P. F. RANDOLPH.

Heater for Cars.

No. 239,671. Patented April 5, 1881.

FIG-1-

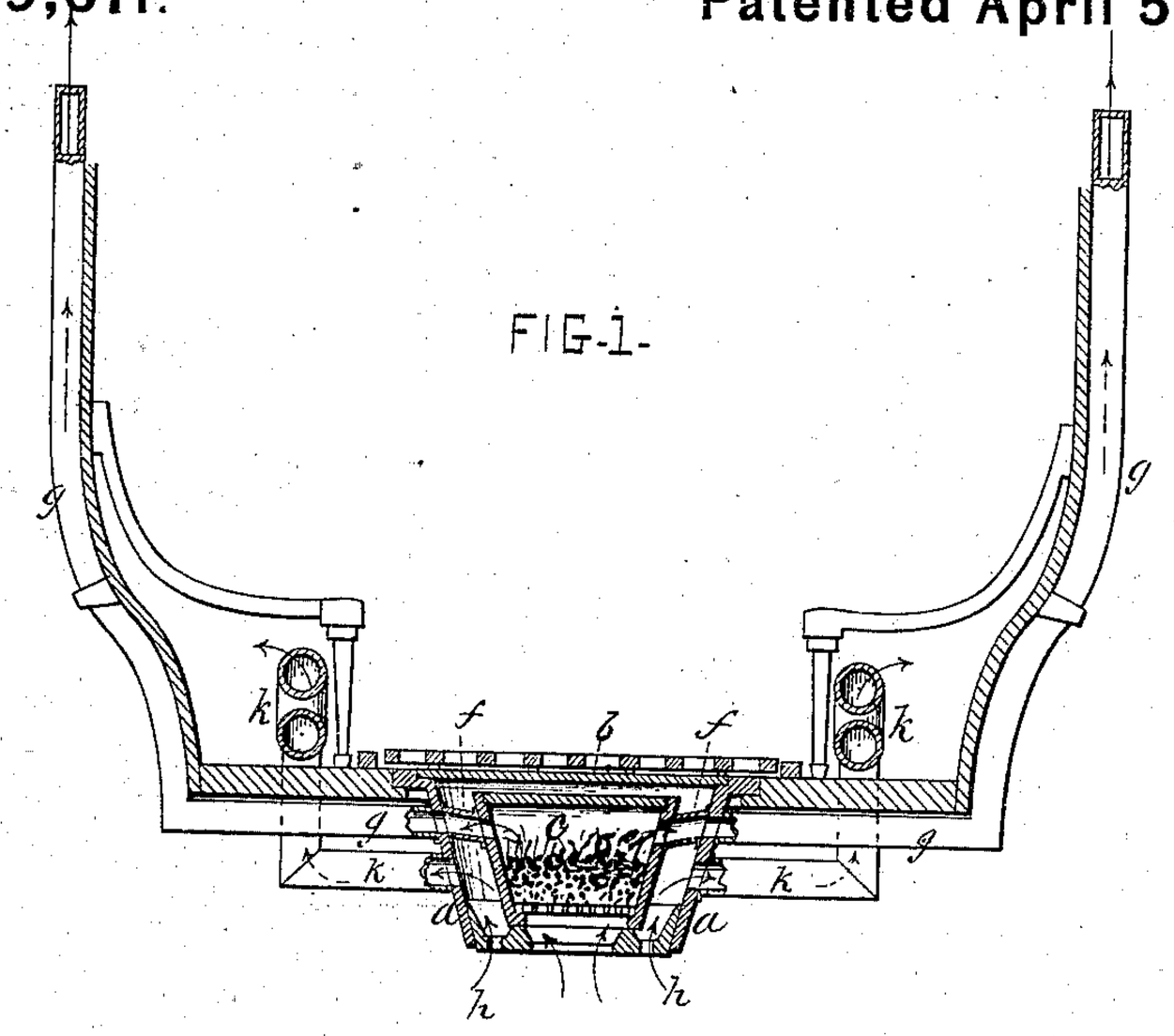
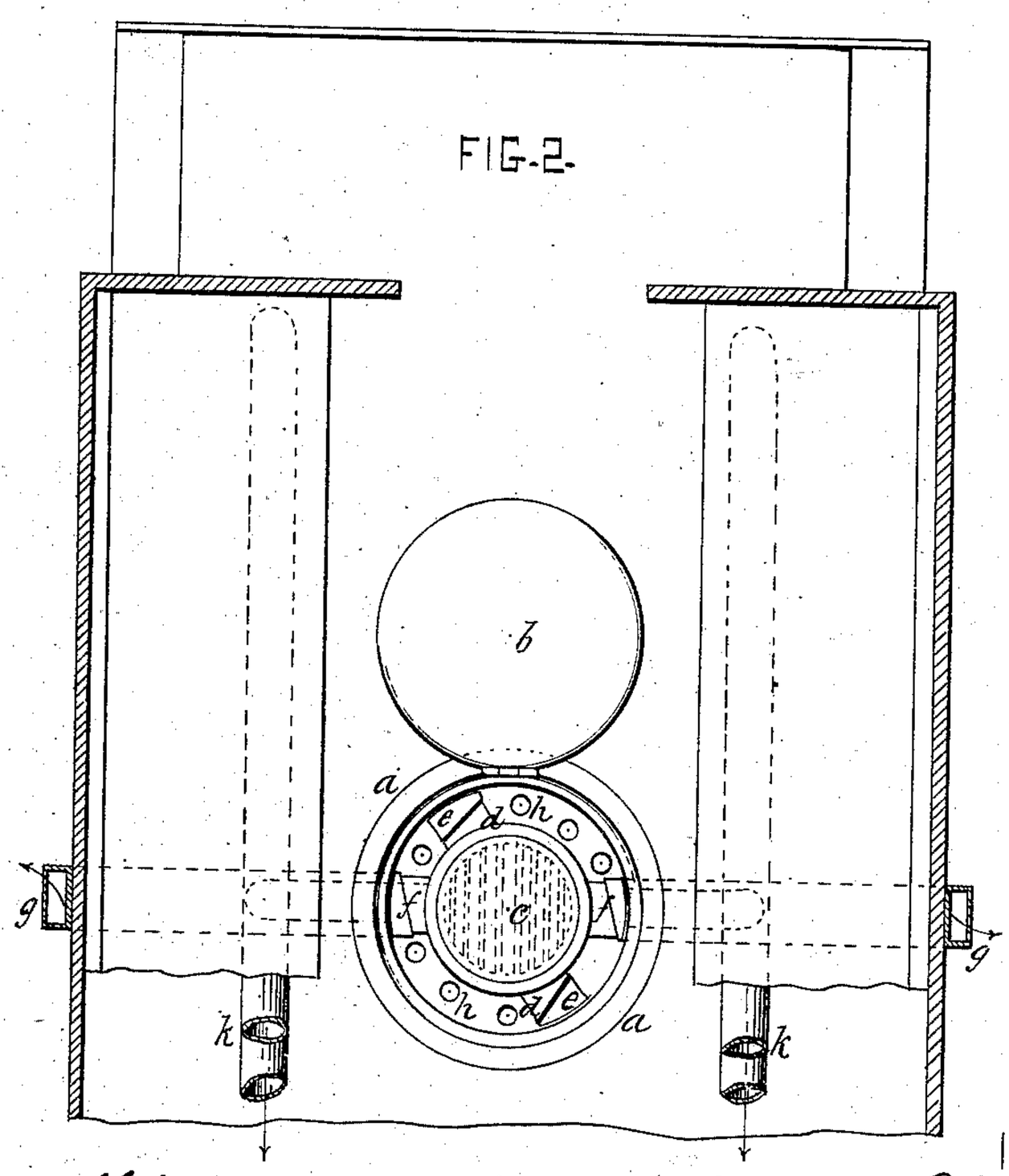


