

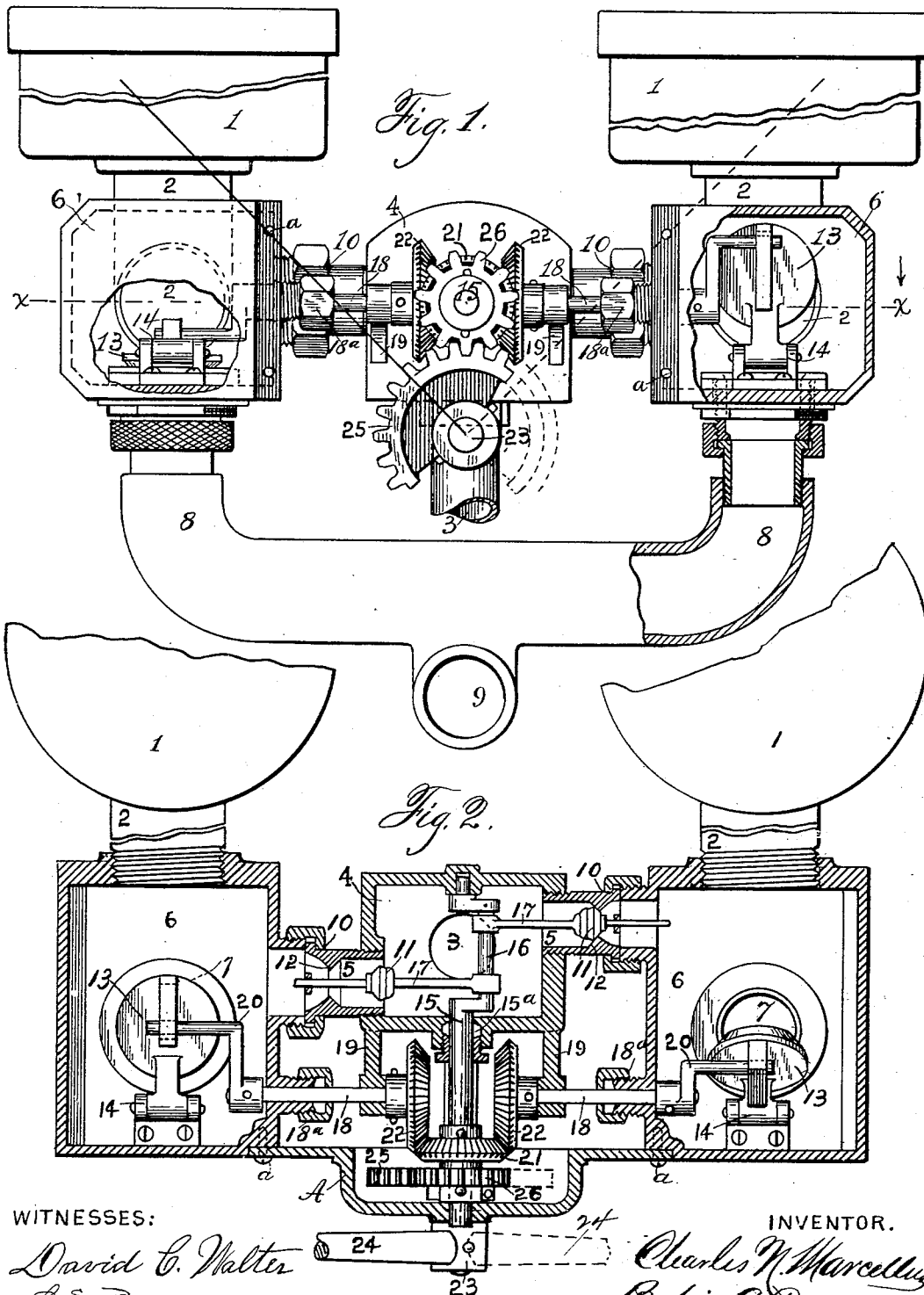
No. 653,750.

Patented July 17, 1900.

C. N. MARCELLUS.
WATER CLOSET FLUSHING APPARATUS.

(Application filed Nov. 8, 1899.)

(No Model.)



WITNESSES:

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CHARLES N. MARCELLUS, OF TOLEDO, OHIO.

WATER-CLOSET-FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 653,750, dated July 17, 1900.

Application filed November 8, 1899. Serial No. 736,238. (No model.)

To all whom it may concern:

Be it known that I, CHARLES N. MARCELLUS, a citizen of the United States, residing at Toledo, Lucas county, Ohio, have invented certain new and useful Improvements in Water-Closet-Flushing Apparatus, of which the following is a specification.

Among the difficulties encountered in the use of many of the flushing devices for water-closets heretofore in use are the uncertainty of operation of float-controlled valves, the leaking of floats, the rapid deterioration of valves and their seats by reason of the leaking of minute streams of water therethrough, and the noises occasioned by the gradual and slow closing of inlet-valves. In that class of these devices in which no float is employed, but in which air is compressed in the water-chamber and in which the water-supply is cut off by time mechanism, the devices easily get out of repair and require almost constant attention.

My invention relates to and its object is to provide cheap and simple means for overcoming the difficulties here indicated, and more particularly to provide a flushing apparatus for water-closets in which there shall be no floats or timing mechanism, in which the inlet and outlet valves shall not be dependent upon any automatic devices for their opening and closing, in which these valves shall be readily operated manually by a single movement, and in which noise, leaks, and wear of valves and their seats shall be reduced to a minimum. I attain these objects by means of the mechanism and arrangement of parts hereinafter described, and shown and illustrated in the accompanying drawings, made part hereof, in which—

Figure 1 is a front elevation of my device with the front cover removed, partly in section, and with portions of the valve-casings cut away to expose their interior; and Fig. 2 is a top plan view of the same in section on line *x x*, Fig. 1.

