

(No Model.)

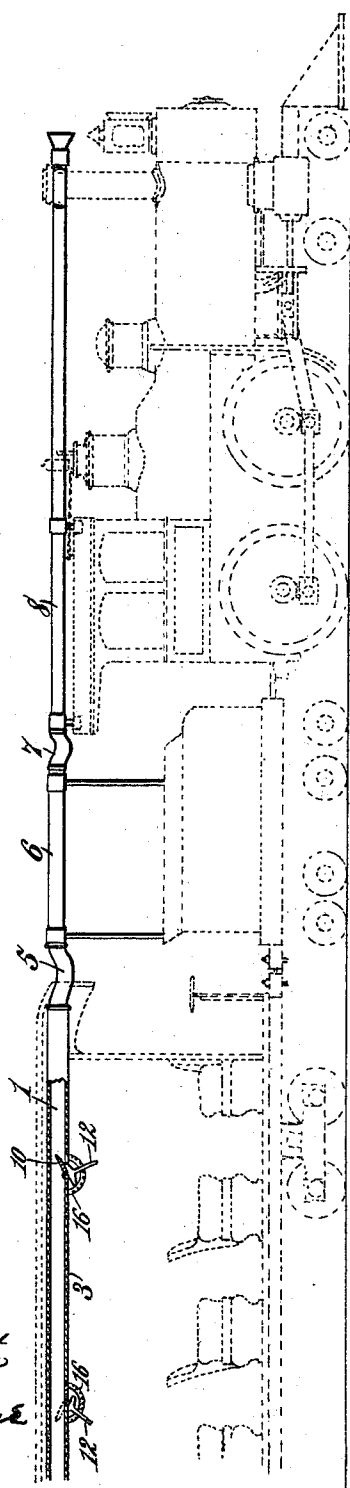
2 Sheets—Sheet 1.

J. I. DUNLAP.
VENTILATOR FOR RAILWAY CARS.

No. 572,877.

Patented Dec. 8, 1896.

Fig. 1.



Witnesses.
Robert G. Smith,
Francis N. Hume

Fig. 4.

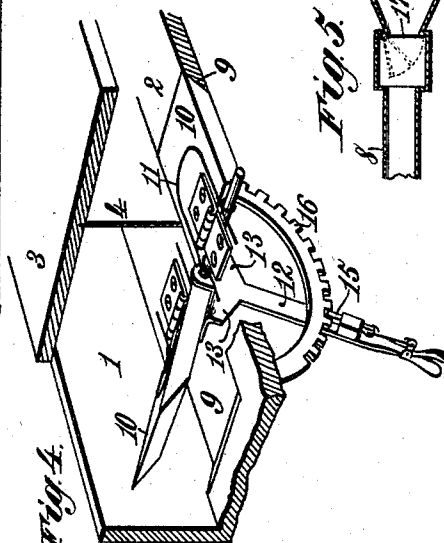


Fig. 5.

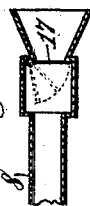


Fig. 2.

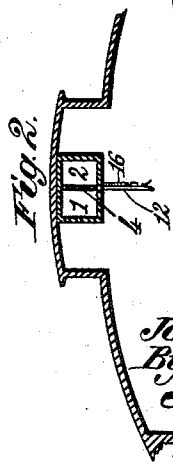
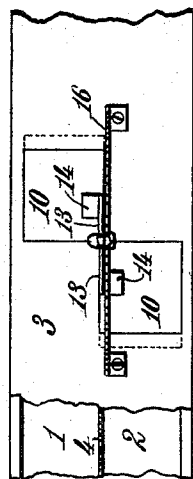


Fig. 3.



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By *James L. Norris,*
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(No Model.)

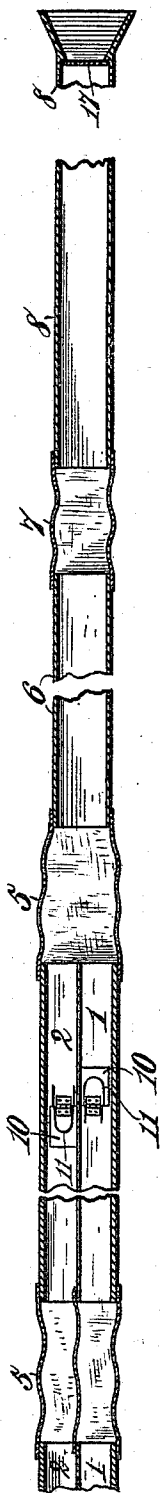
2 Sheets—Sheet. 2.

