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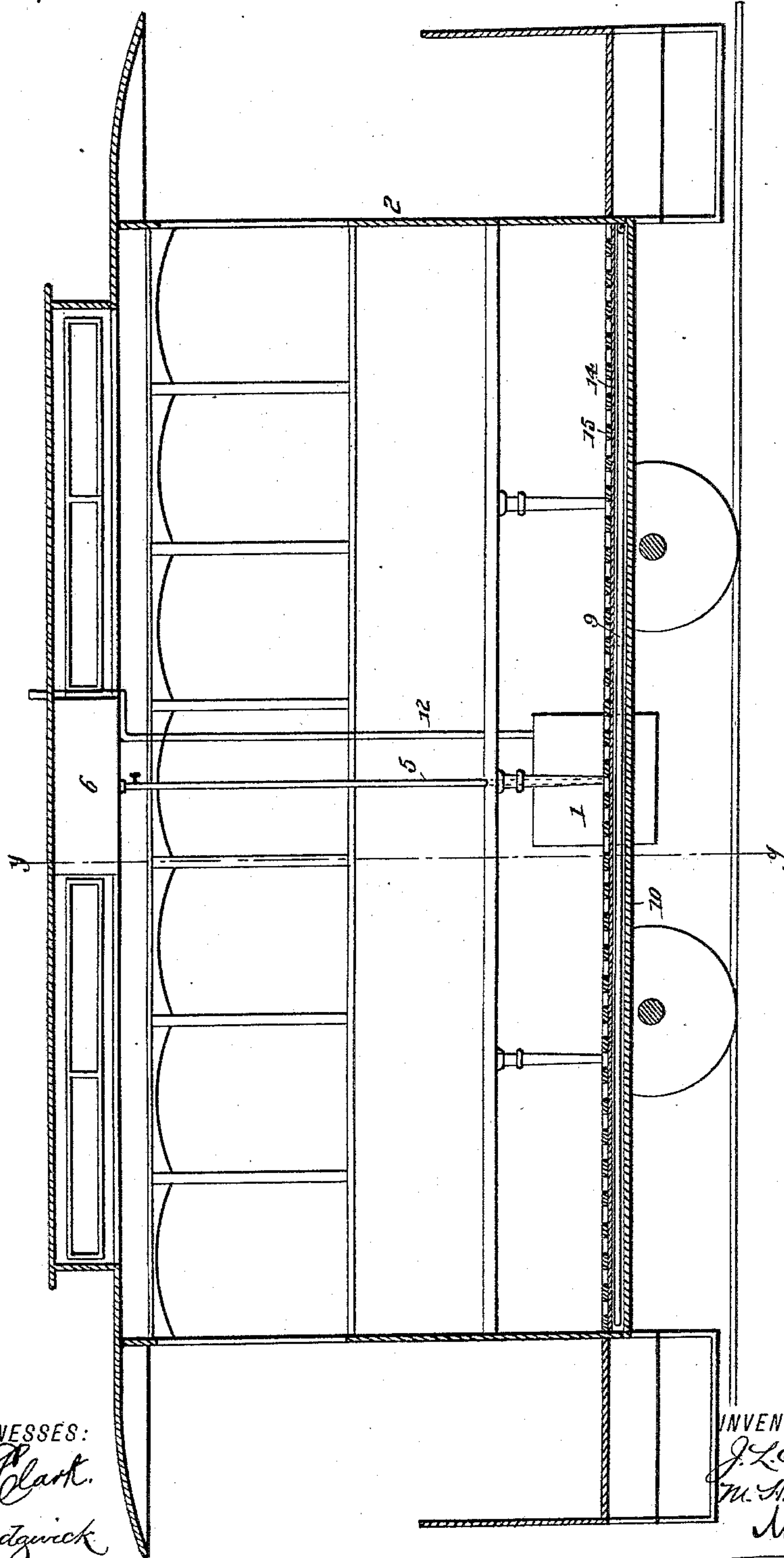
3 Sheets—Sheet 1.

