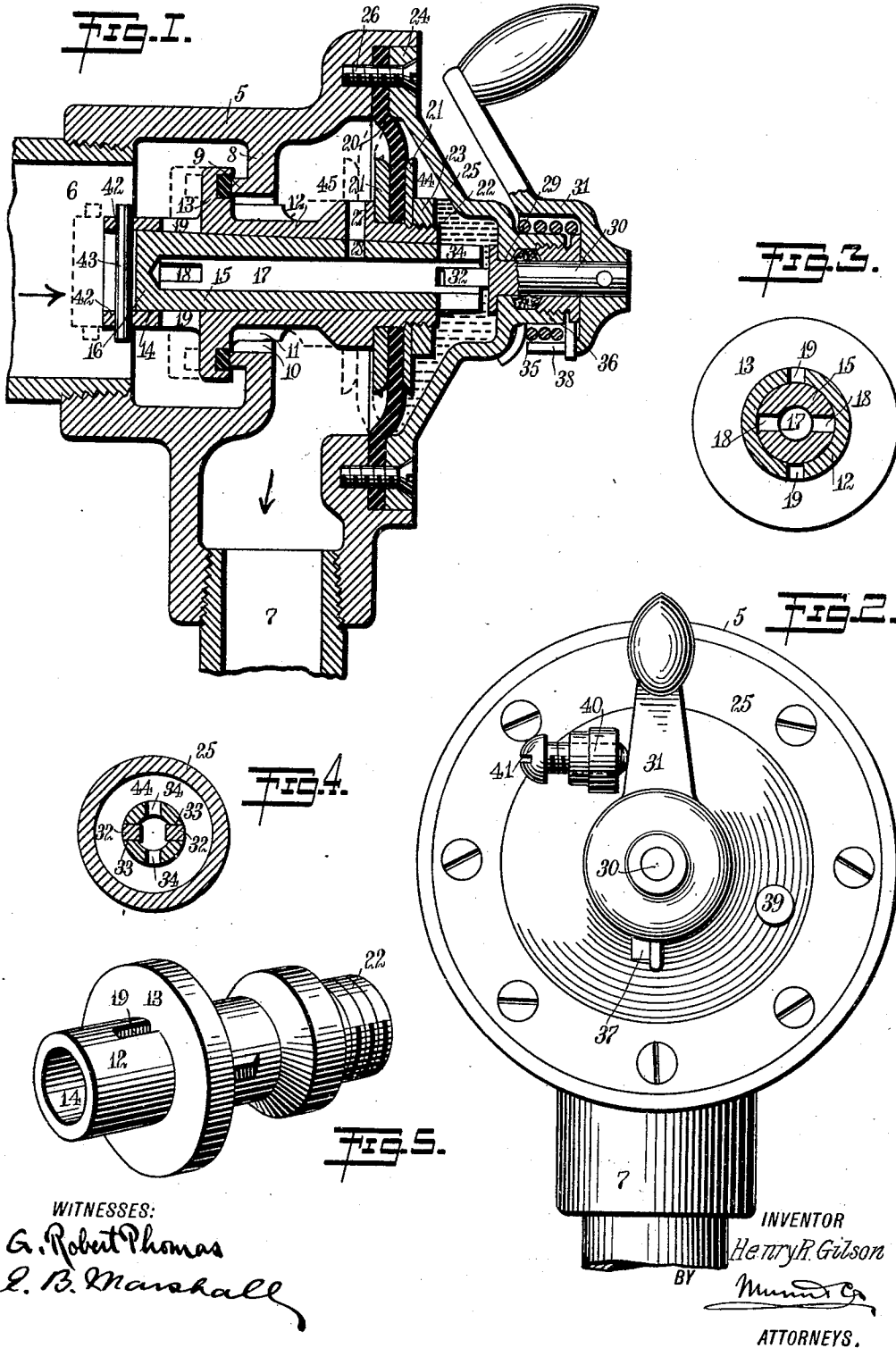


H. R. GILSON.
FLUSHING VALVE.
APPLICATION FILED JAN. 9, 1911.

1,005,641.

Patented Oct. 10, 1911.



UNITED STATES PATENT OFFICE.

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FLUSHING-VALVE.

1,005,641.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY R. GILSON, a citizen of the United States, and a resident of Beaver, in the county of Beaver and State of Pennsylvania, have invented a new and Improved Flushing-Valve, of which the following is a full, clear, and exact description.

The object of my invention is to provide a cheap, simple and efficient flushing valve which will operate with any water pressure, and which may be adjusted from without to control the flow of water to meet the requirements, although the water pressure may be greater or less than normal.

Other objects of the invention are to provide a flushing valve in which piston rings, leather packings and pistons which may become clogged or stuck, are dispensed with; one having large auxiliary ports to prevent clogging; and one in which the valve member is so disposed that the pressure of water supply will always keep it in position, without the use of springs or nuts.

