

THOMAS W. FREEBORN.

Ventilators for Railway-Cars.

No. 126,797.

Patented May 14, 1872.

Fig. 1.

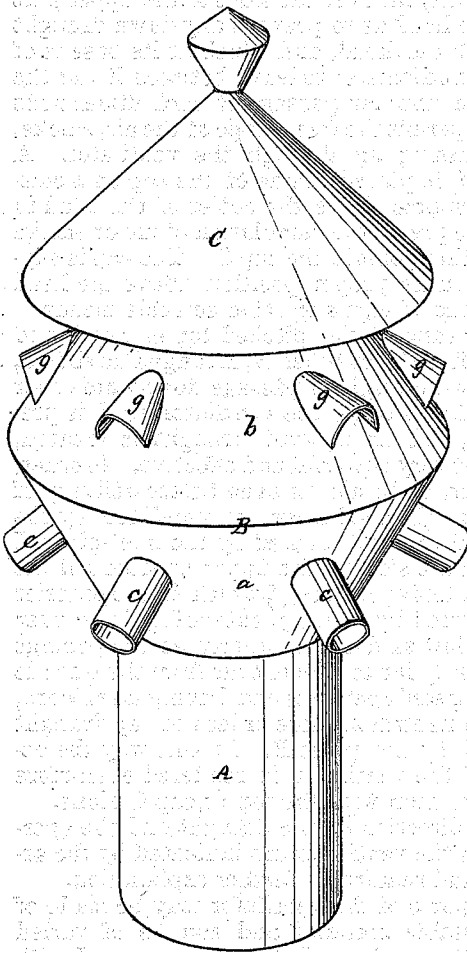
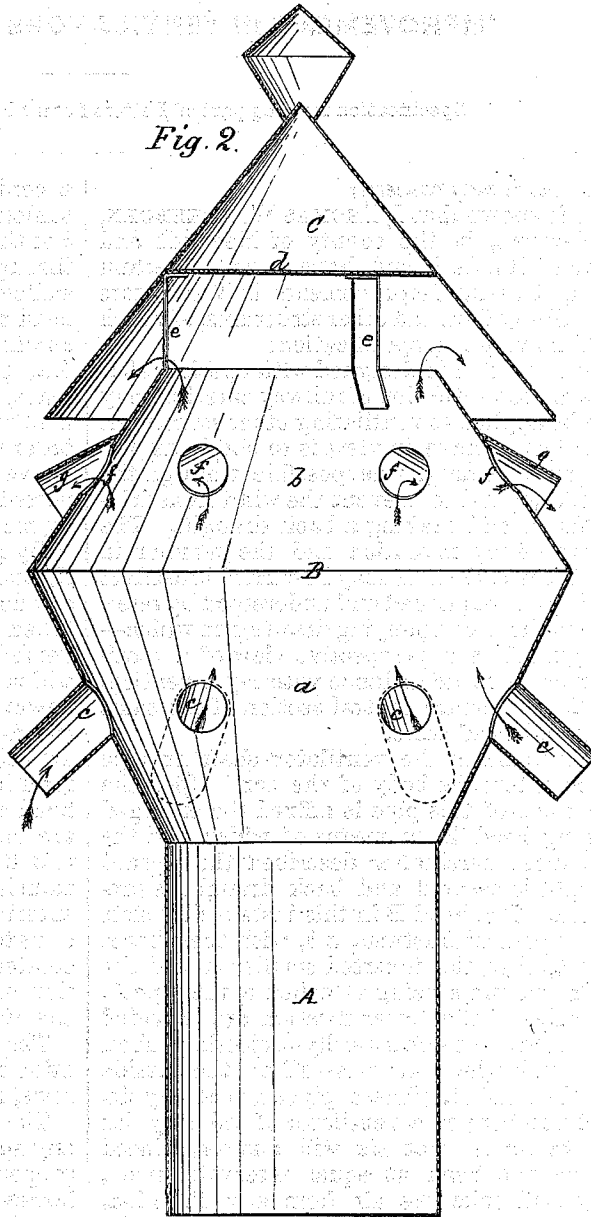


Fig. 2.



Witnesses.

C. B. Nottingham

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UNITED STATES PATENT OFFICE.

THOMAS W. FREEBORN, OF NEWPORT, RHODE ISLAND.

IMPROVEMENT IN VENTILATORS FOR RAILWAY CARS.

