T. FRAME.
Car-Ventilator.

2 Sheets—Sheet 1.

No. 198,290. Patented Dec. 18, 1877.

Fig. 4.

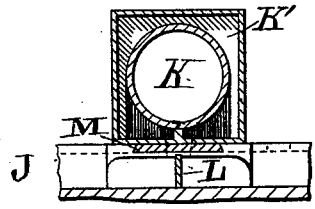


Fig. 5.

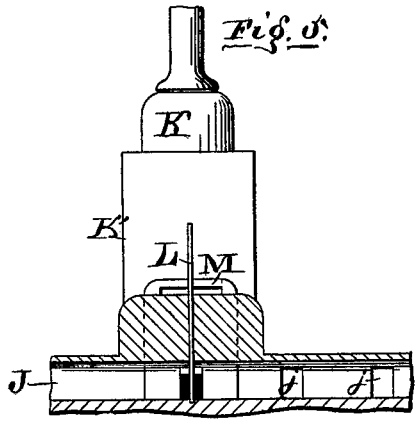
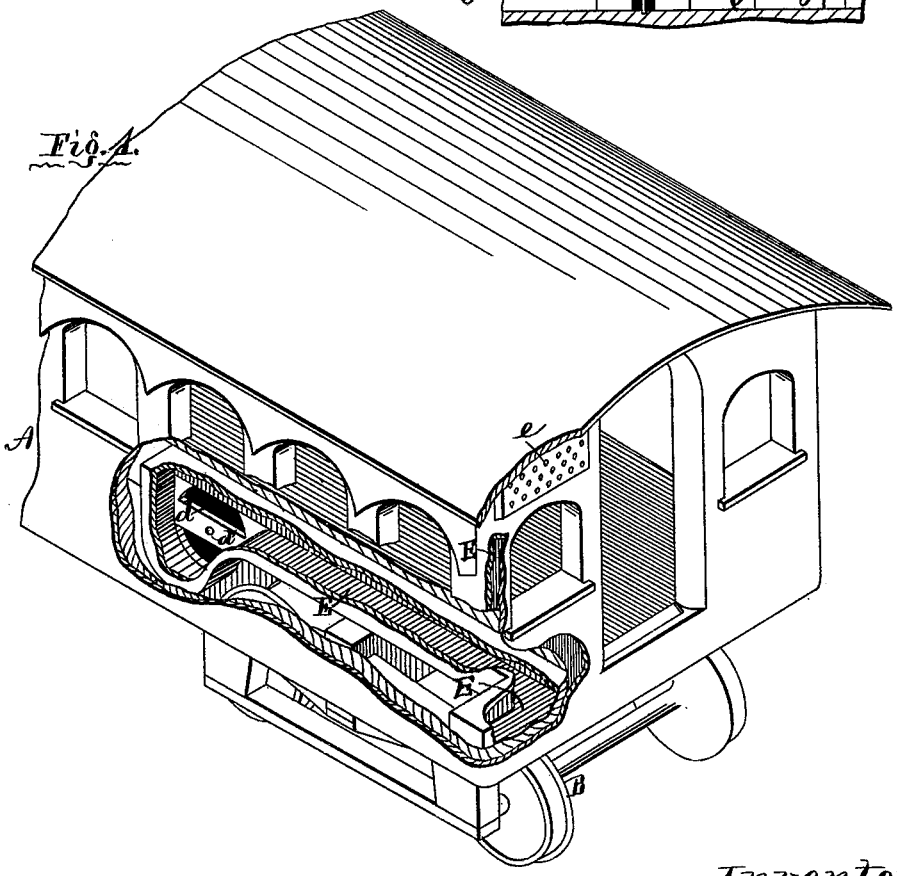


Fig. A.



Witnesses:
M. H. Barringer.
D. G. Stuart

Inventor:
Thomas Frame,
By W. B. Richards
Atty.

2 Sheets—Sheet 2.

T. FRAME.

Car-Ventilator.

No. 198,290. **Patented Dec. 18, 1877.**

Fig. 2.

