W. F. DOWNEY.
Sewer-Trap.

No. 207,260. Patented Aug. 20, 1878.

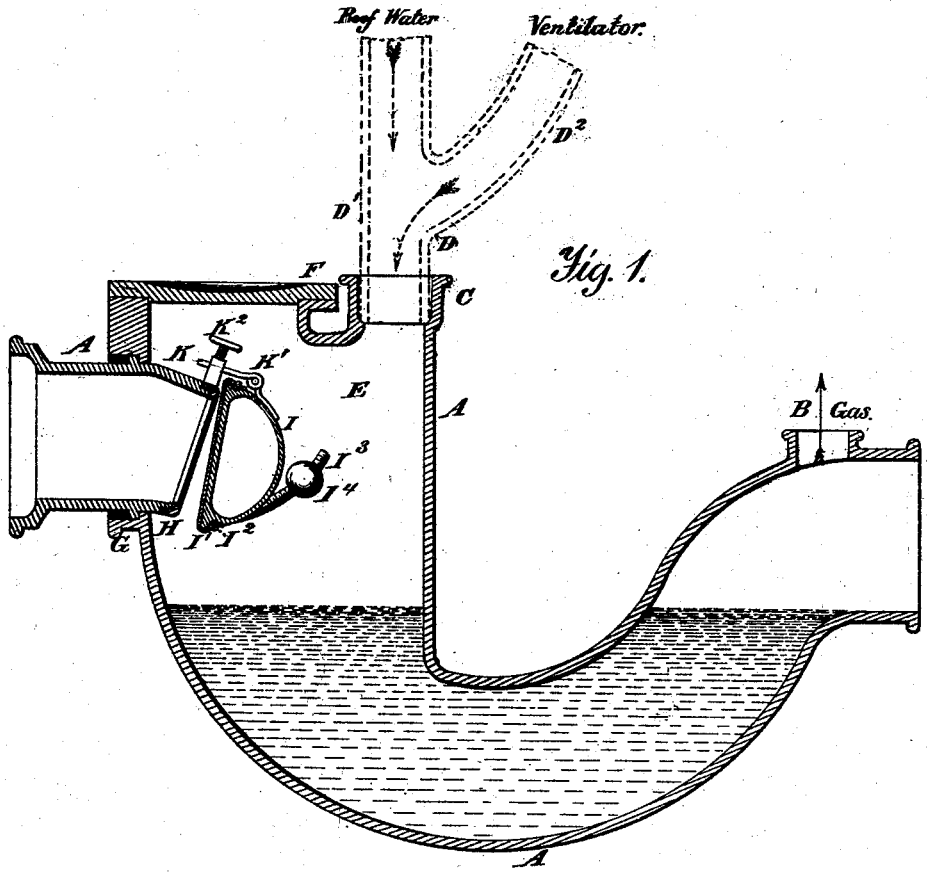
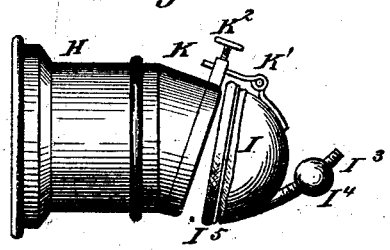


Fig. 1.

Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM F. DOWNEY, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN SEWER-TRAPS.

Specification forming part of Letters Patent No. **207,260**, dated August 20, 1878; application filed July 23, 1878.

To all whom it may concern:

Be it known that I, WILLIAM F. DOWNEY, of Washington, in the county of Washington and District of Columbia, have invented certain new and useful Improvements in Sewer-Traps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements made on the sewer-traps patented by me on the 13th of February, 1877, December 4, 1877, and March 26, 1878; and it consists in a novel construction of a valve for preventing the inflowing of water through the discharge-orifice and the injurious effects which result therefrom, and for permitting of the free ventilation of the chamber of the valve; and it further consists in a novel method of adjusting a swinging valve with reference to its seat, whereby the valve, when in its normal position, is partially open for the purpose of ventilation, but is held in such a position as to be readily closed upon the entrance to its case of backwater; and the invention further consists in certain combinations which will be more fully explained hereinafter.

In the annexed drawings, which make a part of this specification, Figure 1 is a sectional elevation of a trap embodying my improvements, and showing it as combined with a valve of peculiar construction; and Fig. 2 is an elevation of the valve and induction-pipe, showing the mechanism for adjusting the valve with reference to its seat.

Corresponding letters denote like parts in both figures.

In valves of this type it is important that provision be made for sealing them against the passage of sewer or other noxious gases, and for allowing such gases from the trap or pipe outside of the point where the valve or other seal is applied. It is also important that provision be made against the inflowing of water through the eduction-orifice or pipe, and for flushing the trap by the water from the roof of the building in which it may be placed, and for the ventilation of the chamber of the trap and the pipe with which it is connected.

