

No. 762,524.

PATENTED JUNE 14, 1904.

A. HARRISON.
CAR VENTILATION.

APPLICATION FILED NOV. 8, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

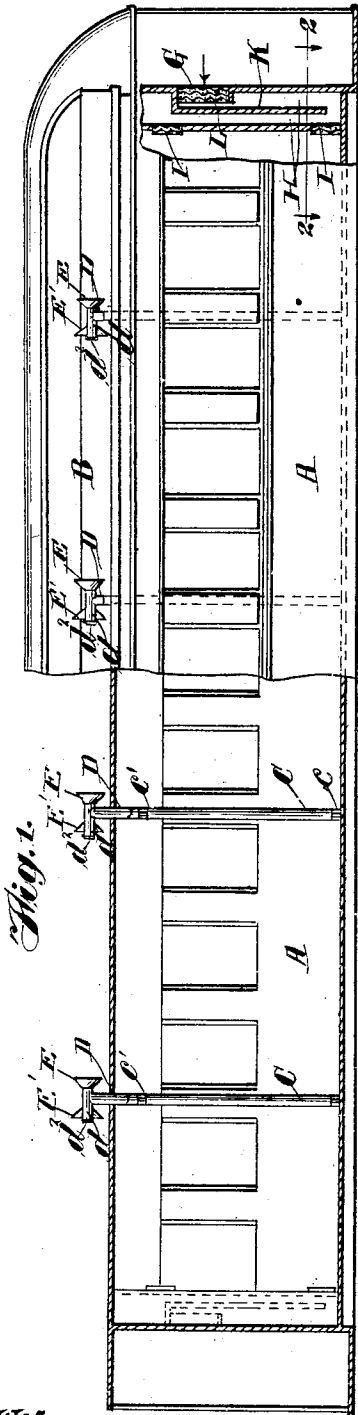


Fig. 2.

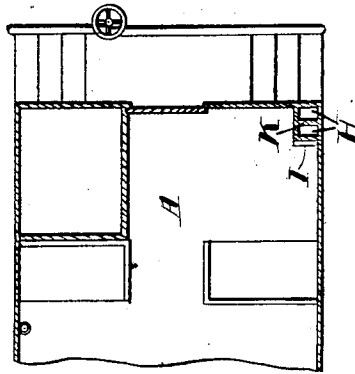


Fig. 3.

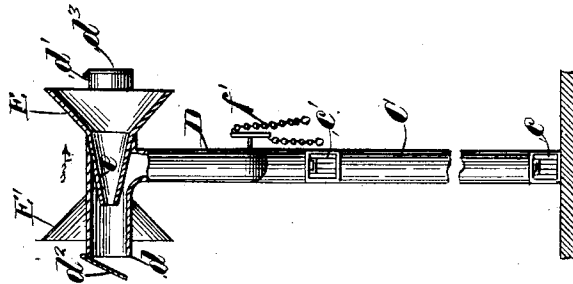
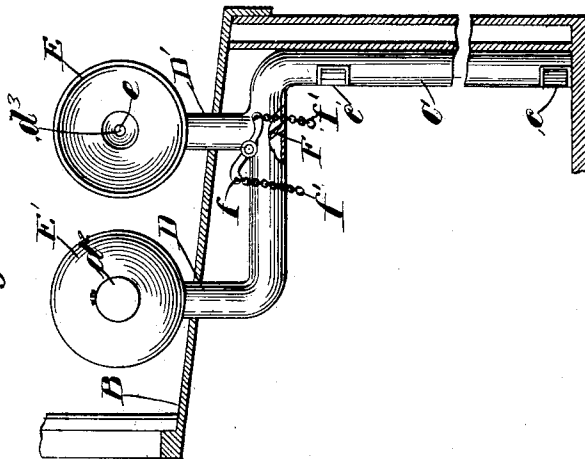


Fig. 4.



