

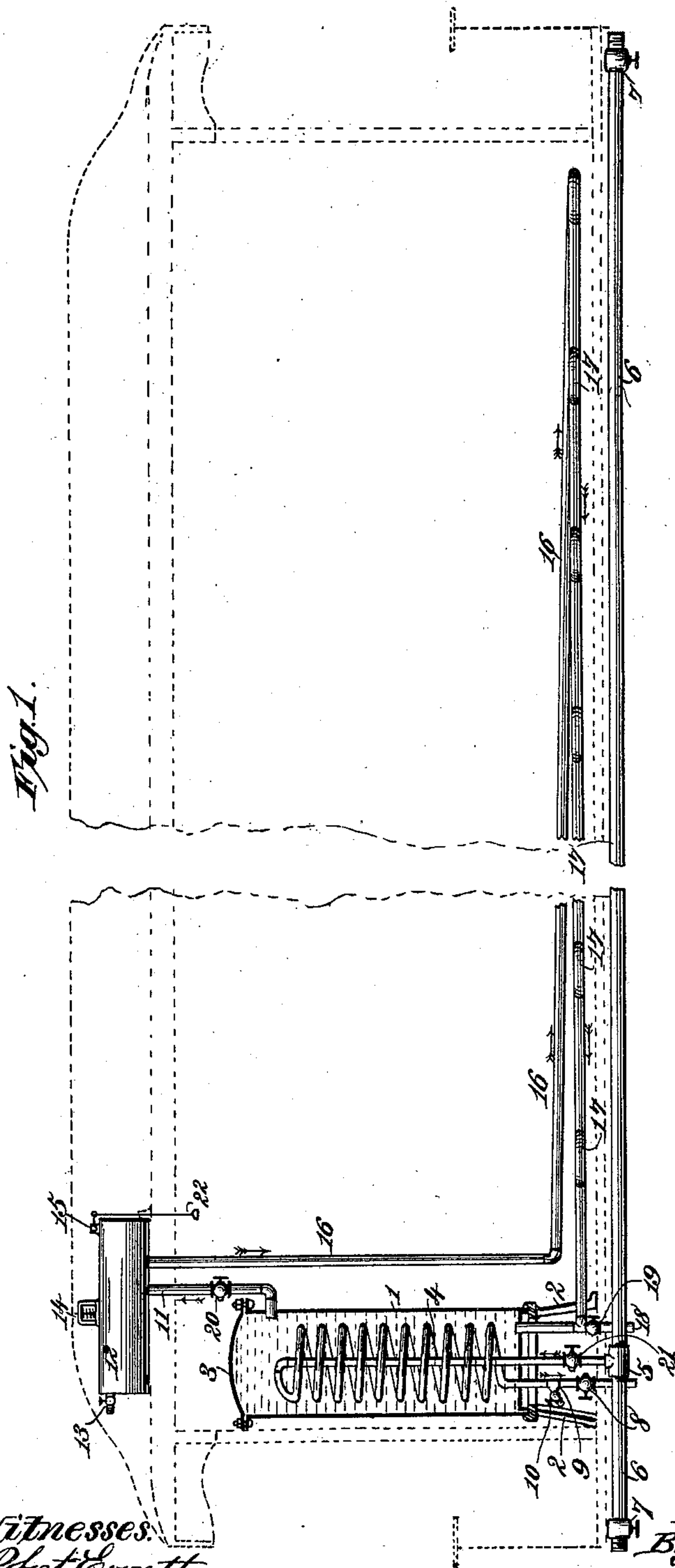
(No Model.)

