(No Model.)

T. C. BOYD.

FROST PROOF ATTACHMENT FOR SOIL AND OTHER PIPES.

No. 346,715. Patented Aug. 3, 1886.

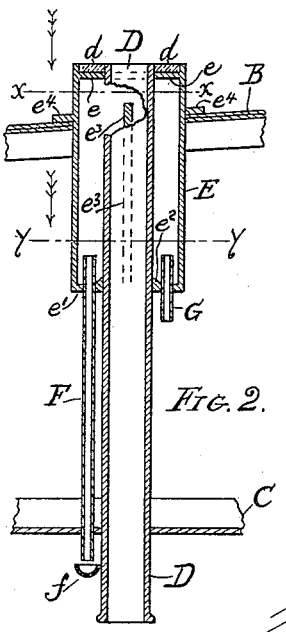

FIG. 2.

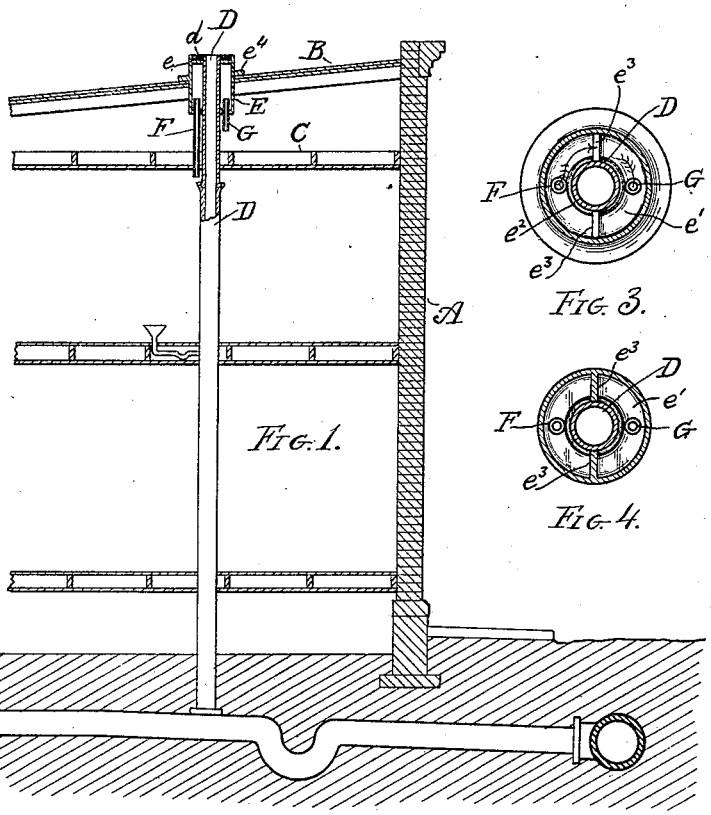

FIG. 1.

FIG. 3.

FIG. 4.

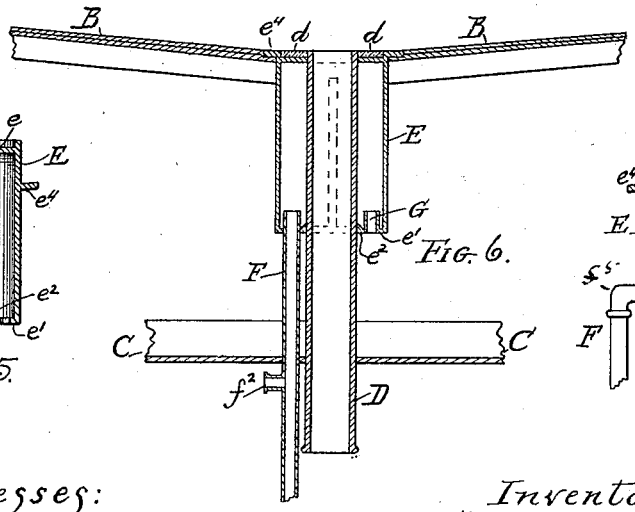

FIG. 6.

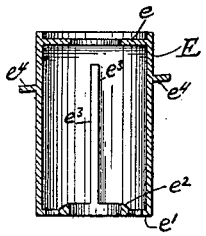

FIG. 5.

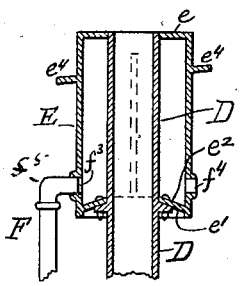

FIG. 7.

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UNITED STATES PATENT OFFICE.

THOMAS C. BOYD, OF CHICAGO, ILLINOIS.

FROST-PROOF ATTACHMENT FOR SOIL AND OTHER PIPES.

SPECIFICATION forming part of Letters Patent No. 346,715, dated August 3, 1886.

