

(No Model.)

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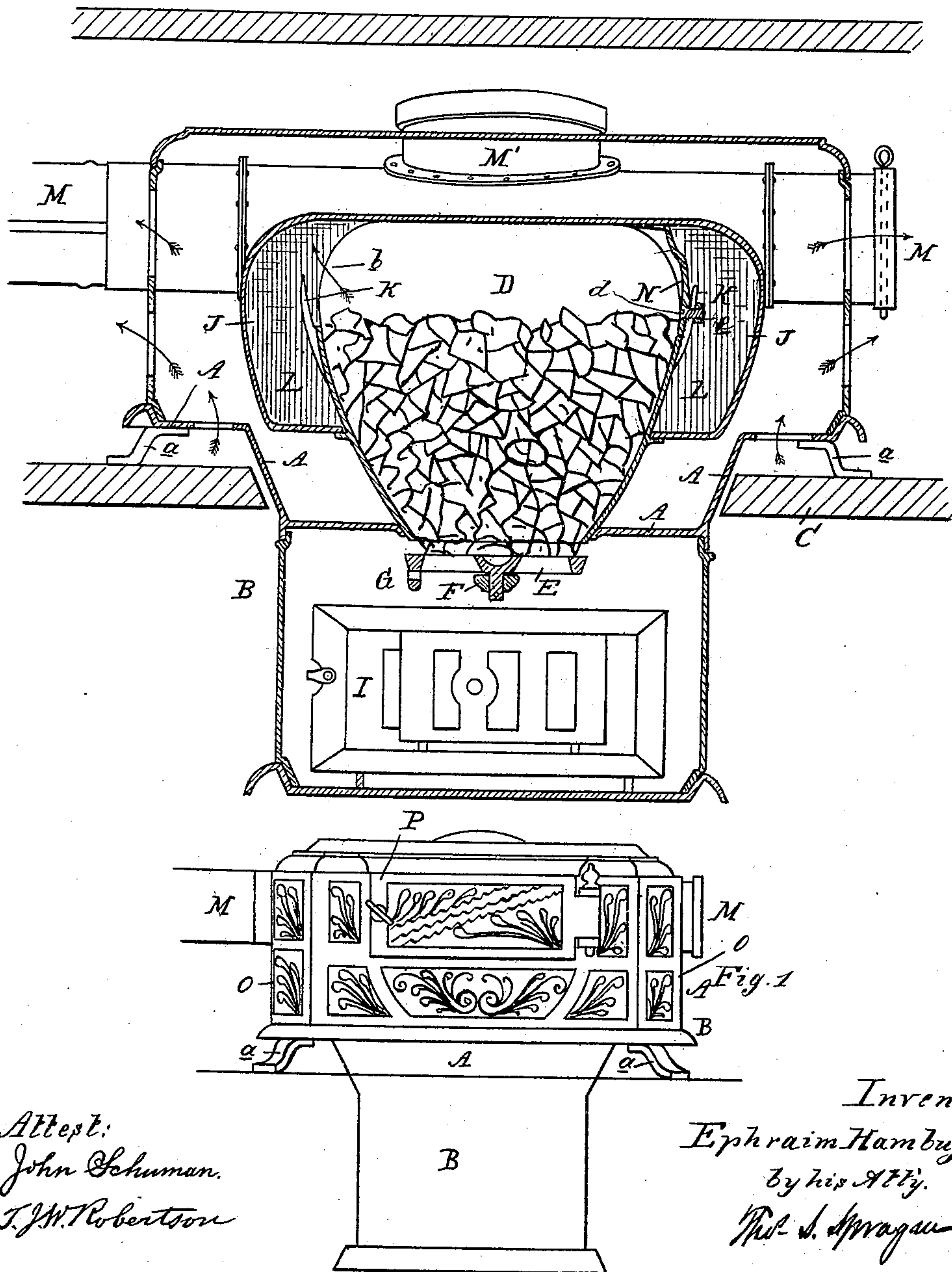
E. HAMBUJER.

CAR HEATER.

No. 353,558.

Patented Nov. 30, 1886.

