C. A. VAILE & H. M. SANDERS.

VENTILATOR.

No. 183,520. Patented Oct. 24, 1876.

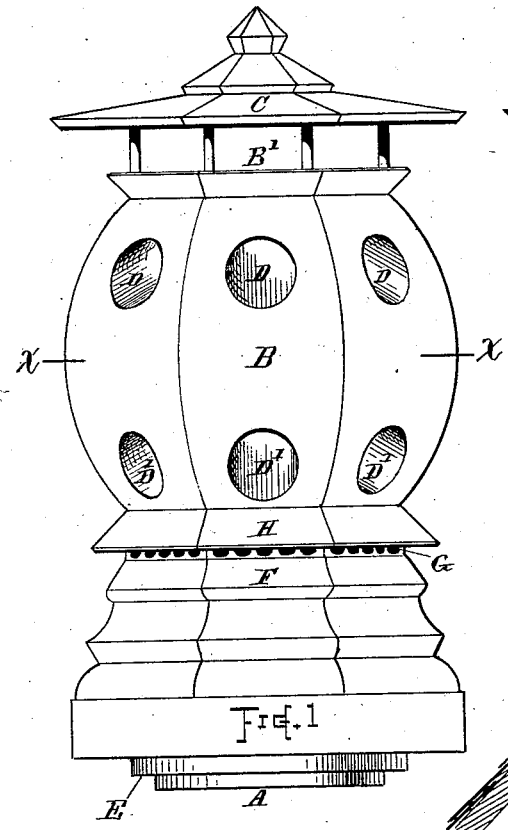

Fig. 1

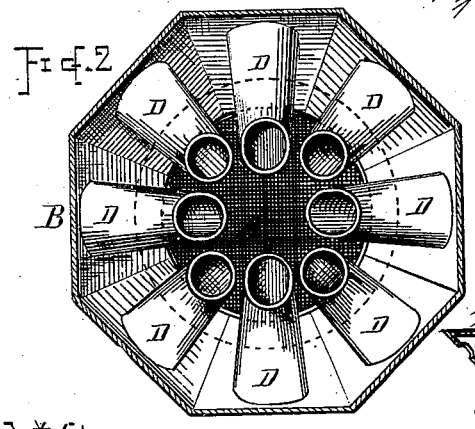

Fig. 2

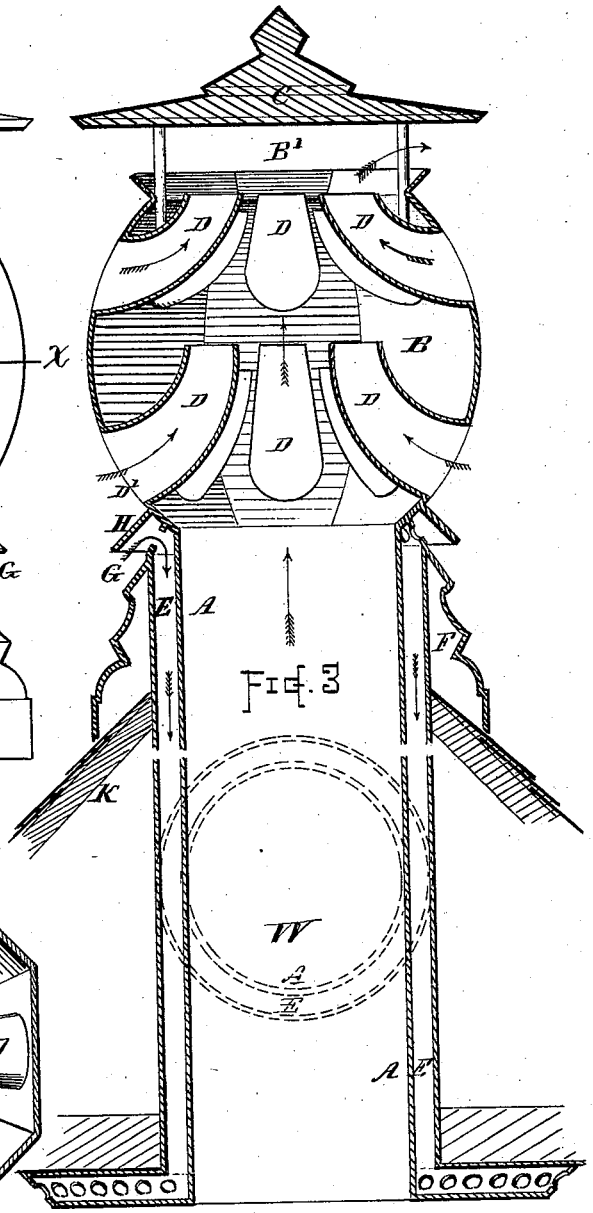

Fig. 3

Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES A. VAILE AND HENRY M. SANDERS, OF WORCESTER, MASSACHUSETTS, ASSIGNORS OF ONE-THIRD OF THEIR RIGHT TO JOSEPH MARCUS RICE, OF SAME PLACE.

