

R. M. DIXON.  
HEATING SYSTEM.

APPLICATION FILED JULY 14, 1908.

989,581.

Patented Apr. 18, 1911.

2 SHEETS-SHEET 1.

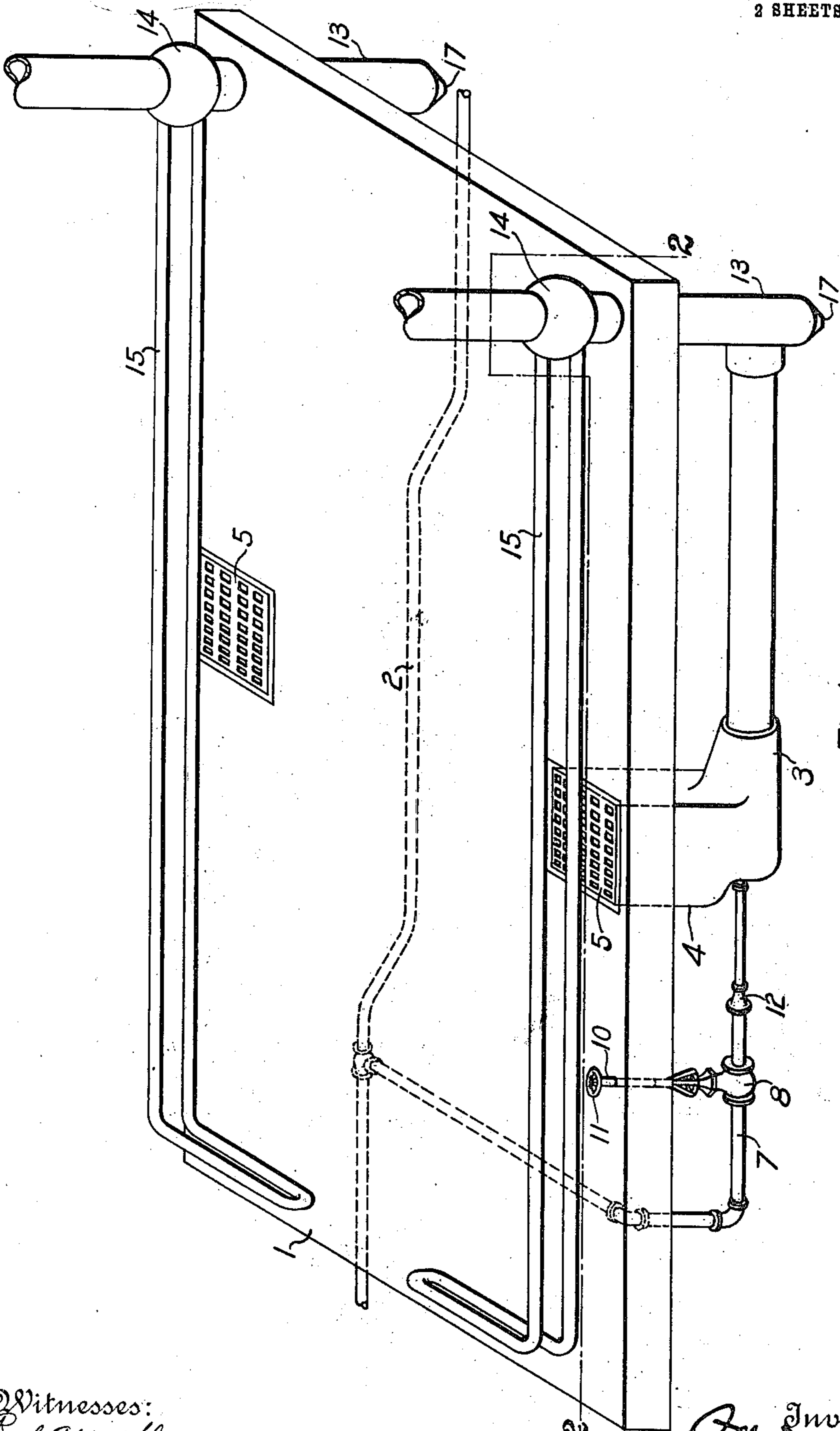


Fig. 1.