Additional objects of the invention will appear in the following complete specification, in which the preferred form of my invention is disclosed.

In the drawings similar characters of reference denote corresponding parts in all the views, in which—

Figure 1 is a sectional side elevation of the flushing valve; Fig. 2 is an end view of Fig. 1; Fig. 3 is a transverse sectional view of the valve members looking toward the annular flange on the outer valve member; Fig. 4 is a transverse sectional view through the head, showing the inner valve member and the members on the stud which engage it; and Fig. 5 is a perspective view showing the outer valve member.

By referring to the drawings it will be seen that a casing 5 is provided having an inlet 6, and an outlet 7, the casing 5 having an inwardly disposed circular flange 8, with a valve seat 9. An outer valve member 12 is provided with an outer flange 13, which is adapted to rest against the valve seat 9, the said outer valve member 12 being disposed through the opening in the valve seat 9, and having a longitudinal tapering opening 14, therethrough, in which is disposed the inner valve member 15, which has a tapering outer wall corresponding with the inner wall of the outer valve member 12. The inner valve member 15 has a longitudi-

dinal opening 17, which is closed at one end by the head 16. There are two ports 18 in the inner valve member 15, which are adapted to communicate with ports 19 in the outer valve member 12, the ports 19 in the outer valve member 12 being disposed at the outer side of the annular flange 13.

A diaphragm 20 is secured to the outer valve member 12 at the extreme right end, between disks 21, the extreme right end of the outer valve member 12, having an outer thread 22 which is engaged by a nut 23 the nut 23 being adapted to hold the diaphragm 20 firmly between the disks 21. The periphery of the diaphragm 20 is clamped between the casing 5 and the periphery 24 of the head 25. This head 25 is secured to the casing 5 by means of screws 26. Between the flange 13 and the diaphragm 20 there is a port 27 in the outer valve member 12, this port 27 being adapted to communicate with the port 28 in the inner valve member 15. In the head 25 there is a bearing 29 in which is journaled a stud 30, a crank 31 being secured to the said stud 30. Projecting inwardly from the stud 30 there are arms 32, which are disposed in slots 33 in the right terminal of the inner valve member 15. There are also ports 34 in the right terminal of the inner valve member 15, which are adapted to afford communication between the interior of the inner valve member 15 and the right-hand side of the diaphragm 20.

A coiled spring 35 is provided which is wound around a hub 36 on the head 25, one end of the spring 35 being held in place by a lug 37, projecting from the head 25, the other terminal of the spring being disposed in a slot 38 in the hub of the crank 31. A pin 39 projects outwardly from the head 25 to limit the movement of the crank 31 in one direction. A member 40 is also secured to the head 25, this member 40 having a threaded orifice in which a screw 41 is disposed, the screw being adapted to be adjusted so that it will limit the movement of the crank 31 in the other direction.

There are orifices 42 in the left terminal of the outer valve member 12, these orifices 42 being provided to accommodate a pin 43, which may be used to prevent the inner valve 15 from becoming misplaced when the flushing valve is being shipped.

In using the invention the crank 31 is turned toward the right to the stop 39, 110

which will rotate the inner valve member 15, until its ports 18 will communicate with the ports 19 in the outer valve member 12. The water from the inlet 6 will then flow through the ports 19, the ports 18, and through the longitudinal opening 17 in the inner valve member 15, and will pass through the ports 34 to the chamber 44 at the right-hand side of the diaphragm 20. This chamber 44 is normally filled with water to the level at the top of the port 27. The water flowing through the longitudinal opening 17 in the inner valve member 15 will fill the rest of the chamber 44 and push the diaphragm 20 to the left, which will carry with it the outer valve member 12, and will move to the left the flange 13, relatively to the valve seat 9. This will permit the water to flow from the inlet through the valve seat, and around the outer valve member 12, filling the chamber 45 from whence the water will flow to the outlet 7. It will be understood that during this operation communication will be cut off between the ports 27 and 28, by the rotation of the inner valve member 15 relatively to the outer valve member 12. The inner valve member 15 has been moved to the left with the outer valve member 12 because of the tapered inner wall of the outer valve member and the tapered outer wall of the inner valve member 15, the arms 32 which are disposed in slots 33 permitting of this movement while still affording support for the right terminal of the valve members. When the crank 31 is freed the spring 35 will cause it to rotate until it strikes against the screw 41. As the crank 31 rotates it will carry with it the inner valve member 15, which will cut off communication between the ports 19 and 18, and open communication between the ports 27 and 28, so that the chamber 44 at the right of the diaphragm 20 will be in communication with the chamber 45. The pressure of water on the left-hand side of the flange 13 and the inner side of the diaphragm 20 will force the outer valve member 12 to the right, the water from the chamber 44 passing through the ports 34, the opening 17, and the ports 27, 28, to the chamber 45, until the outer valve member 12 has moved far enough to the right for the flange 13 to rest against the seat 9 and close communication between the inlet 6 and the outlet 7 of the casing.