J. L. EASLEY & M. H. WHALEN.  
STEAM CAR HEATING APPARATUS.

No. 411,985.

Patented Oct. 1, 1889.

Fig. 1.



WITNESSES:

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Fig. 3.

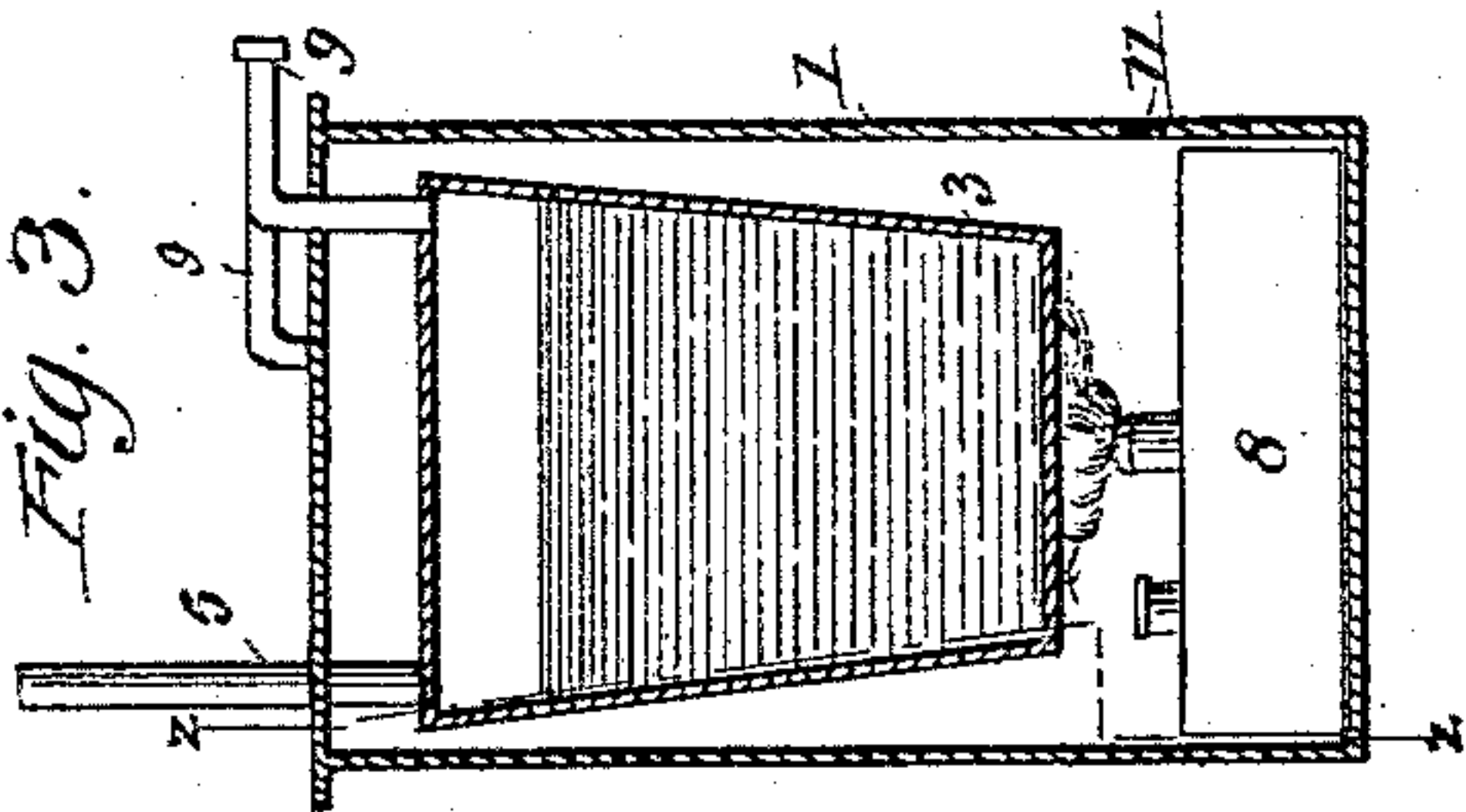


Fig. 4.

