

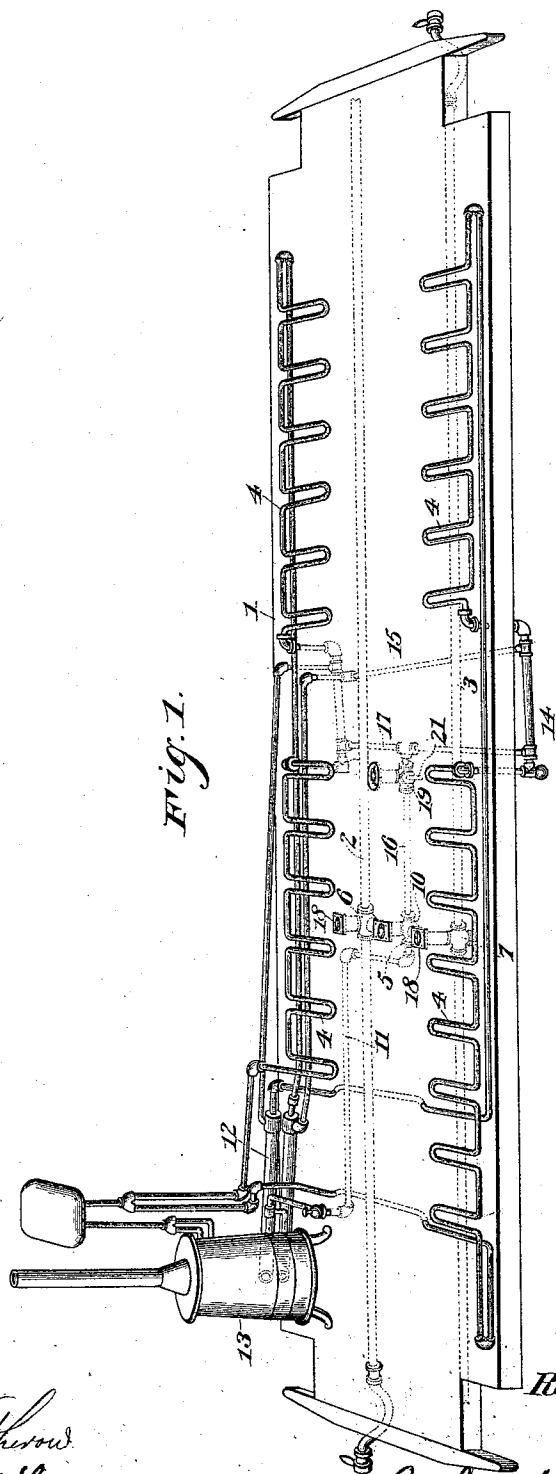
(No Model.)

3 Sheets—Sheet 1.

R. M. DIXON.
CAR HEATER.

No. 540,855.

Patented June 11, 1895.



Witnesses:

