J. AMORY.

Car Heater and Ventilator.

No. 163,908. Patented June 1, 1875.

Fig. 1.

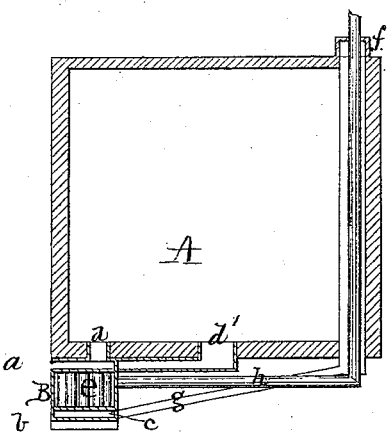


Fig. 2.

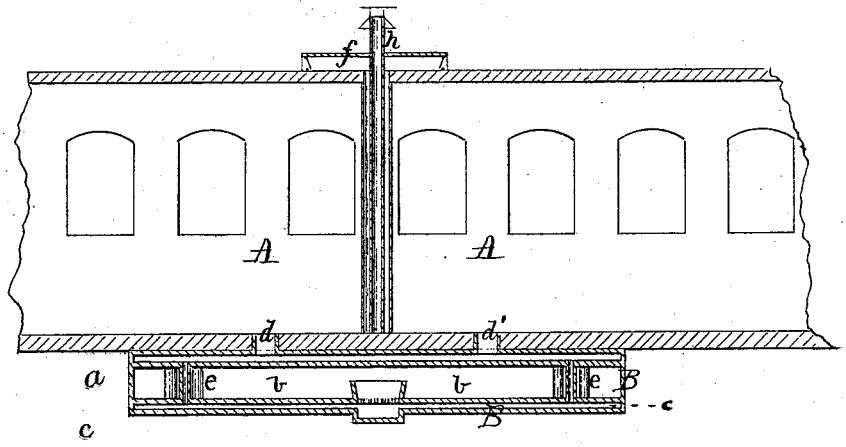
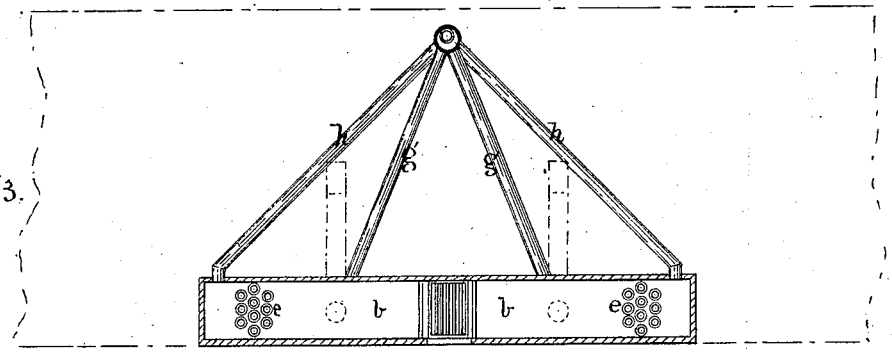


Fig. 3.



Witnesses:
Chas. F. Sleeper.
J. Brown Lord

Jonathan Amory
by J. E. Maynadier
his atty.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

JONATHAN AMORY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN CAR HEATERS AND VENTILATORS.

Specification forming part of Letters Patent No. **163,908**, dated June 1, 1875; application filed June 2, 1874.

To all whom it may concern:

Be it known that I, JONATHAN AMORY, of Boston, Massachusetts, have invented certain Improvements in Heating and Ventilating Railroad-Cars, of which the following is a specification:

In the drawings, A represents a railroad-car of any suitable construction. B is a casing of sheet metal applied under the car, and having a hot-air chamber, *a*, in its upper portion, a combustion and fire-pot chamber, *b*, in its middle portion, and a cold-air chamber, *c*, in its lower portion. The hot-air chamber is connected, by suitable flues, with openings *d d'* through the floor of the car, and the cold-air chamber *c* is connected with the hot-air chamber *a* by means of a series of pipes, *e*, which pipes pass through the combustion-chamber *b*, and are thus heated. The cold-air chamber *c* is supplied, through the inlet-flues *g*, from the box *f*, which is closed on all sides, but provided with flaps at each end, which can open freely inward, but cannot open outward.

The operation is as follows: After the fire is lighted, and while the car is in motion, the air is forced into the box *f* by the motion of the car, the forward flap being opened and the rear flap closed. From the box *f* the air enters the cold-air chamber *c* through the inlet-flues *g*. A portion of the air passes under the grate-bars and supplies the draft. The remainder of the air passes through the pipes *e*, being thus heated, into the hot-air chamber *a*, and from the hot-air chamber, through the flues and registers, into the car, thus ventilating and heating the car.

In practice, I use wire-gauze screens over the air-passages in the box *f*, to keep out dust and cinders. I also use dampers in the cold-air flue *g*, and to regulate the supply of air to the fuel; and also a damper near the bottom of the casing B and near the fire-pot, to supply a draft when the car is not in motion, and proper door, through which the fuel may be introduced, ashes removed, &c. It is also desirable to put a layer of non-conducting and non-combustible material between the floor of the car and the casing B. The products of combustion pass from the chamber *b* through the flues *h*.

I am aware that the combination of a heater with a railroad-car is described in the rejected application of G. J. Kling, filed March 29, 1869, the operation of which was similar to mine in that the air outside the car was warmed by means of a heater, also outside the car, and when warmed was discharged into the car; but his heater was defective mainly for the reason that he relied upon a rotary fan driven from the axle for his supply of air. There are also other important differences between our devices.

I do not claim, therefore, the combination of a furnace and railroad-car regardless of the mode of supplying the cold air; nor do I claim anything described in said Kling's application; but

What I do claim as my invention is—

The combination of the air-box *f* and its two flaps, the casing B, and its flues *d*, *d'*, *g*, and *h*, with car A, substantially as described.

JONATHAN AMORY.

Witnesses:

J. E. MAYNADIER,

J. E. KNOX.