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F. H. LINDENBERG & C. B. DELANY.
FLUSH TANK.

APPLICATION FILED AUG. 28, 1905.

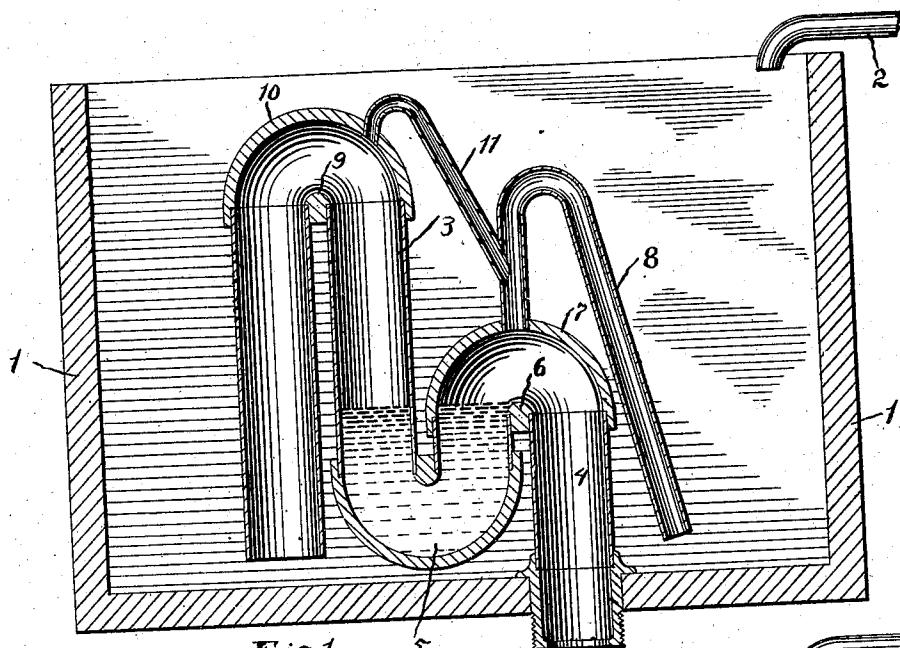


Fig. 1.

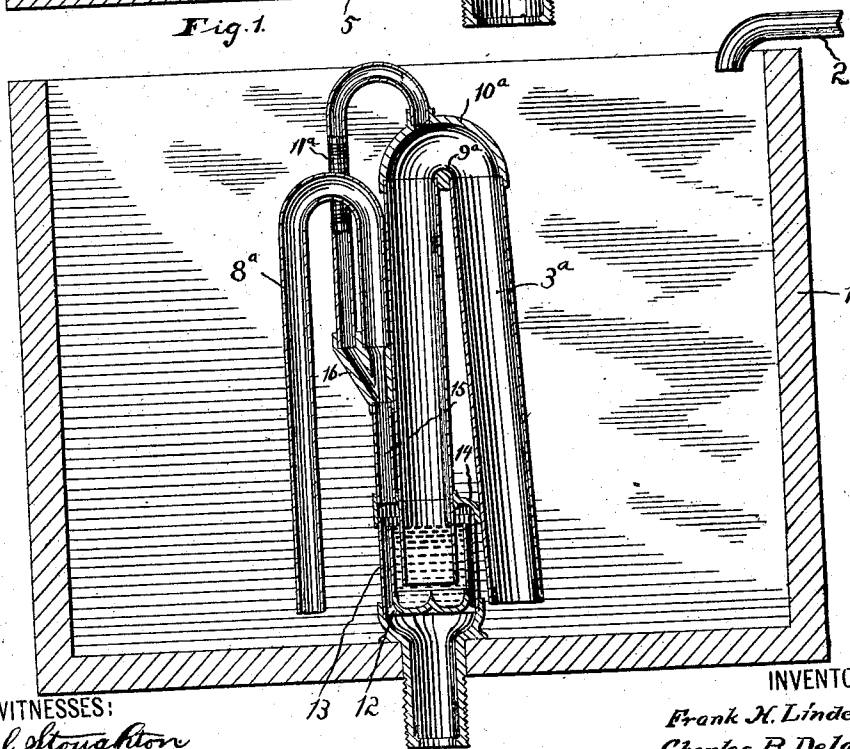


Fig. 2.

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FLUSH-TANK.

No. 853,705.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, FRANK H. LINDENBERG and CHARLES B. DELANY, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Flush-Tanks, of which the following is a specification.

This invention relates to new and useful improvements in siphons for flush tanks.

The object of the invention is to provide means for relieving the air pressure at the top of the high siphon of an ordinary double siphon so as to permit the water to go over in a volume, break the seal in the siphon and flush with a greater force with a less quantity of water than is ordinarily used.

It is also an object to provide a flushing tank of the intermittent automatic type in which there are no movable flushing parts.

Finally the object of the invention is to provide a device of the character described that will be strong, durable and efficient, simple and inexpensive to construct and one in which the several parts will not be liable to get out of working order.

With the above and other objects in view, the invention consists of the novel details of construction and operation, a preferable embodiment of which is described in the specification and illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical sectional view of a tank, showing the siphons in vertical section and the water trap sealed, and, Fig. 2 is a similar view showing a modified form of siphons.

In the drawings, the numeral 1 designates the tank which is supplied with water by a suitable pipe 2 projecting over the upper edge thereof.

