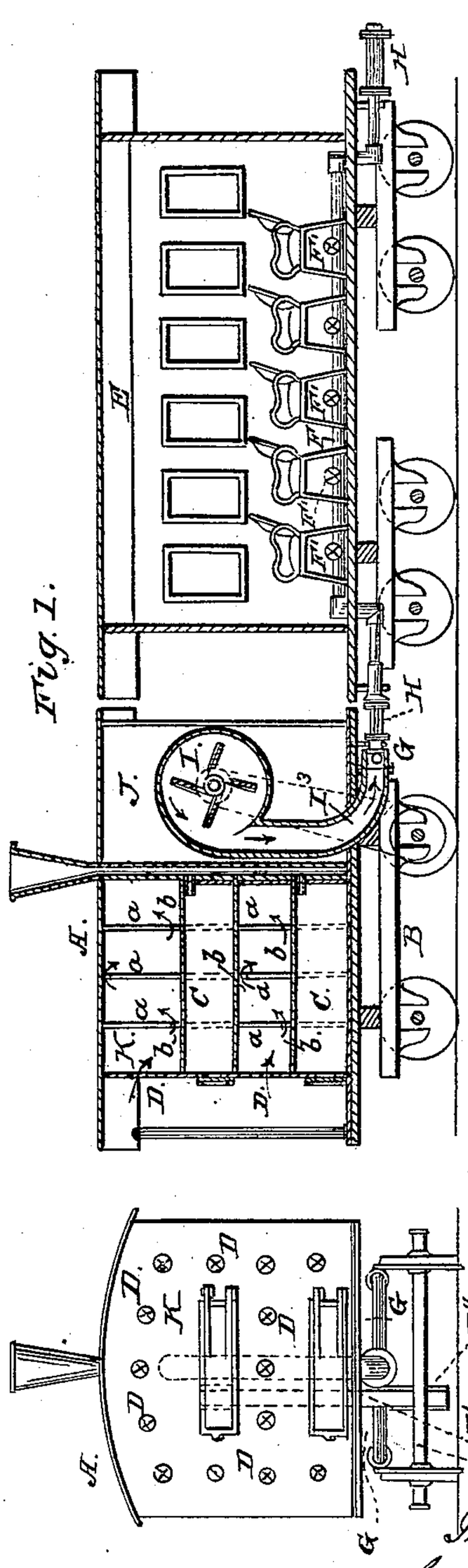
I. R. AMSDEN.

Car Heater.

No. 81,322. Patented Aug. 25, 1868.



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IRA R. AMSDEN, OF BUFFALO, NEW YORK.

IMPROVEMENT IN RAILROAD-CAR HEATERS.

Specification forming part of Letters Patent No. **81,322**, dated August 25, 1868.

To all whom it may concern:

Be it known that I, IRA R. AMSDEN, of the city of Buffalo, county of Erie and State of New York, have invented a certain new and Improved Apparatus for Heating and Ventilating Railroad-Cars; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation thereof.

Figure 1 is a sectional elevation of my furnace-car attached to a train; Fig. 2, an end elevation of the same.

Like letters of reference indicate corresponding parts in both figures.

My invention consists in combining, in a railroad-train, an independent car, forming a furnace complete in itself, and not intended for purposes of transportation, said car being provided with an air-inducting, forcing, and heating apparatus, convertible at will into a refrigerating apparatus, from which the air, either heated or cold, is conveyed to and distributed in the ordinary cars throughout the train, as hereinafter set forth.

It also consists in the combination, in the furnace-car, of a suitable furnace for generating the hot air, a receiving-chamber for holding it, and a fan-blower for expelling it.

And, furthermore, it consists in the special construction and arrangement of the furnace, as hereinafter set forth.

In the drawings, A represents the furnace-car, mounted on truck B, and holding furnaces C C, which are entered through doors in front. The space K, surrounding the furnaces, is divided into sections by partitions *a a*, which have ports *b b* alternately at top and bottom, so as to give a zigzag course to the air as it enters through registers D D in front, and thereby keep it long in contact with the furnaces, to properly heat it.

