(No Model.) 2 Sheets—Sheet 1.

R. M. DIXON.

HEATING SYSTEM.

No. 517,035. Patented Mar. 27, 1894.

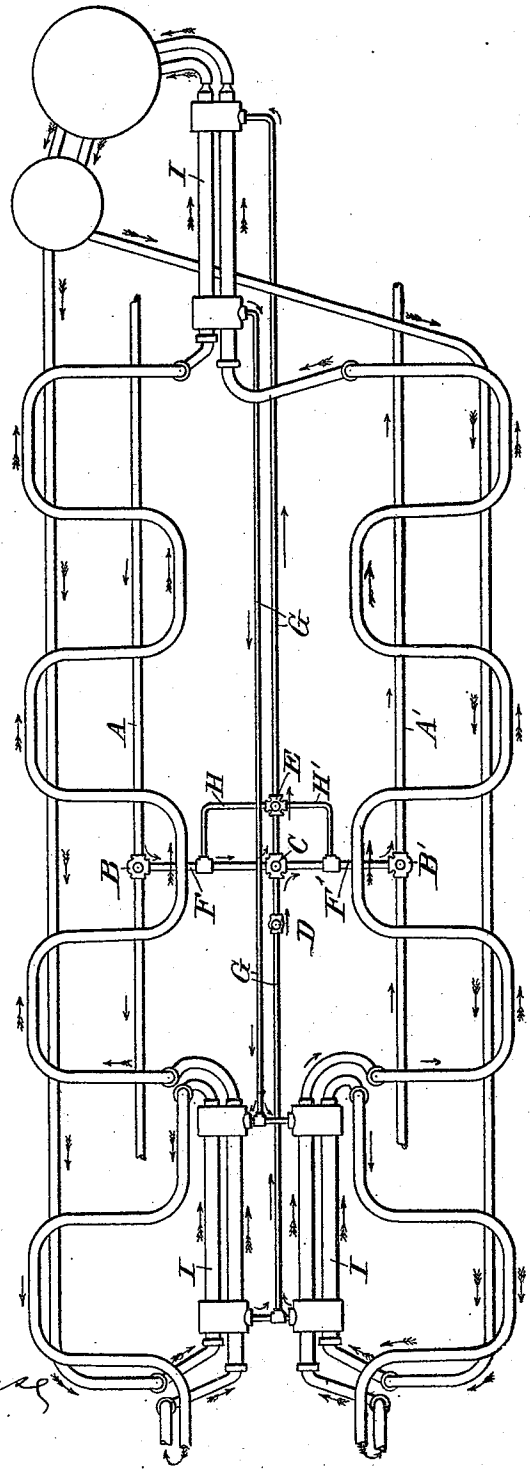

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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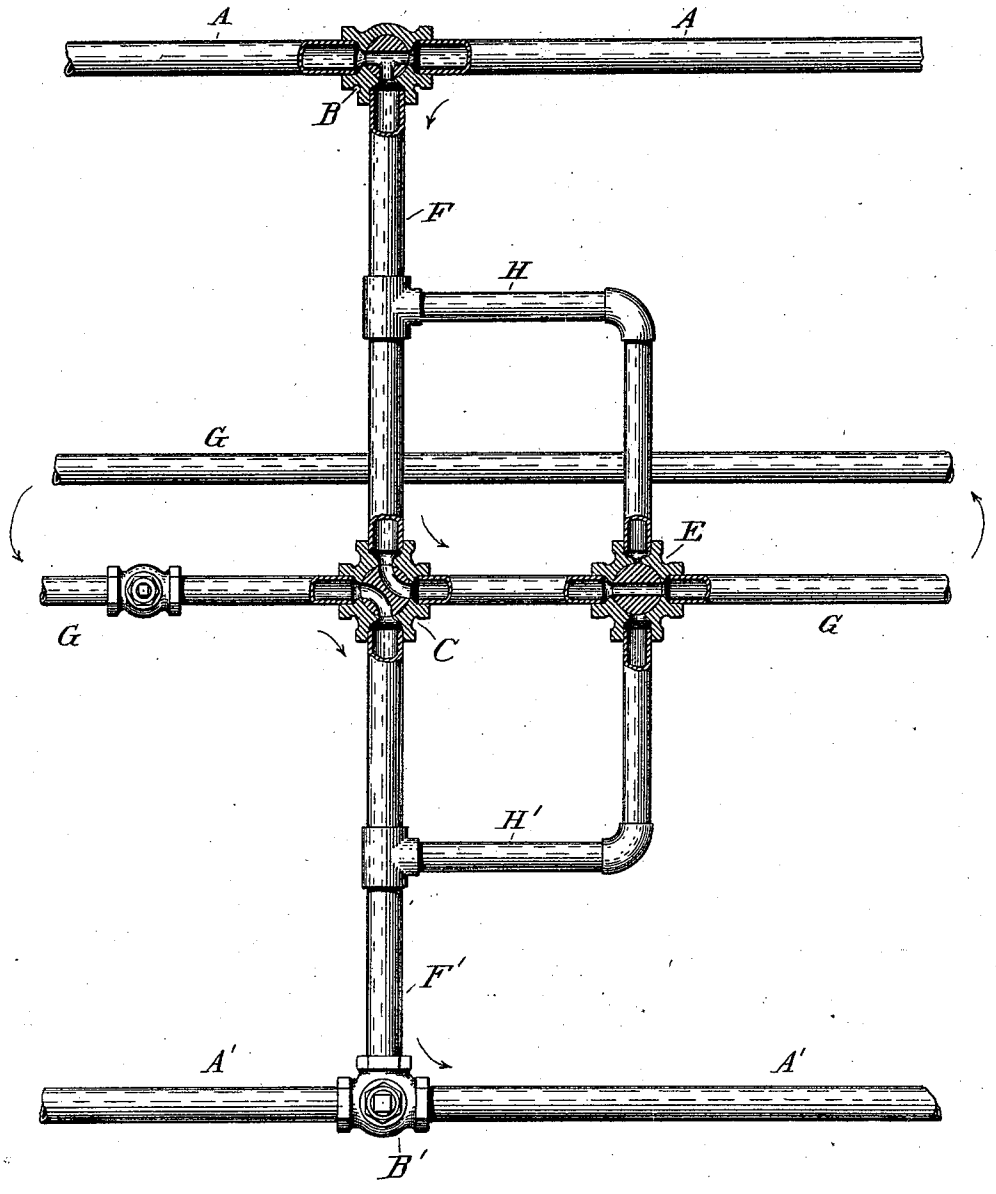
Fig. 2.



