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E. J. BLOOM.

FLUSHING VALVE.

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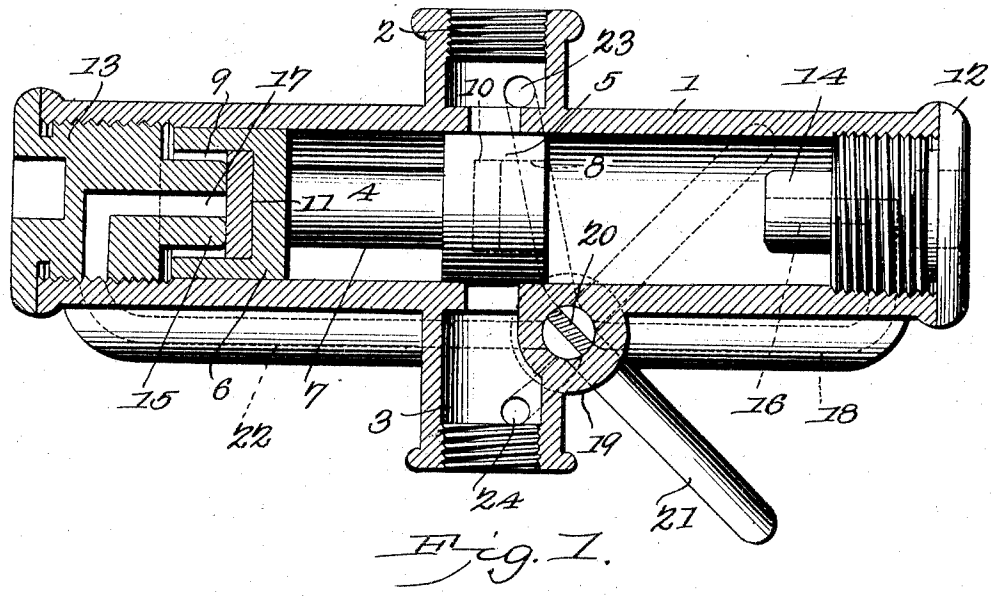
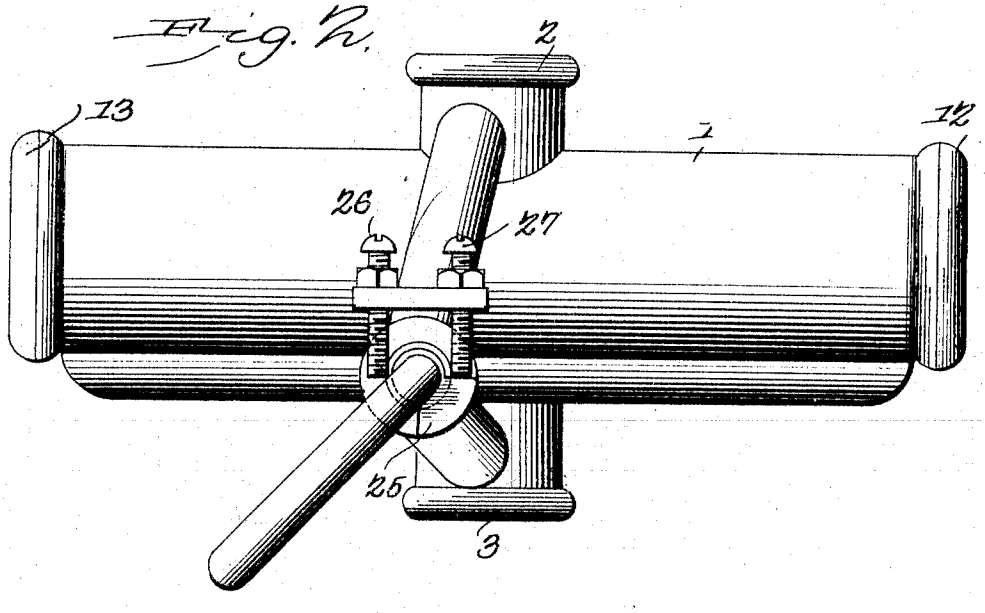


Fig. 1.

Fig. 2.



Witnesses

E. F. Stewart

W. H. Clarke.

Edgar J. Bloom,
Inventor

by C. A. Snow & Co
Attorneys

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UNITED STATES PATENT OFFICE.

EDGAR J. BLOOM, OF TIFFIN, OHIO.

FLUSHING-VALVE.

