

P. S. MILLICE.
 FLUSHING APPARATUS.
 APPLICATION FILED AUG. 24, 1907.

956,863.

Patented May 3, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

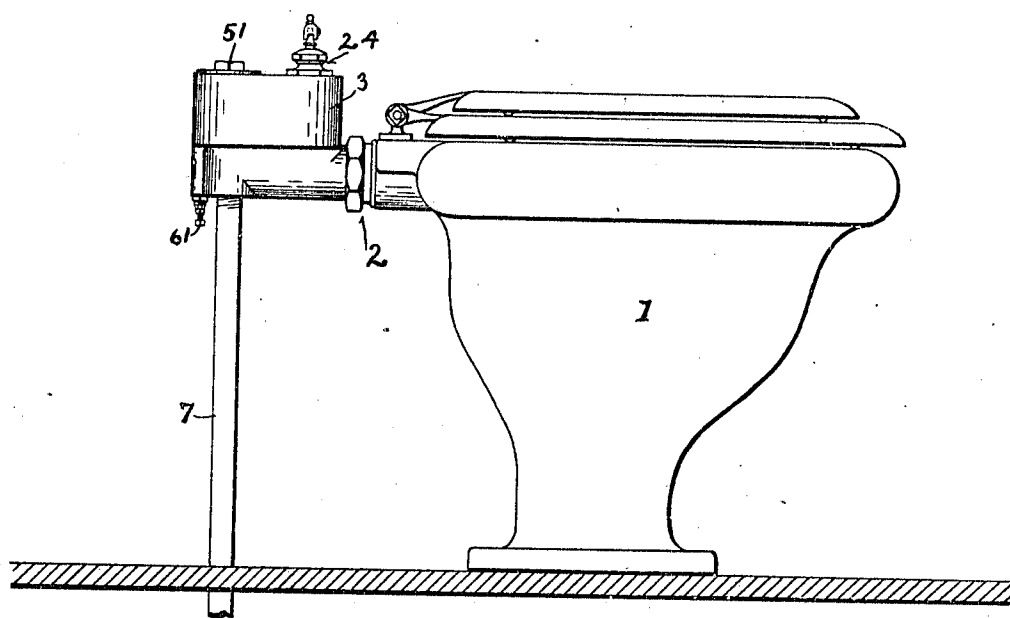
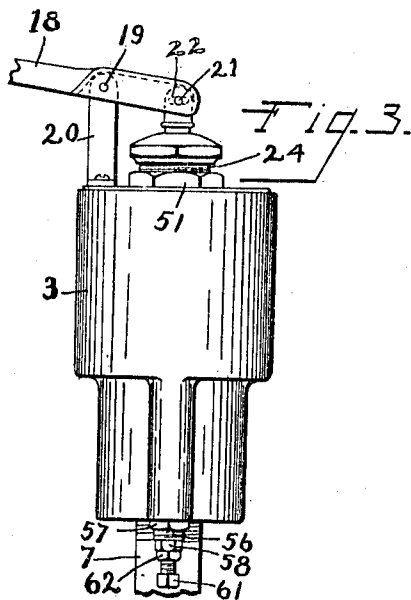
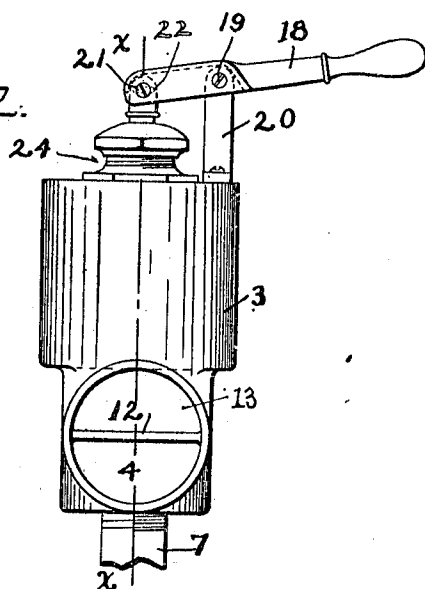


Fig. 2.



Witnesses.

Charles Russell
 Florence Quinn

INVENTOR.

