

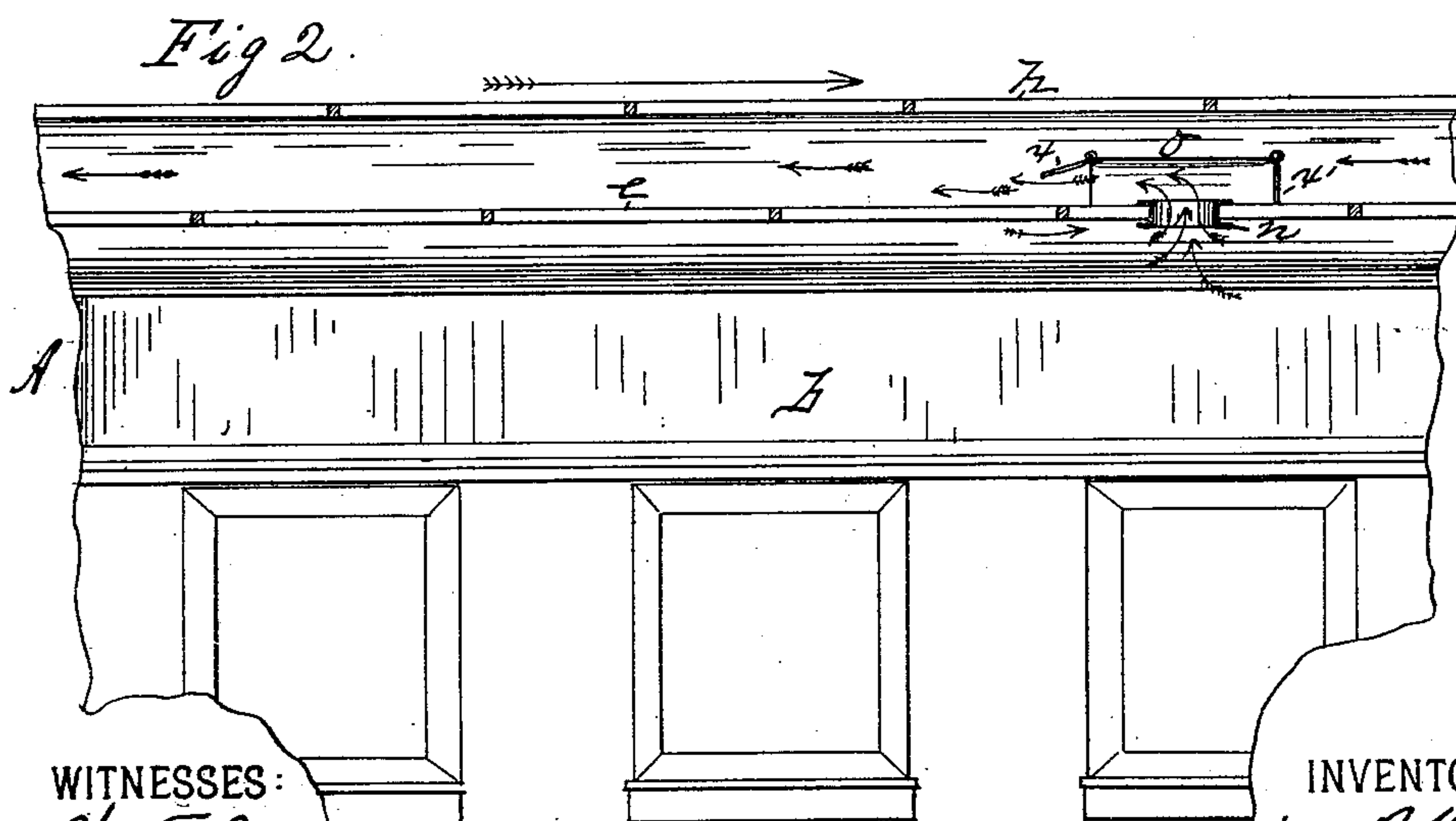
