has the effect of opening or unseating the valve 19 and simultaneously closing the water-supply valve 33 and opening the drain-ports 44. The water in the tank now rushes through the flushing-pipe into the bowl, and the water that is left in the standing portion of the supply-pipe 2 finds its way through the drain-ports 44 into the drain-chamber 43 and thence through the drain-pipe 46 to the waste-pipe 3. By thus emptying the system of pipes the same are prevented from freezing and bursting in cold weather.

I make no claim in this application to the structure disclosed by my Patent No. 737,796, dated September 1, 1903, wherein is set forth, in combination with a bowl, of a sectional water-pipe having its sections detachably connected, a valve-chamber at the upper end of the pipe in communication with the bowl, a lowermost section of pipe formed with a valve-seat and detachably fitted within the supply-pipe, a valve-rod in the sectional pipe, a valve on the lower end of the valve-rod, and a spring to lift the valve-rod with the valve, together with other details of construction cooperating with the main elements specified.

Having thus described the invention, what I claim as new is—

1. In a flushing apparatus, the combination with a bowl, of a water-supply pipe, a valve-chamber at the upper end of said pipe in communication with the bowl, a valve-seat therein, a lowermost section of the pipe formed



with a valve-seat, a valve-rod movable lengthwise of the supply-pipe, a valve at the lower end of said rod, a stem connected with the upper valve, and a seat-controlled crank-shaft  
5 having the stem of the upper valve and the rod of the lower valve journaled thereon and adapted to simultaneously operate both valves, substantially as described.

2. In a flushing apparatus, the combination  
10 of a bowl, a valve-chamber connected therewith by a horizontal branch having a valve-seat, a water-supply pipe leading downward from the valve-chamber and provided with a valve-seat in its lower portion, a swinging  
15 seat, a crank-shaft operated thereby and working in the valve-chamber, a flushing-valve cooperating with the valve-seat in the horizontal branch of the valve-chamber, a supply or admission valve cooperating with the valve-seat in the supply-pipe, and a valve-rod extending from the supply-valve upward, said rod  
20 and also the stem of the flushing-valve being journaled on and operated by the crank-shaft.

3. In a flushing apparatus, the combination

of a bowl, a valve-chamber connected therewith by a horizontal branch having a valve-seat, a second horizontal branch, a flushing-tank, a flushing-pipe connecting the second branch and said tank, an air-check valve associated with said tank, a water-supply pipe leading  
25 downward from the valve-chamber and provided with a valve-seat in its lower portion, a swinging seat, a crank-shaft operated thereby and working in the valve-chamber, a flushing-valve cooperating with the valve-seat in  
30 the horizontal branch of the valve-chamber, a supply or admission valve cooperating with the valve-seat in the supply-pipe, and a valve-rod extending from the supply-valve upward, said rod and also the stem of the flushing-  
35 valve being journaled on and operated by the crank-shaft.  
40

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

JOSEPH A. VOGEL.

Witnesses:

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GEORGE M. BOND.