J. I. DUNLAP.
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Fig. 6.



Witnesses.
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Inventor.
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UNITED STATES PATENT OFFICE.

JOSEPH INGRAM DUNLAP, OF WADESBOROUGH, NORTH CAROLINA.

VENTILATOR FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 572,877, dated December 8, 1896.

Application filed February 27, 1896. Serial No. 580,979. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH INGRAM DUNLAP, a citizen of the United States, residing at Wadesborough, in the county of Anson and State of North Carolina, have invented new and useful Improvements in Ventilators for Railway-Cars, of which the following is a specification.

This invention relates to ventilators for railway-cars, and has for its objects the provision of simple and effective devices for exhausting the foul air of a car and the admission of pure air free from dust, smoke, and cinders.

The invention consists in the construction and combination of devices pertaining to a system of railway-car ventilation, as hereinafter more particularly described and claimed.

In the annexed drawings, illustrating the invention, Figure 1 is a side elevation of part of a railway-train with my improved car-ventilator in longitudinal section. Fig. 2 is a transverse section of the ventilator and upper part of a car. Fig. 3 is an inverted plan of the car-ventilator. Fig. 4 is a perspective of a pair of ventilator-valves and a lever common to both valves and by means of which either valve may be opened and held open to any required extent and in the proper direction for exhausting foul air from the car or the admission of pure air, according to the direction in which the car is moving. Fig. 5 is a sectional detail view showing a valve in the air-pipe that is supported on the locomotive. Fig. 6 is a sectional plan showing the manner in which the air-pipes, couplings, and valved ventilator-conduits may be arranged.

It is the purpose of my invention to exhaust the foul air from a railway-car by means of an induced air-current passing through a tubular conduit preferably located in or upon the top of the car and extended its entire length, and to admit pure fresh air through a separate parallel conduit that is similarly located.

The two parallel conduits are herein designated by the reference-numerals 1 and 2 and are preferably constructed in one body or trunk 3, divided by a vertical longitudinal partition 4, as shown. The trunk 3 and its two parallel conduits 1 and 2 are extended the entire length of each car-top and adapted

to communicate with the interior of the car at several points. At its ends each trunk 3 is provided with flexible couplings 5 for connecting with conduits on adjoining cars or with a pipe 6, supported longitudinally above the tender, and which in turn is adapted to communicate through a flexible coupling 7 with a pipe 8, supported longitudinally on the locomotive. The forward end of the pipe 8 is preferably flared and is extended a sufficient distance in advance of the locomotive smoke-stack to guard against drawing in smoke and cinders.

In the bottom of each conduit 1 and 2 is a series of openings 9, preferably rectangular in form. These openings 9 in the two conduits are controlled by flap-valves or hinged deflectors 10, and the said openings and valves of the respective conduits are so arranged that the hinged or pivotal edge of each valve in either conduit is in line with the hinged or pivotal edge of a corresponding valve in the other conduit. The valved openings of the two parallel conduits are thus brought in such proximity that the valves of each pair may be controlled alternately by a single lever. By means of a spring 11 on its upper side each flap-valve 10 is normally closed downward to cut off communication between each conduit and the interior of the car.

Between adjacent valves of the two conduits and in line with the pivotal or hinged edge of each valve is fulcrumed a depending lever 12, that is provided near its pivotal end with forward and rearward projecting arms 13 beneath the center longitudinal line of the trunk-bottom. On their ends these arms 13 are provided with laterally-projecting lugs 14, extended in opposite directions beneath adjacent valves 10 and adapted to be brought alternately in contact therewith by a swinging movement of the lever 12 either forward or backward, as the case may be. In a normally-vertical position of the lever 12 both lugs 14 are held away from the valves 10, and the said valves are then held tightly closed down by pressure of the springs 11 on their upper sides. To secure close joints between the openings 9 and valves 10, the free edges of the latter may be beveled to correspond with a similar beveling at adjacent-edges of the openings.

If it is desired to open one of the valves 10 in either conduit, the lever 12 will be swung toward said valve, so that the proper laterally-projecting lug 14 will bear against the valve and force it upward and open against the pressure of the spring 11 on its upperside.

A spring-catch 15 is provided on the lever 12 to engage a segmental rack 16, secured to the under side of the trunk 3, so that a valve 10 may be locked in open position at any required angle.