E. A. LELAND.

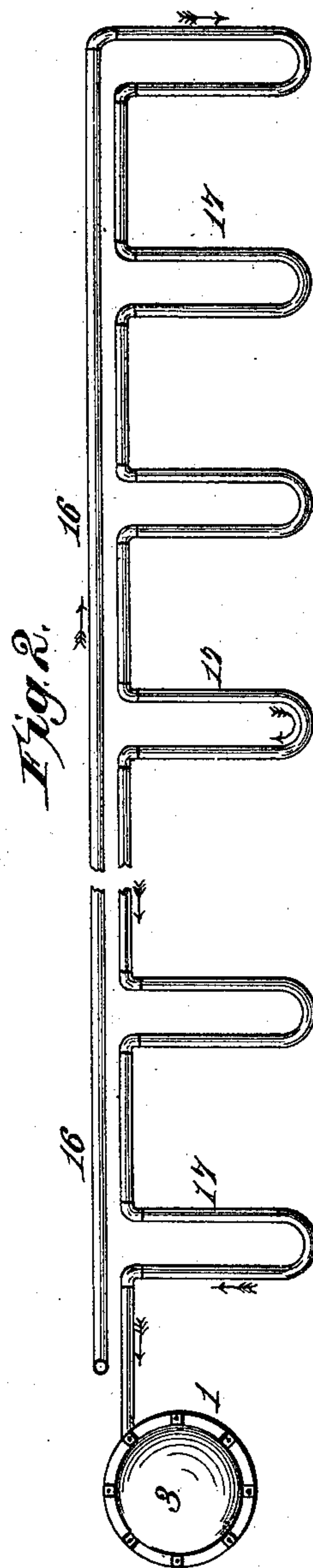
# RAILWAY CAR HEATING APPARATUS.

No. 384,452.

Patented June 12, 1888.



Witnesses:  
 Robt. Corbett,  
 Geo. W. Rea.



*Inventor:*  
*Edwin A. Leland,*  
*by James L. Norris,*  
*Atty*



# UNITED STATES PATENT OFFICE.

EDWIN A. LELAND, OF MERIDEN, CONNECTICUT, ASSIGNOR TO CHARLES C. GLOCK, OF SAME PLACE, AND LEONARD RICHARDSON, OF BROOKLYN, NEW YORK.

## RAILWAY-CAR-HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 384,452, dated June 12, 1888.

Application filed January 18, 1887. Serial No. 224,718. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN A. LELAND, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented new and useful Improvements in Railway-Car-Heating Apparatus, of which the following is a specification.

This invention relates to an improved apparatus for heating railway passenger-cars by means of live steam taken from the locomotive-boiler or from an independent boiler conveniently located exterior to the cars to be heated and conveyed through steam-pipes beneath the cars into a coiled pipe placed in a water-tank at one end of a passenger-car, whereby the water contained in said tank is raised to the desired temperature, and can then be circulated through the car by means of suitable pipes.

My invention consists in the construction and combination of the parts of a car-heating apparatus, as will be hereinafter more fully described, and then pointed out in the claims.

In the annexed drawings, illustrating the invention, Figure 1 is a sectional side elevation of my improved car-heating apparatus, the car being shown by dotted lines. Fig. 2 is a plan view of the water-heating tank and the hot-water-circulating pipes that are located in the car.

In order to enable others skilled in the art to practice my invention, I will now describe the same in detail with reference to the drawings, in which—

The numeral 1 designates a vertical water-heating tank supported on a frame or standards, 2, in one end of a railway passenger-car. This water-heating tank 1 may be of cylindrical or other suitable form, and has a removable head, 3, fastened in place by bolts or otherwise.

Located in the tank 1 is a vertical return-pipe coil, 4, both ends or legs of which are passed through the bottom of the tank and beneath the car-floor. By means of its removable head or top 3 access can be readily had to the interior of the tank 1 for the purpose of removing or replacing the pipe-coil 4, or for making any needed repairs.

One end of the pipe-coil 4 connects with a T-

coupling, 5, in a steam-pipe, 6, that is supported by any suitable means in a horizontal position beneath the car floor. This pipe 6 extends the entire length of the car, and is provided near each end with a hand-valve, 7, whereby either end of the pipe can be closed to prevent the escape of steam when the car is at the rear end of a train. The other end of the pipe-coil 4 is provided beneath the heating-tank 1 with a blow-off cock, 8, and above this blow-off cock is a drip-nozzle, 9, having a cock, 10, both being located within reach of the brakeman or other attendant, so that he can control the discharge of any water of condensation from the coil, the drip-cock 10 being kept entirely closed while the coil 4 is filled with steam, but the cock 8 being then only partially open to allow the escape of dead steam. By these means the pipe-coil 4 can be readily kept filled with live steam as long as the steam-pipe 6 is in connection with a boiler.

