H. A. HOUSE & F. B. BRADBURY.

Heater for Railway-Cars.

No. 221,733. Patented Nov. 18, 1879.

Fig. 1.

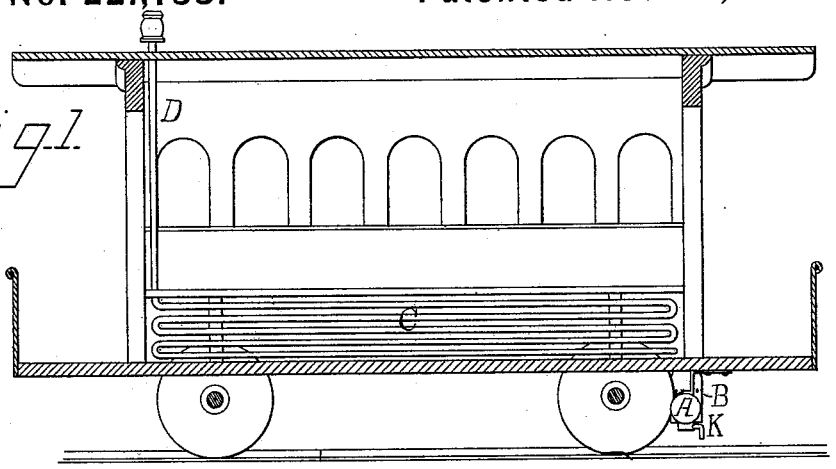


Fig. 2.

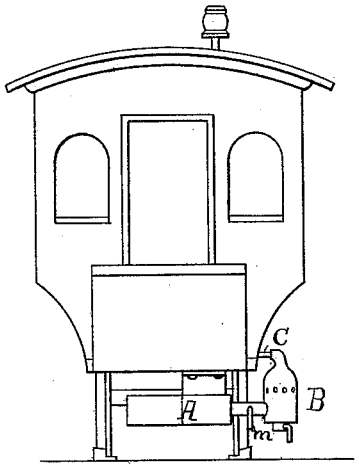
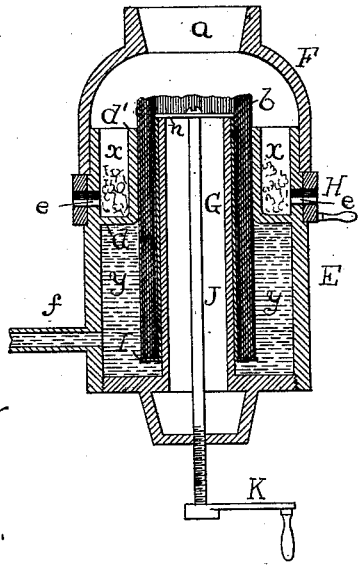


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY A. HOUSE AND FRANK B. BRADBURY, OF BRIDGEPORT, CONN.

IMPROVEMENT IN HEATERS FOR RAILWAY-CARS.

Specification forming part of Letters Patent No. **221,733**, dated November 18, 1879; application filed September 20, 1879.

To all whom it may concern:

Be it known that we, HENRY A. HOUSE and FRANK B. BRADBURY, of Bridgeport, Fairfield county, State of Connecticut, have invented an Improvement in Heaters for Railway-Cars, of which the following is a specification.

The object of our invention is to heat railway-cars rapidly, effectively, and at little expense of material and apparatus; and this we effect by combining with the car a blast-heater, as fully described hereinafter.

In the drawings forming part of this specification, Figure 1 is a sectional elevation of a car with our improvement; Fig. 2, an end view, and Fig. 3 a detached sectional view of the furnace.

Hitherto it has been proposed to heat railway-cars, sleighs, vehicles, &c., by means of stoves or lamps supplied with liquid fuel; but in all such cases the heat has been derived from the action of the flame upon an extended metal surface, the result being inadequate, without the use of a large number of burners, to the heating of a chamber of any considerable size.

We use a liquid fuel, but substitute a blast-furnace of refractory material for the ordinary lamp and sheet-metal casing, obtaining a blast by means of a draft-pipe, and generating a highly-heated gas, which is consumed in a coil in connection with air admitted in close proximity to the gas-flame.

Various forms of furnace may be employed. One that we have found most effective is illustrated in Fig. 3, in which E is the body, suspended outside the car, and covered by a dome, F, of cast metal or other refractory material, which dome has a central opening, *a*, with which communicates the lower end of a pipe folded into a coil, C, within the car, and terminating in a draft-pipe, D.

A tubular stem, G, within the body E, supports a metallic wick, *b*, which may be adjustable by any suitable means, and flanges *d d'* are arranged to form a receptacle, *y*, below and chamber *x* above, the latter being filled with fibrous material and having lateral perforations *e*, to which is adapted a registering-ring, H.

Beneath the car is suspended a reservoir, A, containing the oil, which is supplied to the receptacle *y* through a tube, *f*, provided with a cock or other regulator, *m*.

An ordinary lamp in place of the furnace E would supply a flame of a few inches in length, which would be wholly inadequate to the heating of a railway-car.

The above-described apparatus, however, is essentially different in its operation from a lamp. The gas is first generated by depositing a quantity of alcohol or other easily-ignited fluid on the fibrous material *x* and lighting the same. In a little while the oil carried by the wick will be vaporized and ignited, and the heat thus generated will further increase the supply of vapor, which will flow in a highly-heated state through the coil and heat the latter.

But the mere contact of the heated vapor would of itself be comparatively inefficient. We therefore, by the adjustment of the register H, admit air in such quantities as will insure the thorough combustion of the gases within the coil, and not at the wick only of the highly-heated vapors, which are soon generated in such quantities that the combustion takes place along a considerable extent of the pipe as the air is drawn in with the heated gas.

In practice we have found that a small furnace of five inches in diameter will maintain a coil of thirty feet at nearly a red-heat—a result impossible with a lamp.

The importance of having the dome F of cast metal or refractory material will be apparent, as the intense heat generated by the blast of air upon the heated and ignited gases would melt the ordinary tinned-iron casings.

We do not here claim the construction of the furnace, as it may form the subject of another application for Letters Patent; but

We claim—

The combination, with a car, of an oil-reservoir, A, a furnace supplied from said reservoir, and provided with a dome, F, wick *b*, and air-openings *e*, adjacent to the upper end of the wick, coil C, arranged within the car and communicating with the dome, and draft-pipe D, all substantially as set forth.

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

HENRY A. HOUSE.
FRANK B. BRADBURY.

Witnesses:
CYRUS A. MOREHOUSE,
DAVID B. LOCKWOOD.