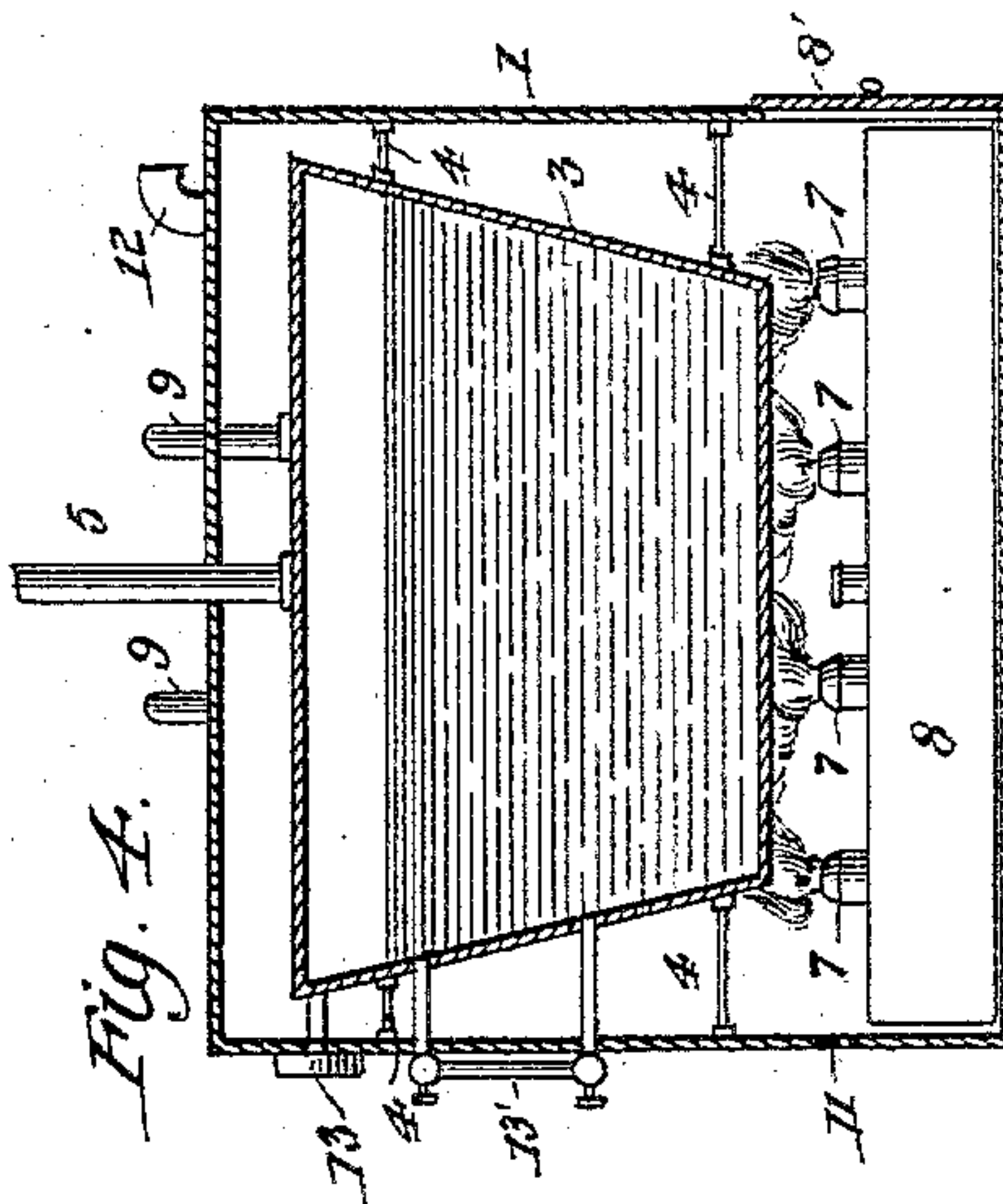
