

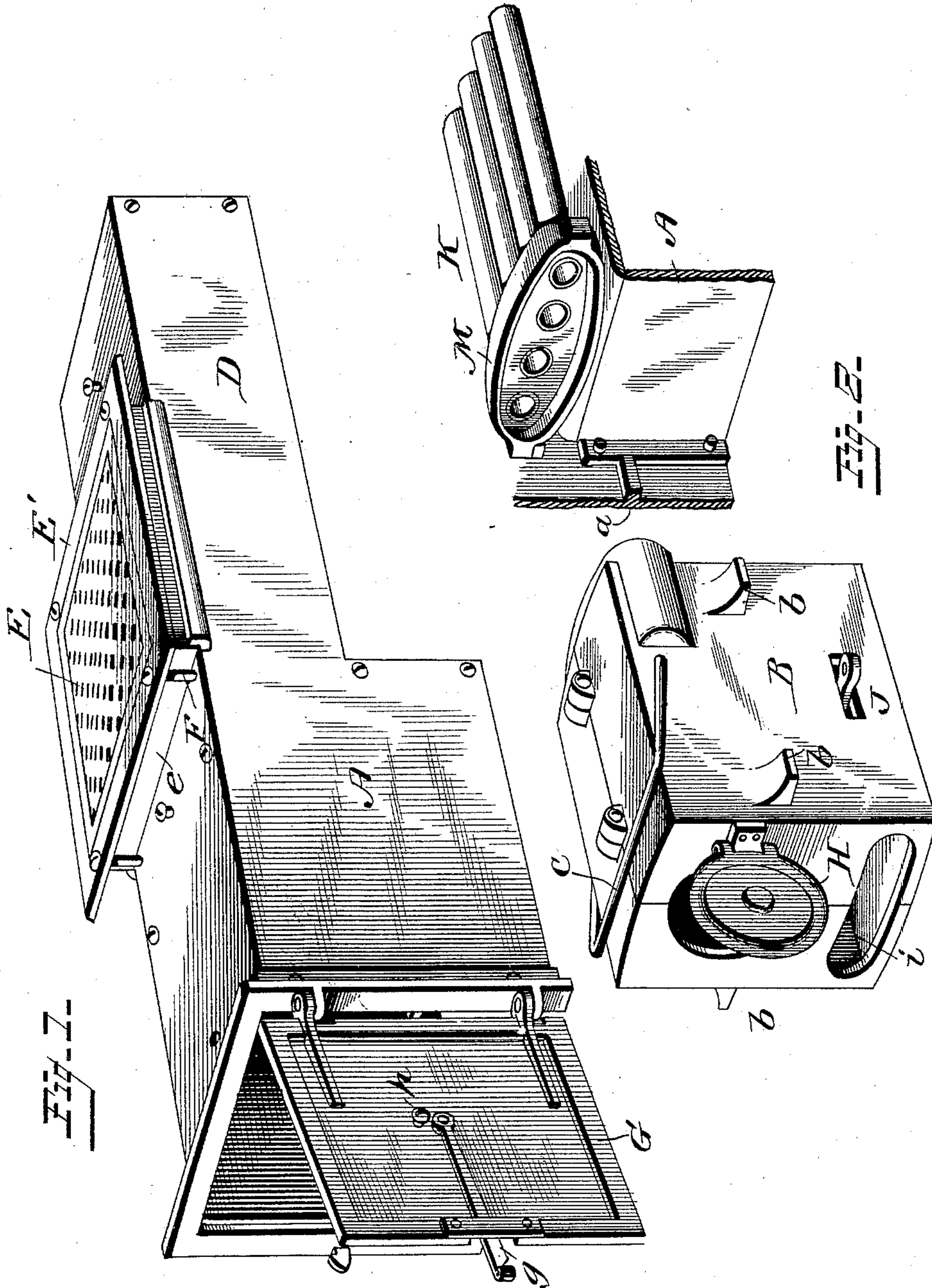
(No Model.)

