E. P. GAYLORD.

WATER CLOSET.

APPLICATION FILED APR. 11, 1910.

1,033,792. Patented July 30, 1912.

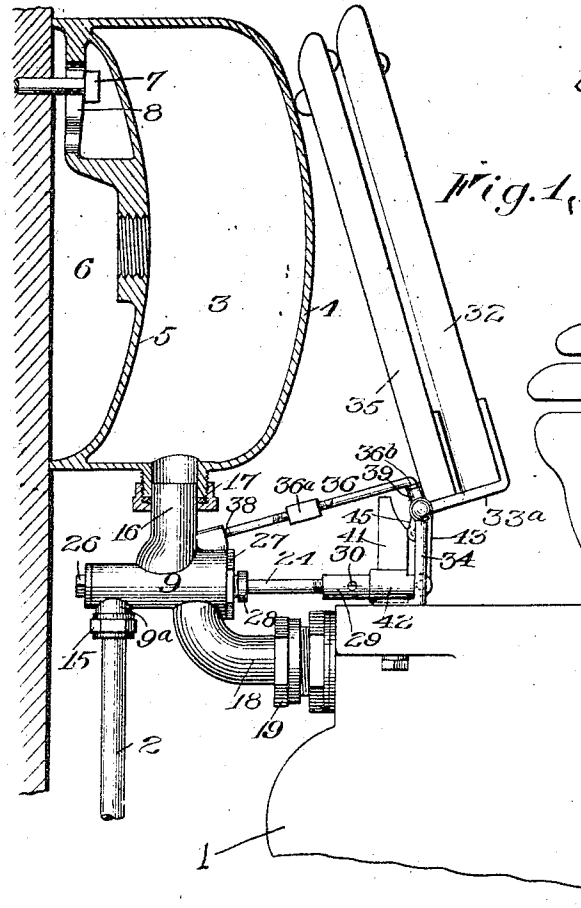

Fig. 1.

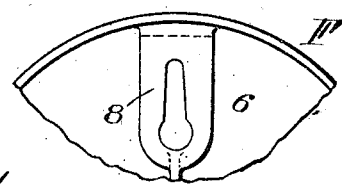

Fig. 1.

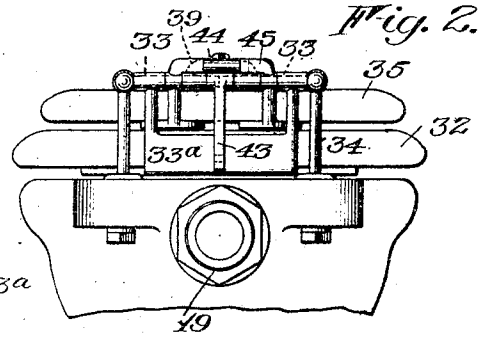

Fig. 2.

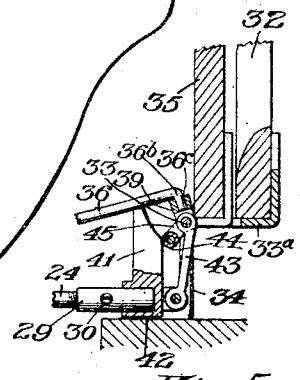

Fig. 5.

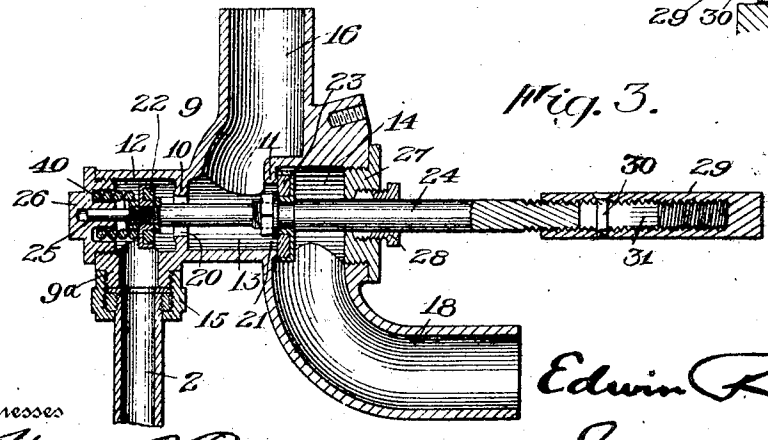

Fig. 3.