Witnesses:  
*Paul Aschoff*  
C. R. Brodix, Jr.

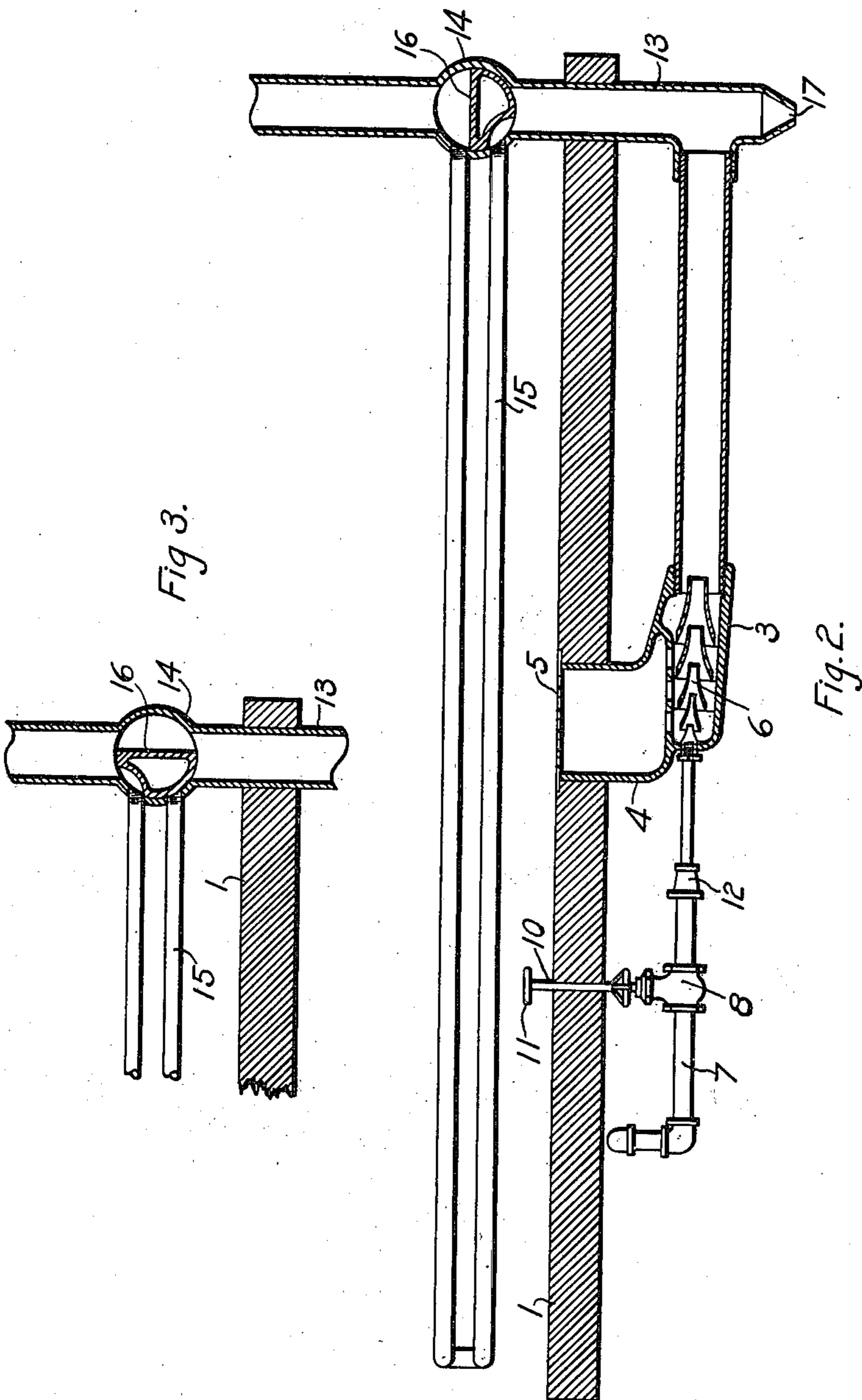
Inventor  
*R. M. Dixon*  
By his Attorneys  
*Wm. C. Phillips*

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2 SHEETS—SHEET 2.



