Nov. 16, 1937. L. SERRA 2,099,631

SIPHON FLUSH TANK

Filed March 24, 1936

Fig. 1.

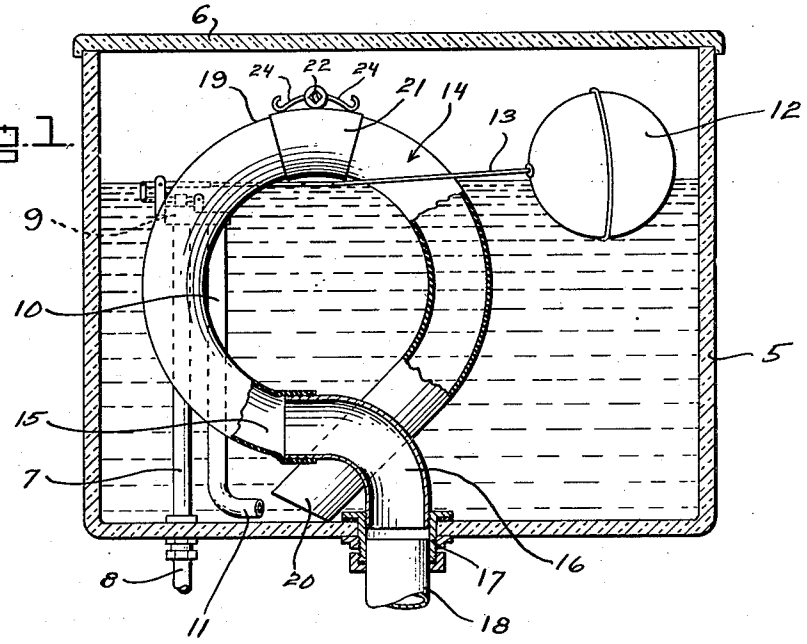


Fig. 2.

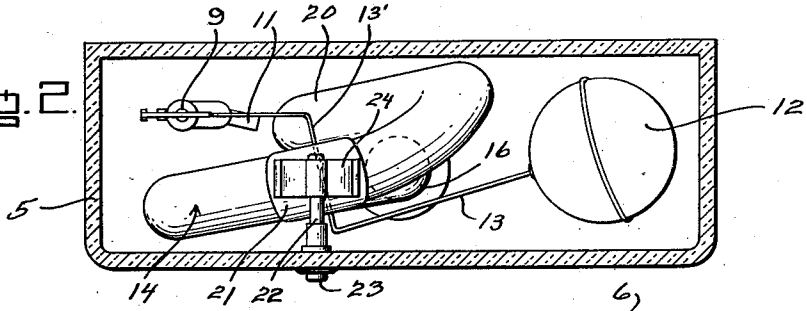


Fig. 3.

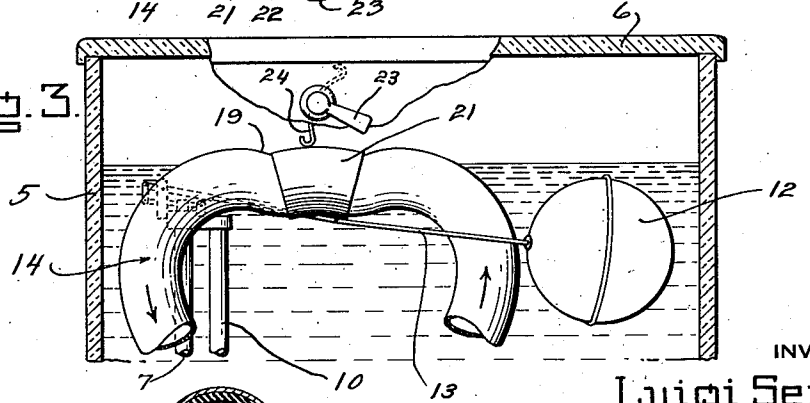
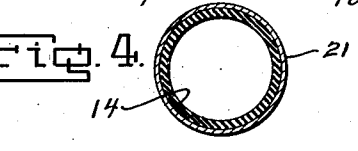


Fig. 4.



