J. W. GRAYDON.

Heating Railroad-Cars.

No. 209,166. Patented Oct. 22, 1878.

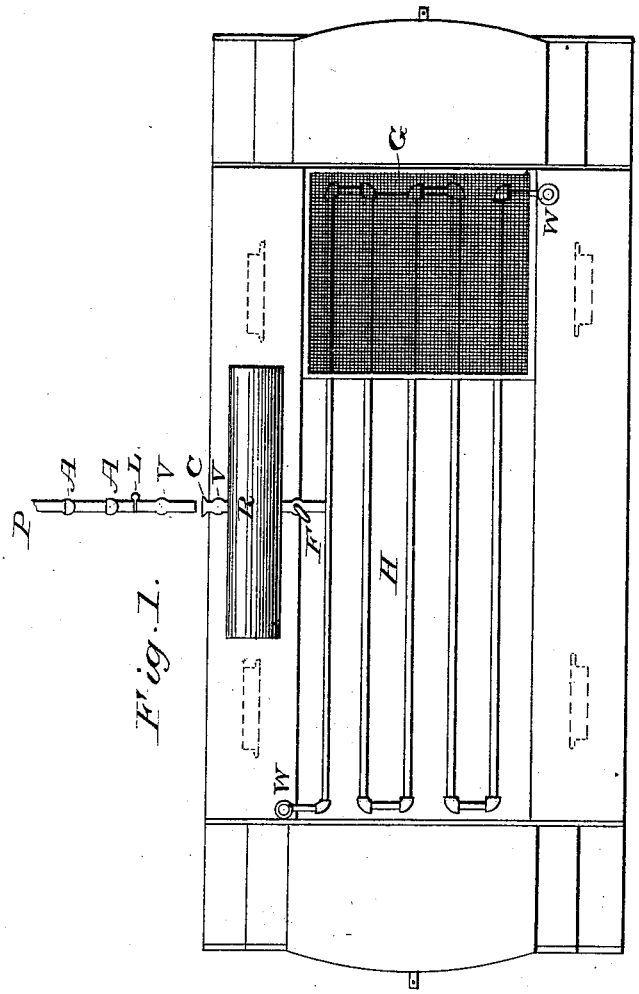

Fig. 1.

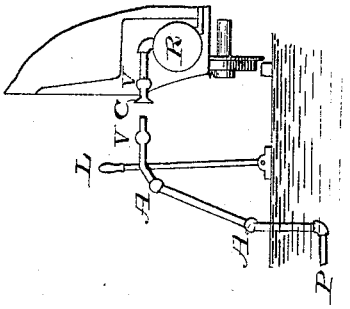

Fig. 2.

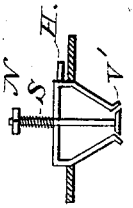

Fig. 3

Witnesses:

Wm. Graydon

Wm. M. Gallagher

Inventor:

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UNITED STATES PATENT OFFICE.

JAMES W. GRAYDON, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN HEATING RAILROAD-CARS.

Specification forming part of Letters Patent No. **209,166**, dated October 22, 1878; application filed September 21, 1878.

To all whom it may concern:

Be it known that I, JAMES W. GRAYDON, of Washington, District of Columbia, have invented a new and useful Improvement in Methods for Heating Railroad-Cars, which improvement is more particularly designed to apply to the heating by steam of passenger-cars, stages, sleighs, and other vehicles drawn or propelled by other power than steam, the same being fully set forth in the following specification and drawings, in which—

Figure 1 represents a horizontal section of a street-car. Fig. 2 is a vertical cross-section of a portion of a car, showing reservoir R underneath the seat, valves V V, coupling C, joints A A, lever L, and the pipe leading to the generator. Fig. 3 is a vertical cross-section through a water-receiver, W, located in the floor of car, provided with a spring-valve, S, and a portion of pipe leading to the heating-coil H.

My invention consists in a steam-generator from which steam is taken and, by means of a compress-pump, supplied at a very high pressure, through my metallic joints and coupling, (patented May 14, 1878, No. 203,611,) to a reservoir placed in any convenient part of the vehicle, when the steam in the generator is of sufficient pressure without the aid of a compress-pump.

From this reservoir the steam is supplied from time to time to the heating-pipes placed over the floor of the vehicle at a sufficient pressure to give the required warmth, and this supply of steam is controlled by means of a valve in the pipe connecting the reservoir with the heating-pipes. The reservoir being supplied with steam at a very high pressure, there will always be sufficient steam to feed to the heating-pipes when the car is away from the steam-generator. This reservoir is so protected as to prevent the radiation of the heat from the steam as much as possible.

At each end of the car, located in the floor, and connected with the heating-pipes, is a small water-receiver, which receives what water is formed by the condensation of the steam. In the bottom of this water-receiver is placed a spring-valve arranged to open at a certain pressure, and the water resulting from condensation is discharged by admitting a sufficient pressure of steam from the reservoir to open this valve, or the valve is opened by hand, whichever is most desirable.

In the accompanying drawing, in which similar letters of reference indicate like parts, R is a reservoir placed under the seat. H are heating-pipes placed over the floor of the car, with light wooden gratings G over them. W W are small water-receivers, located in the floor to receive and discharge the water resulting from condensation. F is the feed-valve, which controls the flow of steam from the reservoir to the heating-pipes. A A, V V, and C are my flexible metallic joints and couplings.

This flexible steam-pipe is operated by means of the lever L when connecting or disconnecting the pipe leading from the steam-generator to the reservoir.

As shown in Fig. 3, the valve is held in its seat by spring S, and is arranged to operate at a certain pressure, either by steam in the water-receiver or by hand from without, and in each case the water resulting from condensation is discharged.

I am aware that cars and other vehicles have been heated by steam, and therefore do not claim the devices heretofore used.

What I claim in a heating apparatus as new, and desire to secure by Letters Patent, is—

1. The combination of the steam-generator, joints, coupling, lever, valves, steam-reservoir, heating-pipes, and water-receivers, arranged substantially as described, and for the purpose set forth.

2. The water-receiver located in the car-floor, and provided with the spring-valve, in combination with the heating-coil and reservoir, substantially as described.

JAMES W. GRAYDON.

Witnesses:

W. W. MCCULLOUGH,

L. MCCULLOUGH.