

J. A. VOGEL.
FLUSHING APPARATUS FOR WATER CLOSETS.

APPLICATION FILED SEPT. 17, 1902.

2 SHEETS—SHEET 1.

NO MODEL
Fig. 5.

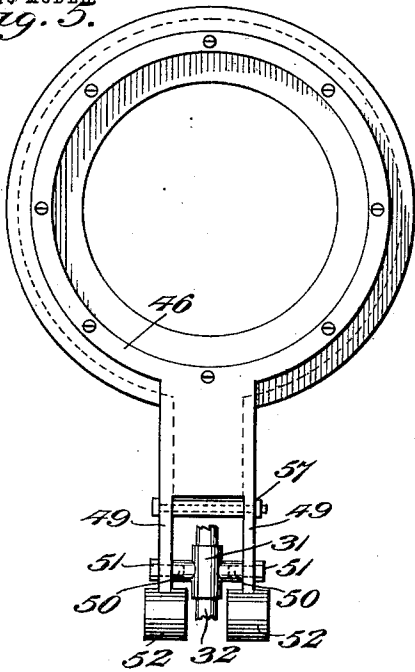


Fig. 1.

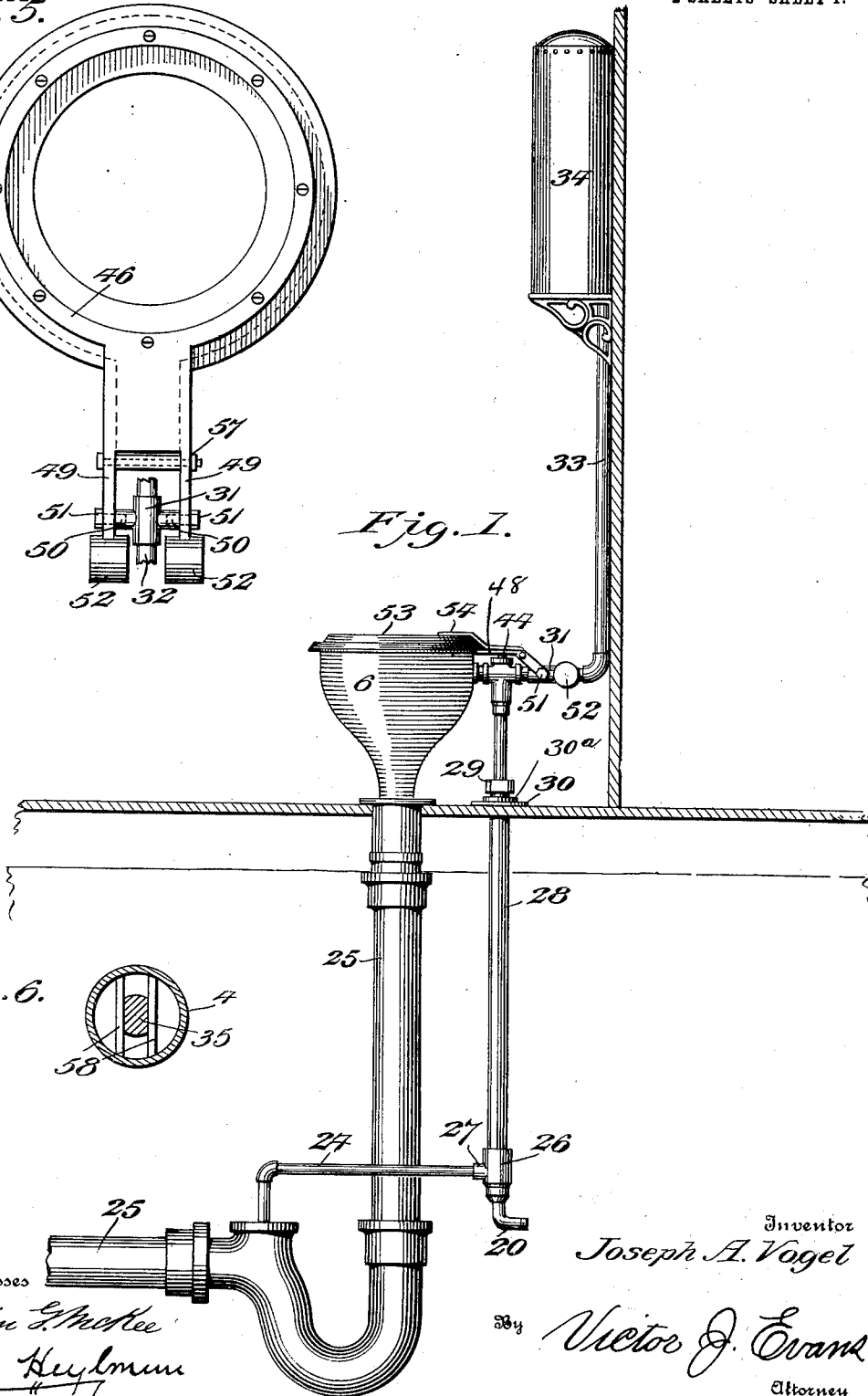
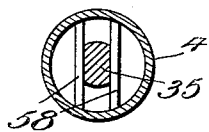


