

(No Model.)

E. A. LELAND.
HEATING APPARATUS FOR RAILWAY CARS.

No. 441,497.

Patented Nov. 25, 1890.

Fig. 1.

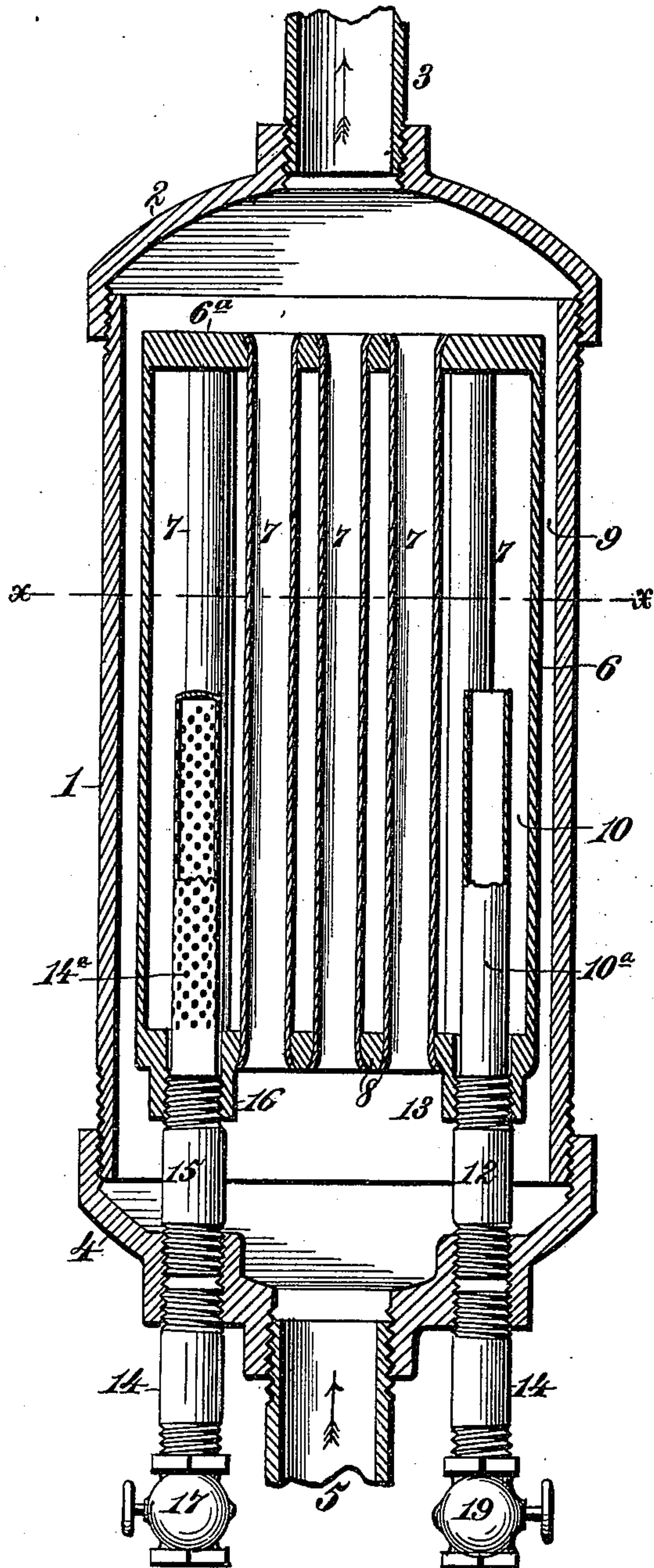
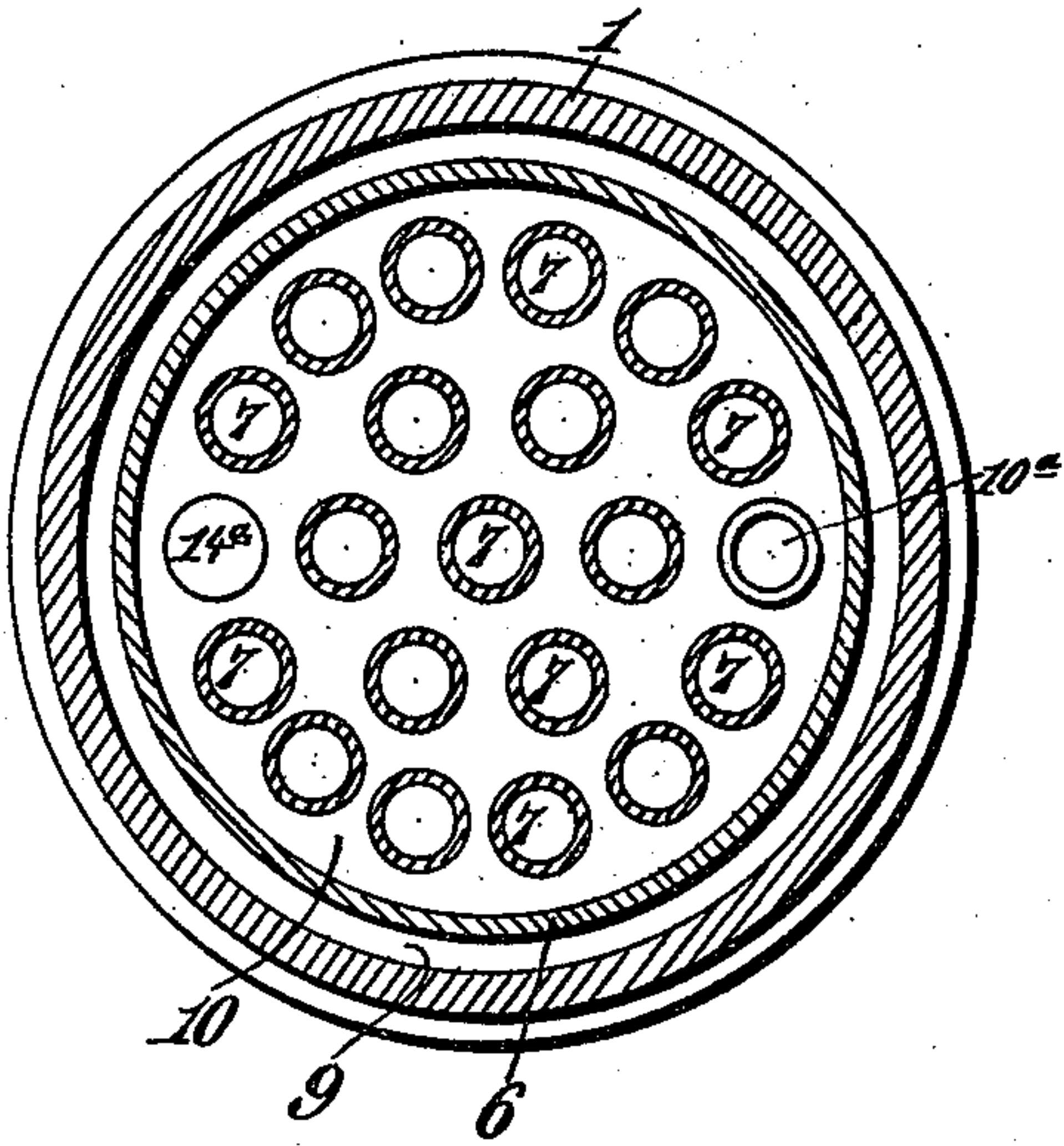


