(No Model.)

M. C. JONES.

VENTILATING CARS.

No. 252,673. Patented Jan. 24, 1882.

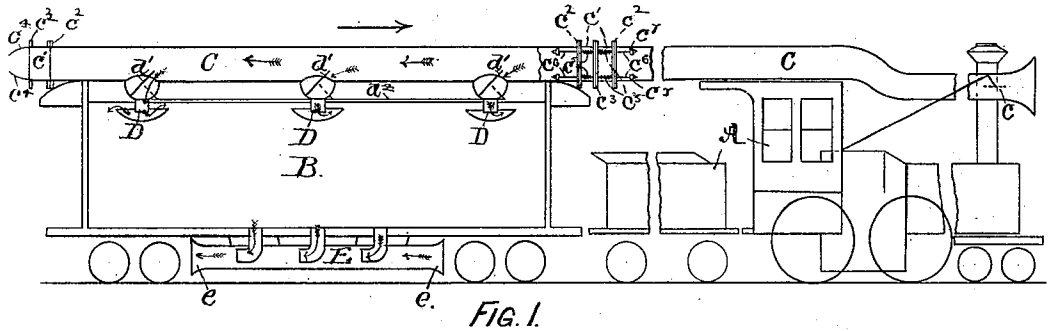

FIG. 1.

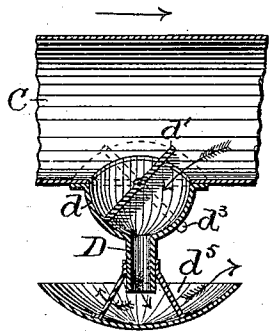

FIG. 2.

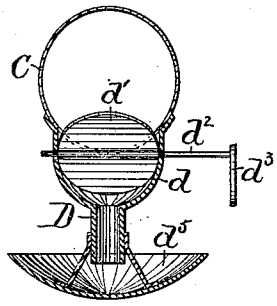

FIG. 3.

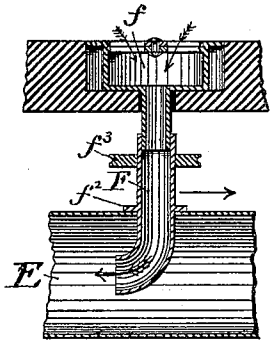

FIG. 4.

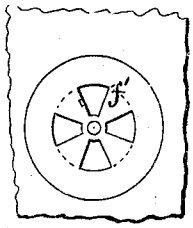

FIG. 6.

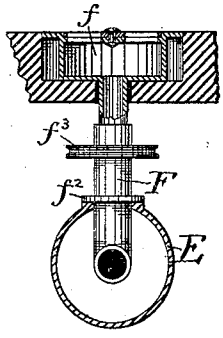

FIG. 5.

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UNITED STATES PATENT OFFICE.

MILTON C. JONES, OF GREEN ISLAND, NEW YORK.

VENTILATING CARS.

SPECIFICATION forming part of Letters Patent No. 252,673, dated January 24, 1882.

Application filed October 8, 1881. (No model.)

To all whom it may concern:

Be it known that I, MILTON C. JONES, of Green Island, in the county of Albany and State of New York, have invented certain new and useful Improvements in the Mode of Ventilating Railway-Cars, of which the following is a full and exact description.

My invention relates to an improved mode of ventilating cars on railways; and the objects of my improvements are, first, to provide the means for obtaining and circulating through the cars an ample supply of fresh air, and for removing the vitiated air from the interior of the cars by means of currents of air produced by the movement of the train; and, second, to afford suitable facilities for properly governing the inflow of fresh air and the outflow of impure air. These objects I attain by means of the appliances illustrated in the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of a locomotive, tender, and car (the latter being shown in longitudinal section) provided with my improved ventilating apparatus; Fig. 2, an enlarged and detached longitudinal section of the inlet air-pipe, valve, and air-distributer; Fig. 3, a transverse section of the same; Fig. 4, an enlarged and detached longitudinal section of the outlet or exhausting air-pipe and reversible elbow-pipe; Fig. 5, a transverse section of the same; and Fig. 6, a plan view of a register or damper applied to the inner end of the reversible outlet-pipe.

As represented in the drawings, A indicates a locomotive and its tender, B a railway-car, C a fresh-air-supply pipe, and E an outlet or exhausting air-pipe.

