April 18, 1961 J. E. REETZ 2,979,731

WATER CLOSET

Filed Aug. 26, 1959 2 Sheets-Sheet 1

Fig. 1.

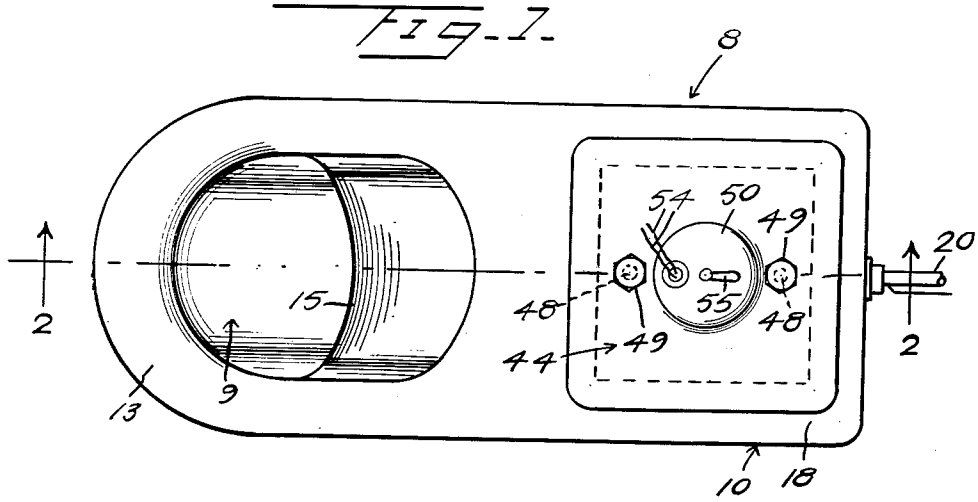


Fig. 4.

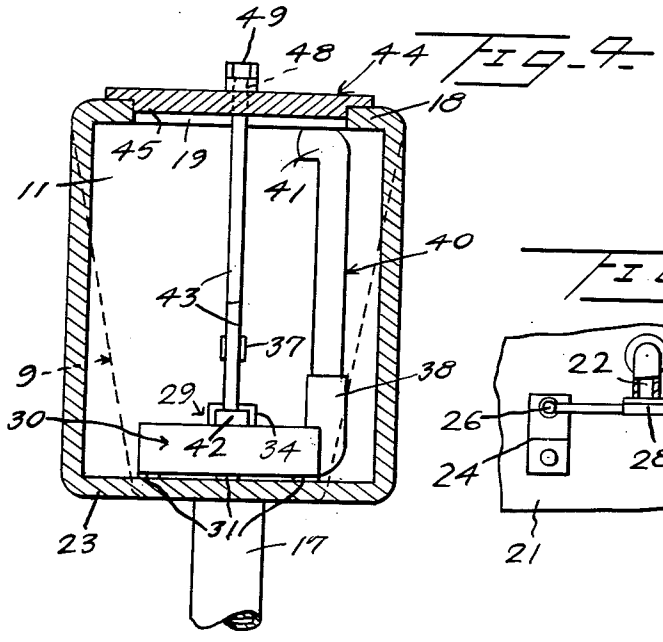


Fig. 5.

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FIG. 2.

