No. 787,287. PATENTED APR. 11, 1905.

H. W. GARDNER.

FLUSHING APPARATUS.

APPLICATION FILED APR. 11, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

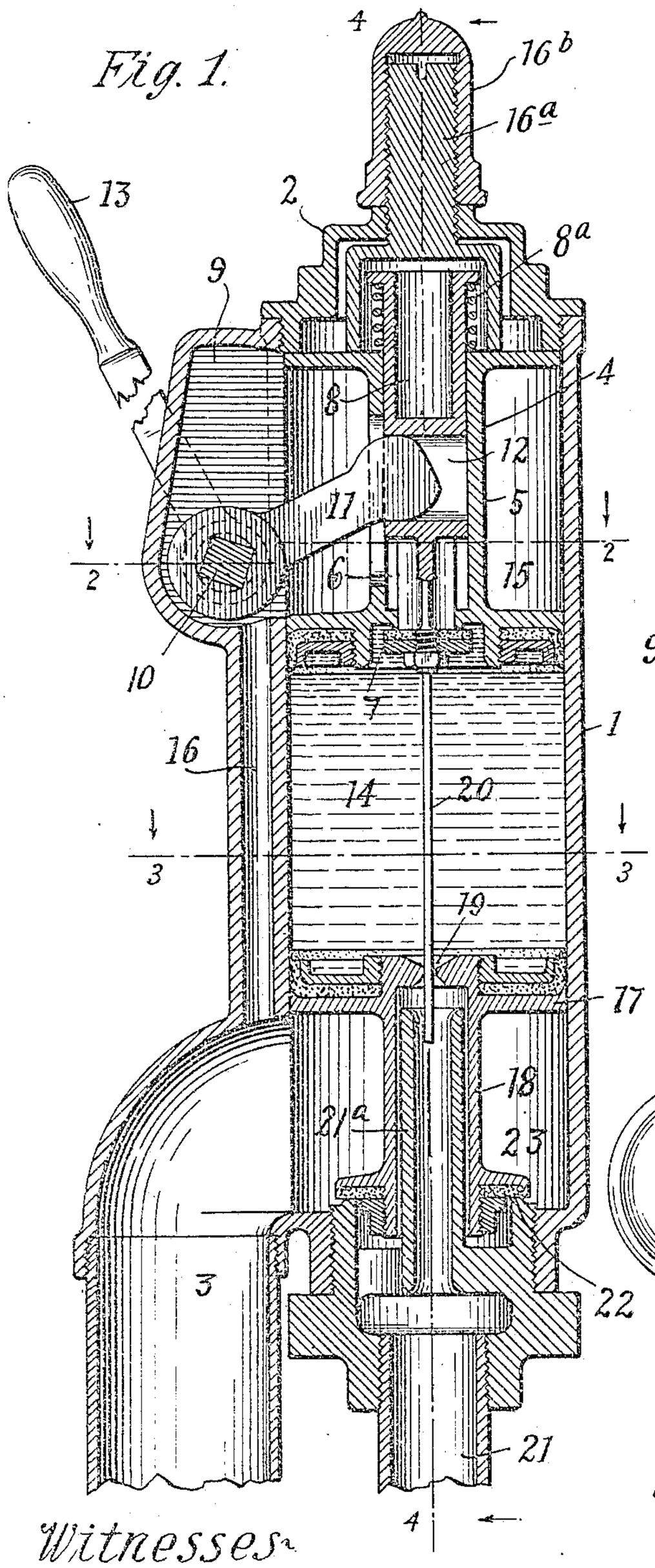


Fig. 2.