Witnesses

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WATER-CLOSET.

1,033,792. Specification of Letters Patent. Patented July 30, 1912.

Application filed April 11, 1910. Serial No. 554,682.

To all whom it may concern:

Be it known that I, EDWIN P. GAYLORD, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Water-Closets; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

The present invention relates to water closets and it has for an object to provide a construction in which the flushing water is economically controlled.

Another object of the invention is to provide a construction in which the flushing tank will be normally empty so that a freezing of the water in the tank cannot occur and the leaking of the tank will not effect any damage to the house or building in which the closet is located.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a side view of the invention, with the flushing tank in vertical central section; Fig. 2 is a rear view of the bowl detached from the tank; Fig. 3 is a vertical central section through the connections between the water supply and the tank, and between the latter and the bowl, together with the valve for controlling the same. Fig. 4 is a detail view of the means for supporting the tank, and Fig. 5 is a detail view of the means for flushing the bowl independently of the seat.

In the embodiment of the invention herein illustrated 1 indicates a bowl of any suitable construction, 2 a water supply and 3 the flushing tank. The latter is preferably of cylindrical formation having its front wall 4 bulged or convexed to give an ornamental appearance and its rear wall 5 concaved in order to reduce the capacity of the tank and at the same time to increase the strength of the latter and to provide a chamber 6 in which the securing means for the tank may be located and thereby hidden from view. This securing means in this instance embodies a headed projection 7 engaged by a slotted lug 8 on the tank, the rear wall of the lug being inclined in order that the tank will be drawn tightly to the wall of the building, and the slot being enlarged at its lower end to permit the headed end of the bolt to pass therethrough.

Connection between the water supply 2 and the flushing tank 3 and between the latter and the bowl 1 is in this instance established by valve casing 9 which is preferably divided by partitions 10 and 11 into three alined and communicating chambers 12, 13 and 14. The chamber 12 communicates with the water supply 2 and to this end the casing 9 has a lateral arm 9^a united to the pipe 2 by union 15. The chamber 13 has the lateral branch 16 which extends from the opposite side of the casing and forms a slip joint connection with the flushing tank at 17, a packing being employed to make a tight joint. The chamber 14 has outlet 18 which has a slip joint connection with the bowl 1 at 19. Communication between the chambers 12 and 13 is established through an opening 20 formed in the partition 10, while communication between the chambers 13 and 14 is formed by an opening 21 in the partition 11.

Connection between the water supply 2 and the tank 3 is controlled by a valve 22, while connection between the flushing tank 3 and the bowl 1 is controlled by a valve 23. These valves preferably have a common operating means and seat in opposite directions. In this instance they are carried by a plunger 24 and are arranged respectively in the chambers 12 and 14. The distance between the valves is greater than the distance between the partitions 10 and 11 which form the seats for the valves, so that the valves move toward and from their respective seats in opposite directions. In this instance the valve plunger 24 is guided at 25 in a plug 26 forming a wall of the chamber 12, while a bushing 27 having a packing gland 28 serves to guide the plunger 24 between its ends. A spring 40 may be arranged between the plug 26 and the valve 22 to maintain the valve 22 normally to its seat. At its forward end the plunger is provided with an extensible portion 29 internally screw threaded and engaging external

threads on the forward end of the portion 24, being held against turning thereon by any suitable means such as a radially arranged screw 30 which passes through a longitudinally extending slot 31 in the member 24.

The valve plunger may be controlled in any suitable manner but in this instance it is actuated by the seat 32. The latter may have a hinge member 33^a extending upwardly at the rear of the same and provided with two sleeves mounted to swing on the horizontal pivots 33 which are supported above the plunger from the bowl by standards secured to horns on the bowl, so that the seat moves toward and from the plunger when moved on its pivots, movement toward its lowermost position effecting the rearward movement of the plunger.