Fig. 6.



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2 SHEETS—SHEET 2.

57 NO MODEL.

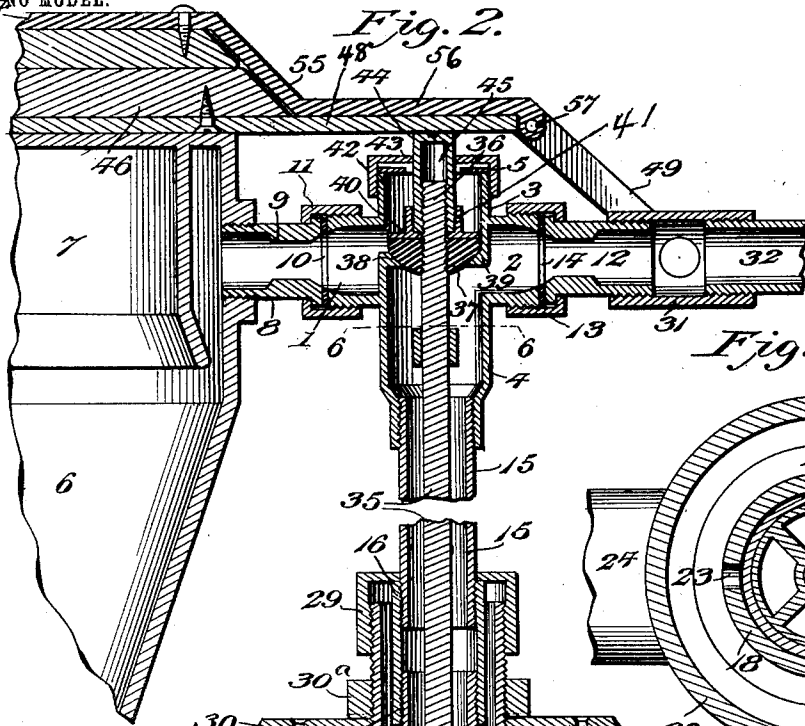


Fig. 3.

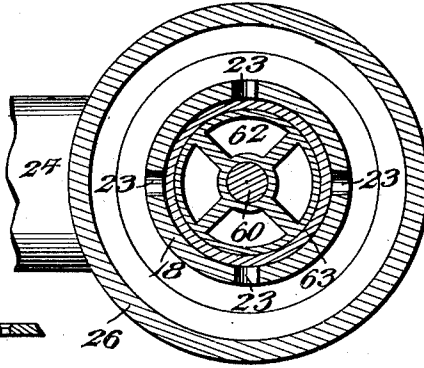
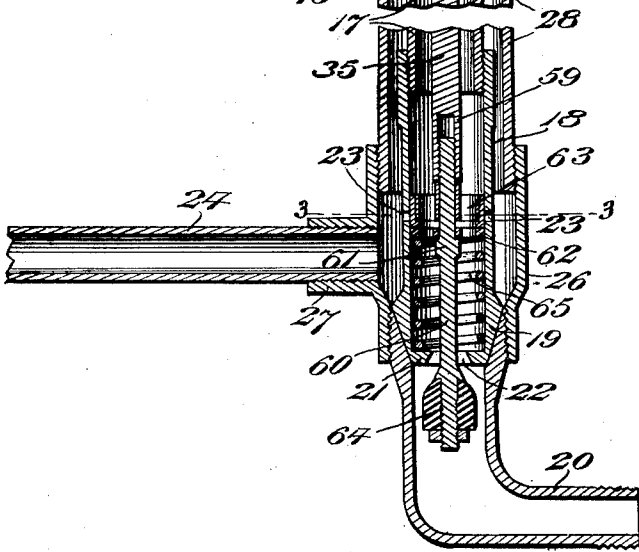
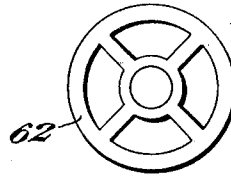


