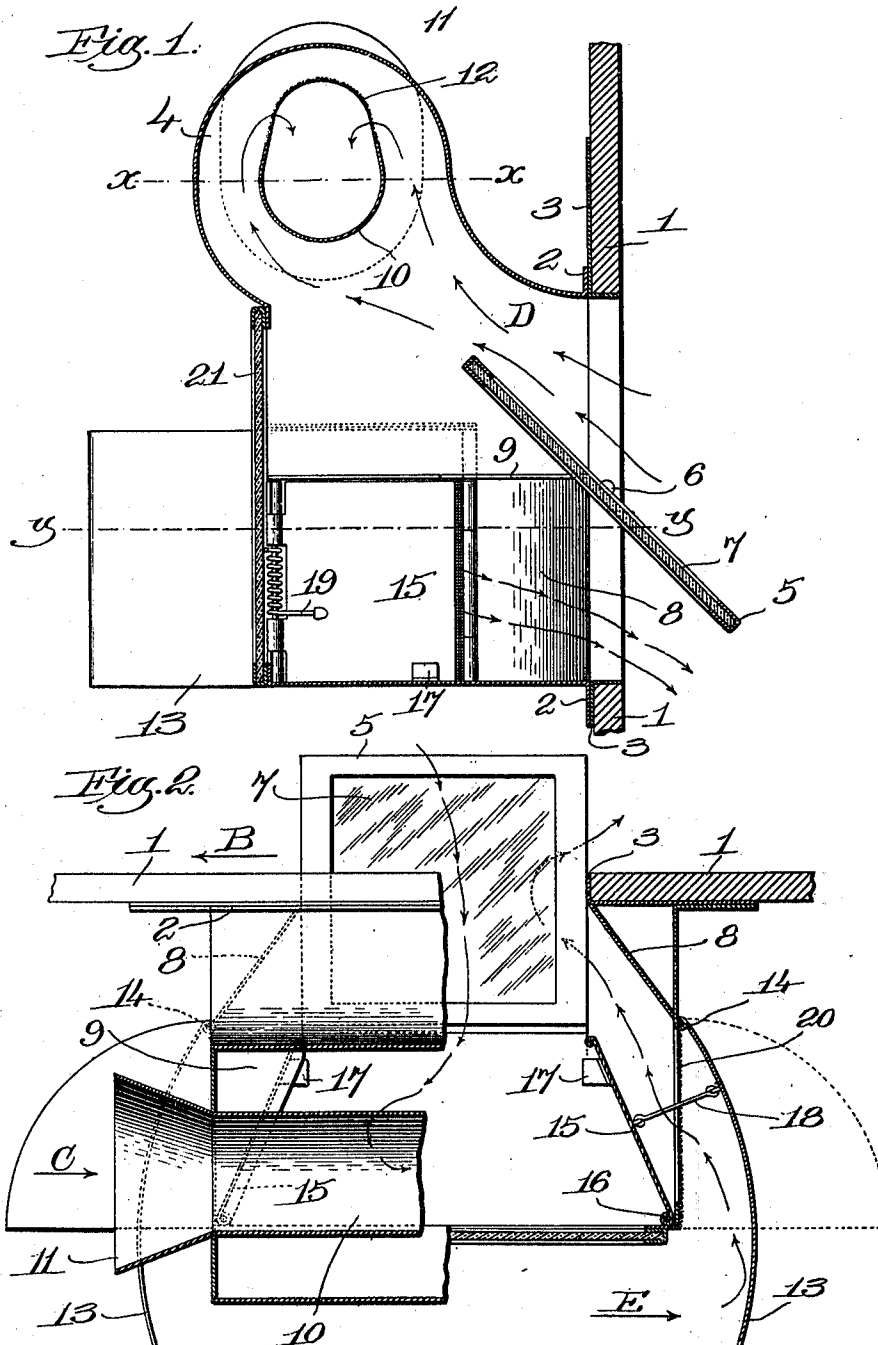


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CAR VENTILATOR.
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UNITED STATES PATENT OFFICE.

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CAR-VENTILATOR.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH GREENBURG, a citizen of the United States, and resident of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Car-Ventilators, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object to provide a simple and efficient ventilator for street and railway cars and other moving vehicles without necessity of any power-driven mechanism but by utilizing simply the currents of air obtainable from the movement of the car.

The ventilator is of that type which comprises a casing mounted upon and opening into the side of the car near the top thereof.

It comprises separate means for withdrawing the vitiated air from the car and for supplying fresh air thereto. It is also so constructed as not materially to interfere with the illumination of the car by exterior light.

These and other features of the invention will appear from the accompanying description and drawings and will be more particularly pointed out in the appended claims.

The drawings represent a preferred form of the invention shown as connected to the wall of a car.

