

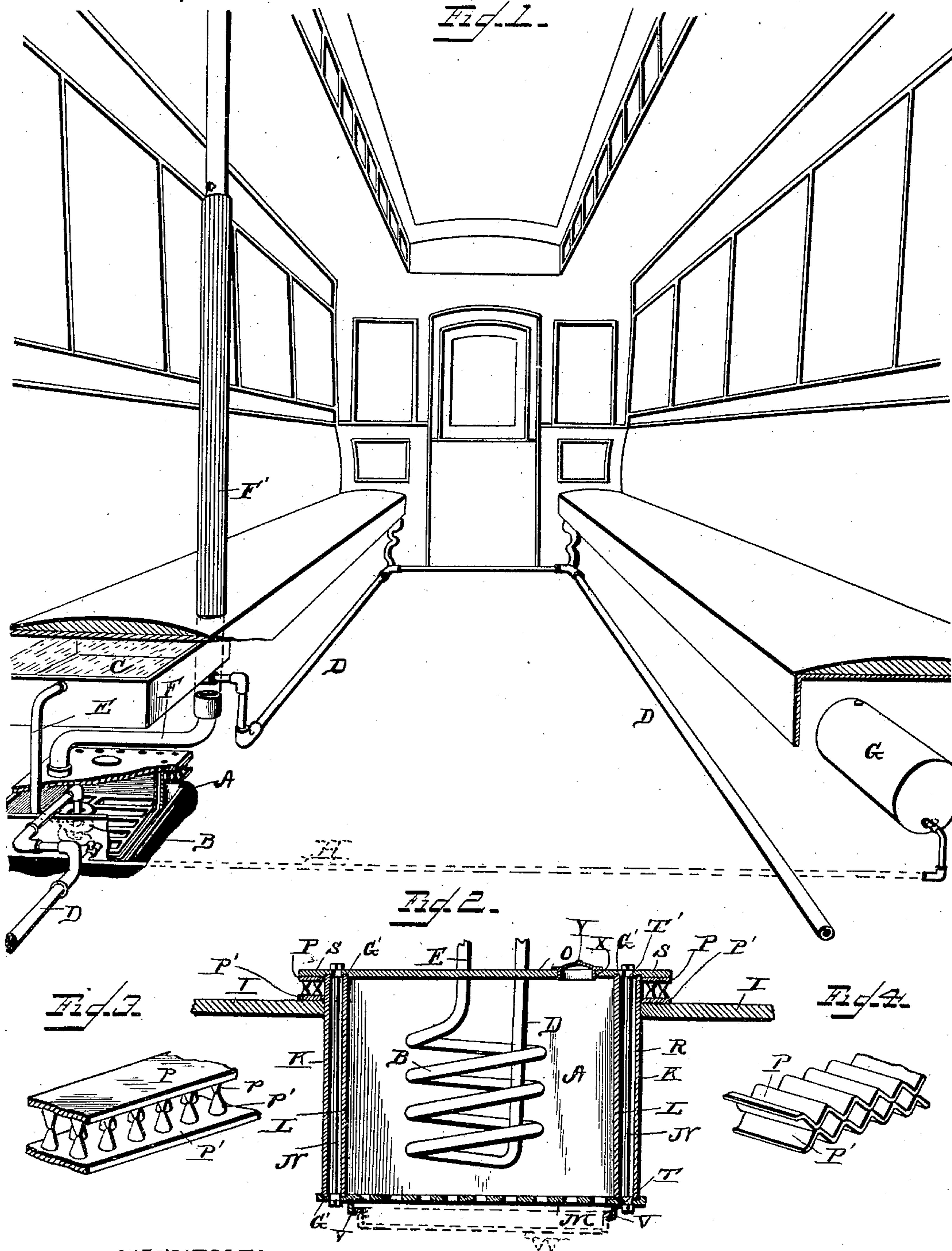
(No Model.)

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HEATING APPARATUS FOR STREET CARS.

No. 397,898.

Patented Feb. 19, 1889.



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## HEATING APPARATUS FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 397,898, dated February 19, 1889.

Application filed January 8, 1889. Serial No. 295,734. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS K. CURLETT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Heating Apparatus for Street-Cars; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to car-heaters in which the agency of circulating heated water is utilized for the transmission and dissemination of heat through a car, and more particularly to that class of devices which are known as "pendent" heaters, and in which the combustion-chamber is arranged beneath the floor of the car; and it has for its object to provide a simple, effective, and inexpensive device in which the charring and burning of the car-floor at the place where the combustion-chamber is attached shall be absolutely prevented.

The invention consists in the improved construction of the combustion-chamber and manner of attaching it to the car, whereby cool air shall be introduced between the heated metal and the wood-work of the car, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a transverse section of a car having my invention applied thereto, parts being removed so as to show the invention more clearly. Fig. 2 is a sectional view of the combustion-chamber and part of the floor of the car. Fig. 3 is a perspective detail view of a portion of the supporting-rings. Fig. 4 is a detail view showing a modification of the same.

