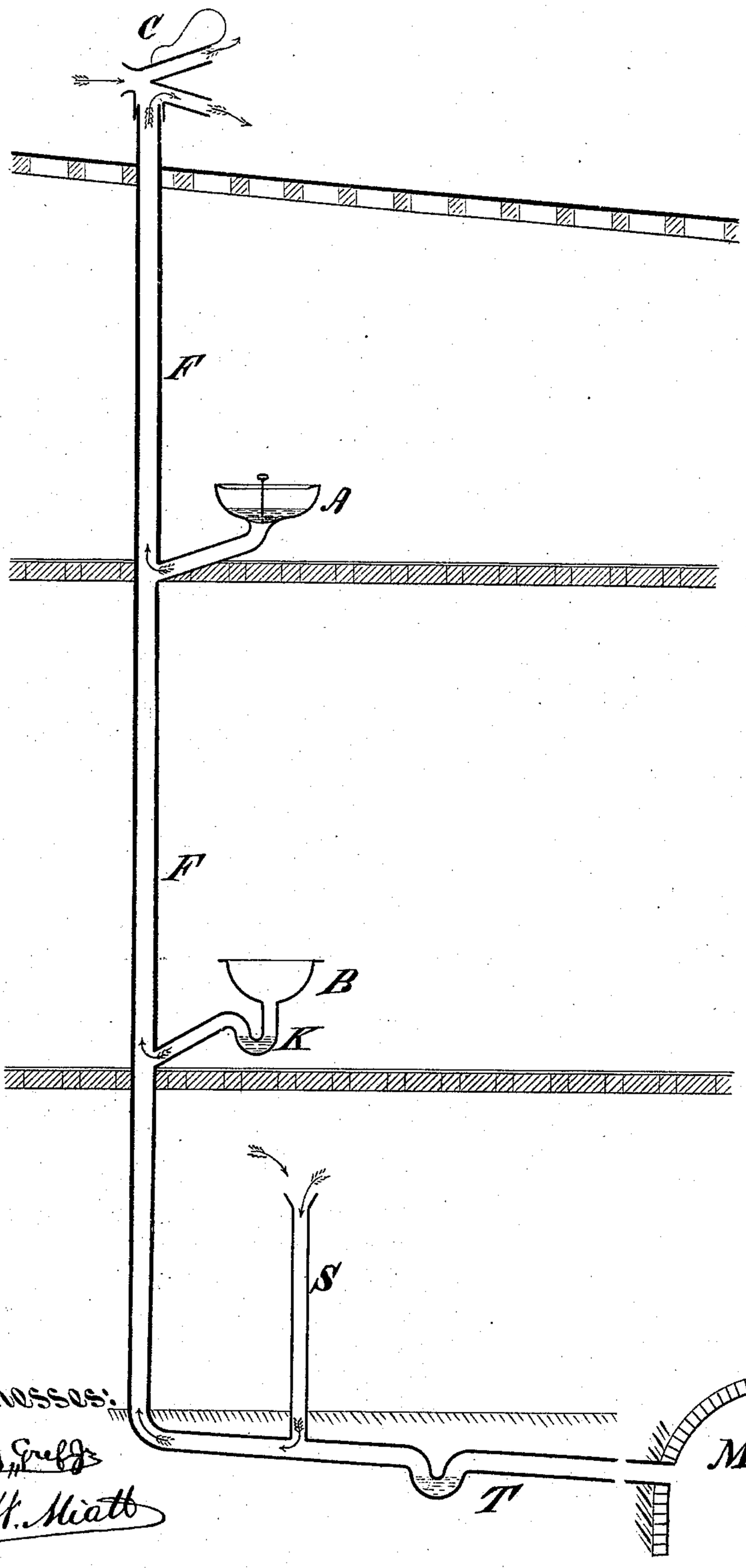
E. N. DICKERSON.

Means for Ventilating Soil-Pipes for Houses.

No. 211,089. Patented Jan. 7, 1879.



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EDWARD N. DICKERSON, OF NEW YORK, N. Y.

IMPROVEMENT IN MEANS FOR VENTILATING SOIL-PIPES OF HOUSES.

Specification forming part of Letters Patent No. **211,089**, dated January 7, 1879; application filed November 14, 1878.

To all whom it may concern:

Be it known that I, EDWARD N. DICKERSON, of the city, county, and State of New York, have invented a new and useful Improvement in Ventilating the Soil-Pipes of Houses, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

The object of my invention is to thoroughly purge the soil-pipes of a house of all deleterious and poisonous sewer-gas which is generated by fermentation therein and what escapes therefrom into the apartments of the house. There are four systems of drainage now in common use, all of which are radically defective: First, a soil-pipe closed at the top, leading to the sewer, having no street-trap at the bottom of it, into which the closets and basins empty through traps; second, the same arrangement with the soil-pipe opening at the roof, so that the sewer-gas from the sewer may be drawn up through the house by rarefaction of the gas column in the pipe and discharged at the roof; third, the same arrangement closed at the top with a street-trap at the foot of the soil-pipe; fourth, the same arrangement with a street-trap at the foot and an opening at the roof.

