

No. 780,572.

PATENTED JAN. 24, 1905.

C. F. L. McQUISTION.
WATER TRAP.

APPLICATION FILED AUG. 4, 1904.

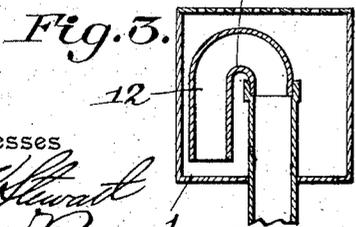
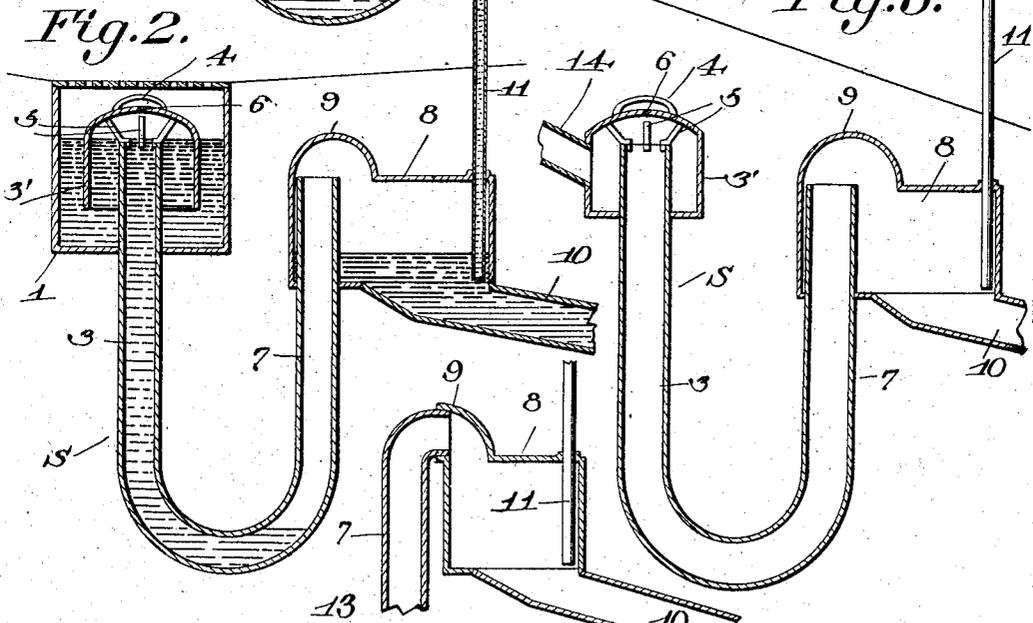
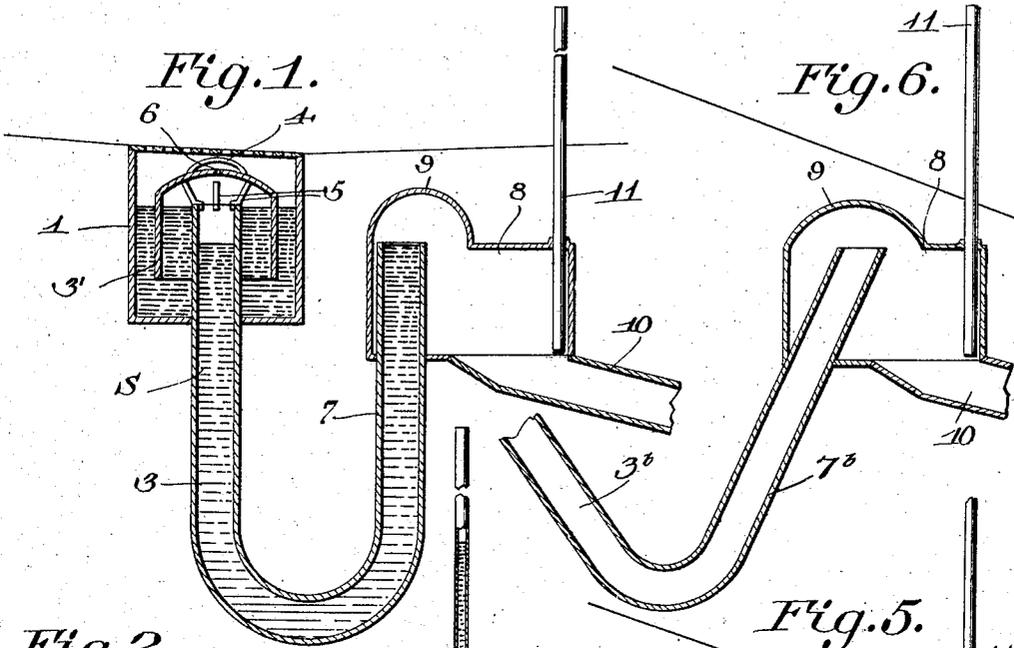


Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES FINDLEY LISLE McQUISTION, OF BUTLER, PENNSYLVANIA.

WATER-TRAP.

SPECIFICATION forming part of Letters Patent No. 780,572, dated January 24, 1905.

Application filed August 4, 1904. Serial No. 219,523.

To all whom it may concern:

Be it known that I, CHARLES FINDLEY LISLE McQUISTION, a citizen of the United States, residing at Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Water-Trap, of which the following is a specification.

This invention relates to water-traps, and especially to that class of traps which will serve to prevent the backflow of water from the sewer.

The object of the invention is to form a seal whereby the possibility of backflow shall be effectually prevented.