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SIPHON FLUSH TANK

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10 Claims. (Cl. 4—50)

The present invention relates to flush tanks of the siphonic outlet type and the primary object of the invention is to provide an improved and simplified means for siphoning the water from the tank.

A further object of the invention is to provide an improved siphon flush tank wherein the usual rubber ball valve at the flushing outlet, and also the usual overflow stand pipe are dispensed with.

A further object resides in the novel formation of the siphon member and the manner of starting the siphon thru raising the water above its normal level in the tank.

A further object is to provide a resilient siphon adapted to be immersed in the water for starting the siphon action.

A still further object resides in the arrangement whereby the siphon member and also the ball float are acted upon for raising the water level to start the siphon action.

A still further object resides in the novel arrangement of the jet starter for the siphon.

Other objects and advantages of the invention will be apparent from the following detailed description taken in connection with the accompanying drawing forming a part of this specification and in which drawing:—

Figure 1 is a vertical sectional view thru a flushing tank provided with the improved flushing means.

Figure 2 is a horizontal section thru the upper portion of the tank.

Figure 3 is a vertical section thru the upper portion of the tank and showing the parts in a position for starting the flushing action.

Figure 4 is an enlarged detail section thru the uppermost portion of the siphon.

Referring to the drawing in detail and wherein like reference characters designate corresponding parts thruout the several views, **5** designates a suitable tank of any preferred construction and provided with a cover or lid **6**. Extending upwardly into the tank adjacent one end thereof is a stand pipe **7** which connects with a supply pipe **8** at its lower end. Provided on the upper end of the stand pipe **7** is a supply valve **9** for controlling inlet of water to the tank **5**. The valve **9** has a downwardly directed outlet tube **10** which extends downwardly to a point closely adjacent the bottom of the tank and has its lower extremity bent at an angle as at **11**, providing the water inlet to the tank. The valve **9** is controlled by a float **12** connected by the rod **13** thru suitable linkage whereby the valve is closed when the float raises to a predetermined level in the tank.

Arranged in the tank **5** is a coiled siphon member **14** which is preferably made of rubber or some such resilient material preferably preshaped substantially into the form of a single coil as shown. The outlet end **15** of the ring-like siphon member is connected to an L-shaped outlet fitting **16** which in turn is connected thru the nipple coupling **17** with an outlet pipe **18**. The ring-like siphon member is disposed in a substantially vertical position in the tank with its intermediate or crown portion **19** extending slightly above the controlled water level in the tank. The intake end **20** of the siphon member is a straight tube portion and extends beside the fitting **16** into engagement with the bottom wall of the tank. The extremity of the intake end **20** is beveled as shown so that practically the entire contents of the tank will be siphoned. The outlet end of the tube **10** is directed toward the open intake end **20** whereby when the valve **9** is opened, a jet of water is directed into the open intake end of the siphon member.

Completely encircling the crown portion **19** of the siphon member is a metal ring or sleeve **21** which may or may not conform to the curvature of the siphon member. Suitably journaled in the front wall of the tank is a shaft **22** having attached to its outer end an operating handle **23**. Mounted upon the inner end of the shaft **22** is a double lever member having presser arms **24** which extend to opposite sides of the axis of the shaft and have curved ends adapted to engage the upper side of the sleeve **21** and force the sleeve downwardly when the handle **23** is swung in either direction. The metal sleeve **21** aside from preventing wear upon the rubber siphon member **14**, also prevents collapsing of the siphon member when pressed downwardly to start the siphon.

Referring once again to the float rod **13**, as shown in Figure 2, this rod has an offset **13'** intermediate its ends which extends thru the siphon member directly beneath the metal sleeve **21**. This offset **13'** is engaged by the sleeve **21** when the siphon member is pressed downwardly at the crown portion **19**.

In operation, when the tank is filled with water to a predetermined surface level as shown in Figure 1, the valve **9** is shut off by the float **12** and the uppermost or crown portion **19** of the siphon member is slightly above the water level. When desiring to empty the tank, the handle **23** is operated in either direction thus causing one of the

presser arms 24 to force the crown portion 19 of the siphon member downwardly so that a flow of water is established thru the siphon member as indicated in Figure 3. The handle may then be released and the siphoning will continue until the tank is emptied or practically so. As the siphoning is begun, the float 12 lowers and starts an inflow of water thru the tube 10 and this water is directed thru the end 11 into the intake end 20 of the siphon thus increasing the speed of flow thru the siphon. When the water level drops to a point below the intake end 20 and air is admitted, the siphoning action is broken and the tank again begins to fill with water. When the float 12 has raised sufficiently, the valve 9 is shut off by the rod 13.