2 Sheets—Sheet 1.

C. S. DEAN.  
CAR HEATER.

No. 474,225.

Patented May 3, 1892.



Witnesses:  
*Albert E. Seiden.*  
*Van Burm Hillyard.*

Inventor  
*Cyrus S. Dean.*  
By his Attorneys  
*R. A. A. Lacey*

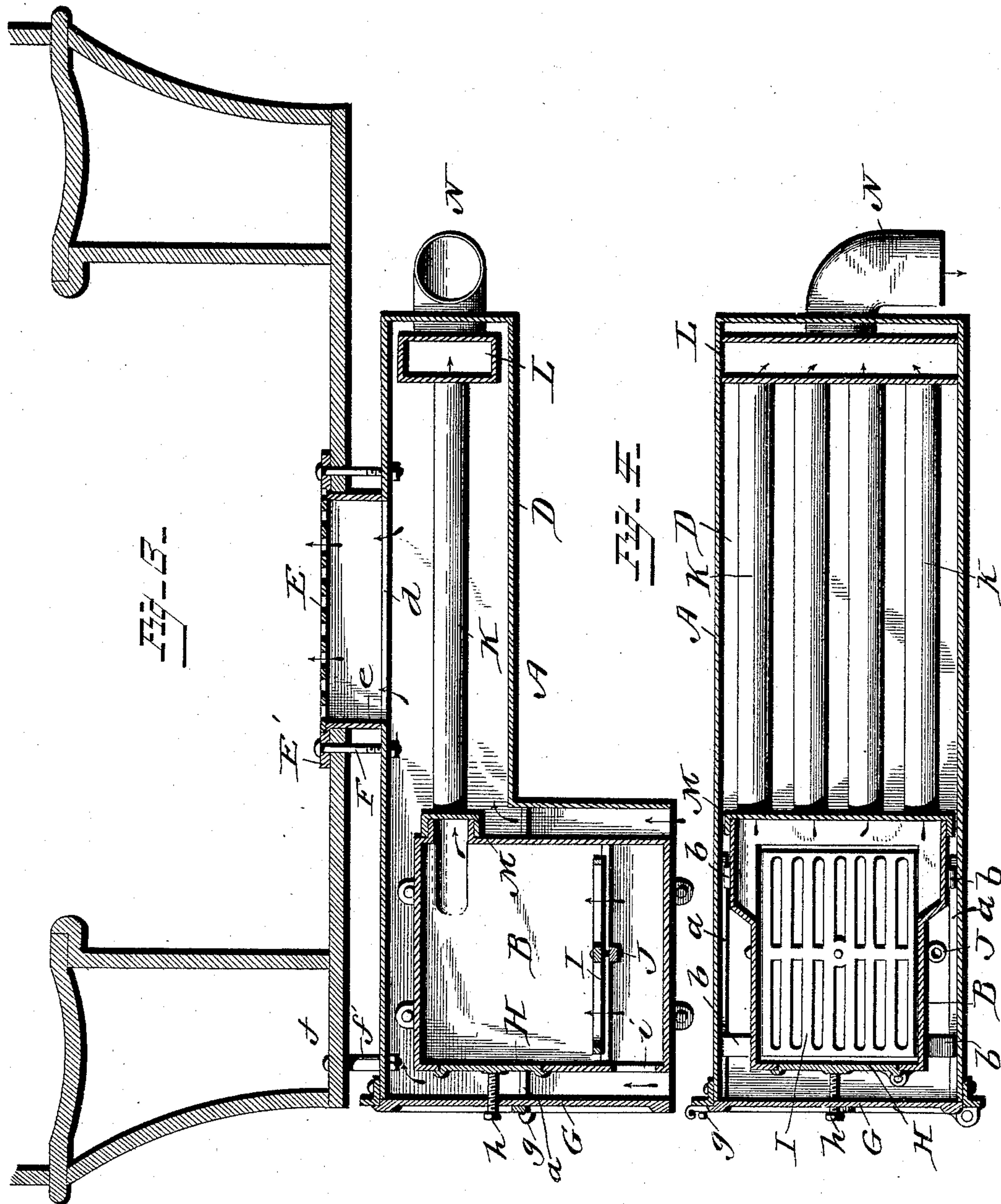
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# UNITED STATES PATENT OFFICE.

