2 Sheets—Sheet 1.

C. A. VAILE.

Ventilator and Chimney-Cap.

No. 196,504. **Patented Oct. 23, 1877.**

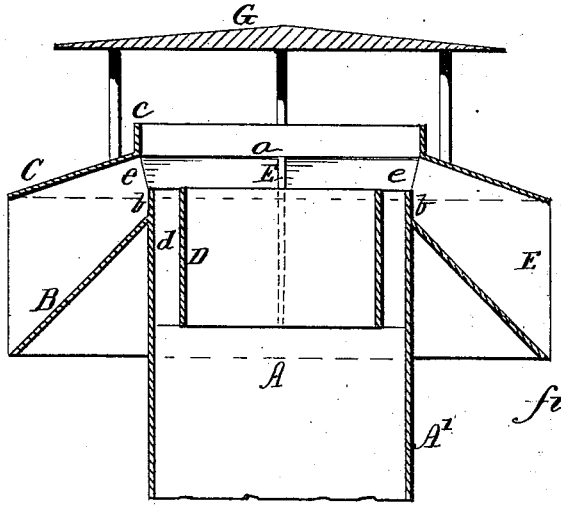


fig. 2

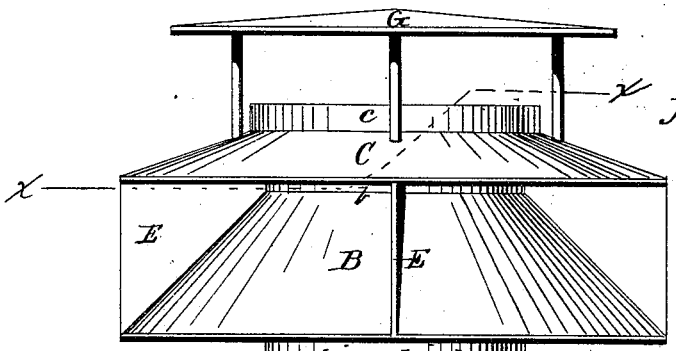


fig. 1

fig. 3

Witnesses

A. E. Barton

D. Harrington

Inventor

Chas. A. Vaile

By Chas. H. Burleigh

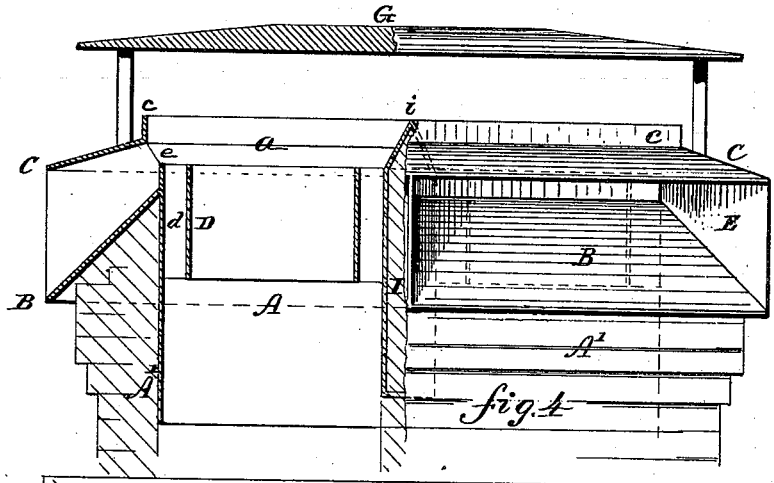
Atty.

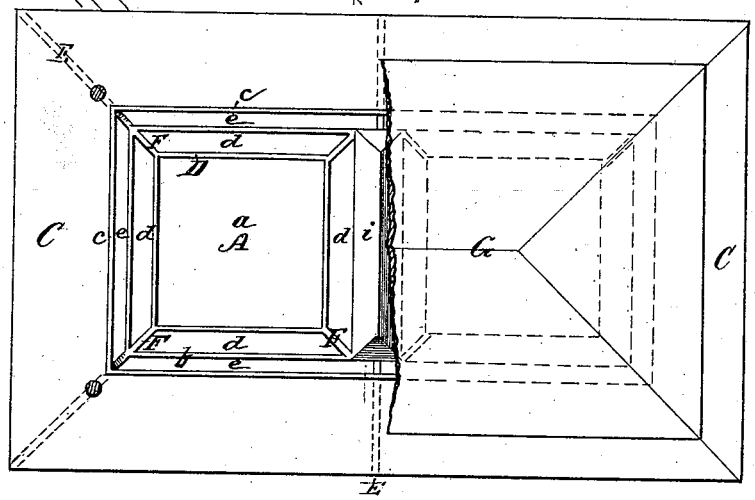
2 Sheets—Sheet 2.

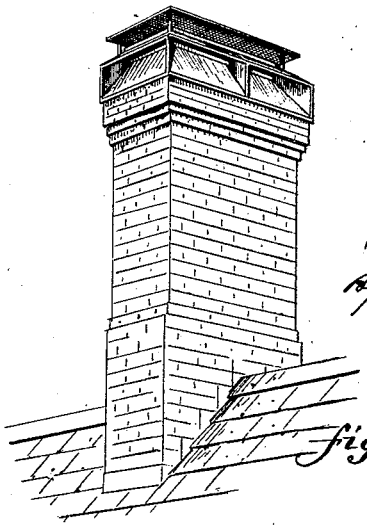
C. A. VAILE.

Ventilator and Chimney-Cap.

No. 196,504. **Patented Oct. 23, 1877.**







Witnesses

J. E. Barton

D. Harrington

Inventor

Chas. A. Vaile

By Chas. H. Burleigh

Atty.

UNITED STATES PATENT OFFICE.

CHARLES A. VAILE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO J. MARCUS RICE, OF SAME PLACE.

