

(No Model.)

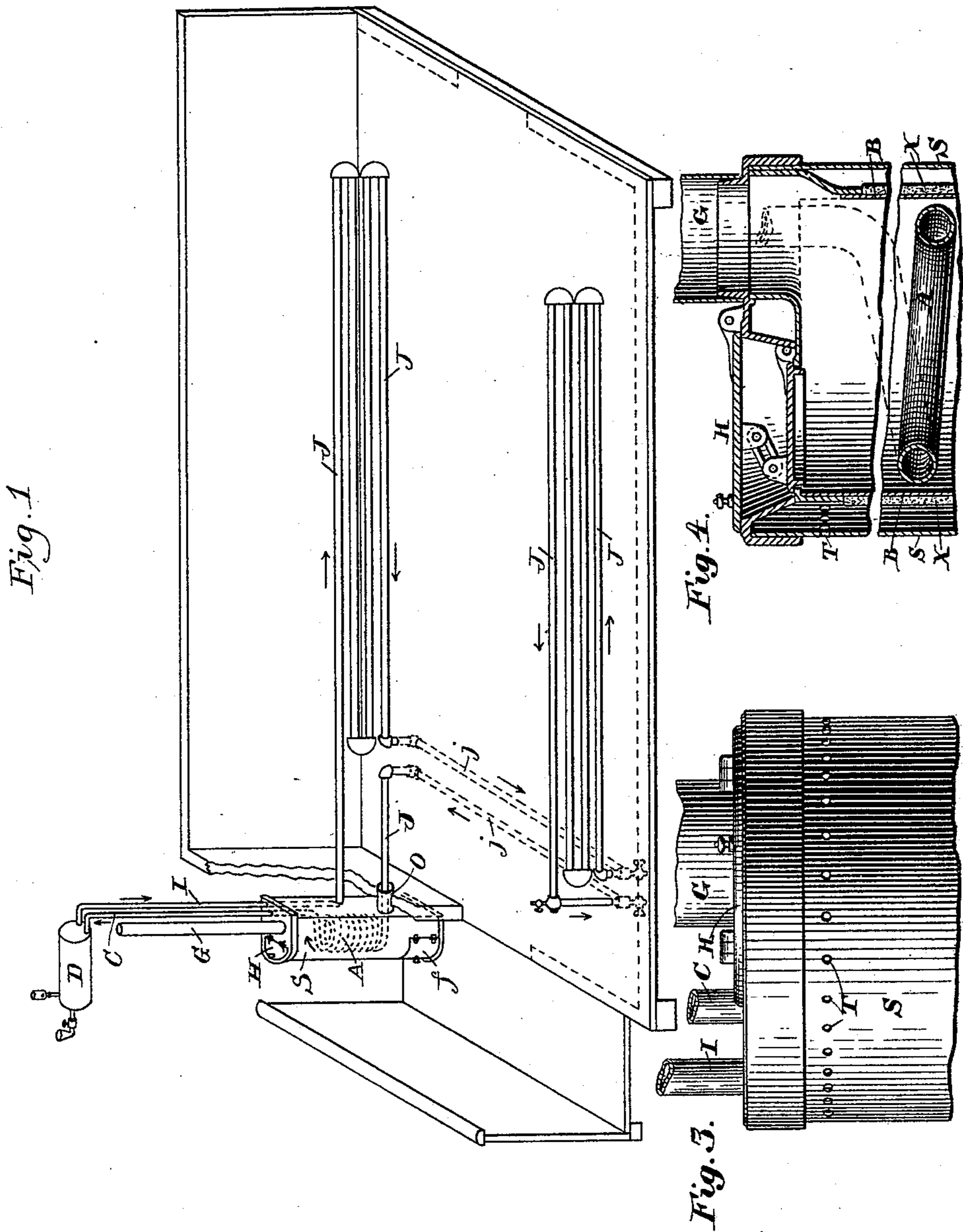
2 Sheets—Sheet 1.

J. F. McELROY.

APPARATUS FOR HEATING STREET CARS.

No. 497,385.

Patented May 16, 1893.



WITNESSES:

John W. Fisher  
Grace T. May.

James F. McElroy. INVENTOR  
BY  
Frederick M. Cameron.  
ATTORNEY.