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UNITED STATES PATENT OFFICE.

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

HEATING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 517,035, dated March 27, 1894.

Application filed August 24, 1893. Serial No. 483,911. (No model.)

To all whom it may concern:

Be it known that I, ROBERT M. DIXON, a resident of East Orange, Essex county, in the State of New Jersey, have invented an Improved Heating System, of which the following is a specification.

My present invention relates to heating systems, and is especially adapted for use in car-heating systems in which the car is heated either directly or indirectly by a source of steam supply.

The object of my invention is to prevent the condensation of the steam, and the freezing of the water in the steam supply pipes when the steam is shut off from the heater.

To this end my invention consists in maintaining a constant circulation of steam in the supply pipes, regardless of whether steam is admitted to the heater or not. A means for attaining the object of my invention is illustrated in the accompanying drawings, in which—

Figure 1 shows a circulating system as is used in a car of a train, with one form of my invention applied thereto. Fig. 2 is an enlarged detail view, partly in section, of my invention thus applied.

I have shown that type of car-heating system in which steam is conveyed to the car through one train pipe and after use is returned wholly or partly condensed to the engine through a second train pipe.

In the drawings A and A′ are the two train pipes serving as the return and supply pipes; B and B′ three-way train pipe cocks by means of which steam is conducted into and out of the car by steam branch supply and return pipes F F′ respectively.

C is a four-way cock between the pipes F F′ by means of which the direction of the inflowing and outflowing steam may be controlled.

D is a drain valve in the steam transfer pipe system G G.

E is a cock in the steam transfer pipe system for controlling the flow, as will be hereinafter explained.

H and H′ are pipes connecting the cock E with the supply and return pipes on both sides of the cock C, (here shown as connected to pipes F F′ although they may be connected directly to pipes A A′) and under certain conditions forming a connection around it for the circulation of steam. The four-way cock C is constructed so that if turned to admit steam from cock B and transmit it through cock E to the heaters of the car, steam cannot then pass through the cock C to B′ without first passing through the transfer pipe system G G (in which are placed the heaters I I) and the drain-cock D.

The operation is as follows: In the position shown in Fig. 2 the steam comes from the engine or other source of supply by means of the train pipe A, passes through the cock B, through the branch supply pipe F, through the transfer pipes G G, cocks E and D, back to the four-way cock C, thence through branch return pipe F′, cock B′ and train pipe A′ back to the source of supply. It will be obvious that when in the position shown, the cock E will serve to admit steam to the transfer pipe system which communicates with the heaters of the car. In order to shut off steam from the transfer pipe system and the heaters, it will be merely necessary to turn the cock E. If, however, it becomes desirable to close off all steam from the heaters of a car in the rear of a train by closing cock E, some means must be devised to provide for a passage of steam from B to B′, or vice versa, without passing through the heaters, as otherwise, owing to condensation, an accumulation of water would take place in the pipes A A′, and there being no circulation of steam, the water would freeze in cold weather. In order to secure circulation under these conditions, the cock E, is turned until its way comes opposite the side ports in the cock in which the cross connection pipes H H′ are entered. Steam can then flow from A to A′ by means of pipes F, H, cock E, and pipe H′ F′. One of the ports of cock E, near pipe H or H′ or some part of one of said pipes may be of greatly reduced area, so as to allow only a small flow of steam therethrough, as it will be obvious that a small flow will be entirely adequate to keep up sufficient circulation to prevent condensation and freezing.

I do not limit myself to the application of my invention to a car-heating system, nor to the precise construction shown, as it is obvi-

ous that the construction and connections may be greatly varied without departing from the spirit of my invention.

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

1. In a heating system, the combination of fluid supply and return pipes, a transfer pipe system connected thereto, a cross-connection between the supply and return pipes connected to the transfer pipe system, and a cock at the junction of the transfer pipe and the cross-connection for controlling the flow of fluid through the said transfer pipe and cross-connection, substantially as described.

2. In a heating system, the combination of fluid supply and return pipes, a transfer pipe system connected thereto having therein a four-way cock C for controlling the flow of fluid therethrough, a cross-connection between the supply and return pipes connected to the transfer pipe system, and a cock at the junction of the transfer pipe and the cross-connection, whereby a flow through the cross-connection may be maintained when the supply of fluid is shut off from the transfer pipe system, substantially as described.

ROBERT M. DIXON.

Witnesses:
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HARRY M. TURK.