(No Model.) 2 Sheets—Sheet 1.

W. MARTIN.

DEVICE FOR HEATING RAILWAY CARS BY STEAM.

No. 371,959. Patented Oct. 25, 1887.

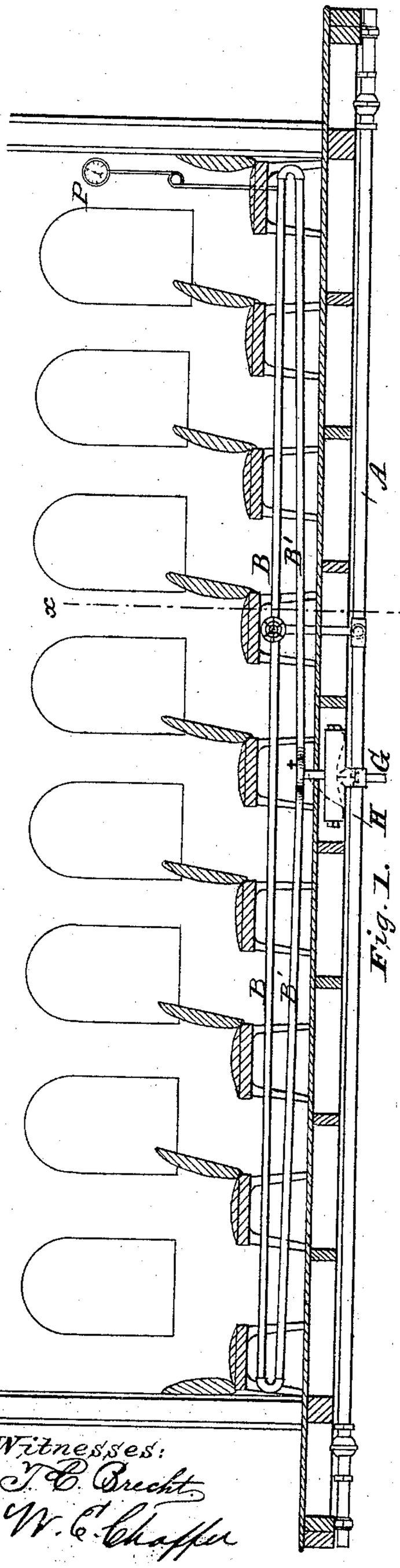

Fig. 1.

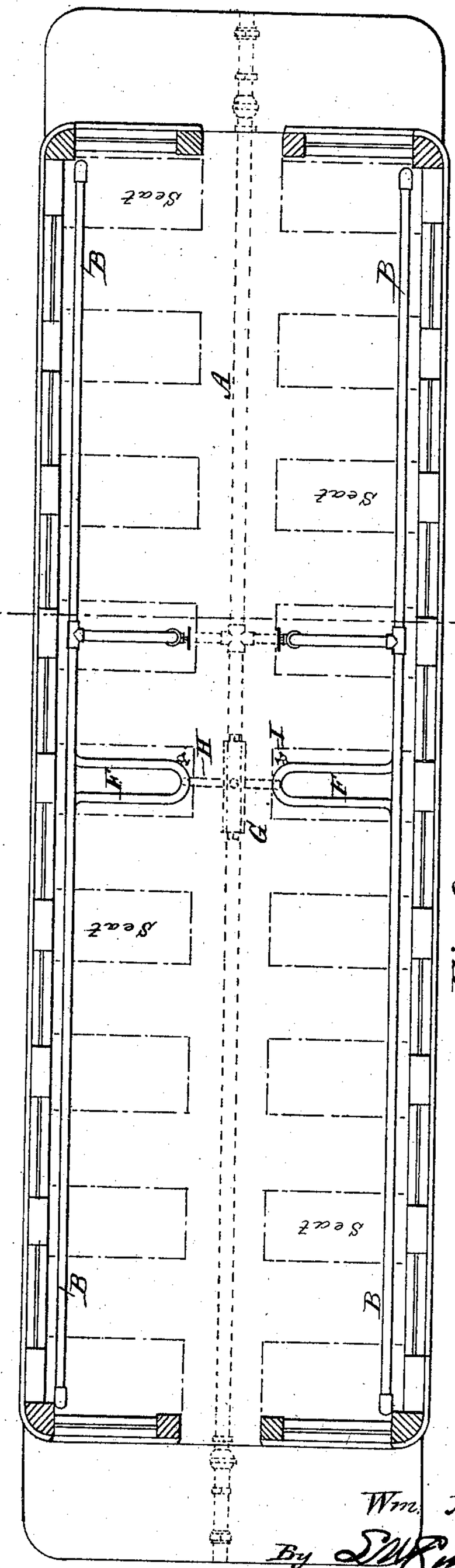

Fig. 2.