Witnesses:
 J. B. Weir
 Chas. W. Vermick

Inventor:
 Amos Harrison
 By John H. Hill Atty.

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2 SHEETS—SHEET 2.

Fig. 5.

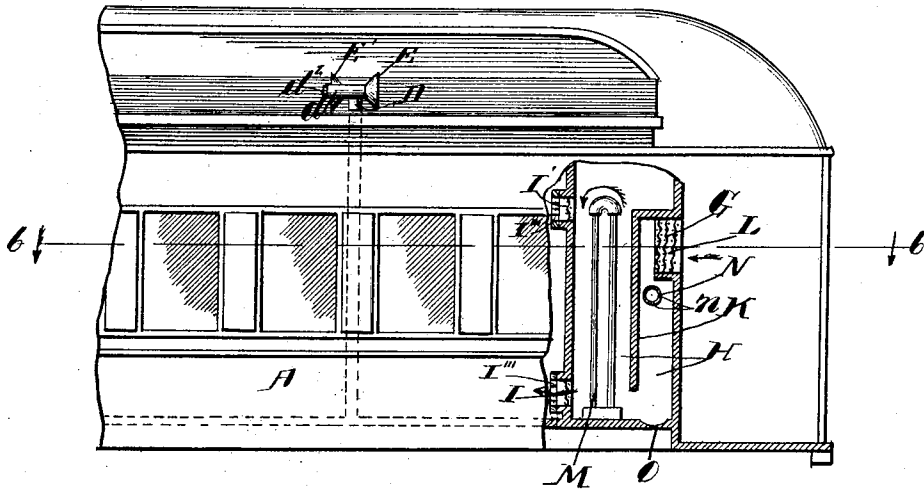
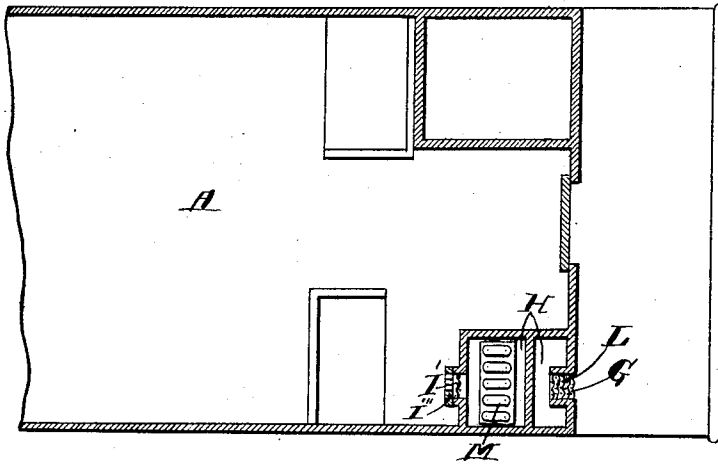


Fig. 6.



Witnesses:
J. B. Weir
O. W. Hennich

Inventor:
Amos Harrison
By John M. Hill Atty.

UNITED STATES PATENT OFFICE.

AMOS HARRISON, OF CHICAGO, ILLINOIS.

CAR VENTILATION.

SPECIFICATION forming part of Letters Patent No. 762,524, dated June 14, 1904.

Application filed November 8, 1902. Serial No. 130,513. (No model.)

To all whom it may concern:

Be it known that I, AMOS HARRISON, a citizen of the United States of America, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Car Ventilation, of which the following is a description.

It is well known that great difficulty is met with in ventilating passenger-cars to prevent dangerous drafts of cold air, which by the methods usually employed fall directly upon the heads of the passengers. This is extremely unpleasant and dangerous and usually results in closing the ventilators, thus depriving the cars of the means for any ventilation.

It is necessary to properly ventilate rapidly-moving cars that several things be considered. Positive action must be secured, dust must be excluded, direct drafts must be avoided, cold air must be drawn off in winter and hot air in summer, pure air must be admitted, as well as numerous other essential features which must be considered.