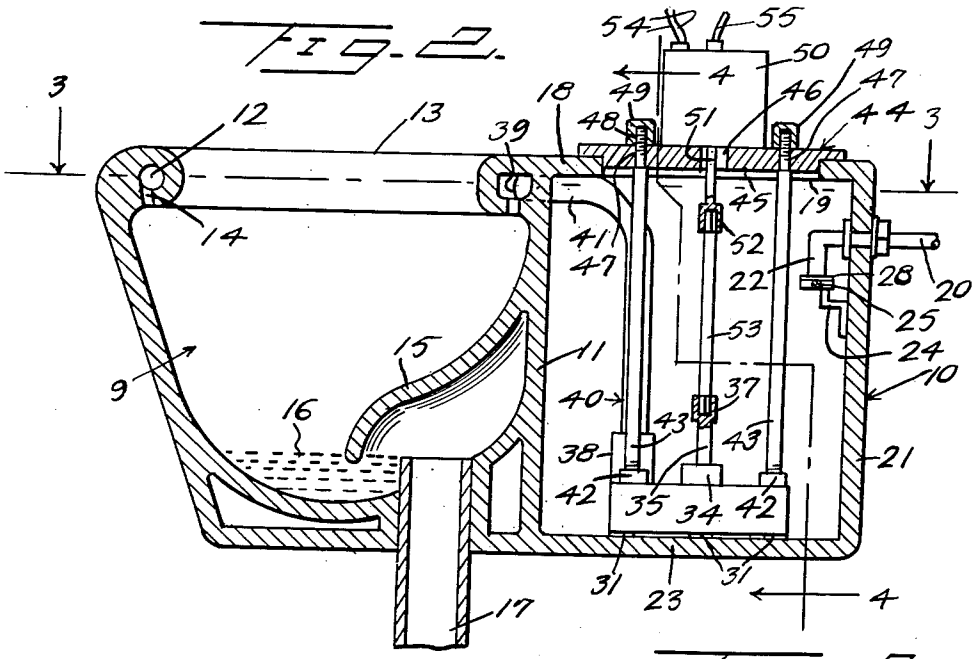
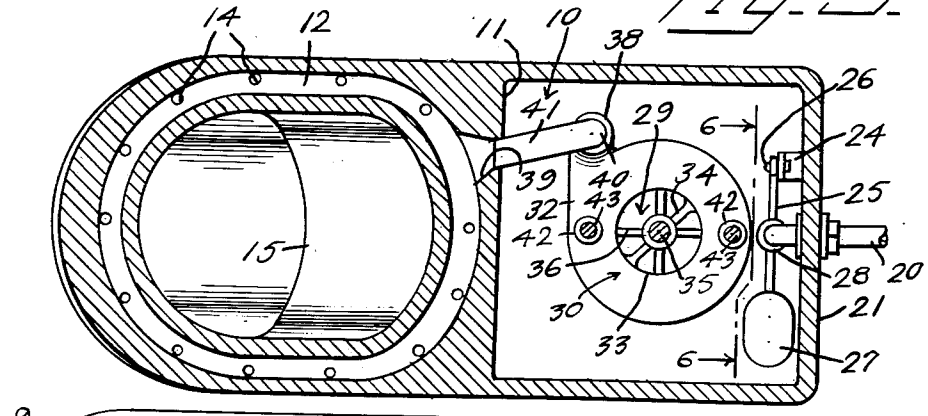


FIG. 3.



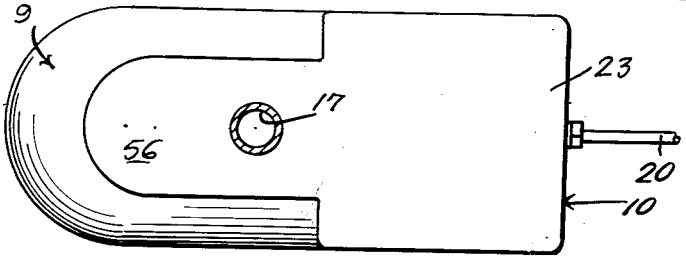


FIG. 5.

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WATER CLOSET

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5 Claims. (Cl. 4—13)

This invention relates to a novel construction of water closet or toilet, and has for one of its primary objects to provide a water closet wherein leakage of water will be reduced to a minimum.

Another object of the invenion is to provide a water closet which is so constructed that any desired amount of water can be supplied to the toilet bowl to effect a complete flushing thereof and wherein the water can be supplied with greater rapidity to the toilet bowl to minimize the time required to effect flushing of the toilet.

Another object of the invention is to provide a combination toilet bowl or commode and storage tank which is extremely compact and will occupy a minimum of space.

A further object of the invention is to provide a novel mechanism of extremely simple construction to effect the flushing of the toilet bowl and whereby a majority of the mechanism, normally found in conventional toilet bowl storage tanks can be eliminated, including those parts which frequently require replacement and which cause leakage due to wear.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, illustrating a presently preferred embodiment thereof, and wherein:

Figure 1 is a plan view of the improved water closet or toilet;

Figure 2 is a longitudinal vertical sectional view thereof, taken substantially along a plane as indicated by the line 2—2 of Figure 1;

Figure 3 is a horizontal sectional view taken through the upper portion of the water closet or toilet, substantially along a plane as indicated by the line 3—3 of Figure 2;

Figure 4 is a transverse vertical sectional view through the storage tank, taken substantially along the line 4—4 of Figure 2;

Figure 5 is a bottom plan view of the water closet or toilet, on a reduced scale, and

Figure 6 is a fragmentary transverse vertical sectional view, taken substantially along the line 6—6 of Figure 3.