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(No Model.)

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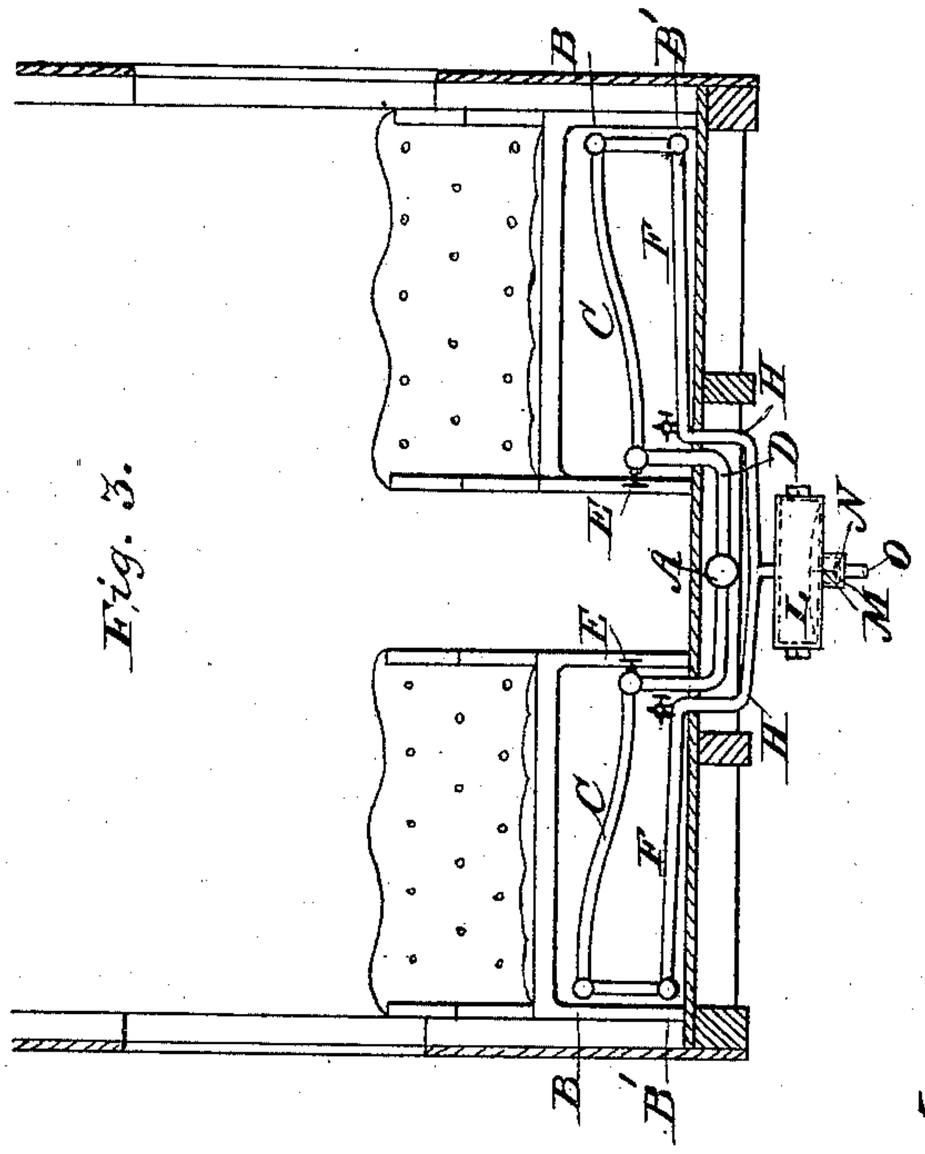

Fig. 3.