M. Withrow
E. G. Gulik

Inventor,
Robert M. Dixon

By *Joseph Kucien*
Attorney

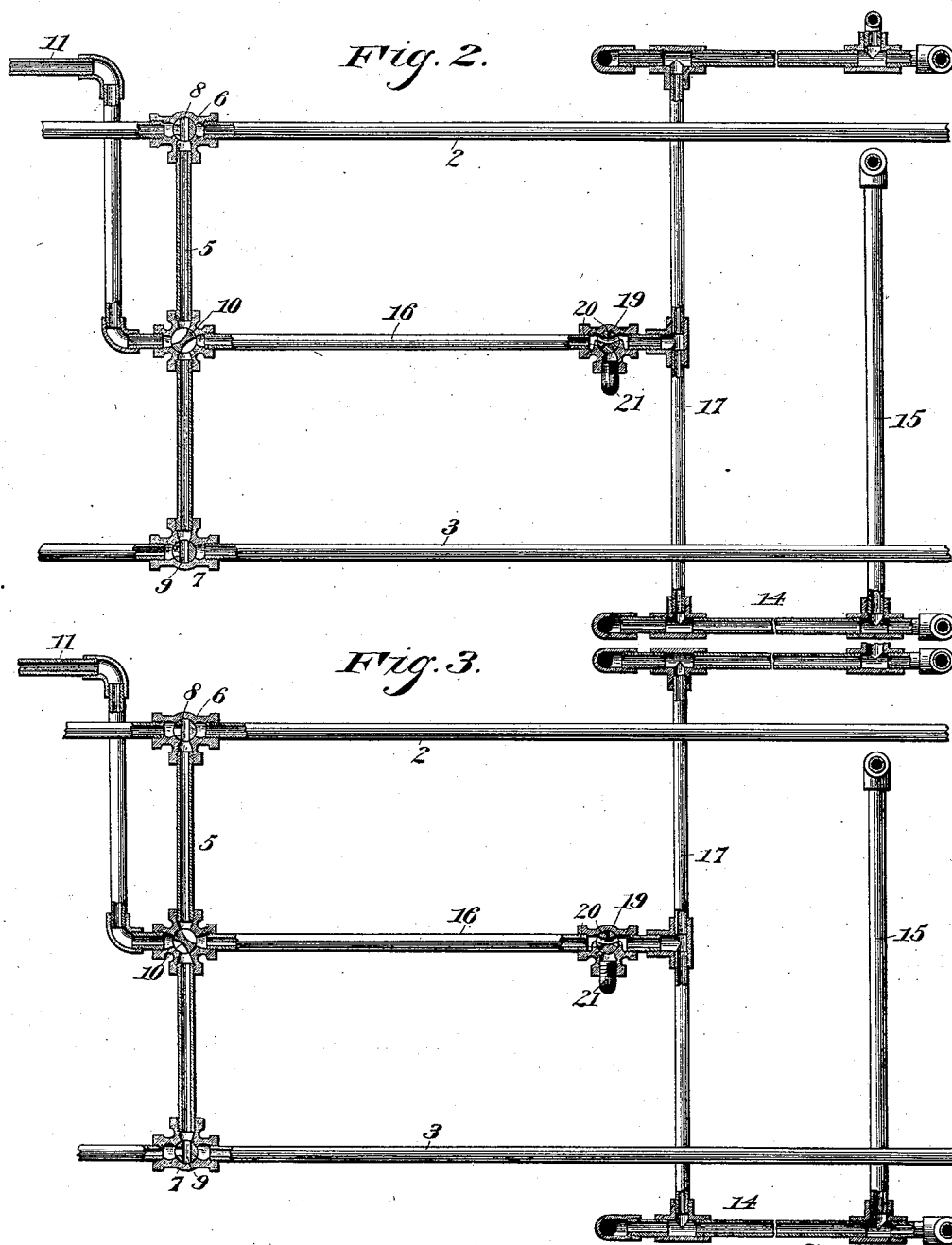
(No Model.)

3 Sheets—Sheet 2.

R. M. DIXON.
CAR HEATER.

No. 540,855.

Patented June 11, 1895.



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(No Model.)

3 Sheets—Sheet 3.

R. M. DIXON.
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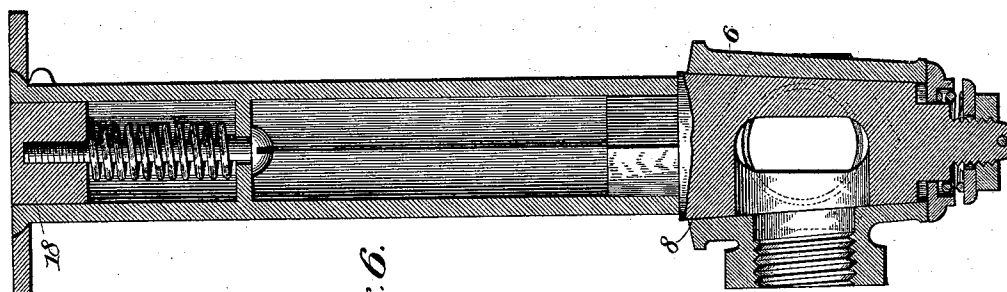


Fig. 6.

