Aug. 28, 1934. W. TAYLOR 1,971,880

FLUSHING TANK

Filed June 23, 1930 3 Sheets-Sheet 1

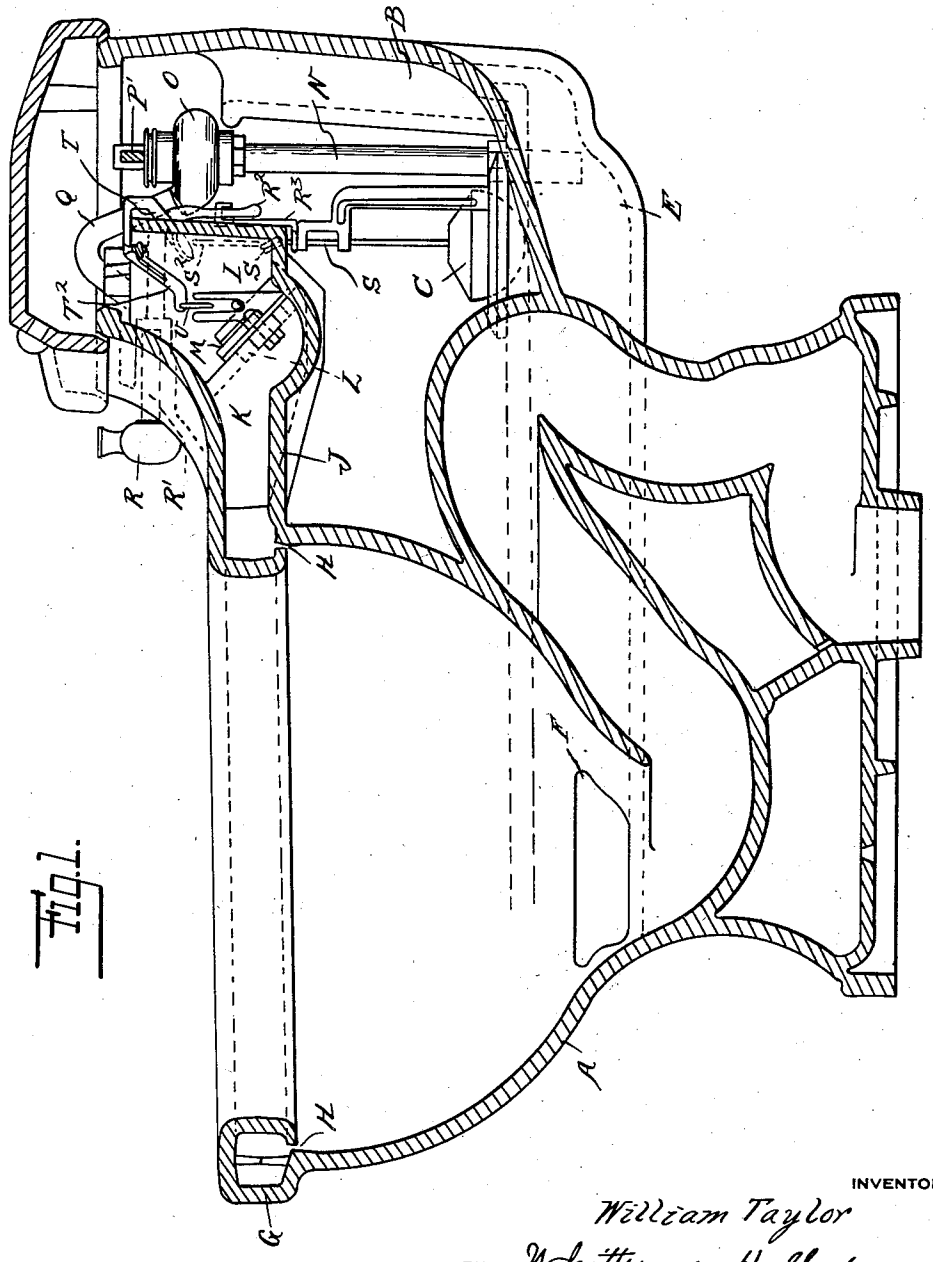


Fig. 1.