IMPROVEMENT IN VENTILATORS.

Specification forming part of Letters Patent No. **183,520**, dated October 24, 1876; application filed April 17, 1876.

To all whom it may concern:

Be it known that we, CHARLES A. VAILE and HENRY M. SANDERS, both of the city and county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in Ventilators; and we do hereby declare that the following is a full, clear, and exact description of 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 ventilator-head embracing our improvements. Fig. 2 represents a horizontal section of the same, at line *x x*, Fig. 1; and Fig. 3 represents a central vertical section of the same, and also illustrates one method of applying it to use.

Our invention relates to improvements in the head or cowl employed at the tops of ventilating-flues, chimneys, or smoke-stacks; and one feature of our invention consists in the ventilator-head, of spheroidal shape, provided with one or more series of inwardly and upwardly converging funnels, constructed and arranged in relation to the head, and to each other, in the peculiar manner herein described.

Another feature consists in the combination, with the ventilator-flue and spheroidal head, of an outer fresh-air inlet-tube opening at the base of the head, as hereinafter described.

In the drawings, A denotes the ventilating-pipe or foul-air flue, the passage being continuous up through the head B, which latter is swelled outward at its central part to a spheroidal form, as indicated, in the present instance, having an octagonal section horizontally to facilitate its construction from ordinary sheet metal. The exit of the foul-air passage is through the top of the head B, at B′, and it is covered above with a plate or cap, C, as shown. D D indicate funnel-shaped tubes or air-inlet passages, arranged radially within the spheroidal part B, with their larger ends opening to the exterior of the head, while their inner or smaller ends turn upward and open in the direction of the exit-passage B′, said smaller ends being arranged in an annular group around the axis, or near the center of the head, as shown. The size of the tubes D may be varied to suit the requirements of different-sized flues, and the metal whereof they are formed may be turned at sharp angles instead of gradual curves. One or more rows of tubes D may be used, (preferably two rows,) which can be made with large external openings, since the spheroidal form of the head gives sufficient area without crowding the space between their sides, and allows sufficient air-passage around the tubes at the interior, while it permits greater taper or funnel shape between the inlet-openings and discharge-orifices. E indicates an annular flue or fresh-air inlet, arranged around the flue A, (see dotted section W,) joined to the base F, and provided with suitable openings G for the entrance of the air. A broad inclined flange, H, covers and protects the openings G, while it also directs the wind into the openings D′ of the tubes D. The base F below the openings G is also made inclined to direct the air to said openings. The flues A and E may be carried directly down into the room, as indicated, or they may be separated or connected with pipes leading from or to the several apartments to be ventilated, the manner of connecting not being a part of our invention, which refers specially to the cowl or portion above the roof K. The cap C and base-moldings may be made to correspond with the style of architecture of the buildings whereon the ventilators are used. The tubes D may have their inner upward ends inclined slightly to one side to impart a spiral motion to the upward current, if desired.

The operation of our improved ventilator is as follows: The outside currents of air enter the tubes D and make their exit in an upward direction inside the head B, making a strong up-current and causing a displacement of air in the lower part or flue A. The partial vacuum thus formed is filled from below, creating an upward draft in the ventilating-flue A. The air thus set in motion and the air which enters the tubes D pass out through the top opening B′, while a supply-current passes in at the openings G and down through the an-

nular passage E. By reason of the spheroidal form the air can enter several of the tubes D, whichever way the wind may be blowing, and, said tubes being contracted at their inner ends, the entering currents attain a greater velocity as they pass inward, thereby causing a strong upward discharge, even though the breeze should be quite light.

The ventilator may, if desired, be used without the annular flue E, and may be employed for air-ventilators, chimney-tops, or the smoke-stacks of boilers and locomotives. If desired, the flue A can be extended up into the head to or near the lower row of tubes D.

Having described our improvements in ventilators, we state that we do not herein make claim, broadly, to the use of blast-tubes or inlet-passages in flues or ventilators; but

What we claim therein as new, and of our invention, and desire to secure by Letters Patent, is—

1. The spheroidal head B, constructed as herein shown and described, with radial converging funnels D, opening from the exterior and discharging upward in an annular group around and near the axis or center of the head as set forth.

2. In combination, substantially as shown and described, the spheroidal head B, inwardly tapering tubes or funnels D, placed within the head B, flue or pipe A, and flat cap-plate C, said parts being constructed and arranged in relation to each other as set forth, for the purpose stated.

3. The combination, with the ventilator-head B, and flue A, of the external flue E, flange A, and openings G, substantially as and for the purposes set forth.

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Witnesses:
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