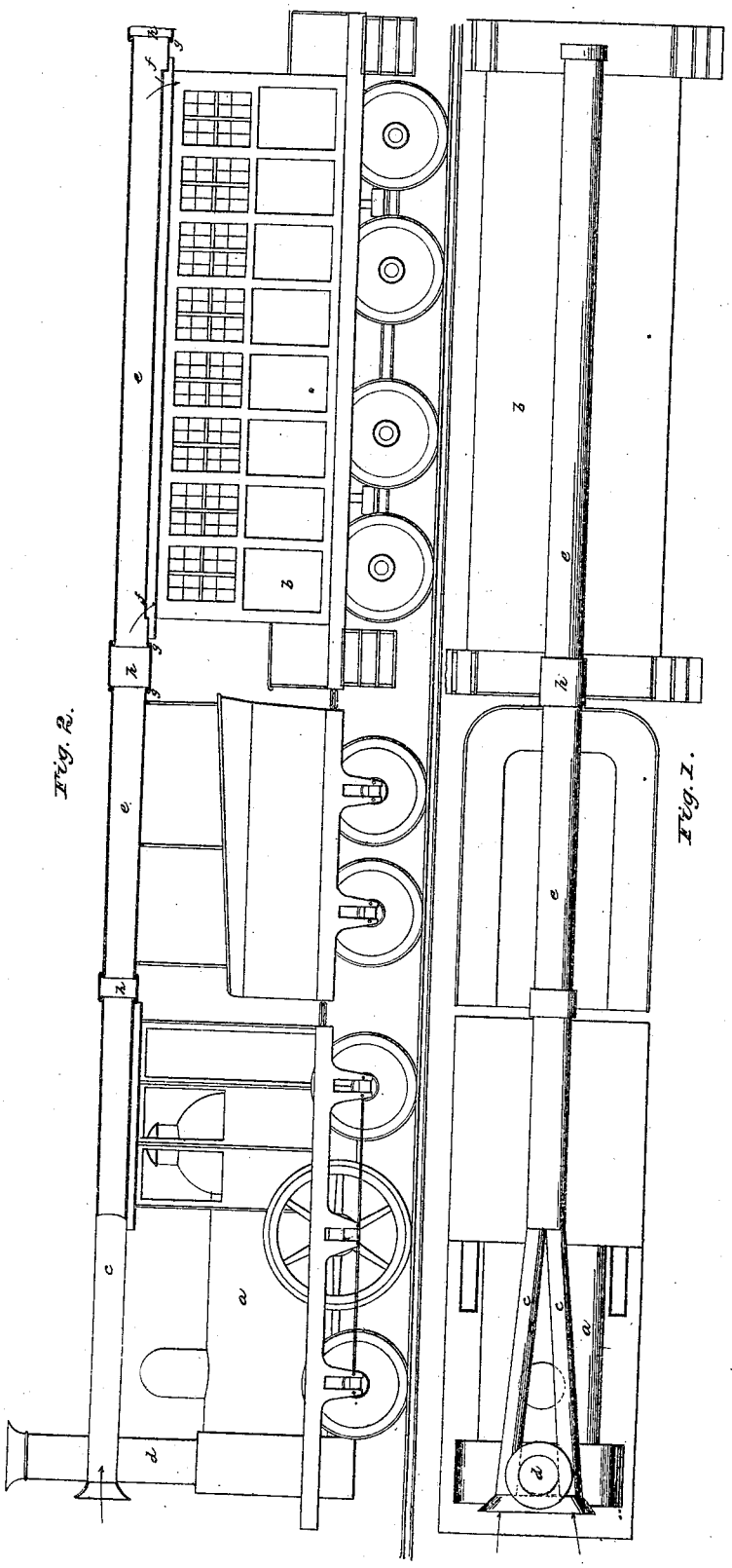
H. BRADFORD & E. MORRIS.

METHOD OF VENTILATING RAILROAD CARS.

No. 7,409. Patented June 4, 1850



UNITED STATES PATENT OFFICE.

HEZEKIAH BRADFORD AND EPHRAIM MORRIS, OF NEW YORK, N. Y.

VENTILATING RAILROAD-CARS.

Specification of Letters Patent No. 7,409, dated June 4, 1850.