The water pressure at the inlet acting against the head 16 will always hold the inner valve member 15 seated against the outer valve member 12, making leakage impossible. It will be understood that by regulating the position of the port 28 relatively to the position of the port 27, when the flushing valve is at rest, the period elapsing between the freeing of the crank 31 and the movement of the outer valve member 12, to the

right, may be controlled regardless of the pressure in the water main.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. In a flushing valve, a casing having an inlet, an outlet, and a valve seat, a valve member having a flange adapted to seat against the valve seat, the valve member being disposed through the valve seat, and having a longitudinal opening with a port at one side of the valve seat leading to the opening, a diaphragm secured to the valve member at the other side of the valve seat and forming a wall of a chamber, a second valve member having a longitudinal opening and disposed in the opening in the first-mentioned valve member, there being a port in the second-mentioned valve member leading to its opening, which is adapted to communicate with the first-mentioned port to open communication from the inlet to the said chamber, a port in the first-mentioned valve member between the valve seat and the diaphragm, a port in the second-mentioned valve member which is adapted to communicate with the last-mentioned port, and means for moving one of the valve members relatively to the other.

2. In a flushing valve, a casing having an inlet, an outlet, and a valve seat, a valve member having a flange adapted to seat against the valve seat, the valve member being disposed through the valve seat, and having a longitudinal opening with a port at one side of the valve seat leading to the opening, a diaphragm secured to the valve member at the other side of the valve seat and forming a wall of a chamber, a second valve member having a longitudinal opening and disposed in the opening in the first-mentioned valve member, there being a port in the second-mentioned valve member leading to its opening, which is adapted to communicate with the first-mentioned port to open communication from the inlet to the said chamber, a port in the first-mentioned valve member between the valve seat and the diaphragm, a port in the second-mentioned valve member which is adapted to communicate with the last-mentioned port, a bearing in the casing, a stud journaled in the bearing and engaging the second-mentioned valve member, a crank secured to the stud, a threaded member secured to the casing, and a screw in the threaded member adapted to check the movement of the crank.

3. In a flushing valve, a casing having an inlet, an outlet, and a valve seat, a valve member having a flange adapted to seat against the valve seat, the valve member being disposed through the valve seat and having a longitudinal opening, and a port at one side of the valve seat leading to the

opening, a diaphragm secured to the valve member at the other side of the valve seat and forming a wall of a chamber, a second valve member having a longitudinal opening and disposed in the opening in the first-mentioned valve member, there being a port in the second-mentioned valve member leading to its opening which is adapted to communicate with the first-mentioned port to open communication from the inlet to the said chamber, there being a port in the first-mentioned valve member between the valve seat and the diaphragm which is adapted to communicate with a port in the second-mentioned valve member, a bearing in the casing, a stud journaled in the bearing and engaging the second-mentioned valve member, a crank secured to the stud, a member adjustably secured to the casing for checking the movement of the crank, and a spring for holding the stud yieldingly in a predetermined position.

4. In a flushing valve a casing having an inlet, an outlet, and a valve seat, a valve member extending through the valve seat, and having an opening extending through the end disposed in the direction of the inlet, the size of the opening decreasing in the direction of the other end of the valve member, said valve member having a flange adapted to seat against the valve seat, and two ports disposed at the respective sides of the valve seat, a diaphragm secured to the valve member, at its second-mentioned end, a second valve member disposed in the first-mentioned valve member and having a head

disposed in the direction of the inlet, and two ports adapted to communicate with the ports in the first-mentioned valve member, and means to rotate the second-mentioned valve member to open one of the ports in the first-mentioned valve member as the other port is closed.

5. In a flushing valve a casing having an inlet, an outlet, a valve seat, and a bearing, a valve member extending through the valve seat and having an opening extending through an end disposed in the direction of the inlet, the size of the opening decreasing in the direction of the other end of the valve member, said valve member having a flange adapted to seat against the valve seat, and two ports disposed at the respective sides of the valve seat, a diaphragm secured to the second-mentioned end of the valve member, a second valve member disposed in the first-mentioned valve member, and having a head at one end, disposed in the direction of the inlet, two ports adapted to communicate with the ports in the first-mentioned valve member, and an opening and a slot at the other end, and a stud journaled in the bearing in the casing, and having an arm disposed in the slot of the second-mentioned valve member.

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

HENRY ROBBINS GILSON.

Witnesses:

A. E. JONES,
J. C. PUFFER.