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PATENTED NOV. 27, 1906.

G. H. LAYNG.  
SYSTEM FOR VENTILATING CARS.  
APPLICATION FILED MAR. 14, 1906.

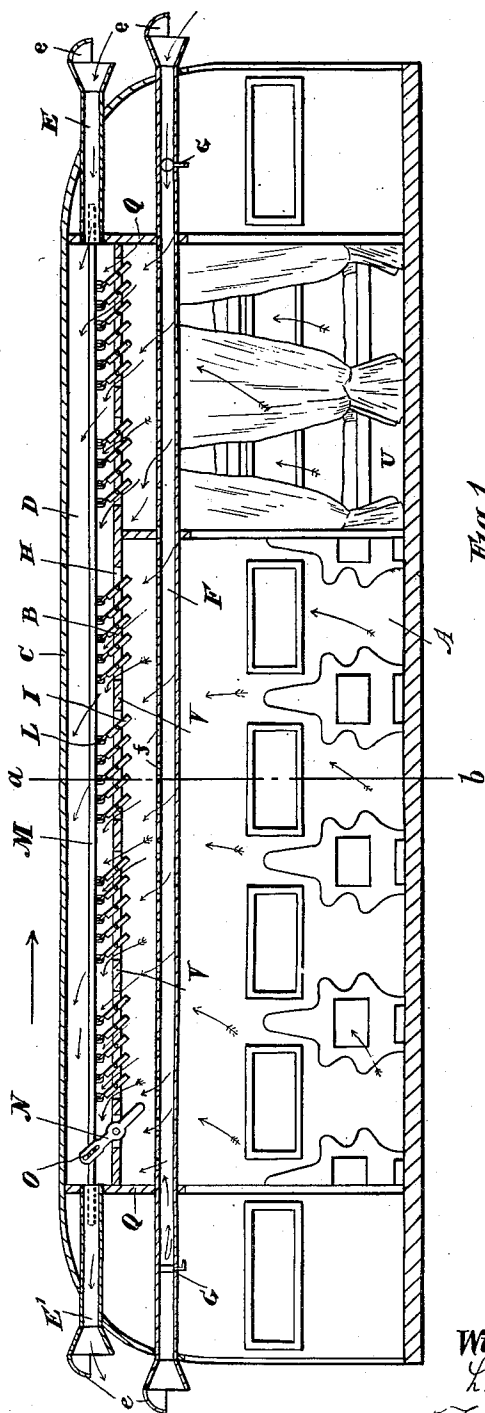


Fig. 1.

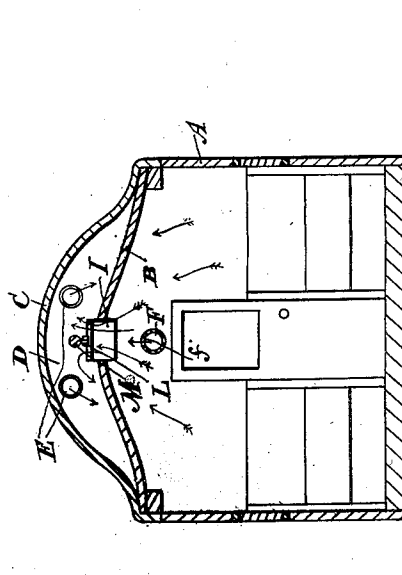


Fig. 2.

Witnesses.  
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Inventor:  
G. H. Layng.  
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Att.

# UNITED STATES PATENT OFFICE.

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## SYSTEM FOR VENTILATING CARS.

No. 836,934.

Specification of Letters Patent.

Patented Nov. 27, 1906

Application filed March 14, 1906. Serial No. 306,017.

*To all whom it may concern:*

Be it known that I, GEORGE HENRY LAYNG, a subject of the King of Great Britain, residing in the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Systems for Ventilating Cars, of which the following is a specification.

My invention relates to improvements in systems for ventilating cars; and the objects of my invention are, first, in connection with passenger-cars to dispense with the top windows of same and so strengthen said cars and reduce cost of construction and cost of maintenance of same; secondly, to provide perfect ventilation in all classes of cars without causing a downdraft on the heads of the passengers and without the possibility of smoke entering into the cars and without the necessity of having to open the side windows, and, thirdly, to keep the top of the car cool even though the car may be stationary; and it consists, essentially, in providing the car with a false ceiling, thus making a space substantially for the whole length of the car, between said false ceiling and the roof of the car, with which space communicates one or more pipes or conduits for conducting air therein to and therethrough, constructing the false ceiling with apertures, if desired, through which air will pass from the body of the car, and providing one or more conduits or pipes whereby fresh air is fed into the body of the car and below said false ceiling, and details of construction, as hereinafter more particularly explained.

Figure 1 is a longitudinal vertical section through a passenger-car, showing a suitable construction whereby my invention may be put into practice; and Fig. 2 is a horizontal cross-section on the line *a b*, Fig. 1.

In the drawings like characters of reference indicate corresponding parts in each figure.

