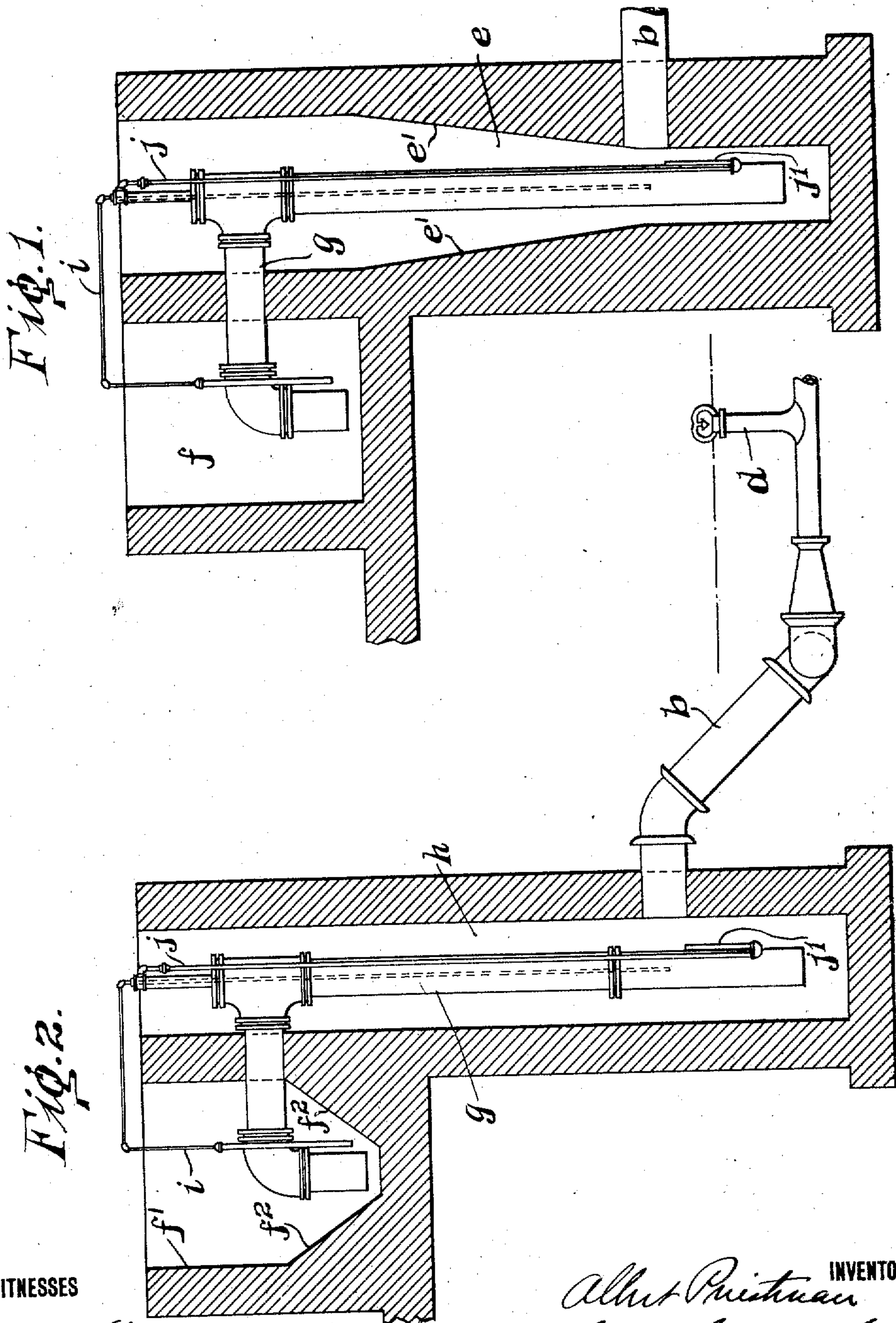


A. PRIESTMAN.
 APPARATUS FOR CONTROLLING THE FLOW OF LIQUIDS.
 APPLICATION FILED MAR. 1, 1909.

989,046.

Patented Apr. 11, 1911.



WITNESSES

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ALBERT PRIESTMAN, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR CONTROLLING THE FLOW OF LIQUIDS.

989,046.

Specification of Letters Patent.

Patented Apr. 11, 1911.

Application filed March 1, 1909. Serial No. 480,648.

To all whom it may concern:

Be it known that I, ALBERT PRIESTMAN, a subject of the King of England, residing in the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Apparatus for Controlling the Flow of Liquids, of which the following is a specification.

