No. 746,044. PATENTED DEC. 8, 1903.

L. T. DERY.

FLUSH VALVE.

APPLICATION FILED APR. 21, 1903.

NO MODEL.

Fig. 2.

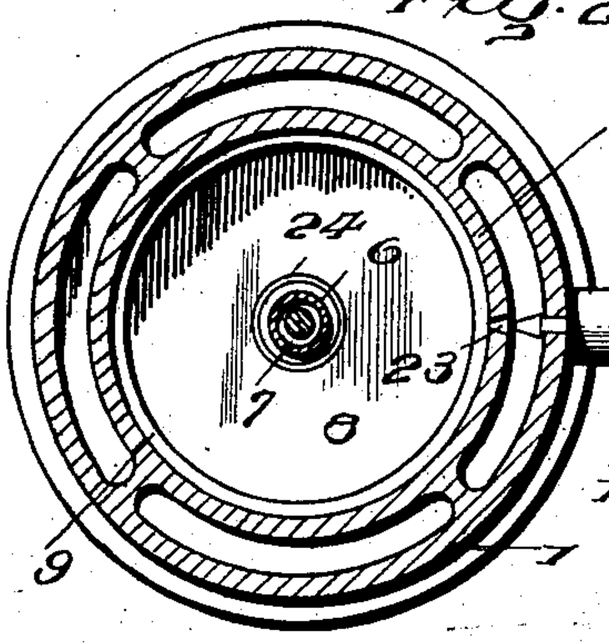


Fig. 1.