Fig. 2



Attest:  
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J. W. Robertson

Inventor:  
Ephraim Ham bujer.  
by his Atty.  
Thos. J. Sprague

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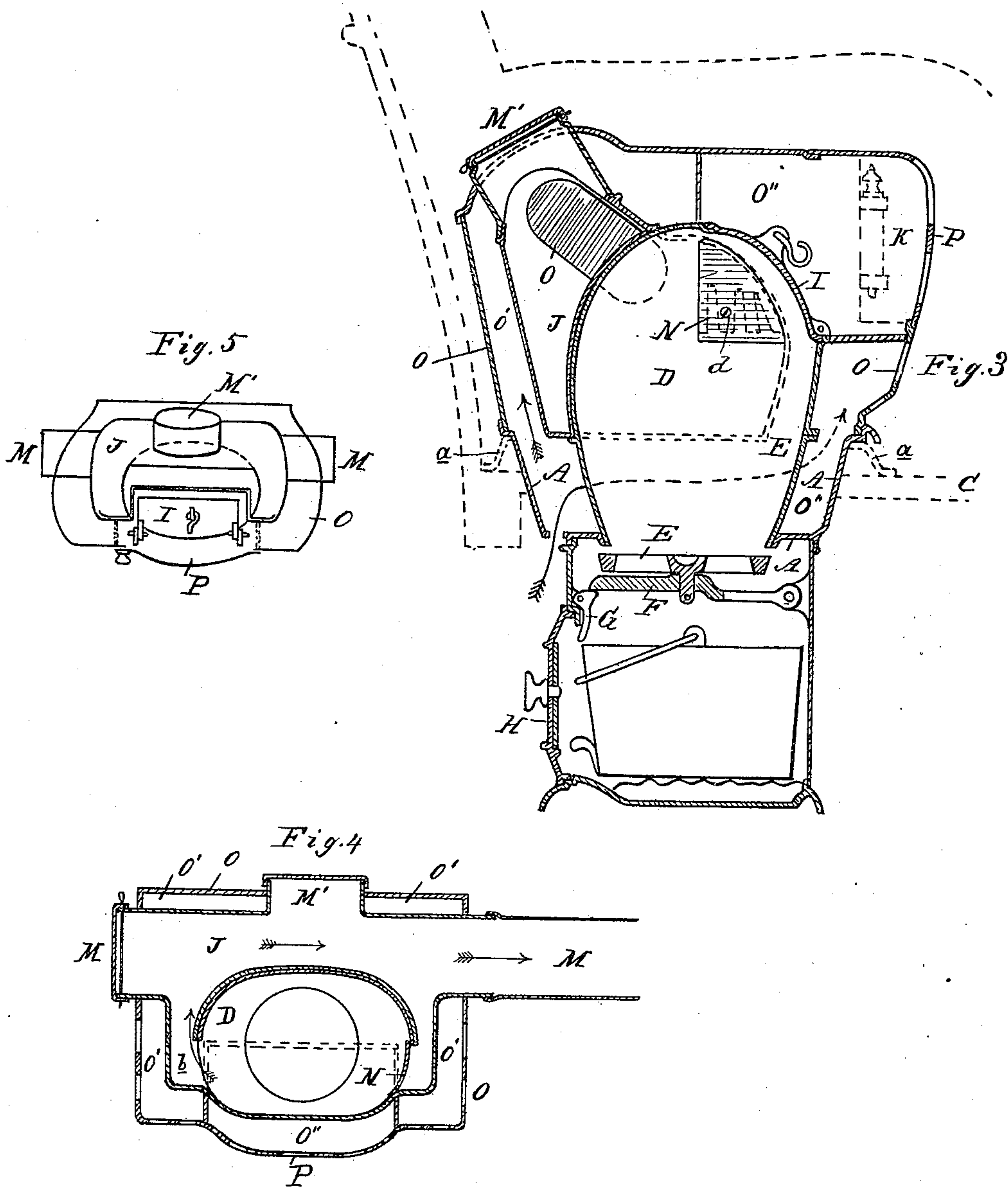
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# UNITED STATES PATENT OFFICE.

EPHRAIM HAMBUJER, OF DETROIT, MICHIGAN.

## CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 353,558, dated November 30, 1886.

Application filed April 12, 1886. Serial No. 198,620. (No model.)

*To all whom it may concern:*

Be it known that I, EPHRAIM HAMBUJER, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Car-Heaters; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

10 This invention relates to certain new and useful improvements in heating-furnaces, especially designed for heating street or tramway cars where the room is limited, and which may be used without interfering with the seating capacity of the cars.

15 The heater is so constructed that the combustion-chamber and radiating parts rest upon the floor of the car beneath the seat, thereby heating the lowest stratum of air in the car, while the grate, ash-pit section, and ash-drawer project downward through the floor, so that the dust arising from clearing the grate and ash-pit is kept from the interior of the car. Means are also provided whereby, if the heater is situated midway between the two ends of the car, the smoke or exit pipe may be carried in both directions under the seat, and through the end walls of the car, and then up through the roof which covers the platforms, so that the driver at one end and the conductor at the other may receive some benefit from the fire.

20 The invention consists in the peculiar construction of the parts, their location with relation to each other, and their combination, as more fully hereinafter described.

25 Figure 1 is a front elevation of my improved heater. Fig. 2 is a vertical longitudinal section, looking toward the rear of the heater. Fig. 3 is a vertical central cross-section from front to rear. Fig. 4 is a horizontal section through the smoke-jacket. Fig. 5 is a plan of the smoke-jacket, outer case, and feed-doors.

30 In the accompanying drawings, which form a part of this specification, A represents the base-plate of the heater, which is formed with a "well," as shown, and from which is pendent the ash-pit and draft-section B, designed to project through the floor C of a car, while the base-plate is provided with suitable feet, a, which rest upon the floor.