It will be observed that the valves 10 of the two parallel and adjacent conduits 1 and 2 are arranged to open in opposite directions, the valves of one conduit being capable of opening only in the direction of movement given to the train of cars and the valves of the other conduit being capable of opening only in a direction contrary to the direction of train movement. The air admitted to the conduits 1 and 2 through the communicating pipes 6 and 8, supported on the forward-moving locomotive and tender, will create a rearward current in each of said conduits 1 and 2 upon or in the cars or coaches. If now some of the levers 12 are swung rearward, the corresponding valves 10 of one conduit will be thereby opened and deflected in a rearward direction, thus permitting the rearward current of air in the conduit to exhaust or draw outward the foul air from the car. By swinging other levers 12 forward a number of valves 10 of the other conduit will be opened or deflected in a forward direction to admit to the car pure and fresh air free from smoke and cinders, coming, as it does, from in front of the engine. Each conduit 1 and 2, with its valved openings, will serve to exhaust foul air from the cars or conduct fresh pure air thereto, according to the direction in which the train is moved. In order to remove the impure air from the cars of a moving train, it is only necessary to swing one or more of the levers 12 rearward, and to admit fresh pure air one or more of these levers 12 are to be swung forward. The two parallel and adjacent conduits of each car may be provided with any desirable number of valved openings and controlling-levers. It is preferable to provide only one lever for each pair of adjacently-located valves, thus conducing to simplicity of construction and avoiding any interference of incoming and outgoing air-currents. The ventilation of the car can be easily regulated by increasing or decreasing the extent of movement given to any lever 12 and the valve that it acts on. When the levers are brought to vertical positions, the valves will be closed down by their springs. The advantage of providing separate conduits, one for removal of foul air and the other for admission of fresh air, will be apparent in the consequent avoidance of any liability to the induction of impure air from one car into the fresh-air supply for another car. At suitable points in the conduits 1 and 2 or in

the pipes 6 and 8 there may be provided suitable screens to intercept the passage of dust, and this, with extension of the supply-pipe 8 in advance of the locomotive, will effectually prevent the access of dust, smoke, and cinders to the cars through the fresh-air supply.

If desired, there may be placed in the pipe 8, in rear of its forward-end flared portion, a swinging valve 17, hinged at the top and normally occupying a vertical position, by gravity, when the train is at rest, thus excluding dust, smoke, and cinders; but when the train is moved forward the valve 17 will open in a rearward direction by pressure of air against its front face. A similar device can be placed in the rear end of the air conduit or conduits on the rear coach.

What I claim as my invention is—

1. A car-ventilator comprising parallel and adjacent air-conduits extended longitudinally the entire length of a car and provided at their ends with flexible couplings for connecting with similar conduits on adjoining cars, each conduit being arranged to communicate with the interior of the car through openings provided with valves that open only in one direction for each conduit, the valves in one conduit being adapted to open only in a forward direction and the valves in the other conduit being adapted to open only in a rearward direction, whereby one conduit will serve for exhaust of foul air from the car and the other for admission of pure air, according to the direction of movement given to the car, substantially as described.

2. A car-ventilator comprising two parallel and adjacent air-conduits extended longitudinally the entire length of a car and communicating therewith through openings provided with valves that open only in one direction for each conduit, the valves in each conduit being hinged or pivoted in line with and adjacent to the hinge or pivot of a corresponding valve in the other conduit so that the valves in one conduit will open only in a forward direction and the valves in the other conduit only in a rearward direction, springs for normally closing said valves, a lever for each pair of adjacent valves in the said conduits, the said lever being provided with arms having lugs projecting laterally in opposite directions to bear on and open said valves alternately according to the direction of movement imparted to the lever, and means for locking said lever at any angle, substantially as described.

3. In a car-ventilator; the combination of a pipe supported on the locomotive and extended in front of the same with an open flared end, a pipe supported on the tender and coupled to the pipe on the locomotive, parallel and adjacent longitudinal conduits in each car and coupled to the pipe on the tender, each of said parallel and adjacent conduits being adapted to communicate with the interior of a car through series of openings

provided with valves that open only in one
direction for each conduit, or forward in one
conduit and rearward in the other, springs
for closing said valves, levers for opening the
5 valves, and locking mechanism for each lever
to hold the valves open at any required an-
gle, substantially as described.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

JOSEPH INGRAM DUNLAP.

Witnesses:

JAMES C. MARSHALL,
J. M. LITTLE.