Both ends of the horizontal steam-pipes 6 are screw-threaded, as shown, for attachment of flexible couplings, whereby the steam-pipes beneath the several cars of a train can be connected together and brought into communication with the steam-space of the locomotive-boiler, or with an independent or auxiliary boiler located on the tender or in the baggage-car, or at some convenient point exterior to the passenger-cars.

The upper end of the heating-tank 1 communicates with a pipe, 11, that leads to a tank or chamber, 12, in the upper part of the car, or, preferably, above the car-roof, as shown. The upper tank, 12, is provided with a filling-cock, 13, a safety-valve, 14, and an air-valve, 15, of any suitable construction.

A pipe, 16, leads down from the tank 12 into the car, and is extended in a slightly-inclined position along one side of the car to the opposite end, where it communicates with a return-pipe, 17, which passes in a tortuous direction beneath the car-seats, and finally terminates in a short vertical pipe, 18, that leads into the bottom of the heating-tank. This pipe 18 has a hand-valve, 19, that is to be opened when it is desired to empty the heating-tank, the air-valve 15 being also open. By closing a hand-



valve, 20, in the pipe 11 the circulation can be cut off whenever desired, and by means of a hand-valve, 21, in the lower end of the pipe-coil 4, between it and the pipe 6, the supply of steam can be partially cut off to regulate the heat of the car.

To empty the tanks 1 and 12 and pipes 16 and 17, the valve 19 will be opened, and, the valve 20 being also open, air can be admitted to both tanks through the air-valve 15 by pulling on a cord, 22, attached to said valve.

From the foregoing description the operation and advantages of this mode of car-heating will be apparent. It will be observed that there is no fire or steam in the car, the steam-conveying pipes 6 are beneath or exterior to the car, and in case of accident to the train will readily become disconnected from the boiler, and by avoiding the direct introduction of live steam into the car, but employing it instead to heat a body of circulating water, the temperature of the car can be more easily and perfectly regulated, thus adding greatly to the comfort and safety of passengers. The body of heated water in the tank 1 also serves as a center of radiation, while the circulating-pipes leading from said tank contribute to an equable distribution of the heat. Being simple in construction, the apparatus is not liable to get out of order and can be readily repaired when necessary and kept in an effective condition for use. When one or more cars provided with these heating devices are standing in a yard disconnected from a locomotive, they can be readily kept warm and in condition for immediate use by connecting the several steam-pipes 6 with a stationary boiler.

What I claim as my invention is—

1. In a car-heating apparatus, the combination of a water-heating tank located in a railway-car, a return-pipe coil supported in said tank, and having both of its ends extended through the tank-bottom and beneath the car-floor, a steam-pipe located beneath the car-floor and connected with one end or leg of the said pipe-coil for the purpose of conveying live steam into the coil, a blow-off cock, 8, located in the other end or leg of the pipe-coil, a cut-off valve, 21, located in the pipe-coil between the tank and steam-supply pipe, and hot-water-circulating pipes extending through the car and communicating with the water-heating tank, substantially as described.

2. In a car-heating apparatus, the combination of a water-heating tank located in a railway-car, the return-pipe coil 4, supported in said tank and having both ends or legs passed through the tank-bottom and provided with blow-off cock 8, drip-valve 10, and regulating-valve 21, the steam-supply pipe 6, communicating with one leg of said coil, the water-supply tank 12, the valved connecting-pipe 11, and the hot-water-circulating pipes 16 and 17, communicating with the water-heating tank, substantially as described.

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

EDWIN A. LELAND.

Witnesses:

J. A. RUTHERFORD,  
GEO. W. REA.