Referring more specifically to the drawings, the water closet or toilet in its entirety is designated generally 8 and preferably comprises a hollow body which is elongated, having one end defining a toilet bowl 9 and an opposite end defining a water storage tank 10. A transverse partition wall 11 separates the toilet bowl 9 from the storage tank 10. The toilet bowl 9 is of conventional construction including an annular recessed portion forming a conduit 12 which is disposed immediately beneath the toilet bowl rim 13 and which is provided with a series of circumferentially spaced downwardly opening discharge ports 14, which discharge downwardly into the bowl 9. The bowl 9 has the usual apron 15 which extends downwardly to below the normal water level 16 of the toilet bowl, as seen in Figure 2, and a drain pipe 17 extends downwardly from the

toilet bowl behind the apron 15 and is adapted to be connected in a conventional manner to a sewer pipe, not shown.

The storage tank 10 has a top wall 18 provided with an opening 19. A water supply pipe 20 extends through one of the vertical walls 21 of the storage tank 10, beneath and adjacent the top wall 18, and has a downturned outlet end 22 which discharges downwardly into the tank 10, at a considerable height above the tank bottom 23. The conduit 20 leads from a conventional source of water supply under pressure for supplying water to the tank 10. Any suitable means may be provided for controlling the supply of water from the pipe 20 to the tank 10. As illustrated in Figures 3 and 6, a bracket 24 may be secured to the inner side of the tank wall 21 and one end of a rigid lever arm 25 is shown pivotally connected by a fastening 26 to the bracket 24 for mounting said arm for up and down swinging movement within the tank 10. A conventional float 27 is secured to the other free end of the arm 25 and a valve 28 of any conventional construction is carried by the intermediate portion of the arm 25 and is disposed to engage under and seal the discharge end 22 of the conduit 20 when the arm 25 is disposed in a raised position, as seen in Figures 2, 3 and 6.

A centrifugal type pump 29 includes a substantially circular or cylindrical casing 30 having pads or feet 31 secured to an underside thereof and which normally rest on the upper side of the tank bottom 23. A substantially flat top wall or side 32 of the pump casing 30 has a centrally disposed inlet opening 33 which is bridged by a spider 34 having a centrally disposed bearing portion in which is journaled a shaft 35. The lower end of the shaft 35 is fixed to the impeller 36 of the pump 29 which is rotatably mounted in the casing 30 and the upper end of said shaft 35 terminates in an upwardly opening noncircular socket 37, which is disposed a short distance above the pump casing 30. The pump casing 30 has an upturned outlet 38 forming a part of the periphery thereof. The wall 11, near its upper end, is provided with an opening 39 which extends therethrough and which connects the upper part of the storage tank 10 to a part of the conduit 12. Said opening 39, as best seen in Figure 3, is preferably flared toward the conduit 12. A conduit 40 has a lower end fitting snugly in the pump outlet 38 and a bent upper end 41 the terminal part of which fits snugly in the restricted end of the opening 39. The pump casing top wall 32 has at least two upwardly extending sockets 42 in which the lower ends of two rods 43 are secured.

A cover 44 rests upon the top wall 18 and has a restricted bottom portion 45 which fits snugly in the opening 19. The cover or closure 44 has a central opening 46 and two openings 47 which are spaced from and disposed on opposite sides of the opening 46. The rods 43 have restricted upper ends 48 which extend upwardly through said openings 47 and which are threaded to be engaged by cap nuts 49 which bear upon the closure 44, for attaching said closure to the pump 29 and for maintaining the closure in a closed position.

