

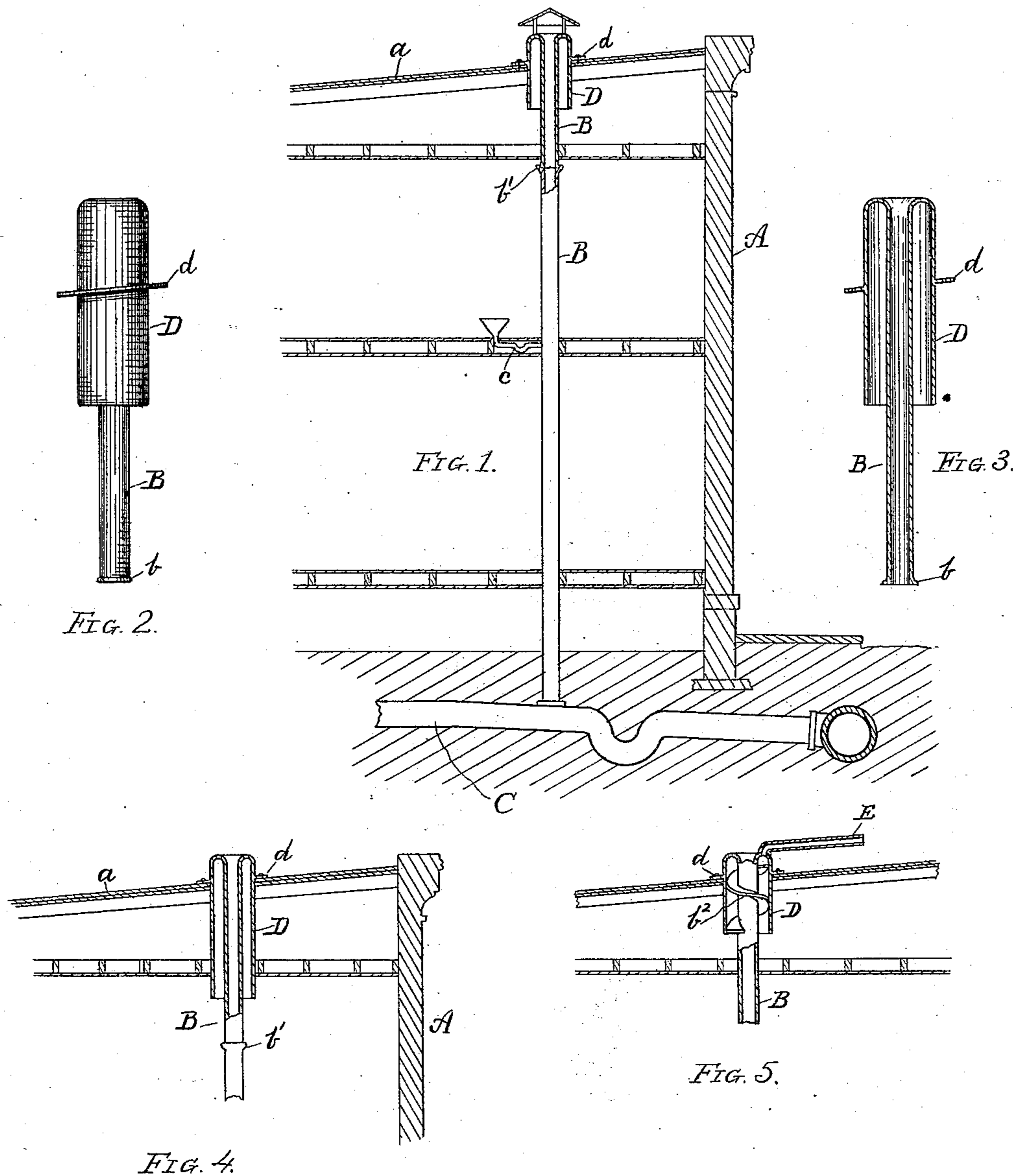
(No Model.)

T. C. BOYD.

FROST PROOF VENTILATOR FOR SOIL AND OTHER PIPES.

No. 334,337.

Patented Jan. 12, 1886.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

THOMAS C. BOYD, OF CHICAGO, ILLINOIS.

## FROST-PROOF VENTILATOR FOR SOIL AND OTHER PIPES.

SPECIFICATION forming part of Letters Patent No. 334,337, dated January 12, 1886.