Witnesses:  
*Paul A. Ivoff*  
C. R. Brodix, Jr.

*R. M. Dixon* Inventor  
By *his Attorneys*  
*Swell, Wapfield & Swell*

# UNITED STATES PATENT OFFICE.

ROBERT M. DIXON, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO SAFETY CAR HEATING & LIGHTING COMPANY, A CORPORATION OF NEW JERSEY.

## HEATING SYSTEM.

989,581.

Specification of Letters Patent.

Patented Apr. 18, 1911.

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*To all whom it may concern:*

Be it known that I, ROBERT M. DIXON, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Heating Systems, of which the following is a full, clear, and exact description, such is will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to heating apparatus, and more particularly to heating apparatus of the low pressure type adapted for use in railway cars or similar structures.

One of the objects of the invention is to provide new and improved means for heating and ventilating a railway car.

Another object of the invention is to provide apparatus of the above character such that it may be employed for heating and ventilating the car, or for ventilating the car without heating the same.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings wherein is illustrated one of the various possible embodiments of my invention, Figure 1 is a view in perspective showing the floor plan of a railway car and heating and ventilating apparatus constructed in accordance with the invention. Fig. 2 is a vertical sectional view taken substantially on the line 2—2 of Fig. 1; and Fig. 3 is a similar view of a portion of the apparatus shown in Fig. 2, but showing a valve employed in the apparatus in a different position.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring now to the drawings 1 indicates the floor of a railway car, and 2 the train pipe which extends longitudinally of the floor beneath the same.

3 denotes a feed conduit which is located beneath the floor of the car, into which leads a conduit 4 which extends downwardly through the floor of the car, an apertured

plate as at 5 covering the upper end of conduit 4. In the present instance conduit 4 and the forward end of conduit 3 are formed integral with each other.

An injector formed by a plurality of serially arranged members 6 is located in feed conduit 3 adjacent its point of communication with conduit 4, said injector being connected with the train pipe 2 as by means of a branch pipe 7 having a valve 8, the stem 10 of which extends upwardly through the floor of the car and is provided with an operating handle 11. In the present instance, a reducing valve is interposed in pipe 7 between the train pipe and the injector, said reducing valve being illustrated conventionally at 12. Connected with the opposite end of feed conduit 3 is a conduit 13 which extends upwardly through the floor of the car, thence through the roof thereof and is open to the atmosphere. In the drawings the upper end of conduit 13 and the roof of the car have been omitted. Conduit 13, intermediate its ends, is provided with a valve chamber 14 and leading from the lower portion of this valve chamber is the feed end of a radiating system 15 which in the present instance extends longitudinally of the car, the discharge end of the radiating system leading into the upper portion of valve chamber 14. A valve 16 is located in valve chamber 14, said valve when occupying the position shown in Fig. 2 of the drawings operating to close communication between the feed and discharge ends of the radiating system, whereby the heating medium passing upward through the lower end of conduit 13 will be compelled to pass through the radiating system, thence through the upper end of conduit 13 to the atmosphere. Valve 16 is capable of being rotated within chamber 14 to the position shown in Fig. 3 of the drawings to close communication between the lower end of conduit 13 and the feed end of the radiating system, and to open communication between the lower and upper ends of the conduit 13.

A drip 17 is provided in the lower end of conduit 13 so that any water of condensation collecting in the system will be discharged beneath the floor of the car.

Having thus described the construction of this embodiment of my invention, the operation thereof may now be understood. With

valve 16 in the position shown in Fig. 2 of the drawings, the steam passing through the injector 6 will draw air through conduit 4 from the interior of the car and this air mingled with the steam will pass through feed conduit 3, the lower end of conduit 13, thence through the radiating system 15, the upper end of conduit 13 operating to discharge vapor to the atmosphere. When it is desired to utilize the apparatus for ventilating purposes without supplying heat to the interior of the car it is only necessary to rotate valve 16 to the position shown in Fig. 3, whereupon the mingled steam and air or vapor will pass directly through conduit 13 to the atmosphere exteriorly of the car.