With this and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated simple and preferred forms of embodiment of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications which come fairly within the scope of the invention and which may be resorted to without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a vertical sectional view illustrating a preferred form of the improved trap, showing the same in normal condition. Fig. 2 is a vertical sectional view showing the condition of the trap under the pressure of backwater. Fig. 3 is a detail view showing modified means for connecting the intake-limb of the trap with the sink. Fig. 4 is a detail view showing a modified connection of the discharge-limb with the air-chamber. Figs. 5 and 6 are detail views illustrating other modifications.

Corresponding parts in the several figures are indicated by similar characters of reference.

In Figs. 1 and 2 of the drawings, 1 designates a sink or well which receives the discharge from the waste-pipes. S designates

an inverted siphon the intake-limb of which, 3, extends into the sink 1, preferably through the bottom of the latter, with which it forms a tight joint. Over said intake-limb is placed a bell 3', having a handle 4, interior projections 5, whereby it is detachably mounted upon the rim or upper edge of the intake-limb, and provided with a very small perforation 6, forming a vent-hole. This bell may be conveniently detached when desired for cleaning purposes, and it coöperates with the intake-limb 2 to form a seal, permitting the water to rise in the sink to the level of the upper edge of the intake-limb and in the latter to the level of the upper edge of the discharge-limb 7, which is shorter than the intake-limb. 8 designates an air-chamber, preferably having a dome 9 and which is suitably connected with the discharge-limb 7 of the trap, the capacity of said air-chamber being in excess of the capacity of the limb 7. The latter may be extended through the bottom of the air-chamber below the dome, as shown in Figs. 1 and 2, or it may be connected directly with the dome, as shown in Fig. 4, or any suitable connection may be made which may be found convenient and practically efficient. The air-chamber 8 connects with the sewer 10, and it is also connected with a vent-pipe 11, which extends nearly or quite to the bottom of the air-chamber and which rises to the height of any possible flood or backwater limit.

In the form of the invention illustrated in Fig. 3 of the drawings the bell 3', supported upon the intake-limb of the trap, is omitted and in place thereof is used a simple return-bend 12, which is supported detachably upon the upper edge of the intake-limb. Under this construction the water may obviously rise in the sink to the level of the inner bend 13 of the return-bend 12, while the water in the intake-limb may not rise above the level of the upper edge of the discharge-limb, as shown in Figs. 1 and 2.

In Fig. 5 the intake-limb of the trap has been shown as being connected directly with the house-drain, (here designated 14,) while the discharge-limb is connected conveniently with the air-chamber. The trap shown in Fig.

5 is of the ordinary U shape, with parallel limbs, while in Fig. 6 a trap has been shown the limbs of which, 3^b and 7^b, diverge. It is obvious that other modifications on the same lines are wholly within the scope of the invention.

In the operation of the device the water from the house-drains or from the sewer will pass into the sink 1, where it rises until it overflows under the bell 3' or its equivalent into the intake-limb of the trap, through which it passes under ordinary circumstances to the air-chamber and thence to the sewer, the dome of the air-chamber affording ample room for the overflow of the discharge-limb of the trap, a vent being obtained through the tube 11. In case of back pressure in the sewer, occasioned by stoppage, flood, or any other cause, whereby the water is made to rise in the outlet-sewer, the air in said outlet-sewer escapes through the vent-pipe 11 until the water-level reaches the lower end of said pipe, when the air within the air-chamber is imprisoned with no means of escape. As the water continues to rise the compression of air within the air-chamber increases and the water-level is lowered in the discharge-limb of the trap and raised in the intake-limb until it reaches the level of the water in the sink or well 1. The water then rises in the vent-pipe to the elevation that the flood or backwater attains and will continue to rise until the water in the discharge-limb of the trap is lowered below the bend of said trap. The water rises in the air-chamber, displacing a volume of air equal only to the displacement of water in the discharge-limb of the trap. The latter may be a bent pipe of soft metal or a casting of any suitable shape within the scope of the invention.

Within the scope of the invention the auxiliary seal for the intake-limb may be dispensed with. The limb or member 7 of the trap will in such case be connected directly with a drain or sewer, as will be readily understood.

Having thus described the invention, what is claimed is—

1. A water-trap consisting of an inverted siphon having a discharge-limb shorter than

the intake-limb, an air-chamber connected with the upper end of the discharge-limb having a capacity greater than that of the discharge-limb, and connecting the latter with the sewer, and a vent-pipe connected with and extended downwardly into said air-chamber. 55

2. A water-trap consisting of an inverted siphon having a discharge-limb shorter than the intake-limb, an air-chamber connecting said discharge-limb with the sewer and having a dome permitting the overflow of the discharge-limb, and a vent-pipe connected with and extending approximately to the bottom of said air-chamber. 60

3. In a device of the class described, a sink or well, a trap consisting of an inverted siphon having one limb extending upwardly into said sink, a bell supported above the intake end of said limb and cooperating with the latter to form a seal within the sink, an air-chamber connecting the discharge-limb of the trap, which is shorter than the intake-limb, with the sewer, and a vent-pipe extending upwardly from a point near the bottom of said air-chamber. 65 70 75

4. In a device of the class described, a trap consisting of an inverted siphon having a discharge-limb shorter than the intake-limb, an auxiliary seal for the said intake-limb, an air-chamber of greater capacity than the discharge-limb and having a dome to permit the overflow of said discharge-limb into the air-chamber which connects said discharge-limb with the sewer, and a vent-pipe connected with said air-chamber, extending nearly to the bottom of the latter and upwardly above the level of any flood or back-pressure limit. 80 85

5. In a device of the class described, a water-trap including an air-chamber, a connection between said air-chamber and a drain, a sewer-pipe connected with the bottom of the air-chamber, and a vent-pipe extending into the latter. 90

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses. 95

CHARLES FINDLEY LISLE McQUISTION.

Witnesses:

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