

GEORGE B. RIGGINS.

Steam-Heater for Railroad-Cars.

No. 128,174.

Patented June 18, 1872.

Fig. 1.

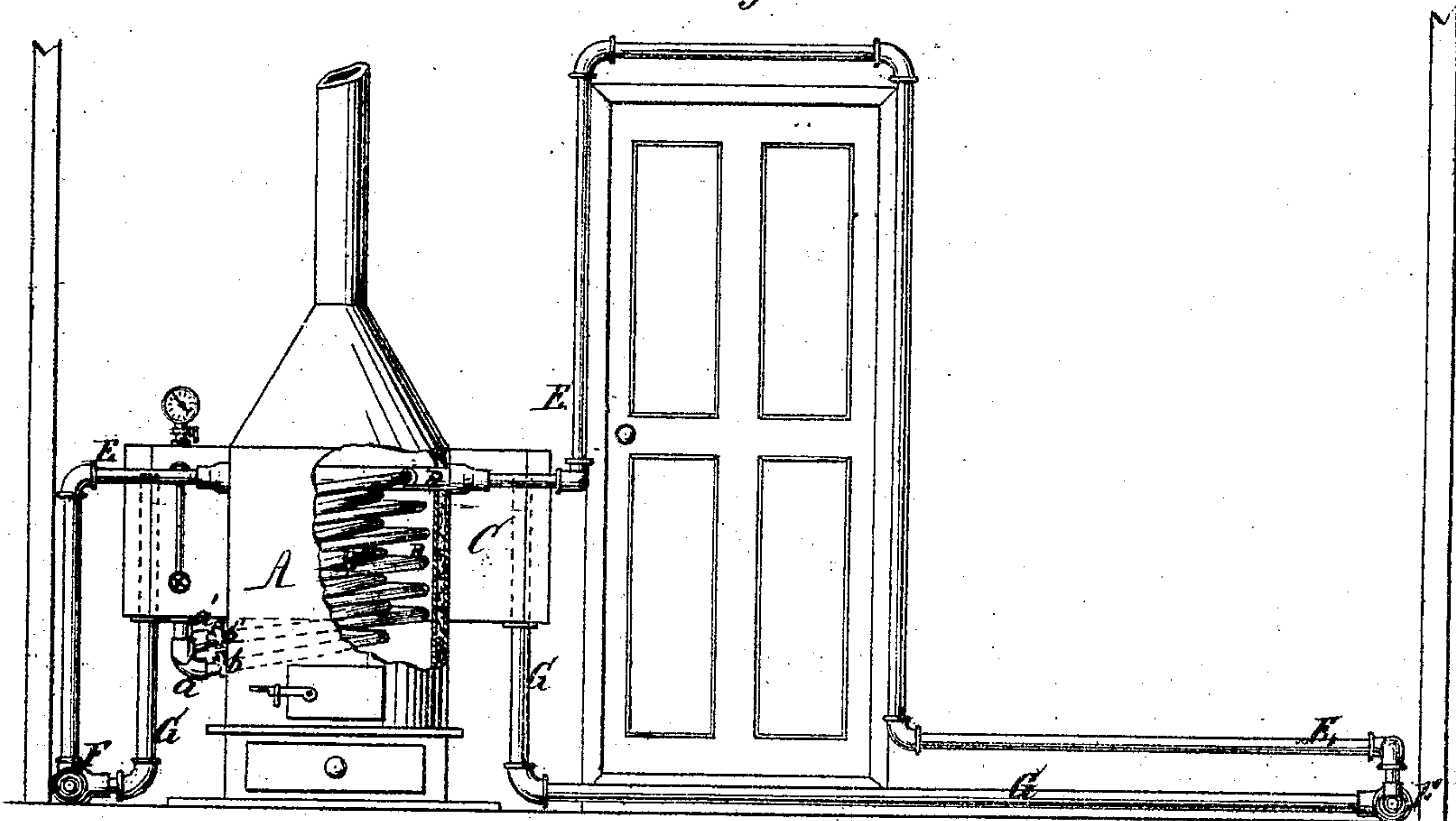


Fig. 2.