My invention has in view all of the above desirable features; and it consists in the novel construction, arrangement, and combination of parts described and shown, and more particularly pointed out in the claims.

Referring to the accompanying drawings, wherein like reference-letters indicate like or corresponding parts, Figure 1 is a side elevation of a passenger-car with parts broken away to show my improvement. Fig. 2 is a longitudinal section in line 2 2 of Fig. 1 looking down. Fig. 3 is a side elevation of the device for siphoning out the impure air. Fig. 4 is a view of the same, taken at right angles to Fig. 3. Fig. 5 is an elevational view broken away to show a modification. Fig. 6 is a section on line 6 6 of Fig. 5.

In the drawings, A represents the body of a car, and B the roof of the same. At one or more points on the side of the car a pipe or duct C extends from a point at or near the floor to near the roof of the car and in all cases is provided with one, and preferably with two, inlets *c c'*, which are in each case capable of being closed at will. An ordinary air-register may suffice for this purpose.

At or near the roof of the car I extend the pipe C in two branch pipes D D', each of which extends above the roof of the car and is provided with an ejecting-cowl E E', the two cowls being placed side by side, but facing in opposite directions toward the ends of the car, as shown. The small end *e* of the funnel extends into the extended end *d d'* of the pipes D D' by the vertical portion of the same, and the strong current of air passing through the cowl by reason of the rapidly-moving train causes an ejecting action, by reason of which the air in the car may be drawn from the floor or from the top of the car at will by simply operating the registers at *e* or *e'*.

It is obvious that one cowl or the other will always be in operation when the car is in motion. In order to preserve the correct ejecting action, means may be employed to close either pipe when the other one is in use. Any preferred form of gate or valve may be employed for this purpose. For example, the simple gate F may be used. In this case short cords *f' f'* extend from the ends of the lever *f*, so that the attendant may operate the gate. Thus it is clear that either pipe D or D' may be used alone, and thus prevent backdrafts or impaired siphoning action. In connection with this means of ejecting the impure air with certainty some means may be employed to admit pure air to maintain an even circulation and prevent the unpleasant results of a possible partial vacuum. As an independent improvement I prefer to secure the proper results by means of the following construction: At one or both ends of the car I arrange an inlet-opening G, which preferably opens into a small passage or duct H, which is divided into a tortuous passage by a dividing-wall K in any preferred manner. Two outlets I I' are preferably provided, each equipped with means for opening or closing them at will. Air-registers I'' may be used for this purpose. It will be seen that the air may be admitted at either the top or the floor of the car through either of the registers I'''. The openings G may be provided with any preferred means to prevent the entrance of dust,

&c. If desired, one or more fine screens L may be used and, if necessary, may also be interposed at other points in the passage. Guards (not shown) may also be used to deflect any cinders that might be liable to strike the screen-covered openings G.

It is obvious the inlets G may be increased, placing one near each corner of the car, if preferred; but ordinarily one at each end of the car will be sufficient for the purpose.

In the preferred construction the passage H is enlarged sufficiently to contain a heating or tempering coil or apparatus M, arranged in the path of the incoming air, as clearly shown in Figs. 5 and 6. The heater M may be of any preferred form of construction and the heating medium such as may be preferred. By this means the incoming air is tempered, preventing drafts and the sudden lowering of the temperature with the usual unpleasant results.

The mode of operation is apparent. The gate F being operated according to the direction the car is running, a current of air passing through the cowl siphons the air from the car through the pipe or duct C and the pipe D or D' in use. If now it is in cold weather, the lower register *c* should be opened, or partially so, and the register *d* closed. The foul and cold air is thus drawn from the floor, while the pure air, preferably tempered, as set forth, is admitted through the partially-opened inlet I near the floor. In hot weather the order may be reversed, drawing off the hot air near the roof of the car and admitting the cool air near the floor through the register *l* or near the top of the car at *l'*, as preferred. It is only necessary to use a sufficient number of the outlets or inlets to accomplish the result desired. All others may be closed by closing the inlets or outlets, as the case may be. In the preferred form also a spray-pipe N is positioned transversely the passage H and so connected with the steam or water piping of the car that a spray of water or steam may be thrown in the passage of the incoming air to thoroughly wash the same and eliminate whatever dust may have passed through the screens G. As shown, the pipe is provided with small perforations *n* to thoroughly distribute the moisture in the passage H. A drip O serves to carry away the accumulated moisture.

