

C. E. LUCAS.
Ventilating Railway-Car.

No. 213,994.

Patented April 8, 1879.

Fig 1.

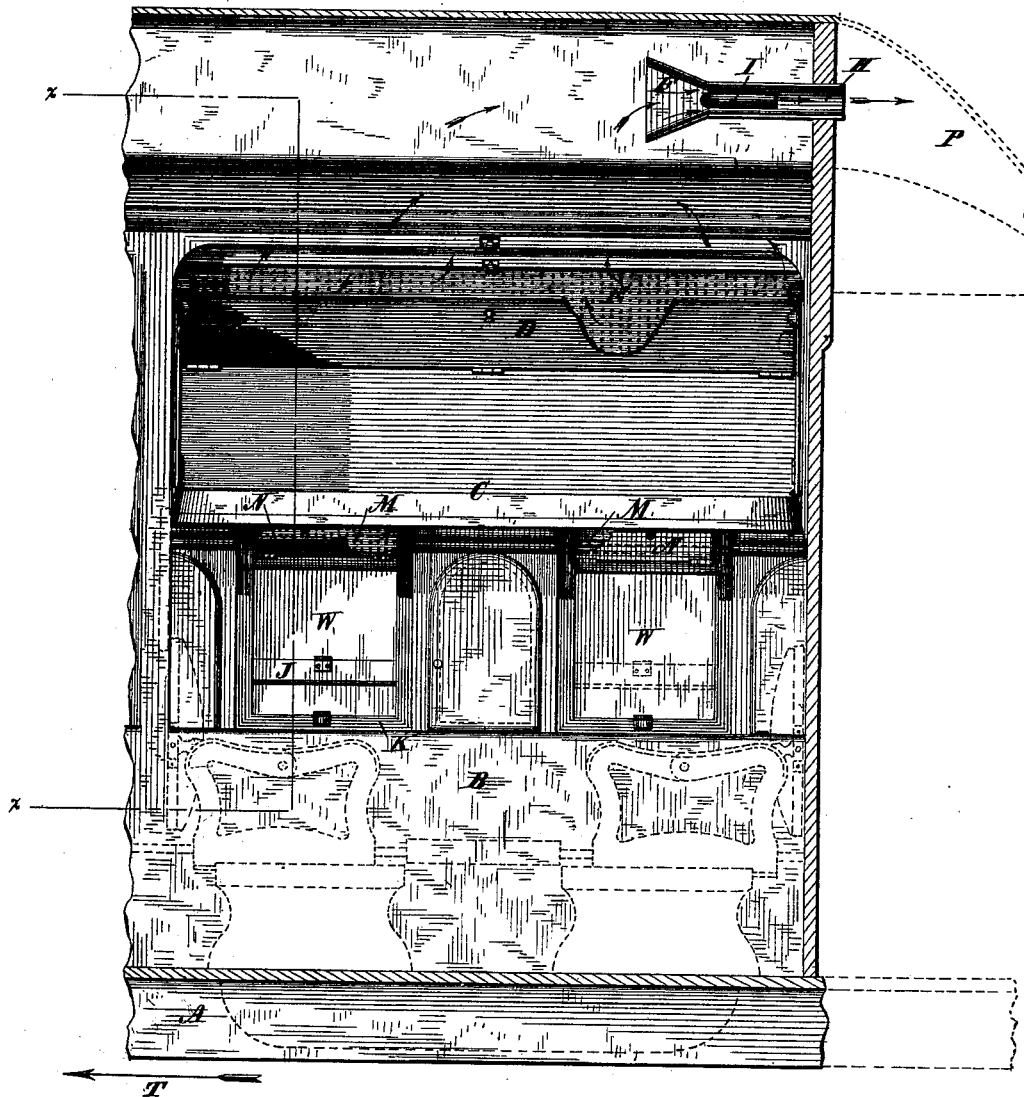
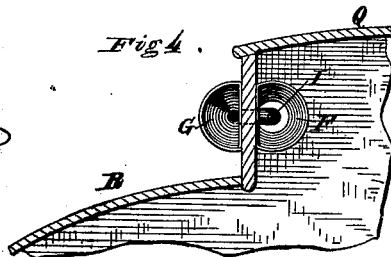


Fig 4.



Witnesses

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Inventor.

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Fig 2.

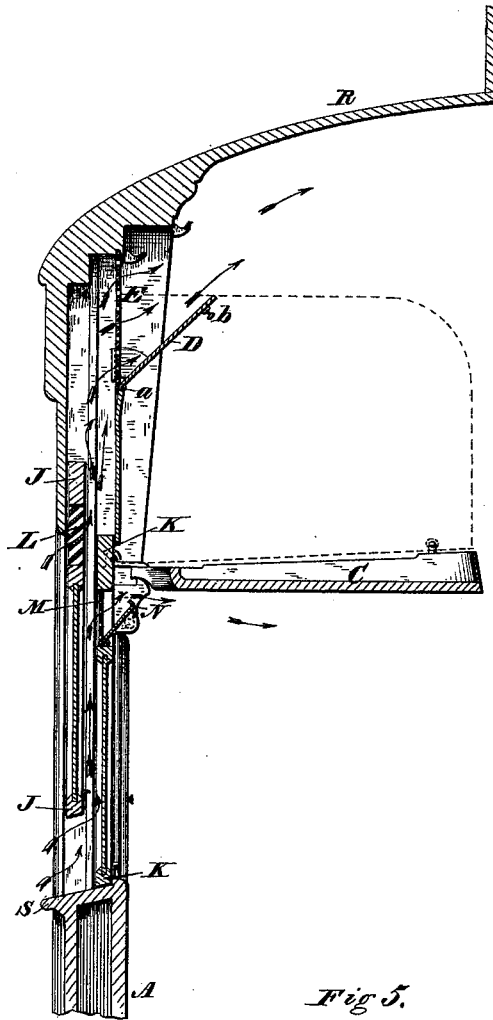


Fig 3.