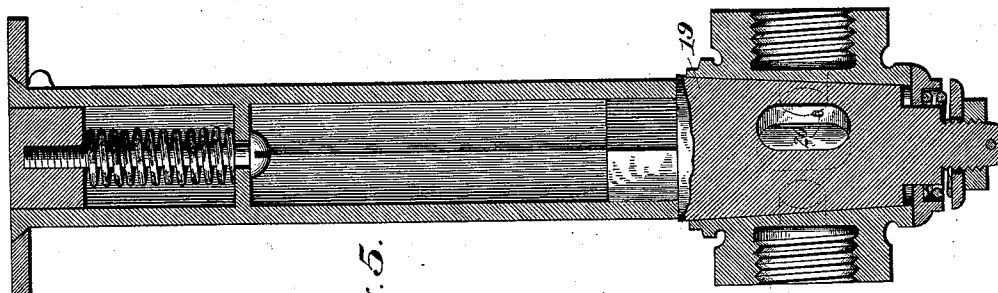


Fig. 5.

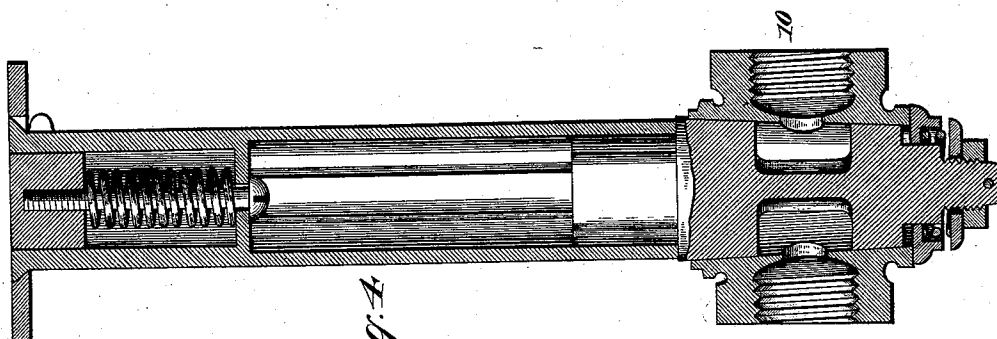


Fig. 4.

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UNITED STATES PATENT OFFICE.

ROBERT MUNN DIXON, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO THE SAFETY CAR HEATING AND LIGHTING COMPANY, OF NEW YORK, N. Y.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 540,855, dated June 11, 1895.

Application filed April 20, 1893. Serial No. 471,207. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MUNN DIXON, of East Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Car-Heaters, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce improvements in a car heater of the type in which steam is supplied directly to a car heating system, or is supplied as a heating medium of a hot water circulating system. It comprehends also such heating systems in combination with a local heater adapted to be used in an emergency, or for any purpose. These various types of heaters are well known in the art, and require no further description.

In all these heating systems, steam is supplied direct from a remote generator, as for instance a locomotive; and by my invention I produce improved apparatus for conveying the water, condensing from the steam supplied by one of the train pipes, back through another train pipe to the locomotive. In this way practically none of the water is lost, and all discharge of water upon the tracks, or in special receptacles, is avoided.

In the accompanying drawings, Figure 1 is a perspective view of my apparatus as attached to a car-floor. Fig. 2 is an enlarged view of a section thereof, showing the cocks in position for receiving steam from one end of the car. Fig. 3 is a similar view showing them in position for receiving steam from the other end of the car. Fig. 4 is a central vertical section of a four-way cock. Fig. 5 is a similar view of the two-way cock. Fig. 6 is a similar view of the three-way cock. The shank or stem of each of the cocks in the last three figures is illustrated in connection with the cocks. The top plates thereof are in practice secured in the car-floor, flush with its surface.

Referring to the figures on the drawings, 1 indicates the position of a car floor.

2 indicates one train pipe, and 3 the other. These train pipes extend from end to end of the car, and are united at their ends by suitable couplings, as in the ordinary way. One of the train pipes in practice supplies steam, and the other conveys away the water of condensation. Either may be the steam supply

pipe, and either the drain or return pipe, depending in each instance upon which end of the car is turned toward the locomotive.

4 indicates radiators upon opposite sides of the car.

5 indicates a cross-over.

6 and 7 indicate valve casings, respectively, which form a union for the respective pipes 2 and 3, and with which also the cross-over is connected at opposite ends.

