J. & J. W. RUSSELL.

Heating Cars.

No. 212,403. Patented Feb. 18, 1879.

Fig. 1.

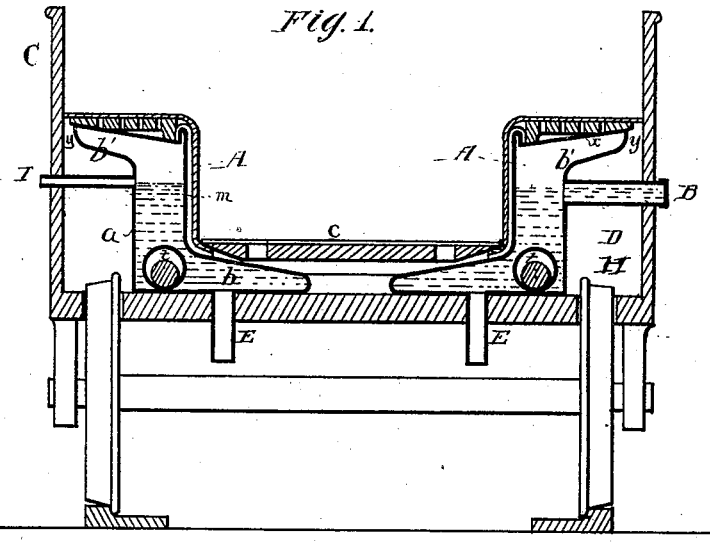
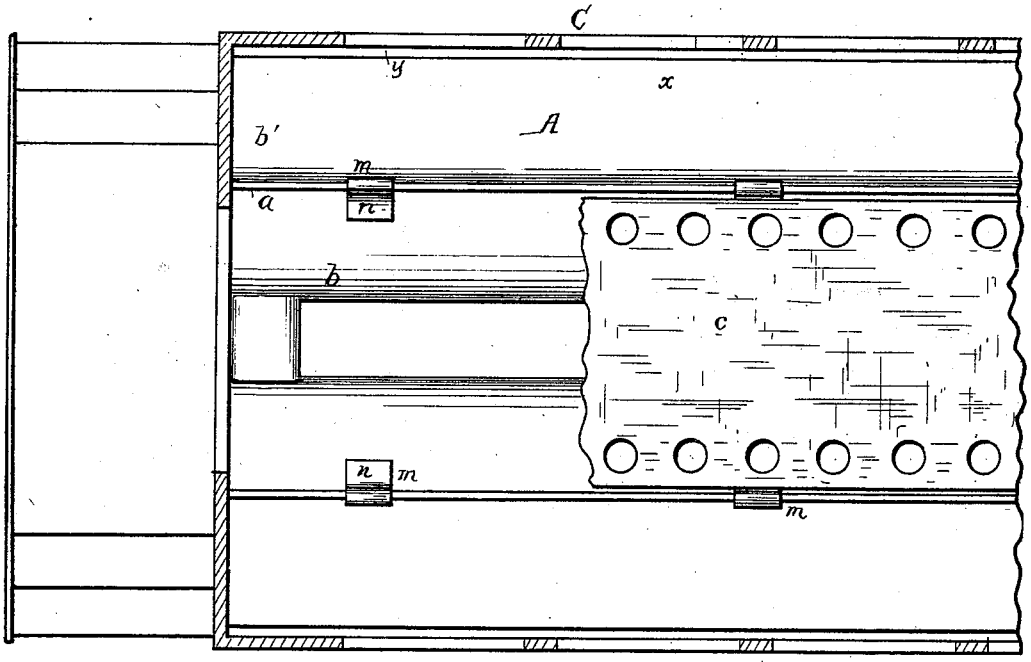



Fig. 2.

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# UNITED STATES PATENT OFFICE.

JACOB RUSSELL, OF NEWARK, NEW JERSEY, AND JAMES W. RUSSELL, OF NEW YORK, N. Y.

## IMPROVEMENT IN HEATING CARS.

Specification forming part of Letters Patent No. **212,403**, dated February 18, 1879; application filed January 30, 1879.