As the upper portion of the siphon member is forced down into the water by the arm 24, the sleeve 21 engages the offset rod portion 13' and also forces the float 12 down into the water. This will cause the water level in the tank to be raised sufficiently to start the siphon action without any great amount of downward flexing of the siphon member. The water displaced by the downward movement of both the siphon member and the float will insure starting of the siphon action thru a slight movement of the handle 23 due to the quick rise in water level due to the lowering of both of the members 12 and 14 into the water.

From the foregoing, it will be seen that an improved and simplified form of siphonic outlet for flushing tanks has been provided embodying a novel siphon member of a resilient nature and adapted to have its crown portion pressed downwardly into the water for starting the siphon action and which action is also quickened thru lowering of the float.

Changes in detail may be made to the form of invention herein shown and described, without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. In a flushing tank, an open ended normally ring-like siphon member of resilient material, and means for flexing the siphon member inwardly intermediate its ends to establish siphonic flow thru the member.

2. In a flushing tank having an outlet opening in its bottom, a coiled siphon member of resilient material disposed vertically in the tank having an outlet end communicating with the outlet opening and an intake end adjacent the bottom of the tank, and operating means engaging the upper portion of the siphon member for flexing the upper portion of the member downwardly to start a siphon action.

3. In a flushing tank, a supply valve, a float for controlling the supply valve, an outlet fitting in the bottom of the tank, a normally ring-like resilient siphon member having one end connected with the outlet fitting and its other end extending to the bottom of the tank, means for flexing the siphon member downwardly at its upper portion, and means for causing the float to be moved downwardly as the siphon member is flexed.

4. In a flushing tank having an outlet fitting in its bottom and a supply valve, a resilient, normally ring-like siphon member having one end communicating with the outlet fitting and its other end opening into the bottom of the tank, a metal sleeve encircling the upper portion of the siphon member, a float, a float rod connecting the float and valve and extending thru the ring-like siphon member beneath said sleeve, and means engageable with the upper portion of the sleeve for flexing the upper portion of the siphon member downwardly and causing downward movement of the float thru engagement of the sleeve with said rod.

5. In a flushing tank having a supply valve, a coiled siphon member, a sleeve encircling the intermediate portion of the siphon member, presser means engageable with the sleeve for flexing the siphon member, a float, and a float rod connecting the float and valve, said rod extending thru the coiled siphon member immediately beneath said sleeve.

6. In a flushing tank, an L-shaped outlet fitting extending into the tank, a coiled resilient siphon member having one end secured to the fitting and its other end extending into close proximity with the bottom of the tank, a supply valve, a float for controlling the supply valve, and means for immersing the siphon member and float to raise the liquid level in the tank and start siphon action thru the siphon member.

7. In a flushing tank, a resilient ring-like siphon member having its intake end at the bottom of the tank, means for pressing the siphon member downwardly at its upper side, a float controlled supply valve for the tank, and an outlet tube for the valve and having its discharge end directed into the intake end of the siphon member.

8. In a flushing tank, a ring-like siphon member, a supply valve, a float for controlling the supply valve, and means for pressing the upper portion of the siphon member downwardly and causing downward movement of said float.

9. In a flushing tank, a supply valve, a float for controlling the supply valve, an outlet fitting in the bottom of the tank, a resilient siphon member having one end connected with the outlet fitting and its other end extending to the bottom of the tank, means for flexing the siphon member downwardly at its upper portion, and means for causing the float to be moved downwardly as the siphon member is flxed.

10. In a flushing tank, a resilient siphon member having its intake end at the bottom of the tank, means for pressing the siphon member downwardly at its upper side, a float controlled supply valve for the tank, and an outlet tube for the valve and having its discharge end directed into the intake end of the siphon member.

LUIGI SERRA.