(No Model.) 2 Sheets—Sheet 1.

# R. J. WILSON.

## SYSTEM OF AND APPARATUS FOR HEATING CARS.

No. 399,592. Patented Mar. 12, 1889

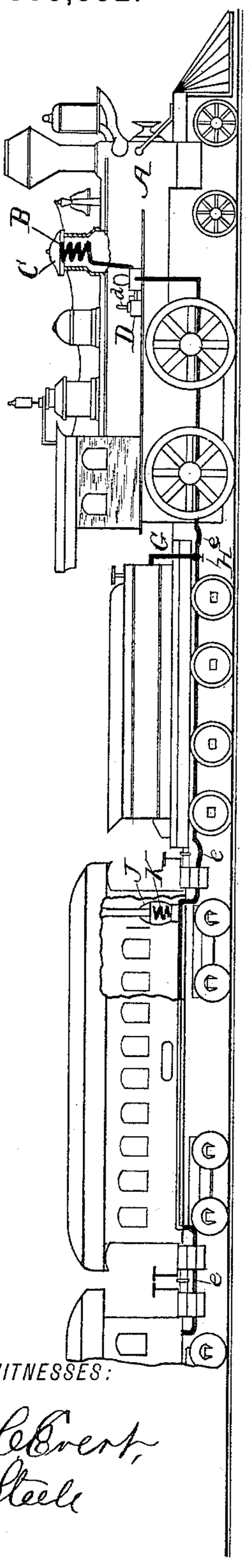

Fig. 1

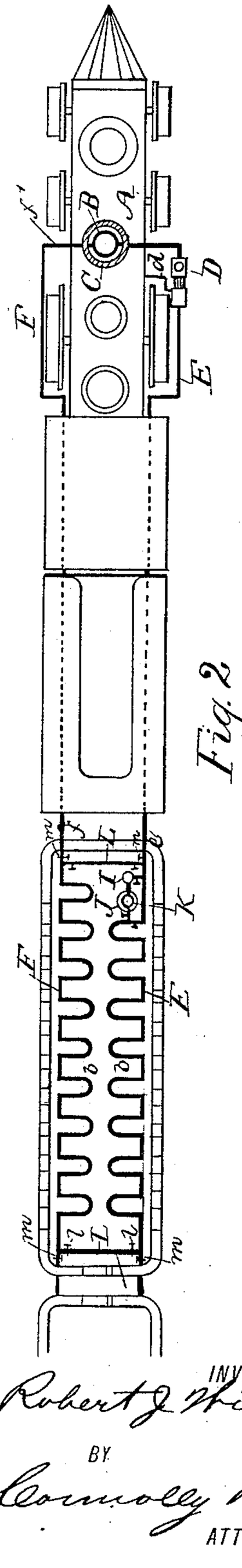

Fig. 2

WITNESSES:

A. C. Brent,
E. D. Steele

INVENTOR,
Robert J. Wilson

BY
Connolly Bros.

ATTORNEYS.