In the drawings, Figure 1 is a vertical central section of the device and a portion of the wall of the car; Fig. 2 is a plan view of the construction shown in Fig. 1, chiefly in cross section, the left hand portion of the figure being shown as a section on the line $x-x$ of Fig. 1, and the right hand portion of the figure being shown as a section on the line $y-y$ of Fig. 1.

The wall of the car is shown at 1 provided with a rectangular opening to receive the ventilator, and this opening is arranged on the side of the car so that the ventilator protrudes therefrom and extends parallel with the line of movement of the car.

The ventilator may be of any suitable material but is preferably constructed as shown of sheet metal. Its general body portion may properly be described as a casing, and this casing is provided at one side with a rectangular opening to fit the opening in the wall of the car. In the drawings, the casing at the opening is flanged, as shown at 2, and provided with a frame 3 secured within

the opening of the car. In its general shape the casing is rectangular, its upper portion 4 having a generally cylindrical form.

A door 5 is mounted centrally in the opening of the casing to swing on a horizontal pivot 6. This door is transparent and for that purpose is shown as having a large pane of glass 7 inserted therein. The door when in its vertical position closes the opening in the casing and when tilted on its pivot serves to separate the upper and lower portions of the interior of the casing. The lower portion of the casing is formed with inclined walls 8 extending from the edge of the opening to the ends of the casing, and shelves or walls 9 at the ends of the casing serve further to define the lower portion of the casing.

A tube 10 extends through the upper part of the casing and is provided with flaring ends 11. This tube is preferably closed at its bottom so that any rain or snow carried therein will pass therethrough without falling into the casing and thence into the car, and open through a material portion of its length. In the drawings it is shown as formed throughout a portion of its periphery of foraminated material, such as the wire netting 12.

Rectangular openings are formed in each end of the lower portion of the casing. These openings extend from the inclined walls 8 to the outer wall of the casing and from the bottom of the casing up to the horizontal walls 9. Curved deflecting blades 13 are secured at 14, that is, at the inner edge of the openings to the casing and project well out beyond the outer wall of the casing. Preferably, these blades are pivotally mounted at 14 and are adjustable automatically, or otherwise, and in coöperation therewith doors 15 for the openings at the ends of the casing may be provided. These doors are pivoted at 16 and swing back against stops 17. The doors may be connected directly to the curved blades by means of links 18, and some means must be provided for maintaining the doors normally open against the air pressure. Such means are illustrated as the springs 19 carried on the door hinge. Preferably, the openings at the ends of the lower portion of the casing are closed by foraminated material, such as the wire netting 20.

The exterior wall of the casing is made transparent, as shown, by means of a large

pane of glass 21 inserted therein. The exterior light may, therefore, pass freely through the ventilator by means of the transparent walls 21 and 7.

5 In the operation of the ventilator the object is to remove the vitiated air which accumulates at the top of the car and to supply to the car a constant stream of fresh air in a quiet manner without producing a strong
10 draft. The door 5 may be tipped to different positions on its pivot and serves to regulate or control the ventilation of the car by opening or closing to a greater extent the opening from the ventilator into the car.

15 The ventilator is symmetrically constructed so as to have the same action in whichever direction the car moves. For the purpose of further explanation let it be assumed that the car is moving in the direction of the arrow B in Fig. 2. Under these
20 circumstances, the air will enter the left hand flaring end of the tube 10, as indicated by arrow C, and being drawn into the comparatively narrow tube will pass there-
25 through with great rapidity, thus producing suction in the upper part of the casing through the foraminated portion of the tube. The vitiated air from the car natu-
rally rises, and drawn by suction in the
30 tube will pass over the door 5 and into the tube 10, as indicated by arrows D, and is thus carried away out of the right hand end of the tube. Meanwhile the motion of the
car likewise causes the air to strike the right
35 hand deflector blade 13, as indicated by arrow E. This air will at once be broken up and deflected by the blade 13 through the opening in the end of the casing, between the door 15 and the inclined wall 8, and
40 beneath the shelf 9 through the lower portion of the casing beneath the door 5 and downward into the car. The sudden change in the direction of the current of air, caused by the deflector 13, and the movement of the
45 current of air slightly in the opposite direction and downward into the car causes it to enter in a quiet and steady stream without producing a strong draft. Preferably, the
deflector 13 is pivotally mounted at 14; is
50 connected to the door, as shown, by the link 18, and the spring 19 is so arranged that the deflector and door act automatically together and regulate the effective size of the opening into the casing in accordance with
55 the air pressure upon the deflector blade 13, thus insuring a proper and even supply of fresh air to the car.

