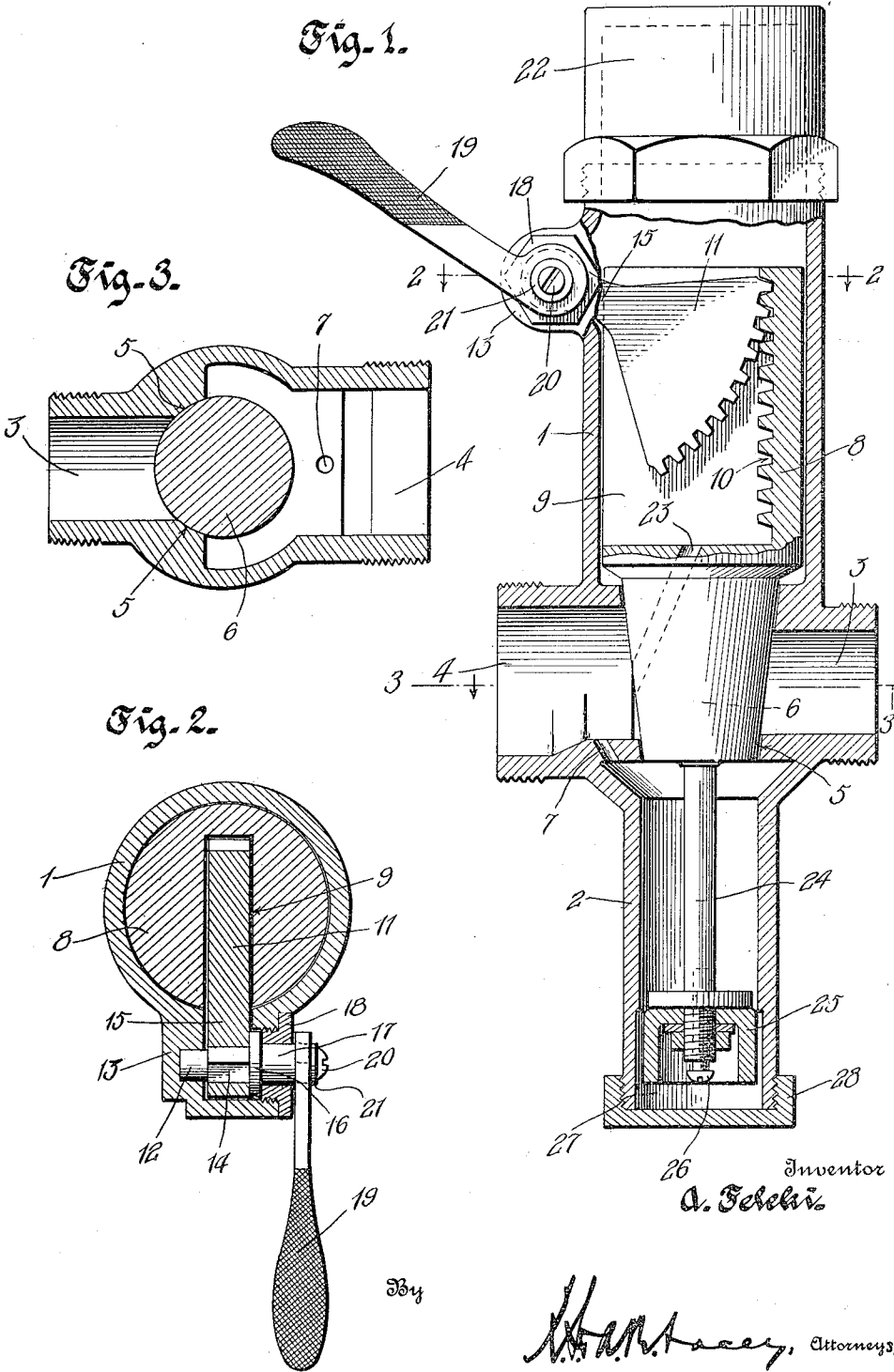


A. FELEKI.
FLUSHING VALVE.
APPLICATION FILED MAR. 14, 1916.

1,214,664.

Patented Feb. 6, 1917.



UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

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Application filed March 14, 1916. Serial No. 84,126.

To all whom it may concern:

Be it known that I, ALEXANDER FELEKI, a subject of the Emperor of Austria-Hungary, who have declared my intention to become a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Flushing-Valves, of which the following is a specification.

This invention relates to flushing valves and has for its object the provision of a simple, compactly arranged and efficiently operating device by which a supply of flushing water may be admitted to a cistern or other article which is to be flushed and the supply maintained as long as desired.