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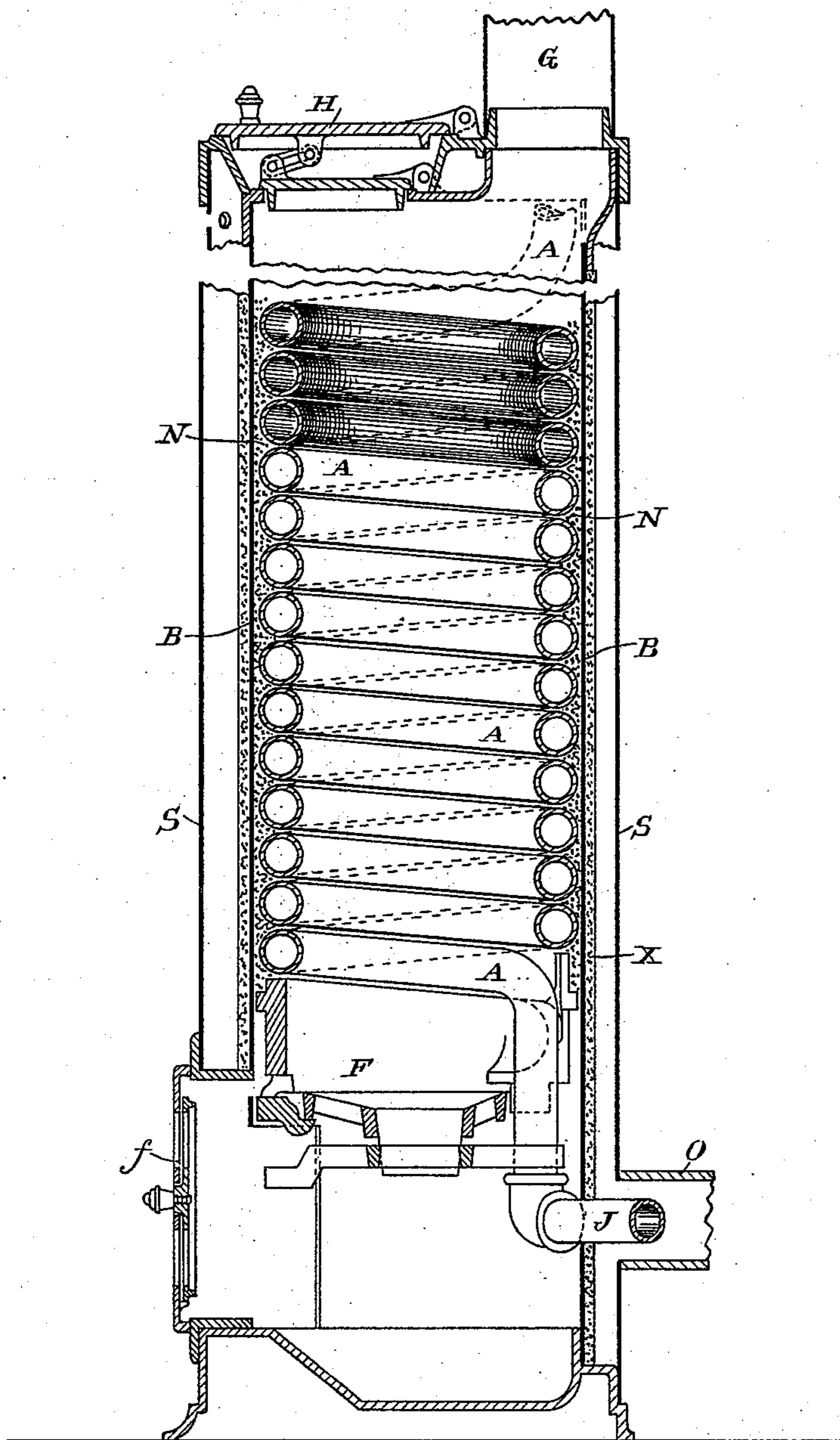


Fig. 2.

WITNESSES:

John W. Fisher  
Grace T. Mang.

INVENTOR

James F. McElroy

BY

Frederick W. Cameron  
ATTORNEY.

# UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNOR TO THE CONSOLIDATED CAR-HEATING COMPANY, OF WHEELING, WEST VIRGINIA.

## APPARATUS FOR HEATING STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 497,385, dated May 16, 1893.

Application filed November 28, 1891. Serial No. 413,449. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing at the city and county of Albany, State of New York, have invented a new and useful Improvement in Apparatus for Heating Street-Cars by a Circulation of Hot Water, of which the following is a specification.

My invention relates to devices for heating street cars, and the objects of my invention are first, to produce a system for heating a street car by circulating hot water through pipes arranged beneath the seats of the car, so that the car is uniformly heated throughout, and no gas or smoke is allowed to enter, and which shall also assist in ventilating the car; second, to provide a street car heater which may be placed upon the platform of a car without obstructing the passage to and from the car to a greater extent than would be occasioned by a person standing there; third, to provide a street car heater in which the greatest heat energy shall be imparted to the water, while the outside of the heater remains at so low a temperature that the hands may be placed upon it without discomfort. I attain these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my car heating system, and Fig. 2 is a sectional detail view of my street car heater. Fig. 3 is an elevation in part of my heater. Fig. 4 is a vertical section of Fig. 3.

Similar letters refer to similar parts throughout the several views.

In order to provide a satisfactory system for heating street cars, it is necessary to distribute the heat uniformly throughout the whole car in such a manner that all the seats will be equally warm, the seating capacity of the car must not be lessened by having the heater placed within the car, and there must be no gas, smoke or impure air brought into the car by the heating process.