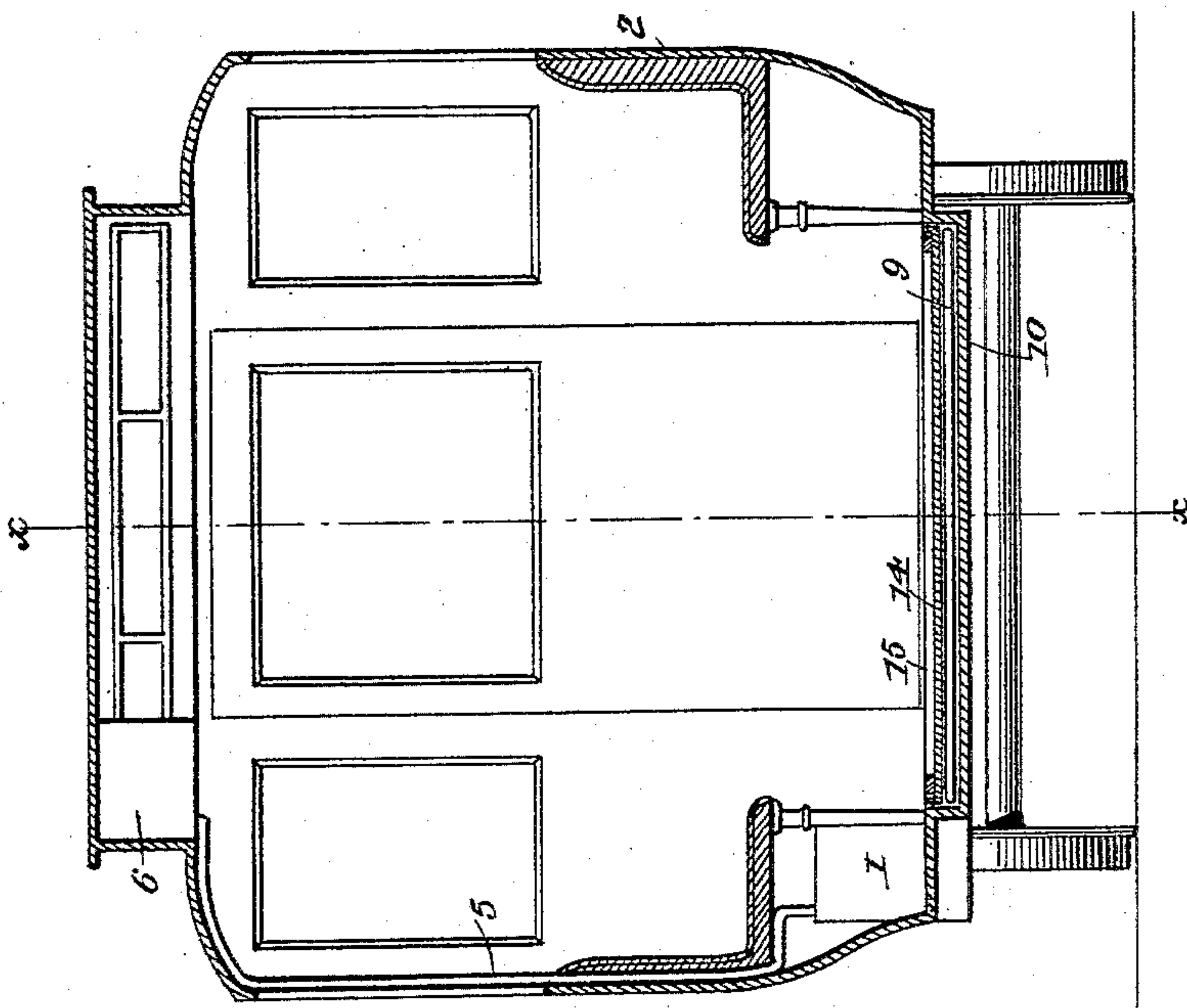