Fig. 4.

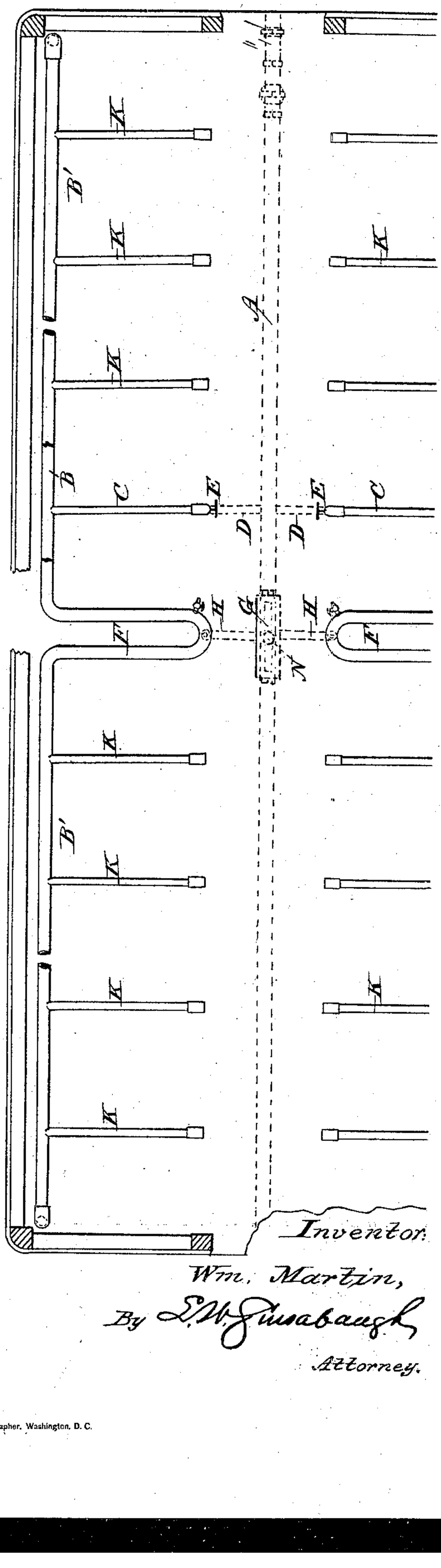

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM MARTIN, OF DUNKIRK, NEW YORK.

DEVICE FOR HEATING RAILWAY-CARS BY STEAM.

SPECIFICATION forming part of Letters Patent No. 371,959, dated October 25, 1887.

Application filed March 30, 1885. Serial No. 160,622. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MARTIN, a citizen of the United States, residing at Dunkirk, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Devices for Heating Railway-Cars by Steam, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to devices or to a system of pipes for heating railway-cars by steam, the object of which is to prevent serious and fatal accidents incident to the derailment and collision of trains by the burning of the cars.

My invention consists in providing the cars with a series or system of steam-pipes which communicate with a main supply-pipe leading to the engine or other steam-supply, each system or series of pipes being connected to a self-adjusting steam and water trap, whereby the water of condensation in each car is free to pass out without permitting the steam to escape.

My invention consists, further, in certain details of construction, which will be fully described hereinafter, and pointed out in the claims.

Figure 1 is a longitudinal sectional view of a car with my system of pipes therein. Fig. 2 is a top or plan view. Fig. 3 is a sectional view on the line *x x* of Figs. 1 and 2. Fig. 4 is a sectional view, and Fig. 5 a top or plan view, of a modification. Fig. 6 is a longitudinal sectional view of the steam-trap.

Great difficulty has heretofore been experienced in this class of devices where the cars have been heated by steam to produce a uniform temperature in all the cars of the train. The front cars, or cars nearest the engine or other source of steam-supply, become too hot, while the rear cars, or cars farthest from the source of supply, are too cold. Another great difficulty has been experienced in getting rid of the water of condensation without allowing the live steam to escape. These difficulties I overcome by means of the following devices and arrangement of pipes, valves, traps, &c.