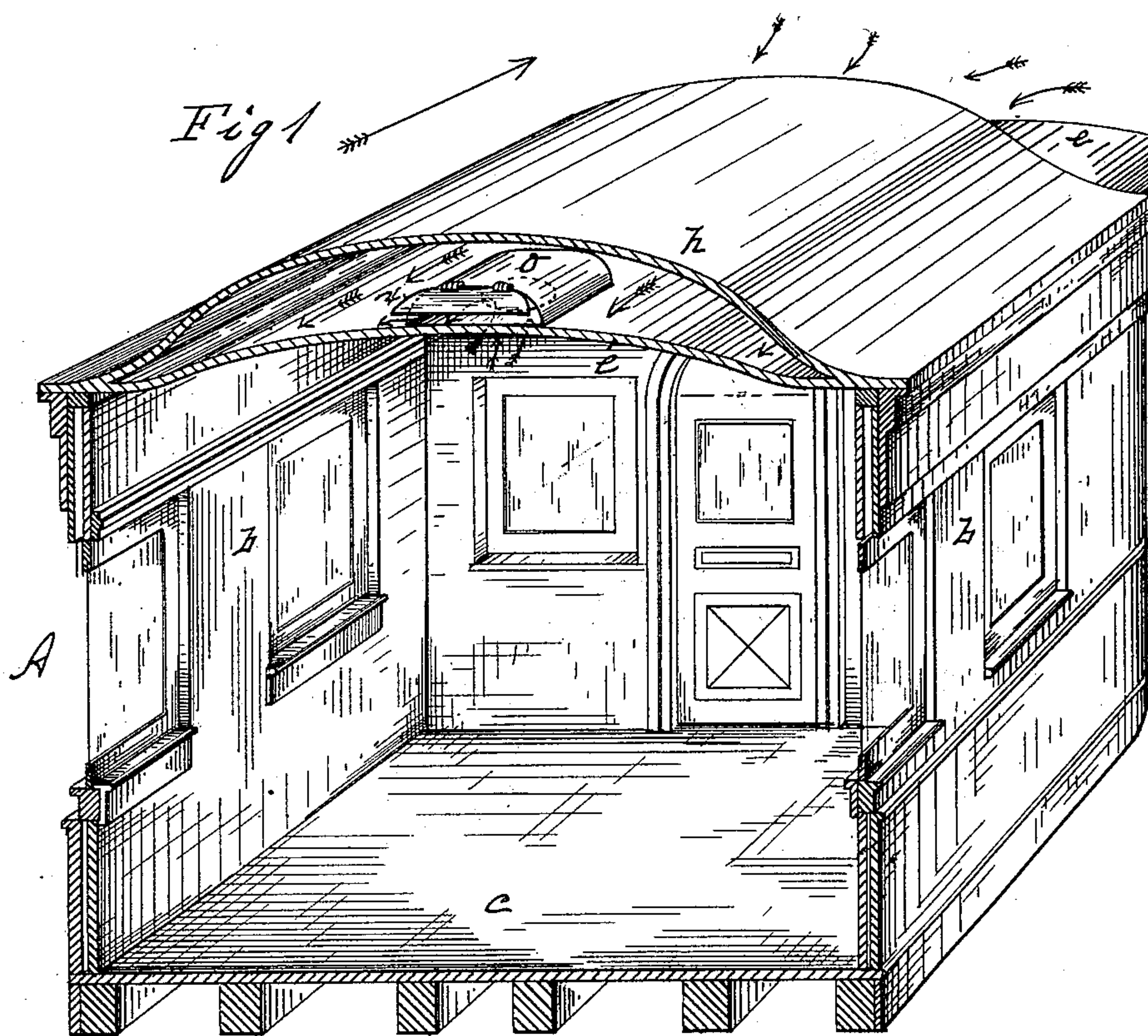
(No Model.)