Having fully described my invention what I claim as new and desire to secure by Let-
60 ters Patent is:

1. A car ventilator comprising a casing open at its side and adapted to be secured to and open into the side of the car, means
65 for separating the lower and upper portions of said casing at said opening, a partially

open tube extending through the upper part of said casing and provided with flaring ends, openings at each end of said casing into the lower portion thereof, deflector
70 blades in front of said openings with their free ends extending beyond the outer wall of the casing whereby, upon the movement of the car in either direction, the air rushing through the tube will suck the vitiated
75 air through the upper portion of the casing into and out through the tube and the air striking against one of the deflector blades will be guided thereby into and through the lower portion of the casing down into the
80 car.

2. A car ventilator comprising a casing open at its side and adapted to be secured to and open into the side of the car, a door for said opening mounted centrally on a
85 horizontal pivot therein and separating the lower and upper portions of said casing at said opening, a partially open tube extending through the upper part of said casing and provided with flaring ends, openings at
90 each end of said casing into the lower portion thereof, deflector blades in front of said openings with their free ends extending beyond the outer wall of the casing whereby, upon the movement of the car in either di-
95 rection, the air rushing through the tube will suck the vitiated air through the upper portion of the casing into and out through the tube and the air striking against one of the deflector blades will be guided thereby
100 into and through the lower portion of the casing down into the car.

3. A car ventilator comprising a casing open at its side and adapted to be secured to and open into the side of the car, a trans-
105 parent door for said opening mounted centrally on a horizontal pivot therein and separating the lower and upper portions of said casing at said opening, a partially open tube extending through the upper part of
110 said casing and provided with flaring ends, openings at each end of said casing into the lower portion thereof, deflector blades in front of said openings with their free ends extending beyond the outer wall of the cas-
115 ing whereby, upon the movement of the car in either direction, the air rushing through the tube will suck the vitiated air through the upper portion of the casing into and out through the tube and the air striking against
120 one of the deflector blades will be guided thereby into and through the lower portion of the casing down into the car.

4. A car ventilator comprising a casing open at its side and adapted to be secured to and open into the side of the car, the said
125 casing being provided with a transparent outer wall, whereby the exterior light may pass freely through said ventilator, a door for said opening mounted centrally on a horizontal pivot therein and separating the
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lower and upper portions of said casing at said opening, a partially open tube extending through the upper part of said casing and provided with flaring ends, openings at each end of said casing into the lower portion thereof, deflector blades in front of said openings with their free ends extending beyond the outer wall of the casing whereby, upon the movement of the car in either direction, the air rushing through the tube will suck the vitiated air through the upper portion of the casing into and out through the tube and the air striking against one of the deflector blades will be guided thereby into and through the lower portion of the casing down into the car.

5. A car ventilator comprising a casing open at its side and adapted to be secured to and open into the side of the car, means for separating the lower and upper portions of said casing at said opening, a partially open tube extending through the upper part of said casing and provided with flaring ends, openings at each end of said casing into the lower portion thereof, doors for said openings, pivotally mounted, deflector blades in front of said openings with their free ends extending beyond the outer wall of the casing, connections between said doors and said deflector blades, and means for counteracting the closing movement of said doors whereby, upon the movement of the car in either direction, the air rushing through the tube will suck the vitiated air through the upper portion of the casing into and out through the tube and the air striking against one of the deflector blades will be guided thereby into and through the lower portion of the casing down into the car.

6. A car ventilator comprising a casing open at its side and adapted to be secured to and open into the side of the car, a door for said opening mounted centrally on a horizontal pivot therein, a tube extending

through the upper part of said casing provided with flaring ends and partially fo- 45
raminated, openings at each end of said casing into the lower portion thereof, spring- 50
controlled curved deflector blades pivoted to said casing and extending past said open- 55
ings with their free ends projecting beyond the outer wall of the casing whereby, upon the movement of the car in either direction, the vitiated air will be drawn out through said tube and pure air will be fed in through the lower portion of the casing.

7. A car ventilator comprising a casing open at its side and adapted to be secured to and open into the side of the car, means for separating the lower and upper portions of said casing at said opening, a partially open tube extending through the upper part of said casing and provided with flaring ends, openings at each end of said casing into the lower portion thereof, doors for said open- 65
ings, walls in said casing immediately above said doors, pivotally mounted, deflector blades in front of said openings with their free ends extending beyond the outer wall of the casing, connections between said doors 70
and said deflector blades, and means for counteracting the closing movement of said doors whereby, upon the movement of the car in either direction, the air rushing through the tube will suck the vitiated air through the upper portion of the casing into and out through the tube and the air striking against one of the deflector blades will be guided thereby into and through the lower portion of the casing down into the car. 80

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOSEPH GREENBURG.

Witnesses:

NATHAN HEARD,
LEONA CHANDLER.