The form shown in Fig. 1, comprises a continuous double siphon composed of a high siphon 3 and a low siphon 4, with a water trap 5 forming the connection between the siphons. The trap 5 is normally closed by a water seal having its high line on a level with the overflow point 6 of the head 7 of the low siphon 4. The low siphon 4 is passed through the bottom of the tank and supported in the usual manner. The auxiliary siphon comprises a vertical siphon tube 8 of considerable less diameter than the double

siphons and having its inlet end terminating in close proximity to the bottom of the tank. The siphon tube 8 has its overflow point below the overflow point 9 of the head 10 of the high siphon and has its downturned end entering the head 7 of the low siphon directly over the overflow point 6. A small branch air tube 11 extends from the downturned portion of the tube 8 to the head 10 and enters the same over the outlet leg of the high siphon.

In the ordinary double siphon which is not provided with an auxiliary siphon, or air tube the water gradually rising in the tank, enters the inlet leg of the high siphon, forces the confined air above it and finally compresses the same in the outlet leg of the siphon on top of the water seal. When the level of the water reaches the overflow point 9, the confined air exerts a back pressure so that the water instead of going over the point 9 in a volume, trickles over until a sufficient quantity has passed to break the water seal, which is then forced over the overflow point 6 of the low siphon and discharged from the tank. The confined air, however, must be forced from the siphons before the water in the tank will flush in a volume. It is also necessary that considerable pressure be exerted in order to force the air from the siphons, as well as to carry the water over the overflow points. This requires that a greater supply of water be introduced and kept flowing into the tank from the supply pipe 2. Another objection is that the air being gradually forced down the outlet leg of the high siphon, presses on the body of water constituting the seal of the tube 5 and causes the same to trickle over the overflow point 6, thus producing a waste. By the application of the auxiliary siphon and air tube herein described, as the water rises in the tank, it also rises in the high siphon 3 and in the tube 8 of the auxiliary siphon. The overflow point of the auxiliary siphon being lower than the point 9 of the high siphon, the water passes down the downturned end into the head 7. This downward flow of the water in the tube 8, creates a vacuum or suction in the tube 11, which draws the air out of the high siphon, thus relieving the pressure and allowing the water to go over the overflow point 9 in a

volume. The water going over the point 9 in a volume, easily breaks the seal and starts the flushing and siphon in action, a considerable less pressure being required in the tank and thus a smaller quantity of water required to be introduced by the supply pipe 2. The water entering through the auxiliary siphon 8 and falling into the head 7 directly over the overflow point 6, is divided so as to flow on each side thereof, part escaping through the outlet leg of the low siphon and the other falling into the trap so that should the water seal not be on a level with the overflow point, its level will be brought up to the high line. By relieving the air pressure in the high siphon, the pressure is of course relieved on the water seal and the water is prevented from trickling over the overflow point 6 and wasting out of the low siphon.

When the siphon is first installed, the trap is filled to form the water seal, and is maintained at its proper height by the water entering through the auxiliary tube 8.

In Fig. 2, we have shown a modified and more compact form. A high siphon 3^a similar to the siphon 3 is provided and has its discharge end projecting into a cup or trap 12 which is normally filled with water to form a seal. The cup is surrounded by a sleeve 13 provided with a cover 14, which supports the high siphon. A short vertical tube 15 extends upward from the cover 14 so as to stand directly over the edge of the cup 12; thus water introduced through the tube will fall partially on the outside of the cup and partially on the inside, thereby maintaining the water seal in the cup. The tube 15 supports a bi-ported coupling 16. An auxiliary siphon tube 8^a similar to the siphon tube 8, has its downturned end connected to one of the ports of the coupling, while a branch air tube 11^a has its lower end connected to the other port of the coupling and its opposite end entering the head 10^a of the high siphon over the outlet neck. The overflow point 9^a of the high siphon is arranged above the overflow point of the auxiliary siphon, the same as in the form shown in Fig. 1. It is to be observed that the high or overflow point of the branch tube 11^a is considerably higher than the head 10^a. This prevents the water entering the branch tube when the high siphon is flushed until all air is first removed.

The operation of this form is similar to that of the form shown in Fig. 1, the water rising equally in the inlet leg of the high siphon 3^a and of the auxiliary siphon 8^a, the water first overflowing in the siphon 8^a and passing down through the coupling 16, creates a suction which draws the air from the head 10^a through the branch tube 11^a, the water falling down through the tube 15 into the collar 13 and out through the lower portion of the high siphon in the usual manner. The water in the high siphon upon reaching the overflow point 9^a being free from back air pressure, flows over in a volume and passes down, breaking the water seal in the cup 12 and flushing with great force in a body.

It is to be observed that the principle is the same in both forms. The principal feature of the invention resides in the provision of auxiliary siphons for relieving the air pressure in the high siphon.

Having now fully described our invention, what we claim and desire to secure by Letters Patent is,

1. In a device of the character described, the combination with a tank, of a main siphon, a pocket adapted to form a water seal located at the base of one of the legs of said siphon, an outlet pipe leading from said pocket, and an auxiliary siphon, one of the legs of which is in communication with the tank and the other leg of which is arranged to discharge partly into said pocket and partly into the discharge pipe and an air tube connecting the outlet leg of the auxiliary siphon with the top of the main siphon.

2. The combination with a tank, of a high siphon and a low siphon which are in communication with each other, a water seal located at the juncture of said siphons, an auxiliary siphon, one of the legs of which is in communication with the tank and the other leg of which discharges partly into said water seal and partly into the leg of the low siphon, and a pipe which is in communication with the high siphon and with the discharge leg of the auxiliary siphon.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK H. LINDENBERG.
CHARLES B. DELANY.

Witnesses:

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