Application filed September 28, 1885. Serial No. 178,325. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS C. BOYD, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Frost-Proof Ventilators for Soil and other Pipes, of which the following is a description, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a building provided with a soil-pipe to which my improved ventilator is attached, said ventilator being shown in section. Fig. 2 is a detached view of said ventilator. Fig. 3 is a vertical sectional view of the same. Fig. 4 is a detail view showing a modification of Fig. 1, and Fig. 5 is a vertical sectional view of a still further modification thereof.

Like letters of reference indicate corresponding parts in the various figures.

The object of my invention is to provide a device whereby the ventilators of soil-pipes, closets, drains, catch-basins, and the like may be prevented from freezing, all of which is hereinafter more particularly described, and definitely pointed out in the claims.

In the drawings, A represents a building provided with the usual soil-pipe, B, which is extended upwardly through the roof *a*, to serve in the usual manner as a ventilator for the house-drain C beneath. Great difficulty and inconvenience have been heretofore experienced from the fact that the warm vapors arising from soil-pipes become congealed upon contact with the cold protruding end of the ventilating-pipe and form hoar-frost, which serves to obstruct the pipe and prevent a free flow of air through it, thus producing siphonage of the traps connecting with said pipe, as at *c*, Fig. 1, and permitting an influx of sewer-gas to the building. This has occurred in my experience in the most costly buildings, which have been especially designed with reference to the best sanitary conditions.

In ventilators of the class mentioned heretofore in use it has been customary to simply extend the soil or ventilating pipe out of the roof without any protection whatever.

My invention has reference to utilizing the warmer air of the building beneath to prevent said pipe from freezing; and I accomplish said result by inclosing said exposed portion of the pipe in a secondary pipe or receptacle, pref-

erably closed at the top around the mouth of said ventilating-pipe, and extending through the roof into the building below, the lower end of said inclosing portion being open. Said inclosing portion or case may consist of a box of any desired shape, as round, square, or polygonal, and may be constructed of any suitable material; but is preferably made in the form of a long depending annular flange, as shown at D in the respective figures, said flange being preferably cast or formed from sheet or other metal or clay or other substance, substantially in the form shown in Figs. 2 and 3. In Fig. 1 I have shown said annular flange or inclosing pipe as extending through the roof only. In Fig. 4 I represent a modified form thereof extending through the ceiling below.

I prefer to attach the hood or inclosing-pipe D to a short length of the ventilating-pipe or to cast the same in one piece therewith, the lower end of said pipe being provided with a bead or flange, *b*, to enable the same to form a joint with the pipe B, as at *b'*, Figs. 1 and 4. A flange, *d*, conformed to the pitch of the roof, is formed upon the part D, for securing said ventilator to the roof, as shown.

Fig. 5 shows a modification in which I provide a pipe, E, attached to the top of the flange D, and communicating with the space between the flange D and pipe B, in which event I prefer to insert a spiral flange, *b*<sup>2</sup>, around the pipe B to distribute the warm air uniformly around the same; but I regard the construction shown in Figs. 2 and 3 as more desirable for obvious reasons.

The operation of said device is as follows: The warm air from the building ascends into the space between the pipe B and flange or pipe D, and upon becoming cooled descends to give place to warm air. Thus a warm-air current is continually maintained around the pipe B, which prevents the formation of frost therein, and this is true whether said annular space is closed or open at the top; but if open said opening should be at some distance from the mouth of the ventilating-pipe B, as otherwise the sewer-gas might often descend into the building. The pipe E, or any similar device, may serve this purpose, but renders said device more expensive.

Having thus described my invention, what I

claim, and desire to secure by Letters Patent,  
is—

1. The combination of the pipe B with the  
depending flange D, substantially as described,  
5 and for the purposes specified.

2. The combination of the ventilating-pipe  
B with the depending annular flange or case D  
and roof-flange *d*, substantially as described.

3. As a new article of manufacture, a section  
10 of ventilating-pipe having a return-case sur-

rounding the same of sufficient length to ex-  
tend beneath a roof from which said pipe may  
be protruded, said case being open at the bot-  
tom and having an air-space between it and  
said pipe, substantially as specified.

THOMAS C. BOYD.

Witnesses:

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