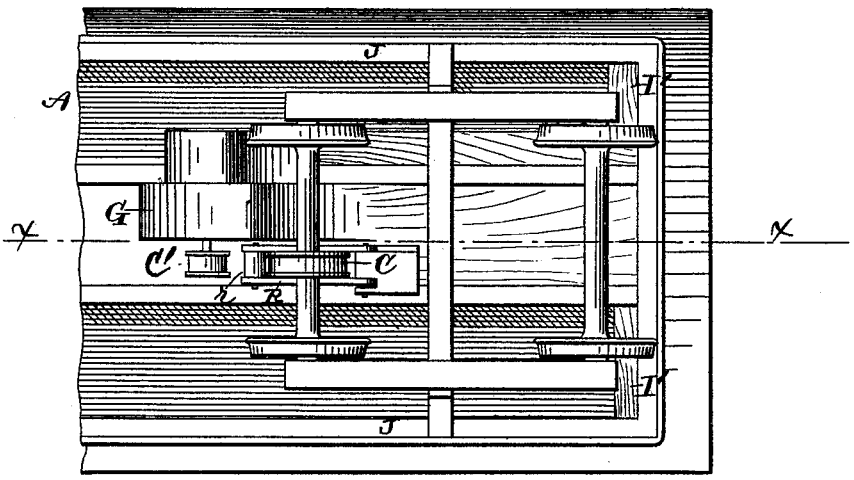
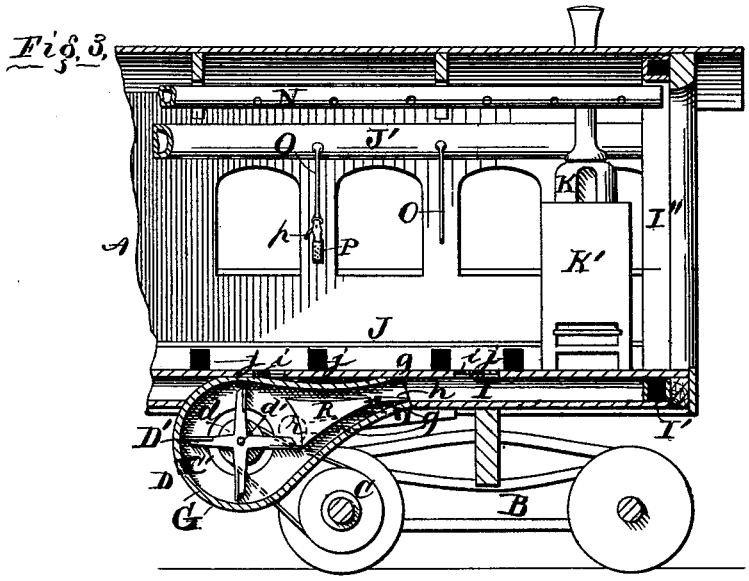


Fig. 3.



Witnesses:
M. H. Barringer.
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Atty

UNITED STATES PATENT OFFICE.

THOMAS FRAME, OF BURLINGTON, IOWA.

IMPROVEMENT IN CAR-VENTILATORS.

Specification forming part of Letters Patent No. **198,290**, dated December 18, 1877; application filed October 16, 1877.

To all whom it may concern:

Be it known that I, THOMAS FRAME, of Burlington, in the county of Des Moines and State of Iowa, have invented certain new and useful Improvements in Railway-Car Ventilators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to the art of ventilating and heating railroad-cars; and the invention consists in certain new and improved devices and combinations of devices whereby a current of purified air is passed into the body of the car and out through the windows, or, if the windows are closed, through the ends of the cars, near the roof. The current of air may be heated before it passes into the interior of the car, or may be conducted into the car without heating, as found necessary or desirable.

The invention also consists in a new and improved device to be used in connection with the air-ventilating tubes, and by means of which each passenger may cool or fan himself by a direct application of the current of air, without opening the windows or subjecting his fellow-passengers to the inconvenience of the draft thereby caused.

In the accompanying drawings, Figure 1 is a perspective view of a portion of a railroad-car, with parts cut away to show the manner in which the current of air is introduced. Fig. 2 is a bottom view, and Fig. 3 is a vertical section, of the same. Fig. 4 is a horizontal section, showing the stove and regulating-valve in the air-tube, detached. Fig. 5 is a vertical elevation of the same, partly in section.

