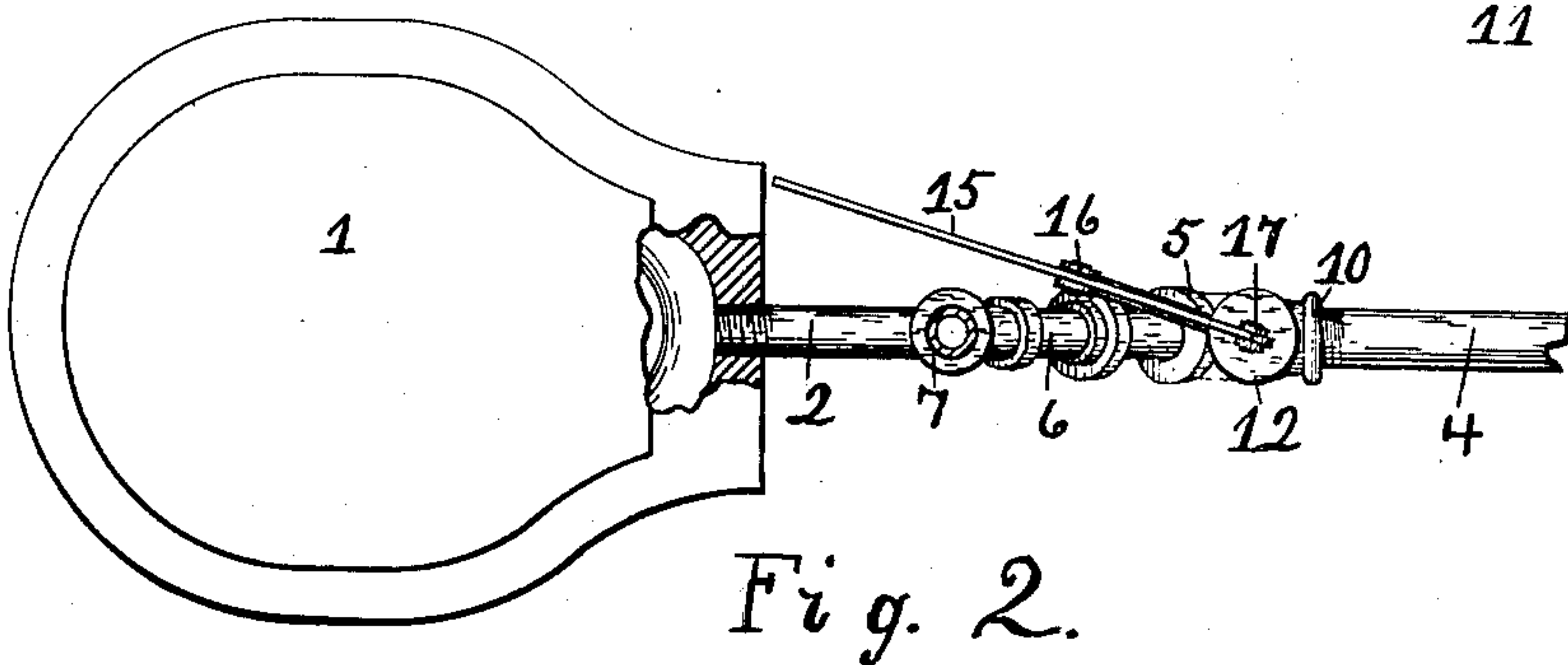
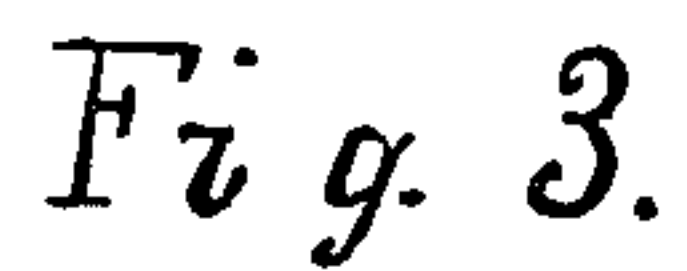


MEANS FOR FLUSHING AND VENTILATING CLOSETS.

Patented Nov. 24, 1908.

2 SHEETS—SHEET 1.

*Fig. 1.*



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MEANS FOR FLUSHING AND VENTILATING CLOSETS.  
APPLICATION FILED JAN. 23, 1908.

904,653.

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2 SHEETS—SHEET 2.

