

No. 822,306.

PATENTED JUNE 5, 1906.

J. N. SANGER.
FLUSHING DEVICE.

APPLICATION FILED JAN. 12, 1903.

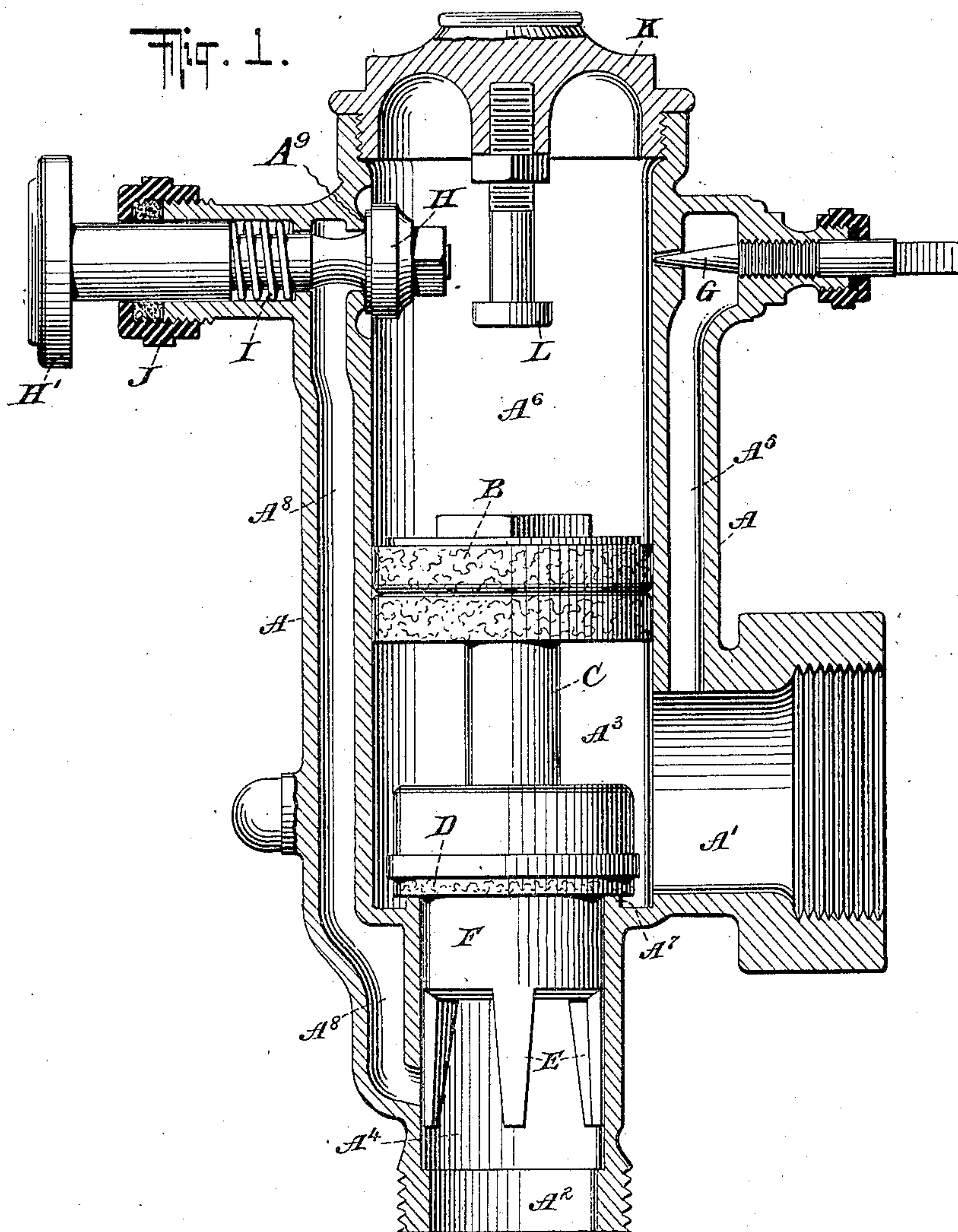
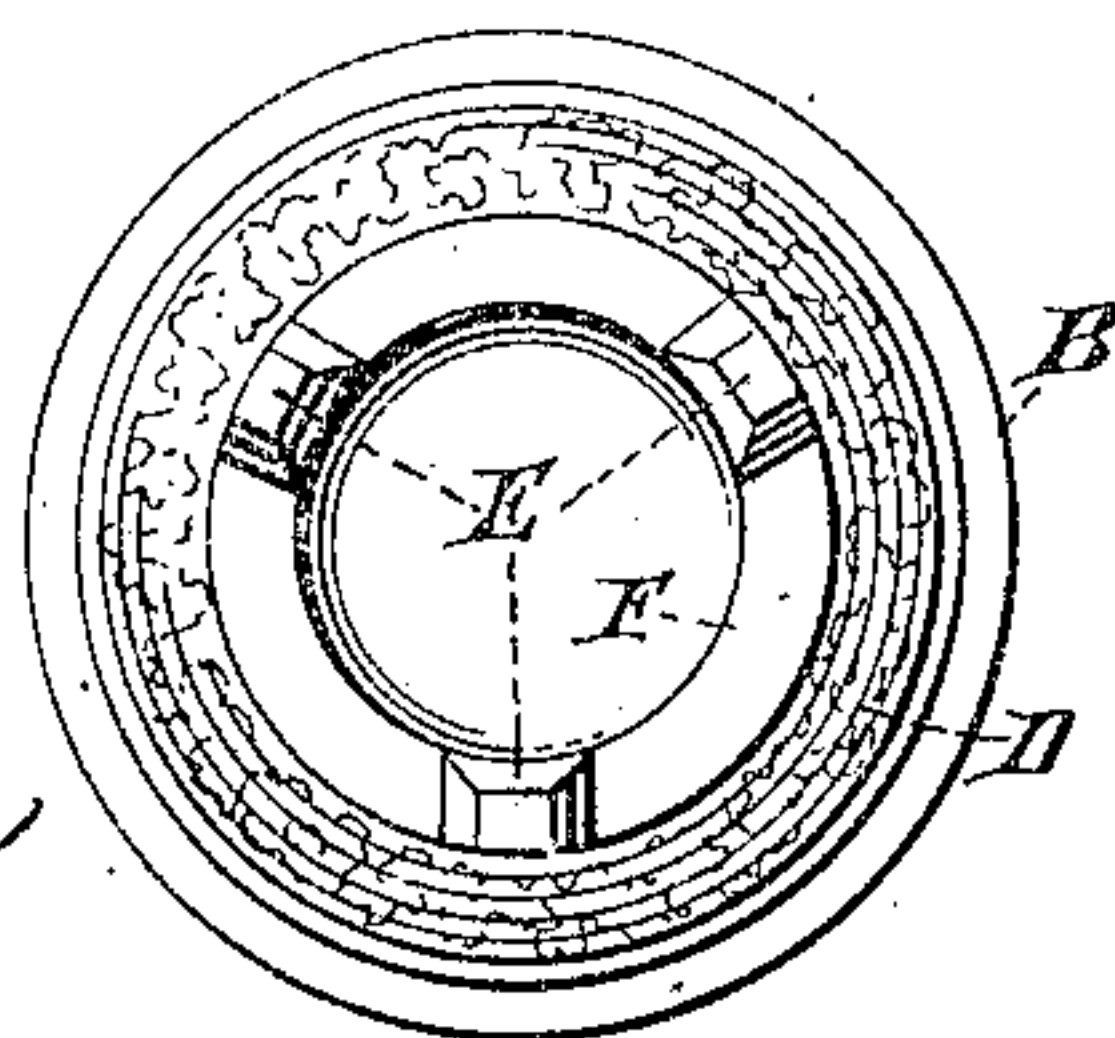


