No. 785,542. PATENTED MAR. 21, 1905.

L. F. DE MAY.

NOISELESS FLUSHING APPARATUS FOR CLOSETS.

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Fig 1

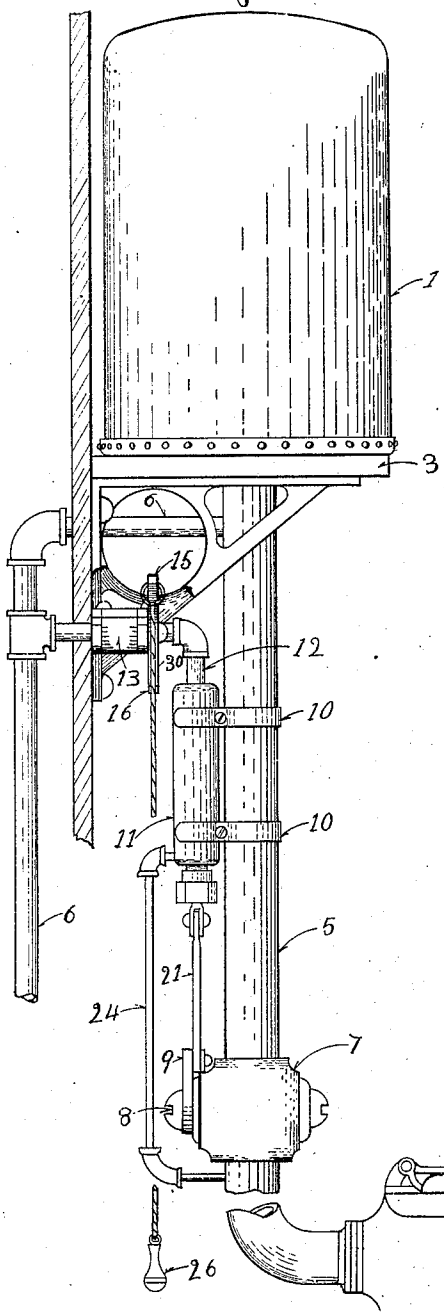


Fig 2

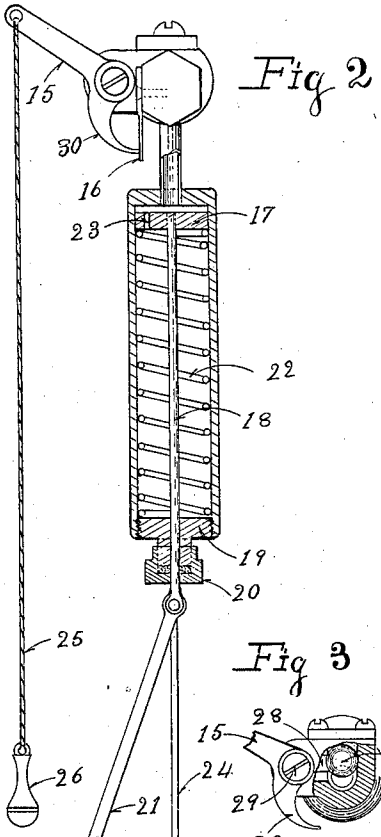


Fig 3

WITNESSES

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UNITED STATES PATENT OFFICE.

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NOISELESS FLUSHING APPARATUS FOR CLOSETS.

SPECIFICATION forming part of Letters Patent No. 785,542, dated March 21, 1905.

Application filed November 21, 1904. Serial No. 233,588.

To all whom it may concern:

Be it known that I, LOUIS F. DE MAY, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Improvement in Noiseless Flushing Apparatus for Closets, of which the following is a specification.

My invention relates to a flushing apparatus for closets, and has for its object to provide a simple, efficient, and inexpensive apparatus of the kind that is noiseless in operation and in which the flushing-valve is automatically and quickly opened by the pressure of water released from a feed-pipe connected to a water-pressure system, and slowly closed by spring-pressure retarded by the water that opened the valve released from the pressure of the system. I accomplish these objects by constructing a flushing apparatus as hereinafter described, and illustrated in the drawings, in which—

Figure 1 is a side elevation of my apparatus. Fig. 2 is an enlarged sectional view of the water-motor for the flushing-valve, showing its connections with the release and flushing valves. Fig. 3 is a view of the release-valve, partly in a section and with the operating-lever partly broken away.

In the illustrations of my apparatus shown in the drawings, 1 represents an air-tight pressure-tank supported above the closet-seat 2 by the bracket-shelf 3. The tank is connected with the bowl 4 by the flushing-pipe 5, and with a source of water under pressure by the feed-pipe 6, tapped into the flushing-pipe above the flushing-valve 7. The flushing-valve 7 is of the ordinary rotary-stem variety and has mounted on its stem 8 the crank-lever 9 for rotating the valve. A suitable distance above the flushing-valve, and secured to the flushing-pipe by the clamp-bands 10, is provided a cylinder 11 of suitable diameter and length, to the upper end of which is coupled a small branch pipe 12 from the main feed-pipe 6. Into the branch pipe 12 is coupled a valve 13, which is adapted to be opened by the lever 15 against the resistance of the spring 16 and to be automatically closed by the spring when the lever is released.