*To all whom it may concern:*

Be it known that we, JACOB RUSSELL, of Newark, Essex county, New Jersey, and JAMES W. RUSSELL, of the city, county, and State of New York, have invented an Improvement in Heating Cars, of which the following is a specification:

The purpose of our invention is the thorough heating not only of the air of a railway-car, but also of the seats and floor, so that each passenger, whatever his position, may be thoroughly protected from the chilling effects of the external cooler atmosphere.

In the drawings forming part of this specification, Figure 1 is a cross-section of a street-car, illustrating one mode of embodying our invention; and Fig. 2 is a plan of one end, the seat-covers being removed.

Our invention consists in the application of certain hot-water receptacles within the body C of the car, below and preferably supporting or constituting the seats, as fully described hereinafter, so as to secure an extended heating-surface in juxtaposition to the body and limbs of each passenger, heat the air in the body of the car, and insure an upward current of heated air between the back of each passenger and the side of the car.

The actual structure of the hot-water receptacles is not an essential feature of our invention; but we have found it advantageous to make each receptacle A of galvanized iron, with an upright body, *a*, and lateral extensions *b b'*, the former projecting forward over the floor of the car, and the latter projecting from the top backward. Each receptacle thus constructed may constitute one of the seats of the car, the top *x* being covered with carpet, felt, perforated veneer, or slats; or the perforated veneer or slats constituting the seat proper, of any suitable form, may be supported by or above the receptacle, preferably so as to leave a narrow space, *y*, between the rear edge and the side of the car.

When formed as shown in the drawings, the receptacles constitute the seats of the car, and may be arranged longitudinally or crosswise, the extensions *b* being protected by a perforated or slatted floor, *c*, to prevent direct contact of the feet therewith, and the upper sides being inclined to shed water.

To avoid perforating the casing, as well as to remove the weight from the extensions *b*, the floor *c* may rest on flanges *n* of hooks *m*, suspended from the upright portions of the receptacles, as shown. As thus arranged, there is a chamber, D, at the rear of each receptacle.

It should be understood, however, that there may be three or more receptacles, *a b b'*, or but one or two, communicating with each other, and that they may consist of separate sections, of any desired shape, suitably connected.

A pipe, B, (or pipes) extends from the receptacle or receptacles outside the car, and is provided with a suitable coupling for attaching a hot-water-feed hose or other pipe, one or more discharge-pipes, E, having cocks, being arranged to permit the receptacles to be emptied, and a gage-pipe, I, regulating the level of the water.

The receptacles are filled, through the pipe or pipes B, with hot water from a stationary boiler arranged at some point on the route. The large body of hot water thus carried imparts its heat to the extended surface presented by the receptacles, the arrangement of which in almost direct contact with the body and limbs of each passenger and beneath the feet overcomes the effects of the outside chilly atmosphere, while the hot air ascending from the chambers D passes between the backs of the passengers and the sides of the car, with an effect not attainable by any of the usual modes of heating.

The entire body of air in the car is thus maintained at a comfortable temperature, while the positions of all the passengers in respect to the heaters are equally favorable.

The heater thus constructed is not only most effective, but of unusual simplicity, capable of being applied to cars in use without material alteration, and of being supplied or replenished within the limited time allowable with street-cars, seldom exceeding two minutes.

When routes are of unusual length, and it is not practicable to change or replenish the

water at intermediate points or stations, the heat may be re-enforced by means of heated balls, bars, bricks, &c., *t*, placed in tubes or cases H, so arranged as to receive the same, without permitting the actual contact of the heated body and the water surrounding said receptacles.

We claim—

1. A car provided with seats consisting of hot-water receptacles, having inlet and outlet pipes or passages, substantially as specified.

2. The combination, with the perforated seat of a car, of a hot-water receptacle or receptacles, extending beneath or forming part of the same, substantially as set forth.

3. The hot-water receptacle arranged beneath or forming part of the seat of a car, and provided with an extension, *b*, substantially as specified.

4. The combination of the seat and the hot-water receptacle, arranged to form a hot-air chamber, D, having an outlet near the side of the car, substantially as specified.

5. The combination, with the seat of a railway car, of a vertical hot-water receptacle, extending beneath and parallel to the forward edge of the same, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JACOB RUSSELL.
JAMES W. RUSSELL.

Witnesses:
F. ALDHOUS,
THOMAS MCLAUGHLIN.