Fig. 2.



WITNESSES:

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JOHN N. SANGER, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO FRED. ADEE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

FLUSHING DEVICE.

No. 822,306.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed January 12, 1903. Serial No. 138,642.

To all whom it may concern:

Be it known that I, JOHN N. SANGER, a citizen of the United States, and a resident of Brooklyn Hills, borough of Queens, county of Queens, city and State of New York, have invented certain new and useful Improvements in Flushing Devices, of which the following is a specification.

My invention relates to flushing devices, particularly such as are used in connection with water-closets.

The object of my present invention is to provide an efficient, substantially-constructed, and readily-dismembered flushing device of that class in which the flow of the water is started by opening a controlling-valve and in which provision is made for a continued flow of water during a limited period of time following the closing of said valve for the purpose of refilling the bowl of the water-closet after flushing it.

The invention will be fully described hereinafter and the features of novelty pointed out in the appended claim.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a central sectional elevation of one form of my improved flushing device, and Fig. 2 an inverted plan of the main valve.

The casing A, of substantially cylindrical shape, has an inlet A' leading to the inlet-chamber A³ and an outlet A² connected with the outlet-compartment A⁴. The inlet-chamber communicates with the opposite end of the casing through the medium of a channel A⁵, which at its upper end leads to a water receiving or compression compartment A⁶, which is separated from the inlet-chamber A³ by a piston B. This piston is connected, as by a rod C, with the main valve controlling the connection of the inlet-chamber A³ with the outlet-compartment A⁴. In detail, this valve has a disk D, adapted to engage a seat A⁷, located at the junction of the inlet-chamber A³ with the outlet-compartment A⁴, so that the seating of said disk will completely interrupt the direct flow of water from the inlet to the outlet. The valve is furthermore provided within the outlet-compartment with spaced arms E, preferably tapering toward their free ends and having their outer surfaces arranged to closely fit the

inner surface of the outlet-compartment A⁴. A cylindrical portion F is preferably located between the disk D and the arms E. It will be understood that the spaces between the arms will form ports for the passage of water as soon as the upper ends of the arms are raised above the valve-seat A⁷, and the area of these ports will increase as the valve rises and diminish as it falls, and this with particular rapidity if the arms E are tapered, as described, so as to increase the width of the ports, as well as their height, when the piston rises.