The cylinder 11 is provided with a piston 17, to which is centrally attached one end of the rod 18, which extends downward through a suitable stuffing-box 20, run on the lower end head 19 of the cylinder. The lower end of the piston-rod 18 is coupled to the crank-lever 9 of the flushing-valve by the connecting-rod 21. Within the cylinder 11, between the piston and the lower end closure, is compressed a helical spring 22, as shown in Fig. 2, of sufficient power when further compressed by the piston into the lower part of the cylinder and released to readily operate the lever 9 to close the flushing-valve from an open position and to yieldingly hold the piston against the upper head of the cylinder.

The piston 17 is provided with a small open port 23, and to the lower end of the cylinder is coupled a small drain-pipe 24, which extends to and is tapped into the flushing-pipe below the flushing-valve.

To the lever 15 of the release-valve 13 is attached a cord or chain 25 of suitable length, to the lower end of which is attached a suitable handle 26.

The flushing-valve 7 is so arranged that a quarter-turn of the stem 8 will fully open the valve, and the cylinder is of a length and the spring is compressed to allow sufficient stroke of the piston to fully open the valve. The release-valve 13, as shown in Fig. 3, is provided with the gate 14, which is adapted to be quickly lifted by the rock-arm 28, mounted on the rock-shaft 29, to which is attached the bell-crank lever 15, having the curved lower arm 30, adapted, when the lever is pulled downward, to flex the spring 16, suitably attached to the body of the valve, abutting the free end of the arm 30. Thus constructed and connected, and the flushing-valve being closed, it is apparent that the tank 1 will be partially filled with water until the air-pressure in the top of the tank equals the pressure of the water-supply. Being so filled, when the lever 15 is momentarily pulled down by the cord 25 and released the valve 13 is quickly and widely opened, thereby admitting water under full pressure of the system into the cylinder, whereby the piston is driven quickly downward a sufficient distance to open the valve 7, the operation of the valves

13 and 7 being substantially simultaneous. The cord 25 being released, the spring 16 quickly closes the release-valve 13, thereby cutting off the pressure of the system from the piston 17. Released from this pressure the spring 22 forces the piston slowly upward as the water cut off in the cylinder slowly leaks through the port 23, whereby the flushing-valve after being suddenly fully opened is slowly closed again by the spring 22 as retarded by the water in the cylinder. As fast as the water passes through the port 23 it is carried off by the drain-pipe 24 into the flushing-pipe below the flushing-valve. The operation of the valves 13 and 7 and the refilling of the tank 1 are entirely noiseless, and by the use of my apparatus the noisy thumping occasioned by release of float-valves and the prolonged and noisy refilling of the flushing-tank is entirely avoided. By employing the water-pressure to open the flushing-valve, and a small quick-acting spring-valve to apply the water-pressure for the purpose the manual force required is so reduced as to make it easily operated by a young child.

While a manual spring release-valve of the form shown in Fig. 3 is preferably used, it is manifest that other forms of quick-acting spring-valves may be used without departing from the principle of operation of my apparatus, and the same is also true as to the form of flushing-valve shown and described, as it is apparent that other forms of flushing-valves may be operated by the pressure-cylinder. I therefore do not limit myself to any special forms of these valves. It is further manifest that the working parts of my apparatus may be given different relative locations from those shown in the drawings without affecting its operation. I therefore do not limit myself in the construction of my apparatus to any special arrangement of the parts.

What I claim to be new is—

In a flushing apparatus for closets, the combination with a water-supply under pressure, of a pressure-tank having its lower end portion connected with the water-supply; a flushing-pipe connecting the pressure-tank with a closet-bowl; a flushing-valve connected in the flushing-pipe between the bowl and the tank; a lever adapted to operate the flushing-valve; means to operate the lever of the flushing-valve, comprising a cylinder, a piston in the cylinder connected with and adapted to operate the lever of the flushing-valve, a spring adapted to resist the opening of the flushing-valve by the piston and to automatically move the piston to close the valve; a branch pipe connecting the cylinder with the water-supply; a release-valve controlling the branch pipe; means to automatically close the release-valve when opened; means to open the release-valve and admit water from the branch pipe under pressure of the supply into the cylinder and oppose the pressure of the water on the piston to the pressure of the spring; a small open port in the piston; and a drain-pipe from the cylinder to the flushing-pipe below the flushing-valve, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 18th day of November, 1904.

LOUIS F. DE MAY.

Witnesses:
IRVING E. MAUMEN,
JOHN MUGGY.