R. B. MILLER.

Improvement in Eaves-Troughs and Conductors.

No. 115,340. Patented May 30, 1871.

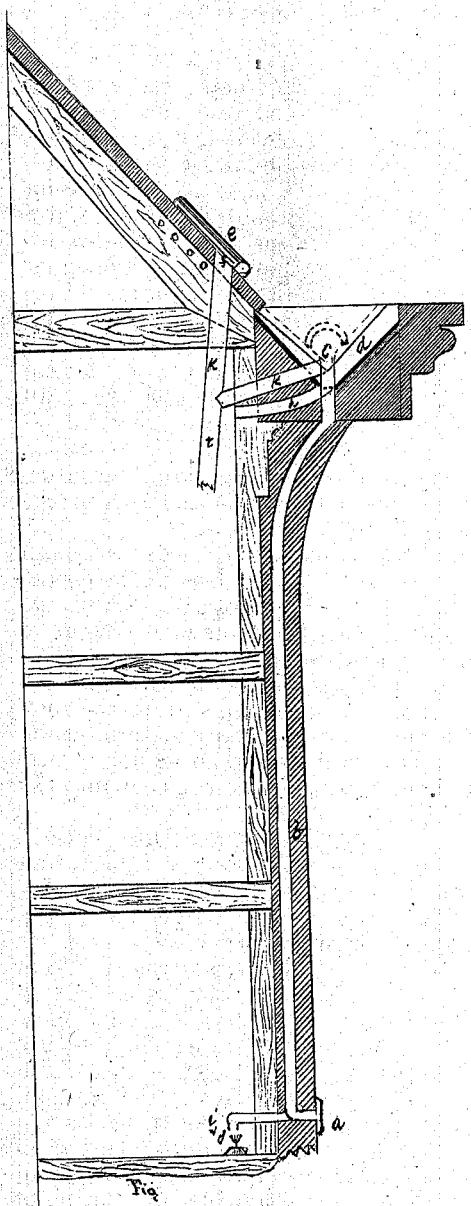

Fig.

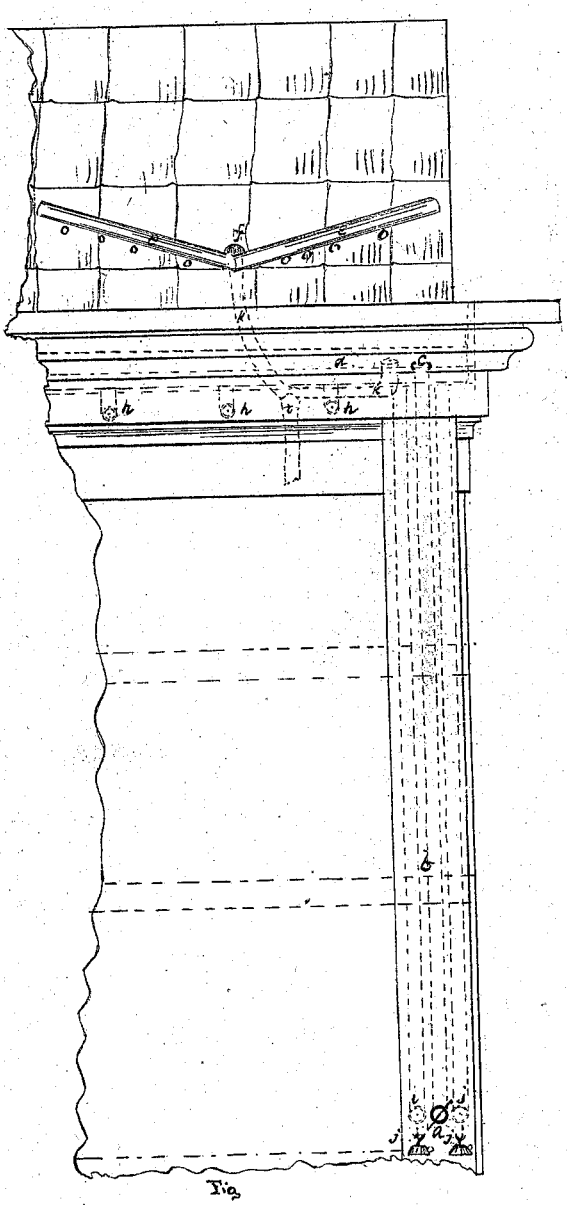

Fig.

Witnesses

H. N. Warner

Geo. Burnop.

Inventor

Rutger B. Miller

UNITED STATES PATENT OFFICE.

RUTGER B. MILLER, OF UTICA, NEW YORK.