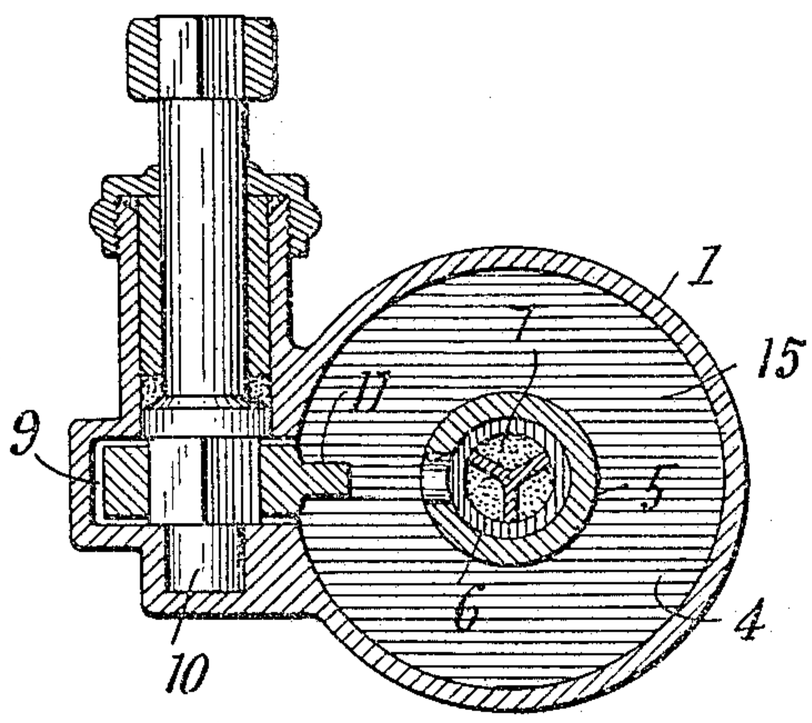
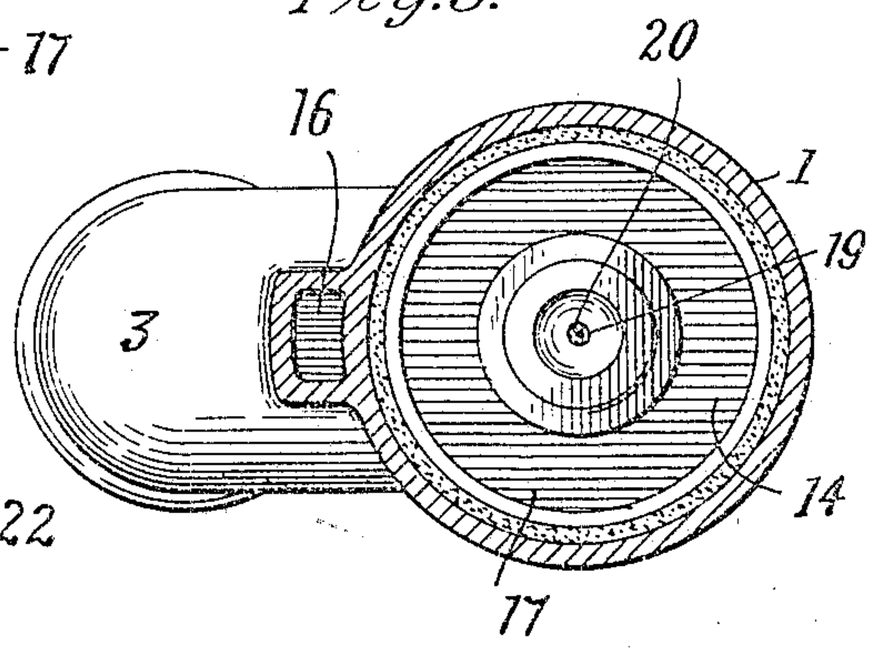


