

*J. B. Talmadge,
Car Ventilator,*

N^o 46,831.

Patented Mar. 14, 1865.

Fig: 1.

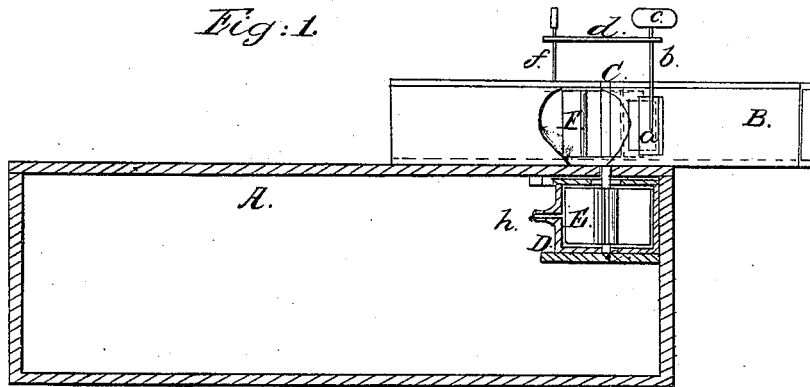
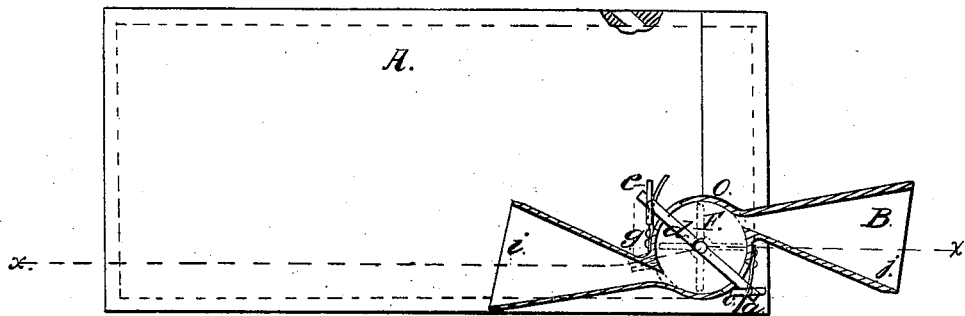


Fig: 3.



Fig: 2.



Witnesses:

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JAMES B. TALMADGE, OF WINSTED, CONNECTICUT.

VENTILATING APPARATUS FOR RAILROAD-CARS.

Specification forming part of Letters Patent No. 46,831, dated March 14, 1865.

To all whom it may concern:

Be it known that I, JAMES B. TALMADGE, of Winsted, in the county of Litchfield and State of Connecticut, have invented a new and useful Improvement in Ventilating Apparatus for Railroad-Cars and other Structures; and I do hereby declare that the following is a full, clear, and exact description of one form in which I have contemplated the application of my said invention, and a description of which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section showing the herein-described form of my apparatus as applied to a railroad-car, the bent line *x*, Fig. 2, being the plane of section. Fig. 2 is a top view, the cover of the conducting-box being removed. Fig. 3 is a horizontal section of the wind-wheel F.

Similar letters of reference indicate corresponding parts.

My invention consists in giving a motion and producing a circulation of air in a car or other structure by means of a fan-wheel or blower driven by a wind-wheel outside of the car or structure.

A is taken to represent a railroad-car, upon the top of which, at one end, over a corner of the car, is set a box, B, open at both ends, of the shape shown in Figs. 1 and 2, or other known forms of conducting air to a wind-wheel, consisting of two mouth-pieces, *i* and *j*, each of flaring shape, in horizontal section; but I prefer to make them of the same height throughout their length. Their narrow ends are connected tangentially to the circular box O, within which is placed the wind-wheel F. The said mouth-pieces *i* and *j* are closed on all sides except at their ends and at their points of connection with the box O, and their points of connection therewith are directly opposite to each other. At points about midway between the points of connection of the mouth-pieces with the circular box I make openings in the upright sides of said box, to which are fitted hinged doors *a* *g*, each opening outward. A vertical rod is secured on the outer face of each door, that on the door *a* being lettered *b* and that on the door *g* being lettered *f*. These doors are connected so as to cause a reciprocating motion by means

of a connecting-rod, *d*, through which the rods *b* and *f* pass, and whose length is such that when one door is closed the other will be open. The tops of the rods carry vanes *c* and *e*, which are so set on the rods that when one of the doors is shut its vane points in the direction of the motion of the car, and when it is open its vane lies across the direction of motion. This arrangement causes the vanes to remain in that position—to wit, the open door having the vane on its rod presented broadside to the air, and the closed door having its vane presented edgewise thereto. When the car is moved in an opposite direction, the positions of the vanes and doors will be changed automatically, as is hereinafter explained. This arrangement of the doors to open and shut serves as valves for the escape of the wind after it strikes the wind-wheel.