IMPROVEMENT IN EAVES-TROUGHS AND CONDUCTORS.

Specification forming part of Letters Patent No. 115,340, dated May 30, 1871.

To all whom it may concern:

Be it known that I, RUTGER B. MILLER, of Utica, in the county of Oneida and State of New York, have invented a new and Improved Mode of Preventing the Accumulation of Ice and Icicles in the Conductors and Eaves-Troughs and on the Roofs of Houses or other buildings; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature or principle of my invention consists in applying heated air to the lower and upper orifices of the conductors and to the surface of the eaves-trough, and to a tube of metal or brick tile placed on the roof above the eaves where ice accumulates, which heated air is derived from the basement or attic story of the house by means of tubes of metal or other material placed in contact with the conductor and eaves-trough and tile on the roof above the eaves, where ice accumulates in such manner as to prevent the reflux of water into the interior of the house or the overflowing of the eaves-trough or bursting of the conductor, or formation of icicles, &c.

To enable others skilled in the art to make use of my invention, I will proceed to describe its construction and operation, reference being made to the drawing accompanying this specification.

Let the lower orifice of the conductor *a* be protected with a valve, which will open with the pressure of water from the conductor *a*, and shut when not thus opened, so as to exclude cold air, snow, and sleet tending to close the orifice with ice made by the droppings of the conductor mingled with snow or sleet. Let the lower elbow of the conductor be kept warm by heated air, derived from the basement, passing through tubes *i* and *j*, of metal or other material. The mouth of the conductor being thus secured from closing with ice—the primary cause of all the difficulty in the conductor and eaves-trough—the conductor is kept warm by heated air rising from the tubes *i* and *j*, which may be temporarily warmed by an ordinary lamp or gas, if there be no other fire in the basement, placed in contact with the elbow of the conductor, one on each side thereof, and running up on each side of the conductor, all three pipes being protected by a covering or flue of wood, brick, or other material, *b*, which may be coated with an internal insulating composition to aid the conducting power of the flue or jacket. This column of heated air enters through the cornice into an air-chamber under the base of the eaves-trough, and prevents the closing of the upper orifice of the conductor by ice or snow, *c*. Furthermore, it ascends through this air-chamber, warming the base of the eaves-trough, and preventing its filling with ice, or the formation of icicles, or overflowing upon the wall or door-steps, &c. Other tubes may be admitted into this air-chamber from the attic *h*, thus increasing the heat, and aiding the circulation from the orifice to the other end of the eaves-trough.

To complete the operation, the eaves-trough should be covered with a brick (horseshoe) tile, simply laid in the trough to prevent its filling up with leaves and snow, as well as to retain heat, and cause snow to melt as it falls instead of filling the trough and freezing into ice by mixing with droppings from the roof. This covering may be of any material, such as tin, zinc, or wood, so placed as not to prevent the flow of water from the roof into the eaves-trough.

Effectual as these means are for preventing ice and icicles in the eaves-trough and conductor, my invention would fail in its principal object but for the arrangement on the roof, *e e* and *f*, which prevents a reflux of water through the roof into the house, resulting from an accumulation of ice on the eaves, caused by the melting of snow on the upper part, which is warmer than the lower part, because heated internally by the air of the attic, which is warmer by several degrees at the internal apex of the roof in the attic than at the eaves; whence it results that the water flowing from melted snow near the apex on the roof will congeal near the eaves and form a coating of ice from one to two feet in thickness, causing water to flow back under the shingles or slate, or even tin-roofs, the soldering of which is broken by the weight of the ice. To prevent this most important difficulty in the case before us the tubes or brick-tiles *e e f* are warmed from the air of the attic or from the chimney-flue therein, admitted through tubes *o o o o*,

of tin or other material, and so attached to the roof as to turn the water of the melted snow into the orifice *f*, from which a lead pipe, *k*, leads the water to the orifice in the eaves-trough *d*, furnishing water for a tank, *t*, in the attic, if desired, and thus prevents its congelation and accumulation on the lower part of the roof, and the consequences thereof, above specified.

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

1. The metal tubes or brick tiles, or their equivalents, marked *e e f*, on the roof, warmed by heated air from the attic, admitted through tubes *o o o o*, or their equivalents, for the uses and purposes mentioned.

2. The brick horseshoe-tiles or tin-pipes, or their equivalents, placed in the bottom of the eaves-trough, for the uses and purposes mentioned.

3. The valve at the lower extremity of the conductor, marked *a*, or its equivalent, for the uses and purposes mentioned.

Utica, January 11, 1870.

RUTGER B. MILLER.

Witnesses:

EDWIN H. REILY,

JAMES F. LEAHY.