# James L. Howard, Car-Ventilator.

117289

Fig 1

PATENTED JUL 25 1871

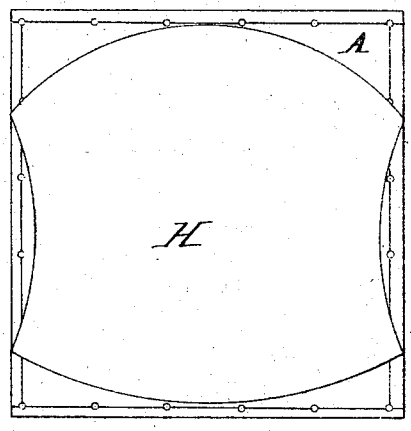
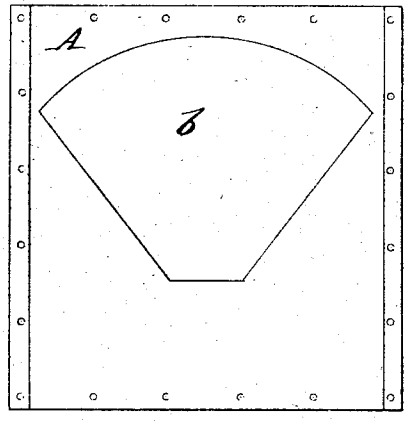



Fig. 2.




H Fig 3 x A

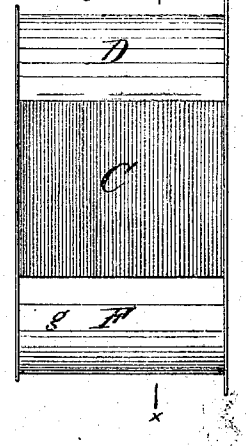



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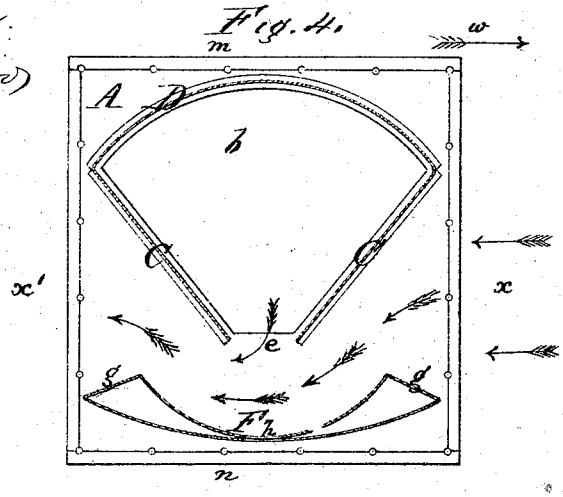
Fig. 4.



# UNITED STATES PATENT OFFICE.

JAMES L. HOWARD, OF HARTFORD, CONNECTICUT.

## IMPROVEMENT IN RAILROAD-CAR VENTILATORS.

Specification forming part of Letters Patent No. 117,289, dated July 25, 1871.

*To all whom it may concern:*

Be it known that I, JAMES L. HOWARD, of the city and county of Hartford and State of Connecticut, have made an invention of a new and useful Ventilator, suitable for railroad cars and and for other purposes; and that the following is a full, clear, and exact description and specification of the same.

The object of the invention is to exhaust air by the action of a current of air that is lateral to the direction in which the air is to be exhausted, whether the acting current be in one direction or in the opposite direction, without the necessity of adjusting any part of the ventilator, so that the ventilator may produce the exhaustion of air from the side of a car, whichever end of the latter may be moved forward, without the necessity of moving any part of the ventilator to adapt it to the change of direction of the exhausting current of air. To this end, my invention consists of a ventilator, which is a flat case having an aperture at one side for the admission of air laterally to its interior, a second aperture for the discharge of air in a vertical direction, two deflectors inclined vertically in opposite directions to direct a current of air across the discharging-aperture, a guard which both protects the discharge-aperture from vertical currents and guides the exhausting current across the said aperture, and a plate which closes the outer side of the apparatus.

In order that my invention may be fully understood, I have represented in the accompanying drawing a ventilator embodying it in the best form at present known to me.

Figure 1 represents the outer side of said ventilator. Fig. 2 represents the inner side of the same. Fig. 3 represents one edge of the same. Fig. 4 represents a transverse section of the same at the line *x x* of Fig. 3, looking toward the receiving-aperture.

The inner side A of the ventilator represented is constructed with the receiving-aperture *b*, by which the air to be exhausted is admitted into a cavity in the implement formed by the two deflectors C C and the curved top D of the case which connects the deflectors. The deflectors C C are inclined vertically in opposite directions, and are separated at their nearest points by the discharge-aperture *e*. Opposite this discharge-aperture is the wind-guard F, which is, by preference, constructed in the form represented in the drawing, so that each of its ends *g*, in connection with the opposite deflector C, forms a flaring mouth to receive the exhausting current. The outer side of the central cavity is closed by a flat plate, H, which completes the case and prevents external currents from entering the ventilator except at the front or rear edges thereof.

The apparatus thus described may be applied to the side of a car or to the roof thereof with either the side *m* or the side *n* uppermost. If applied with the side *m* uppermost the guard F should be perforated with one or more slits, *h*, to permit rain-water to escape; and if applied with the side *n* uppermost one or more slits should be made in the curved top (which then becomes the bottom of the apparatus) for the same purpose. When the ventilator thus constructed is applied to an aperture in the side of the raised roof of a railroad car, and the car is moved in the direction represented by the arrow *w*, Fig. 4, the current of external air enters the forward edge of the ventilator in the direction of the arrows *x*, and, being deflected in a vertical direction, is directed by the guard F across the discharge-aperture *e* and escapes at the rear of the ventilator. The current thus passed across the discharge-aperture induces a current through that aperture, and consequently through the receiving-aperture *b* from the car, which is lateral to the external current entering the ventilator. If the direction in which the car is moved be reversed the external current enters at the edge *x'* and escapes at the opposite edge, but the current is induced through the discharge-aperture as before.

The apparatus may be entirely constructed of tin plate, and consequently at a small cost.

I claim as my invention—

The ventilator, constructed, as before described, with a receiving-aperture at one side, two deflectors inclined vertically in opposite directions, a discharge-aperture between the ends of said deflectors, a directing-guard for the discharge-aperture, and the outer plate.

Witness my hand this 31st day of May, A. D. 1871.

JAMES L. HOWARD.

Witnesses:

GEO. C. BARNES,

ALBERT L. BURKE.