It is well known that it is a great desideratum to ventilate cars of all classes, whether they be passenger-cars or refrigerator or fruit cars. Particularly in connection with the convenience of passengers on railroads it is desirable that the coaches be thoroughly and conveniently ventilated. In the drawings herewith I show and describe a suitable construction whereby my invention may be put into practice in connection with passenger-cars, and by one skilled in this art it will be understood that my invention can be

readily applied to the ventilation of fruit-cars, refrigerator-cars, and, in fact, all classes of cars or coaches on railroads.

The car A is provided with any suitable false ceiling B, which, together with the roof C of the car, forms a space D therebetween, with which communicates one or more pipes or conduits E and E', whereby fresh air passes into and out of said space D. Although the car may be stationary, it will be understood that as the pipes or conduits E and E' are freely open, air will be circulating there-through and through the space D, thus keeping the roof of the car cool. For illustrating purposes I am supposing that the car A is traveling in the direction indicated by arrow. As a result of the speed of the car, it will be understood that a very strong draft is passing through the space D. Now in order to provide ventilation in the body of the car below the false ceiling B, I provide one or more conduits F, which communicate with the outside of the car and at both ends, as shown. In order to prevent air passing right through the conduit and not entering into the car therefrom, I provide any suitable valve or damper for that purpose. According to the construction shown for this purpose I provide the valves or dampers G and G', which are similarly constructed to those used in hot-air pipes leading from a furnace. As the car is moved in the direction indicated by arrow, it will be understood that the valve or damper G must be closed, thus preventing the air from passing directly through the conduit F and compelling it to pass therefrom through the series of holes *f* formed therein and preferably more on its upper side. When the car is moving in this direction, it will of course be understood that the valve or damper G' is left open. It is well known that the foul air in the car will rise to the top thereof. Now by forcing the fresh air through the conduit F into the car and providing the false ceiling B with suitable apertures the foul air is quickly carried through said apertures into the space D and passes therefrom through the conduits E'.

I prefer to make the apertures H in the false ceiling B so that I can control same. According to the construction shown for this purpose I pivot in the false ceiling B and in said apertures slats I of any suitable construction, which are linked, as shown at L, to the rod M, which is held so as to have suitable bearing in the walls Q of the car. By

means of any suitable arm or lever N, pivoted in the false ceiling B and suitably connected, as at O, to the rod M, so as to permit of the necessary relative movement between these parts, it will be understood that the slats I are operated to regulate the size of the apertures H. The slats I are preferably slanted, as shown, when the car is moving in the direction indicated by arrow.

By means of any suitable hoods e the extreme ends of the conduits or pipes E and E' and F are more or less shielded, so as to prevent as much as possible the entrance into the car of sleet, rain, or smoke.

I have shown a sleeping-compartment U, in the car, and by inspecting the drawings it will be seen that the conduit F passes through and that the false ceiling B extends through said sleeping-compartment, thus providing perfect ventilation of same.

In order to reduce to a minimum the injurious action of any drafts around the lamps (not shown) for lighting the car, the false ceiling B is constructed, as shown at V, above where the lamps may be placed, without any aperture.

It will of course be understood that when the car is moving in the direction opposite to that indicated by arrow that the damper or valve G' will be closed and the damper or valve G opened and that the slats I will be moved in the opposite position to that shown.

What I claim as my invention is—

1. In a system of the class described, the combination with a car and the roof thereof, of a false ceiling placed in said car so as to provide between same and said roof a space, and provided with apertures to permit air to pass into said space from the body of the car; conduits or pipes for controlling the passage of air into and out of said space, and a conduit or pipe for conveying air into the body of said car below said false ceiling.

2. In a system of the class described, the combination with a car and the roof thereof, of a false ceiling placed in said car so as to provide between same and said roof a space, and provided with apertures; means for controlling the opening and closing of said apertures; conduits or pipes for controlling the passage of air into and out of said space, and a conduit or pipe provided with apertures

whereby air is introduced into the body of said car below said false ceiling.

3. In a system of the class described, the combination with a car and the roof thereof, of a false ceiling placed in said car so as to provide between same and said roof a space, and provided with apertures; means for controlling the opening and closing of said apertures; conduits or pipes for controlling the passage of air into and out of said space; a conduit or pipe provided with apertures whereby air is introduced into the body of said car below said false ceiling, and means for controlling the passage of air through said conduit.

4. In a system of the class described, the combination with a car and the roof thereof, of a false ceiling placed in said car so as to provide between same and said roof a space, and provided with apertures; a plurality of slats operating in said apertures so as to open and close same; means for operating said slats; conduits or pipes for controlling the passage of air into and out of said space; a conduit or pipe provided with apertures whereby air is introduced into the body of said car below said false ceiling, and means for controlling the passage of air through said conduit.

5. In a system of the class described, the combination with a car and the roof thereof; a false ceiling, provided with apertures or openings, in said car and below said roof so as to provide an air-space therebetween, and conduits or pipes controlling passage of air into and out of said space, of a conduit provided with openings or apertures so as to deliver fresh air into the body of said car and below said false ceiling.

6. A car-body for passenger-cars constructed without windows in any portion of the roof and provided with a false ceiling, and further provided with openings controlling the passage of air into and from the space between the roof and said false ceiling.

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

GEORGE HENRY LAYNG.

Witnesses:

EGERTON R. CASE,  
L. G. SHARPE.