A conventional electric motor 50 is secured in any conventional manner to the upper side of the closure 44, between the nuts 49. The motor 50 has a downwardly extending drive shaft 51 which extends loosely through the opening 46 and which terminates in a downwardly opening noncircular socket 52. A shaft 53 extends between the sockets 37 and 52 and has noncircular ends fitting in said sockets for coupling the motor shaft 51 to the pump shaft 35 so that the pump impeller 36 will be driven by the motor shaft 51. The motor 50 is provided with conventional wiring 54 which

may be connected to any conventional electrical outlet, not shown, and said motor is also provided with a manually operable switch **55** for making and breaking an electric circuit thereto.

The water level within the tank **10** is normally maintained at approximately the level of the lower discharge end of the conduit portion **22**, so that the pump **29** is substantially submerged. To flush the bowl **9**, the switch **55** is manually moved to a circuit closing position so that the electric motor **50** will be energized for driving the shafts **51**, **53** and **35** to drive the pump impeller **36**. The pump casing **30** is maintained full of water so that when the impeller **36** is driven the water will be forced through the outlet **38** and conduit **40** into the bowl conduit **12** from which the water will be discharged downwardly through the apertures **14** into the bowl **9**. The combined capacity of the apertures **14** is sufficient so that a large amount of water will be rapidly supplied to the bowl **9** to effect a flushing thereof, after which the switch **55** is returned to a cricuit interrupting position. As soon as the pump **30** commences to operate and the supply of water in the tank **10** recedes or diminishes, the float **27** will swing downwardly together with the arm **25** and valve **28** for uncovering the discharge end of the water supply conduit **20** so that water can be supplied to the tank **10**. The water can be supplied to the tank **10** through the conduit **20** in sufficient quantities to maintain the pump **29** submerged, so that said pump can be operated as long as desired to effect a complete flushing of the bowl **9**. When the pump **29** ceases to operate, the tank **10** will be rapidly refilled sufficiently to lift the float **27** to a position so that the valve **28** will resume a closed position for shutting off the supply of water. Since the outlet of the tank **10** is substantially above the normal water level in said tank, there will be no leakage of water from the tank to the bowl **9** and water will be supplied to the bowl **9** only when the pump **29** is operated.

As best seen in Figure 5, the bowl **9** has a flat bottom **56** which is disposed coplanar with the flat bottom **23** of the tank **10**. The coplanar undersides of the bottoms **23** and **56** provide a surface of large area for engaging a supporting surface such as a floor so that the toilet **8** will have a stable support thereon without the necessity of utilizing fastenings for anchoring the toilet to a floor or other supporting surface.

Various modifications and changes are contemplated and may be resorted to, without departing from the function or scope of the invention as hereinafter defined by the appended claims.

I claim as my invention:

1. A water closet comprising a flush bowl, a storage tank, a transverse partition wall separating the storage tank from the flush bowl, means for supplying water to said storage tank, means automatically operated by the water level within the storage tank for controlling the supply of water through said first mentioned means to the tank, a pump disposed within the bottom portion of the tank having an inlet opening into the tank substantially below the normal water level thereof as maintained by said last mentioned means, said pump having an outlet, said partition wall having an opening connecting the bowl and tank and disposed above the water level of the tank as maintained by said last mentioned means, a conduit leading from the pump outlet and having a discharge end disposed in said partition opening, a manually controlled electric motor, means supporting said motor above the tank, and means contained within the tank forming a driving connection between said motor and the pump for acuating the pump to supply water under pressure to the bowl from said tank.

2. A water closet as in claim 1, said pump being of the centrifugal type including a casing having a top wall provided with an opening forming said inlet opening of the pump.

3. A water closet as in claim 1, said storage tank having a substantially flat top wall provided with an opening, said motor supporting means comprising a closure resting on and supported by said top wall and having a restricted bottom portion fitting snugly in the top wall opening.

4. A water closet as in claim 3, and means secured to said pump and detachably connected to said closure for forming a rigid connection between the pump and closure.

5. A water closet as in claim 4, said pump having an upwardly extending shaft terminating in an upwardly opening noncircular socket, said motor having a downwardly extending drive shaft projecting into the upper portion of said storage tank and terminating in a downwardly opening noncircular socket, and a shaft disposed between said sockets and having noncircular ends fitting nonrotatably therein, said shafts and sockets combining to form said means for connecting the motor to the pump.

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