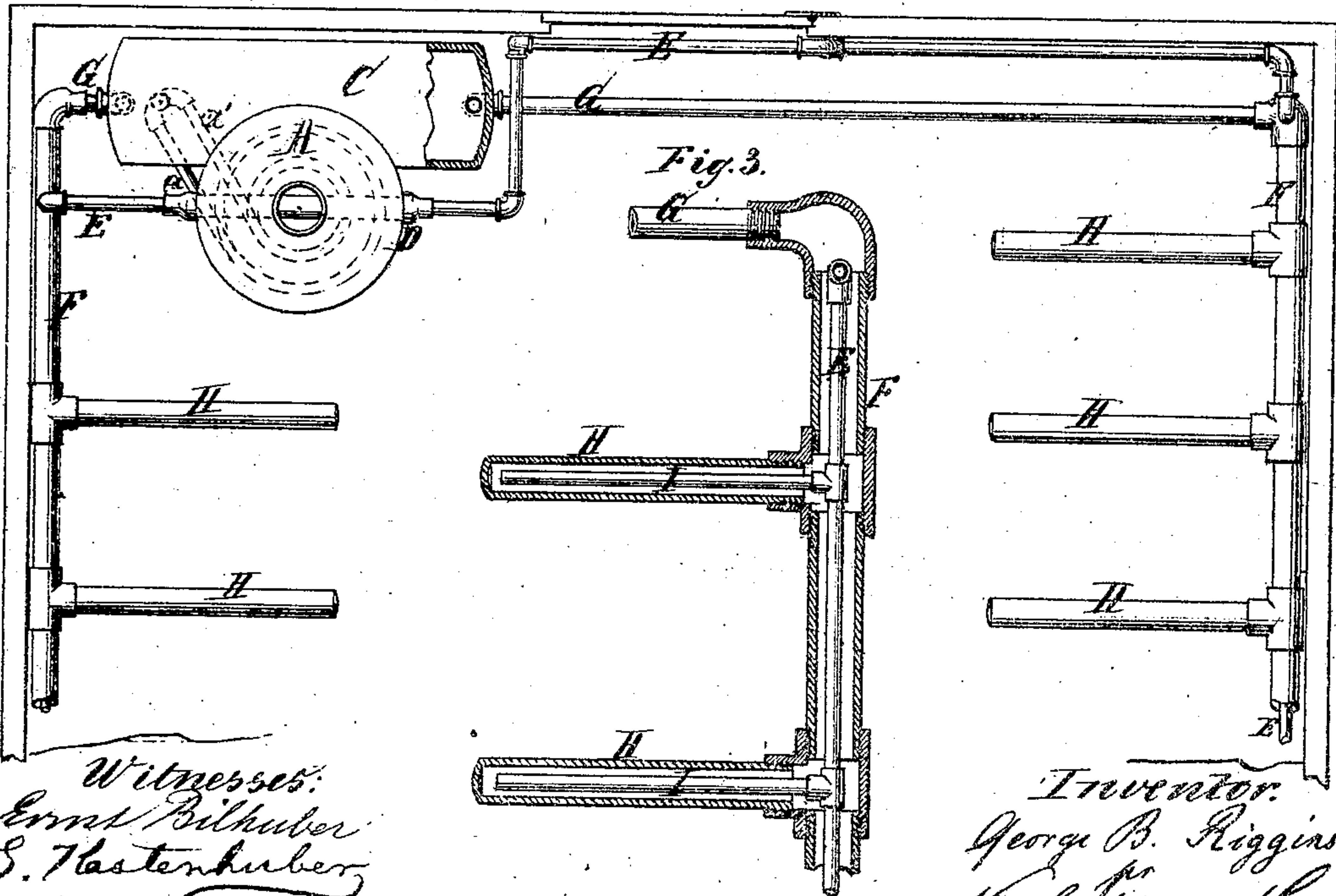


Fig. 3.