CYRUS S. DEAN, OF FORT ERIE, CANADA.

## CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 474,225, dated May 3, 1892.

Application filed October 27, 1891. Serial No. 409,981. (No model.)

*To all whom it may concern:*

Be it known that I, CYRUS S. DEAN, a subject of the Queen of England, and a citizen of Canada, residing at Fort Erie, in the county of Welland, Province of Ontario, Canada, have invented certain new and useful Improvements in Car-Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to heaters for vehicles, especially of that class which are designed to travel overland and which are readily accessible beneath the floor from the outside, such as street-cars, omnibuses, and other vehicles of a similar nature. The casing or shell which receives and supports the removable fire-pot is pendent from the floor of the vehicle and forms a hot-air chamber and receives the cold air, which is heated in its passage therethrough by the heat radiating from the fire-pot and the smoke-flues, the heated air escaping into the vehicle through a suitable register. The fire-pot is removably inserted through a door in the front end of the casing and is adapted to automatically form a close joint with the smoke-flues, by means of which the products of combustion are carried off to a suitable conductor, which conveys them to a convenient point of discharge into the open air. By having the fire-pot removable the fire can be started therein in a barn at a convenient point along the road, and after the heavy smoke has passed off and the coals thoroughly ignited the pot can be placed in the case, thereby obviating the annoyance and the destruction which would follow if the fire was started in the heater on the vehicle. Moreover, the danger from fire is lessened, because when a vehicle is turned in the fire can be removed therefrom.

The improvement consists of the novel features and the peculiar construction and combination of the parts, which will be hereinafter more fully described and claimed, and which are shown in the annexed drawings, in which—

Figure 1 is a perspective view of the heater detached, the door of the casing being open. Fig. 2 is a perspective view of the fire-pot detached and the front end of the smoke-flues,

the latter being separated from and arranged in a relative position to the said pot. Fig. 3 is a longitudinal section of the heater, showing its relative position to the vehicle to which it is applied. Fig. 4 is a top plan view of the heater, the top of the casing and the top of the fire-pot being removed.

The heater comprises, essentially, a casing or shell A and a removable fire-pot B, the latter being provided with a bail C for convenience of handling. The front or receiving end of the casing is deeper than the rear portion to accommodate a fire-pot of suitable proportions, in which the coal will have a proper depth and body. The rear portion D of the casing or shell is comparatively wide and shallow, being designed to form, in effect, a supplemental hot-air chamber, and is provided in its top side with opening *d*, through which the heated air escapes and enters the vehicle through the register E.

The register-frame E' overlaps an opening in the vehicle-floor in coincident relation with the opening *d*, and has a depending portion *e*, which connects with the top of the shell or casing and surrounds the opening *d* and forms a conductor to convey the hot air from the said shell or casing to the vehicle. The bolts F, which pass through the horizontal portion of the register-frame E' and through the casing, hold the said parts in place and support the rear portion of the said shell or casing, the front portion of the latter being suspended from the vehicle by means of the bolts *f*. To prevent overheating the vehicle-floor directly over the heater, the latter is suspended at a distance from the floor, leaving an air-space between the top of the heater and the under side of the vehicle-floor, the distance being fixed by the vertical portion *e* of the register-frame and by spacing-blocks or short tubes *f'*, mounted on the bolts *f*.

The fire-pot B is removably inserted through the front end of the casing or shell and is supported by means of lateral projections *b*, extended from the sides of pot B, resting upon ribs *a*, projecting inward from the inner sides of the said shell or casing. The front end of the casing or shell is closed by door G, which is held shut by any suitable fastening means, as the latch *g*. The stop *h*, carried by the door G, is adapted to press against the door



H of the fire-pot and hold the latter closed, and at the same time hold the fire-pot within the shell.