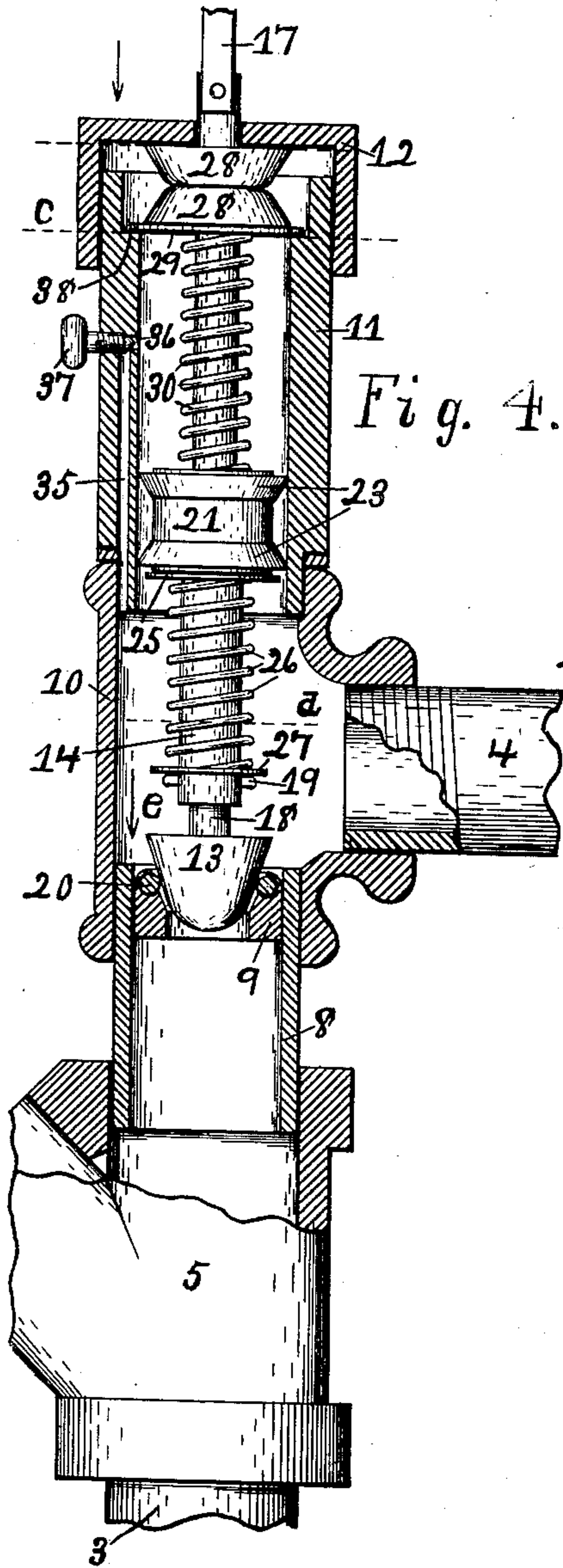


Fig. 4.

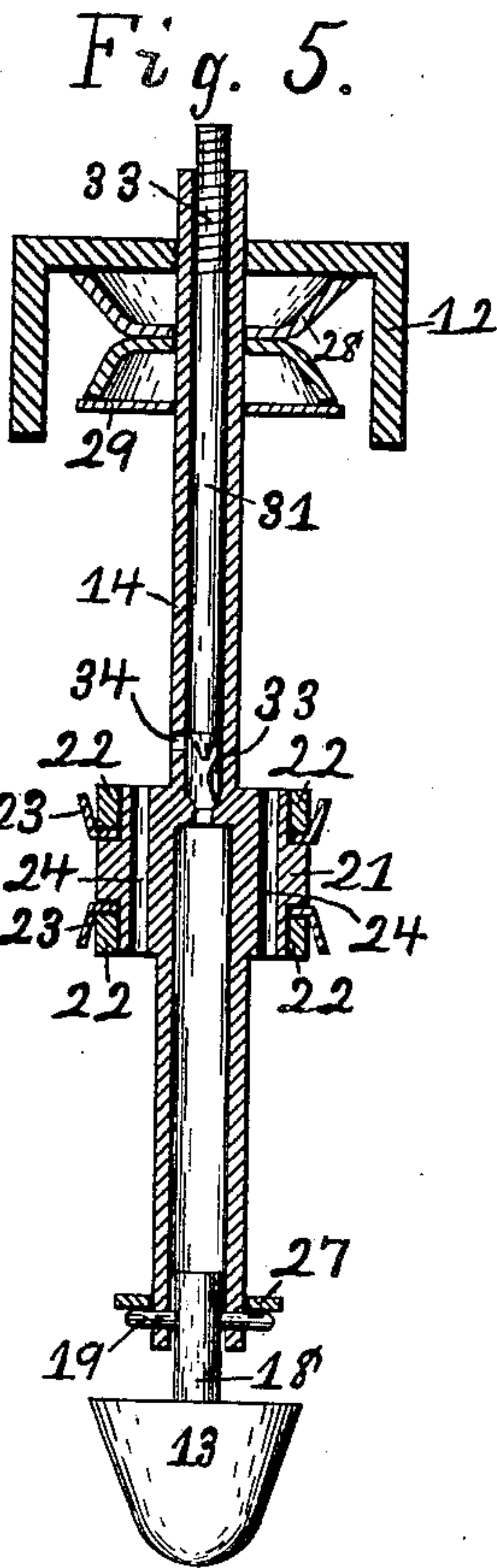


Fig. 5.