In rear of the furnace-space is a receiving-chamber, J, to retain the hot air, and in this is situated a fan-case holding a fan, I, driven by belt I^1, or suitable gearing from one of the axles of the car-wheels, and serving to distribute the air through the connecting cars. When the train is stopped the fan may be driven by hand, if required, to keep the cars sufficiently warm. To the nozzle or tail I^3 of the fan-case are attached two branch pipes, G G, connected by flexible tubes H H (between the cars) with the main pipes F, which distribute the hot air through the main transportation-cars E E by registers F′ F′. These pipes may be arranged and connected in any desirable manner.

One important object of my invention is, by employing an independent furnace-car, (not intended for transportation,) combined with the ordinary cars of a railroad-train, to avoid the serious results of a conflagration of the car and contents (often attended with serious loss of life) where fires are employed within the cars devoted to passengers or freight. By making a separate car a furnace in itself, and devoted to no other purpose, such disastrous consequences may be avoided, for if the train be thrown from the track, the fire is confined to the furnace-car, where human life is not jeopardized by it.

In addition to this security, the employment of this furnace-car enables the cars to be supplied with heat from any desirable point in the train, which may vary with the circumstances of the case. Thus, it may be employed at the front or at the rear, or it may be interposed at any intermediate point. In ordinary methods of heating cars, the stoves, or other apparatus used, are fixed in their respective cars, and cannot be varied if circumstances require it. This arrangement effects economy in fuel, in the cost of apparatus, and in attendance, since but one fire is kept for the whole train.

If desired, the exhaust-steam may be conducted into the furnace-space, and made to assist in the heating.

The construction of the car presents some features of novelty, as follows: The cold air is admitted through registers D D into the heating-chamber K, which incloses the furnaces C C, and portions of the air are successively brought in contact with the heated sides of the furnace by means of the partitions *a a* and ports *b b*, causing it to pass alternately up and down in a zigzag course, during which protracted passage it becomes so highly heated that it can be conveyed to the remotest car in the train without losing all of the heat in the passage. The receiving-chamber J serves to retain the heated air in a close body, so as to furnish a constant supply to the fan or blower I, which serves not only to distribute

it to the different cars by direct force, but to draw the cold air in through the furnace by suction or exhaust.

By the described method of construction of the furnace-car I avoid the use of cowls or funnels outside of the car for admitting the air to the furnace. The transverse partitions *a a*, dividing the chamber surrounding the furnace into compartments, serve the additional purpose of strengthening the outer structure or inclosing sides of the car, which are preferably of iron, and preventing, in case of an accident by which the train is wrecked, the fire of the furnace from being thrown out and endangering the other cars by exposing them to conflagration.

In warm weather this apparatus is adapted to supplying the cars with fresh air freed from dust, and cooled, when required, by passing it over the surface of ice placed in the sections of the chamber K, or in the furnace-space, which then becomes a portable refrigerating-chamber; and, as such, it may be attached not only to trains of passenger-cars, but to those carrying perishable fruits and meats. In this use it differs from ordinary preserving or refrigerating-cars, in that it is capable of supplying a number of such cars with fresh and cool air by the capacity of the fan-blower. When ice is not required for lowering the temperature of the external air, it may be passed over a small quantity of water placed in the bottom of the chambers, in which the dust will be deposited and retained.

I do not claim, broadly, distributing heated air in a railway-train by a system of pipes, as I am aware that the same is old; neither do I claim, broadly, passing the pipes through a furnace or stove for the purpose of heating the air; but

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

1. Constructing a furnace-car, with a furnace or furnaces, C C, and surrounding chamber K, provided with transverse or intermediate partitions *a a*, having suitable apertures for the passage of air, substantially as shown, and for the purpose described.

2. The combination of the furnace or furnaces C, space K, and partitions *a a*, constructed substantially as described, with a receiving-chamber, J, and fan-blower I, the whole constituting the furnace-car, as herein set forth.

3. As a whole, the construction of furnaces C C, surrounding chamber K, alternating partitions *a a*, receiving-chamber J, fan I, driven from the axle or car-wheels, and conducting-pipes G F, with flexible connections H, for distributing the heated air, the whole arranged as described, and operating in the manner and for the purpose specified.

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