FIG-2-



ATTEST-

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PETER F. RANDOLPH, OF LIBERTY CORNER, NEW JERSEY, ASSIGNOR OF ONE-FOURTH TO JAS. D. VANDERVERE, OF SAME PLACE.

HEATER FOR CARS.

SPECIFICATION forming part of Letters Patent No. 239,671, dated April 5, 1881.

Application filed December 16, 1879.

To all whom it may concern:

Be it known that I, PETER F. RANDOLPH, of Liberty Corner, Somerset county, New Jersey, have invented certain new and useful Improvements in Heaters for Cars or other Vehicles, of which the following is a specification.

My invention aims to provide a heater for street-cars or similar public vehicles which shall embody the simple principle of the ordinary stove, but of such construction and arrangement relatively to the car as not to obstruct the interior thereof or require any attention during the trip of the car from end to end of its route, and yet distribute an effectual warmth throughout the car.

My invention relates to that class of heaters in which a pendent chamber beneath or in the car-floor incloses a removable stove; and my invention consists in several improved features, whereby the heat of the inclosed stove is more safely, economically, and efficiently distributed to the interior of the car without interfering with the full carrying capacity of the car.

To this end the main feature of my invention may be stated to consist in a pendent chamber fixed in the car-floor, and closed at the top flush with the car-floor, inclosing a removable stove with an air-heating space between said stove and the walls of the chamber, and air-inlets at the bottom to admit cold air in said heating-chamber, and outlets at or toward the top connected with distributing-pipes extended within the car, beneath the seats thereof, whereby the above-named objects are accomplished.

In the drawings annexed, Figure 1 presents a fragmentary cross-section of an ordinary street-car embodying my invention, and Fig. 2 a fragmentary sectional plan of the same.