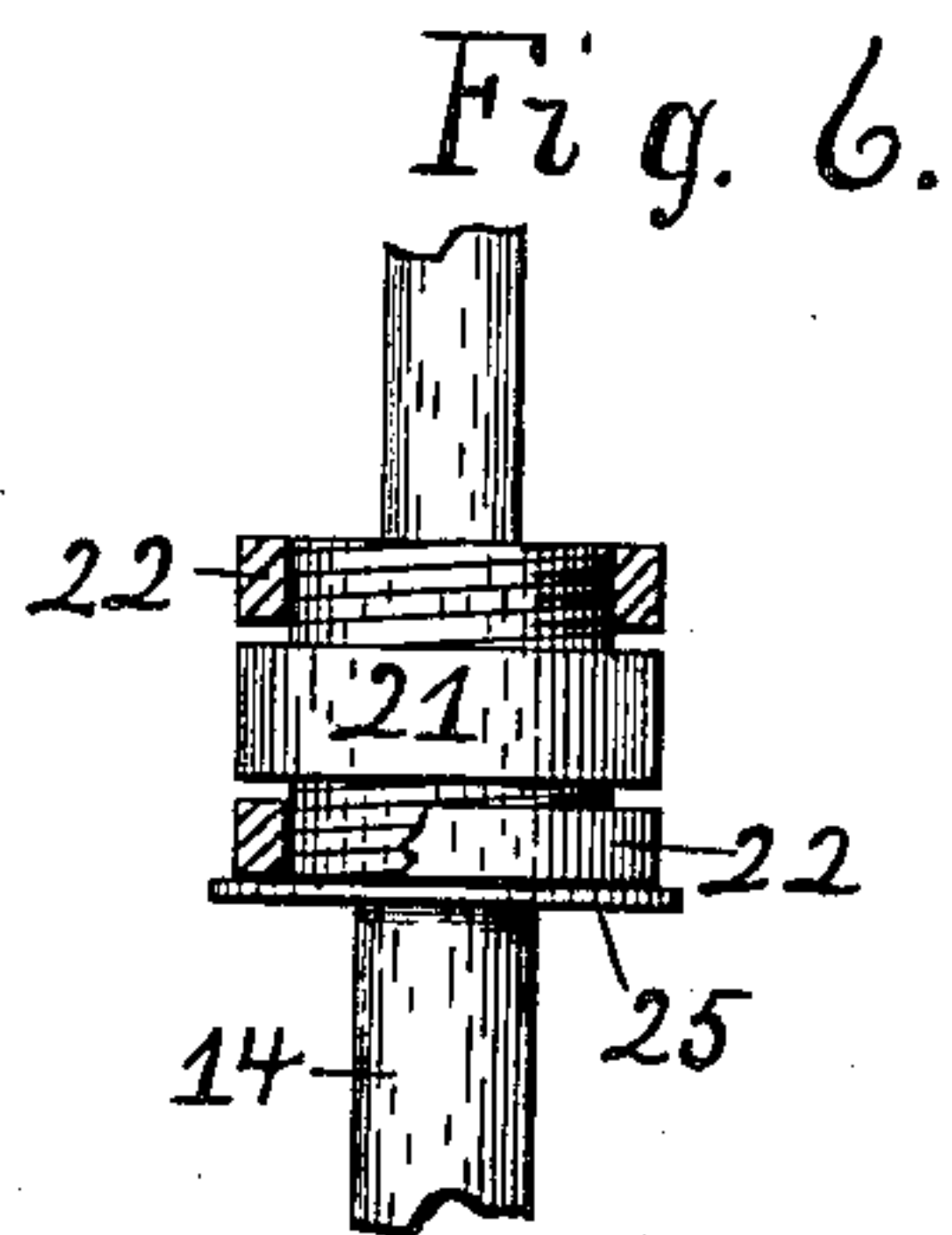


Fig. 6.