The accomplishment of the above-recited results is the object of this invention; and in carrying it into execution I construct a case or body, A, of a trap, substantially of the form shown in Fig. 1 of the drawing, the lower portion of which serves as a chamber for water, which acts as a seal against the passage of gases. Near the outlet-orifice there is formed a nozzle, B, to which a pipe is attached, which may lead to a flue in a chimney, or it may extend up through the roof of the building, and thus convey away any gas which may enter the trap. The opposite end of the trap, when in use, is made to assume a vertical or nearly vertical position, and is provided with a nozzle, C, to which a branch pipe, D, is fixed. The branch D′ of this pipe is to be connected to the eaves-trough of the building, or to a reservoir of water in the upper part thereof, in order that the trap may be flushed by the water which accumulates in the trough from falling rain, or is taken from the reservoir at times. This branch may also be connected to the sewerage-pipes leading from water-closets, wash-basins, or sinks in the upper stories of any building in which the trap is placed, so that in the event of water caused by a rise in rivers or streams, or from any other source, being made to flow into the outlet-orifice, and thus prevent the water from the induction-pipe from flowing off, the water or other substances from the upper stories of the building, owing to its greater head or force, will pass through the trap.

The branch D^2 is for the purpose of admitting air to the chamber E in the trap, and through it to induction pipe or pipes, and thus thoroughly ventilating them. This vertical end of the trap is provided with a cap, F, which is properly secured thereto, and may be removed for the purpose of giving access to the interior, and to a valve placed therein, for the purpose of preventing the inflow of water to the pipes with which the trap is connected.

Upon one side of the enlarged portion of the case of the trap there is formed a nozzle, G, in which there is an opening for the reception of an induction-pipe, H, which is made to

form a tight joint with the case by any suitable kind of packing. The outer end of this induction-pipe is provided with a nozzle for the reception of any pipe which may be attached thereto, for the purpose of conducting water or other substances to the trap.

The inner end of pipe H is curved or beveled, so as to cause its upper portion to overhang or project beyond its under portion, as shown in Fig. 1, in order that when the valve is hinged thereto it will be caused by its own gravity to remain partially open, and thus leave a free passage for the air which enters the chamber E to pass through, and thus ventilate said chamber and the induction-pipes.

For the purpose of preventing corrosion of the valve-seat, there is secured to the inner end of pipe H a non-corrosive ring of metal, H′, the inner surface of which forms the valve-seat, it being of the form shown, or of any other that will best insure the formation of a tight joint with the valve.

For the purpose of closing the end of the induction-pipe H at times, and in places where there is liable to be a back-pressure of water or an inflow through the discharge-orifice of the trap, there is attached to the inner end of such pipe a swinging valve, I, which is preferably of the semicircular form shown, but which may be of any other form that will cause it to form a tight joint with its seat when closed by back-pressure, but which will allow it to remain partially open when not subjected to such pressure. This valve is made of a semi-spherical form, and, by preference, of sheet metal, so that it may be made to more readily close upon its seat in the event of an influx of water through the eduction-orifice, that portion thereof which comes in contact with its seat having a flat unbroken surface, which is to be covered with a hood, I^1, of rubber or other elastic substance, for forming the joint with the seat, said hood to be held in position by wire I^2, which passes around the valve in front of a projection, I^5, formed thereon. For the purpose of arranging this valve with reference to its seat, and so that it may be readily removed for repairs, there is attached to the pipe H a projection, K, which has an aperture formed in it for the reception of an adjustable hinge, K^1, one portion of which passes through the projection K, the other being secured to the valve.

K^2 is a thumb-screw for holding the adjustable hinge in position in the projection K.

For facilitating the swinging movement of the valve, there is attached to its inner surface an arm, I^3, which carries a weight, I^4, the latter being attached to the arm by means of a screw formed thereon, by which the weight is rendered adjustable, so that it may be more or less effectual in holding the valve in its open position, and also in preventing it from being raised up or carried into a more open position in the event of an inflow of water through the eduction-orifice.

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

1. The swinging valve, when made adjustable with reference to its seat by means of a sliding hinge, constructed substantially as described.

2. The combination of the swinging semi-spherical valve having a projecting flange for holding its facing, an elastic face, and a ring for securing said facing to the valve, substantially as set forth.

3. In combination with the induction-pipe of a water or stench trap, having upon it a valve-seat which recedes from its upper to its lower surface, an adjustable swinging valve, substantially as and for the purpose set forth.

4. The combination of the case A, the induction-pipe H, and the adjustable swinging valve I, the parts being arranged to operate substantially as set forth.

5. A case for a stench-trap, provided with an aperture for the escape of gas outside of the water-seal, and with apertures for the reception of inlet and outlet pipes, and an air-pipe for ventilating said case, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WM. F. DOWNEY.

Witnesses:
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