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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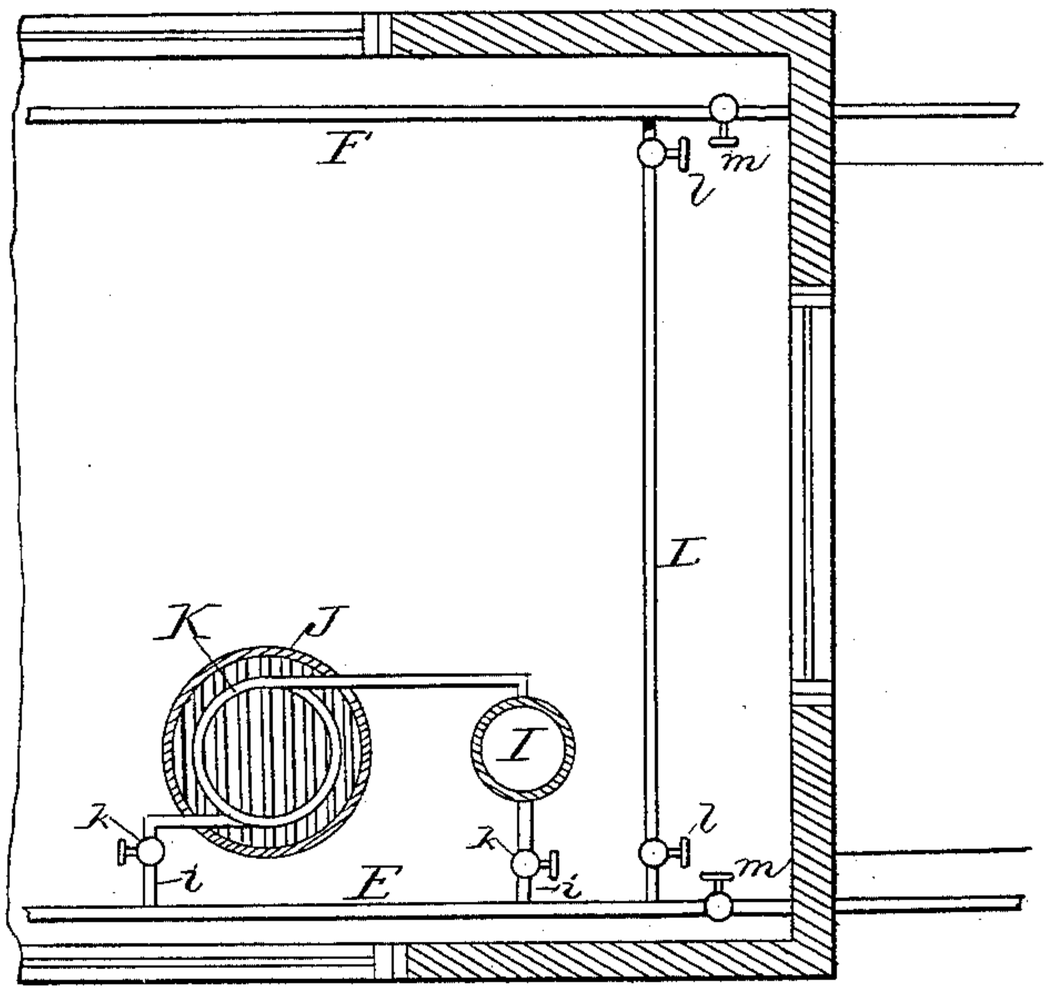