To allow for variation in the mechanical construction of the parts of the heater, the stop *h* is adjustable, so that it can be set to effect the desired result—*i. e.*, hold the door H closed and prevent movement of the fire-pot within the casing. The projections *b* serve to maintain a fixed relative distance between the sides of the fire-pot and the sides of the casing and prevent lateral shifting of the said fire-pot.

The opening *i* in the front side of the fire-pot opposite the ash-pit admits air to the fire to support combustion, and also serves as a convenient means to permit the removal of the ashes and cinders.

The grate I is movable and is adapted to be actuated by means of the shaker-bar J, which is pivoted at one end to one side of the fire-pot and has its other end extended through an opening in the other side of the said fire-pot to be engaged by a poker or other suitable instrument for purposes of shaking the fire. This bar J has engagement with the grate between its ends, so as to move the said grate when actuated.

The conductor K for carrying off the products of combustion is located in the rear portion of the shell or casing, and is preferably composed of a series of smoke-flues, which are united at their ends by the smoke-boxes L and M. The smoke-pipe N for carrying off the products of combustion to a convenient point connects with the smoke-box L.

The smoke-box M is adapted to connect with the fire-pot by a slip-joint. The flanged opening in the rear side of the fire-pot matches with a corresponding flanged opening in the smoke-box M, the former slipping into the latter as the fire-pot is thrust into place within the casing or shell.

It will be observed that the fire-pot and the smoke-conductor are surrounded by an air-space, in which the cold air is heated, the air entering through the open end of the enlarged portion of the said shell or casing.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A heater comprising a casing having the front portion comparatively deeper than the rear portion and having said rear portion wide and shallow and constructed to have a register connected therewith, a smoke-conductor located in the shallow rear portion of the casing and composed of a series of pipes connected at their ends by smoke-boxes, and a fire-pot removably inserted in the front por-

tion of the casing and adapted to automatically connect with the inner smoke-box of the said smoke-conductor, substantially as described.

2. The herein-described heater, composed of a casing having a wide and shallow supplemental hot-air chamber projected from its rear, a smoke-conductor located in the said hot-air chamber and composed of a series of pipes which are connected at their ends by smoke-boxes, a fire-pot removably inserted through the front end of the casing and suspended therein by lateral projections on the fire-pot engaging with ribs on the sides of the casing and adapted to connect automatically with a smoke-box of the said smoke-conductor, and a door to close the open end of the casing and provided with a stop to hold the door of the fire-pot closed and prevent the latter from shaking about, substantially as described.

3. In a car-heater, the combination, with the casing having ribs *a* on its opposite sides and having its front end open, of a fire-pot adapted to be thrust through the open end of the casing and having lateral projections which engage with the ribs *a* and support the pot and prevent lateral movement of the same, and having a bail and provided with a door in its front side and a door to close the open end of the casing, and having an adjustable stop to engage with the fire-pot door and hold it shut and prevent longitudinal movement of the said fire-pot within the casing, substantially as described.

4. The hereinbefore shown and described car-heater, consisting of a casing having its front portion deeper than the rear portion and having the said rear portion wide and shallow and constructed to have a register connected therewith, a smoke-conductor located in the shallow rear portion of the casing, composed of a series of pipes which are connected at their ends by smoke-boxes, a fire-pot having a bail and provided with lateral projections and adapted to be thrust through the open end of the casing and be supported therein by the lateral projections engaging with ribs on the sides of the casing, and a door to close the open end of the casing and provided with an adjustable stop to hold the fire-pot door closed and prevent the said fire-pot from longitudinal movement in the case, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CYRUS S. DEAN.

Witnesses:

VAN BUREN HILLYARD,  
FRANK H. BURNS, Jr.