Fig. 4.



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JOSEPH A. VOGEL, OF WILMINGTON, DELAWARE.

FLUSHING APPARATUS FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 737,796, dated September 1, 1903.

Application filed September 17, 1902. Serial No. 123,765. (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 for Water-Closets, of which the following is a specification.

My invention has relation to improvements in flushing apparatus for water-closets; and the object is to provide a simplified mechanism for the purpose indicated which is certain and efficient in operation and of durable construction.

With these purposes in view my invention embodies the novel construction of parts and their assemblage or aggroupment in operative combinations, as will be hereinafter fully described and particularly pointed out and distinctly claimed.

I have fully and clearly illustrated my improvements in the accompanying drawings, to be taken as a part hereof, and wherein—

Figure 1 is a side elevation of the complete apparatus, showing it as secured in place for utilization. Fig. 2 is a vertical central sectional view of the water-conduit pipe, the valves, and a portion of the bowl and the lid. Fig. 3 is a transverse horizontal section taken on the line 3 3 of Fig. 2, showing the escape or drip ports in the conduit-pipe and the sleeve or ring-valve by which they are opened and closed. Fig. 4 is a detail plan view of the ring by which the escape-ports are closed. Fig. 5 is a bottom view of the seat, showing it as it appears when turned back. Fig. 6 is a transverse section on the line 6 6 of Fig. 2.

In the drawings like reference designations appearing in the several illustrations refer to like parts.

It will be premised that the water-inlet or water-conduit pipe is made up of separable sections or parts, so that they may be readily and conveniently taken apart when it becomes necessary to make repairs or to take out the valves. I also surround the lower portion of the water-pipe with a jacketing-pipe of larger diameter than the main pipe and permit the water to course through the drain-ports into the waste-pipe, and thus prevent freezing at any point in the apparatus. Referring to the drawings, it will be seen

that the uppermost section of pipe consists of a T-shaped valve chamber or casing formed with end pieces 1 2 of the desired length and diameter and provided with exterior screw-threads. A vertical hollow extension 3 is formed at the top of the chamber having external screw-threads. At the lower side of the chamber it is formed with a depending cylindrical pipe 4, having a lower portion of less diameter than the main part and provided with interior screw-threads. On the part 3 is arranged a ring-washer 5, over which the rod-adjusting cap or piece is arranged and engages, as hereinafter will be more fully specified.

6 designates the bowl, which may be of any suitable construction, but I prefer to make it with a depending circular partition 7 of less diameter than the bowl and extending the desired distance into the bowl. At the rear side of the bowl is formed a threaded aperture in which engages the threaded end of a short pipe-section 8, formed with an annular flange at its outer end and having interior lugs or ribs 9, adapted to be engaged by a suitable implement used when the pipe is being placed in position. The pipe-section 8 alines with the end of the part 1, and between the adjacent ends of these parts is a packing-washer 10, and then they are firmly united by a coupling-sleeve 11, having an interior annular flange to engage the exterior annular flange on the pipe 8 and also having interior screw-threads to engage over the end of the part 1. The part 2 is in like manner coupled to a pipe-section 12 by a coupling-piece 13, and between the coupled pieces is a packing-washer 14.