The fresh-air-supply pipe C extends forward beyond the front of the smoke-stack of the locomotive, so as to obtain a supply of air that is uncontaminated with smoke. The forward portion of said pipe may be bifurcated to pass at each side of the smoke-stack, and the forward end or ends should be enlarged to form a bell-mouth opening. Each of said ends should be provided with a damper, *c*, (placed under the control of the engineer of the train,) for the purpose of preventing the smoke emitted from a passing train from entering the supply-pipe and contaminating the air that enters the car. The portions of the supply-pipe C that are fixed to the cars B are made in sections, each of which corresponds in length to the length of the car, and both ends of each section are provided with a flexible coupling-joint composed of a sleeve, *c'*, of india-rubber or other flexible material, one end of which is secured to the stationary flange c^2 on the pipe C, and the opposite end of the sleeve is attached to a movable flange, c^3, which is provided with projecting curved guides c^4, so arranged around the inner circumference of said flange that they will enter into the opening of a like flange on the end of a flexible joint of a conjoining section of the supply-pipe and guide the two parts to their respective places. The flexible sleeve *c'* is extended by means of spiral springs c^5, which surround the guide-rods c^6, and are interposed between the flanges c^2 and c^3. The guide-rods c^6 are fixed to the flange c^3, but are adapted to slide in holes formed in the flange c^2 and in the ears c^7, formed on the pipe C. This arrangement of the parts of the flexible joint, while it serves to hold the conjoining flanges of two sections in close contact, also permits the joint to yield in any direction whenever a strain is thrown upon it.

Each section of the supply-pipe C that passes over a car is provided with a series of branch pipes, D, (shown in the enlarged details, Figs. 2 and 3,) and each of said branch pipes, where it joins with the supply-pipe C, is furnished with a head, *d*, preferably made of a hemispherical form, for containing the reversible valve *d'*, said valve having a central shaft, d^2, which forms the trunnions on which the said valve swings. The outer end of the shaft d^2 is provided with a crank, d^3, for manipulating the valve *d'*, and the several cranks of the series of branch pipes may be connected by a rod, d^4, as shown in Fig. 1, to produce a simultaneous movement of the several valves in each car; or, when preferred, the cranks may be left disconnected, so that each valve can be operated separately. From the under side of each head *d* a vertical branch pipe, D, is fixed to discharge an incoming current of air into a concave distributer, d^5, and by the latter device the air-current is broken and spread in every direction. To obtain a supply of fresh air in the car, the valves *d'* should be set in inclined positions, with their uppermost edges toward the front of

the train, as shown in Fig. 1. Then, as the train moves forward, part of the volume of air passing through the supply-pipe C will be deflected by the valves d' downward through the branch pipes D, and the quantity of air so deflected may be regulated to suit the occasion by changing the angle at which the valve is set; or, when required, the air may be excluded from passing down the branch pipes D by placing the valves d' in a horizontal position to close the opening in the head d, as indicated by dotted lines in Fig. 2.

A separate exhausting-pipe, E, is attached to each car, and runs in the direction of the length of the latter. The said pipe is provided at each end with a bell-mouth enlargement, e, so that when the car is run with either end foremost a rapid current of air will be forced to pass through the exhausting-pipe. From the bottom part of the car a series of reversible elbow branch pipes, F, pass into the pipe E, so that when the open mouths of the elbows are turned toward the rear of the train the current of air passing through the pipe E will produce sufficient vacuum behind the pipes F to induce a strong downward draft through the latter pipes, and by this means the impure air that lies near the floor of the car will be drawn out therefrom and ejected from the rear end of the pipe E. As represented in the detail figures, (4 and 5,) each of the branch pipes F is furnished with a head, f, preferably fixed in the floor of the car, and each of said pipes should be provided with a suitable damper for governing the outflow of air therethrough, and said dampers may be in the form of the register f' shown in Fig. 6, or in any other of the well-known styles of dampers suited to the purpose. The pipes F are furnished with collars f^2, that rest on the pipe E and form bearings to sustain the branch pipes F in position.

Secured to each of the pipes F is a grooved pulley, f^3, for receiving endless bands, which run from one pulley to the next one to form a continuous connection, whereby the series of pipes F of each car may be moved simultaneously; but while I show this mode of turning said pipes I do not confine myself to this particular mechanism for effecting the purpose.

When the train is moving forward in the direction indicated by the arrow over the car in Fig. 1 a rapid inflow of air will be forced to pass through the pipes C and E, and the actions hereinbefore described in respect to the branch pipes D and F will occur, as set forth, to produce a fresh supply of air to the interior of the car.

I claim as my invention—

1. The combination, with an inlet air-pipe, D, provided with the head d, as herein described, of the reversible valve d', fixed in the head d and adapted to deflect and govern the entering air-currents, as herein set forth.

2. The combination, with an inlet air-pipe, D, provided with a reversible valve or deflector, d', of the air-distributer d^5, arranged in relation to the pipe D, as and for the purpose herein specified.

3. In an organized system of ventilation for railway-cars, the combination, with a fresh air-supply pipe, C, constructed and arranged as herein described, and provided with branch pipes D, furnished with reversible valves or deflectors d', of the exhausting air-pipe E, provided with the reversible elbow branch pipes F, and arranged in relation to the supply-pipe C, as and for the purpose herein specified.

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