(No Model.) 2 Sheets—Sheet 1.

T. B. HOWE.

CAR VENTILATOR.

No. 342,099. Patented May 18, 1886.

Fig. 1.

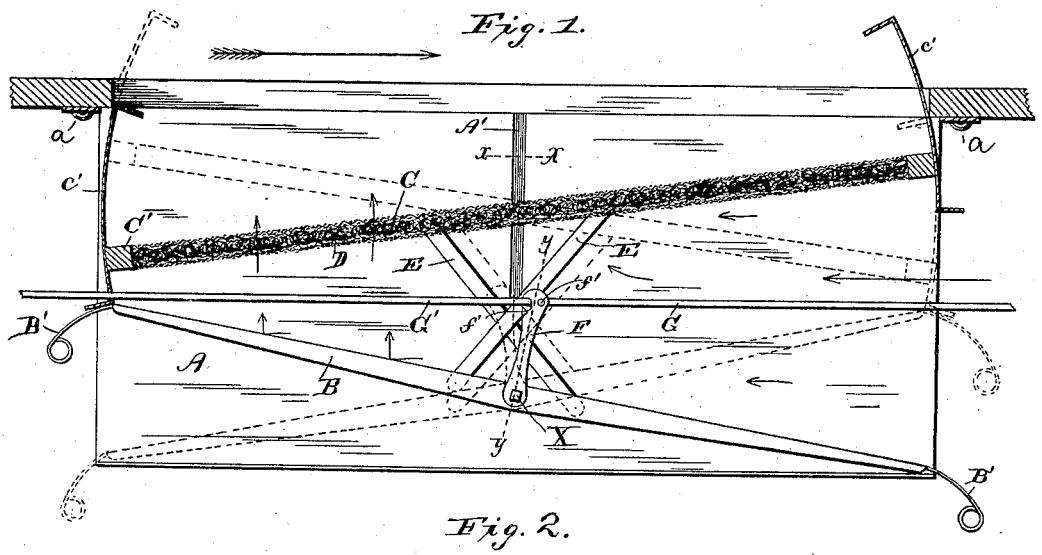


Fig. 2.

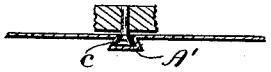


Fig. 3.

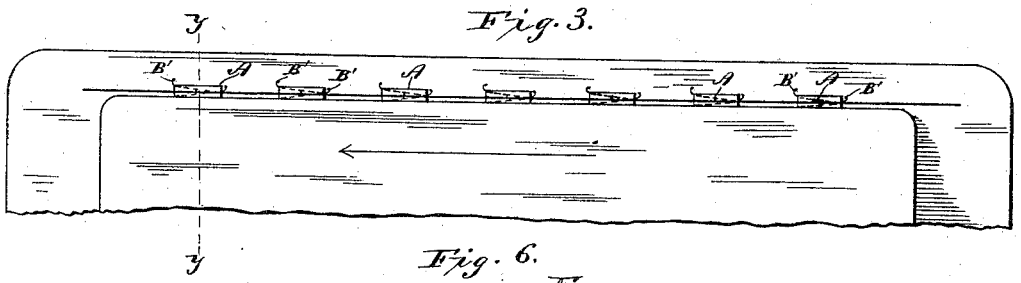
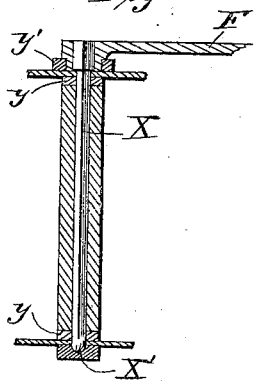


Fig. 6.



Witnesses.
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Inventor.
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by Church & Church
his Attorneys.

(No Model.)

2 Sheets—Sheet 2.

T. B. HOWE.

CAR VENTILATOR.

No. 342,099. Patented May 18, 1886.

Fig. 4.