To the lower or depending pipe 4 of the chamber is a pipe-section 15, having screw-threaded connection therewith and at its lower end has similar connection to a coupling-sleeve 16, which at its lower end couples to a pipe-section 17, the lower end of which couples with a terminal section of pipe 18. This pipe-section 18 is made with a tapering end part 19, which extends into and has ground connection with the opening of the supply-pipe 20. The part 19 is formed with an internal annular flange 21 at its lower end, in which is an upwardly-tapering aperture 22, constituting a valve-seat. At a determined point, preferably just above the mouth of the drip-

pipe, are made diametrically-disposed drip-holes 23. The drip-pipe 24 opens from the lower part of the jacket-pipe and opens into the waste-pipe 25, as shown in Fig. 1 of the

5 drawings.
 26 designates the lower section of an exterior jacketing-pipe having an interior threaded lower end engaging over the end of the supply-pipe 20 and by a lateral pipe-piece 27
 10 with the drip-pipe 24. The upper end of the pipe 26 has suitably connected to it a section of pipe 28, the threaded upper end of which is closed tight by a cap 29, which has the pipe
 15 15 passed through it and screws down water-tight and lodges on the upper end of the coupling-sleeve 16, as shown in Fig. 2 of the drawings. On the upper end portion of the pipe
 20 28 is arranged a floor-bracket 30, adapted to be secured to the surface of a floor on the pipe, and a locking-nut 30^a serves to hold the
 pipe-sections securely in vertical position and so that the cap 29 may be removed and replaced without disturbing any of the pipes.

At the outer end of the pipe-section 12 is
 25 connected a coupling-sleeve 31, the outer end of which couples with a pipe-section 32, suitably connected with a vertical pipe 33, opening into an air-tight tank 34.

35 designates the valve-rod, having flattened
 30 sides, Fig. 6, and having a screw-threaded upper end portion 36, whereon a valve 37 is screwed, the valve being fitted to operate in relation to a valve-seat 38, formed in a partition 39 in the valve-chamber. The valve 37
 35 is secured to a plate 40, having a socket 41, provided with interior screw-threads. The extension 3 is covered by a cap 42, having threaded connection therewith and formed
 40 with a central opening 43, through which slidably passes a plug 44, having threaded connection in the socket 41 of the valve-plate and is formed with a threaded socket 45, which
 screws over the threaded end of the valve-rod 35.

45 46 designates the seat on the bowl, formed with a rearwardly-extending plate 48 and downwardly-inclined parallel arms 49, pivotally mounted on stud-bearings 50, extending
 50 laterally from the coupling-sleeve 31 and held in their bearings by threaded bolts 51. The arms 49 extend beyond their bearings and are provided with weights 52, which counterbalance the weight of the seat and the lid of the bowl.

55 The lid or closure of the bowl is designated by the numeral 53 and is hinged to the seat by a broad strap-hinge 54, having an inclined portion 55 and a terminal straight portion 56, the outer end of which is hinged to the seat
 60 by a bar-hinge 57, as shown in the drawings. It will be perceived that the lid may be raised independently of the seat and that the lid and the seat may both be raised at one time.

The valve-rod 35 is guided in its movements
 65 at its upper portion by parallel guide-bars 58, secured in the port 4, as shown. In the lower end of the valve-rod is formed a threaded

socket 59, wherein the upper end of the valve-stem 60 adjustably engages. At a point adjacent to the ports 23 the valve-stem is formed
 70 with a collar 61, on which is seated a ring-washer 62, and immediately above this ring is a ring-valve 63, which opens and closes the ports 23. On the lower end of the valve-stem
 75 60 is suitably secured a valve 64, which fits in the valve-seat 22 and controls the passage of water at that point. Between the collar or washer 62 and the flange 21 is arranged an expansive coil-spring 65, against the force of
 80 which the valve is opened and by the expansion of which it is lifted into the valve-seat and closes the port therethrough.

As illustrated in the drawings, particularly in Fig. 2, the device is shown as an "after-flush," but it may be arranged readily to perform the functions of an immediately-acting
 85 flush. This is accomplished by plugging the section 12 and removing the valve 37 and the washer or plate 41, when the water has free course through the pipe into the bowl when
 90 the lower valve 64 is opened.