A is the main steam-supply pipe, located under the bottom of the car, which connects with the engine or other source of steam-supply, it being understood that each car is provided with a permanent supply-pipe, A, and connected with the adjacent car by means of flexible couplings. The pipes A are covered with asbestus, or any suitable non-conducting material, which will prevent the steam from condensing during its passage therethrough.

B and B′ are the heating-pipes, which are arranged near the floor against the inside of the car, the upper pipe, B, being placed parallel with the floor of the car, and is supplied with steam from the main pipe A by means of the pipes C and D, the supply of steam admitted to said pipes being regulated or cut off entirely by means of valves E. The ends of the pipes B are connected to the pipe B′ by any suitable coupling, the pipe B′ being so arranged as to slope from each end to the center of the car, in order that the water formed by the condensed steam will be rapidly carried away. The pipe B′ is bent inward at its central portion as far as the outer end of the car-seat, and forms a U-shaped portion, F, said U-shaped portion being connected at its under side with the steam and water trap G by means of the short section of pipe H.

I is an air-cock or valve secured in the U-shaped portion of the pipe, which is opened when the steam is turned on and permits the air within the pipes to escape as the pipes are being filled with steam.

The steam-trap G consists of a cylindrical chamber closed at each end and provided with openings at the top and bottom.

L is a strap or bow-spring rigidly secured at each end to the lower inner walls of the chamber, and to which is secured the valve-stem M of the valve N, said valve being adapted to close the opening in the outlet-pipe O.

The operation of the trap is as follows: When the steam is admitted to the pipes, and finds its way to the trap, the heat of the steam causes the spring L to expand, which draws up the valve in the opening and closes the trap against the further escape of steam. The trap, being below the floor of the car, is rapidly cooled by the motion of the train, so that when the water of condensation within the trap has been cooled to the proper degree the spring L will contract and open the valve, thus allowing the water to escape. It will be noticed that by this construction and arrangement the operation of the steam-trap is rendered automatic.

In the system of pipes just described the cars are warmed by the radiated heat from the pipes B and B′, which in actual practice has given perfect satisfaction; but in order to obtain a greater heating or radiating surface the pipes K are arranged to project from the pipe B′ inward or toward the center of the car, and to occupy a position under each seat or under all the seats, except the seats occupied by the pipes C and F. The pipes K project upward and inward toward the center of the car from the pipe B′, in order that the water of condensation will readily flow back into the pipe B′, and escape from thence into the trap G, as beforestated. The ends of the pipe A are provided with a spherical or ball-and-socket coupling or joint, so as to yield with the motion of the car without doing violence to the pipe A, and the ends of the ball-and-socket joint are joined by any suitable or readily detachable coupling. It will be noticed that by this arrangement or system of pipes the live steam from the engine or other source of supply passes from the main pipe into the pipes B and B′, and that the water of condensation moves or travels in the direction of the flow of the steam. This is an important feature, as the pipes are kept free from the water of condensation.

In order to determine the pressure of steam within the heating-pipes, I secure to the pipe B a pressure-indicating gage, P.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a system of heating railway-cars, the combination, with a car, of a main supply-pipe extending from end to end of the car, a horizontal pipe arranged within the car and extending along the side of the same, a pipe directly connecting the main supply-pipe with the horizontal pipe only, centrally of the car, a pipe connected at both ends with the horizontal pipe and inclining from its points of connection therewith toward the center of the car, said horizontal and inclined pipe forming a continuous passage in both directions, from the point of admission of the steam to said horizontal pipe, to the discharge-outlet for the water of condensation, substantially as and for the purpose set forth.

2. In a system of heating railway-cars, the combination, with a car, of a main supply-pipe located beneath the car, a horizontal pipe located within the car and extending from end to end of the same, a pipe for connecting said horizontal pipe directly with the main supply-pipe only, a pipe connected at both ends with the horizontal pipe and inclining from its points of connection with the horizontal pipe toward the center of the car, a valve for regulating the admission of steam from the main supply-pipe to the horizontal pipe, and a trap with which the inclined pipe connects at its central or lowest point, substantially as and for the purpose set forth.

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

WILLIAM MARTIN.

Witnesses:

CHAS. A. CLUTE,

WILLIAM P. TOOMEY.