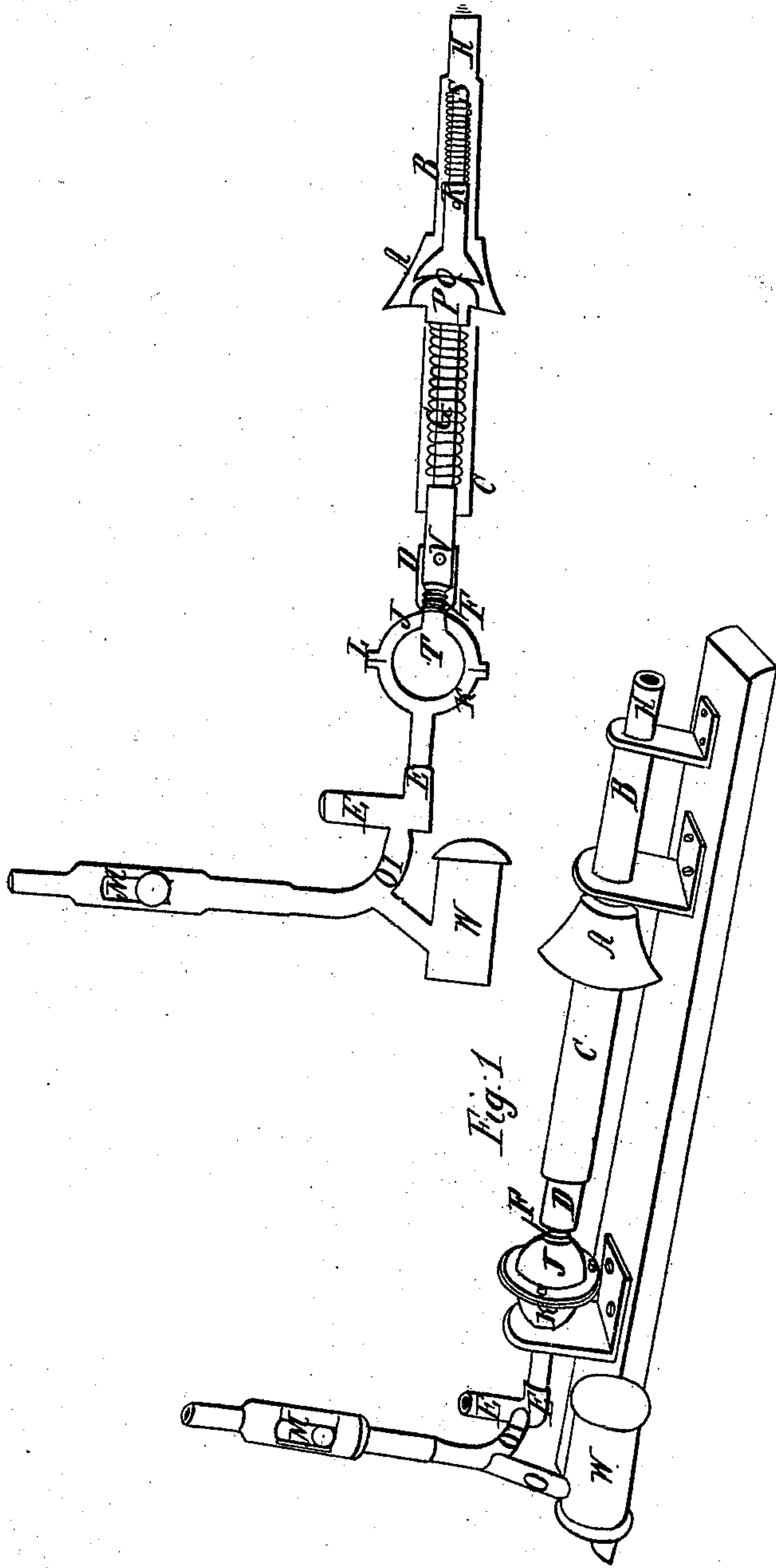


Sheet 1-2, Sheets.

A. C. Curry.
Car Heater.

N^o 87472.

Patented Mar. 2, 1869.



Witnesses;
Wm R Woodin
John M Cable

Inventor;
Archibald G. Curry.