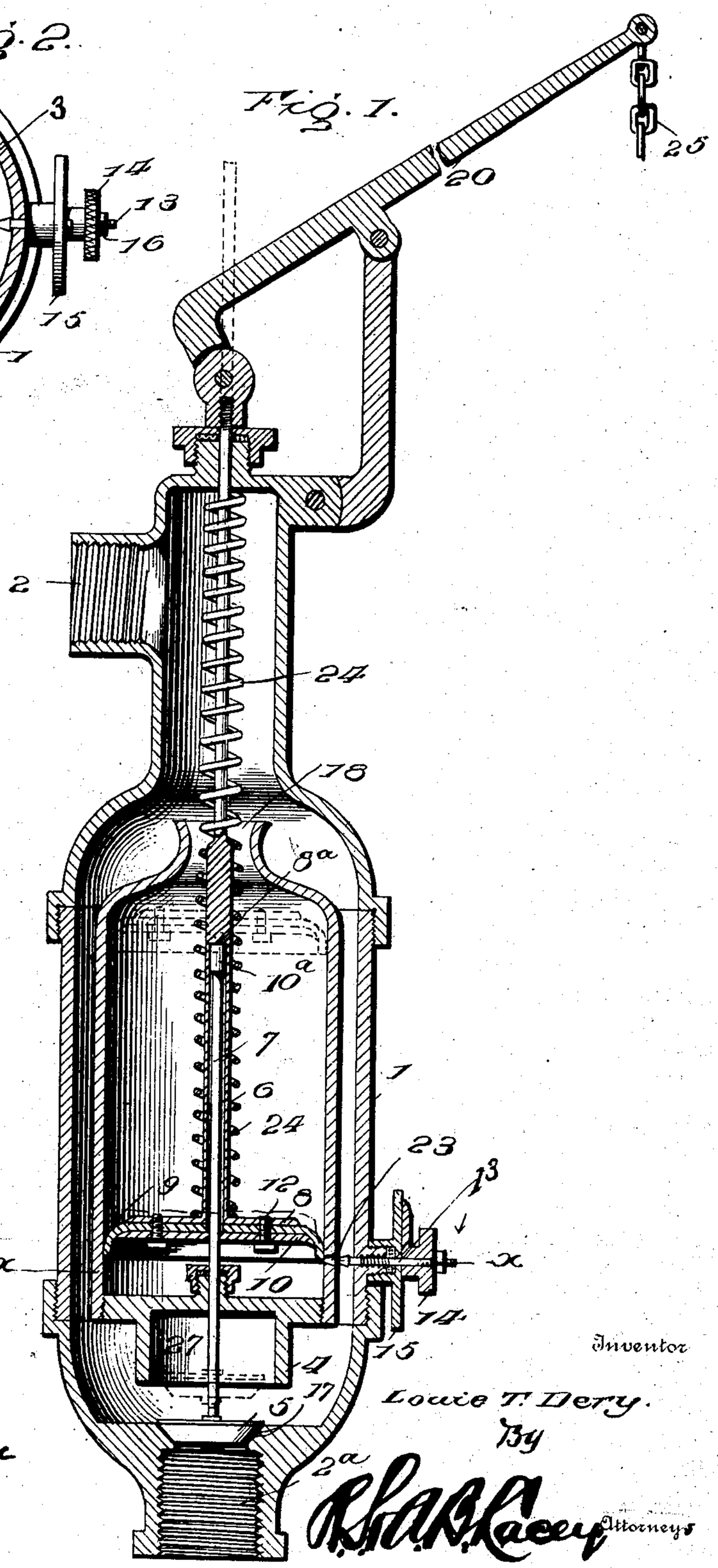
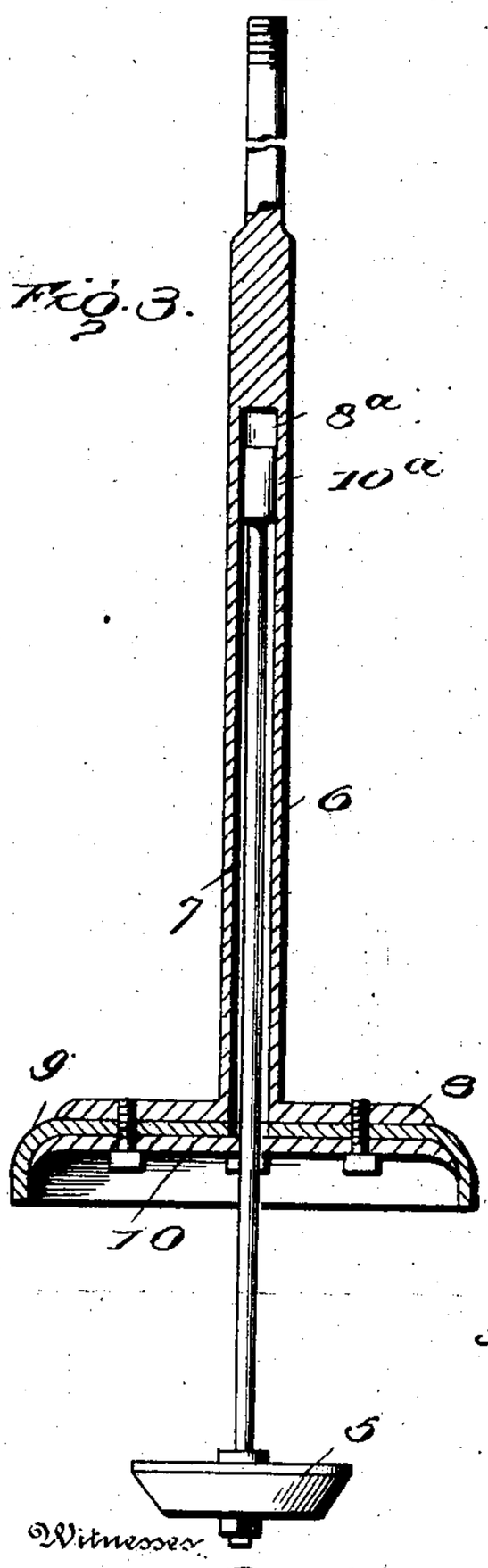


Fig. 3.



Witnesses:

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No. 746,044. Patented December 8, 1903.

UNITED STATES PATENT OFFICE.

LOUIE T. DERY, OF MONTPELIER, NORTH DAKOTA, ASSIGNOR OF ONE-HALF TO LOUIS B. NIEMEYER, OF JAMESTOWN, NORTH DAKOTA.

FLUSH-VALVE.

SPECIFICATION forming part of Letters Patent No. 746,044, dated December 8, 1903.

Application filed April 21, 1903. Serial No. 153,625. (No model.)

To all whom it may concern:

Be it known that I, LOUIE T. DERY, a citizen of the United States, residing at Montpelier, in the county of Stutsman and State of North Dakota, have invented certain new and useful Improvements in Flush-Valves, of which the following is a specification.

The object of this invention is to provide a new and novel form of flush-valve for use in water-supply cisterns of closets.