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

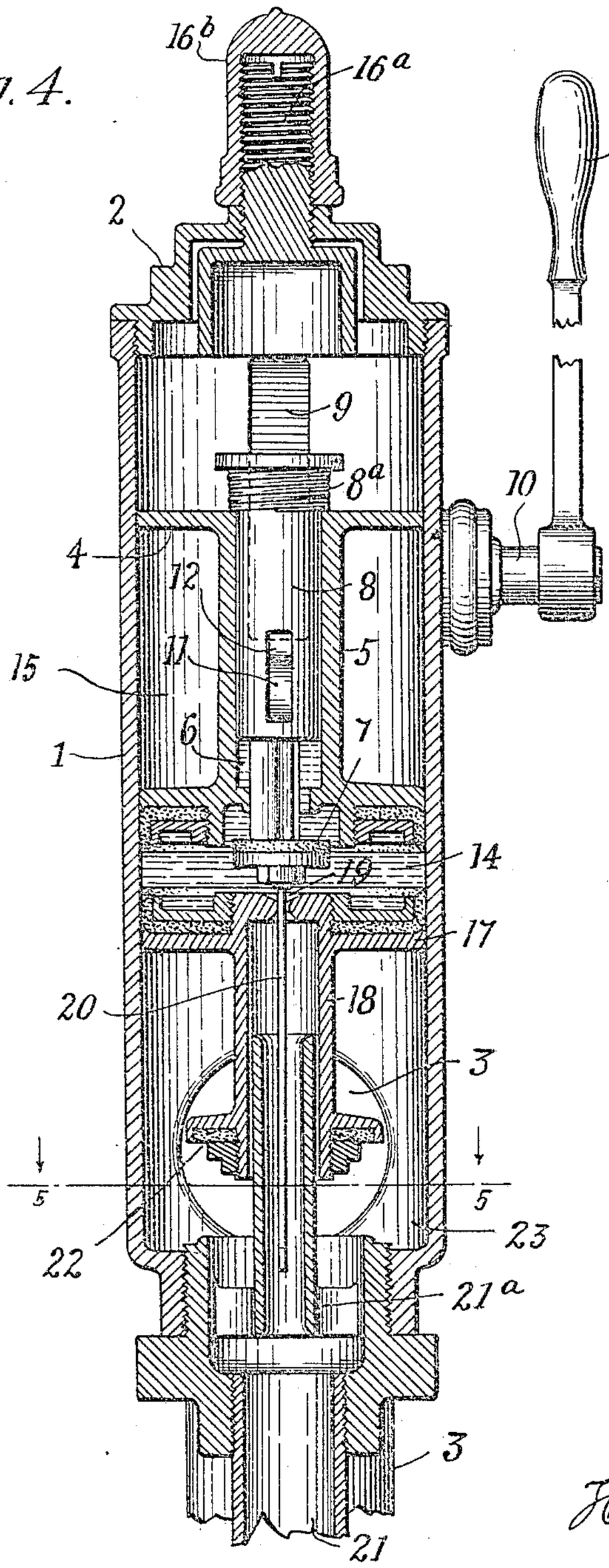
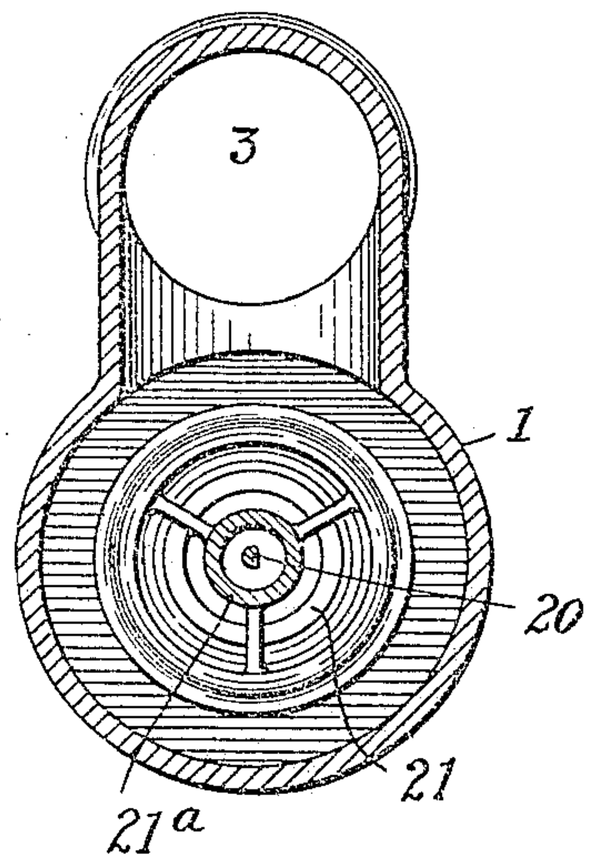


Fig. 5.