The device stands normally with the valve 37 open and the valve 64 closed. Now when the seat is pressed down it moves the valve-rod 35 down, closing the valve 37 and opening
 95 the valve 64, and also pushing the ring-valve 63 down to close the ports 23. The water now has free course through the pipe into the tank 34, into which it continues to flow until an equilibrium is established between
 100 the air-cushion in the tank and the water-pressure or until the pressure on the seat is removed. As soon as this latter occurs the force of the spring 65 lifts the valve 64 to close the valve-port and carrying the valve-rod
 105 upward opens the valve 37, and the water in the tank flows down, rushes through the upper valve-port into the bowl and accomplishes the flushing. The upward movement of the valve-rod and valve-stem lifts
 110 the ring-valve 63 and opens the drip-ports 23, so that the water above the ports remaining in the pipes drains therefrom through the ports and out through the drain-pipe 24 into the waste-pipe 25. It will thus be perceived
 115 that the pipe remains practically empty except when the lower valve is opened to admit the water and filled only during the time the seat is pressed down to hold that valve open, and whether the after-flush or immediate
 120 flush is used, after the flushing has been accomplished and the lower valve is closed the pipe above is substantially drained off.

It will be observed that the cap 29, having the pipe 15 passed through it, screws down
 125 onto the pipe 28 and lodges on the upper end of the coupling-sleeve 16, thereby forcing the tapering end part 19 down into the seat made for it in supply-pipe 20, making a water-tight joint. It will further be observed that by
 130 unscrewing and removing the coupling-sleeves 11, 13, and 29 all the valves may be lifted out without disturbing the lower jacketing-pipes, the supply-pipe, or the drip-pipe. It will

also be perceived that the rod-guides 58 keep the rod 35 from turning on its axis, and so that it may be adjusted by the plug 44.

Having thus described my invention, what I claim is—

1. In a flushing apparatus, the combination with the bowl, of a sectional water-pipe, the sections thereof being 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 in 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.

2. In a flushing apparatus, the combination with the bowl, of a valve-chamber mounted adjacent thereto and provided with a valve-seat therein, a sectional pipe, coupling-sleeves uniting the pipe-sections, an end section of pipe detachably connected to the supply-pipe, a depressible valve-rod in the pipe, a valve on the rod to operate in relation to the valve-seat in the valve-chamber, a valve on the lower end of the valve-rod to open and close the lower end of the pipe, and an expansive coil-spring to lift the valve-rod with the valves.

3. In a flushing apparatus, the combination with the bowl, the seat for the bowl, and a tank, of a valve-chamber having communication with the bowl and with the tank, and provided with a valve-seat, a pipe leading downward from the valve-chamber and formed with a conical tapering lower end, and a valve-seat, a supply-pipe having a flaring open end to connect with the tapering end of the pipe, a valve-rod, a valve on its lower end, a valve on its upper portion within the valve-chamber, an expansive spring on the valve-rod to lift the rod with the lower valve into contact with its seat.

4. In a flushing apparatus, the combination

with the bowl, the tank, and a valve-chamber having communication with the bowl and the tank, of a water-pipe, leading to the valve-chamber and formed with drain-ports, a reciprocable valve-rod in the pipe, valves at the respective ends of the valve-rod, a spring to lift the rod with the valves, a ring-valve actuated by the valve-rod to open and close the drain-ports, and a pipe to carry the drain off.

5. In a flushing apparatus, the combination with the bowl, the tank and a valve-chamber having communication with both the bowl and the tank, of a conduit-pipe depending from the valve-chamber and formed with a valve-seat in its lower end, and drain-ports, a valve-rod extending through the pipe, a valve on its lower end, a valve on the rod within the valve-chamber, a spring to lift the rod and against the force of which it may be depressed, a ring-valve actuated by the valve-rod to open and close the drain-ports, a casing of larger diameter than the conduit-pipe secured around the same into which said ports open, and a drain-pipe opening from the casing.

6. In a flushing apparatus, the combination with the bowl, the valve-chamber, and the tank, of a conduit-pipe depending from the valve-chamber, and comprising an upper pipe-section 15, connected to the valve-chamber, a coupling-sleeve 16, an intermediate section 17, and an end section 18, formed with drain-ports and having a tapering lower end and a valve-seat, an outer casing 23, surrounding the sectional pipe, and a drain-pipe leading from the casing.

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

JOSEPH A. VOGEL.

Witnesses:

F. L. WAILES,
PAUL RICHARDSON.