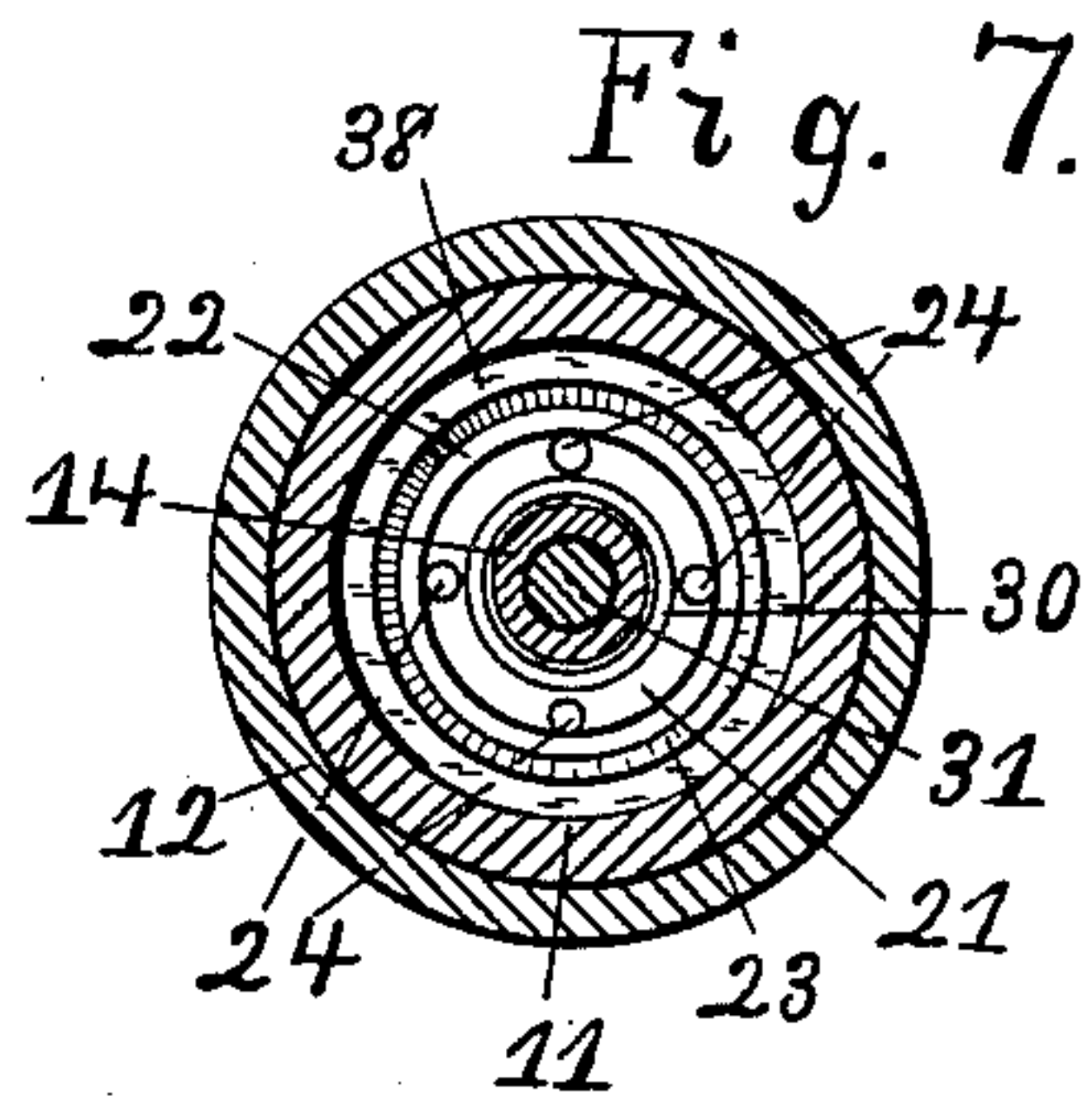


Fig. 7.