The seats adjoining the car stove from which there is always more or less coal gas and smoke escaping, are always uncomfortable, because of the close proximity of the fire and disagreeable odors and are avoided as much as possible by passengers, and the

space occupied by the heater, of course, makes the seating capacity of the car less than it would be if the heater were placed without the car. For the purpose of avoiding these annoyances, heaters have been made to occupy a position under the car, but in that place they are inconvenient, because it is necessary to stop the car for the purpose of attending to the fire. They have also been placed upon the platform of a car, but in order to furnish heat enough to approximately warm the car, it has been necessary to construct them so large as to prevent the side of the platform upon which they are placed, from being used by passengers in entering and leaving the car. By my invention all of these difficulties attending the successful heating of street cars, are obviated.

I place upon the platform against the car at one side of the door, a small heater which does not take up more room than a person standing there, and between which and the car rail a person may pass without inconvenience. It is necessary that this heater should be on the outside cool enough so that a person shall not burn his clothes if they should come in contact therewith, even if they remain against it for some time, and it is also necessary that the heat energy should be sufficient to warm the water that circulates through the car to such a degree that the car shall be comfortable in extremely cold weather. To accomplish these results, I construct a pipe A in the form of a close coil, which fits snugly within the heater drum B extending from the fire pot F in the lower portion of the heater upward to nearly the top of the heater drum, having its upper end extending vertically and connecting with the pipe C, which pipe C extends upward along the side of the car and enters the expansion drum D. The coil A forms a wall about the fire in the heater, the adjacent spirals of the coil being close to each other. Between the interior surface of the drum and the coil A, a suitable insulating material N, usually ashes, may be placed. The drum D is usually provided with an insulating substance X preferably asbestos, placed between the interior and exterior surfaces of the drum B. Beneath the coil A is the fire pot F suitably

supported with an ash receiving space beneath it, and a door *f* opening thereto. The heater drum is placed within a shell S, which is constructed sufficiently large to leave an open space between the drum and the shell entirely around the drum, and which shell is flattened on one side forming a rectangular surface, in such a manner that it will sit closely against the end of the car, as shown in Fig. 1. The opening or hole T in the shell S at the upper portion thereof allows the foul air from the car, entering into the space between the heater and the shell, to pass out into the open air.

The heater is provided with a smoke stack G passing from the top of the heater along the side of the car and through the car roof or overhanging hood. The top of the heater is also provided with a suitable opening or door H, through which the fuel is passed into the heater.

Above the heater suitably secured to the top of the car, I place an expansion drum D and connect it by means of a pipe C to the pipe coil A as hereinbefore stated, and I also place a pipe I in connection with the expansion drum and extend it downward parallel to the pipe C into the heater shell S and just above the floor of the car, I connect the pipe I with a system of pipes J extending into the car beneath the seats of the car, as shown in Fig. 1, the pipes J being placed on each side of the car and extending across from one side to the other by means of connecting pipes *j* placed beneath the floor of the car, as shown by dotted lines in Fig. 1, the lower portion of the coil pipe A extending through the heater drum and shell and connected with the piping J near the floor of the car, as shown in Fig. 1. By this arrangement of the pipes, the water which enters the expansion drum D passes through the pipe I into the pipes J and circulates through the pipes J on both sides of the car in a direction indicated by the arrows in Fig. 1, and passes into the coil A, where it is heated and forced upward into the expansion drum D, by this means making a complete circulation.

The fire in the heater is in direct contact with the coil A and the greatest amount of heat energy which the fire is capable of producing, is thus brought in the closest possible contact with the water. It is apparent

that the outer surface of the drum of the heater will not be of a higher temperature than the water, nor indeed quite so high. The insulating material placed within the drum of the heater will retain the heat of the fire, and the outside of the interior wall of the drum will be cooler than the water in the coil. The space between the heater drum and the heater shell S will allow most of the heat emanating from the fire drum to escape therein, and the exterior surface of the heater shell will be so cool that even when an intense fire is burning within the heater, the hand may be held upon it without experiencing any discomfort.

In order to provide for the expulsion of the foul and cold air, which collects at the bottom of the car, I connect the space between the shell S and the drum B with the interior of the car near the floor by a suitable tube O, made of any suitable material, opening into the shell S, extending through the end of the car and opening therein. It is apparent that a draft is obtained by this means, the air being drawn from the car and stimulated in its passage therefrom by the constantly rising current of air in the space between the shell and drum of the heater.

My invention is simple in its construction and operation. The greatest amount possible of heat energy is applied to the circulating water, causing great economy in the use of fuel and a car supplied with my system is heated uniformly throughout, and the atmosphere of the car is greatly purified by the use thereof.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a street car heater, the combination of a drum, a water circulating coil arranged concentrically with said drum, the adjacent spirals of said coil fitting closely together, an insulating material placed between the coils and the walls of the heater, an insulating material placed outside of the interior wall of the drum, an enveloping shell communicating with the open air, and also communicating with the interior of the car near the floor thereof, substantially as described and for the purpose set forth.

JAMES F. MCELROY.

Witnesses:

EDWIN A. SMITH,

FREDERICK W. CAMERON.