

Feb. 4, 1958

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2,821,720

AUTOMATIC TANK FOR WASH CLOSETS, WATER DRAINS AND THE LIKE

Filed May 4, 1954

2 Sheets-Sheet 1

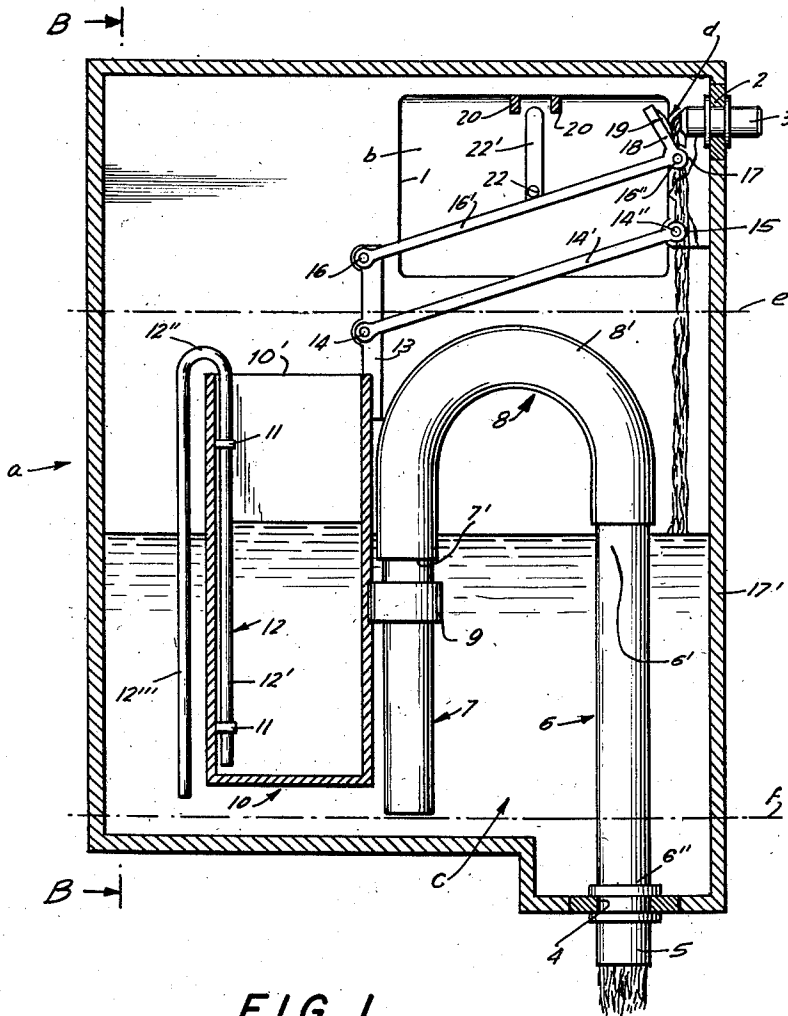


FIG. 1

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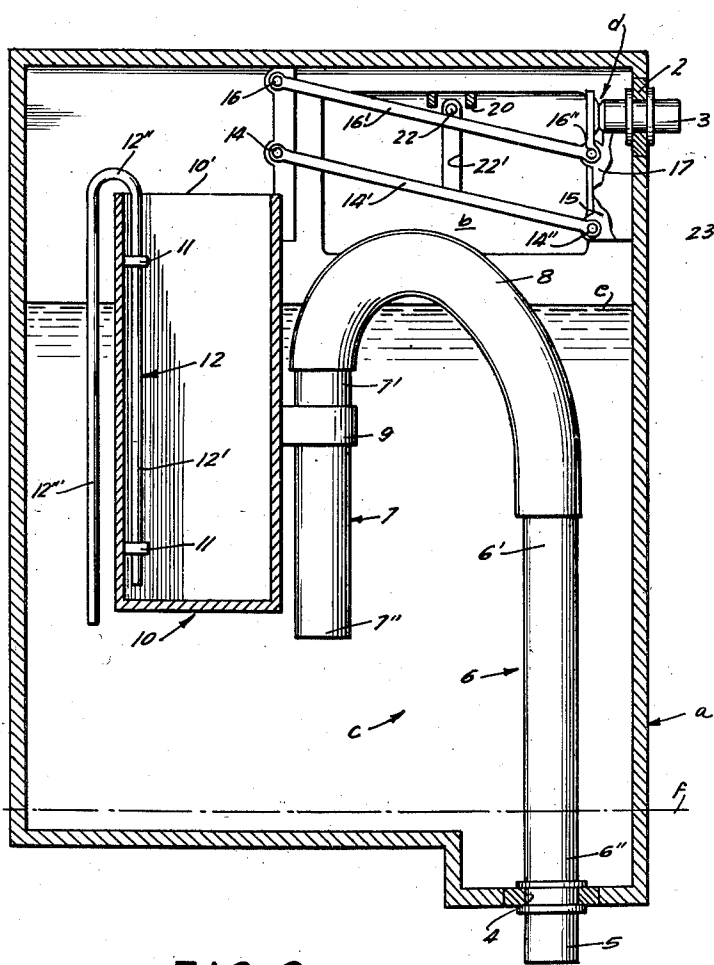


FIG. 2

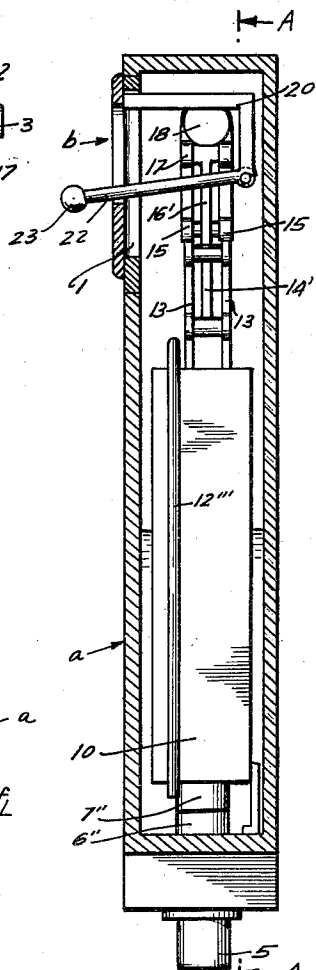


FIG. 3

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**AUTOMATIC TANK FOR WASH OUT CLOSETS,
WATER DRAINS AND THE LIKE****Tulio Humberto Antonio Cornalba, Buenos Aires,
Argentina****Application May 4, 1954, Serial No. 427,628****1 Claim. (Cl. 4—42)**

The present invention refers to improvements in tanks for flushing devices or the like, of the type which comprises a container for the operating liquid, provided with an inlet for the liquid, with a valve duct driven by a floating member or the like, and a corresponding outlet opening for the liquid; and the invention has for its object to provide a new construction for such devices whose operation is practical and presents many advantages for the user.

Through the realization of the present invention all leakages of the liquid from the tank is prevented because the said realization is free of outlet valves, and at the same time, due to the lack of such valves, the troubles resulting from the replacing, repairs, etc., that the ordinary tanks require are avoided.

It is another object of the invention to provide certain realizations in which the float which operates the inlet valve for the liquid within the said container serves also to hold the discharging mechanism in operation position.

Therefore, through the present invention not only are prevented the risks of the liquid leaking and the troubles caused when the valve mechanisms which drive the discharge of the tank get out of order, but also the advantage is obtained that the mechanism proper of the invention, intended to drive and carry out said discharge, can substitute, advantageously, the otherwise required floater connected with a rod, that at present drives the valve that controls the admission of the liquid.