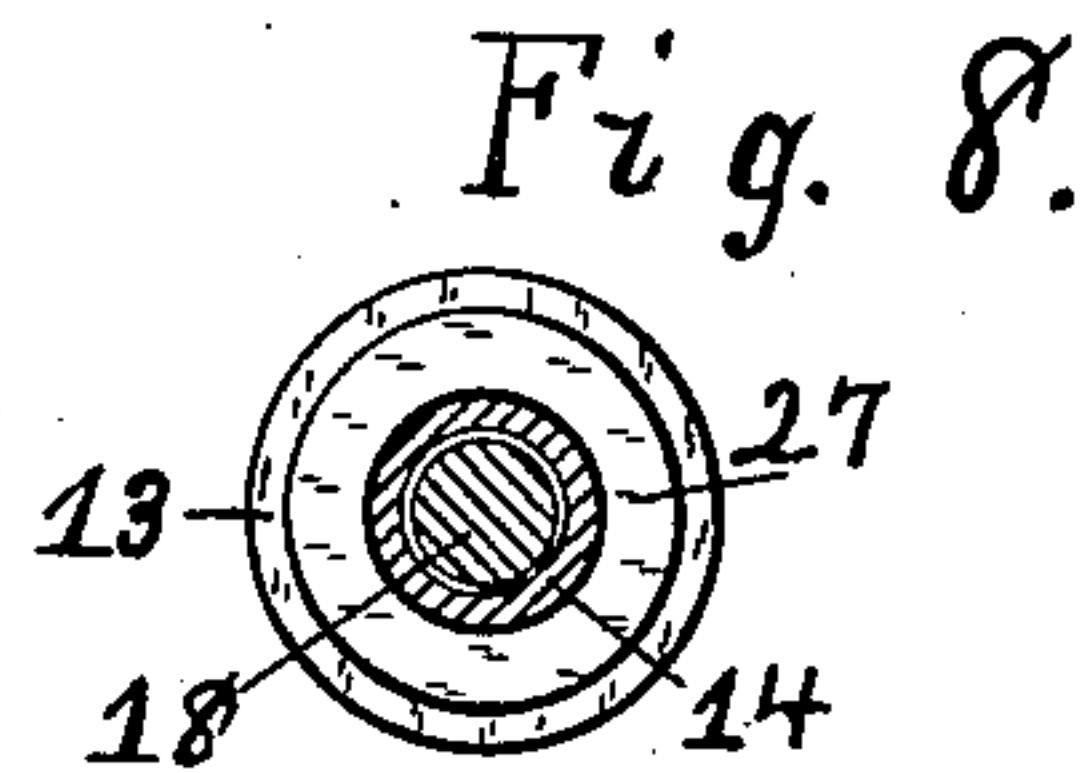


Fig. 8.

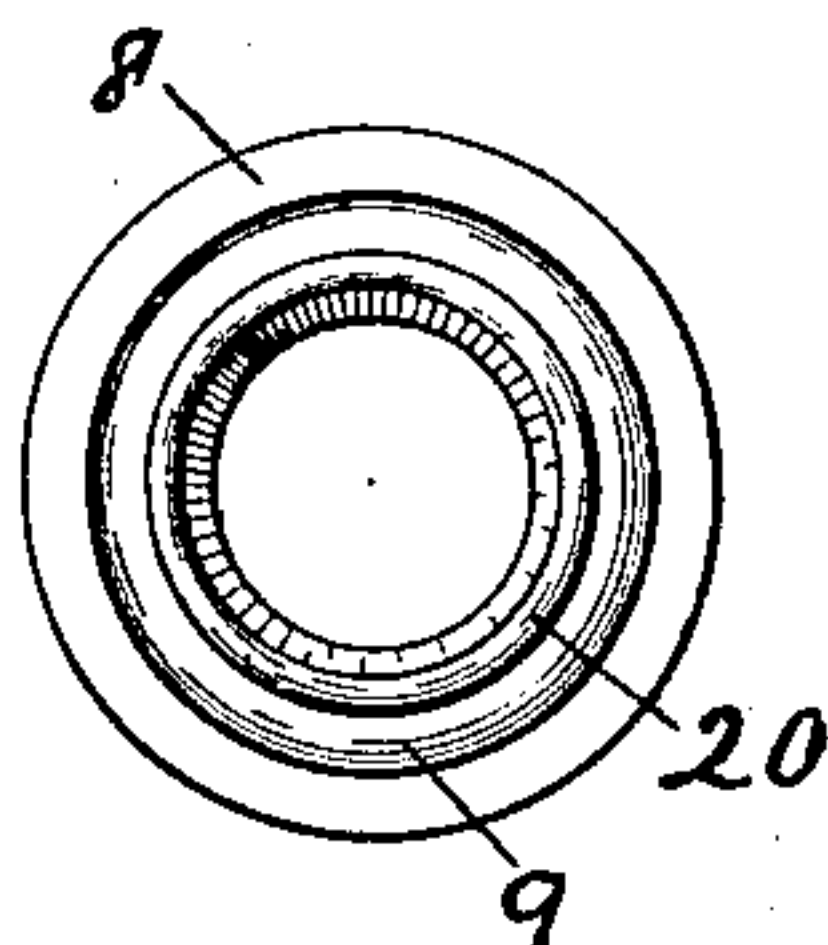


Fig. 9.