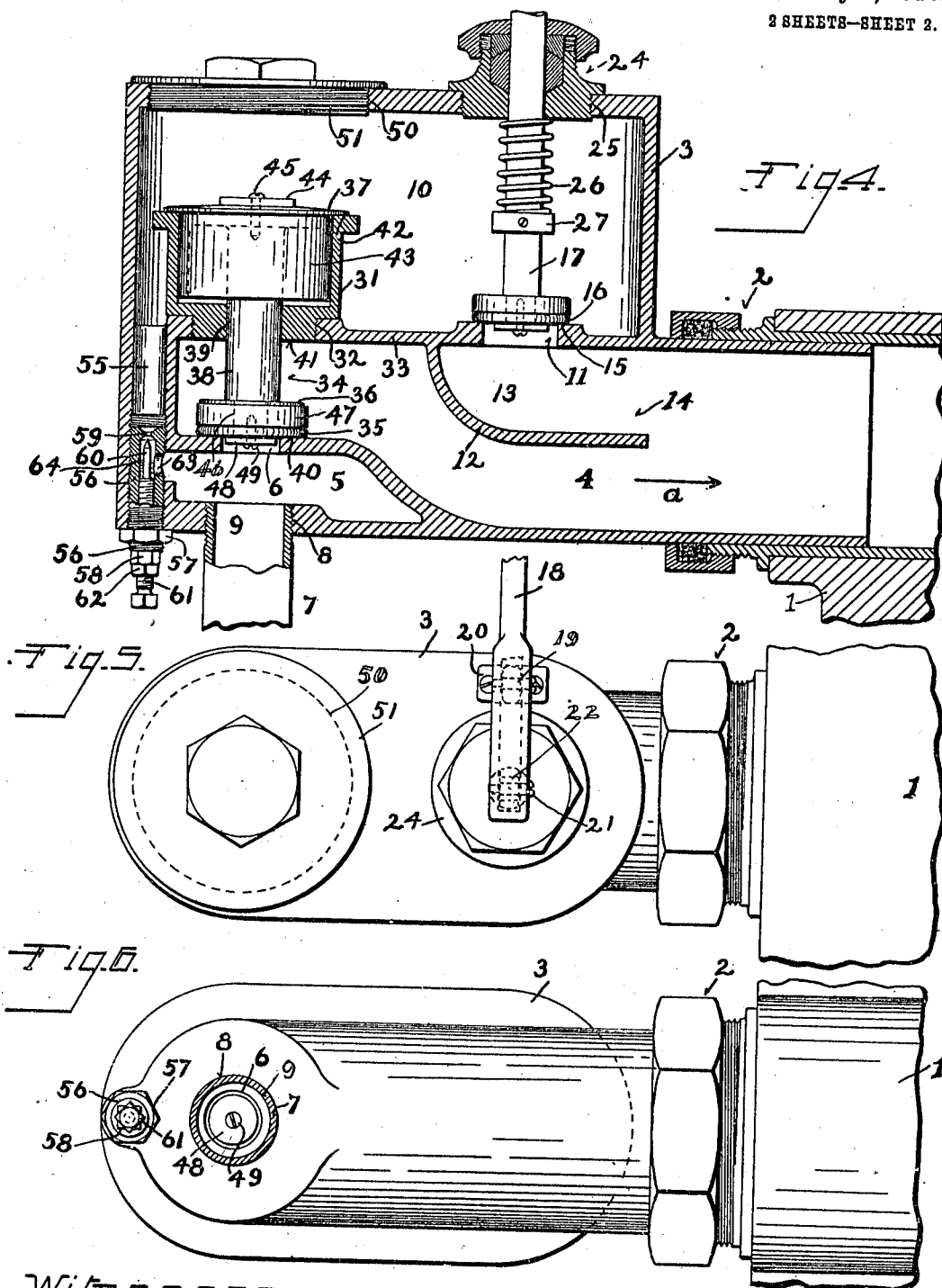
Paul S. Millice
 by A. H. Helbold
 His Attorney.

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WITNESSES.

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UNITED STATES PATENT OFFICE.

PAUL S. MILLICE, OF HAMILTON, OHIO.

FLUSHING APPARATUS.

956,863.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed August 24, 1907. Serial No. 389,934.