Referring to the parts by letters, A represents the body of a car, and B one of the trucks of same. C is a pulley on one of the axles of the truck. D is a fan-blower secured beneath the car, and operated by means of a pulley and belt passed around the pulley C. E is a pipe or conduit, having an opening in the end of the car, near the roof, and which is protected by a perforated cover, *e*, which may be of wire-gauze, or of any suitable construction which will admit the air and exclude the dust and cinders. The pipe E passes down to the bottom of the car, and then along the side to the fan-blower, with the interior of the case of which it communicates through the central opening *d*.

If desired, a pan of water may be located in the conduit E, at any suitable point, to further purify the air as it passes over the water, and an ice-box may also be provided for the purpose of cooling the air as it passes through the conduit. The fan-wheel D′ is journaled in proper bearings, *d′*, and inclosed within the case G. The eduction-opening of the casing G is divided into two channels, *g g*, which again unite at the point of connection with the air-conducting pipe I.

h is a hinged valve, located within the eduction-passage of the case G at the point of its junction with the pipe I, and so arranged to close one or other of the channels *g g*, according as the direction in which the car is traveling, so that no matter in which direction the car may be moving, the fan-wheel will draw in air and force it through one or other of the channels *g* into the air-pipe I. The air-pipe I is located, preferably, at the center of the car-bottom, and extends throughout its length.

i i are registers, by means of which the air may pass directly from the pipe I through the floor of the car into its interior. The pipe I connects, by means of lateral pipes I′ and vertical pipes I″, with longitudinal pipes J J′, which are located at the sides and extend throughout the length of the car at the floor and ceiling. The pipes J are provided with registers *j*.

K is a stove, having a heating-chamber, K′, around it. L is a valve in the pipe J, and M is a slide-valve located between the pipe J and the heating-chamber of the stove.

N represents perforated ventilating-pipes, which are located at the roof, and extend throughout the length of the car, and communicate by suitable openings with the exterior air, so as to carry off the bad air.

The pipes J′ are provided and connected with flexible tubes O, which hang or are led down to the seats. The lower ends of these tubes O are provided with perforated cylin-

ders P, having valves, which are operated by thumb-levers *p*.

R is a hanger, having a belt-pulley, *r*, on its end, which serves to keep the belt on the pulleys *c* and *c'*.

The operation is as follows: The current of air being drawn in and forced into the pipe I by the fan-wheel, as before described, it passes by the pipes I' I'' into the pipes J J', when, if the valve M is closed and the valve L opened, it will pass into the cars through the registers *j*, and, circulating through the car, will then pass out by the perforated pipes N, or outwardly through the windows, if open. When it is desired to heat the air before passing it into the car, the valve L is closed and the valve M opened, when the air will pass into the heating-chamber of the stove on one side of the valve L, and pass out therefrom into the pipe J on the other side of the valve L, as clearly shown by Fig. 5 of the drawings. When a passenger desires to cool or fan himself, he takes hold of the perforated cylinder O, and presses on the thumb-lever *p*, when a current of air will pass through the tubes J' and O.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The fan-blower D, operating in combination with the induction-tube or air-passage E and eduction air-passages I I' I'', and with the air-passage J, having registers *j*, substantially as and for the purpose specified.

2. The fan-blower D, operating in combination with the induction-tube or air-passage E and eduction air-passages I I' I'', and with the pipe J', having pendent tubes O and cylinders P, having valves operating substantially as and for the purpose specified.

3. The fan-blower, air-passages, and tube J, having valves L and M, operating, in combination with a stove, K, to heat the air before passing into the car, substantially as and for the purpose specified.

4. In combination with the fan-wheel and air-passages E and I, the casing G, having the two channels *g g* and hinged valve *h*, substantially as and for the purpose specified.

5. The pendent tubes O, provided with perforated cylinder P, and arranged to operate with air-passages and the body of a car, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

THOMAS FRAME.

Witnesses:
THOMAS MCKEE,
W. A. FORBES.