Like numerals of reference indicate like parts in both figures.

In the drawings, 1 1 are a pair of cylinders or equivalent chambers, closed except at bottom, where pipes 2 2 are connected with these chambers or vessels. In practice the closed vessels 1 1 are designed to be concealed in the

wall back of the seat; but if the wall does not permit this arrangement the parts 1 1 may be placed on either side of the wall and exposed.

3 is a water-supply pipe leading into valve-box 4, from which lead two ports 5 5 into valve-boxes 6 6, which are respectively connected through pipes 2 2 with the chambers or vessels 1 1. The valve-boxes 6 6 are each provided with an outlet 7, from which lead pipes 8 8. These pipes unite, as at 9, and discharge through a common orifice into the bowl of the closet. The valve-box 4 is connected with the valve-boxes 6 by suitable "unions" 10 10. The front faces of the two valve-boxes 6 lie in the same plane, and the space between them is filled by a removable cover A, which protects the gearing, hereinafter to be described.

In the passages 5 5 are valves 11 11, having seats 12. These valves are preferably compression-valves, or valves of the type known as the "Fuller" valve. In the mouth of each of the two outlets 7 7 is a valve-seat for valves 13 13. These valves are pivoted and arranged to swing as a door, as shown at 14, and are of sufficient area to permit the water to be rapidly discharged therethrough into the flushing-pipe 8.

15 is a shaft journaled and supported in the valve-box 4 and the casing of the device. That portion of the shaft 15 within the valve-box 4 is formed into a crank 16, which crank is engaged by the stems 17 of the valves 11. As these valves are disposed at opposite sides of the crank, it will be seen that by a half-turn of the crank one valve will be closed, while at the same time the other one will be opened.

18 18 are shafts at a right angle to the shaft 15, projecting through the walls of the valve-boxes 6 6 and journaled and supported therein and in brackets 19 upon the casing of the box 4. The extremity of each of these shafts which projects into the valve-box 6 is provided with a crank 20, which cranks engage, respectively, the valves 13 13. By turning either of the shafts 18 upon its axis its connected valve is opened or closed.

The shaft 15, where it passes through the wall of the valve-box 4, is provided with a stuffing-box 15^a. The shafts 18 18, where they

pass through the wall of the valve-box 6, are each provided with a stuffing-box 18^a.

Fixed upon the shaft 15 near its outer end is a beveled gear-wheel 21, which engages upon opposite sides of its periphery two beveled gear-wheels 22 22, fixed, respectively, upon the adjacent extremities of the shafts 18 18. The relative proportions of these beveled gear-wheels 21 22 are such that a half-turn of wheel 21 will cause a quarter-turn of wheels 22, and the arrangement of these gear-wheels and their shafts is such that a half-turn of the wheel 21 and its shaft will close one of the valves 11 and open the other valve 11 and will also close one of the valves 13 and open the other valve 13.

23 is a short shaft journaled and supported in the casing of the device, having an arm or lever 24, by which the various parts of my device are operated manually. Upon the shaft 23 is fixed the segment of a gear-wheel 25, which engages a pinion 26, fixed upon the extremity of shaft 15. The relative proportions of the segment 25 and pinion 26 are such that a slight throw of the lever 24 will cause the full throw of the connected valves 11 13.

The operation of my device is as follows: Assuming that the parts are assembled and secured in proper relation, that the inlet or supply pipe 3 is connected up, and that the outlet or flushing pipes 8 8 are connected to the seat or bowl of the closet, now if the lever be thrown to the position shown in the drawings one of the valves 13 will be opened, and the water contained in the vessel 1 connected therewith will be discharged through this valve. At the same moment the valve 11 in the supply-port leading into the chamber of the valve through which the flushing is taking place is closed to prevent access of water through the supply-pipe 3. All of the water in the vessel referred to runs out by gravity, and the air finds its way through the open valve 13, valve-box 6, and connection 2 into the vessel 1. The same operation which

has opened one of the valves 13 and closed one of the valves 11 has also simultaneously closed the opposite valve 13 and opened the opposite valve 11. Water from the supply-pipe 3 now enters the opposite vessel 1 through port 5, compressing the air therein until the resistance of the air in the chamber equals the pressure of the supply in pipe 3, and thus the device stands until it is again used. Now when the lever 24 is again moved it will be in the direction opposite from that above referred to, and the movement of the four valves will be the reverse of that above described. Thus alternately the empty vessel will be filled and the filled vessel will be emptied. It will be seen that the compressed air by its resiliency causes the rapid discharge of the water through the flushing-pipes when the valve is first opened. It will also be seen that all of the four valves are moved and seated positively and manually without the intervention of any float or other automatic mechanism, thus insuring the proper seating of the valves, preventing leaks therethrough, and avoiding the disagreeable whistling noises due to the slow or improper seating of the valves.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

In a flushing apparatus, a pair of vessels or chambers, a water-supply connected with each of said vessels, a pair of inlet-valves to control the water-supply to said vessels, a flushing-conduit connected with each of said vessels, a pair of outlet-valves to control the discharge of water from said vessels into said conduit, a shaft, a crank thereon, connections between said valves and said crank, and connections between said outlet-valves and said shaft, whereby, by the rotation of said shaft, all of said valves are actuated simultaneously.

CHARLES N. MARCELLUS.

In presence of—

WILBUR A. OWEN,
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