Specification forming part of Letters Patent No. 126,797, dated May 14, 1872.

To whom it may concern:

Be it known that I, THOMAS W. FREEBORN, of Newport, in the county of Newport and State of Rhode Island, have invented certain new and useful Improvements in Ventilators for Railway Cars and other structures, of which the following is a specification:

My invention is designed with special reference to the ventilation of railway cars, but may also be applied to ventilating other structures. The object I have in view is to obtain as perfect an up draught as possible through the ventilator, and to prevent the wind from driving down and making a back draught. The nature of my invention and the manner in which the same is or may be carried into effect can best be explained and understood by reference to the accompanying drawing, in which—

Figure 1 is a perspective view of a ventilator made in accordance with my invention. Fig. 2 is a vertical central section of the same on an enlarged scale.

A represents the ventilator-shaft or pipe which enters the body of the car. Upon the upper end of this pipe is affixed the enlarged bulging head B, by means of which and the appliances hereinafter described the upward draught is assured and back draught is prevented. The head B in this instance consists of two conical frustums, *a* *b*, with their bases put together, the inverted smaller end of the lower frustum *a* being attached to the pipe A. The sides of the lower frustum are provided with a series of downwardly-projecting tubes, *c*, through which air passes from the outside into the head B. These pipes are of any desired number; on a ventilator of ordinary size I have found that six will answer, placed around the head at equal intervals apart. They will take the air from any direction, causing a powerful up draught through the ventilator, while they are arranged at such an angle as to prevent the wind from driving down and making a back draught. I have found that for this purpose it will answer to place them at an angle of about forty-five degrees from the perpendicular. The outlet at the top of the head B should have about the same diameter as that of the pipe A in order to insure a more perfect delivery or escape of the air, smoke, &c., passing up through the ventilator. Over the top of the head is placed

a conical cap, C, which should extend down sufficiently far over the sides of the upper part *b* of the head as to prevent any down draught through the head, and which at its base is of sufficient diameter to leave between it and the head an annular passage of such dimensions as will permit the free escape of the air, smoke, &c., passing up through the ventilator. A plate, *d*, is placed inside of the cap at a suitable distance above the outlet of the head in order to prevent accumulation of air or smoke above that point in the cap C. The cap is supported in its proper position above the head by means of legs *e* or other suitable means.

By means of the pitched top or cap C and the inclined inlet-tubes B, arranged as shown, any down draught or passage downward of air taken in through the ventilator-head is prevented, and an upward draught is created, which is very powerful and effective. In order, however, to obtain an even better delivery of the foul air, smoke, &c., accumulated by the artificial draught created by the inlet-pipes, I form in the sides of the upper frustum *b* of the head outlet apertures, *f*, which on the exterior are covered by hoods *g*, extending down over and below said outlet apertures or openings sufficiently far to prevent air from the outside entering said apertures and driving downward, so as to neutralize more or less the up draught created by the pipes B. In this way the action of the ventilator is rendered even more effective than with the top or cap C alone.

The direction of the draught and the operation of the ventilator are indicated by the arrows, and require no further explanation.

The parts of the ventilator may be made of any suitable material and can be of varied proportions relatively to each other. I will, however, indicate the proportions which I have found to be well adapted for an eight-inch ventilator, the same proportions being equally well adapted for other sizes. When the pipe A is eight inches in diameter, I proportion the other parts as follows: The axial length of frustum *a*, eight inches; axial length of frustum *b*, six inches; diameter of bases of *a* and *b*, sixteen inches; diameter of outlet and bottom openings of the head B, eight inches; tubes *c*, four inches long and two inches in diameter; openings *f*, two inches in diameter; hoods *g*, four inches long; cap C, twelve inches

in drop and fifteen inches in diameter at the base; plate *d*, eight inches in diameter and two inches above the outlet or top of the head B.

A ventilator made as above described is cheap, easily made, and most effective in operation, having none of the objectionable features of other ventilators now in use.

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

1. The combination, with the exhaust or eduction pipe and the ventilator-head composed of two conical frustums, as herein described, of the inclined draught-tubes in the lower frustum and the conical cap over the top

of the upper frustum, all constructed and arranged for joint operation as herein shown and set forth.

2. In combination with the elements specified in the preceding clause, the hooded discharge-apertures arranged in the upper frustum of the head, as shown and described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

THOMAS W. FREEBORN.

Witnesses:

STEPHEN GOULD,
WM. C. COZZENS, Jr.