Application filed March 29, 1886. Serial No. 196,880. (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 a new, useful, and Improved Frost-Proof Attachment for Soil and other Pipes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a building having a soil-pipe ventilator to which said protector is applied. Fig. 2 is an enlarged sectional view of said device as applied to a ventilating-pipe. Fig. 3 is a transverse sectional plan view of the same, taken upon the line *x x*, Fig. 2. Fig. 4 is a like sectional view upon the line *y y* in said Fig. 2. Fig. 5 is a central vertical sectional view of said device when separated from the ventilating-pipe. Fig. 6 is a vertical sectional view of said device as applied to a down spout; and Fig. 7 shows a modified form of connecting the pipes.

Like letters of reference indicate like parts in the different figures.

The object of my invention is to provide a frost-proof attachment or protector for the protruding or exposed ends of down spouts, soil, and other pipes, and which, when applied thereto, may serve to prevent the accumulation of frost and ice at the mouth of said pipes, all of which is hereinafter more particularly described and claimed.

In the drawings, A represents a building, of which B and C form the roof and upper ceiling, respectively.

D shows an ordinary ventilating-pipe extending through the roof, while E indicates my improved protector as applied thereto. Said protector consists of a hollow metal cylinder, preferably cast and provided with internal annular flanges, *e e'*, the former of which is placed somewhat below the top of the cylinder, while the latter is slanted upwardly or provided with an upwardly-extended bead, e^2, upon its inner edge. The interior opening formed by the flanges *e e'* is of such a size as to enable the pipe D to be inserted therein and to fit closely against said flanges. Internally-projecting radial flanges e^3 e^3 are likewise formed within said cylinder, extending upwardly from the flange *e'* nearly to the flange *e*, as shown in Fig. 2. A flange, e^4, is formed upon the outside of the cylinder, which is intended to rest upon the roof and retain said cylinder in position. If the top of the cylinder is intended to be even with the roof, as is the case when applied to down spouts, as shown in Fig. 6, said flange should be at the top, while in other cases it may be placed farther down, as shown in Fig. 1.

Extending upwardly through the flange *e'* and into the cylinder, as clearly shown in the drawings, I place a pipe, F, which is carried through the ceiling C into the room below, said pipe being open at both ends, and preferably provided with a drip-cup, *f*, at the bottom, to collect any moisture which may form therein as the result of condensation. Upon the opposite side of said cylinder I place a short pipe, G, open at both ends. The object of extending the pipes F G upwardly into the cylinder and of providing the bead e^2 is to form a receptacle at the bottom of the cylinder for the collection of such moisture as may be condensed within it. In the event that the space between the walls of the pipe D and the cylinder E should prove to be too small to insert a sufficiently-large pipe, I prefer to form openings f^3 f^4 upon opposite sides thereof, into one of which, as f^3, may be secured an elbow, f^5, and the pipe F screwed therein. This permits the moisture to collect at the bottom of the cylinder, where it is prevented from dropping to the ceiling below, and hence serves the same purpose as the upward extension of the pipes F G. In connecting said attachment, the cylinder is passed over the exposed end of the pipe until the tops of the two are even. The connection is then made tight and the attachment secured in place, preferably by filling the annular depression at the top above the flange *e* with melted lead, as at *d;* or the attachment may be bolted to the pipe, as shown in Fig. 7, or in any well-known way. The effect of said attachment is to cause a passage of air upwardly from beneath the ceiling C through the pipe F and into the cylinder E, when it passes over the tops of the partitions e^3 and down through the opening in the pipe G. It is thus obvious that the passage of warm air would be continuous, and thus prevent the formation of ice or frost at the mouth of the pipe D.

If desired, the drip-cup *f* may be dispensed with and the lower end of the pipe F conducted to an open water-fixture, while a lateral opening, f^2, may be provided for the admission of air.

The advantages of said protector are that it may be readily attached to pipes in actual use, or to down spouts, especially where the latter are placed upon the inside of the building.

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

1. A frost-proof attachment for soil and other pipes, consisting of a hollow metal cylinder provided with internal annular flanges at or near its top and bottom, internal radial flanges extending upwardly upon opposite sides thereof from the bottom nearly to the top annular flange, and suitable openings at or near the bottom for connecting air-pipes therewith upon opposite sides of said radial flanges, substantially as described.

2. The combination, with a ventilating or other pipe, of a hollow metal cylinder provided with internal annular flanges at or near its top and bottom, internal radial flanges, e^3, and suitable openings at or near the bottom and upon opposite sides of the flanges e^3, for the induction of warm and eduction of cold air, substantially as specified.

3. The combination, with a soil or other pipe, of the cylinder E, having flanges *e e'*, the latter being provided with beads e^3, partitions e^3, and air-openings upon opposite sides of said partitions, the mouths of said openings being above the upper surface of the flange *e'*, whereby moisture condensed within the cylinder may be retained therein.

4. The combination, with a soil or other pipe, of the cylinder E, having flanges *e e'*, partitions e^3, pipes F G, and means for attaching said cylinder to the pipe which it surrounds, substantially as described.

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