Within each of the valve casings 6 and 7, three-way cocks 8 and 9, respectively, are fitted.

Between the casings 6 and 7 in the cross-over 5, a four-way cock 10 is located. A steam supply pipe 11 leads from the cock 10 to the jacket 12, from which the two radiators, on opposite sides of the car, are heated. Heat is communicated either directly or through the local heater 13.

The hot water circulating system is shown in the drawings, but as heretofore suggested the steam may be used as a heating medium direct instead of hot water.

The drain system 14 communicates with the steam radiating system either with the jackets 12, as shown in the drawings, as through pipes 15, or with the radiators within the car if the direct system of radiation is employed. The drain system 14 drains toward a common drain pipe 16 connected at one end with a branch 17 of the drain system, and at the other end with the four-way cock 10. Thus the four-way cock is connected with both ends of the steam radiating system, and may be said to be in circuit with it.

In Fig. 2 of the drawings the cocks 8, 9, and 10 are shown in the position for receiving steam and discharging the water of condensation when the car is faced in one direction. In Fig. 3 the relative position of these parts is shown for receiving steam when the car is turned in the opposite direction.

In Fig. 2 the steam is shown as received from the pipe 2, the three-way cock 8, and discharged from the four-way cock into the pipe 11, thence circulated into the drain system the water of condensation returns through the pipe 16 and the four-way cock 10 to the pipe 3. In Fig. 3 of the drawings the steam is shown as coming from pipe 3, the three-way cock 9, and four-way cock 10 into the pipe 11,

thence draining back through the pipes 16 and 5 and the cocks 8 and 10 into the pipe 2.

Inasmuch as all of the cocks are in practice operated from the floor of the car, I prefer to employ a convenient means of indicating the respective positions of the cocks from above. As for example right angular lines on the stem 18 of the three-way cocks, as illustrated, and an arrow on the end of the stem of the four-way cock. This arrow should always point toward the locomotive. Consequently a turn of one hundred and eighty degrees is indicated each time it is brought opposite the indicating mark in line of the locomotive. When the car is the last in a train, the three-way cocks are turned so as to allow the passage of steam into the heating system from the train pipes, and to shut it off from the end of the car. When, however, the car is an intermediate one, three-way cock allows a portion of the steam to pass into the heating system, and at the same time permits the passage of steam through the train pipes into the next car. The lines upon the head of the stems indicate when the valve is set to permit the passage of steam through the train pipes, and when they are set to shut off the steam from the ends of the train pipes.

Inasmuch as the pressure in the return pipe or drain pipe is always much less than that in the supply pipe, the return pipe should have somewhere within it a means of reducing its area, thereby permitting the water of condensation to pass through it; but at the same time keeping the greater part of the steam back in the heating jackets. For this purpose I employ a cock 19 in the pipe 16. This cock may be regulated to permit the passage of a sufficient amount of water into the

return pipe, or if the cock 10 is partially closed, sufficient drainage may be made through the drill hole 20 in the cock without opening the main passage of the cock.

21 indicates an ordinary drain pipe, extending downwardly from the cock 19. It is adapted, when the cock 19 is turned, to blow out the steam pipes, or if the suction apparatus on the locomotive, designed to operate the return pipe is out of order, it may be employed to drain off the water of condensation, as in the ordinary single pipe systems.

I do not confine myself to the details of construction herein shown and described, but reserve the right to modify and vary them at will within the scope of my invention.

What I claim is—

In a railway car, the combination with a double line of steam pipes adapted to communicate with a source of steam supply, of a radiating system within the car provided with supply and drain pipes, valve casings included, respectively, in the line steam pipes, three-way cocks within the valve casings, a cross-over connecting the casings, respectively, of the three-way cocks with a four-way cock, the supply and drain pipes of the radiating system communicating with said four-way cock on opposite sides thereof, and a drainage steam-pressure-reducing cock 19 included in the drain pipes, substantially as and for the purpose specified.

In testimony of all which I have hereunto subscribed my name.

ROBERT MUNN DIXON.

Witnesses:

ELMER E. ALLBEE,
CLARENCE D. SLOCUM.