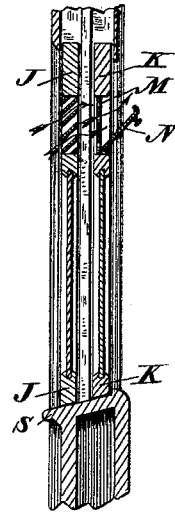
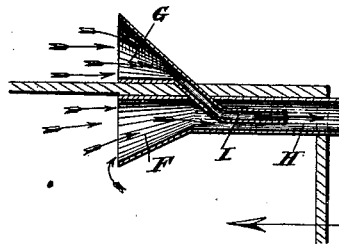


Fig 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHRISTIAN E. LUCAS, OF ATLANTA, GEORGIA.

IMPROVEMENT IN VENTILATING RAILWAY-CARS.

Specification forming part of Letters Patent No. **213,994**, dated April 8, 1879; application filed February 10, 1879.

To all whom it may concern:

Be it known that I, CHRISTIAN E. LUCAS, of Atlanta, in the State of Georgia, have invented certain Improvements in the Ventilation of Railway-Cars; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is an interior elevation of a section of a sleeping-car, showing the ventilating devices applied to the upper and lower berths and to the top of the car. Fig. 2 is a transverse vertical section on line *xx* of Fig. 1, showing the outer sash, J, of the double window partially raised. Fig. 3 is a detail vertical transverse section of the double window, showing both sashes closed. Fig. 4 is a detail transverse vertical section of a part of the car-roof, showing the injector and exhaust-funnels. Fig. 5 is a horizontal central section of the injector and exhaust funnels, showing the manner of their connection.

The same part is indicated by the same letter of reference wherever it occurs in the drawings.

My invention relates to the ventilation of railroad-cars, and more especially of sleeping-cars; and consists in peculiar devices and arrangements by which a constant and effective exhaust is applied to draw the impure air from the car, while fresh air, free from dust and cinders, is as constantly supplied, and is evenly distributed without producing those direct thorough drafts which are incident to the ordinary methods of ventilation and render them objectionable. The devices I employ are injector and exhaust funnels and pipes, in combination with perforated air-registers provided with adjustable deflecting-covers, all constructed, arranged, and operating substantially as hereinafter more specifically set forth.

The invention is clearly illustrated in the drawings, whereon A marks the car body or frame; B, the lower berth, and C the upper berth, of a sleeping-car. In the side of the car, near the roof, at the back of the upper berth, is placed a perforated metallic plate, E, communicating with the outer air by means of the slatted portion L of the outer sash, J, of the double window of the car. In front of this plate, and hinged at *a* to the wall of the car,

is a cover, which, when closed, entirely prevents the entrance of air through the register E, and which can be opened to any desired degree to regulate the admission of air. When open it stands at an angle with the wall of the car, and deflects the entering air-currents upward, and prevents their impinging upon the person of the occupant of the berth.

The air is drawn from the car by the exhaust-funnel F, and discharged through pipe H, opening under hood P at the rear of the car. A strong draft through this funnel and pipe is kept up by reason of the air collected by the outside funnel, G, which opens toward the forward end of the train, passing through the injector-pipe I into pipe H, and rapidly driving out the air contained in that pipe at the rear of the car, thus producing a powerful exhaust in funnel F. By this arrangement a constant circulation of air is kept up, while the car is in motion, by currents entering through the perforated plates and passing out, with the impure and heated air of the car, through funnel F and pipe H.

The lower berth is ventilated by means of perforated plates M, inserted in the top of the inside sash, K, of the double windows W, and covered by deflecting-plates N, which are hinged and operate in the same way as the deflector D of the upper berth, and can be closed or regulated at will. The air is admitted to the perforated registers M through the slats L when both sashes are closed; but when the outer sash, J, is partly raised, as in Fig. 2, the air enters between the outer and inner sash and passes up to the registers.

The direction of the motion of the car is indicated by the large arrow T. The small arrows indicate the movements of the air-currents. The injection and exhaust funnels and the pipe H may be provided with dampers to check or modify their action when desired.

When the train is moving in the direction opposite to that indicated by the arrow T, the action of the outer air on the funnel G tends, on a well-known principle, to exhaust the air of the car by inducing a current through that funnel and its pipe I, the pipe H being closed at rear by a damper.

Funnels similar to F and G, but opening in the opposite direction, are placed on the oppo-

site side of the car and near its opposite end. These are for use when the car is moving in the opposite direction to that marked by arrow T.

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

1. In combination with the exhaust and injector funnels F G, the perforated register-plates E M, arranged in the manner and for the purpose set forth.

2. In combination with the register-plates E M, constructed and arranged as described, the deflector-covers D N, arranged and operating as and for the purpose stated.

3. In combination with a railway-car provided with an exhausting-ventilator, the double windows W, having the slatted openings L in their outer sashes and the perforated plates M in their inner sashes, all substantially as and for the purpose described.

The above specification of my said invention signed and witnessed at Atlanta, Georgia, this 18th day of January, A. D. 1879.

CHRISTIAN E. LUCAS.

Witnesses:

J. M. MORGAN,

Jno. L. HOPKINS,