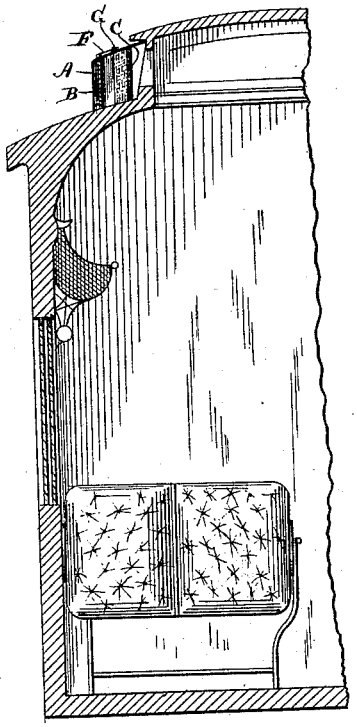


Fig. 7.

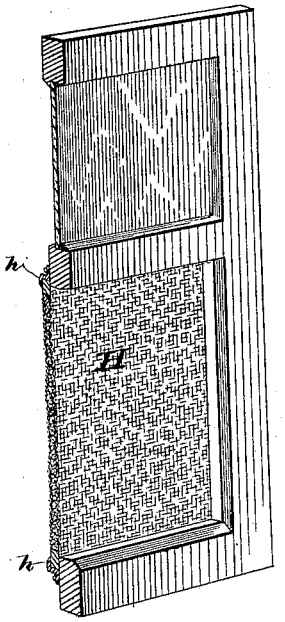
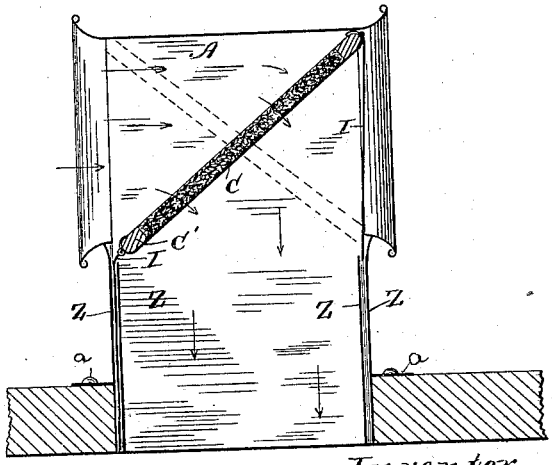


Fig. 5.



Witnesses.
Chas. R. Burr
A. J. Stuart.

Inventor.
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UNITED STATES PATENT OFFICE.

THOMAS B. HOWE, OF SCRANTON, PENNSYLVANIA.

CAR-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 342,099, dated May 18, 1886.

Application filed February 20, 1886. Serial No. 192,684. (No model.)

To all whom it may concern:

Be it known that I, THOMAS B. HOWE, of Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Car-Ventilators; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

My invention has for its object to improve the construction of the ventilators applied to railway-cars; and it consists of a certain improved device adapted, if desired, to be applied to cars now in use, whereby the air admitted to the interior thereof will be pure and free from dust, cinders, &c., all as I will now proceed to describe.

In the accompanying drawings, Figure 1 is a plan view of one of my improved ventilators with the top of the casing removed, showing its application to a car. Fig. 2 is a sectional view taken on the line *x x* of Fig. 1. Fig. 3 is a top plan view of a car, showing a series of ventilators, and Fig. 4 is a cross-sectional view of a portion of a car, taken on the line *y y*, Fig. 3. Fig. 5 is a view of a modification of my invention. Fig. 6 is a sectional view on the line *y y*, Fig. 1. Fig. 7 is a view of a car-door with a filter mounted therein.

As usually constructed, car-ventilators are so arranged that as the car moves the air will either be forced into the car or drawn therefrom, according to the position of the ventilator with relation to the direction of the movement of the car; but one great objection to this form of device is, that dust, cinders, &c., are forced or drawn in with the air, much to the annoyance and discomfort of the passengers. My invention, however, is designed to obviate this and other objections by providing a suitable screen or filter in the ventilator-opening, and also to improve the efficiency of the filter by keeping it at an angle to the plane of the movement of the car when running in either direction, so as to cause the air to pass directly through the filter, and, if desired, a part to be deflected through by means of a deflecting wing or vane attached by suitable mechanism to the filter, so that as the latter is reversed when the cars are run in the opposite direction the deflector will be reversed also, and will assume the same position relative to the filter as before.