The invention seeks to provide means whereby flow will be automatically and positively cut off when the flushing operation is no longer needed, and a further object of the invention is to provide means to retard the seating of the valve whereby the hammering, incidental to the use of devices now in common use, will be eliminated.

The invention is illustrated in the accompanying drawings and consists in certain novel features which will be particularly pointed out in the claims following the detailed description.

In the accompanying drawings: Figure 1 is a view partly in section and partly in elevation of a valve embodying my present improvements; Fig. 2 is a horizontal section on the line 2—2 of Fig. 1; Fig. 3 is a horizontal section on the line 3—3 of Fig. 1 through the plug constituting the valve proper.

In carrying out my invention, I employ a casting which comprises an upper cylindrical portion 1, a lower cylindrical portion 2, and an intermediate coupling or valve casing presenting diametrically opposite laterally extending nipples 3 and 4 which are adapted to be coupled respectively to the supply pipe and the flushing pipe. The walls of these lateral nipples extend partly across the ends of the cylinders 1 and 2 and the inner extremities of said walls are converged downward, as shown clearly in Fig. 1. The nipple 4 is larger in diameter than the nipple 3 and shoulders 5 are thereby provided at the inner end of the nipple 3 which constitute seats for the valve plug 6 which, when resting against said seats or shoulders, will extend across the bore of the nipple 3 and thereby positively cut off the flow. In the inner end of the lower wall of the nipple 4

is provided an opening 7 which establishes communication between the bore of the said nipple and the lower cylinder 2 for a purpose which will presently appear. The valve plug 6 is tapered toward its lower end to conform to the downwardly converging surfaces of the inner ends of the nipples 3 and 4 and the upper end of the said valve plug or body is connected (preferably integral) with a head or weight 8 slidably mounted within the cylinder 1 and substantially filling the same diametrically, as will be understood on reference to Fig. 2. This weight is longitudinally recessed or slotted, as shown at 9, and on the longitudinal end wall of the said slot or recess, I form a rack 10 which is adapted to be engaged by a segment 11. The said segment is carried by a spindle 12 mounted in an offset or boss 13 formed on the cylinder 1 near the upper end thereof, the said spindle having a cylindrical extremity which fits within a circular socket in the end wall of the boss and being also constructed with an angular portion 14, which fits within an angular opening in the stem 15 of the segment whereby the rotation of the spindle will be imparted directly to the segment. Adjacent angular portion 14 a circular collar or rib 16 is formed upon the spindle to bear against the side of the stem 15 and coact with the inner wall of the boss 13 to prevent lateral movement of said stem and the segment. Outwardly from the said collar or rib 16, the spindle is constructed with a cylindrical portion 17 upon which is fitted a cap 18 threaded into the end of the boss 13 and serving thereby to retain the spindle in place. The outer extremity of the spindle is angular to receive a lever or handle member 19 which is retained upon the spindle by a screw 20 inserted into the end of the spindle and having its head bearing against a washer 21 which extends over the opening in the lever or handle, whereby the handle will be positively retained upon the spindle. Should it be necessary at any time to remove the spindle or the segment, the screw 20 is withdrawn whereupon the lever may be readily slipped over the end of the spindle. The cap 18 is then withdrawn from the boss 13, after which the spindle may be withdrawn from its engagement with the segment and the segment lifted from the cylinder.

The upper end of the cylinder 1 is covered and closed by a cap nut 22 which extends

above the cylinder a sufficient distance to accommodate the movements of the weight or head 8 of the valve, as the same is reciprocated through the action of the segment and the force of gravity. A passage 23 is provided through the valve plug or body which constitutes a vent to relieve the pressure within the chamber above the valve body when the valve is raised and thereby prevent the formation of a cushion which would resist the opening of the valve.

A piston rod 24 depends from the valve plug 6 and is preferably integral with the plug. Upon the lower end of this piston rod is secured a piston 25 which is constructed to yield to the upward movement of the valve and the piston rod but upon downward movement of the same will expand against the sides of the cylinder 2 and thereby retard the seating of the valve. The lower end of the piston rod 24 is provided with a vent opening extending through its lower extremity to a point above the piston and then communicating laterally with the bore of the cylinder and this vent is controlled by an adjusting screw 26 whereby the capacity of the vent may be regulated according to the friction between the parts, the flow of the water, and other circumstances.

