

E. P. STARY.
 AUTOMATIC FLUSHING TANK OR RESERVOIR.
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1,166,556.

Patented Jan. 4, 1916.

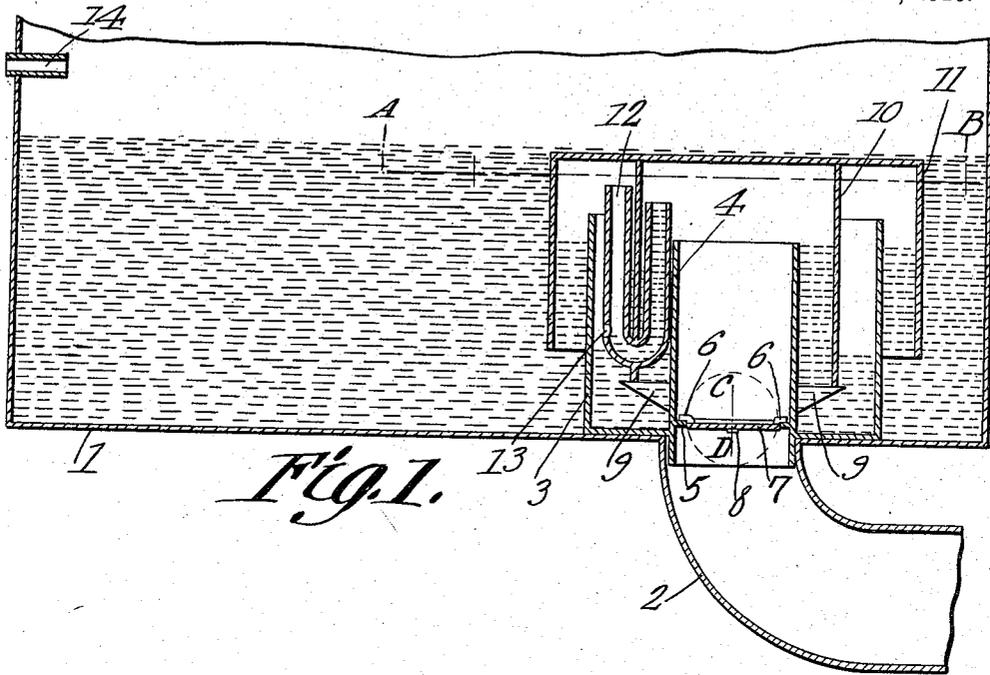


Fig. 1.

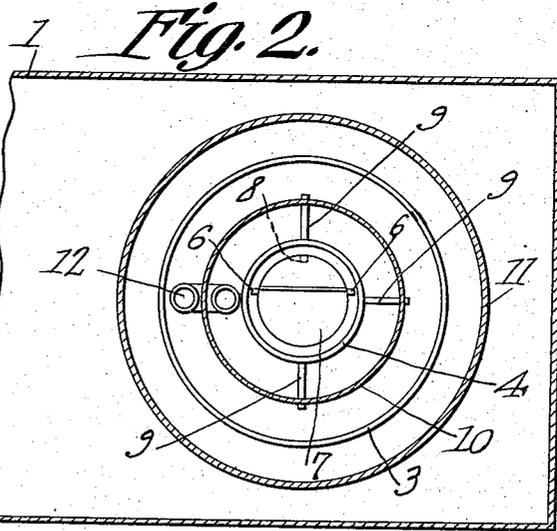


Fig. 2.

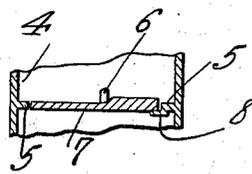


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

EMIL P. STARY, OF CEDAR RAPIDS, IOWA.

AUTOMATIC FLUSHING TANK OR RESERVOIR.

1,166,556.

Specification of Letters Patent.

Patented Jan. 4, 1916.

Application filed May 19, 1914. Serial No. 839,554.

To all whom it may concern:

Be it known that I, EMIL P. STARY, a citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have invented a new and useful Automatic Flushing Tank or Reservoir, of which the following is a specification.

This invention relates to automatic flushing tanks or reservoirs of that type utilizing siphons for withdrawing water from the container when a predetermined quantity has been discharged into the container. Heretofore siphons of this type have allowed a considerable loss of liquid before siphonic action has begun, this loss being due to the time required for the liquid, which is rushing through the siphon, to attain a sufficient velocity to choke or fill the long leg of the siphon, which action is absolutely necessary before siphonage will begin.