The invention consists in a discharge opening for the liquid of the tank connected with a siphon arranged within the tank; the siphon is provided with at least two members capable of moving relative to each other, one of said members being movable and is attached to a float; the embodiment being provided with driving means capable of determining, through driving caused by the user, the suitable displacement of the float and the parts secured to it, so as to cause the initial loading of the siphon, the float being provided with means apt for draining the liquid, circumstantially entered therein, at the right moment.

It is also another object of the invention to provide a simple realization and an easy mounting that do not offer either mechanical or constructive complications.

Another object of the present invention is to provide a solid tank, durable and of low cost.

The other objects of the present invention will be made clear in the following description of the construction and operation of some of the realizations, all of which, as non limitative examples, is hereby disclosed with reference to the accompanying drawings.

In the accompanying drawings:

Fig. 1 is the view in elevation of a vertical section taken on line A—A of Fig. 3, showing a realization of the present invention, the figure showing the relative arrangement of the parts constituting the said realization, which is illustrated in its operative phase of discharge of the operating liquid contained in the formerly said container that gives shape to the embodiment;

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Fig. 2 is the view in elevation of the same arrangement shown in Fig. 1, but showing it in its operative phase of retention of the operating liquid contained in the said container that gives shape to the arrangement; and

Fig. 3 is the view in elevation of a section passing along line B—B of Fig. 1 and showing the same arrangement shown in Fig. 1.

The realization of the invention shown in Figs. 1, 2 and 3 comprises: a tank *a* of a shape common for flush tanks, provided with an inspection or access opening 1 that may be sealed with the removable lid *b*, the opening 1 being, besides, of a size capable of allowing for the introduction of the constitutive elements of siphon *c* and its embodying parts.

At the upper portion of the container *a* and in a side wall thereof, there is provided an opening 2 that is traversed by the feeding duct 3 for the liquid intended to fill tank *a* as will hereinafter be explained. Besides, to an orifice 4 provided at the bottom of container *a*, there is secured with tight contact the tube 6, made preferably of metal, in whose lower end 6" is screwed nozzle 5 which, at the same time, serves as a securing means for tube 6, provides an extension for the connection of the drawing tube that must be in communication with the overflow of the water toilet, for leading the discharge water towards the bowl thereof.

At the upper end 6' of tube 6 there is tightly secured an end of a flexible tube 8 whose other end is connected to the end 7' of another substantially rigid tube 7, which, together with ducts 6 and 8 forms siphon *c*.

As clearly shown in Fig. 1, the said tube 8 is conveniently bent for forming the vertex portion 8' of siphon *c*, and besides, tubes 6 and 7 are arranged in substantially vertical form. Due to the presence of flexible tube 8, the ascending limb 7 of siphon *c*, is movable relative to the descending limb 6 securely joined to container *a*.

By means of support 9 rigidly connected to portion 7, there is secured to it a container 10 which is capable of moving, jointly, with limb 7, without contacting the side walls of container *a* wherein the arrangement is lodged. The said receptacle 10 is provided with an auxiliary siphon 12, for the discharge of liquid from the same, and the siphon 12 held by supports 11 to the said container 10.

In the projections 13 extending upwardly from one of the side walls of container 10 there are hinged in joints 14 and 16, corresponding rods 14' and 16', parallel to each other, whose inherent free ends 14" and 16" are respectively hinged in the vertically aligned supports 15 and 17 secured to a side wall 17' of container *a*. Therefore, connecting rods 14' and 16' can guide elements 7 and 10 for motion in a vertical plane.

Besides, rod 16' carries at its end 16" a side projection or extension 18 capable of pushing the stop valve 19, for the purpose of providing the sealing of the passage *d*, that the already mentioned feeding duct 3 possesses, and the sealing takes place when rod 16' has moved to the position shown in Fig. 2.

On the other hand, lid *b* is provided with a support 20 which extends towards the inside of container *a* in a direction substantially normal to the plane in which connecting rods 16' and 14' can move, and a lever 22, passing through the vertical opening 22' provided in lid *b*, ends in a button or handle 23 is hinged on this support.