A represents a casing, open at both ends and closed on the outer side and at top and bottom, constructed, preferably, of sheet metal and adapted to be attached to the ventilator-opening in the top of the car by means of fastenings *a*, or any other suitable devices. This casing is of a length corresponding to that of the ventilator-opening and of a width possibly half as great, and its top and bottom have a transverse dovetailed groove, A′, as shown in Fig. 2, and in these grooves are mounted the pivots *c* of the filter-frame C. The latter consists of a frame, C′, having on either side a piece of wire netting or gauze, D, and between these pieces of gauze is placed, on the outside, a layer of ordinary lambs'-wool and a layer of curled hair, the function of the latter being to keep the wool pressed against the gauze, to prevent its jarring down by the motion of the cars, and also to arrest the coarser cinders, &c. This filter is substantially the same as that described in my Patent No. 325,803, dated September 8, 1885, and has been found to be especially adapted to the purpose of filtering air. The pivots of this filter consist of two small dovetailed blocks, *c c*, before mentioned, fitting the grooves A′ in the top and bottom of the casing and arranged to have a slight longitudinal motion therein. At the ends of the filter-frame are placed pieces of sheet metal, *c′ c′*, extending across the frame and projecting farther on the side toward the car than on the outside, for preventing air passing by the filter at either end, as will be presently described.

B represents the deflecting board or vane constructed of wood or metal, and of a length about equal to that of the filter, mounted upon the pivots constructed as shown in Fig. 6.

x represents a square rod or pin passing vertically through the deflecting-board, having its lower end rounded, as shown, to fit in the socket *x′*, secured to the lower side of the casing. The upper and lower sides of the deflector-plate have washers or plates *y* secured to them, having square openings through which this rod passes, so that as the rod is turned the deflector-plate turns also.

y' is a plate secured to the top of the casing, having a circular perforation through it, which the upper portion of the rod fits, and which, in connection with the socket x', form the bearings for the rod.

F is an arm secured to the upper end of rod x, by means of which the deflector and filter are operated, as will be presently explained. To each end of the deflector-plate a flaring piece of metal, B', is secured, serving to prevent the entrance of air behind it, and also acting as a flaring mouth or funnel. The filter C and deflector B are connected by links E E, pivoted to them at top or bottom, their pivotal points on the filter being farther from the pivots than those on the deflector-plate, and on opposite sides thereof, whereby the ends of the latter will move through a greater arc than the former, and in so doing it is necessary for the pivots of the filter-frame to change their position slightly; hence the provision of the movable pivots $c\,c$ and the dovetailed grooves for receiving them. The operative position of the device is, as shown in Fig. 1, with the plate on the rear end of the filter and the rear end of the deflector together, their front ends widely separated, and the plate c' on the front end of the filter against the car, so as to prevent the entrance of dust at that point. When the device is in operation and the open end toward the direction in which the car is moving, the air entering the casing between the deflector and filter will part of it pass directly through the latter and into the car, being freed from all dust, cinders, &c., by its passage through, and the air striking the deflecting-board will also be thrown into the car through the filter. When the car is moved in the opposite direction, and it is desired to force in air as before, it is necessary to have the other end of the casing open; and this is accomplished by the means now about to be described.

F represents an arm secured to the pivotal pin of the deflector B, having the two perforations $f'\,f'$ at its outer end, with which are connected the hooked ends of links G G', the former communicating with the arm on the preceding ventilator, and the latter connected to the succeeding ventilator, as shown in Fig. 3. These links or rods connecting the deflectors are for the purpose of operating the whole series on the side of the car simultaneously by a suitable operating-handle connected at the end; or, if desired, a single through-rod having studs or projections for engaging the perforations may be employed. Assuming the car to be moving in the direction of the arrow, Fig. 1, and the device to be in the position indicated in full lines, the air entering will, as before described, be deflected through the filter into the car. Now, if the car is to be moved in the opposite direction, or it is desired to draw air from the car, the rod G is operated to the left, when the deflector will be operated through the arm F to the position shown in dotted lines, and the filter will at the same time, through the links E E, move to the position shown, corresponding to its former position with relation to the deflector B, and the operation being of course the same. If desired, the position of the filters may be reversed—that is to say, the smaller end of the cone formed by the filter and deflector may be pointed in the direction of the car's movement, in which case the air will be drawn out of the car by a well-known principle of physics, and when this is to be done I employ a filter applied to the car-door, such as shown in Fig. 7. The internal construction of this filter is the same as the upper ones, and the door to which it is applied is provided with a rabbet, h, in the molding around the space usually occupied by the lower panel, into which the filter H is slipped from the top; or a door having the lower portion removable may be employed. This filter can, when desired, in winter, for instance, be replaced by a solid panel secured in place in the same manner.

