J. E. RICHARD.
Ventilator.

No. 205,418. Patented June 25, 1878.

Fig. 1.

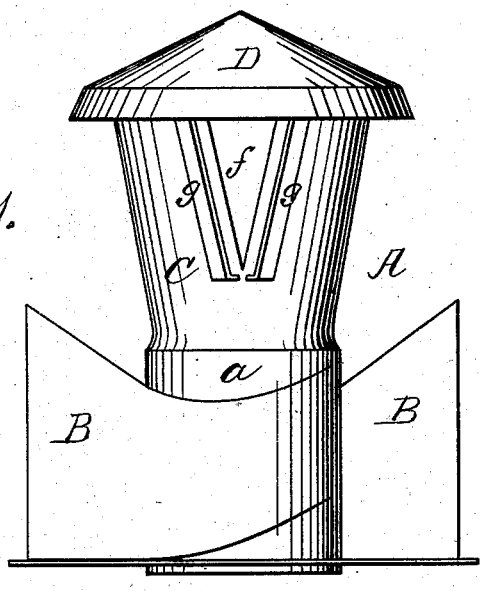


Fig. 3.

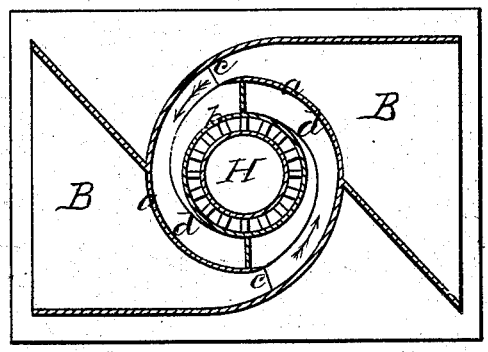
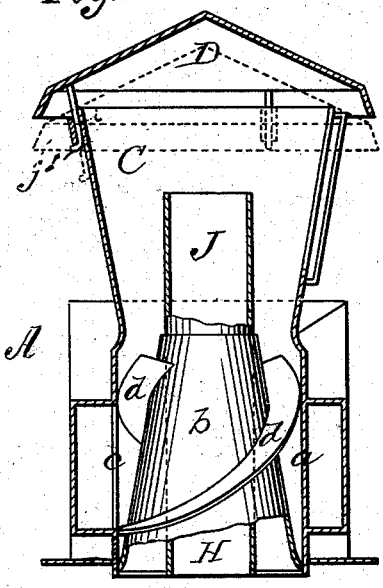


Fig. 2.



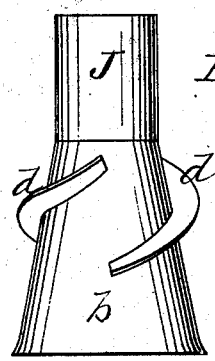


Fig 4

WITNESSES
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UNITED STATES PATENT OFFICE.

JEAN E. RICHARD, OF NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN S. HULIN, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN VENTILATORS.

Specification forming part of Letters Patent No. **205,418**, dated June 25, 1878; application filed May 4, 1878.

To all whom it may concern:

Be it known that I, JEAN ELIE RICHARD, of New York, in the county of New York and State of New York, have invented a new and valuable Improvement in Ventilators; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a side view of my improved ventilator. Fig. 2 is a vertical central section thereof. Fig. 3 is a horizontal section of the same; and Fig. 4 is a detail.

This invention has relation to improvements in ventilators.

The object of the invention is to devise a ventilator for houses, railroad-cars, and vessels which is convertible at pleasure from an exhauster, whereby foul air is sucked out of a room, into an air-feeder for the purpose of supplying fresh air to the same.

The nature of the invention consists in certain novel combinations of parts, as will be hereinafter more fully set forth.

In the accompanying drawing, the letter A designates my improved ventilator, consisting of a preferably cylindrical body, *a*, having rigidly secured to it an interior tube, *b*, of the form of a conical frustum, and open at both ends, two opposite trumpet-mouthed conduits, B, opening at *c* into the space between tube *b* and body *a* diametrically opposite to each other, a funnel, C, in continuation of the body *a*, and a cap or hood, D, secured to the upper end of the said funnel.

The tube *b* has a cylindrical extension, J, extending nearly half-way to the cap, and is provided with the spiral flanges *d*, that, starting each from an air-induct, *c*, extend in a regular curve nearly up to the said extension. These flanges reach from tube *b* to the body *a* of the ventilator, and turn around the former in the same direction.

The cap D fits close down upon the upper end of the funnel, as shown in dotted lines, Fig. 2, and the funnel is provided just below said cap with an angular opening, *f*, provided at each side with guards *g*, which prevent the wind from blowing in and disturbing the course of the air-currents.

When this ventilator is in position over the ventilating-aperture of a room or car, the air passing into the trumpet-mouthed conduit B is narrowed by its form and discharged in a forcible current through the inducts *c* into the interior of the ventilator. It is then conducted in a whirling course upward by the flanges. Dust, cinders, and other substances in the air are dashed by the force of the current against the side of the ventilator, owing to their greater specific gravity and centrifugal force, and pass out of the V-opening *f* along with some portion of the air; but the greater portion, not finding egress at said opening, is received in the tube *b* and discharged from its lower end in a state free from impurities. The guards *g*, by preventing outside air from blowing into the funnel, materially aid to produce this result by preventing the disturbance of the inside currents.

The extension or neck of the pipe *b* may be rigidly secured to it, as shown in Fig. 4, or it may be formed by passing a separate pipe, H, up from below through it, as shown in Fig. 3. The former construction will obtain when my ventilator is designed to be used permanently to supply fresh air to a car, house, or other place, and the latter when it is to be used sometimes to exhaust air therefrom. To do this pipe H should be removed and the cap raised to afford a sufficient discharge-opening between it and the top of the funnel. This latter has upon its upper edge a number of vertical eyes, *i*, in which are received a like number of rods, *j*, rigidly secured to the under side of the cap, and having their ends bent at *l* to prevent the cap from being blown off the funnel; or a nut may be applied to the rods below the eyes for the same purpose.

When the wind enters the mouths of both trumpets the currents pass separately into the body of the ventilator and pass around the tube *b* in the same direction, and (for the reason that the spiral flanges *d* turn about the said tube in the same direction) unite at its top and continue in a common whirl, thereby creating a strong eddy, which exhausts the

foul air from the room through the pipe *b* aforesaid.

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

1. In a ventilator, the combination, with the casing *a*, funnel C, cap D, and trumpets B B, having opposite inducts *c c* opening into casing *a*, of the interior conical pipe *b*, open at both ends, and provided with the spiral flanges *d*, each commencing at one of the inducts and running in the same direction around the said pipe *b*, substantially as specified.

2. The combination, with the casing *a*, having opposite trumpets opening into said casing, and the conical tube *b*, having the spiral flanges *d* running around said tube in the same direction, of the funnel C, having a cap, D, and angular opening *f*, provided with guards *g*, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JEAN ELIE RICHARD.

Witnesses:

TH. BÜRCKNER,

ALFRED ENGELSBERG.