

(No Model.)

F. MEYER.
SEWER TRAP.

No. 304,841.

Patented Sept. 9, 1884.

Fig. 2.

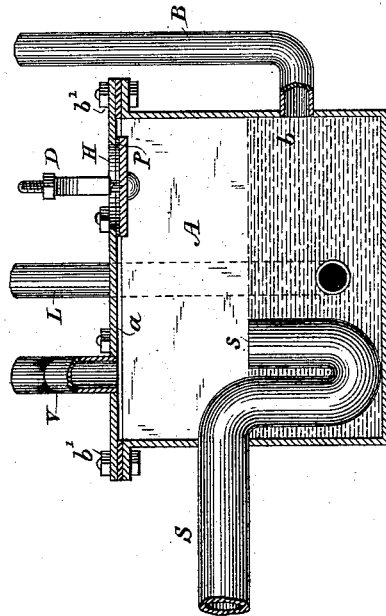


Fig. 3.

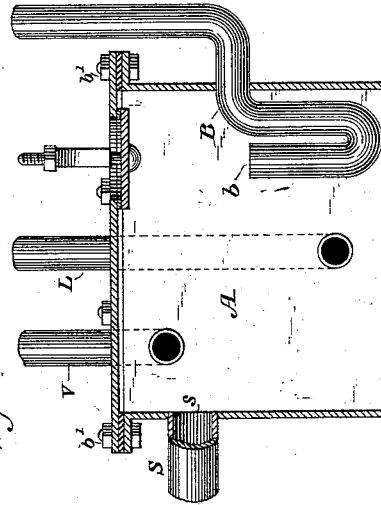
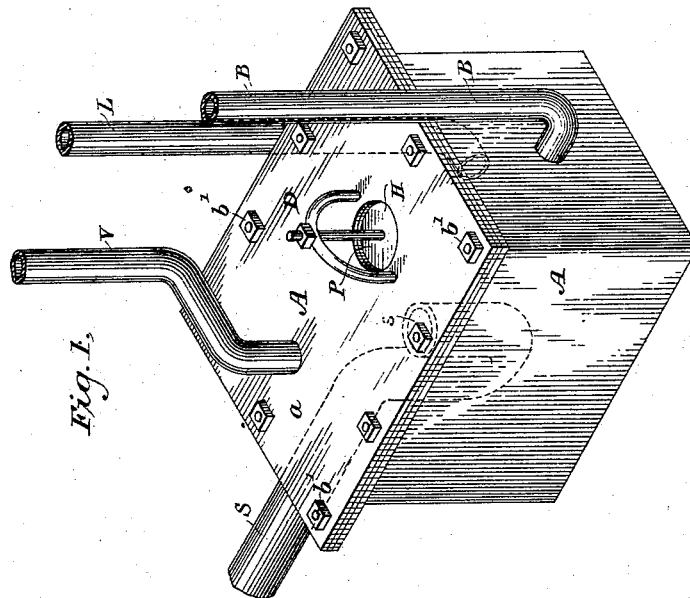


Fig. 1.



WITNESSES

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SEWER-TRAP.

SPECIFICATION forming part of Letters Patent No. 304,841, dated September 9, 1884.

Application filed January 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK MEYER, of the city, county, and State of New York, have invented a certain new and useful Improvement in Sewer-Traps, of which I declare the following to be a full, clear, and exact description, so that any one skilled in the art or science to which it appertains or with which it is most nearly connected can make, construct, and use the same, reference being had to the accompanying drawings, which form a part of this specification, and to the letters and figures of reference thereon.

The object of my invention is to prevent the entrance of sewer-gas into buildings; and it consists of the apparatus hereinafter described. One great defect in the methods generally employed to prevent the entrance of gas from the sewer, which usually consist in placing one or more traps in the line of the waste or soil pipe, is that suction from the sewer may draw out, or "siphon," as it is termed, the water from the traps, or the water in coming down the waste-pipe may acquire such momentum as to carry too much of its volume around the bend, the traps being thus liable to be left open and the house thus left exposed to the entrance of gases from the sewer. My device is designed to meet all such defects and prevents the entrance of gas into the house.