The internal diameter of the cylinder 2 is enlarged at its lower extremity, as indicated at 27, and this enlarged portion of the cylinder will extend from the lower extremity thereof to a point about in the diametrical plane of the upper end of the piston when the piston is in its lowest position. The lower end of the cylinder 2 is closed by a cap 28 as shown and as will be readily understood.

When the apparatus constructed and arranged as shown and described is set up for use, there is no necessity for employing a cistern or tank to contain a volume of water for flushing purposes, as the supply pipe or nipple 3 may lead directly from a street main or other source of supply and the nipple 4 will be coupled directly to the sewer pipe or other pipe which is to be flushed at intervals. Normally the parts will occupy the position indicated in Fig. 1 in which the valve 6 will be seated and flow through the supply pipe will be cut off. When it is desired to admit a supply of water to the flushing pipe, the lever 19 is depressed, thereby causing the segment 11 to swing upwardly about the spindle 12 and this upward movement of the segment, through the engagement of the same with the rack 10, will lift the valve. As the valve rises, water will, of course, be admitted through the supply pipe and the parts are so proportioned that when the upper end or edge of the segment 11 reaches the wall of the cylinder 1 above the spindle 12, the valve will be fully unseated and the

weighted head 8 will be received within the cap 22. The air which is contained within the cap 22 and the cylinder 1 around the weighted head 8 and within the recess 9 of the weighted head will escape through the vent 23 as the valve rises and, consequently, there will be no cushion formed above the head or the valve to resist the opening movement. As the water flows through the nipples 3 and 4, the opening in the lower walls of the same which receives the lower end of the valve plug will, of course, permit some of the water to pass into the cylinder 2 and a portion of this water will flow around the piston 25 into the lower end of the cylinder 2 and be retained below the piston. To reseat the valve, the pressure on the lever 19 is released, whereupon the weight of the valve and the head 8 will cause the same to drop until the valve again seats and cuts off the flow. As the valve descends, the piston 25, of course, moves toward the lower end of the cylinder 2 but the water within the lower end of the cylinder will resist such downward movement so that the action will be retarded and the valve can only drop as rapidly as the water escapes through the vent in the lower end of the piston rod 24. As the valve reaches its seat, the water displaced by the descending piston 25 will pass out through the opening 7 into the flushing pipe, as will be readily understood.

My device is exceedingly simple in the construction and arrangement of its parts and will be highly efficient for the purpose for which it is designed. The valve, the head 8 and the piston rod 24 are preferably one integral structure so that sufficient weight will be provided to positively seat the valve and cut off the flow. This structure also insures the simultaneous operation of the valve and the retarding piston, while the recessed or slotted head maintains the engagement of the rack and the segment and also guides the segment so that displacement of these parts cannot occur. When the valve is nearly seated, the water which tends to flow in through the supply pipe exerts an upward pressure upon the valve and to overcome this upward pressure. I have provided the enlarged diameter at the lower end of the cylinder 2 which more quickly reduces the pressure below the retarding piston.

My improved device may be applied to any system inasmuch as it will operate very quickly and easily and is not dependent upon any particular water pressure so that, if the water has sufficient head to flow through the pipes, the desired results may be obtained.

Having thus described the invention, what is claimed as new is:

1. In a flushing apparatus, the combination of a casing comprising axially aligned

inlet and outlet nipples, a cylinder rising from said nipples and a second cylinder depending from said nipples, a spindle journaled on the upper cylinder, an operating
5 lever carried by one end of said spindle externally of the cylinder, a valve plug adapted to seat in the upper end of the lower cylinder and against the inner end of the inlet
10 nipple and cut off the flow through said nipple, a head rising from said valve within the upper cylinder and having a longitudinally extending diametrically disposed recess, a rack on the end wall of
15 said recess, a segment secured on said spindle and fitting between the side walls of the recess and meshing with the rack on the end wall of the same, and a retarding piston depending from the valve plug and playing in the lower cylinder.

2. In a flushing apparatus, the combination of a casing comprising upper and lower cylinders and axially alined inlet and outlet nipples disposed between said cylinders and having a lower wall in common, said lower wall having a valve-receiving opening and a
25 drain opening leading into the lower cylinder, a valve adapted to seat in said valve-receiving opening and against the inner end of the inlet nipple and cut off the flow there-
30 through, a retarding piston carried by the valve and playing in the lower cylinder, a head rising from the upper end of the valve within the upper cylinder, and means mounted on the wall of said upper cylinder and acting on said head to unseat the
35 valve.

In testimony whereof I affix my signature.
ALEXANDER FELEKI. [L. s.]

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."