SPECIFICATION forming part of Letters Patent No. 783,671, dated February 28, 1905.

Application filed May 24, 1904. Serial No. 209,478.

To all whom it may concern:

Be it known that I, EDGAR J. BLOOM, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented a new and useful Flushing-Valve, of which the following is a specification.

This invention relates to flushing-valves.

The objects of the invention are to improve, strengthen, and simplify the construction of such devices and to increase their efficiency and reliability in action.

With these and other objects in view, which will be apparent hereinafter, the invention resides in the novel combination and arrangement of parts, and in the details of construction particularly described with reference to the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a vertical longitudinal section, partly in elevation; and Fig. 2 is a side elevation.

The improved device comprises a casing 1 having an inlet 2, adapted to be connected with waterworks-supply, tank, or other suitable source of supply, and an outlet 3, adapted to be connected with suitable piping leading into the bowl to be flushed. Within the casing 1 is a double-ended piston 4, comprising the heads 5 and 6, connected by a spindle 7. Each of the piston-heads 5 and 6 is formed in its outer end with a cavity or socket, (denoted by 8 and 9.) Disks or cushions 10 and 11, of rubber or other suitable material, are placed one in each of the sockets 8 and 9 of the piston-heads. The two ends of the casing 1 are closed by screw-plugs 12 and 13, each of which is formed with a tubular extension 14 and 15 and a bore or passage 16 and 17. It will be observed that when the piston 4 is at one end of the casing the tubular extension of one plug, 12 or 13, projects into the socket of the adjacent piston-head and when said piston is at the opposite end of the casing the tubular extension of the other plug projects into the socket of the other piston-head. Moreover, it will be observed that when the piston is at one end or the other of the casing one or the other of its heads 5 6 always closes the inlet 2 and outlet 3, and, furthermore, it will be apparent that while said piston is traversing the cylinder in either direction water is permitted to pass from the inlet 2 to the outlet 3 around the central spindle 7 of the piston.

Communicating with the bore 16 of the plug 12 is a passage 18, which leads into the valve-casing 19 of a four-way valve 20, that is controlled by means of a lever or handle 21. A passage 22 communicates with the valve-casing 19 and with the bore 17 of the plug 13. A similar passage 23 extends from the inlet 2 to the valve-casing 19 and a similar passage 24 from said valve-casing to the outlet 3. The construction of the four-way valve 20 is such that when it is moved in one direction communication is opened between one of the end plugs and the inlet 2 and between the opposite end plug and the outlet 3.

Formed upon the valve 20 adjacent to its operating-handle is a segment 25, the movement of which is limited and adjusted by means of adjusting-screws 26 27. By turning the screws 26 27 to limit the throw of the valve the quantity of water permitted to pass in a given time from the inlet to one of the end plugs and from the opposite end plug to the outlet may be regulated for a purpose to be set forth in the description of operation.

Constructed as described, the improved device operates in the following manner: Let it be supposed that the double-ended piston 4 is at the left end of the casing, with the tubular extension 15 of the plug 13 projecting into the socket 9 of the piston-head 6 against the rubber disk 11 and with the piston-head 5 closing the inlet 2 and outlet 3. The valve 20 then will be in such position as to permit communication between the end plug 13 and the outlet 3 and between the inlet 2 and the end plug 12. Now if the handle 21 of the valve 20 be moved to the position shown in dotted lines communication will be opened between the inlet 2 and the end plug 13 and between the end plug 12 and the outlet 3. Water then will flow from the inlet 2 through passage 23, valve 20, passage 22, and bore 17 and will impinge against the head 6 of the piston 4, causing said piston to move steadily to the right. As soon as the piston-head 5 uncovers the inlet 2 and outlet 3 a large volume of water rushes through the casing 1 around the

spindle 7 from the inlet to the outlet to flush the bowl. All this while the piston 4 is moving steadily to the right under the impetus of the water passing from the inlet to the end plug 13. It will be understood that the water left in the opposite end of the casing by the previous operation of the device is steadily exhausting through the end plug 12, passage 18, valve 20, and passage 24 to the outlet 3. When the piston 4 reaches the end of its stroke, the inlet 2 and outlet 3 are closed by the head 6, and the passage of water from the inlet 2 to the end plug 13 is stopped, because no more water can enter the casing. The piston remains in this position until the valve 20 is again actuated, when the operation just described repeats itself in the opposite direction.

