(No Model.)

J. F. McELROY.

STEAM HEATING SYSTEM FOR RAILWAY CARS.

No. 454,286. Patented June 16, 1891.

Fig. 1.

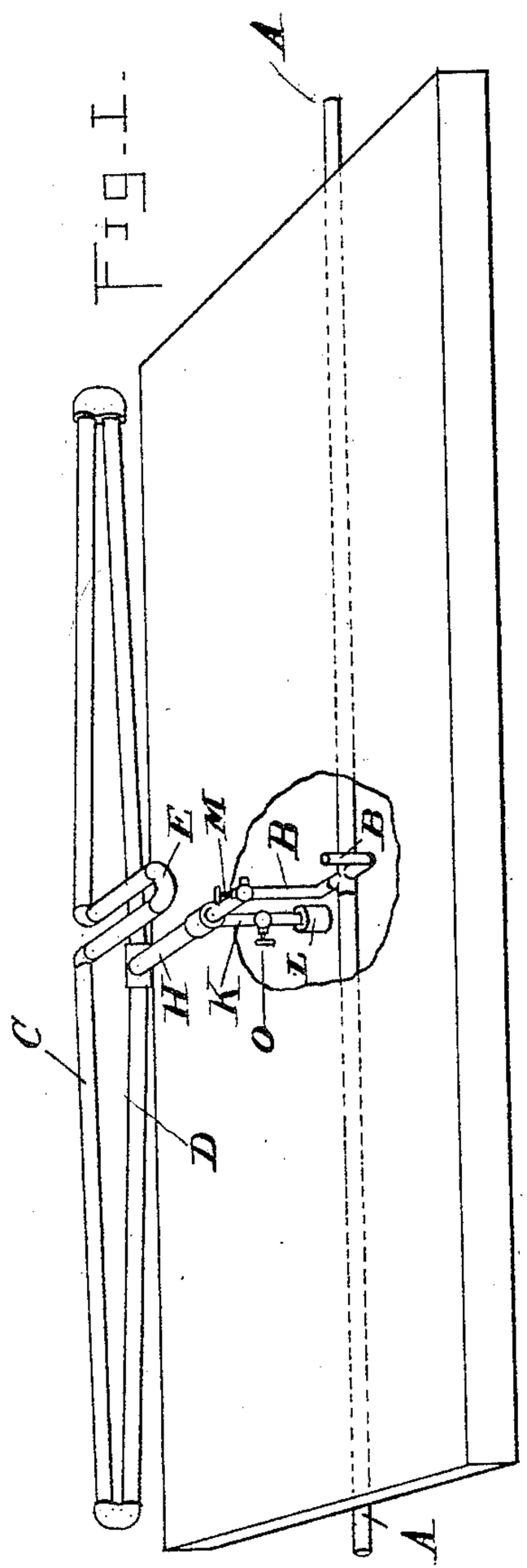


Fig. 2.

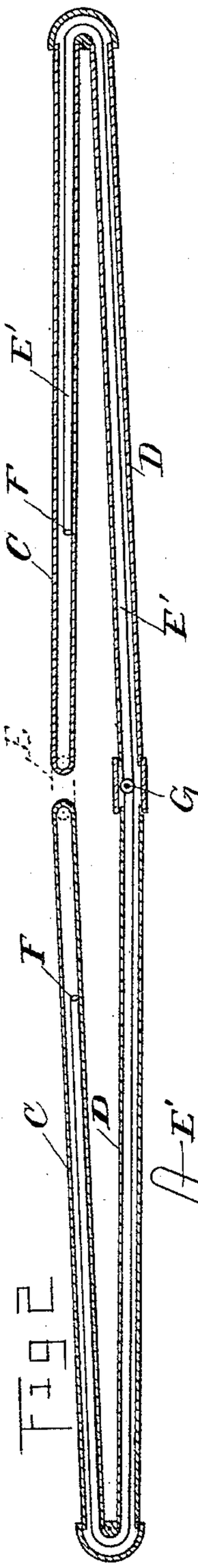


Fig. 3.

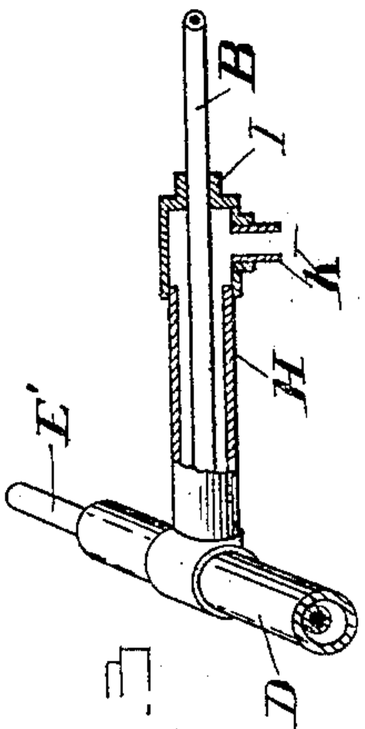
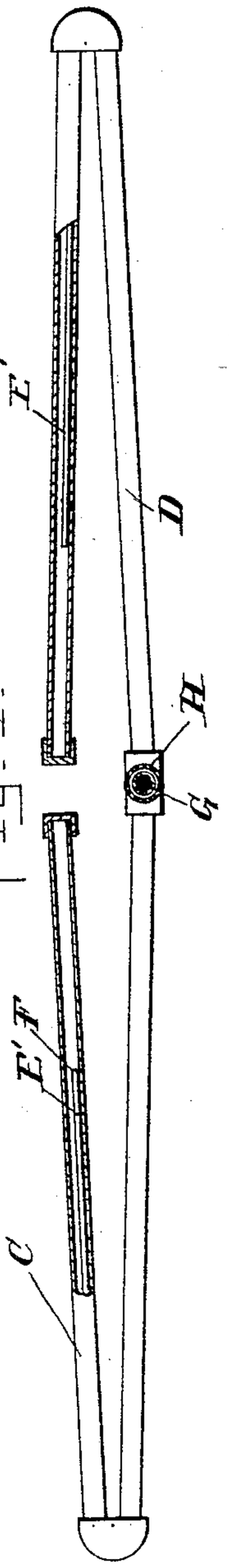


