(No Model.)

J. J. POWERS.

DISINFECTING AND AUTOMATIC FLUSH TANK.

No. 243,970. Patented July 5, 1881.

Fig. 1.

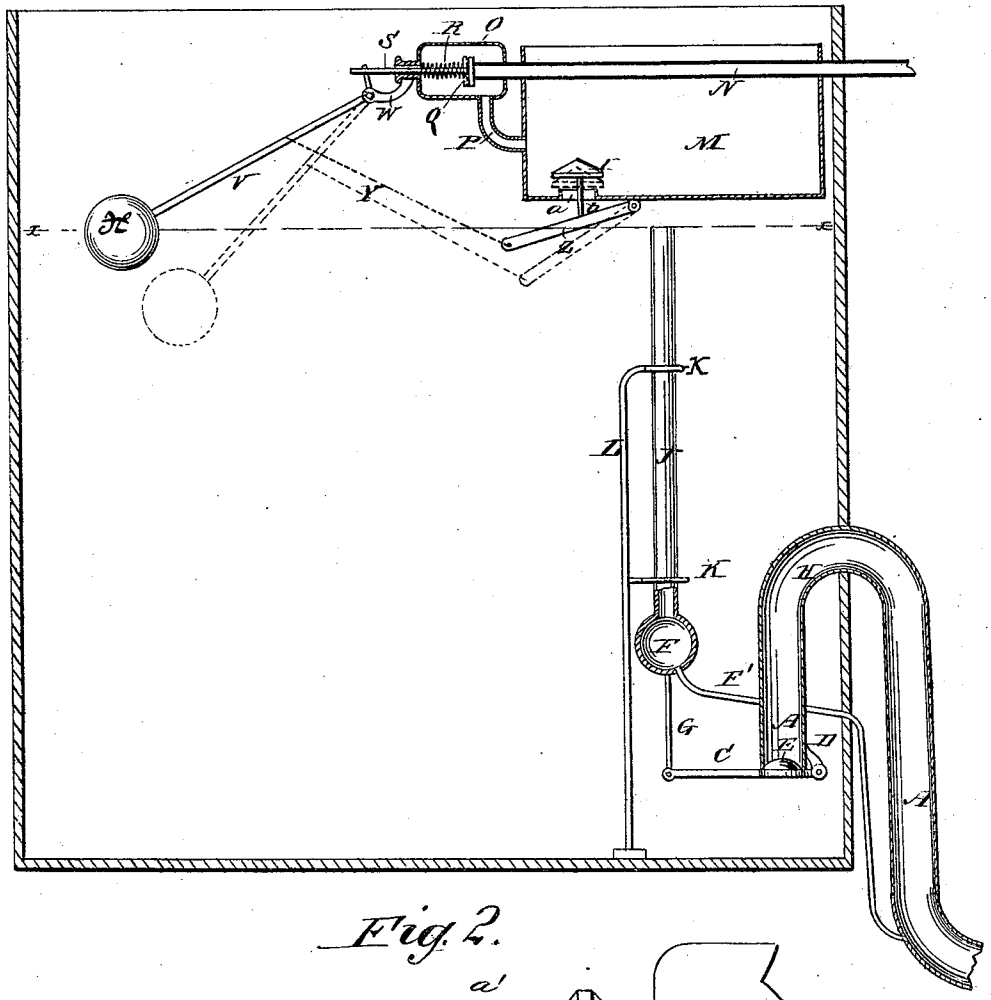
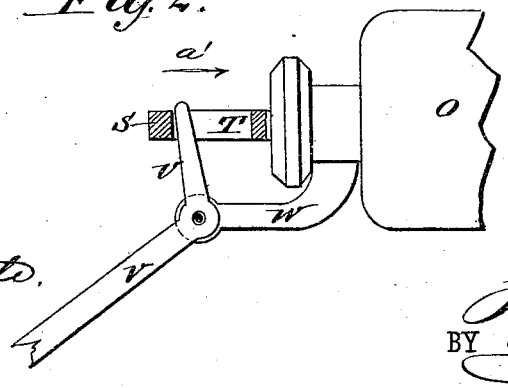


Fig. 2.



WITNESSES:

F. McArdle.

C. Sedgwick

INVENTOR:

J. J. Powers

BY Munn & Co

ATTORNEYS.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JAMES J. POWERS, OF BROOKLYN, NEW YORK.

DISINFECTING AND AUTOMATIC FLUSH-TANK.

SPECIFICATION forming part of Letters Patent No. 243,970, dated July 5, 1881.

Application filed April 8, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. POWERS, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Disinfecting and Automatic Flush-Tank, of which the following is a full, clear, and exact description.

The object of my invention is to facilitate collecting and disinfecting liquid sewage and removing it after disinfection.

The invention relates to a tank arranged at or below the end of a sewer, or of any conduit through which a liquid is passed. The foul liquid may be pumped, or flow, or be conducted in any suitable manner to the tank.

The invention consists in a tank provided with a siphon, the inner end of which is closed by a valve on a pivoted lever, to the outer end of which a float with a vertical tubular extension is attached, whereby the float will be raised as the level of the water rises, thus closing the siphon; but when the water-level has reached the upper edge of the tubular extension of the float the water will flow into the float, causing it to descend, thereby opening the siphon and permitting the water to flow from the tank, the water in the float flowing off through a small flexible tube.

The invention further consists in a tank for the liquid disinfectant, which tank is provided with a spring-valve combined with a float, so that when the float rises the supply-pipe of this disinfectant-tank will be closed by the spring-valve, and a moment later a weighted valve closing a port in the bottom of the disinfectant-tank will be opened by a lever connected with the lever of the float, thus permitting the disinfectant to flow through this port into and mix with the sewage-liquid, thereby disinfecting the same.