INVENTOR

William Taylor

BY Whittemore Hulbert & Whittemore & Belknap

ATTORNEYS

Aug. 28, 1934. W. TAYLOR 1,971,880

FLUSHING TANK

Filed June 23, 1930 3 Sheets-Sheet 2

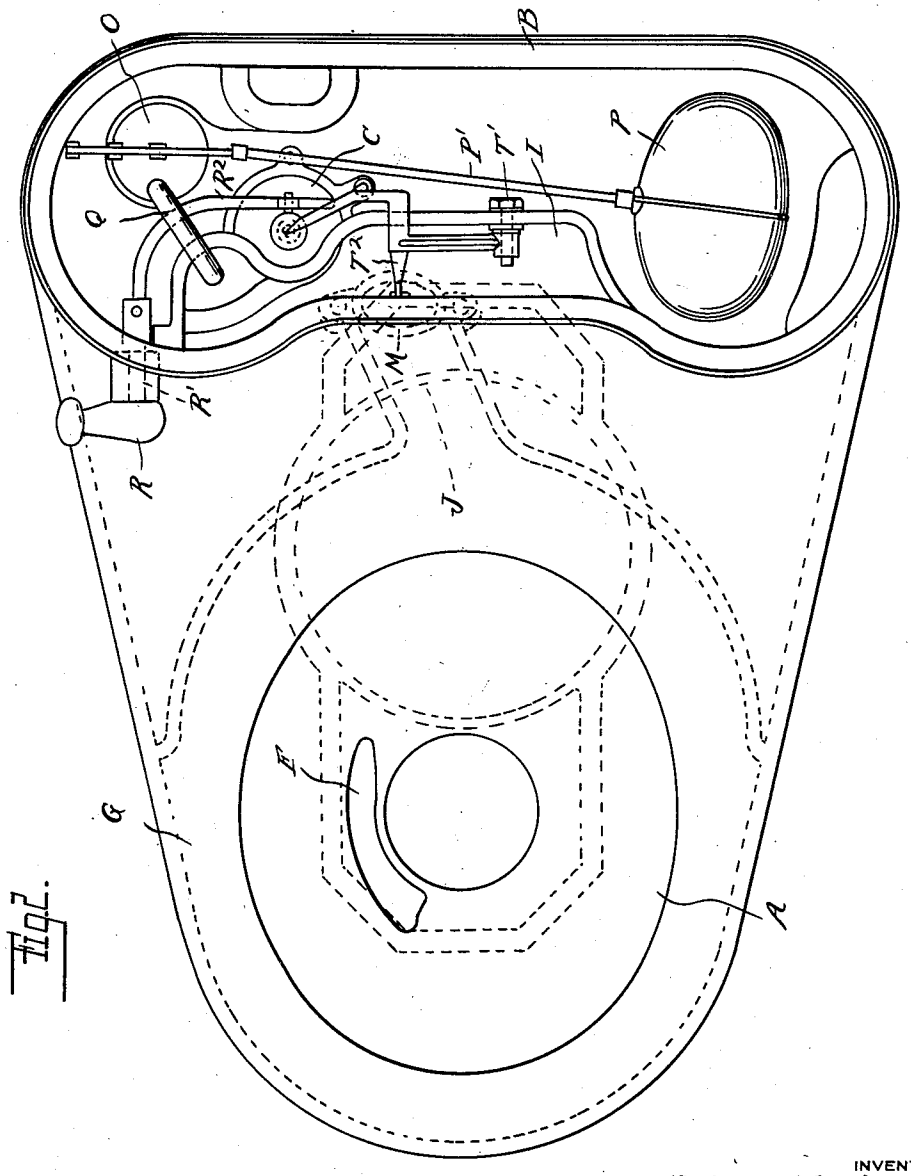


Fig. 1.