To all whom it may concern:

Be it known that we, HEZEKIAH BRADFORD and EPHRAIM MORRIS, of the city, county, and State of New York, have invented a new and useful Method of Ventilating Railroad-Cars and Preventing Dust, Smoke, and Sparks from Entering the Same, and that the following is a full, clear, and exact description of the principle or character of our invention which distinguishes it from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of a locomotive at the head of a train of cars, and Fig. 2 a longitudinal vertical section in part of the same.

The same letters indicate like parts in the two figures.

The object of our invention is to introduce into the several cars of a railroad train a current or currents of air taken from some point or points forward of the smoke pipe of the locomotive, and thereby not only to supply the cars with the required ventilation, but at the same time to produce in each car of the train an outward pressure of air which will effectually prevent dust, smoke and sparks from entering the cars, and to this end the nature of our invention consists in combining with the railroad train a tube or tubes united at the junction of each car in the train by a flexible or yielding joint, the said tube or tubes being carried forward of the chimney of the locomotive to receive the air in the front of the train and the said tube or tubes being made to communicate with each car of the train so that the current of air forced by the motion of the train into the forward end of the tube or tubes where from its location the air cannot be charged with dust, smoke or sparks may by the said motion be caused to pass through the said tube or tubes into each car of the train.

In the accompanying drawing (*a*) represents the locomotive, and (*b*) one car of a train. Above the locomotive we place two tubes (*c*, *c*,) each having a funnel shaped aperture in front of the smoke pipe (*d*) and on each side thereof and which come together and unite into one pipe back of the smoke pipe. On the roof of each car as well as the tender, there is a pipe (*e*) of the same diameter, and all these may be considered as several sections of one and the same pipe, and each one of these sections communicates with its appropriate car by holes (*f*, *f*,) near each end. The ends of the sections are formed with flanges (*g*, *g*,) to admit of connecting the several sections by short sections of india rubber tubes (*n*) which are properly secured by any known means to the flanged ends of the sections. By means of the india rubber sections which unite the several sections of the tube at the junctions of the several cars in the train the requisite play will be given to the cars for turning curves on the road, and for approaching and receding from each other at the time of starting or stopping, and also for the lateral play common to all trains.

From the foregoing it will be seen that when the train is in motion a strong current of air will be taken into the ends of the funnel shaped end of the tubes forward of the chimney of the locomotive and therefore at points so far forward as not to take in either dust, smoke, or sparks, and that by reason of the motion of the train aided by the funnel shaped apertures of the tube the motion of the current through the tube will be accelerated, and thus cause a current of fresh air to blow into each car of the train, thus producing in each car an outward pressure of air tending to escape through all the apertures, and which will effectually prevent dust, smoke, and sparks from entering. When the train is in motion, the doors and windows should be kept closed or nearly so or the supply of air from the tube may not be sufficient effectually to exclude, dust, smoke, and sparks, although it will tend in a great measure to do so.

Instead of india rubber for uniting the several sections of the tube, other flexible substances may be substituted, and indeed metal universal and sliding joints may be substituted, but the india rubber cloth connections will be found the best adapted to the purpose, and the least liable to derangement and will have the advantage of facilitating the connecting and disconnecting the cars.

The two branches of the forward end of the tube, particularly for the summer, should be placed as far from the chimney and boiler of the locomotive as circumstances will permit, to prevent the heating of the air as it enters the tube. The tube may be made of any desired form or size

to suit circumstances or the judgment of the construction, and instead of admitting the air from the tube through holes in the roof of the car, short section, or sections of a tube or tubes may be extended down at the front of each car so as to introduce the current or currents of air at such a point or points as to establish a cooling current or currents through the car which may be made to escape through corresponding apertures at the back or at any other part. When our invention is to be used simply for keeping out dust smoke or sparks, the tube may be very small, of less comparative capacity than the proportions given in the drawings; but when it is to be used for the additional purpose of inducing a cooling current or currents through the cars, then the proportions of the tube should be enlarged, or the capacity of the funnel increased; but these are modifications which will be apparent to all engineers and which are only here given the better to distinguish the principle of our invention from the mere modes of application.

What we claim as our invention and desire to secure by Letters Patent is—

The method of ventilating the cars of a rail road train and keeping out dust, smoke, and sparks, by combining therewith a tube made in sections, and united by flexible joints at the junctions of the cars which tube receives a current or currents of air forward of the chimney of the locomotive and discharges it into the car, through apertures, all substantially as herein described.

HEZEKIAH BRADFORD.
EPHM. MORRIS.

Witnesses:
CHS. M. KELLER,
EDW. A. PETERS.