The fan-wheel E is inclosed in a box, D, placed in the inside of the car, near its roof, beneath the wind-wheel F. The top of the box D is placed a little ways below the roof or ceiling of the car, and its cover has an opening, *n*, about the axis C of the wheel for the purpose of admitting air thereto, which is discharged through a nozzle or pipe, *h*, proceeding from the side of the box, as shown most clearly in Fig. 1. I propose to attach to the nozzle *h* an air-tube of suitable size, made of wood or metal, leading lengthwise of the car, and over the seats, provided with branch tubes over each seat, through which the air is distributed at the will of the occupants.

The rotation of the fan E causes the ingress of the air in the car through the opening *n* in the top of the box D, and its egress through the nozzle *h*, thereby causing an active circulation of the atmosphere of the car and relieving its occupants of the oppression which attends a stagnant condition of the air. When a car is in rapid motion, the agitation of the air through which it passes causes an uprising of dust from the track, and it is often necessary to exclude the outer air from a car on this account. The doors and windows are also kept closed for the purpose of shutting out the cinders and smoke from the locomotive. When a car is thus closed, it is of great importance to the health and comfort of its occupants to cause the air therein to be circulated until fresh air can be introduced. Especially is this desirable in warm weather, when

the circulation of the air in the car in the manner described will be equivalent to the operation of fanning; but my invention is not designed exclusively to act when a car is shut up and the outer air excluded. The windows and doors of a car are not so tightly incased as to prevent the passage of air into and out of a car, and most cars are provided with ventilators for the regulated admission of fresh air. When my apparatus is applied to a car, it is clear that a less amount of fresh air, comparatively, will be needed for ventilation, because of the active circulation of the atmosphere which is made in the car by the fan. It is not material in which direction the rotation of the fan proceeds.

When the car is moving toward the right, the outer air will be forced through the mouth-piece *j* into the circular box *O*, where it puts the wind-wheel *F* in rotation, which wheel *F*, being connected, directly or indirectly, by the use of any known gearing, with the fan *E*, causes it also to rotate at a high or low degree of velocity, according to the construction of the gearing. The air will press against the inner face of the door *g* and force it open, and thereby bring its vane *e* at right angles to the direction of motion.

The opening of one door and the closing of another will be caused in part by the pressure of the air against that door whose inner face is presented toward the direction of motion, and in part by its pressure against the outside of the other door. When the changes in the positions of the doors are taking place, such changes are facilitated by the action of the air on the vanes, and when the changes have been effected the doors are retained in their new position as well by the continued pressure of the air upon them as by the pressure of the air against the face of the vane of the open door. When the motion of the car is re-

versed, the air will press against the face of the vane of the open door and help to close that door, its vane meanwhile being turned so as to point in the new direction of motion, while the other vane is being turned to face at right angles to that direction. The air which is received into the mouth-pieces *i* and *j* acquires increased velocity because the throats of said mouth-pieces are narrower than their embouchures, and the air received into the circular box *O* is discharged therefrom through one of its doors and through the throat of the mouth-piece which is not opposed to the currents of air.

This apparatus may be applied to any other structure in which ventilation is desired.

I desire it to be distinctly understood that I do not limit myself to the particular construction or combination of parts herein shown and described.

I claim as new and desire to secure by Letters Patent—

1. Producing a current and circulation of air in a railroad-car by means of a fan-wheel or blower driven by a wind-wheel on the outside in the manner and for the purpose substantially set forth.

2. The self-adjusting apparatus consisting of the upper box, *B*, and its wind-wheel, its doors and vanes, and of the lower box, *D*, with its fan constructed and combined substantially as above described.

3. The method substantially as above described of constructing and operating the doors of the circular box *O* and the vanes which are connected thereto so that they are automatic in their action.

JAMES B. TALMADGE.

Witnesses:

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