According to my invention, I form a cavity or chamber in the car-floor, at about the center thereof, as indicated by *a*, which preferably consists of a metallic vessel, of conical or other form, set fixedly in the car-floor flush, or thereabout, with the same, and depending a convenient distance beneath the floor. This chamber is preferably open only at the bottom, and over nearly the entire area of the same, as illustrated. The top of the chamber is, however, provided with a removable or hinged lid, *b*, which may be closed down tight, and which is preferably overlaid by a separated or insulated grating, which rises to a level with the usual grating or matting on the car-floor. When the car reaches either terminus, at the end of its trip, the lid *b* may be raised to insert in the chamber *a* a small portable or removable stove or fuel-pot, *c*, which is supported on an annular ledge at the bottom of the chamber *a*, and has laterally-projecting beveled lugs *d d*, which match with similar lugs, *e*, projecting on the side of the chamber *a*, which serve to center the stove and steady it in true position, while a latch or catch of suitable form may be provided to hold the stove rigidly in central position in the chamber.

The fuel-pot or stove is of ordinary stove construction, being provided with a common grate, as illustrated, on which the fuel rests, its top being closed by a tight-fitting lid, while rudimentary flues *f f* project laterally from its top and junction tightly on a bevel-joint, with the main flues *g g* leading from the side of the inclosing-chamber *a*, and taking a suitable direction therefrom either on the outside or inside of the car, and rising to a suitable height above the roof thereof, thus providing an energetic draft to insure proper combustion of the fuel in the small fuel-pot.

If desired, the draft may be increased and rendered more positive by a form of "jack" or hood fixed to turn on the bottom of the chamber *a*, so that its flaring mouth may be set to face forward, and thus insure the enforcing of air by the forward motion of the car.

When the fuel-pot is inserted and fastened in its inclosing-chamber, and the lid *b* clamped down, the floor thus preserves a flush unobstructed appearance, and the stove becomes concealed and inclosed in the chamber beneath.

The stove or fuel-pot, as will be observed, is considerably smaller than the inclosing-chamber, leaving an air-space above and around the same to form an air-heating jacket, to which the cold air is directly admitted by a ring of perforations, *h*, in the base of the chamber, which air, circulating around the stove and becoming heated thereby, escapes through the outlet-pipes *k k*, which pipes extend to the interior of the car, and are continued in coils or bends beneath the seats, as shown. These

pipes may be perforated to discharge the heated air into the car, or they may be arranged to heat merely by radiation, discharging the air only at the terminals of the pipes, which may also be so arranged as to discharge outside in case so much heat is not required within the car.

Dampers or registers may be provided to regulate the inflow of air to the heating-jacket, as well as to the fuel-pot, if required.

When the car reaches the end of its trip a special attendant at the depot or terminus may lift the lid of the inclosing-chamber, and with a suitable form of hook or wrench remove the fuel-pot therein, and substitute another with a fresh charge of fuel already lighted, and by then closing the chamber the action of the heater will be thus renewed in a very quick and convenient manner.

By this invention it will be thus observed that the heating of the car and the renewing of the heat is accomplished without causing any delay in the running of the cars, or requiring any attention from the conductor or driver, or causing any annoyance or inconvenience to the passengers, while at the same time the interior of the car is unobstructed and its full carrying capacity preserved.

It will be observed that as in my invention the chamber inclosing the stove constitutes the air-heating chamber to which the cold air is directly admitted around the stove, and from which the air thus heated is discharged and distributed into the car, the heating of the car is thus rendered quicker, more uniform and economical, and, moreover, the air circulation thus effected directly around the stove prevents the surrounding parts of the car or the inclosing-chamber from becoming too highly heated, which advantages do not exist where the heat is conveyed from a distinct heating-jacket around the inclosing-chamber, as has been heretofore used.

It may be further observed that the described construction is also an improvement on those heaters in which the top of the pendent inclosing-chamber opens directly into the car, admitting the heat from the stove directly through the floor into the car, as in this case the heat is too intense at one part of the car, and the carrying capacity is somewhat reduced, for the reason that passengers cannot stand on this part of the floor, and, moreover, the wet earth or refuse matter on the car-floor is liable to enter the heating-chamber and cause unpleasant odors in the car, which objections are wholly obviated by my invention.

What I claim as my invention is—

1. A heater for cars constructed with a pendent chamber fixed in the car-floor, and provided with a hinged or removable lid, flush, or nearly so, with the car-floor, and arranged to close the top of said chamber, in combination with a removable stove or fuel-pot, insertible through said lidded top and supported on the perforated bottom of said chamber, together with hot-air-distributing pipes extending from or near the top of said chamber into the interior of the car and under the seats thereof, substantially as herein shown and described.

2. The combination, with the inclosing-chamber *a*, provided with a fixed flue, of the removable fuel-pot *c*, fixable in said chamber, and provided with rudimentary flues meeting with the main flues on a beveled joint, substantially as herein shown and described.

3. The combination, with the removable fuel-pot *c*, of the fixed inclosing-chamber *a*, having its base provided with air-inlets, and a raised annular ledge to support said fuel-pot, substantially as herein shown and described.

PETER F. RANDOLPH.

Witnesses:
CHAS. M. HIGGINS,
EDWARD H. WALES.