In Fig. 5 I have shown a modification of my invention in which the pivoted deflector is dispensed with, and the air entering the car passes directly through the filter. In said modified construction the casing is secured to the car, as before, and the filter is mounted upon a pivot similar to the one on the deflector provided with the arm F, to which the operating-rod or the links are applied, as before. This filter is pivoted near the center of the passage through the casing, and has connected to each of its ends pieces of sheet metal, I, corresponding to the pieces on the ends of the filter before described, for closing the side of the casing opposite to that into which the air is allowed to enter, and these metal pieces are adapted to slide into the pockets formed between the double walls Z Z of the casing, as shown. When the car is traveling in the direction indicated by the arrow, and it is desired to force air in, the filter is moved to the position shown, drawing out the slide at the rear of the casing, and closing that side and moving the one on the forward side in between the walls Z Z, leaving the front open, so that the air will pass through the filter into the car, as indicated by the dotted arrows. When the direction in which the car is moving is changed, the filter is reversed to the position shown in dotted lines by operating the rod or the links connected to them, as will be readily understood.

The principal features of my invention are, placing the filter at an angle with the plane of movement of the car, so that the air may pass directly through it; also making the filter movable, so as to enable the same one to be employed regardless of the direction in which the car is moving, and the employment of a deflector that is reversed each time the filter is, for co-operating with it. By the employment of the deflector shown and described the necessity of moving the ends of the filter through as great an arc is avoided.

In Figs. 3 and 4 is shown the manner of

applying the invention, which may be made in the form of a device adapted to be applied to cars now in use, or may be built in as a part of the permanent structure.

I claim as my invention—

1. In a car-ventilator, the combination, with the casing, of the movable filter pivoted therein and adapted to be turned at an angle to the direction of the movement of the car and the plates connected to the opposite ends of the filter for closing the space between the elevated end of the filter and the casing, substantially as described.

2. The combination, with the casing, of the filter mounted therein and the deflector of a length equal to or greater than the length of the opening to the filter, pivoted in front of the filter, and adapted to be turned at an angle to the direction of movement of the car, whereby air may be deflected through the filter when the car is moving in either direction, substantially as described.

3. In a car-ventilator, the combination, with the casing, of the filter mounted therein and adapted to be turned at an angle to the direction of the movement of the car and a deflector co-operating with the filter, whereby part of the air entering the car will pass directly through the filter and part be deflected through, substantially as described.

4. In a car-ventilator, the combination, with the casing, of the movable filter pivoted therein and adapted to be turned at an angle to the direction of the movement of the car, and having the plates at its ends, and the deflector, also pivoted in the casing, and connected to the filter by suitable means, whereby when the car is moved in the opposite direction and the position of the deflector is reversed the position of the filter will be automatically reversed also, substantially as described.

5. In a car-ventilator, the combination, with the casing and the movable filter pivoted therein and adapted to be turned at an angle to the direction of the movement of the car, and having the plates at its ends, of the deflector, also pivoted in the casing, and the links connecting the filter and deflector on opposite sides of the pivots, substantially as described.

6. In a car-ventilator, the combination, with the casing, of the movable filter pivoted therein and adapted to be turned at an angle to the direction of the movement of the car, and having the plates on its ends, of the deflector, also pivoted in the casing, the links connecting the filter and the deflector on opposite sides of the pivots, the operating-arm on the deflector, and the rod connected therewith, substantially as described.

7. In a car-ventilator, the combination, with the casing, of the filter mounted upon movable pivots therein, and having the plates at its ends, the pivoted deflector, and links connecting the filter and deflector on opposite sides of the pivots, so as to cause them to be operated simultaneously in opposite directions, the pivotal point of the links on the deflector being nearer the pivots than those on the filter, substantially as described.

8. The combination, with a railway-car, of a series of ventilators, consisting of reversible air-filters and deflectors therefor, and rods or links connecting said ventilators with each other, whereby the whole series may be operated at once, substantially as described.

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Witnesses:
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J. M. POORE.