Fig. 2.



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Fig. 5.

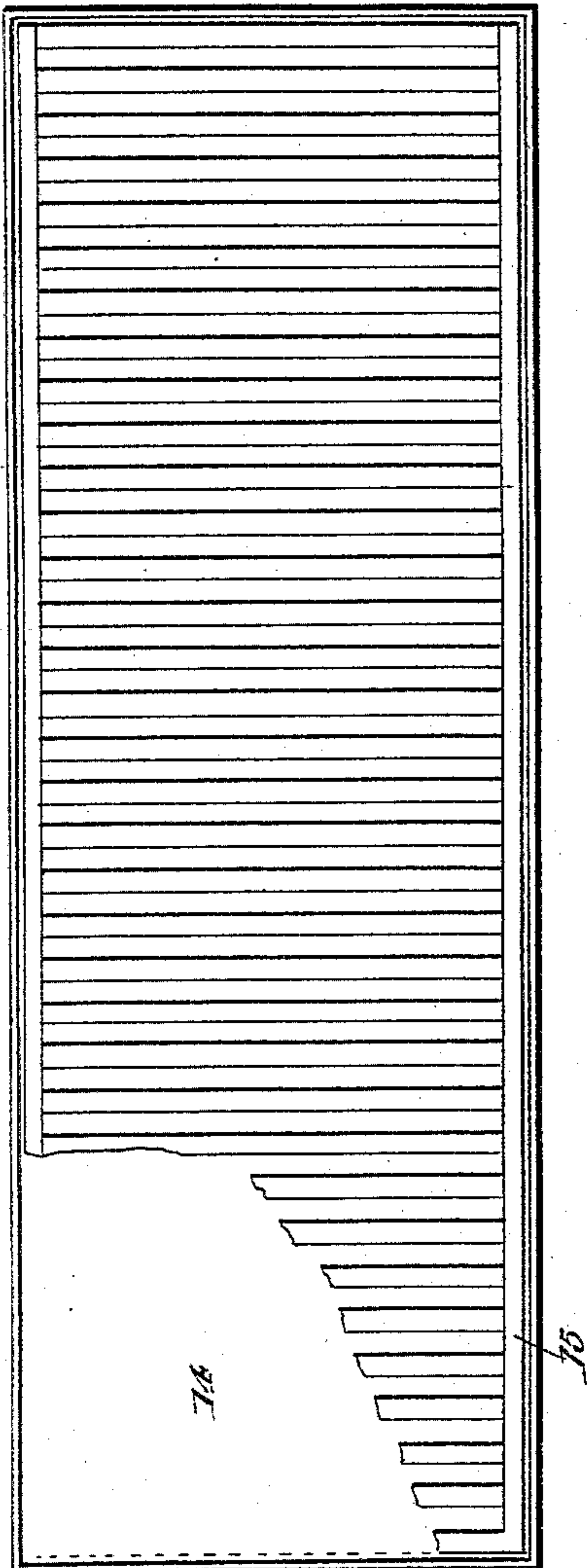
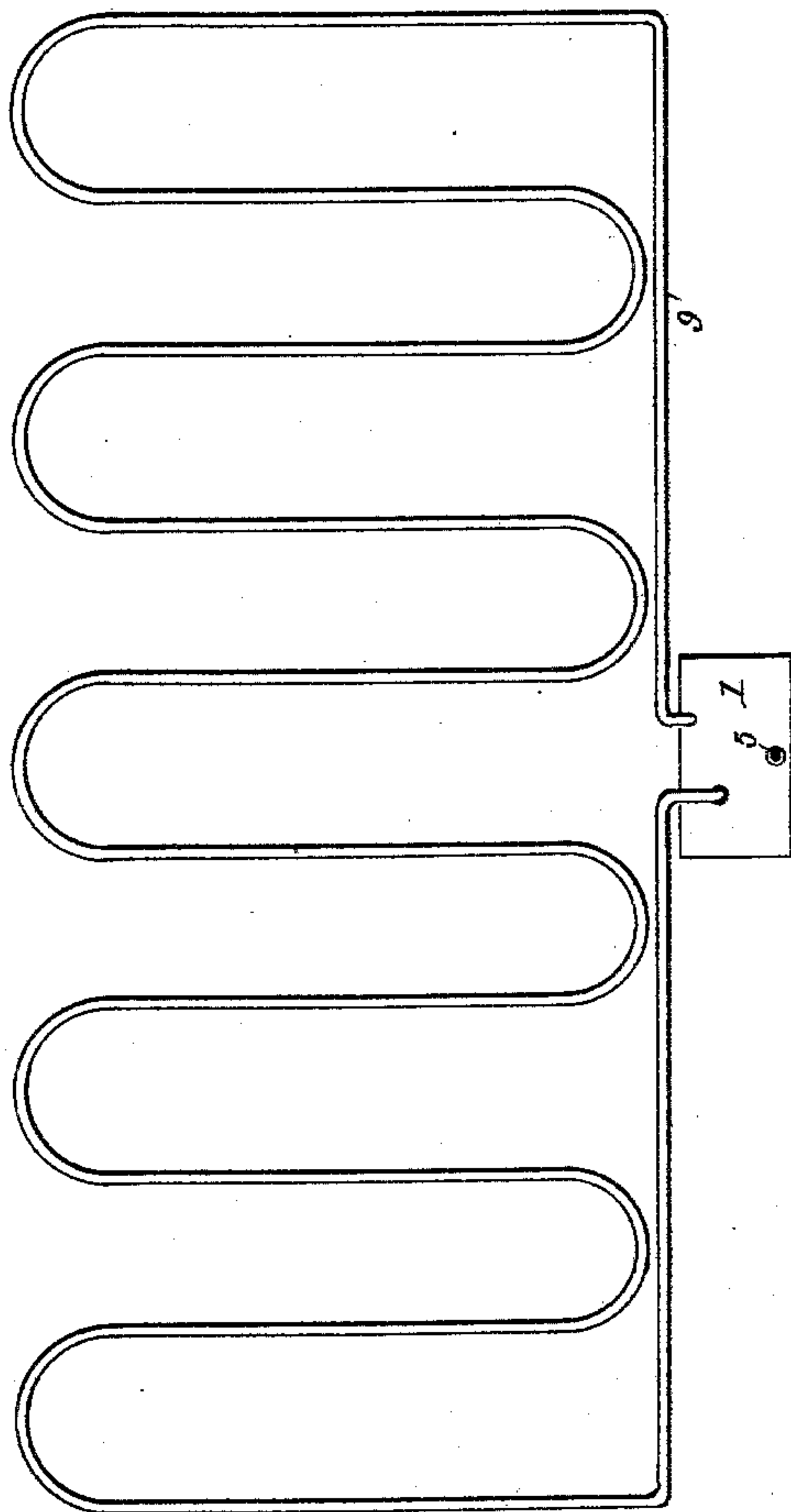