Fig. 3

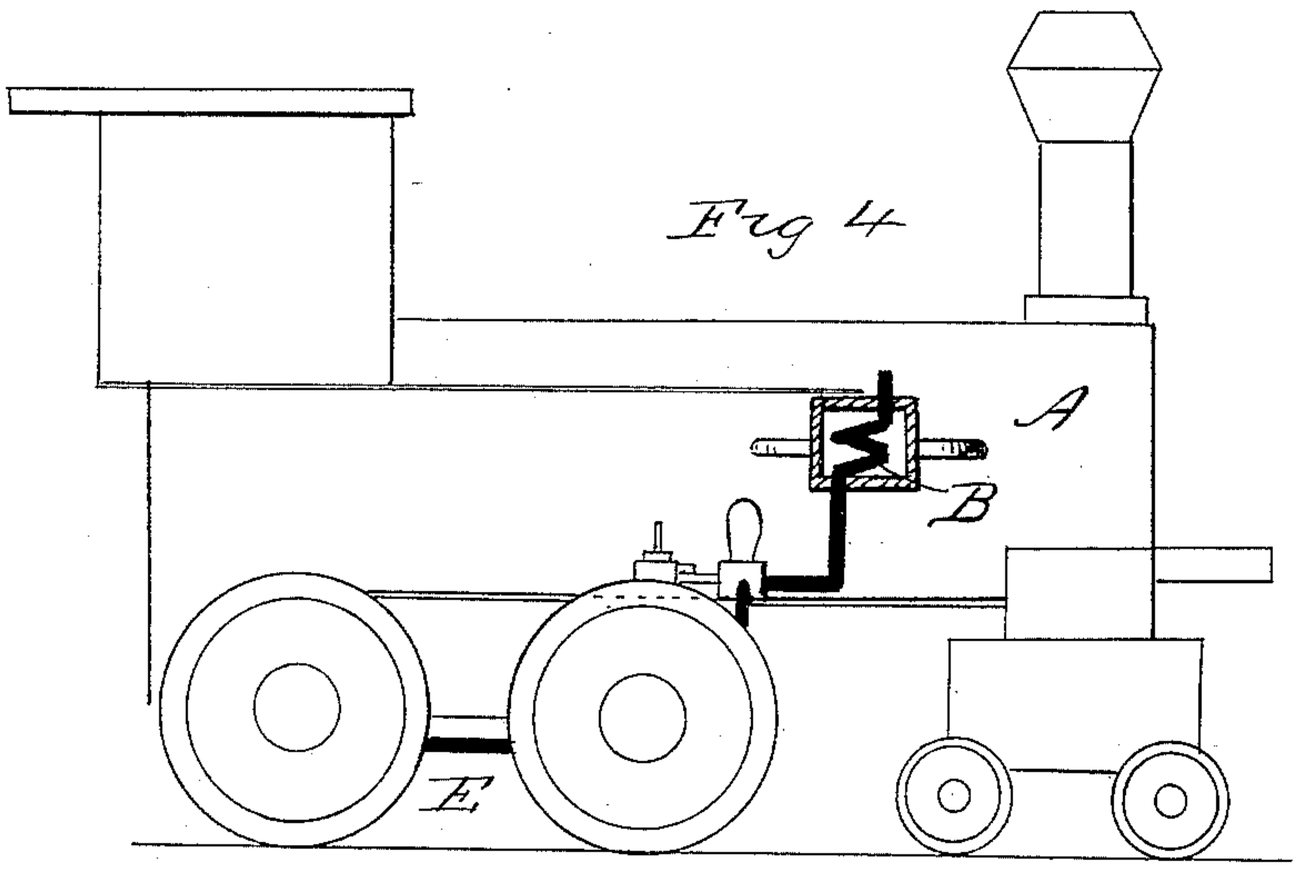


Fig 4

WITNESSES:

A. C. Ewert.
E. L. Steele

INVENTOR.

Robert J. Wilson

BY

Connolly Bros.

ATTORNEYS.

N. PETERS, Photo-Lithographer, Washington, D. C.

# UNITED STATES PATENT OFFICE.

ROBERT J. WILSON, OF PITTSBURG, PENNSYLVANIA.

## SYSTEM OF AND APPARATUS FOR HEATING CARS.

SPECIFICATION forming part of Letters Patent No. 399,592, dated March 12, 1889.

Application filed April 26, 1887. Serial No. 236,207. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT J. WILSON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Systems of and Apparatus for Heating Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification.

This invention has relation to systems of and apparatus for heating cars, and has for its object the provision of means for economically and effectually heating the several cars of a train by and through the medium of the heat generated in the locomotive, thereby avoiding the dangers and disagreeable features of those systems wherein the car is heated from a stove carried on the car.

My invention consists in the combination, with a steam-generator carried on one of the vehicles of the train, of a main water-heater contained in a vessel communicating with said generator and carried on the same vehicle, direct and return pipes connected to said main heater and traversing the other vehicles of the train, and a supplementary heating-circuit consisting of a coil and heater on each car connected to said direct and return pipes by branch pipes.

My invention still further consists in certain novel details of construction and operation, hereinafter described and specifically set forth.

Referring to the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of a locomotive and a train of cars furnished with my improved heating appliances, and Fig. 2 is a horizontal sectional view of the same. Fig. 3 is a horizontal section of a portion of a car and of the supplementary heating system contained therein, and Fig. 4 is a vertical sectional view of a portion of a locomotive provided with a modified form of my invention.

A designates the boiler of a locomotive, and B a coil of pipe suitably disposed inside of the boiler, preferably, as shown, within a steam-dome, C.

D designates a small steam-pump communicating with the coil B and receiving steam from the boiler by a pipe, *d*. While I prefer to use an ordinary steam-pump in this connection, an injector may be substituted therefor, if thought desirable.