The same letters refer to the same parts in all the figures.

A designates the combustion-chamber, which consists of a box, usually constructed in a rectangular shape, the walls of said box being indicated by letters L L. This box is surrounded by a jacket or casing, K, of such dimensions as to leave an air-space, R, between its walls and those of the inner box. The bot-

tom consists, when coal is the fuel to be employed, of a grate, M, of such dimensions as to extend slightly beyond the walls of the outer casing, and said bottom is connected by bolts N, extending vertically through the air-space R, with the top plate, O, which extends beyond the walls of the outer jacket or casing, so as to form a circumferential flange, S, as will be seen in Fig. 2, for the purpose of supporting the device in position for operation. The bottom and top plate will be provided with grooves G' to seat the upper and lower edges of the walls of the casings.

I represents the car-floor, which has an opening of proper size and shape to admit the outer jacket or casing, K. Resting upon the car-floor, surrounding said outer casing, are a pair of supporting rings or guards, P P', the adjoining faces of which are provided with studs or projections *p p'*, whose apices abut against each other, thus forming the smallest possible points of contact, and enabling air to circulate freely between said guards, which in turn support the combustion-chamber by the flange S of the top plate of the latter resting on the upper guard-ring. This construction absolutely prevents the intense heat from the metal of the combustion-chamber from being transmitted in such power or volume as to burn or char the floor of the car.

In Fig. 4 I have shown a modification in the construction of the guard-rings P P', which consists in simply making said guard-rings of corrugated metal, the apices of the corrugations being placed in contact with each other, so as to diminish the transmission of heat and allow the free circulation of air in the manner already described.

The bottom M is provided with openings T, communicating with air-space R, and the top plate has corresponding openings, T', thus admitting of the passage or circulation of cold air, which, however, before being discharged into the car, becomes sufficiently heated by contact with the heated walls of the combustion-chamber to assist in heating as well as ventilating the car, while the steady current prevents overheating of the metal parts adjoining the wood-work.

The under side of the bottom M is provided with parallel angular cleats V V, adapted to support a removable sliding ash-pan, W,



(shown in dotted lines in Fig. 2,) which, when the car is housed, may be placed in position to prevent fire and ashes from dropping out.

The top O of the combustion-chamber has  
5 an opening, X, provided with a removable cover, Y, for the admission of fuel. A pipe, F', also extends from the top O through the car and through the roof of the latter to carry off the products of combustion. Said smoke-  
10 pipe is provided inside the car with a protecting jacket or guard, (shown in Fig. 1,) to prevent persons coming in contact therewith and scorching their limbs or clothes.

B designates the heating-coil of water-pipe,  
15 which is located in the combustion-chamber, and the upper end of which is connected by a pipe, E, with a water-tank, C, suitably located. From the bottom of said tank extends a pipe, D, circulating through the car below  
20 and in front of the seats, so as to form foot-rests and foot-warmers, and finally connecting with the bottom of the heating-coil in the combustion-chamber, the top plate, O, of which is provided with openings for the pas-  
25 sage of said pipes E D.

When, instead of coal, petroleum or other hydrocarbon oil is to be used as fuel, a supply of such oil may be kept in a tank, G, suitably located under one of the car-seats, a pipe,  
30 H, extending from said tank under the floor of the car to the combustion-chamber, where it is to be connected with a suitable burner, which, however, I have not shown in the drawings, as it does not form a part of my  
35 present invention.

The operation of this invention will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. Fire is maintained in

the combustion-chamber to heat the water con- 40  
tained in coil B. Water, by the force of gravity, flows from the tank C through the circulating-pipe D to the lower end of coil B, whence, on becoming heated, it passes upward through  
said coil and through pipe E into tank C, from 45  
where it is again withdrawn and circulated by pipe D.

Having thus described my invention, I claim—

1. In a pendent car-heater, a combustion- 50  
chamber composed of an inner casing, an outer jacket, a bottom, and a top plate extending beyond the walls of the outer jacket, so as to form a circumferential flange, said bottom  
and top plate being connected by bolts pass- 55  
ing through the air-space between the inner and outer casings, substantially as set forth.

2. In a pendent car-heater, a combustion-  
chamber composed of an inner casing, an outer jacket, a bottom, and a top plate extending 60  
beyond the walls of the outer jacket, so as to form a circumferential flange, the whole connected by bolts, as described, said bottom and top plate being provided with openings reg-  
istering with the air-space between the inner 65  
casing and outer jacket, in combination with a pair of supporting rings or guards fitting around the outer jacket under the flange of the top plate, and provided with studs or cor-  
rugations, the apices of which are placed in 70  
contact, substantially as and for the purpose set forth.

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

LEWIS K. CURLETT.

Witnesses:

W. A. SMITH,  
J. F. COLEMAN.