One of the objects of the present invention is to provide means whereby choking of the long leg of the siphon is insured without the loss of liquid until said long leg has been filled, whereupon the weight of the liquid will cause the choking means to shift and permit siphonage to take place.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a vertical section through a tank or reservoir and showing the present improvements combined therewith. Fig. 2 is a section on line A—B Fig. 1. Fig. 3 is an enlarged section through the choking element on the line C—D Fig. 1.

Referring to the figures by characters of reference 1 designates a tank or reservoir of any desired proportions and provided with an outflow pipe 2 extending from the bottom thereof to the sewer or other structure to be flushed. Mounted upon the bottom of the tank 1 is a container 3 prefer-

ably cylindrical and extending through the bottom of this container and concentric therewith is a discharge pipe 4 constituting the long leg of the siphon, this pipe being extended downwardly into the outflow pipe 2 and being formed preferably integral with the bottom of the container 3. A continuous flange 5 is formed within the pipe 4 near the bottom thereof and mounted on this flange are alining trunnions 6 extending in opposite directions from a circular disk-like valve 7. These trunnions support the valve off center but the small segment of the valve at one side of the axis of rotation of said valve is weighted in any suitable manner so as to overbalance the larger segment of the valve, there being a stop for supporting this weighted portion of the valve and holding the valve normally horizontal or closed position.

Webs 9 radiate from the pipe 4 and support the inner bell 10 of the siphon, this inner bell being within and concentric with an outer bell 11. Bell 10 extends downwardly into the container 3 while bell 11 surrounds the container; the lower edge of the outer bell 11 being in a plane above that occupied by the lower edge of the inner bell 10. A U-shaped air pipe 12 extends upwardly along the outer side of the bell 10 and upwardly along the inner side thereof, the outer leg of this U-shaped air pipe being extended above the container 3 while the inner leg of said pipe likewise extends above the plane occupied by the upper edge of the container 3 but terminates below the upper end of the outer leg of the pipe. A vent opening 13 is formed in the lower portion of the outer leg of the pipe 12. A water supply pipe 14 discharges into the tank or reservoir 1. Liquid is supplied to the tank or reservoir 1 in any desired volume and when the rising liquid in the tank reaches the mouth or lower end of the bell 11, which constitutes the short leg of the siphon, the air within the siphon becomes inclosed. The continued rise of the liquid within the tank 1 compresses the air confined within the siphon and this compression gradually forces the liquid from the container 3. When the liquid within the container 3 has been forced below the opening 13 in the air pipe 12, the further supply of liquid to the air pipe ceases and the remaining liquid within the air pipe 12 is forced around the bend in said air pipe, thus allowing the confined

air within the siphon to escape through the pipe 4 which constitutes the long leg of the siphon. As soon as the air thus escapes the liquid from the tank 1 rushes through the bell 11 into container 3 and thence into the pipe 4 where it drops onto the closed valve 7 until the said pipe 4 is completely filled whereupon the pressure upon the large segment of the valve will cause said valve to open by turning on its bearings, thereby allowing the liquid to rush into the pipe 2 and start siphonic action instantly without the waste of liquid. This action results in drawing the liquid from the tank until it drops to a level with the bottom of the bell 11 whereupon air enters the siphon, breaking the siphonage and leaving the siphon filled with air and the container 3 filled with liquid for the next operation. As the liquid again rises in the tank or reservoir 1, the operation is repeated.

What is claimed is:—

The combination with a tank or reservoir of relatively small capacity having an outlet pipe of large capacity extending from the bottom thereof, of a container, a discharge pipe extending through the bottom of the container and of relatively large capacity,

said discharge pipe opening into the outlet pipe to form the long leg of a siphon, inner and outer bells, the said container being extended upwardly between the bells, an air pipe extending downwardly along the outer side of the inner bell and upwardly along the inner side of said bell, supports radiating from the lower portion of the discharge pipe and above and close to the bottom of the container, the inner bell being mounted on said supports, a disk pivotally mounted within the discharge pipe substantially in the same plane with the bottom of the container, one side portion of said disk being weighted, and means for supporting the weighted portion of the disk to limit its downward movement, said disk being normally in position to choke the discharge pipe but being adapted to open automatically when subjected to a predetermined weight of liquid.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

EMIL P. STARY.

Witnesses:

FRANK STARY,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."