Figure 1 is a perspective view of my apparatus, showing an outside view of the tank or box with its arrangement of pipes. Fig. 2 is a view of the same, partly in section, showing the interior of the tank. Fig. 3 is a view partly in section, showing modifications of the apparatus.

Like letters represent corresponding parts in the several figures.

A is a tank or box, which I place anywhere along the waste or soil pipe between the sewer and the sink or closet to be protected from the sewer-gas.

B is the pipe leading into the house, and connecting with the sinks and closets throughout the house or building.

S is the pipe leading into the sewer, which may be called the "sewer-pipe," as shown in Figs. 1 and 2. The part of this pipe inside the tank has the form of a U-shaped trap. Its opening *s* must be higher than the opening *b* of the soil-pipe B.

V is a vacuum or stench pipe, and leads to the outer air.

L is a leader to bring the rain-water from the roof down into the tank. The upper plate, *a*, of the tank A may be fastened to the tank in any ordinary way, as shown. It is fastened by the bolts *b' b'*, rubber or other suitable packing material being used to give an airtight joint. In the plate *a* there is preferably a hand-hole, H, for convenience in getting at the interior of the tank for the purposes of cleaning or repairing. This opening may be closed and fastened in any usual way. In the drawings it is closed from below by the plate P, which is made a little larger than the opening, and is screwed up tightly by the dog-clamp D, rubber or other suitable packing material being interposed to make the joint airtight. It is necessary that the tank should be air and water tight, so that no fluid or gas can escape from it except by way of the pipes.

The operation of my improved apparatus is as follows: The pipes B and L, or the pipe B alone, as the case may be, discharging their contents into the tank A, gradually fill it until the level of the sewer or outlet pipe S is reached, when the contents begin to be drained off into the sewer. The sewer-pipe S will of course only drain off the contents of the tank A when and to the extent that they rise above the level of the opening *s*. Thus there will always be a body of liquid in the tank up to the level of the opening *s*, and the opening *b* of the soil-pipe B is therefore permanently covered with water to a depth equal to the difference in elevation between the top of the opening *b* and the bottom of the opening *s*. This difference, if desired, may be made greater than is shown in the drawings by lowering the opening *b*. Suction from the sewer may siphon the trap in the sewer-pipe and reduce the water in the tank to the level of the opening *s*; but it cannot reduce the level below that point, no matter how strong the suction, for the vacuum-pipe will relieve the pressure, and air from it, instead of the remaining water in the tank, will flow into and through the sewer-pipe. Again, should waste water come down the soil-pipe with great momentum, it will raise, but cannot lower, the level of the water in the tank below the opening *s*. The level of the water will consequently always be not lower than the opening *s*, and hence will be considerably above the highest point of the opening *b*. As the opening of the soil-pipe is thus always entirely covered by water, gas can never pass from the tank into

it and up through the soil-pipe into the house. My device is therefore at all times a complete protection to a house from gas coming from the sewer.

- 5 My device will operate without the vacuum-pipe. In this case, as the suction from the sewer draws the water in the tank out through the sewer-pipe, whatever water is in the soil-pipe B will, by the suction or vacuum, be
10 drawn down into the tank to take its place, until all or nearly all the water is drawn out of the pipe B, when air from the pipe B will flow into the tank. When air from the soil-pipe B first begins to flow into the tank, the
15 water in the tank is of course on a level with the opening *s*. As air rises quickly through water, the air from the pipe B will soon entirely supersede the flow of water into the sewer-pipe, and the level of the water will fall
20 but slightly below the opening *s*, and will always be above the opening *b*. I prefer, however, to use the vacuum-pipe, as it tends to purify the tank and relieve it from the formation of a vacuum.
- 25 The leader L is designed to bring rain-water from the roof. By causing large volumes of pure water to pass through the tank from time to time, it tends to wash it out and prevent solid matter from settling and staying in it.
30 Its mouth is for this purpose preferably placed near the bottom of the tank. This pipe may be dispensed with, if desired.