Fig. 6.



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# UNITED STATES PATENT OFFICE.

JOHN L. EASLEY, OF NEW YORK, AND MICHAEL H. WHALEN, OF BROOKLYN,  
NEW YORK.

## STEAM-CAR-HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 411,985, dated October 1, 1889.

Application filed April 23, 1889. Serial No. 308,280. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN L. EASLEY, of the city, county, and State of New York, and MICHAEL H. WHALEN, of Brooklyn, in the  
5 county of Kings and State of New York, have invented a new and Improved Street-Car-Heating Apparatus, of which the following is a full, clear, and exact description.

This invention relates to an apparatus for  
10 heating street-cars, and has for its object to provide a heating apparatus especially adapted for street-cars, and so constructed and arranged as to effectively heat such cars without taking up much room and with only  
15 a small expenditure of fuel.

The invention comprises in its general features a heater and boiler for generating steam, located at one side of and beneath a car, with an arrangement of heating-pipes  
20 leading from the heater and boiler and extending over the floor of the aisle of the car beneath the usual form of grating, all constructed and arranged as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate  
25 corresponding parts in all the views.

Figure 1 is a side view of a street-car in  
30 longitudinal vertical section on the line  $x x$ , Fig. 2, with the invention applied. Fig. 2 is a transverse section on the line  $y y$ , Fig. 1. Fig. 3 is a transverse vertical section of the boiler and heater detached. Fig. 4 is a vertical longitudinal section on the line  $z z$ , Fig.  
35 3. Fig. 5 is a plan view of the heater and heating-pipes detached; and Fig. 6 is a plan view of the floor-grating with the heat-radiating metal pan or sheet removed.