To all whom it may concern:

Be it known that I, PAUL S. MILLICE, a citizen of the United States, residing at Hamilton, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Flushing Apparatus, of which the following is a specification.

My invention relates primarily to that character of flushing apparatus intended for use in connection with water closets, and has for its object the providing of flushing means whereby the flushing may be accomplished by direct flow from the water service, such as a city or other public service, under the direct pressure of said service.

My present invention is an improvement on the flushing apparatus shown, described and claimed in my application for Letters Patent of the United States, filed August 3, 1906, Serial No. 329056.

The invention will be further readily understood from the following description and claims, and from the drawings, in which latter:

Figure 1 is a side elevation of my improved device shown connected up and applied to a water closet bowl. Fig. 2 is a front elevation of my improved device. Fig. 3 is a rear elevation of the same with the operating handle partly broken away. Fig. 4 is a central vertical longitudinal section of my improved device, shown on the line $x-x$ of Fig. 2, partly broken away. Fig. 5 is a plan view of my improved device; and, Fig. 6 is a bottom view of the same.

1 represents a closet bowl, with which my improved device is adapted to be connected by a suitable coupling 2.

3 represents a casing in which there is a fluid passage 4 with which a chamber 5 has connection through a port 6, the chamber having communication with the water service, as by means of a supply pipe 7, the pipe being threaded into an opening 8 of substantially greater diameter than the port 6. This permits a supply pipe having a bore 9 of greater cross-section than the port 6 to be employed for the purpose of providing an inflow through the opening 8 of greater volume than the capacity of the port 6 for forming a back pressure in the supply-chamber 5, the port 6 forming the discharge opening for said chamber. The casing also has

a pressure-compartment 10 from which a port 11 communicates with the fluid passage, there being however, a web 12 in the fluid passage for forming a cavity 13, whose mouth 14 opens into the fluid passage in the direction of flow of water through the fluid passage, as indicated by the arrow a . The web 12, cavity 13 and mouth 14 are preferably located within the longitudinal projections of the walls of said fluid-passage at the discharge-end of the same. At the port 11 there is a valve seat 15 for accommodating a valve 16 on a valve stem 17 operated in suitable manner, as by means of the lever 18 having the pivot 19 on the lug 20, and having a screw 21 pass through a slot 22 in the upper end of the stem.

24 is a compression bearing for the valve stem. This bearing is threaded into a threaded opening 25 in the casing of larger diameter than the valve-seat 15. A spring 26 is interposed between the bearing and a collar 27 on the valve stem for normally causing seating of the valve 16.

31 is a valve-shell secured in a threaded opening 32 in the wall 33 of the casing, which wall separates the pressure-compartment from the fluid passage. The shell accommodates a compound valve 34 which is preferably a triple valve, comprising the valves 35 36 37. The compound valve has a stem 38 adapted to reciprocate in the bearing 39 in the shell. The valves 35 36 37 are respectively adapted to seat against the valve seats 40 41 42, respectively at the port 6, at the bearing 39 and at the larger end of said shell. The valve 37 preferably takes the form of a flap-valve or thin disk of flexible rubber or leather or other suitable substances secured to the outer end of the hub 43 of the compound valve by means of a washer 44 and screw 45. The valves 35 36 are preferably compression valves in the form of disks of rubber, leather or the like. They are held in place by providing the valve-stem with a reduced end 46 about which the disks 35 and 36 are received at respective sides of a collar 47, a washer 48 and screw 49 securing the parts in place. The body of the shell serves as a bearing for the hub 43 of the compound valve. This hub is of greater diameter than the port 6, that is to say, the opening of the valve seat 42 is

of substantially greater diameter than the opening of the valve seat 40, so that pressure may be applied over a greater area of the compound valve 34 in said pressure-compartment than in the fluid passage, whereby the pressure upon the compound valve from the pressure-compartment serves to reseat the upper and lower valves thereof after the same have been released by release of pressure in said pressure-compartment by the opening of the valve 16. The compound valve and shell are received through an opening 50 in the casing which is closed by a threaded cap 51. There is a passage 55 in said casing between the chamber 5 and the pressure-compartment, forming a by-pass around the compound valve. 56 is a plug threaded into said passage and held in place by a lock-nut 57, the said plug having a head 58 for turning the same. This plug has a valve seat 59 therein adapted to be engaged by a valve 60, shown as a needle valve on a threaded stem 61 threaded into the plug 56, a lock-nut 62 serving to lock the stem in place in the plug. These lock-nuts 57 62 also serve to prevent leakage. The plug is provided with a port 63 which communicates with the bore 64 of the plug so that the fluid may pass from the chamber 5 through the port 63, bore 64, valve seat 59, and by-pass 55 into the pressure-compartment.