Witnesses:
Ernst Bilhuber
C. S. Hastenhuber

Inventor:
George B. Riggins
per
Van Santvoord & Hauff
attys

UNITED STATES PATENT OFFICE.

GEORGE B. RIGGINS, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND
ANDREW VAN HORN, OF SAME PLACE.

IMPROVEMENT IN STEAM-HEATERS FOR RAILROAD CARS.

Specification forming part of Letters Patent No. 128,174, dated June 18, 1872.

To all whom it may concern:

Be it known that I, GEORGE B. RIGGINS, of the city, county, and State of New York, have invented a new and Improved Steam-Heating Apparatus; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a sectional front view of my apparatus. Fig. 2 is a sectional plan of the same. Fig. 3 is a detached section of the steam and return pipe in a larger scale than the previous figures.

Similar letters indicate corresponding parts.

This invention relates to a steam-heating apparatus with a continuous circulation, in which the heating-pipes are situated beneath the level of the steam-generator, the condensed water being returned to the generator partly by the pressure of the steam and partly by a vacuum produced at certain intervals in said generator. My apparatus consists essentially of one or more coils, which are exposed to the action of the fire in a furnace, and which connect at their bottom ends with a supply-tank while their top ends connect with one or more steam-pipes extending through a heating-jacket, which also serves to return the condensed water into the supply-tank, said heating-jackets being situated beneath the level of the generating-coils and of the supply-tank.

In the drawing, the letter A designates a furnace, which contains one or more coils, B B', so that said coil or coils are exposed to the direct action of the fire in the furnace. The lower ends of the coils connect, by pipes *a a'*, with a supply-tank, C, and said pipes are provided with check-valves *b b'* to prevent the steam from passing through them into the supply-tank. The upper ends of the coils B B' connect with a pipe, D, which extends transversely through the furnace and connects with the steam-pipes E E. These steam-pipes extend down beneath the level of the generating-coils B B', while the supply-tank C is situated at such a height that the water contained therein will have a tendency to pass,

by its inherent gravity, through the check-valves *b b'* into the coils. The steam-pipes E E extend through jackets F F, which are closed at their outer ends, while from their inner ends extend pipes G G, through the bottom of the supply-tank and up above the level of the water contained therein.

When my apparatus is to be used for heating a railroad car the radiating-jackets F F are placed close down to the bottom of the car, and they are provided with branches H H, one under each seat. These branches are closed at their outer ends, and through them extend the pipes I I, (see Fig. 3,) branching off from the steam-pipes.

When the apparatus has been supplied with the requisite quantity of water the supply-tank is hermetically closed and the fire is lighted in the furnace. As soon as steam is generated in the heating-coils the jackets F F are heated, and in a short time the water in the coils has completely evaporated. A partial vacuum is formed therein and a fresh supply of water passes into said coils from the supply-tank. At the same time the steam passing through the jackets F F condenses, and the condensed water passes back into the supply-tank partly by the pressure of the steam, which constantly flows in through the pipes E E, and partly by the action of the vacuum formed in the supply-tank, whenever a portion of the water contained therein flows down into the generating-coils.

By this joint action of the steam and of the vacuum I am enabled to raise the condensed water several feet above the level of the heating-jackets, and a constant circulation of water and steam takes place through my apparatus.

It will be readily seen that this steam-heating apparatus is especially adapted to railroad cars, where the furnace and the supply-tank must necessarily be placed above the level of the heating-tubes; but it can also be used in buildings or in all places where a similar disposition of the generator and heating-pipes is desirable.

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

1. The combination of a heating-jacket, return-pipe, and supply-tank with a steam-pipe,

generating-coil, and furnace, substantially in the manner herein shown and described.

2. The branches H, extending from the heating-jacket in a horizontal or inclined direction, in combination with corresponding pipes I branching off from the steam-pipe, substantially as set forth.

This specification signed by me this 21st day of March, 1872.

GEORGE B. RIGGINS.

Witnesses:

W. HAUFF,
E. F. KASTENHUBER.