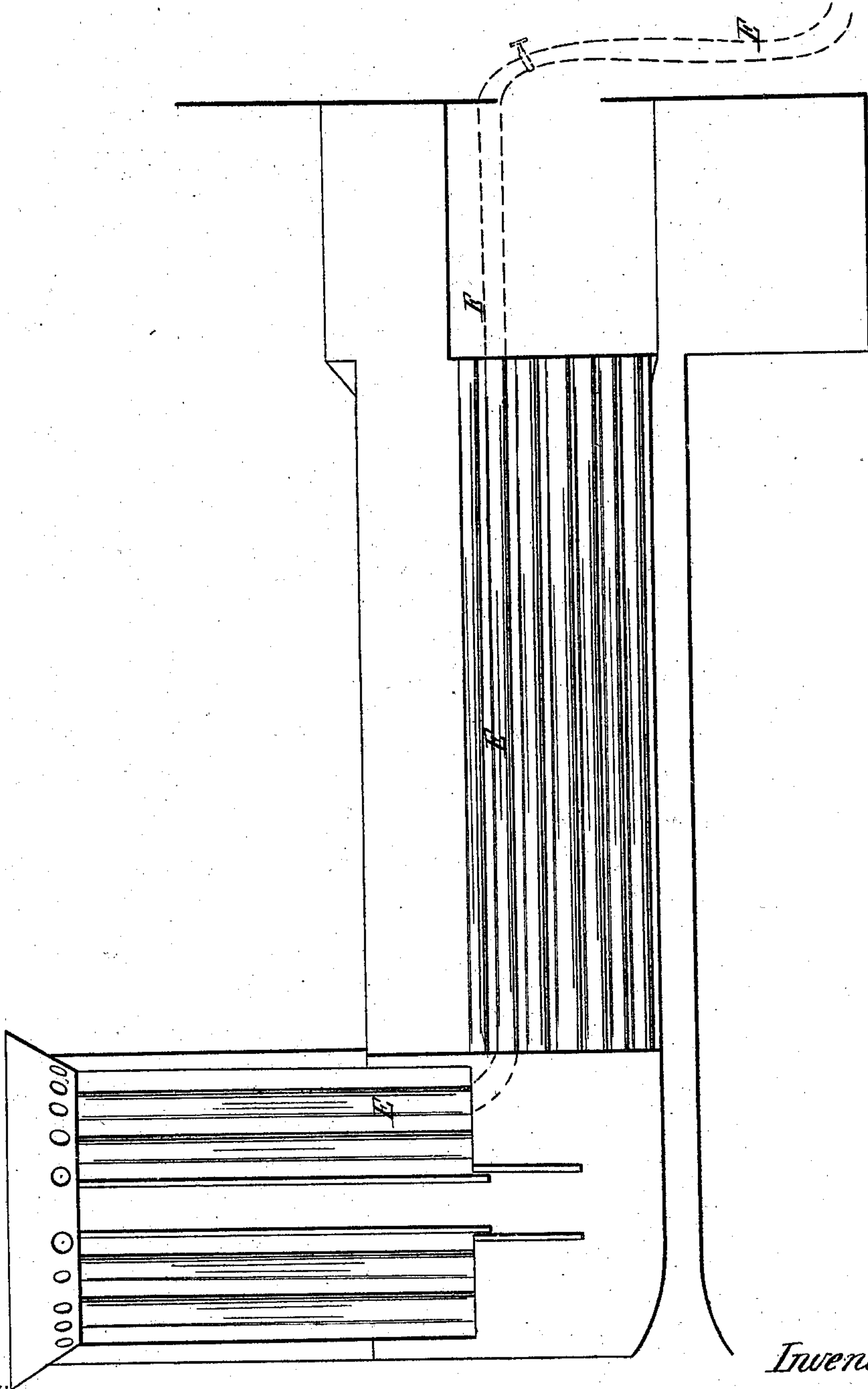
Sheet 2-2, Sheets.

A. C. Curry.

Car Heater.

N^o 87,472.

Patented Mar. 2, 1869.



Witnesses;
Mund. Mund.
George Cowie

Inventor;

Archibald C. Curry

UNITED STATES PATENT OFFICE.

ARCHIBALD C. CRARY, OF UTICA, NEW YORK.

IMPROVEMENT IN RAILROAD-CAR HEATERS.

Specification forming part of Letters Patent No. 87,472, dated March 2, 1869.

Be it known that I, ARCHIBALD C. CRARY, a resident of the city of Utica, in the State of New York, have invented a new and useful Improvement in the Mode or Process of Warming Railway-Cars by Means of Steam.

The nature of my invention consists in the peculiar location of the steam-pipes, by means of which the steam is transmitted longitudinally through the interior of the steam-generator, and also through the interior of the boiler of the locomotive to the cars, and in the peculiar construction of the automatic steam-conduits applied as intermediates between the steam-generator and boiler and cars, and between the several cars in a train of cars; and I hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a perspective view of a cylinder of a locomotive, and of part of an exhaust-pipe, O, self-acting valve M, and the intermediate pipe O' between the exhaust-pipe O and the steam-pipe E E. Fig. 1 also shows the hood A and a part of the pipe to which hood A is attached, and which extends from hood A to the interior of the next adjoining car, to which car hood A is attached by means of pipe H. Fig. 2 represents a sectional view of the intermediate between the steam-pipes of two adjoining cars, and its connection, by means of a screw, with the steam-pipe E E, and its insertion at its opposite end in hood A. This intermediate is composed of the steam-zone joint I, valve V, spiral spring G, pipe P, and inclosing-pipe C. Fig. 2 also represents a sectional view of socket Q, hood A, tube B, spring S, and pipe H, the cylinder W, exhaust O, valve M, the intermediate pipe O', and a part of steam-pipe E E.