INVENTOR
William Taylor
BY Whittemore Hulbert
Whittemore & Belknap
ATTORNEYS

Aug. 28, 1934. W. TAYLOR 1,971,880

FLUSHING TANK

Filed June 23, 1930 3 Sheets-Sheet 3

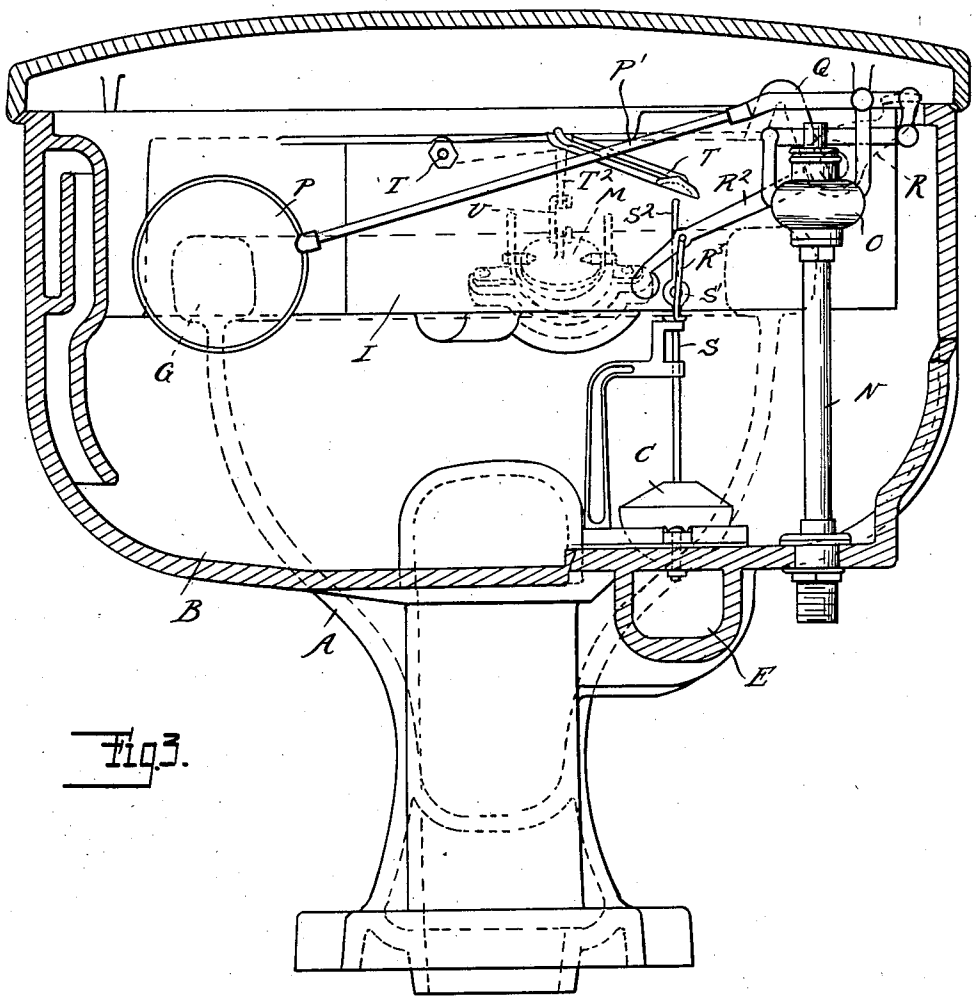


Fig. 3.

INVENTOR

William Taylor

BY Whittemore Hulbert

Whittemore & Belknap

ATTORNEYS

Patented Aug. 28, 1934

1,971,880

UNITED STATES PATENT OFFICE

1,971,880

FLUSHING TANK

William Taylor, Windsor, Ontario, Canada, assignor to James M. Teahan, Detroit, Mich.

Application June 23, 1930, Serial No. 463,321

5 Claims. (Cl. 4—13)

The invention relates to flushing tanks for water closets of that type in which the tank is integral with the bowl and the velocity of water required for flushing is developed by siphonic action. With such constructions it is essential that the main body of water discharged from the tank should enter the bowl below the water seal thereof so as to remove atmospheric back pressure and to establish siphonic head. On the other hand it is equally important that there should be a rim flush for thoroughly washing the walls of the bowl. It is therefore necessary to divide the water so as to send a portion to the rim flush and to accomplish this without interference with the control of the water supply by a float actuated ball cock. This is a difficult problem for there is danger on the one hand of robbing the rim flush and discharging all of the water into the lower portion of the bowl, or, on the other hand, of interfering with the refilling of the tank and the complete shutting off of the ball cock.

My improved construction accomplishes the desired result and the invention consists in the construction as hereinafter set forth.

In the drawings:

Figure 1 is a sectional elevation through a water closet bowl and tank.

Figure 2 is a plan view thereof and

Figure 3 is a section through the tank in a plane transverse to that of Figure 1.

The type of water closet to which my improvement is applied consists essentially of a bowl A, a tank B integral therewith and arranged above the normal level of the water seal in the bowl but with its own normal water level below the rim of the bowl. Within the tank B is a float flush valve C which controls discharge of water from the bottom of the tank through a passage E discharging into the bowl through a port F below the normal water seal. G is a hollow rim for the bowl which has a series of discharge jets H directed against the side walls of the bowl.

With the construction as thus far described it will be understood that the tripping of the float valve C will permit discharge of water from the tank through the passage E and port F which will raise the level within the bowl a point sufficient to form the siphon. As soon as the siphon is formed there is added to the normal gravity head of water in the tank the siphonic head which will so increase the velocity of discharge as to insure thorough cleansing of the bowl. With this construction no water is supplied to the rim flush and to provide for the latter I have devised the following construction. I is an auxiliary tank arranged within the main tank B and connected by the passage J to the hollow rim G. The connection to the passage J is through a partition K shown as arranged in an inclined plane and having a port L which is normally closed by a valve M. N is the water inlet conduit having arranged at its upper end a ball cock O controlled by a float P and rock arm P'. The discharge of water from the ball cock is not, however, directly into the main tank but through a return bent conduit Q which discharges into the auxiliary tank I. Thus assuming that the flush valve C has been tripped and the water of the tank discharged through the passage E as previously described, this, by dropping the float P will open the ball cock and discharge water therefrom into the auxiliary tank I. This, when filled, will overflow into the main tank filling the latter until the rising of the float P will again shut off the ball cock. Thus both the main tank and the auxiliary tank have been refilled.