Lever 22 is intended to serve as a driving means for operating the mechanism for the discharge of the tank, being in contact with connecting rod 16', as shown in Fig. 1 and serving as pushing means to depress it.

As shown in Fig. 2, when the water entering within tank through passage *d* has reached a predetermined level *e*, the empty container 10 acts as a float and keeps

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elevated the upper portion 8' of the flexible portion 8, above the said level, thus preventing the discharge of the liquid through the descending limb 6 of siphon c.

Simultaneously, passage *d* has remained sealed by stopper 19, carried to its advanced position by extension 18, and lever 22 has remained elevated, maintained by rod 16'. The auxiliary siphon 12 keeps its vertex portion 12'' raised relative to level *e*, in coincidence with the raised position or ascended operative position of container 10, and the mouth 10' of the said container is also raised above said level *e*. In such conditions, the liquid that has entered within tank *a* remains perfectly retained inside it.

When the user exerts on lever 22 an action that will determine its lowering, the lever pushes down rod 16' which, turning around hinge 16'', provides for the lowering displacement of limb 7 of siphon *c* and of the members connected to it, i. e. container 10 with its siphon 12 and the end of tube 8 connected with the upper end 7' of limb 7, with the corresponding deformation of flexible tube 8, carrying the embodiment to the position shown in Fig. 1. Therefore, the mouth 10' of the container 10 moves below level *e*, thus causing the liquid to flow inside the said container, annulling the floatability of container 10.

Simultaneously tube 8 remains wholly immersed and thereby is caused the pre-charging of the siphon *c*, a fact that determines the evacuation of the liquid contained in tank *a* until the liquid is practically even with the lower end 7'' of portion 7, i. e. to level *f*. Naturally, the draining takes place through the descending limb 6 of siphon *c*.

When container 10 goes down to immersion below level *e*, the ascending limb 12', the vertex portion 12'' and the descending limb 12''' of siphon 12 remain completely full, and when the level of the liquid within the tank *a* descends, there takes place a siphon action that leaves container 10 practically empty, when the operating liquid within the container *a* reaches level *f*.

On the other hand, when rod 16' descends in the manner already explained, extension 18 moves stopper 19 to its rear position, passage *d* is opened and allows the entrance of the liquid that will again fill tank *a*; but as this entrance is carried out according to a stream of liquid of volume substantially lower than the volume with which the water drains through siphon *c*, the refilling of tank *a* starts to take place when the operating liquid reaches the lower level *f* and the siphon action stops.

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Once the refilling of tank *a* has started there is produced, as the level within it rises, the elevation by floatability, of tank 10 which is now empty, with the resulting return to the initial position of the arrangement, i. e. as shown in Fig. 1.

The invention is not limited to the preferred realization described, as the same may adopt modifications and amendments in their constitutive parts, that will keep within the scope and sphere of the invention as set forth in the annexed claim.

I claim:

In a flushing device, in combination, a tank adapted to hold a liquid and having a top portion; inlet means communicating with said tank adjacent the top portion thereof for supplying liquid thereto; a first siphon mechanism within said tank for discharging liquid therefrom and having a tubular member movable from a first non-discharging position to a second liquid discharging position; a float in said tank having an open top end and a bottom wall and fixedly connected to said tubular member; operating means carried by said tank and connected to said float for lowering the same so that a liquid in said tank may float through said open top end into said float to prevent the same from floating on the liquid, whereby when said float is lowered said tubular member is moved from said first position to said second position; valve means carried by said operating means and operatively connected to said float and being in a first inlet-closing position when said movable member is in its first position and being in a second inlet-opening position when said movable member is in said second discharging position; and a second siphon mechanism carried by said float and leading from a location within said float and near the bottom wall thereof over said open top end to the outside of said float to a location below said bottom wall for automatically discharging liquid in the float from the interior thereof into said tank as liquid in said tank is discharged therefrom by said first siphon mechanism.

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