It will be obvious that the quantity of water used for flushing the bowl and the length of time during which it shall be permitted to run can be regulated by means of the adjusting-screws 26 27. If the valve be permitted but partially to open, the water passes more slowly from the inlet to one of the end plugs. Consequently the piston will move more slowly, and the flushing operation will be prolonged.

It will be apparent that other means than the lever 21 may be employed to actuate the valve 20, and the invention therefore is not to be limited to the use of a lever-handle.

At each end of its stroke the piston seats itself quietly against the end plug without shock or jar. The device is therefore rendered more strong and its period of usefulness is greatly prolonged. Furthermore, the cushions 10 11, seating against the tubular extensions 14 15 of plugs 12 or 13, act as valves, thus shutting off any water leaking past piston-heads 5 6. Furthermore, the device is simple, compact, neat, and inexpensive in construction and is adapted to be applied easily and quickly to different forms of sanitary apparatus.

In its novel combination and arrangement of parts, as well as its method of operation and details of construction, the device of this invention presents an improvement over prior devices used for a similar purpose.

Changes in the precise embodiment of invention illustrated and described may be made within the scope of the following claims without departing from the spirit of the invention.

Having thus described the invention, what I claim is—

1. A flushing device comprising a casing having an inlet and an outlet alined transversely thereof and in communication with the interior of the casing intermediate of its ends, a double-ended piston contracted intermediate of its ends to permit communication between the inlet and outlet and arranged to simultaneously close the inlet and outlet at the completion of each stroke, and means to alternately establish communication between the inlet and one end of the casing and the other end of the casing and the outlet.

2. A flushing device comprising a casing having an inlet and an outlet alined transversely thereof and in communication with the interior of the casing intermediate of its ends, a double-ended piston contracted intermediate of its ends to permit communication between the inlet and the outlet and arranged to simultaneously close the inlet and outlet at the completion of each stroke, a valve-casing, a four-way valve therein, a passage connecting the valve-casing with each end of the casing, a passage connecting the inlet with the valve-casing, and another passage connecting the valve-casing with the outlet.

3. A flushing device comprising a casing having an inlet and an outlet alined transversely thereof and in communication with the interior of the casing intermediate of its ends, a double-ended piston working in the casing and contracted intermediate of its ends to permit communication between the inlet and the outlet, means to limit the movement of the piston with its respective ends simultaneously closing the inlet and outlet at the completion of each stroke, and means to alternately establish communication between the inlet and one end of the casing and the other end of the casing and the outlet.

4. A flushing device comprising a casing having an inlet and an outlet alined transversely thereof and in communication with the interior of the casing intermediate of its ends, a double-ended piston working in the casing and contracted intermediate of its ends to permit communication between the inlet and the outlet with its respective ends disposed to simultaneously close the inlet and outlet at the completion of each stroke, hollow heads closing the ends of the casing and constituting stops to limit the movement of the plunger, said heads being open at their inner ends and in communication with the casing, a four-way valve, a passage leading from the inlet to the valve, a passage leading from the valve to the outlet, and passages extending between the valve and the respective hollow heads.

5. A flushing device comprising a casing having an inlet and an outlet alined transversely thereof and in communication with the interior of the casing intermediate of its ends, hollow plugs fitted in the ends of the casing with their inner ends reduced and pierced by openings in communication with the casing, a double-ended piston working in the casing and reduced intermediately to permit communication between the inlet and the outlet, the outer end of each piston having a socket to receive the reduced end of the adjacent plug, a cushion within the back of each socket to engage the adjacent plug, the plugs constituting stops to limit the movement of the piston with the

respective ends of the latter simultaneously closing the inlet and outlet at the completion of each stroke, and means to alternately establish communication from the inlet to one of the hollow plugs and from the other hollow plug to the outlet.

6. A flushing device comprising a casing having an inlet and an outlet alined transversely thereof and in communication with the casing intermediate of its ends, plugs closing the ends of the casing and provided with substantially L-shaped passages intersecting the inner ends of the plugs and the peripheries thereof, a double-ended piston working in the casing and contracted intermediate of its ends to permit communication between the inlet and the outlet, the plugs constituting stops to limit the movement of the piston with its respective ends simultaneously closing the inlet and outlet at the completion of each stroke, a four-way valve, a passage leading from the inlet to the valve, a passage leading from the valve to the outlet, and passages extending from the valve to the outer ends of the passages of the respective plugs.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDGAR J. BLOOM.

Witnesses:
W. L. CLOUSE,
FRANK BLOOM.