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

EDWIN A. LELAND, OF BROOKLYN, NEW YORK, ASSIGNOR TO CHARLES M. PRATT, OF SAME PLACE.

HEATING APPARATUS FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 441,497, dated November 25, 1890.

Application filed June 20, 1890. Serial No. 356,045. (No model.)

To all whom it may concern:

Be it known that I, EDWIN A. LELAND, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Heating Apparatus for Railway-Cars, of which the following is a specification.

My invention relates to that class of apparatus ordinarily used for heating railway or other cars; and the purpose thereof is to provide a simple mechanism whereby the water or other circulating medium from which the heat is derived may be rapidly heated and acquire a rapid circulation with an expenditure of the minimum quantity of steam. It is my purpose, also, to provide a construction and combination of parts whereby the rumbling and crackling noise, which has frequently been a source of great annoyance to travelers, shall be entirely avoided, or practically so, by removing all actual contact between said steam and the water which traverses the heater.

It is a further purpose of my invention to simplify and improve the construction and operation of this type of heating apparatus; and to these ends my invention consists in the several novel features and new combinations of parts hereinafter fully set forth, and then definitely pointed out in the claims annexed to this specification.

To enable others skilled in the art to make and use my said invention, I will now describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a substantially central vertical section of a heater in which my said invention is embodied. Fig. 2 is a cross-section of Fig. 1 upon the line $x x$ in the latter figure.

In the said drawings, the reference-numeral 1 designates the cylindrical body or jacket of the heater, upon the upper end whereof is a head or cap 2, screwed upon the end of the cylinder or attachable thereto in any suitable manner. Into this cap is tapped a water-outlet 3, which is connected with any suitable form of expansion-chamber and thence to the radiators or heaters in the interior of the car. At the bottom of the cylinder 1 a substantially similar cap 4 is attached, through which

is tapped a water-inlet 5, communicating with the return pipe or pipes, by which the water which has parted with a portion of its heat is returned to the heater to be brought to its proper temperature.