IMPROVEMENT IN VENTILATORS AND CHIMNEY-CAPS.

Specification forming part of Letters Patent No. **196,504**, dated October 23, 1877; application filed April 16, 1877.

To all whom it may concern:

Be it known that I, CHARLES A. VAILE, of the city and county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in Ventilators and Chimney-Caps; and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a side view of a cap made in accordance with my invention, and adapted for a cylindrical flue. Fig. 2 is a vertical central section of the same; Fig. 3, a horizontal section at line *x x*, Fig. 1; Fig. 4, a half-elevation half-section view of a rectangular double cap embracing my invention, as adapted for square and double-flued chimneys. Fig. 5 is a half-plan half horizontal sectional view of the same, and Fig. 6 represents a perspective view of a chimney with my improved cap arranged thereon.

This invention relates to that class of ventilators or chimney-caps wherein upward draft in the flue is effected or augmented by the action of the wind against or through the cap; and my invention consists in the peculiar construction and arrangement of the inlet and draft passages, and the plates, flanges, and partitions for guiding and governing the air-currents, as hereinafter fully described.

In the drawings, A denotes the main flue, formed by the inclosing tube or casing A′. B indicates a downwardly-inclined rim, plate or surface surrounding the tube A′, and joining it (preferably at an angle of about forty-five degrees) near its upper extremity, the tube A′ projecting a short distance above the inclined surface to form the annular deflecting-flange *b*.

C indicates a second rim or plate, arranged above the rim B, and having a central opening, *a*, concentric with and of similar shape to the end of the tube A′, but of somewhat greater diameter. This opening *a* is surrounded by a flange, *c*, of the same, or nearly the same, height as the flange *b*, while the position of the rim C is such as to give an open space or passages, *e*, at the top of the flange *b*, and below the flange *c*, said space *e* being about equal in width to the height of flange *b*.

Within the flue-passage A, and concentric with its casing A′, I arrange a short tube or casing, D, the length of which equals about one-half the diameter of flue A, more or less, while the diameter of said tube D is such as to allow space or draft-passages *d* at all sides between it and the casing A′, said space being of about the same width or capacity as the inlet-openings *e*. (See Figs. 2, 3, 4, and 5.) The arrangement of the passages *e* and *d* is such that the air entering the open spaces *e* passes across the end of the passages *d* and produces an upward current therein.

Upright partitions E are arranged between the rims B and C, dividing the space between said rims into separate inlet-passages, and radial partitions F are arranged across the space *d*, at intervals corresponding with the partitions E, to separate said space into draft-passages to match the several inlet-passages *e*. A greater or less number of divisions may be employed.

The top plate G for covering the end of flue or opening *a* is of less diameter than rims C and B, so that downward currents of air will be deflected outward by the said rims, instead of curling under the edge of the cap-plate. The plate G is supported by suitable standards at a height above the flange *c* sufficient to give the necessary exit-opening for the escape of the air or gases which pass up through the space *a*.

In the double cap, where two or more flues are employed, the flues are separated by a dividing-partition, I, having a pyramidal or wedge-shaped top, *i*, which deflects the air-currents upward when blown across one flue from the other. (See Figs. 4 and 5.)

The upward draft in the flue A is occasioned by the force of the wind passing in at the inlets *e*, across the ends of the draft-passages *d*, and upward through the opening *a*, tending to form a partial vacuum within and below the passages *d* and at the center of the space *a*.

The cap, constructed as shown in Figs. 4, 5, and 6, is specially adapted for use on chimney-heads built of brick-work or masonry, and the inlets *e* are made to correspond with the

straight outer sides of the flues, the inner or draft passages *d* being straight, with their partitions F radiating from the several angles thereof. The rim B extends over and forms a protecting water-shed for the masonry. Said rim B may, if desired, be made wider than the rim C when a thick course of masonry is to be covered.

The cap may be extended to include any desired number of flues, the upright partitions E being arranged at intervals corresponding with the flue-divisions.

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

1. The combination, in a ventilator or chimney-cap, of the central passage A, the surrounding draft passage or passages *d*, opening into and forming a portion of the upward flue, the inlet space or passages *e*, air-deflecting rims B and C, the latter provided with concentric opening *a*, and the top plate G, and concentric opening *a*, substantially as set forth, and for the purposes stated.

2. In combination with the flue tube or tubes A′, the inclined rim B, the upper rim C, having less inclination, the top plate G, and the inner tube D, substantially as and for the purposes set forth.

3. The combination, substantially as described, in a ventilator or chimney-cap, of the tube or flue-casing A′, inclined rim B, joining tube A′ with a flange, *b*, the inner concentric tube D, the upper rim C, having flange *c* and opening *a* of greater diameter than the flue A, and the top plate G, made smaller or of less diameter than the rims B C, as and for the purposes stated.

4. The combination, with the rims B and C and tubes or casings A′ and D, of the upright partitions E and radial partitions F, arranged, in relation to each other, substantially as described, and for the purpose set forth.

5. In a ventilator or chimney-cap for two or more flues, the combination, with the casing A′ and rim-plates B C, of the dividing-partition I, having inclined or pyramidal top *i*, substantially as and for the purposes set forth.

6. The combination, with a chimney-head built with brick-work or masonry, of a metal cap or cowl provided with a series of side inlets, *e*, corresponding with external sides of flues, internal lining-tubes D, arranged concentrically within the flues to form draft-passages up to the said inlets *e*, flue-dividing partitions having pyramidal or wedge-shaped tops *i*, and downwardly-inclined projecting rim or rims B, for covering and protecting the masonry, substantially as herein set forth.

CHARLES A. VAILE.

Witnesses:

CHAS. H. BURLEIGH,

J. MARCUS RICE.