In the accompanying drawings, Figure 1 is a cross-sectional elevation of my improved disinfecting and automatic flush-tank. Fig. 2 is a detail side elevation of the front end of the spring-valve of the tank containing the disinfectant.

A siphon-tube, A, enters into the lower part of the tank B, the inner end of this siphon being a short distance above the bottom of the tank. A lever, C, is pivoted to a short arm, D, of the end of the siphon-tube, and on the upper edge of this lever C a block, E, of rubber, wood, metal, earthenware, &c., is fastened in such a manner that it fits in and over the end of the siphon-tube, thus closing it when the lever C is raised. The outer end of the lever C is connected with a float, F, by a rod, G, of such length that the float will be below the curve H of the siphon-tube, so that the float will be raised before the level of the water rises high enough to permit the siphon to operate. This float F is provided with a vertical tubular extension, J, of such length that its upper edge is on a level with the height to which the tank B is to be filled before being discharged. This extension-tube J is guided by the rings K of an upright, L. The float F is connected with the outer arm of the siphon-tube A by a flexible tube, F′.

A vessel or tank, M, for the liquid disinfectant, is arranged in the upper part of the tank B, and is connected with the disinfectant-reservoir by a pipe, N, which passes through it and into a valve-casing, O, connected with the vessel M by a pipe, P, and containing a valve, Q, fitting against the end of the pipe N, and pressed against the same by a spiral spring, R, surrounding the valve-stem S, which is provided at the outer end with a longitudinal slot, T, into which a cam, U, of a lever, V, passes, pivoted to an arm, W, of the casing O.

A float, X, is attached to the outer end of the lever V, and this lever V is connected by a chain or cord, Y, with a lever, Z, pivoted to the bottom of the vessel M. A weighted block or valve, I, closes a port, *a*, in the bottom of the vessel M, and is provided with a stud, *b*, projecting through the port *a*. The lever V is of such length that the float X will rise about six inches before the level of the water rises to the line *x x*, so that the disinfectant will be thoroughly mixed with the liquid sewage before the same is discharged.

The operation is as follows: The liquid sewage is conducted into the tank B in some suitable manner, and as its level rises it raises the float F, thereby closing the inner end of the siphon-tube A. When the level of the liquid arrives within about six inches from the line *x x* it raises the float X, causing the cam U to move in the direction of the arrow *a′* in the slot T, Fig. 2, thus permitting the spring R to force

the valve Q against the end of the pipe N, and thus shutting off the supply of disinfecting-liquid from the disinfectant-reservoir. The float still rises, and as it raises the end of the lever Z by means of the chain Y this lever strikes the stud *b* and raises the valve I, permitting the disinfecting-liquid in the vessel M to flow from the same and mix with the sewage-liquid, thereby disinfecting the latter; but by this time the level of the sewage-liquid has reached the line *x x*, and flows down the tubular extension J into the float F, causing the same to descend, whereby the inner end of the siphon-tube A is opened, permitting the sewage-liquid to flow off through the siphon-tube. The sewage-liquid in the float F then flows off through the flexible tube F′, leading into the outer part of the siphon-tube A, thus restoring the buoyancy of the float. As soon as the level of the sewage-liquid descends the float X and the lever Z descend also, whereby the valve I descends, closing the aperture or port *a*, and the cam U moves in the reverse direction of the arrow *a′*, thus opening the end of the pipe N, and permitting disinfecting-fluid to flow from the reservoir, through the pipe N, casing O, and pipe P, into the vessel M. As the end of the pipe N is closed before the valve I is raised, the quantity of disinfecting-fluid in the vessel M only will flow into the tank B, and all waste of the disinfecting-fluid is avoided.

The length of the inner arm of the siphon-tube is entirely independent of the height of the tank, or of the height of the level to which the liquid sewage rises, and the inner arm of the siphon can thus be made much shorter than in the siphon made heretofore.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a sewage-liquid-collecting tank, of a disinfectant-vessel and automatically-operating devices, substantially as described, for discharging the contents of this disinfectant-vessel into the tank, substantially as herein shown and described, and for the purpose set forth.

2. The combination, with a sewage-liquid-collecting tank, of a discharge-siphon, of a disinfectant-vessel, and of automatically-operating devices, substantially as described, for discharging the contents of this disinfectant-vessel into the tank, substantially as herein shown and described, and for the purpose set forth.

3. In an automatic flush-tank, the combination, with the siphon-tube A, of the valve E, the lever C, and the float F, provided with an extension, J, and a discharge-tube, F′, substantially as herein shown and described, and for the purpose set forth.

4. In a disinfecting and automatic flush-tank, the combination, with the vessel M, the supply-pipe N, the valve Q, the lever V, acting on the valve Q, float X, the casing O, the chain, or equivalent, Y, the lever Z, and the valve I, substantially as herein shown and described, and for the purpose set forth.

5. In a disinfecting and automatic flush-tank, the combination, with the vessel M, the supply-pipe N, the valve Q, the slotted valve-stem S, the spring R, the cam U, the lever V, the casing O, the pipe P, the float X, the chain Y, the lever Z, and the valve I, substantially as herein shown and described, and for the purpose set forth.

6. The combination, with a disinfecting and automatic flush-tank, of the siphon A, the valve E, the lever C, the float F, provided with an extension, J, and a discharge-tube, F′, the vessel M, the pipe N, the casing O, the pipe P, the valve Q, the lever V, acting on this valve, the float X, the chain Y, the lever Z, and the valve I, substantially as herein shown and described, and for the purpose set forth.

JAMES J. POWERS.

Witnesses:
OSCAR F. GUNZ,
C. SEDGWICK.