Fig. 4.



Witnesses
A. L. Habbe
P. M. Hulbert

Inventor
James F. McElroy
By James Whittemore
Atty

UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNOR TO THE CONSOLIDATED CAR HEATING COMPANY, OF WHEELING, WEST VIRGINIA.

STEAM-HEATING SYSTEM FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 454,286, dated June 16, 1891.

Application filed March 10, 1890. Serial No. 343,383. (No model.)

To all whom it may concern:

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

This invention relates to new and useful improvements in car-heating apparatus; and the invention consists in the peculiar arrangement and construction of parts whereby a system of car-heating apparatus is obtained in contact with and communicating with a system of hot-water pipes, such hot water being supplied by the condensation of the steam, all as more fully hereinafter described.

In the drawings which accompany this specification, Figure 1 is a perspective view of my improved car-heating apparatus as applied to a car. Fig. 2 is a vertical central section of one of the side coils. Fig. 3 is a detached perspective view showing details of the construction specifically referred to. Fig. 4 is a side elevation of a modified form of one of the side coils, partly in section.

A is the main steam-supply pipe or so-called "train-pipe," connected with any suitable source of steam, such as the locomotive.

B are the branch steam-supply pipes from the steam-pipe A, carrying steam into the radiators within the cars. These radiators are preferably composed of substantially horizontal courses of piping, the upper course C dipping from the middle to the ends and the lower course D from the ends to the middle.

E is a coil of piping arranged in the upper course of the radiators to take up the expansion and contraction in the pipes.

The radiator composed of pipes C and D forms the hot-water-heating coil, and within this radiator I extend the steam-pipes E′ through the lower course of piping D the entire length and through the upper course of pipes C to at or near its middle and highest point, the ends F being open to allow the steam to pass from the steam-pipe into the outer radiating-piping. By arranging the loop E centrally of the upper coil I am enabled to pass the steam-pipe within the water-pipe its entire length, or so much of it as may be necessary. The steam-supply pipe B connects with the steam-pipe E′ at G, its lowest point, from which the steam is distributed both ways. The steam-pipe B, I preferably arrange to enter first the pipe H through the T I, the lower opening of which is provided with a drip-pipe K, extending through the floor and provided, preferably, with a valve O and a suitable steam-trap L. The pipe K communicates with the outer or water coil of the radiator. Suitable valves M and O are arranged to control the inlet of the steam and exit of the water of condensation.

The parts being thus constructed and arranged, they are operated as follows: The valve M being open, steam enters through the steam-pipe B through the pipe H and is distributed in both directions through the steam-pipe E′ to the open ends F thereof, when it escapes into the outer piping C D, and filling the same by passing from the upper middle point to the ends, and from the ends back to the lower middle point. The water of condensation will accumulate, the trap L being properly set to hold it back until it has considerably cooled in the outer piping C D, so that the inner piping will be jacketed a part or the whole of its length, with the water surrounding it, and this water will be kept in a heated condition at all times by the steam-pipe. The accumulated water of condensation will pass off through the pipe K, and steam-trap L may be omitted and a valve O may be opened at suitable intervals to allow the accumulated water to escape. It will be seen that the water of condensation will naturally drip from the outer pipe toward the lower middle portion of the lower pipe, which is ordinarily the coldest point in the system; but as the steam enters at this point, the steam being hottest at this point of entry into the radiator, the water jacketed around the steam-pipe will be practically the same temperature throughout, and thus cause an even temperature throughout the car. By omitting the loop E (shown in Fig. 4) and capping the ends of the upper course of pipe the expansion and contraction will be taken up in

the space between these ends, and thereby avoid the necessity of using the loop.

What I claim as my invention is—

1. In a car-heating apparatus, the combination, with a water-radiator, of a steam-radiator located within and communicating with the same, and a valved exit at the lowest point of the water-radiator, substantially as described.

2. In a car-heating apparatus, a radiator formed of two courses of pipes connected together at the ends and reversely inclined, a steam-pipe entering said radiator at the lowest point, extending therein to at or near the highest point, and communicating with the outer pipe, and a valved water-exit at the lowest point of the radiator, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 23d day of January, 1890.

JAMES F. McELROY.

Witnesses:
EDWIN A. SMITH,
DANIEL D. SEWALL.