- The object of the hand-hole H is to allow ready access to the interior of the tank for
35 the purpose of repairs, or in order to remove any obstruction in the tank or in any of its pipes. I prefer to carry the soil-pipe to the roof, as is generally done, and then, by means of the opening H, a rope, and a bundle of
40 straw or other suitable apparatus, the soil-pipe, when without a trap, can be readily cleansed, or, if there is a stoppage in the pipe, its location can easily be determined. As shown in Fig. 1, the opening H is round. I
45 prefer, however, an elliptic shape, as then the plate P can easily be lifted up through it. The opening H may also, if desired, be dispensed with. The plate *a* could be removed for any purpose, if found necessary,
50 and to make this the easier the vacuum-pipe could be constructed, as shown in Fig. 3, to open into the tank through the side instead of through the top.

- While I prefer to have a trap in the sewer-pipe S as an additional precaution, it is not
55 necessary to the operation of my invention, and may, as represented in Fig. 3, be omitted. If a trap is used, it will answer the purpose as well if placed outside of the tank instead of inside. A trap could also be placed,
60 if desired, in the soil-pipe, as is shown in Fig. 3, and in this case could be outside as well as inside of the tank. Traps might be used simultaneously in both the pipes S and
65 B; or they might be dispensed with altogether, both pipes being straight.

The tank or box can be made of iron or

any suitable material, and should be strong and perfectly air-tight. More than one soil-pipe may discharge into the same tank. 70

A single tank in the cellar of a building will protect the whole building. No traps throughout a house, now in such common use, are needed. This is a great advantage, for
75 much of what is called "sewer-gas" comes from decaying material caught and held in these various traps on the different floors. With my device this can be avoided, and the soil or drain pipes can be made with a directly perpendicular or nearly perpendicular
80 fall to the cellar, so that no decaying matter can be caught or held in them, but everything will be swiftly carried directly into the tank, from which no gas can escape back into the soil-pipe. 85

My device can be used not only in the cellar, but might, with slight modifications and on a reduced scale, be used under each sink or closet. In such cases the sewer-pipe S of each tank would simply be another soil-pipe
90 leading down to the next lower tank, or to the tank in the cellar, or directly to the sewer, as the case might be. The leader L could be retained, as described, or could be dispensed with, or might even be so arranged that it
95 could at pleasure be fastened to the fresh-water-supply pipe of the sink, so that the tank could, if necessary, be thoroughly cleansed out. One vacuum-pipe would do for a number of tanks on different floors one above another. 100

My invention can thus be applied to separate sinks or closets.

What I claim as new, and desire to secure by Letters Patent, is— 105

1. In a sewer-gas trap, the combination of the tank A, having soil-pipe B, sewer-pipe S, the opening of the soil-pipe being lower than the opening of the sewer-pipe, and vacuum-pipe V, substantially as and for the purposes
110 described.

2. In a sewer-gas trap, the combination of a tank A, soil-pipe B, sewer-pipe S, the opening of the soil-pipe being lower than the opening of the sewer-pipe, and leader L, substantially as and for the purposes described. 115

3. In a sewer-gas trap, the combination of a tank, A, soil-pipe B, sewer-pipe S, the opening of the soil-pipe being lower than the opening of the sewer-pipe, vacuum-pipe V, and
120 leader L, substantially as and for the purposes described.

4. In a sewer-gas trap, the combination of a tank, A, with removable cover *a*, soil-pipe B, sewer-pipe S, the opening of the soil-pipe
125 being lower than the opening of the sewer-pipe, vacuum-pipe V, leader L, and hand-hole H, substantially as and for the purposes described.

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Witnesses:

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HERMAN C. BOEHME.