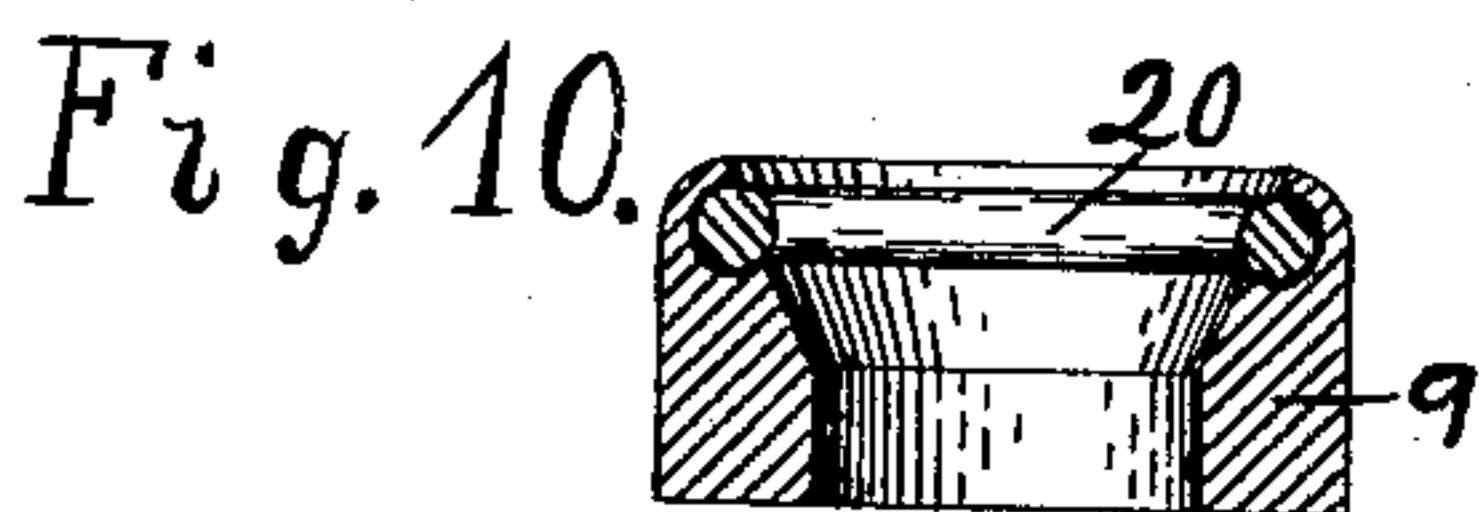


Fig. 10.

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# UNITED STATES PATENT OFFICE.

JACOB J. SHTUCHKA, OF ROCHESTER, NEW YORK.

## MEANS FOR FLUSHING AND VENTILATING CLOSETS.

No. 904,653.

Specification of Letters Patent.

Patented Nov. 24, 1908.

Application filed January 23, 1908. Serial No. 412,308.

*To all whom it may concern:*

Be it known that I, JACOB J. SHTUCHKA, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Means for Flushing and Ventilating Closets, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention relates to water-closets and mechanism connected therewith, and it has for its object among others to provide improved means and devices for the better flushing and ventilating of the bowl, and for controlling the flow of air and water during the process of flushing. The pipe for conducting the water for flushing comprises three cylindrical parts or members joined by screw-threaded portions and having a common axis, said three portions collectively constituting a housing or inclosure for the flushing valve and valve-seat together with a lengthened tubular holder or carrier for the valve, with numerous incumbent parts and devices.

Other objects and advantages of the invention will be brought out and made to appear in the following description and the novel features pointed out in the appended claims, reference being had to the accompanying drawings which, with the reference numerals marked thereon, form a part of this specification.

Figure 1 is a side elevation of my improved mechanism shown attached to a bowl, parts being broken away and axially sectioned. Fig. 2 is a plan seen as indicated by arrow *a* in Fig. 1, parts being broken away. Fig. 3 is a view at the upper end of the flushing pipe, seen as indicated by arrow *b* in Fig. 1, parts being broken away and horizontally sectioned. Fig. 4 is an axial section of the parts holding and inclosing the flushing valve, parts being broken away. Fig. 5 is an axial section of the tubular holder for the valve and other parts above the valve. Fig. 6 is a side elevation of parts at the middle of the holder for the valve, parts being broken away and in longitudinal section. Fig. 7 is a transverse section of parts taken on the dotted line *c* in Fig. 4. Fig. 8 is a transverse section of parts on the dotted line *d* in Fig. 4. Fig. 9 is a plan of the valve-seat and the end of the valve-chamber, seen as indicated by arrow *e* in Fig. 4. Fig. 10 is an axial section of the valve-seat,

detached. Figs. 3 to 10 inclusive are drawn to various scales larger than that of Figs. 1 and 2.