In the preferred construction I employ means to automatically close and open the ends *d* and *d'* to secure the proper effect and prevent smoke, dust, and cinders from entering the pipe not in use. Any preferred means may be employed for this purpose, that shown being preferred. As shown, covers *d*² *d*³ are loosely hinged to the ends of the extension *d* *d'* so as to depend downward from the hinge and normally cover the ends of the pipes. It will be clear that the cover toward the front of the car or the direction the car is traveling

will be held against the end of the pipe by the pressure of the current of air created closing the pipe against the entrance of smoke, dust, or cinders, while the companion cover will by the same agency be forced away from the end of the pipe, permitting the operation of the same as heretofore described. (See Fig. 3.) The operation of the covers is automatic and effective.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A means for ventilating cars, consisting of a pipe or duct extending from near the floor to the roof of the car, terminating in two branch pipes extending above the roof, means for closing either of said branch pipes at will, and an ejecting-cowl on each of said branches, the two facing in opposite directions toward the ends of the car, in combination with an inlet for pure air, and means for controlling the admission of air into the car, whereby when the car is in motion the impure air may be drawn from the car by a siphoning action and the pure air may be admitted, substantially as described.

2. A means for ventilating cars, consisting in a pipe or duct extending from near the floor to the roof of the car, means for closing said duct at will, two branch pipes extending from the said duct to a point above the roof, means for closing either of said branch pipes at will, and an ejecting-cowl on each of said branches, the smaller end of the cowl extending by the vertical duct and into the branch pipe, said cowls facing in opposite directions toward the ends of the car, in combination with an inlet for pure air, and means for controlling the admission of air into the car.

3. A means for ventilating cars, consisting in a pipe or duct extending from near the floor to the roof of the car, inlets into said duct near the floor and also near the roof, means for controlling the current of air through either of said inlets, two branch pipes extending from said duct to a point above the roof, means for closing either of said branch pipes at will and an ejecting-cowl on each of said branches, the two facing in opposite directions toward the ends of the car, in combination with an inlet for pure air, and means for controlling the admission of air into the car.

4. A means for ventilating cars, consisting in a pipe or duct extending from near the floor to the roof of the car, terminating in branch pipes extending above the roof, means for closing either pipe at will and an ejecting-cowl on each of said branch pipes, the two facing in opposite directions toward the ends of the car, in combination with an inlet in one or both ends of the car opening into an inclosed passage or duct, means for preventing the entrance of dust through said passage, and means for controlling the admission of air into the car.

5. A means for ventilating cars, consisting in a pipe or duct extending from near the floor to the roof of the car, terminating in branch pipes extending above the roof, means for closing either pipe at will, and an ejecting-cowl on each of said branch pipes, the two facing in opposite directions toward the ends of the car, in combination with an inlet in one or both ends of the car opening into an inclosed vertical passage or duct provided with a discharge-opening near the floor and also near the roof, means for controlling the admission of air through either of said openings, and means for preventing the entrance of dust through the passage.

6. A means for ventilating cars, consisting in a pipe or duct extending from the floor to the roof of the car, inlets formed in said duct near the floor and also near the roof, means for controlling the current of air through either of said inlets, two branch pipes extending from said duct to a point above the roof, means for closing either of the branch pipes at will, and an ejecting-cowl on each of said branches, the two facing in opposite directions toward the ends of the car, in combination with an inlet in each end of the car opening into an inclosed vertical passage or duct provided with a discharge-opening near the floor and also near the roof, means for controlling the admission of air through either of said openings, and means for preventing the entrance of dust through the passage.

