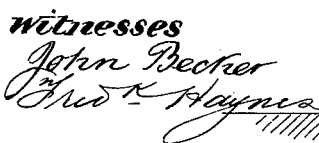


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UNITED STATES PATENT OFFICE.

LORENZO ULLO, OF SOUTH ORANGE, NEW JERSEY.

IMPROVEMENT IN MEANS FOR VENTILATING SEWER-PIPES AND WATER-CLOSETS. fr

Specification forming part of Letters Patent No. **218,799**, dated August 19, 1879; application filed March 29, 1879.

To all whom it may concern:

Be it known that I, LORENZO ULLO, of South Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Means for Ventilating Sewer-Pipes and Water-Closets, of which the following is a specification.

My invention relates particularly to that class of sewer or waste pipes and water-closets in which what are known as "S-traps" are formed for the purpose of retaining a body of water to prevent noxious gases from passing upward into a dwelling, and thereby endangering the health of its occupants. In traps of this kind, however, the water contained in the trap becomes foul, and unless provision is made for carrying off gases accumulating above the water in the trap they will pass upward into the dwelling.

The object of the present invention is to provide for properly ventilating water-closets, commodes, and the like, and also the portions of sewer or waste pipes which are above the traps.

To this end the invention consists in the combination, with a water-closet, of a trap, a waste-pipe leading therefrom, a pipe or opening independent of the main opening at the mouth of the closet for the admission of air to the closet from within the building in which the closet is situated, and an upwardly-extending pipe or passage for the escape of gases leading from said closet above said trap separate from and independent of said waste-pipe, whereby a circulation of air is maintained in the closet, and the same is thoroughly ventilated.

In the accompanying drawings, Figure 1 represents a central vertical section of a water-closet embodying my improvements, and Fig. 2 a plan thereof. Fig. 3 is a central vertical section of the basin or valve of said closet detached from the other parts. Fig. 4 is a vertical section of a portion of a building provided with water-closets and sewer-pipes embodying my invention. Fig. 5 is a vertical section of a building, showing a modified form of my invention; and Fig. 6 is a plan, partly in section, of a modification of my invention.

Similar letters of reference designate corresponding parts in all the figures.

Referring, first, to Figs. 1, 2, and 3, A designates the bowl, and B, the basin, of a water-closet embodying my improvements. C designates a valve (here shown as consisting of an ordinary slide-valve) for closing the outlet of the basin B and preventing the passage of gases upward.

Any other description of valve may be employed, or in lieu thereof a hinged pan for containing water and sealing the outlet of the said basin may be employed. These details are not here represented, as they form no part of the present invention.

A' designates the outlet of the bowl A, which communicates with a waste-pipe, preferably provided with a trap of the ordinary construction. The bowl A is provided with an opening, *a*, from which a pipe or passage extends upward, and communicates with the external atmosphere.

D designates a pipe or passage communicating with the bowl A, through which air passes into the same from the apartment in which the closet is situated.

By means of these two pipes or passages a continuous current of air is maintained through the water-closet, and any noxious gases emanating from the contents of the water-closet or trap are carried off through the outlet-opening *a*. I prefer to make the pipe or passage D of such length as to extend nearly to the floor of the room in which the closet is situated, as by that means the heavy and impure air at the bottom of the room will be drawn off. To provide for a more active circulation through the closet a gas-jet may be kept burning in the pipe or passage D; or the supply of air may be drawn from the heated air near the ceiling of the kitchen, if the building in which the closet is used is a dwelling house.

Fig. 4 represents a number of water-closets arranged on different floors of a building.

The closets E E are of the kind generally known as "hopper closets," as they are not provided with pans like the one previously described.

I have here represented these closets as communicating with a common sewer or waste pipe, F, extending from top to bottom of the building, and as provided with traps G between them and said sewer or waste pipe.

H designates pipes or passages extending vertically through the building, with which the gas-outlets of several closets may communicate, and through which gases may pass upward to the atmosphere.

For the purpose of economy the gas-outlets of several closets may communicate with a chimney-flue, which, if the flue is used as a smoke-flue, will greatly aid the circulation of air through the closets. The pipe or passage for the supply of air to the closets may be carried down, and the supply of air drawn from a floor below that upon which the closet is situated, as represented at I, Fig. 4.

In Fig. 5 I have represented the waste-pipes *b*, *c*, and *d* of a water-closet, a wash-basin, *J*, and a bath-tub, *K*, as all extending downward into a receiver, *L*, placed in the cellar of the building. This receiver communicates through a trap, *M*, with a sewer or waste pipe, *N*.

O designates the pipe for the admission of air to the receiver, and *P* a pipe or passage through which the air and gases pass upward to the atmosphere.

Fig. 6 represents the receiver *L* as provided upon its side with a chamber or chest, *l*, for the reception of a series of waste-pipes.

It is obvious that as the pipe or opening *D*, through which air passes into the closet from the room, is independent of the main opening at the mouth of the closet, proper ventilation may be insured without leaving the mouth of the closet open.

It will be understood that as the pipe through which the gases pass is entirely separate from and independent of the waste-pipe, air and gases may pass uninterruptedly through said pipe, which would not be the case with a waste-pipe passing upward and ventilated at the top, as then the flow of gas would be stopped by water passing through the pipe, and the water would compress the gas below it and cause it to pass into lower rooms if the discharge into the waste-pipe were from an upper story.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, with a water-closet, of a trap, a waste-pipe leading therefrom, a pipe or opening independent of the main opening at the mouth of the closet for the admission of air to the closet from within the building in which the closet is situated, and an upwardly-extending pipe or passage for the escape of gases leading from said closet above said trap separate from and independent of said waste-pipe, substantially as specified, whereby foul gases are prevented from passing upward by the water in the trap, and the gases accumulating above the water in the trap are carried away and prevented from passing into the room in which the closet is situated.

LORENZO ULLO.

Witnesses:

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