Referring to the parts shown 1, Figs. 1 and 2, is a bowl of substantially common construction in water-closets, 2 being an air-pipe for ventilating and 3 an inflow water-pipe for flushing the bowl, the water being supplied through an inflow pipe 4. The flush-pipe 3 has a branch coupling 5, Figs. 1, 2 and 4, there being a connecting pipe 6 threaded into said coupling 5 and leading obliquely upward to a similar inverted coupling 7 on the air-pipe 2 forming a continuous passage for air between the two pipes 2 and 3, which, except as to the pipe 6, are independent of each other and both being independently connected with the bowl 1. Above and attached to the coupling 5 by threaded portions is a short pipe or thimble 8, Figs. 1, 4 and 9, constituting a valve-chamber, holding a valve-seat 9 this thimble forming a connection between the coupling 5 and a T-coupling 10 receiving the discharge end of the supply pipe 4. Above the coupling 10 and screw-threaded thereon is a short tubular body or casing 11, Figs. 1, 3, 4 and 7, closed at its upper end by a screw-cap 12, said casing, the T-coupling 10 and the valve-chamber 8 being coaxial.

Within the coupling 10 is a conical valve 13, Figs. 4, 5 and 8, adapted to rest upon and within the valve-seat 9, said valve being held or suspended at the lower end of a lengthened tubular part or member 14 axially within the coupling 10 and the casing 11, extending at its upper end centrally through and above the screw-cap 12, as shown in Figs. 1 and 4. A lever or arm 15, Figs. 1 and 2, is provided for working the valve 13, held to swing on a bearing vertically in a bracket 16 secured to a part of the water-pipe 3, one end of the lever being joined to the upper projecting end of the holder 14 for the valve by straps or connectors 17, Figs. 1, 2, 3 and 4. A downward pull upon the free end of the lever at any time will serve to lift the valve 13 off of its seat 9 and allow a down-rush of water through the pipe 3 into the bowl 1.

The valve 13 is formed with a short stem 18, Figs. 4, 5 and 8, extending upward into the lower end of the hollow holder 14, being retained in place by a pin 19 passing transversely through both the holder and the stem. The stem is smaller in diameter than the bore of the holder and being loose on the



pin 19 allows the valve to have limited universal motion so as to readily adjust itself to the seat 9 and so form a tight joint therewith, the seat being commonly provided with an india-rubber ring 20, Figs. 4, 9 and 10, to directly receive the valve. The stem 18 being smaller in diameter than the bore of the holder 14, as stated, admits of the flow of air or water through the holder. The lower portion of the valve holder 14 is preferably made larger in diameter than the upper portion, at the junction of which unequal parts, and substantially midway of the length of the holder, is formed an expanded part or cylindrical head 21, Figs. 4, 5, 6 and 7. This head is reduced at its ends and provided with threaded rings 22 holding cup-shaped packing-rings 23, as of leather, turned in opposite directions to meet and press the inner surface of the casing 11, as shown, making a water-tight joint therewith, the head acting as a piston-head moving in the cylindrical casing 11.

The head 21 is pierced longitudinally by passages 24, Figs. 5 and 7, for air or water, normally closed by a yielding ring 25, as of leather, Figs. 4 and 6, pressed against the lower end of the head by a spring 26 coiled upon the tubular holder 14, and resting at its lower end upon a ring or disk 27 resting against the cross-pin 19 of the holder 14. On account of the openings or passages 24 through the head 21 the valve 13 may be, at any time, quickly lifted from its seat 9 by pulling the free end of the lever 15 downward, as stated, the air or water above the head 21 passing rapidly downward through said openings to supply the partial vacuum beneath. The upper portion of the valve holder 14 is provided with a pair of stiff cup-shaped fibrous packing-rings or bodies 28 turned base to base, as shown in Figs. 3, 4 and 5, with their open edges pressing respectively the inner surface of the screw-cap 12 and a circular plate 29 on the holder 14, resting upon an internal shoulder 38 of the casing 11. A spiral spring 30 between the plate 29 and the head 21 serves normally to close the valve by pressing it and the holder 14 downward, the lifting of the holder by means of the lever 15 acting to compress the spring.

When the valve 13 is lifted at any time, as stated, the water above it under pressure rushing downward through the pipe 3 will draw quantities of air downward through the connecting pipe 6 into the pipe 3 to ventilate the latter and the bowl. The pipe 3 is normally filled with air below the valve 13, with small quantities of air in the upper end of the casing 11.