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No. 787,287. Patented April 11, 1905.

UNITED STATES PATENT OFFICE.

HENRY W. GARDNER, OF WAUKEGAN, ILLINOIS.

FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 787,287, dated April 11, 1905.

Application filed April 11, 1904. Serial No. 202,490.

To all whom it may concern:

Be it known that I, HENRY W. GARDNER, a citizen of the United States, residing at Waukegan, in the county of Lake and State of Illinois, have invented new and useful Improvements in Flushing Apparatus, of which the following is a specification.

My invention relates to flushing devices for use in connection with water-closets, slop-sinks, urinals, &c., but especially with the former; and the object is to provide an apparatus of simple construction in which the ordinary flush-valves are dispensed with.

A further object of the invention is to provide means whereby the pressure and volume of water used in the flushing operation may be regulated.

The invention will be fully understood by referring to the accompanying drawings, in which—

Figure 1 is a vertical section of my improved automatic flushing-valve, showing the auxiliary valve and the lower valve in their closed positions. Fig. 2 is a cross-section taken on line 2 2 of Fig. 1. Fig. 3 is a cross-section taken on line 3 3 of Fig. 1. Fig. 4 is a vertical section taken on line 4 4 of Fig. 1, showing the auxiliary valve and the lower valve in their open positions; and Fig. 5 is a cross-section taken on line 5 5 of Fig. 4.

1 indicates the shell or casing of the flushing apparatus, the upper end of which is provided with the screw-threaded cap 2. The lower end of said casing is provided with the outlet passage or pipe 3.

4 indicates the upper plunger, which is adapted to operate in the upper part of casing 1. The piston-rod 5 of this plunger is hollow and is provided with the slot 6.

7 indicates a valve, and 8 the valve-stem. This valve-stem is adapted to operate in the hollow stem of piston 4. The valve 7 is normally held in its closed position by means of the spiral spring 8^a.

9 indicates a chamber formed in the upper portion of the casing 1. A spindle 10 extends through the chamber 9 and carries the short arm 11. The end of arm 11 fits in slot 12 in stem 8, and when the lever 13, attached to spindle 10, is pressed the valve 7 will be opened and the plunger 4 pressed downward. This operation will allow the water in middle chamber 14 to flow through the valve 7 and into upper chamber 15 and from chamber 15 into outlet 16.

16^a indicates an adjustment-screw by means of which the upper plunger 4 can be stopped at any point desired, thus reducing the area of chamber 14 and regulating the flow of water through outlet 3. This adjusting-screw is provided with the cap 16^b.

In the lower portion of casing 1 is the lower plunger 17. The piston-rod 18 of this plunger is hollow and the upper portion thereof provided with the small opening 19. A small rod 20, attached to the lower end of valve 7, is adapted to pass through the opening 19. This rod is flat on one side, thus allowing an opening for water to pass from supply-pipe 21 through opening 19 and into chamber 14. Rod 20 also serves to keep opening 19 from becoming clogged. The lower plunger 17 is normally held in its downward or closed position by reason of the water in chamber 14.

21^a indicates an intermediate pipe, which is adapted to telescope into piston 18. One end of the intermediate pipe 21^a is secured to the upper end of supply-pipe 21. This pipe is considerably smaller in diameter than pipe 21 and is adapted to telescope into piston 18. The purpose of pipe 21^a is to convey the water directly from supply-pipe 21 to chamber 14. One end of this pipe is secured to casing 1.