It will accordingly be seen that I have provided apparatus well adapted to attain among others, all the ends and objects above enumerated in a simple yet efficient manner.

One important advantage inherent in the apparatus constructed in accordance with the invention is that a car may be heated and ventilated from the train pipe without the employment of any auxiliary devices, and that the steam supplied from the train pipe may be utilized solely for ventilating purposes.

While I have shown the floor of the car equipped at either side with the heating and ventilating apparatus, it is thought that a description of that employed upon one side thereof will suffice to impart a clear understanding of the invention.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a heating system for railway cars, the combination with a train pipe, of a radiating system located within the car, a feed conduit located beneath the floor of the car, a conduit connected to said feed conduit extending upwardly through the floor of the car and alternatively communicating with said radiating system or with the atmosphere, a valve controlling said communication, an injector located within said feed conduit, means forming communication between the train pipe and said injector, and a

conduit extending from the interior of the car and connected with said feed conduit at a point adjacent said injector.

2. In a railway car, in combination, a train pipe, a ventilator open to the interior of said car, an injector in communication with said ventilator and with said train pipe and adapted to receive steam from said pipe whereby air may be drawn from the interior of said car, a radiating system located in said car, a conduit forming communication between the outlet of said injector and the said radiating system and also with the atmosphere, and means located within said conduit adapted to compel the mingled steam and air to pass through said radiating system before passing to the atmosphere or allow the same to pass directly to the atmosphere without passing through said radiating system.

3. In a heating system for railway cars or similar structures, the combination with the train pipe, of a radiating system located within the car, a feed conduit located beneath the floor of the car, a conduit connected to said feed conduit extending upwardly through the floor of the car and communicating with the feed and return ends of said radiating system and also with the atmosphere, a valve located in said latter conduit between the feed and return ends of said radiating system, an injector located within said feed conduit, means forming communication between the train pipe and said injector, and a conduit extending from the interior of the car and connected with said feed conduit at a point adjacent said injector.

4. In a heating system for railway cars or similar structures, the combination with the train pipe, of a radiating system located within the car, a conduit leading from the discharge end of said radiating system to the atmosphere exteriorly of the car, said conduit being connected with the feed end of said radiating system, a valve located in said conduit adapted to close communication between the feed and discharge ends of the radiating system, a feed conduit connected with said first named conduit, an air-conducting conduit leading from the interior of the car to said feed conduit, an injector located in said feed conduit adjacent the junction therewith of said air conducting conduit, and means forming communication between the train pipe and said injector.

5. In a heating system for railway cars or similar structures, the combination with the train pipe, of a radiating system located within the car, a conduit passing upwardly through the floor of the car and connected with the feed and discharge ends of said radiating system, a valve located in said conduit between the feed and return ends of the radiating system, said conduit being adapt-

ed to conduct the discharge from the said radiating system upwardly through the roof of the car, a feed conduit connected with said first named conduit, an air-conducting  
 5 conduit extending from the interior of the car to said feed conduit, an injector located within said feed conduit at a point adjacent its connection with said air-conducting conduit, and means for conducting steam from  
 10 the train pipe to said injector.

6. In a heating apparatus for railway cars or similar structures, the combination with the train pipe, of a radiating system located within the car, a conduit connected  
 15 with the feed and discharge ends of said radiating system and extending upwardly through the roof of the car, a three way valve located in said conduit between the feed and discharge ends of the radiating  
 20 system and adapted to shut off communication between those parts, a feed conduit connected with said first named conduit, a conduit leading from the interior of the car to said feed conduit, an injector located in  
 25 said feed conduit, and means forming communication between the train pipe and said injector, said injector being adapted to draw air from the interior of the car into said feed conduit whereupon said air, said valve  
 30 being in one position, after passing through the radiating system, is discharged to the atmosphere through said first named conduit.