The third, which is the most common, is the worst of all, because the whole pipe system of the house is closed up, top and bottom; and as the fermentation goes on in the traps, and from the deposits smeared on the pipe-surfaces, a pressure of gas is generated in the pipes, which forces itself into the house through any cracks in the pipes, or through the smaller traps of the basins, which give way to it before the larger street-trap yields. In this case the first trap is an evil, and is liable to convert a comparatively safe arrangement into a dangerous one.

When, however, the soil-pipe is opened at the roof, as in the fourth system, no pressure can be generated in the pipes; but so much of the gas evolved in them which balances the atmospheric pressure remains there, and diffuses through the water in the basins, traps, or is drawn into the house through cracks in the pipes by the chimney-drafts of the house.

The first and second plans are substantially alike, because in both cases the house-pipes are full of sewer-gas at the same pressure as that of the air; but whether that gas comes from the sewer itself or is generated in the house is immaterial. In either case it will diffuse through water in the small traps, or flow out when they are siphoned, or leak through cracks when the air in the house is rarefied by heat, and is drawn toward the fireplaces or ventilators.

It has been proposed also to furnish the soil-pipe with a cowl at the top, and to provide such a pipe at the bottom with a trap, which communicates with the air outside the building in which the soil-pipe is located by means of a pipe entering the trap just inside of the depression forming the seal, or at a point but little removed therefrom, the pipe actually or substantially forming a continuation of one side of the trap. In arrangements of this kind the air from without the building is intended to be drawn through the soil-pipe, and the currents produced pass over or in proximity to the water forming the seal, and would, in winter freeze the water, and at other times, by causing its evaporization, destroy the seal, so that the soil-pipe would be either stopped up or in free communication with the sewer.

The true remedy is to supply a large quantity of fresh air flowing through the soil-pipes, so as to carry off at once any gas generated in them, while at the same time the sewer is cut off by a trap, so that it supplies no gas to the soil-pipes. A street-trap, as is usual, at the foot of the soil-pipes is the first requisite. The second is an exhausting-cowl on the open top of the soil-pipe, above the roof, placed high enough to operate at all times; and the third is an opening into the soil-pipe in the cellar or vaults inside of the foot-trap to supply the air for purging the pipes. Then use no water-closet with a trap under it to retain the deposits in the house, and there will be no sewer-gas in the house; and if there is a crack in the pipe the air will flow into the soil-pipe from the house instead of into the house from the pipes.

My apparatus is clearly shown in the accompanying drawing.

F represents the soil-pipe, open at its bottom by means of the stand-pipe S, which communicates with the cellar. This opening is in the

cellar, because it has the effect of ventilating the cellar, and at the same time there is no danger of freezing the soil-pipe from the inflow of cold air, which otherwise might result.

Between the opening S and the main sewer M is the trap T. B represents a trap-basin; A, a water-closet which has no trap, but is sealed by the water in it. The only unsealed opening into the soil-pipe should be the opening through the stand-pipe S. The roof-drainage should be trapped if it enters the stand-pipe. With this arrangement there is a constant flow of air out of the cellar into and upward through the soil-pipe, whereby the cellar is ventilated, and the gas generated in the soil-pipe is constantly displaced and carried out at the roof through the ventilator. Even when there is no heat in the house the inward flow of air is very strong, and when the soil-pipe is warmed the blast is still stronger.

I am aware that plans of ventilating the soil-pipes of houses independently of the sewer have been resorted to; but, so far as I know, they are essentially different from the system herein described. The plan patented to W. H. Fludder, July 18, 1876, is a type of those plans which, in the main, involve the use of two pipes, extending through the roof of the house, operating in effect like an inverted siphon with unequal legs, through the longer leg of which an ascending current is supposed to be passing, and through the shorter one of which a descending current. In the patent referred to, the gases generated in the soil-pipe are supposed to be carried downward through the house to the bottom, and upward again through an ascending pipe, thereby retaining them as long as possible in the house; whereas in my system there is but one pipe leading through the house, and the deleterious gases are driven upward through it, by the shortest and quickest passage, to the external atmosphere by a current of air, which is supplied from the cellar of the house, thereby ventilating it at the same time that the soil-pipe is purged.

I do not claim, generally, ventilating soil-pipes of houses by fresh air, since that is old.

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

In the soil-pipes of houses, the combination of a street-trap, an opening into the soil-pipe of such trap communicating with the cellar of the house, and a ventilating-cowl on the upper end of the soil-pipe in the external air, thereby both ventilating the cellar and the sewer, substantially as described.

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Witnesses:
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