22 indicates the lower valve. This valve is normally held in its closed position by reason of the water-pressure in the middle chamber.

23 indicates a chamber in the lower part of casing 1 under the piston-plunger 17. This chamber communicates with outlet or discharge pipe 3.

The operation is as follows: When the parts are in the position as shown in Fig. 1 and it is desired to flush the apparatus, the lever 13 is pulled upward, thus causing the arm 11 to push the valve-stem 8 downward and opening the valve 7. After the valve 7 has been completely opened the plunger 4 will be pressed downward, thus forcing the water in chamber 14 through valve 7 and into chamber 15, thence into outlet 16, and out through pipe 3.

When nearly all of the water is out of chamber 14, by reason of the pressure of water in pipe 21 the lower plunger 17 will be forced upward, thus opening the valve 22 and allowing the water to be forced through valve 22 and out through pipe 3. This flow will continue until sufficient water has passed through opening 19 and into chamber 14 to close valve 7 and force the upper plunger 4 upward until it meets adjusting-screw 16^a, and by reason of the said water-pressure in chamber 14 the lower plunger 17 will be forced downward, thus closing valve 22 and forcing lever 13 in position for the flushing operation.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing any of the advantages thereof, and I therefore reserve the right to make such changes and alterations as may suggest themselves from time to time as may fairly fall within the scope of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a flushing apparatus the combination of a casing having a screw-cap on its upper end and a supply-pipe connection at its lower end, of a plunger in the upper part of the casing having a slotted hollow piston-rod, a valve-stem having a slot in the hollow piston-rod, an auxiliary valve on the lower end of the stem, a spiral spring on said stem normally holding the auxiliary valve in closed position, a bell-crank lever pivotally secured in the casing one arm engaging the slots in the valve-stem and hollow piston-rod whereby the valve-stem and upper plunger are operated downwardly.

2. In a flushing apparatus the combination of a casing having a screw-cap on its upper end and a supply-pipe connection at its lower end, of a plunger in the upper part of the casing having a slotted hollow piston-rod, a valve-stem provided with a slot operating in the hollow piston-rod, a bell-crank lever pivotally secured in the casing one arm engaging the slot in the valve-stem and hollow piston-rod, an adjusting-screw on the upper portion of the casing adapted to regulate the upward movement of the plunger in the upper part of the casing, substantially as described.

3. In a flushing apparatus the combination of a casing having a screw-cap on its upper end and a supply-pipe connection at its lower end, of a plunger in the upper part of the casing having a slotted hollow piston-rod, a valve-stem provided with a slot operating in the hollow piston-rod, an auxiliary valve on the lower end of said valve-stem, a cleaning-rod one end of which is secured to the lower portion of the auxiliary valve and the opposite end adapted to pass through an aperture intermediate of the upper portion of the plunger in the lower part of the casing, an intermediate pipe one end of which telescopes into the hollow piston-rod of the plunger in the lower part of the casing and the opposite end thereof secured to said casing, a valve on the lower end of the piston-rod of said plunger, an outlet-passage or discharge-pipe communicating with the chamber formed in said plunger, substantially as described.

4. In a flushing apparatus the combination of the casing having a screw-cap on its upper end and a supply-pipe connection at its lower end, of a plunger in the upper part of the casing forming a chamber which communicates with an outlet-pipe, an auxiliary valve on the lower end of the stem of said plunger, a plunger in the lower part of the casing forming a chamber which communicates with an outlet-passage or discharge-pipe, an aperture on the upper end of said plunger, a cleaning-rod one end of which is secured to the auxiliary valve and the opposite end thereof adapted to pass through said aperture and into the hollow piston-rod of the plunger in the lower part of the casing, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY W. GARDNER.

Witnesses:

SAMUEL E. WOOLLEY,

JAMES VAN DEUSEN.