The discharge of water through the rim flush is accomplished by opening the valve M and this in turn is accomplished through the tripping of the flush valve C through the medium of the following mechanism; R is the manually operable trip lever which is connected by a rock shaft R' with a lever arm R^2 arranged within the main tank. The arm R^2 is connected by a pivotal link R^3 with the stem S of the flush valve C. This stem has the shoulder S' preferably formed by a loop therein for engagement with the link R^3 and above said loop is an upward extension S^2. Above and in the path of this extension S^2 is the free end of a lever T fulcrumed on a pin T' secured to the wall of the auxiliary tank I. At an intermediate point in the length of the lever T is an arm T^2 connected by a pivotal link U with the valve M the arrangement being such that when the trip lever R is operated it will rock the shaft R' and lift the lever arm R^2. This will actuate the link R^3 to lift the stem S and the flush valve C attached thereto. At the same time the upward extension S^2 of the stem S will impinge upon the lever T lifting the lever and through the link U opening the valve M. The parts will remain in this position sustained by the buoyancy of the flush valve C until the water in the main tank has dropped to a point where the suction will draw the flush valve C again to its seat. Thus it will be understood that during the interval when the valve M is open the water which is stored in the auxiliary tank I will be freely discharged into the rim of the bowl and through the jet ports H to flush the side walls of the bowl. When, however,

the valve M is again seated, this occurring upon the seating of the flush valve C, the water admitted through the ball cock O and discharged through the conduit Q will first fill the auxiliary tank and then by overflowing will fill the main tank until the rising of the float P cuts off the supply. As has been stated, the normal level of water in the main tank is below the rim of the bowl so as to avoid any danger of overflowing this rim even in case of stoppage of the soil pipe. It was not, however, necessary that the auxiliary tank should be restricted to such a level and to give a greater head for discharge of water through the ports H, this auxiliary tank has its overflow edge at a considerably higher level. However, when the valve M is closed the only escape of water in the auxiliary tank is through the main tank and the rising of water in the latter to the normal level will cut off a further supply to the auxiliary tank.

What I claim as my invention is:

1. In a water closet, the combination with a bowl, a flushing tank connected thereto to discharge its water below the normal water seal in said bowl, and a rim flush for the bowl, of an auxiliary tank in the main tank and connected to said rim flush, a valve for cutting off connections between said auxiliary tank and rim flush, a flush valve for the main tank, a ball cock having a discharge into said auxiliary tank, a float for controlling said ball cock arranged in the main tank, and means actuated by the tripping of the flush valve for opening the rim flush valve.

2. In a water closet, the combination with a bowl, a flushing tank connected thereto to discharge its water below the normal water seal in said bowl, and a rim flush for the bowl, of an auxiliary tank in the main tank and connected to said rim flush, a valve for cutting off connections between said auxiliary tank and rim flush, a flush valve for the main tank, a ball cock having a discharge into said auxiliary tank, a float for controlling said ball cock arranged in the main tank, and means actuated by the tripping of the flush valve for opening the rim flush valve, said means permitting the closing of said rim flush valve on the reseating of the flush valve.

3. In a water closet, a bowl having a siphon discharge and a flushing rim, a dual compartment tank attached directly to said bowl, one of said compartments extending down to substantially standing water level in said bowl and another of said compartments terminating above the bottom of said rim and means for separately controlling the discharge of water by gravity from said compartments respectively to below the water level in said bowl to establish syphonic action and to said flushing rim.

4. In a water closet, a bowl having a siphon discharge and a flushing rim, a dual compartment tank attached directly to said bowl, one of said compartments extending down to substantially standing water level in said bowl and another of said compartments terminating above the bottom of said rim, means for filling one of said compartments and overflowing the same to fill the other compartment, and means for separately controlling the discharge of water by gravity from said compartments respectively to below the water level in said bowl to establish siphonic action and to said flushing rim.

5. In a water closet, the combination with a siphonic action bowl, of a flushing tank integral therewith and having a portion extending upward above the rim of the bowl, a rim flush for the bowl, means for establishing a water level in said portion above the rim of the bowl, a water inlet passage communicating with said bowl below the water seal therein, a ball cock for supplying water to the tank, and valve controlled means for supplying water by gravity flow from said tank to both said rim flush and water inlet passage.

WILLIAM TAYLOR.