The valve is of peculiar structure relative to the disposal and operation of the several parts and adapted to be actuated by the usual chain or lever apparatus, special means being provided for regulating the amount of water with which it is desired to flush the bowl and to cause the automatic seating of the valve after actuation from the normal position thereof.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional-view through the valve mechanism. Fig. 2 is a detail side elevation of the piston and valve shown in working relation. Fig. 3 is a horizontal sectional view through the valve-casing and the inner chamber.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In carrying out the invention the casing 1 is provided with an inlet-opening 2 at the upper portion thereof, to which the service-pipe will be connected when the device is placed in operative position. Within the casing 1 is disposed a chamber 3, this chamber being rigidly fixed within the casing 1 in any suitable manner. An outlet-opening 2^a, disposed at the lower portion of the casing, is adapted to receive the pipe leading to the closet-bowl in a manner which will be readily apparent. A piston 9 is movably mounted within the inner chamber 3, and this piston is the actuator means for operating a valve 5, by which the outlet-opening leading from the casing 1 is normally closed. The piston is provided with a piston-rod 6, which is formed with a tubular portion 8^a at the lower part thereof. The tubular portion 8^a of the piston-rod 6 receives the valve-stem 7, and the said stem is provided with a head 10^a. The piston is held normally at the lower end of the chamber 3 by a coil-spring 24, which is disposed so as to surround the piston-rod, normally exerting a pressure against the upper side of the piston-head, which causes same to rest at the lower portion of the chamber until actuated from this position and causes valve 5 to rest upon its seat by means of the end of the tubular stem 8^a resting on head 10^a. A lever 20 of ordinary type is pivoted to the casing 1, and this lever is connected at one end to the piston-rod 6, and from the other end thereof extends a chain 25. The valve 5 is normally held seated by the pressure of the piston-rod against the head 10^a, formed upon the valve-stem 7. When the lever 20 is pulled downward by the chain 25, the piston 9 is moved toward the upper portion of the inner chamber 3, and when the said piston 9 has approximately reached its limit of movement toward the upper end of the said chamber a lower clamping-ring 10, which serves to clamp the packing of the piston upon one side, engages with the head 10^a and the valve 5 is raised from its seat 17. The valve being lifted from its seat, the water which has been drawn within the outer casing rushes through the outlet 2^a and into the pipe connected thereto down to the closet-bowl in the usual manner. Upward movement of the piston by its tendency to create a vacuum within the chamber 3 causes a suction which draws the water coming in from the service-pipe through the inlet 2 within the said inner chamber through the passage-way 23, which leads into the side of the latter and also through the passage-way 18. The passage-way 23 is located at the lower portion of the inner chamber 3. When the chain 25 is released, the spring 24 forces the piston 9 to

the lower part of the chamber and the water which has been drawn within the chamber is forced through the passage-way 23 into the outer casing 1 and from the outer casing through the outlet 2^a, giving a continuous flow of water to the closet-bowl. The outlet-passage 23 is of such a size that the return of the piston 9 to its normal position when the chain is released is by an approximately slow movement, being retarded, of course, by the water within the said inner chamber. It is proposed to so regulate the outflow of water from the inner chamber 3 through the passage-way 23 that the return movement of the piston 9, to cause seating of the valve 5, may be also regulated. This is accomplished by providing means for increasing or decreasing the size of the passage-way 23, whereby the amount of water flowing into the casing 1 through the said passage-way may be regulated, so as to regulate the flow of water through the casing 1 and outlet 2^a. The means before mentioned consist of a pin 13, which is threaded into the side of the casing and is regulated by means of a finger-piece 14. An indicating-plate 15, provided with suitable data, such as numerals or the like, indicates the position of the pin 13 with relation to the passage-way 23. By means of this plate 15 the position of the pin 13 is determined, and thus the size of the passage-way 23 is increased or decreased to permit the water within the inner chamber to escape slowly or the reverse. The valve 5 when off of its seat moves in a recess 27 upon the closing-cap 4 at the lower end of the inner chamber 3, and thus is not affected by the rush of water through the outlet 2^a.

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

1. In a flush-valve mechanism, the combination with a casing, an inner chamber disposed within the casing, outlet and inlet means provided upon the casing, a valve disposed in the casing adjacent the inner chamber and normally closing the outlet means, a stem extended from the valve and passing within the inner chamber, a piston mounted within the inner chamber and provided with a hollow stem, said hollow stem of the piston receiving the portion of the valve-stem within the inner chamber, means for actuating the piston to cause unseating of the valve, and spring means for normally holding the piston in such a position as to cause the valve to remain normally seated.

2. In a flush-valve mechanism, the combination with a casing provided with inlet and outlet means, an inner chamber, a valve seated so as to normally close the outlet of the casing, a piston disposed within the inner chamber for coöperation with the said valve at ascertained points in its movement, and a recess disposed adjacent the valve and adapted to receive the same when actuated from its normal position.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIE T. DERY. [L. S.]

Witnesses:
B. F. BIGELOW,
HENRY J. DERY.