E designates the delivery-pipe, which leads from the pump D to and through each of the cars of the train, suitable flexible couplings, *e e*, being provided at the ends of the cars, and F designates the return-pipe, also provided with flexible couplings *f f*, and connected to the coil B by a pipe, *f'*.

The pipe E is connected to the water-tank of the tender by a branch pipe, G, and at the junction of pipes E and G a three-way cock, H, is arranged, so that the water when required may be fed to the heating-pipes or withdrawn therefrom, as desired.

The delivery and return pipes E and F are disposed in the cars, passing along beneath the seats on each side and formed with loops or bends *b b* in the usual manner.

The construction and arrangement of the parts above described constitute a complete and effective car-heating apparatus; but in order to provide for such contingencies as an accident to the coil or pump or the detaching of the locomotive from the train I arrange in each car a water-tank, I, a stove, J, and a coil, K, within the stove, and connect the coil and tank with the pipe E by branch pipes *i i*, having cocks *k k*, and connect the pipes E and F together at the ends of the cars by pipes L L, having cocks *l l*. I also place cocks *m m m m* in the pipes E F, so as to shut them off when desired at those points.

Operation: Under all ordinary circumstances the tanks I and coils K are cut off from connection with the main pipes E and F, and the water heated in the coil B is driven through the pipes E and F by the pump D, thereby heating the cars and returning to the coil B by way of the pipes.

Should the apparatus become inoperative, as by the pump failing, or should it be necessary to detach the locomotive or any of the cars from the train, each car can be separately heated by opening the cocks *k k* and *e e*, and closing the cocks *m m m m*, and then lighting a fire in the stove J. It will thus be seen that each car, while having its heating-pipes normally connected directly with the coil B in the locomotive-boiler, is capable of being

heated in an emergency by means of apparatus carried on the car itself.

A modification shown in Fig. 4 and obviously within the spirit of my invention, is to have the coil, which in Figs. 1 and 2 of the drawings is shown within the boiler of the locomotive, situated in a separate vessel connected to the boiler by suitable pipes, so as to receive hot water or steam to heat the coil.

While I propose to use the pump herein described for forcing the water through the heating-pipes or an equivalent device, it may be found possible to dispense with the same and to depend for proper circulation solely upon the difference in gravity between the water entering the coil and the water leaving the same.

Having described my invention, I claim—

1. In a car-heating apparatus, the combination, with a main water-heating device mounted on the locomotive-boiler and within the same, of a water-circulating system, consisting of direct and return pipes mounted on a car and arranged and adapted to heat the car by direct radiation, and connected directly to said heating device, and a local or supplementary heating circuit comprising a water-tank, stove, and coil mounted on the car, said coil being connected to the main system by pipes having cocks, whereby the car may be heated independently from the heat derived from the locomotive-boiler, substantially as described.

2. In a car-heating apparatus, the combination, with a main water heating and circulating system comprising a water-heating device mounted on a locomotive and the boiler thereof, and delivery and return pipes connected directly thereto and passing through a car, of a supplementary or local heating and supply circuit mounted on the car and connected to said main system, substantially as described.

3. In a system of heating cars, the combination, with a water heating and supplying device consisting of a steam-pump and coil, said coil being located within the steam-space of the locomotive-boiler and connected to said pump, of delivery and return pipes connected with said coil and passing through the car to be heated, and a stove and supplemental coil carried on the car, said coil being connected to the service-pipes by branch pipes having suitable cocks, whereby said car may be heated independent of the locomotive.

4. In a car-heating apparatus, the combination of a steam-boiler carried upon one of the vehicles of the train, a main water-heater contained in a vessel communicating with said boiler and carried on the same vehicle direct, return-pipes connected to said main heater and traversing the other vehicles of the train, and a supplementary heating-circuit consisting of a coil and heater on each car, connected to said direct and return pipes by branch pipes having cocks, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of April, 1887.

ROBERT J. WILSON.

Witnesses:
JNO. F. ATCHESON,
A. A. CONNOLLY.