It will be noted that the diameter of the opening in the valve seat 59 is of substantially less cross-section than the port 6, the supply opening into chamber 5 in turn being preferably greater than said port 6. If now the valve 16 be raised, the pressure in the pressure-compartment is relieved and the fluid in the pressure-compartment will be received by the fluid passage. As soon as the pressure in the pressure-compartment is relieved, the compound valve 34 will unseat from the seat 40 for permitting flow through the port 6. The pressure from this port will force the compound valve away from said port for causing the valve 36 to seat against the valve seat 51 for preventing leakage around the compound valve from the fluid passage into the pressure compartment, the valve 16 having meanwhile been closed, and compelling the filling of the pressure-compartment to be accomplished through the by-pass, so that the moment of shutting off of the flushing may be definitely determined. The supply water takes the course of the arrow *a* into the bowl, the web 12 protecting the flow from the pressure-compartment through the port 11 for preventing shutting off of that flow while the valve 16 is open. The supply opening being greater than the port 6 will cause part of the fluid to pass through the valve seat 59 and by-pass 55 into the pressure-compartment. This opening in the valve seat 59 is comparatively

small so that greater pressure will result in the pressure-compartment, which will be exerted upon the top of the compound valve for causing the valves 35 37 to be seated when the pressure in said pressure-compartment has overcome the pressure of the flow through the port 6 against the bottom of said valve, this seating being accomplished with comparative rapidity.

My improved device is simple in construction and practically noiseless in operation.

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

1. In a flushing apparatus, the combination of a casing having a dividing wall 33 therein for forming a pressure-compartment at one side of said wall and a fluid passage at the other side of said wall, said dividing wall having an exit-port 11 therein for said pressure-compartment, a valve therefor, said casing further having a web 12 in said fluid-passage opposite said exit-port for forming a cavity 13 opposite said exit-port which extends parallel with said fluid-passage and having a mouth 14 which opens in the directions of extension of said cavity and fluid-passage whereby the streams of water passing through said exit-port from said pressure-compartment and through said fluid-passage are directed into the same direction by contact with said web and continued in the same direction after passing said web, said fluid-passage comprising a fluid-chamber having an inlet-port, a valve therefor extending through said dividing wall and having a backing-face in said pressure-compartment of greater diameter than the diameter of said inlet-port, and a by-pass between said fluid-chamber and pressure-compartment, substantially as described.

2. In a flushing apparatus, the combination of a casing having a dividing wall 33 therein for forming a pressure-compartment at one side of said wall and a fluid-passage at the other side of said wall, said dividing-wall having an exit-port 11 therein for said pressure-compartment, said casing further having a web 12 in said fluid-passage opposite said exit-port forming a cavity 13 opposite said exit-port which is closed at its back by said web and has a mouth 14 opening toward the discharge-end of said fluid-passage, the said web, cavity and mouth being located within the longitudinal projections of the walls of the discharge-end of said fluid-passage, whereby the streams of water passing through said exit-port from said pressure-compartment and through said fluid-passage are directed into the same direction by contact with said web, said fluid-passage comprising a fluid-chamber having an inlet-port, said casing further having a by-pass between said fluid-chamber and pressure-compartment, a valve for said exit-port,

a valve for said inlet-port passing through
said dividing wall and having a backing-
face in said pressure-compartment of greater
diameter than said inlet-port, and a valve
5 in said by-pass, said valves movable in direc-
tions parallel with each other and located
in different longitudinal planes, substan-
tially as described.

In testimony whereof, I have subscribed
my name hereto in the presence of two sub- 10
scribing witnesses.

PAUL S. MILLICE.

Witnesses:

W. C. BOYLAN,
EARLE R. PASSEL.