F. EMERSON.

Chimney Cap.

No. 5,183. Patented July 3, 1847.

Fig: 2.

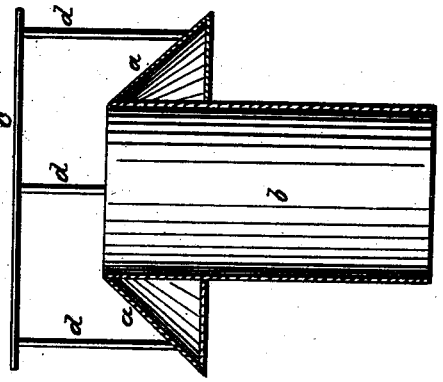
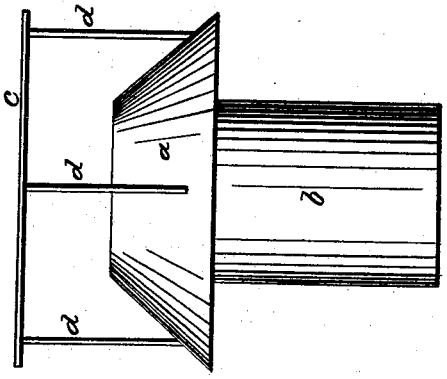


Fig: 1.



UNITED STATES PATENT OFFICE.

FREDERICK EMERSON, OF BOSTON, MASSACHUSETTS.

VENTILATOR.

Specification of Letters Patent No. 5,183, dated July 3, 1847.

To all whom it may concern:

Be it known that I, FREDERICK EMERSON, of Boston, in the county of Suffolk and State of Massachusetts, gentleman, and a citizen of the United States, have invented a new and useful Ventilator for Ventilating Buildings, Apartments, and other Places, which I denominate the "Ejecting-Ventilator," which has not before been known or used and of which the following is a true and full description.

The ejecting ventilator is designed to withdraw impure air from the interior of ships and buildings, and from any other places requiring ventilation; it is also designed to draw off and discharge smoke, gas, steam and vapor, through flues, pipes and other apertures. It consists of three principal parts, formed and combined as follows.

Part first is the frustum of a cone (*a*) containing a cylindric tube (*b*) the upper end of the frustum and the upper end of the tube being united, and the body of the tube passing down through the body of the frustum, (see drawings Nos. 1 and 2.) and extending below the base of the frustum as at (*b*).

Part second is a circular plate (*c*) which I denominate a fender. It is placed over the upper end of the frustum, its center being vertical to the center of the tube, and its disk parallel to the base of the frustum. (See drawings Nos. 1 and 2.)

Part third is the support of the fender. This, consists of a rod or rods (*d*) descending perpendicularly from the fender to the slant side of the frustum or into the center of the tube. The fender, however, where it is practicable and convenient, instead of having a support projecting upward from the conic frustum, may be supported by rods or other supporters attached to some vertical or lateral fixture or fixtures, such fixture or fixtures being at such a distance from the ventilator as not materially to disturb the external current of air about the ventilator.

Dimensions.—This ventilator may be of any size, but whatever its size shall be, its relative dimensions should be as follows: The diameter of the base of the frustum should be equal to twice the diameter of the tube. The diameter of the fender should be equal to the diameter of the base of the frustum. The height of the fender above the upper end of the tube should be equal to six-tenths of the diameter of the tube. The angle of the side of the frustum should be forty-five degrees from the perpendicular. The size of the rod or rods that support the fender, should be no greater than is sufficient to support it and keep it steady, and resist the wind and any other force to which it may be exposed by its situation. The length of the tube below the base of the frustum should be equal to once and a half the diameter of the tube.

I have, above, in order to render the description more plain, described this ventilator as standing vertically over the place to be ventilated, as it usually will do; but it may be placed horizontally, or at any angle to the horizon, or inverted. I have, also, for the same reason, described it as being formed on the frustum of a cone, as will in fact be usually the most convenient and the cheapest form, but it may be varied from this form without destroying its effect, the other conditions of its construction being, as nearly as may be, observed; thus it may be of such form as that the base, and consequently any section parallel to the base, instead of being circular, shall be triangular, quadrilateral, polygonal, elliptical or of an irregular figure. In such case the open space in the central part of the frustum, will, instead of being cylindrical, correspond to the exterior outline of the base of the frustum the fender although described as a plane may be slightly varied therefrom provided a clear horizontal passage is preserved between it and the tube. The proportional dimensions, the angles and relative distances of the parts of this ventilator are above given definitely, being those which I have by the results of a long course of experiments, proved to be the best, and accordingly those to which as near an approximation is to be made, as conveniently can be, in constructing the ventilator; but it is by no means essential to its successful application that these should be exactly followed; it will suffice if they are complied with approximately and substantially.

The material of the structure may be wood, masonry, iron or any other substance which has sufficient strength and is suitable to the place where it is to be used. When made of metal, the body of the frustum which lies between its slant side and the tube, and is represented as solid in drawing

No. 2 may either be hollow, or partly hollow and partly solid.

Application.—The lower end of the tube of the ventilator is to be attached to the end of a pipe, or to a flue or flues at the top of a chimney, or to any aperture leading from the place from which air, smoke or gas is to be drawn, while the fender and frustum are exposed to the wind.

The effect of the ventilator.—In whatever direction the wind strikes the ventilator, it diverges from the mouth of the tube, and there causes a partial vacuum; that is, it partially counteracts the vertical pressure of the atmosphere at the mouth of the tube, without affecting the upward pressure within the tube; hence arises the draft through the tube.

Although the relative dimensions of the parts of this ventilator, as specified above, are such as best fit it for a majority of the cases in which it is designed to be used; yet the dimensions may be relatively varied, and a corresponding variety of effects.

I do not claim simply the combination of the conic frustum with a fender above it; but

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

So placing the fender above the conic frustum as to leave a clear space between the plane of the upper edge of the conic frustum and the parallel plane of the lower part of the fender, substantially in the manner and for the purpose specified, whether the fender be a flat disk or varied from that form, as described.

FREDERICK EMERSON.

Witnesses:
WILLARD PHILLIPS,
A. D. PARKER.