The upper small part of the tubular holder 14 is substantially filled by an elongated core-piece or plug 31, Figs. 3, 5 and 7, with pointed lower end to meet a valve-seat 32 for the purpose of closing the opening or passage

through the holder 14 when wished. The plug 31 is threaded at 33 in the upper end of the part 14 and formed with a transverse slot at its upper end, as shown in Fig. 3, to receive an ordinary screw-driver for turning it. An opening 34, Fig. 5, laterally through the side of the holder 14 admits of a flow of water through the lower large part of the holder between the interiors of the coupling 10 and the casing 11 the water entering at the lower end of the holder 14 around the loose valve-stem 18. The lower end of the core-piece or plug 31 when turned downward past the opening 34 substantially stops the flow of water through the holder 14 but when it is wished to wholly stop this flow the plug is turned fully down against the seat 32, as stated. I also provide a longitudinal opening or passage 35 through the wall of the casing 11, Fig. 4, communicating through an opening 36 between the interiors of the coupling 10 and the casing 11, this passage being controlled, and closed when necessary, by a thumb-screw 37. The passage through the hollow holder 14 and the passage 35 in the wall of the casing 11, both communicating between the interiors of the coupling 10 and the casing 11, afford two independent means of controlling and regulating the flow of small quantities of water one way or the other between said two parts 10 and 11, this flow being caused by the vertical movements of the piston-head 21 during the upward and downward movements of the valve, above described. In some cases it may not be convenient to operate the plug 31 in which cases the thumb-screw 37 may be employed.

The operation briefly described is as follows:—When the valve 13 is lifted off its seat by a downward pull on the free end of the lever 15, the water is permitted to flow through the supply pipe 4 under pressure and rushing downward through the pipe 3 the said water draws quantities of air downward through the branch pipe 6 into the pipe 3, thus ventilating the latter and the bowl. It is to be noted that the pipe 3 is normally filled with air below the valve 13 when the latter is seated and that there will be a small quantity of air in the upper end of the casing 11 above the valve.

The aspirated air from the bowl will in a great measure be drawn through the branch 6 and pipe 3 and down through the water seal into the soil pipe and thus removed. Any that is not thus removed will be so thoroughly washed in its passage through the water pipe as to become entirely inoffensive.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The combination, with a water pipe and an air pipe adapted to be connected to a closet bowl, of a connection between these pipes and means for introducing water into



the water pipe above the connection to exhaust air from the bowl by way of the air pipe and at the same time flush the bowl.

2. The combination, with a water pipe and an air pipe adapted to be connected to a closet bowl, of a connection between these pipes and means for introducing a predetermined quantity of water into the water pipe above the connection to exhaust air from the bowl by way of the air pipe and at the same time flush the bowl.

3. The combination with a closet bowl of separate air and water pipes connected therewith, a connection between the said pipes outside of the bowl and means for introducing a predetermined quantity of water into the water pipe above the connection to exhaust air from the bowl by way of the air pipe and at the same time flush the bowl.

4. The combination, with a water pipe and an air pipe adapted to be connected to a closet bowl, of a connection between these pipes, a water supply pipe, and means embodying devices intermediate the supply pipe and the point of junction of said connection with the water pipe for introducing water into the water pipe above the connection to exhaust air from the bowl by way of the air pipe and at the same time flush the bowl.

5. The combination, with a water pipe and an air pipe adapted to be connected to a closet bowl, of a connection between these pipes and means embodying a valve seat, a valve and tubular holder for the valve and a piston head on said holder for introducing water into the water pipe above the connection to exhaust air from the bowl by way of the air pipe and at the same time flush the bowl.

6. The combination with a closet bowl of separate air and water pipes connected therewith, a connection between the said pipes outside of the bowl and means embodying a valve seat, a valve and a tubular holder for the valve and a piston head on said holder

for introducing water into the water pipe above the connection to exhaust the air from the bowl by way of the air pipe and at the same time flush the bowl.

7. The combination, with a water pipe and an air pipe adapted to be connected to a closet bowl, of a connection between these pipes and means embodying a valve seat, a valve and tubular holder for the valve and a piston head on said holder, said tubular holder having an opening above the piston for introducing water into the water pipe above the connection to exhaust air from the bowl by way of the air pipe and at the same time flush the bowl.

8. The combination, with a water pipe and an air pipe adapted to be connected to a closet bowl, of a connection between these pipes and means embodying a valve seat, a valve and tubular holder for the valve and a piston head on said holder, said piston having longitudinal passages and means for normally closing the same for introducing water into the water pipe above the connection to exhaust air from the bowl by way of the air pipe and at the same time flush the bowl.

9. The combination, with a water pipe and an air pipe adapted to be connected to a closet bowl, of a connection between these pipes and means embodying a valve seat, a valve and tubular holder for the valve and a piston head on said holder, said tubular holder having an opening above the piston, said piston having longitudinal passages and means for normally closing the same for introducing water into the water pipe above the connection to exhaust air from the bowl by way of the air pipe and at the same time flush the bowl.

In witness whereof, I have hereunto set my hand this 20th day of January, 1908, in the presence of two subscribing witnesses.

JACOB J. SHTUCHKA.

Witnesses:

E. B. WHITMORE,  
A. M. WHITMORE.