7. In a heating system for railway cars or similar structures, the combination with the  
 35 train pipe, of a radiating system located within the car, a valve chamber connected with the feed and discharge ends of said radiating system, a three way valve located in said valve chamber and adapted to close  
 40 communication between the feed and discharge ends of said radiating system, a conduit leading from the portion of said valve chamber in communication with the discharge end of said radiating system to the  
 45 atmosphere exteriorly of the car, a conduit extending upwardly through the floor of the car and connected with the portion of said valve chamber in communication with the feed end of said radiating system, the  
 50 construction being such that, said valve being in one position, the heating medium passing upward through said last named conduit will be compelled to pass through said radiating system whereupon the same  
 55 is discharged to the atmosphere, a feed conduit connected with said last conduit, an injector located in said feed conduit, a conduit leading from the interior of the car to said feed conduit and connected with the  
 60 latter at a point adjacent said injector, and means forming communication between the train pipe and said injector.

8. In a heating system for railway cars or similar structures, the combination with the  
 65 train pipe, of a radiating system located

within the car, the feed and return ends of said radiating system being disposed in adjacency, a conduit connected with the feed and discharge ends of said radiating system  
 and extending exteriorly of the car, a valve  
 70 located in said conduit between the feed and discharge ends of said radiating system adapted to effect a closure between the feed and discharge ends of the conduit, whereby  
 75 the heating medium will be compelled to pass from the feed end of said conduit through said radiating system to the discharge end of said conduit, whereupon it is discharged into the atmosphere, said valve  
 80 being adapted to be operated to close communication between the feed end of said conduit and the feed end of said radiating system and to open communication between the feed and discharge ends of said conduit,  
 85 a feed conduit connected with the feed end of said first named conduit, an injector located in said feed conduit, an air-conducting conduit leading from the interior of the car to said feed conduit at a point adjacent said  
 90 injector, and means forming communication between the train pipe and said injector.

9. In a heating system for railway cars or similar structures, the combination with the train pipe, of a radiating system located  
 95 within the car, a feed conduit, an air conducting conduit leading from the interior of the car to said feed conduit, an injector located in said feed conduit at a point adjacent the connection of the latter with the  
 100 conduit which leads from the interior of the car, means forming communication between the train pipe and said injector, and a conduit connected with said feed conduit and open to the atmosphere, said last named conduit  
 105 being connected with the feed and discharge ends of said radiating system, and a valve located in said last named conduit adapted to be operated to cause the mingled steam and air to pass through said radiating  
 110 system to the atmosphere or directly through said last named conduit to the atmosphere.

10. In a railway car or similar structure, the combination with the train pipe, a conduit located beneath the floor of the car, an  
 115 injector located in said conduit and in communication with said train pipe, a conduit leading from the interior of the car to said injector, a conduit connected with said first named conduit and open to the atmosphere,  
 120 a radiating system located within the car, the feed and discharge ends of which are connected with said last mentioned conduit, and means located within said last named conduit adapted to compel the mingled  
 125 steam and air to pass through said radiating system before passing to the atmosphere or allow the same to pass directly to the atmosphere without passing through said radiating system.

11. In a railway car or similar structure, the combination with the train pipe, of a conduit arranged beneath the floor of the car and adapted to conduct steam, a conduit  
5 connected with said first named conduit and extending upwardly through the floor of the car and adapted to discharge to the atmosphere above the roof thereof, a conduit  
10 open to the interior of said car extending downwardly through the floor of the car and connected with said first named conduit, said downwardly extending conduit being  
adapted to draw air from said car, an injector located in said first named conduit  
15 adapted to draw air through said third named conduit into said first conduit, means forming communication between the train pipe and said injector, a radiating system

located within the car, having its feed and return ends connected with said second  
20 named conduit, and a valve located in said second named conduit between the feed and discharge ends of said radiating system, adapted to cause the mingled steam and air  
25 to pass through said radiating system before the same is discharged into the atmosphere or to close the feed end of said radiating system and allow the mingled steam and air to pass through said second mentioned conduit to the atmosphere. 30

In testimony whereof I affix my signature, in the presence of two witnesses.

ROBERT M. DIXON.

Witnesses:

C. H. WILSON,  
PAUL A. WOLFF.