At the orifice by which the channel A⁵ communicates with the receiving-compartment A⁶, I prefer to locate the regulating-valve G, preferably in the nature of a needle-valve mounted to screw for adjustment. From a point of the receiving-compartment which is preferably in the same transverse plane with the upper end of the channel A⁵ and diametrically opposite thereto a controlling-channel A⁸ leads to the outlet-compartment A⁴. At the upper end of this channel a seat A⁹ is formed in the receiving-compartment A⁶ for the controlling-valve H, which is located within said compartment, so that it would be in the path of the piston B if the travel of the said piston were not limited by a stop, as will be set forth presently. The valve H is preferably arranged to close automatically, as by the influence of a spring I, a stuffing-box J being provided where the stem of the valve projects through the casing to the handle H'.

The end of the casing adjacent to the receiving-compartment A⁶ is provided with a screw-cap K, which preferably carries a stop L, arranged to arrest the piston B before it collides with the valve H and before it covers the upper orifice of the channel A⁵. The stop is preferably adjustable relatively to the cap K, so that the travel of the piston may be varied. As shown, the stop has a screw connection with the cap.

Fig. 1 illustrates the normal position of the parts when the valve-disk D and valve H are seated so that there is no communication between the inlet A' and the outlet A². Water may, however, pass from the inlet A' to the receiving-compartment A⁶ through the channel A⁵, so that said compartment will be filled

and the piston B will be balanced, as the pressure will be the same on both of its faces. Now when it is desired to produce a flushing action the controlling-valve H is pressed inward, so as to admit water from the receiving-compartment A⁶ through the channel A⁸ to the outlet-compartment A⁴ and the outlet A². Prior to this the water-pressure in the inlet-chamber A³ has held the valve-disk D to its seat A⁷. As soon, however, as communication is established from the receiving-compartment A⁶ to the outlet the pressure in said compartment becomes less than that in the inlet-chamber A³. Now inasmuch as the piston B is of larger diameter than the effective surface of the valve-disk D the pressure on the lower surface of the piston becomes sufficient to raise said piston, and with it the valve-disk, so as to establish a communication from the inlet-chamber A³ to the outlet-compartment A⁴ through the valve-seat A⁷ as soon as the cylindrical valve portion F rises above said seat. The upward movement of the piston is arrested by the stop L. As soon as the knob or handle H' is released the valve H will close, so that the reduction of pressure due to the discharge through the channel A⁸ will cease. If an equal pressure were restored immediately on both sides of the piston B, the valve-disk D would be forced back on its seat almost instantly. This is prevented, however, and the seating of the valve-disk is retarded owing to the checking of the water-supply to the compartment A⁶ by the regulating-valve G. In consequence thereof the piston will move so as to seat the valve-disk slowly and to allow of the so-called "after fill" of the bowl. The flow of water through the valve-seat A⁷ will be diminished gradually owing to the progressive decrease in the size of the ports formed by the spaces between the arms E. The decrease will be quicker if the arms E are tapered toward their free ends, as shown. The time required for the seating of the valve-disk D can be regulated by adjusting either the stop L or the needle-valve G. This valve,

however, is always open during the normal operation of the flushing device.

If for any reason repairs should have to be made to any interior part, the needle-valve G will be closed and the cap K will be removed. As this relieves the pressure on the upper surface of the piston, the latter will be thrown upward, (even if the connection of the outlet A² with the water-closet should be interrupted, as by turning a stop-cock,) and the piston, with the valve attached thereto, would be blown out through the top of the casing A if the valve H did not act as a stop under these circumstances. The valve will stop the piston before it covers the orifice of the channel A⁵ adjacent to the needle-valve G, so that the operation of the last-named valve may be tested readily.

What I claim as new, and desire to secure by Letters Patent, is—

The combination, with the casing having an inlet-compartment and an outlet-compartment with a valve-seat between them, of a valve arranged to close upon said seat, a piston connected with but distant from said valve and separating the inlet-compartment from a receiving-compartment, a channel connecting said receiving-compartment with the inlet-compartment, another channel connecting the receiving-compartment with the outlet-compartment, a cap for closing the end of the receiving-compartment opposite to the piston, a stop carried by the cap and arranged to normally arrest the piston and a controlling-valve for normally closing the channel which connects the receiving-compartment with the outlet-compartment, said controlling-valve projecting into the receiving-compartment to serve as a stop for the piston when the cap is removed.

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

JOHN N. SANGER.

Witnesses:

EUGENE EBLE,
ALBERT C. WIECHERS.