Cylinder W represents the cylinder of the locomotive. O, Fig. 1, represents the exhaust-pipe. Through pipe O so much of the escape-steam as is not applied to warming the cars flows to the vertical chamber of the steam-generator. Pipe O contains the exhaust or escape steam. Near its lower end is the self-acting valve M. The weight of this valve determines the quantity of steam which shall flow into the cars. The valve M is a safety-

valve to the steam-generator, and a steam-gage to the steam which flows through pipe O.

If the steam in the chamber of the steam-generator exceeds the prescribed density in the cars, the excess flows through pipe O' into pipe O, and is discharged through the vertical chamber in the steam-generator. If the steam from the steam-generator, which flows through pipe E E, is of less density than is prescribed for the cars, the steam from pipe O flows through pipe O' into pipe E E till the steam in the chamber and pipes in the cars shall become of the prescribed density. So soon as the steam in the cars is of the prescribed density the steam in pipe O' raises valve M, and the excess of steam flows through pipe O to the vertical chamber of the steam-generator, as above stated.

E E is a part of the steam-pipe, which extends from the steam-chamber of the steam-generator to the intermediate between the cars. Its location is within the steam-generator, and within the boiler of the locomotive, the fire-box, and the engineer's station.

In that portion of the steam-pipe which is within the engineer's house or station there is a steam-cock, which enables the engineer, under the instructions or signals of the conductor, to determine the quantity of steam within the amount prescribed which shall pass through pipe E E to warm the cars.

The steam-zone J and K, Fig. 1, which forms a part of the intermediate between the steam-pipes of the several cars, has in its center a double flange, L, which is united by bolts or other suitable fastenings. This double flange is designed to cheapen the construction of joints J and K, and to afford access to the interior for the purpose of packing this joint.

The segment of a sphere, T, Fig. 2, which is inclosed in zone J and K, Fig. 1, is attached to pipe D by screw F. Through F the steam flows into pipe D to valve V in pipe P. This valve is pressed by spring G acting upon a sleeve moving on pipe P, and thus closes the aperture near the end of pipe P in valve V, Fig. 2. When the cars are coupled pipe D, which is attached by screw T to this valve, presses valve V, Fig. 2, back on pipe P, and thus opens the aperture to the steam in pipe D, and permits the steam to flow through pipe P to Q and to valve R, which is similar to valve

V. When socket Q is pressed back by end of pipe P it opens the valve R and exposes the aperture in R, and allows steam to flow into pipe B by pressing R past its inclosing-flange, and the steam instantly flows from the aperture in R through pipe H to the cars. When the car or cars are uncoupled the pressure from pipe P is removed from socket Q, and the spring S instantly presses forward valve R into the inclosure or flange in pipe B, and the flow of steam from the car is thus prevented, and the warmth of the car is preserved by the steam inclosed in the steam-chamber during a temporary separation of the locomotive from a train of cars. The pressure being removed from steam-pipe P by uncoupling, the car-spring G instantly presses valve V into its inclosure or flange in D, which stops the flow of steam from pipe E E through T and D. The cylinder or tube C incloses spring G, Fig. 2, and pipe P, and part of the pipe D, Fig. 1, and retains them in their relative positions, and protects spring G from the weather. Hood A, Fig. 2, guides the end of pipe P into the socket Q.

A part of pipe O is removed, to show the structure and operation of valve M.

I disclaim the use of hot air in heating railway-cars.

I am aware that attempts have been made heretofore to provide a connection between railroad-cars, when steam is used as the heating agent, and that ball-and-socket joints and springs and valves have been sometimes used in these efforts; but in none has a successful device been shown where the connection is made and the flow of steam is cut off automatically, in manner like that herein shown.

Having thus described my invention, what I claim therein as new and useful, and desire to secure by Letters Patent of the United States, is—

1. The self-acting extension and flexible steam-conduit, and its equivalent, constructed substantially as hereinabove set forth, and its application to the transmission of steam from a steam-generator to a train of cars, or from the boiler of a locomotive to the cars, or as an intermediate between the steam-pipes of adjacent cars.

2. The steam-pipe E E, and its equivalent, when located and used substantially as herein set forth, in transmitting steam from the steam-chamber of a steam-generator longitudinally through the interior of the steam-generator, and longitudinally through the interior of the boiler, substantially as herein set forth.

3. Valve M, when used in connection with a steam-generator and steam-boiler as a safety-valve and regulator for the heating apparatus, substantially as set forth.

4. The self-acting or automatic valves V and R, and their equivalents, constructed and used substantially as herein set forth.

5. The self-connecting and self-disconnecting joint formed by the pressure of the semi-spherical end of pipe P into socket Q, with hood A, for the purpose of forming automatically a union between the steam-pipes of two adjacent cars when used or applied substantially as hereinabove set forth.

6. The application and use of springs G and S, and their equivalents, in connection with valves, substantially as hereinabove set forth, in controlling and stopping the flow of steam to and from the railway-cars.

7. Pipe O' is used in connection with pipes O and E E, substantially as herein set forth.

ARCHIBALD C. CRARY.

Witnesses:

WM. R. WOODIN,
JOHN M. CABLE.