A. B. HARRIS.

VENTILATOR FOR RAILWAY CARS.

No. 335,448.

Patented Feb. 2, 1886.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

AZARIAH B. HARRIS, OF SPRINGFIELD, MASSACHUSETTS.

## VENTILATOR FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 335,448, dated February 2, 1886.

Application filed November 30, 1885. Serial No. 184,239. (No model.)

*To all whom it may concern:*

Be it known that I, AZARIAH B. HARRIS, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Railway-Cars, of which the following is a specification.

This invention relates to improvements in railway-cars, the object being to provide an improved roof for cars, whereby the ventilation thereof is improved and the heat of the sun acts less directly to raise the temperature therein, and to provide for said improved roof ventilating devices to co-operate therewith.

In the drawings forming part of this specification, Figure 1 is a perspective view of a portion of the body of a railway-car, partly in section, having a roof constructed according to my invention. Fig. 2 is an elevation of a portion of the side of a car, showing the roof thereof in longitudinal section, both of said figures illustrating ventilating devices applied to the roof of the car.

In the drawings, A is the car-body, having the usual sides, *b b*, floor *c*, and main roof *e*.

My improvements consist in constructing a second roof, *h*, in addition to the ordinary roof, *e*, of a car, sufficiently removed from the latter to provide an air-space between the two roofs, open at or near each end of the car, through which air may at all times circulate freely, and particularly so when the car is moving.

In the drawings the large arrows over each figure indicate the direction in which a car is moving when the air-currents are moving in the directions indicated by the small arrows.

A car embodying in its construction the above-described two roofs, with said open-ended air-space between them, is rendered by the said air-circulation much more impervious to the heating effects of the sun than is a car with a single roof, and may be provided with ventilating-pipes or not to conduct air from the interior of the car into said air-space. Any suitable well-known ventilating-pipes may be inserted through the main roof *e*, through which air from the interior of the car is directed into the air-space between the roofs *e* and *h*, and thus the air which rushes through said air-space serves to exhaust the bad air from the car and discharge it at the rear end thereof; but the preferable ventilating devices to be

used in connection with the hereinbefore-described roof construction are those shown in the drawings, and which are constructed and operate as follows: Fig. 1 illustrates said ventilating devices in a perspective view, and Fig. 2 in longitudinal section. An air-pipe, *n*, Fig. 2, of any suitable length or diameter, is fixed in the main roof *e*, through which air from the car is to be drawn. Over said pipe *n*, in the air-space between roof *e* and *h*, is fixed a box, *o*, of suitable sheet metal or other material, having open ends in the direction of each end of the car, and to each end of said box is hinged a gate or door, *x*. Said gate is hung at the upper side of box *o*, and drops to a closed position by gravity. It is preferable, in order to produce the best exhaust effects through the action of said ventilating devices, that the size of the said box *o* be such as to leave a space between it and the roof *h* above it for the moving air to circulate, as shown. When the car is moving in the direction of the large arrows, the effect of the air upon said ventilating devices, which rushes through between the two roofs, is to close the gate *x*, against which the air rushes directly, and to cause the gate *x* on the opposite end of the box *o* to open, about as shown in Figs. 1 and 2, by the exhaustive effect of the rushing air around the box, and thereupon the air is drawn from the car through the pipe *n* into box *o*, and escapes from the latter at its open end, as indicated by the small arrows. For the reason that the gate of the box *o*, against which the inrushing air between the roofs acts, is always closed under such conditions as are illustrated in Fig. 2, no dust or cinders can enter the car through said devices, and the gates on the ends of the box open and close automatically, accommodating themselves to the direction in which the car moves. Furthermore, when the car is not moving, said gates will ordinarily remain closed and prevent cold air from blowing into the car.

In practice no openings for ventilating purposes are made through the main roof leading to said air-space, excepting those communicating with proper devices, which act in conjunction with the latter, and as many of said devices may be applied thereto as the proper ventilation of the car may demand.

If desired, the ventilator-box *o*, having a



hinged gate on each end, may be dispensed with, and in its place, over the pipe *n*, may be placed a box having one open end, such as would be made of the box *o*, Fig. 2, by removing the gate *x* therefrom and locking gate *x'* in a closed position, as shown, against the opposite end of the box. Boxes thus arranged, however, would need to be turned with each change of direction of movement of the car to bring their closed ends against the wind.

I am aware that a double-roofed car is not new; also, that a car-ventilating apparatus has been patented in which a pipe communicating through the car-roof has been surrounded by an outer pipe, through which air is forced by the movement of the car, thus serving as an exhaust-ventilator, and that it has been proposed to incase such outer and inner pipes within the top portion of the car. I do not claim such constructions.

What I claim as my invention is—

1. A railway-car having a second roof above its main roof, and having an open passage between the two roofs from front to rear, to secure a draft through the same, and a ventilator-opening through the main roof, substantially as described.

2. The combination, with the main roof of a car, of a supplementary roof above the same, the passage between the two roofs being open from front to rear, a box in the open space between the roofs, having hinged covers opening outward at each end, and a ventilating-pipe leading from said box through the main roof, substantially as described.

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Witnesses:

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