The strain produced by the operation of the plunger is such that the bowl is liable to break where the supports 34 are connected thereto, and to prevent this the pivots of the seat are tied to a fixed part, preferably the valve casing 9. To this end there is employed a brace 36 preferably adjustable by a turn buckle 36^a and having one end secured to the valve casing at 38 and the other end deflected downwardly at 36^b to engage within a pocket 36^c in a sleeve 39 which connects the proximate ends of the pivots 33. A closure 35 may be provided to coöperate with the seat 32 and this closure may also swing on the pivots 33.

When the closet is also to be used as a urinal it is desirable that the flushing of the bowl may be accomplished without pressure on the seat. In the present instance this flushing is effected by means of the closure 35, the latter for this purpose preferably being moved to a position between its uppermost and its lowermost position. A cam member 41 may extend upwardly from a cap 42 which fits over the extension 29 and is preferably held in place thereon by a link 43 pivoted to the cap and to the pivots 33. The cam member may be engaged by an actuating device preferably comprising a roller 44 arranged on an arm 45 extended from the closure 35, and is so shaped that when the closure is in its uppermost and near its lowermost positions, the plunger 24 is moved forward under the action of the pressure of the spring 40 and the valves are closed but when the closure is at an intermediate point the plunger will be moved to the rear to open the valves. When the closure is moved but a short distance from its uppermost position out of engagement with the tank, the valves are opened to the greatest degree.

When pressure is applied to the seat 32 the plunger 24 is engaged by hinge member 33^a and is moved rearwardly, thus seating the valve 23 and unseating the valve 22. This establishes connection between the water supply 2 and the tank 3 so that the water under the city pressure enters at the bottom of the tank 3 from the supply 2. As the tank 3 is air-tight, the water continues to flow into it until the air pressure above the water is substantially equal to the pressure of the water supply. Upon the release of the seat, the valve 22 closes and the valve 23 opens, these actions being effected by the pressure of the water in the supply pipe and the air pressure in the tank, assisted by the spring 40, thus establishing communication between the flushing tank and the bowl. This communication is larger than the supply pipe and permits a rapid flow from the flushing tank, the water during the first part of the flushing movement being subjected to the air pressure within the flushing tank and thus giving a very efficient flushing action while the weaker flow at the end is not sufficient to produce such an action and is therefore useful for filling the bowl seal.

From the foregoing it will be seen that the water is controlled in such a manner that very little waste can occur. The flushing tank is normally empty and is not liable to collect sediment, while its walls are so shaped that a free discharge therefrom is permitted and there is no liability of a freezing of the apparatus. Further, the flushing tank, by not having the operating parts connected thereto may be located in any convenient place and the air compressed by the water in the tank not only assists in flushing and operating the valve but renders the closet noiseless.

The support for the seat is tied to the valve casing by an adjustable brace so that it is impossible for the seat pivots to shift relatively to said casing when in use. This is important for should the seat pivots not be properly positioned relatively to the plunger, there is liability that the porcelain of the bowl will be broken where it is connected to the supports. The proper relation between the parts is obtained by adjusting the length of the plunger of the valve and this adjustment is held against accidental change by the fastening device.

I claim as my invention:

1. The combination with a bowl, of pivots supported from the bowl above the upper surface of the latter, a seat turning on the pivots, a flushing tank, a water supply, a valve casing connecting the water supply with the flushing tank and the latter with the bowl, an operating member controlling the flow through the casing and engaging the seat below the pivots, and a brace having a sleeve surrounding the proximate ends of the pivot and an end connected to the valve casing.

2. In a water closet, the combination with a bowl and a flushing apparatus having a

plunger at the rear of the bowl provided with an adjustable portion and a cap fitted to said adjustable portion and carrying a cam, of a seat hinged to the bowl in proximity to the plunger, a link connecting the seat hinge to the plunger cap, and a closure hinged to the bowl and having a portion for coöperation with the cam to actuate the plunger.

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Witnesses:
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