In many instances it is desirable to vary the quantity of liquid discharged proportionally to variations in the area supplied. This is particularly desirable in connection with sewage disposal systems in which the sewage is distributed by a sprinkler or nozzle upon the surface of a filter bed. To obtain uniform treatment of the sewage it is necessary that it shall be distributed evenly on the bed. This cannot be accomplished with stationary nozzles by simply increasing and decreasing the radius of the spread without any variation in the quantity of liquid discharged, since the areas supplied will vary directly with the squares of the radii of the spread, and if the quantity discharged is constant for all radii, less liquid per surface unit will be distributed over the surface of the bed in greater areas than will be distributed over the surface in less areas.

To obtain the even distribution of liquid it is necessary to vary the quantity of the liquid discharged proportionally with the spread or area supplied. As the radius of the spread—and consequently the area supplied—decreases, the quantity of liquid discharged must decrease, and vice versa. This result I accomplish by supplying the liquid to the nozzle from a tank or liquid container of decreasing capacity or horizontal dimension from the top to bottom. As the radius of the spread and the area supplied by the nozzle are proportional to the hydrostatic head, it follows that during the fall of the head in the tank and the resulting decrease of the annular areas supplied there will be a corresponding variation in the quantity of liquid supplied by the nozzle; and thus the volume of liquid outflow from the tank will decrease proportionately to the diminution of the areas successively supplied with liquid through the nozzle. In my invention, broadly considered, the tank or reservoir of decreasing capacity which thus controls the volume of liquid outflow may be either the tank which directly supplies the nozzle, or a tank which supplies an intermediate tank or receiver.

In the drawings, Figure 1 is a vertical sectional view of one form of the apparatus; and Fig. 2 is a similar view showing another form.

b is the main feed pipe through which the sewage or liquid is supplied to the nozzle *d*, or other distributing device.

e is the tank or reservoir, from which the sewage flows into the pipe *b* and this tank may be supplied from a reservoir *f* by a siphon *g*.

In the form shown in Fig. 1 it is the tank *e* which is of decreasing capacity and acts as the means for decreasing the volume of liquid outflow proportionately to the diminution of the areas successively supplied through the nozzle. As shown, the walls *e'* above the outlet to the feed-pipe *b* are inclined so that the tank has a portion of decreasing horizontal dimension from its top to its bottom. The intake end of the siphon *g* is in the supply tank or reservoir *f* and the discharge end extends to the lower part of the tank *e*. The tank *e* is filled by the siphon *g*, and as the liquid flows from said tank *e* through the pipe *b* to the nozzle *d* there will be a decrease in volume of liquid outflow proportional to the diminution of the areas successively supplied with the liquid through the nozzle. When the tank *e* is filling the action will be reversed. This action takes place only while the level of the liquid is falling in that portion of the tank *e* which is of varying horizontal dimension.

In the form of the apparatus shown in Fig. 2 the tank or reservoir of varying capacity or horizontal dimension is the tank *f'* from which the sewage or liquid is discharged by the siphon *g* into the intermediate tank or reservoir *h* from which the pipe *b* is supplied. The walls of this tank or reservoir *f'* are inclined as shown at *f''* to form the portion of decreasing horizontal dimension, and the intake end of the siphon *g* is located with its receiving end at the lowest or smallest part of the tank *f'*. While the discharge of liquid at the nozzle *d* is controlled by the head of liquid in the vessel *h* that head is controlled by the flow through the siphon *g*, and as that flow is controlled by the portion *f''* of varying horizontal dimension the volume of liquid outflow from the nozzle *d* varies proportionately with the areas successively supplied through said nozzle. I do not claim as part of my invention as covered by this patent this particular

form of the apparatus shown in Fig. 2, as that forms the subject matter of my application Serial No. 523,680 filed October 20th, 1909.

I have shown the siphons provided with air-pipes for automatically controlling their operation.

i is a pipe leading from near the intake end of the siphon up above the liquid level and then down through the discharge-leg and terminating at a distance above its end.

j is an air-pipe leading from the crown of the siphon up above the normal liquid level and then down into the discharge chamber e or h where it terminates in a liquid seal j' at the level of the outlet to the pipe b .

What I claim is as follows:

1. In combination, a liquid container, a discharge device for emptying the same, a nozzle through which liquid is discharged and means for decreasing the volume of liquid outflow from the container, propor-

tionately to the diminution of areas successively supplied with liquid through the nozzle, during the emptying of the container. 25

2. In combination, a liquid container, a nozzle connected therewith, a reservoir and a siphon for supplying the liquid container from the reservoir, said container having a liquid containing portion of decreasing horizontal dimension from its top to its bottom, and the discharge outlet to the nozzle leading from the smallest part of said container. 30

3. In apparatus for controlling the flow of liquids, the combination of a chamber having a liquid containing portion of decreasing horizontal dimension from its top to its bottom, and a nozzle supplied from the smallest part of said chamber. 35

In testimony of which invention, I have hereunto set my hand. 40

ALBERT PRIESTMAN.

Witnesses:

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R. M. KELLY.