In carrying out this invention a heater is  
40 located at one side of a street-car, in its bottom, beneath the seat.

As here shown, the heater preferably consists of a sheet-metal box or casing 1, of suitable size, mounted in the side of a car 2, beneath the seat, the lower portion of the heater  
45 1 being suspended from the car, as shown in Fig. 1. Within the box 1 is mounted a metallic boiler 3, of suitable shape, supported  
50 by the bracket-rods 4, secured to the boiler 3

and casing 1, and having a surrounding air-space to contain the heated air arising from the heating medium.

The boiler 3, which is supplied with water through a feed-pipe 5, connecting with a supply-tank 6 in the top of the car, is heated by  
55 means of a number of burners 7, an oil-tank 8, resting on the bottom of box 1, beneath the bottom of boiler 3, and removable through an opening in the side of box 1, closed by a door 8'.  
60

The steam generated in boiler 3 will pass into a heating-pipe 9, arranged to extend in any desired manner over the floor 10 of the  
65 aisle of the car 2, and, as shown in Fig. 6, extending half-way down the length of the car, then across the floor 10 in folds from side to side of the floor, and back half the length of the car to the boiler.

A suitable condenser (not shown) may be interposed at any convenient point between  
70 the ends of pipe 9. Draft is provided for the heater 1 by means of apertures 11.

The smoke arising from the burners 7 is carried off by a chimney 12.

A suitable steam-gage 13 is mounted on the  
75 outside of heater 1, to indicate the amount of pressure, and a glass gage 13', to indicate the amount of water.

Upon the heat-radiating pipe 9, extending over the floor 10, is located a shallow sheet-  
80 metal pan 14, and upon the latter rests the usual form of wooden grating 15. By means of the sheet-metal pan 14, dirt falling through the grating 15 is caught and prevented from falling between the folds of pipe 9, the sheet-  
85 metal pan at the same time serving to radiate the heat from pipe 9. In practice the sheet-metal pan is of such a width as to leave a space at its sides for the ascent of heat from beneath the pan.  
90

The supply-tank 6 being located within the car, the water therein will be protected from freezing.

The tank 6 is of a sufficient size to contain water enough to last for a considerable time,  
95 and may be replenished from time to time as occasion requires.

The heat radiated in car 2 from the steam in pipe 9 will be found to thoroughly heat the  
100 car.



The air surrounding boiler 3, heated by the heat of the burners 7, serves to prevent the boiler 3 from becoming cooled and aids in the generation of the steam.

5 The cost of fuel will be inexpensive in this apparatus, the consumption of oil in the tank not being great.

While a specific form of heater is shown and described, we do not intend to limit ourselves thereto, as any suitable arrangement of heater may be employed with the radiating-pipe 9.

15 It will thus be seen that by means of this invention a simple and effective heat-distributing apparatus is provided for a street-car, which will take up little room and may be easily regulated.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

20 1. A street-car-heating apparatus consisting of a heater mounted on the car, a heat-radiating pipe connected with the heater and extending in folds over the floor of the car, a

removable sheet-metal pan extending over 25 the folds of the heat-radiating pipe, and a removable floor-grating extending over the sheet-metal pan, substantially as shown and described.

2. A street-car-heating apparatus consist- 30 ing of a casing 1, mounted in the bottom and side of a car 2, and having an oil-tank 8, with burners 7, located in the bottom of casing 1, a water-supply tank 6, located in the car at its top, a boiler 3, suspended in casing 1, 35 above burners 7, and connected with water-tanks 6 by pipe 5, a heat-radiating pipe 9, leading from boiler 3 and extending over the floor of car 2 in folds, a sheet-metal pan 14, extending over the folds of pipe 9, and a grat- 40 ing 15, resting on the pan 14, substantially as shown and described.

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Witnesses:

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