D represents the fire pot, which is supported by the base A, and below which is located a grate, E. This grate is pivotally set in a bracket, F, which latter is pivoted to a stud projecting from the wall of the ash-pit section, its opposite end being supported by a dog, G. When it is desired to dump the grate, the free end of the dog is pushed inwardly, freeing the end of the bracket from the head of the dog, allowing bracket and grate to swing downwardly and deposit the contents of the fire-pot into the ash-pit, from whence they may be readily removed through the door H.

35 The fire-pot is cast or formed dome shaped, and is provided with a feed-door, I, surrounding the ends and back of the fire-pot, and supported thereby is a jacket, J, into which the products of combustion pass from the fire-pot through an opening formed in the sides thereof, as at b. These openings have secured over them fingers K, which may be cast, if found preferable, as an integral part of the fire-pot, and they are for the purpose merely of preventing the fuel or contents of the fire-pot from falling into the chamber L, which is formed by the jacket J around the fire-pot, and either one of these openings, as may be desired, or as may be necessary from the position that the stove may occupy within the car, should be closed by a plate, N, the products of combustion passing from the fire-pot into the jacket, from whence they find an exit at either end of the jacket at M, or through a vertical pipe connected at M', as may be desired. This plate N is retained in position by means of a bolt, d, which projects outwardly between the fingers K of the fire-pot, and receives upon its outer end a nut, e, that will not slip between said fingers, the said plate being of sufficient size and shape to fully close the draft-opening at that point. For instance, if it is desired to have the products of combustion pass out upon the right-hand exit, as in Fig. 4, there is a cap placed over the other exits, M M', and the right-hand exit of the fire-pot is likewise closed, thereby forcing the products of combustion to pass to the left (referring to Fig. 4) into the jacket J, thence around the fire-pot and out at the right-hand end of the jacket, as is clearly shown by the arrows in the figure referred to, thereby



gaining a circulation of the products of combustion around the fire-pot within the jacket, radiating their heat through such jacket into the car. O is an external casing, that is preferably perforated at its sides and front, while its top is imperforate. It forms an air-space, O', surrounding the smoke-jacket J.

It will be seen upon referring to Figs. 2 and 3 that the heated air thrown off from the fire-pot and the jacket surrounding it will heat the air and cause a circulation of air through the outer space, O', as is clearly shown in Figs. 2 and 3, already mentioned. Of course, if desired, both of the openings at the ends of the fire-pot may be left open, particularly when a draft in a direct line, as through M', is necessitated by the position that the stove or heater may occupy in the car.

The case O is provided with a door, as P, which it is necessary in the construction shown to open before fuel can be introduced into the fire-pot. It is evident, however, that a door of the construction shown or any other door or slide may be employed, as the mere function of the door is to provide a communication through the perforated case which surrounds the stove to the feed-door, and to serve as a shield or guard to prevent the clothes of any person occupying a seat immediately above coming in contact with such portions of the stove as may be sufficiently heated to burn or scorch them, while at the same time it gives a more ornamental finish to the structure. The space O' between the fire-pot and the feed-door P is preferably separated by suitable partitions from the space O'.

In practice, the device being placed in a car and arranged substantially as shown and described, a fire is made in the fire-pot, either with coke or coal, as may be the most preferable. The cold air will rush through the perforated case O, become heated in passing over and around the jacket J, and be discharged in such heated condition into the car through the perforations in the casing, causing a circulation of the air in the car through the casing to heat such air and discharge it back into the car, and

as such cars are usually constructed there will be leakage enough to insure a rapid change of the air within the car.

It will be noticed that this device occupies no space that is valuable for passengers, and that while the seat immediately over the device may be somewhat warm, it will not be inconveniently so, owing to the air-space.

If desired, and it would be preferable, the side of the car and under side of the seat may be covered with sheet-iron, so as to prevent the radiation of too much heat to the seat immediately above.

What I claim as my invention is—

1. The combination, with the fire-pot provided with openings *b*, of the fingers K, secured over said openings, and the plate N, pivotally secured to one of said fingers, substantially as and for the purpose specified.

2. In a car-heater, the combination, with the fire-pot, of the jacket J, surrounding the same and forming the chamber L, the fire-pot being formed with openings affording communication with said chamber, plates for controlling said openings, and one or more exits from said chamber through the said jacket, substantially as described.

3. In a car-heater, the combination of the fire-pot, the jacket J, surrounding the same and formed with exits M M, and exit M' at right angles thereto, removable caps for said exits, and the external casing, O, forming an air-space around the jacket J, substantially as described.

4. In a car-heater, the combination of the fire-pot, the jacket J, surrounding the same and provided with exits M M M', as described, and removable caps therefor, the perforated external casing, O, provided with feed-door P, and suitable partitions forming the feed-throat between the fire-pot and the feed-door, and the pivoted plates N, substantially as described.

EPHRAIM HAMBUJER.

Witnesses:

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