7. A means for ventilating cars, comprising a pipe or duct extending from near the floor to the roof of the car, means for closing said duct at will, two branch pipes extending from the duct to a point above the roof, means for closing either of said branch pipes at will, and an ejecting-cowl on each of said branch pipes the two facing in opposite directions toward the ends of the car, in combination with an inlet for pure air, means for controlling the admission of air into the car, and means for heating or tempering the air as it is admitted.

8. Means for ventilating cars, comprising a pipe or duct extending from near the floor to the roof of the car, terminating in branch pipes extending above the roof, means for closing either pipe at will, and an ejecting-cowl on each of said branch pipes the two facing in opposite directions toward the ends of the car, in combination with an inlet in one or both ends of the car, opening into an inclosed passage, heating means arranged within the passage for tempering the incoming air, means for preventing the entrance of dust into said passage, and means for controlling the admission of air to the car.

9. Means for ventilating cars, comprising a pipe or duct extending from the floor to near the roof of the car, terminating in branch pipes extending above the roof, means for closing either pipe at will, and an ejecting-

cowl on each of said branch pipes, facing in opposite directions toward the ends of the car, in combination with an inlet in one or both ends of the car opening into an inclosed vertical passage provided with a discharge-opening near the floor, and also one near the roof, heating means arranged within the passage for tempering the incoming air, means for controlling the admission of air to either of said openings, and means for preventing the entrance of dust into the passage.

10. Means for ventilating cars, comprising a pipe or duct extending from near the floor of the car to the roof of the same, inlets formed in the duct near the floor and also near the roof, means for controlling the current of air through either of said inlets, two branch pipes extending from said duct to a point above the roof, means for closing either of the branch pipes at will, and an ejecting-cowl on each of said branches, the two facing in opposite directions toward the ends of the car, in combination with an inlet in one or both ends of the car opening into an inclosed vertical passage provided with a discharge-opening near the floor, and also near the roof, heating means arranged within the passage for tempering the incoming air, means for controlling the admission of air to either of said openings, and means for preventing the entrance of dust into the passage.

11. Means for ventilating cars, comprising a pipe or duct extending from the interior of the car to the exterior of the roof, and terminating in branch pipes extending above the roof, in combination with an ejecting-cowl on each of said branches the two facing in opposite directions toward the ends of the car, and means for automatically controlling the operation of said ejecting-cowls.

12. A means for ventilating cars, consisting of a pipe or duct extending from near the floor to the roof of the car and terminating in two branch pipes extending through the roof, means for closing either of said branch pipes at will, and an ejecting-cowl on each of said branches, the cowls facing in opposite directions.

13. A means for ventilating cars, consisting of a pipe or duct extending from the interior of the car through the roof thereof, inlets formed in said duct near the floor and also near the roof, means for controlling the current of air through either of said inlets, two branch pipes extending from said duct to a point above the roof, means for closing either of the branch pipes at will, and an ejecting-cowl on each of said branches, the two facing in opposite directions toward the ends of the car, in combination with an inlet at each end of the car, opening into an inclosed vertical passage or duct provided with a discharge-opening near the floor and also near the roof of the car, means for controlling the admission of air through either of said openings,

means for tempering and washing the air during its admission, and means for preventing the entrance of dust through the passage.

14. Means for ventilating cars comprising a pipe extending from the floor to near the roof of the car, terminating in an ejecting-cowl above the roof, in combination with an inlet in one or both ends of the car opening into an inclosed vertical passage provided with a discharge-opening near the floor and an addi-

tional opening near the roof, heating means arranged within the inclosed vertical passage for tempering the incoming air, means for controlling the admission of air through either of said openings, and means for preventing the entrance of dust into the passage.

AMOS HARRISON.

Witnesses:

JOHN W. HILL,
CHARLES I. COBB.