Within the upper part of the cylinder 1 is arranged a separate interior cylinder 6, having a head 6^a, which is penetrated by a series of brass pipes 7, all of which are preferably seamless. These pipes open at their lower ends through a similar head 8, forming the lower head of the cylinder 6, which lies near the lower end of the cylindrical jacket 1, thereby affording a direct passage for the water, which enters by way of the inlet 5 and passes through said pipes and out by the outlet 3. The heads within which these pipes are arranged are so placed in the cylinder that an annular water-space 9 is provided between the inner face of the wall of the jacket and the inner cylinder 6.

Surrounding the several pipes 7 is a steam-space 10, which is sealed at both ends by the upper and lower heads, but which has communication, in the manner hereinafter described, with the steam-supply.

At or near one side of the cylinder is a pipe 10^a, inserted within the end of a short section of pipe 12. In the lower head of the inner cylinder is formed an opening having a nipple 13, and having a female thread of a size to receive the threaded end of the pipe 12, which has a right and left hand male thread upon its ends, in one of which is inserted the pipe 10^a, which is braced therein, or which passes readily through the opening in the nipple. The lower end of the short section is received in a threaded opening in the lower cap 4, said opening also receiving a live-steam pipe 14. This pipe has communication with the pipe conveying the live steam, which is thrown into the pipe 10^a. Diametrically opposite the pipe 10^a is a substantially similar pipe 14^a, of similar caliber and having a similar connection with a short section 15, having a right and left thread at its ends and connecting with a nipple 16 and with the head 4 in the manner described in connection with the pipe 12. The pipe 14^a is perforated at close intervals and closed at its upper end. This perforated pipe forms an

outlet for the waste water produced by the condensation of the steam. It will be seen that the entire steam-space 10, surrounding the pipes conveying the water will be filled
 5 with live steam, which as it condenses will flow out by way of the perforations in the waste-water outlet. In this manner and by this construction the water and steam are separated from actual contact, and the un-
 10 pleasant sounds caused by the intermingling of the two are wholly avoided.

A steam cock or valve 19 may be placed in the live-steam pipe to cut off or let on the steam, as required. A similar valve 17 may
 15 be placed in the outlet-pipe.

By forming the outer space 9 between the inner and outer cylinders I prevent any sudden chilling of the steam by cold drafts, as by opening the car-door, this space being
 20 filled with hot water.

What I claim is—

1. A railway-car heater consisting of an external jacket having at its lower end a cap containing a water-inlet and at its upper end
 25 a cap containing a central hot-water outlet to communicate with the car-radiators, a cylinder located within the jacket and arranged to provide a surrounding water-space between it and the interior of the external jacket, a
 30 series of tubes extending through the interior cylinder for the upward flow of the water, a steam-inlet pipe entering the lower cap of the jacket and extending upward into the interior cylinder, and a condensed-steam-outlet
 35 pipe also entering through the lower cap of the jacket and provided with a perforated pipe rising within the interior cylinder for the escape of the condensed steam, substantially as described.

40 2. A railway-car heater consisting of an external jacket having at its lower end a cap containing a central water-inlet and at its upper end a cap containing a central hot-water outlet to communicate with the car-

radiators, a cylinder located within the jacket 45 between the upper and lower caps and arranged to provide a surrounding water-space between it and the external jacket, a series of tubes extending through the interior cylinder for the upward flow of the water, a 50 steam-inlet pipe passing through the lower cap of the jacket and rising upwardly within the interior cylinder to deliver the steam at or near the center thereof, and a condensed-steam-outlet pipe also extending through the 55 lower cap of the jacket and having a perforated pipe or extension rising upwardly within the interior cylinder for the escape of the condensed steam, substantially as described.

3. A railway-car heater consisting of an external jacket provided at its lower end with a water-inlet and at its upper end with a hot-water outlet to communicate with the car-radiators, a cylinder arranged within the jacket and provided with a series of tubes for 65 the upward flow of the water, a steam-pipe section having right and left hand screw-threads engaging the lower end of the interior cylinder and the lower head of the external jacket, a steam-delivery pipe connected 70 with the screw-threaded steam-pipe section and rising within the interior cylinder to deliver the steam at or near the center thereof, and a condensed-steam-pipe section having right and left screw-threads engaging the 75 lower end of the cylinder and the lower head of the external jacket, and provided with a perforated pipe or extension rising within the interior cylinder at a point opposite the steam-inlet-pipe section for the escape of the condensed steam, substantially as described. 80

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

EDWIN A. LELAND.

Witnesses:

JOHN S. FERGUSON,
 MARTIN MILLER.