

(No Model.)

2 Sheets—Sheet 1.

R. I. HAMPTON.

VALVE FOR THE STEAM HEATING PIPES OF RAILWAY CARS.

No. 405,959.

Patented June 25, 1889.

Fig. 1.

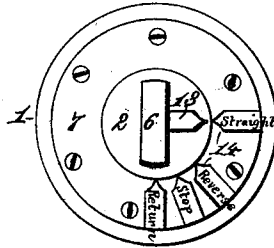


Fig. 2.

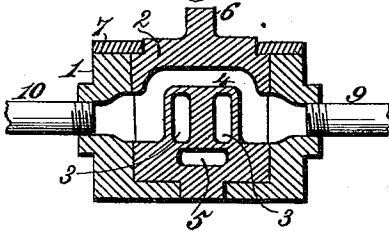


Fig. 3.

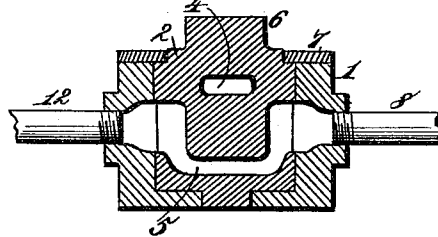
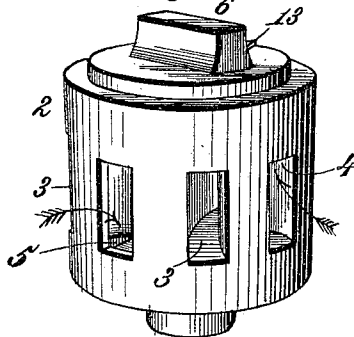


Fig. 4.



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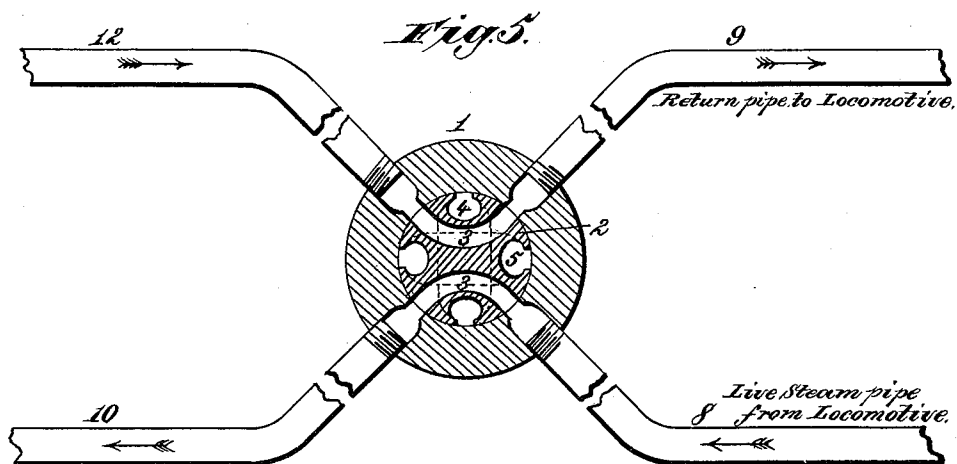
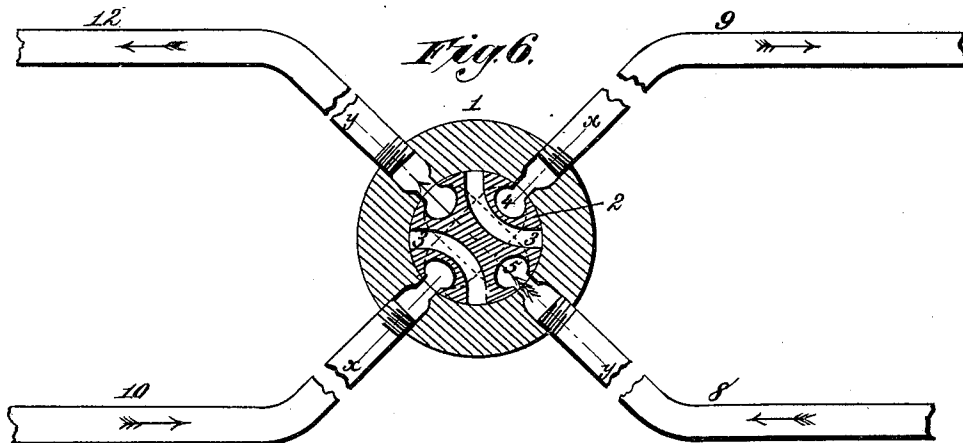
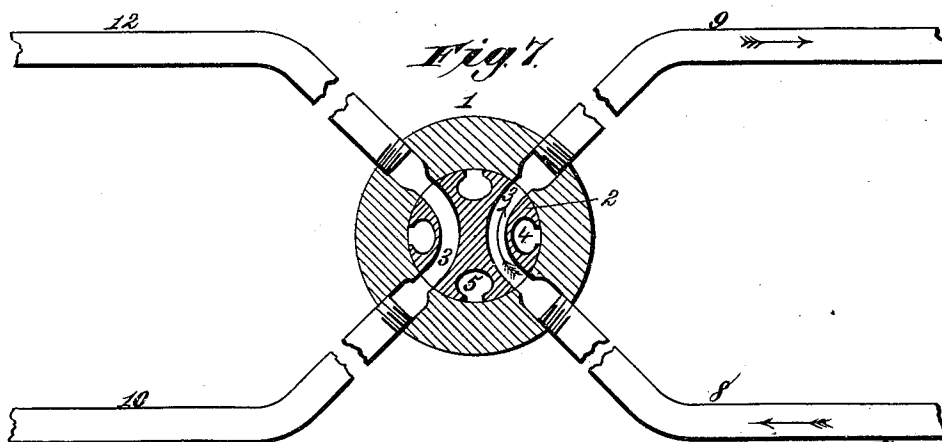
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VALVE FOR THE STEAM HEATING PIPES OF RAILWAY CARS.

No. 405,959.

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UNITED STATES PATENT OFFICE.

ROBERT I. HAMPTON, OF ATHENS, GEORGIA.

VALVE FOR THE STEAM-HEATING PIPES OF RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 405,959, dated June 25, 1889.

Application filed March 21, 1889. Serial No. 304,197. (No model.)

To all whom it may concern:

Be it known that I, ROBERT I. HAMPTON, a citizen of the United States, residing at Athens, in the county of Clarke and State of Georgia, have invented new and useful Improvements in Valves for the Steam-Heating Pipes of Railway-Cars, of which the following is a specification.

My invention relates to apparatus for the steam-heating of railway-cars, the heating medium being derived from the locomotive-boiler or from any other suitable source.

It is the purpose of my invention to provide each car with a radiating-circuit provided at suitable points with the ordinary manifolds or accumulators, and to combine with said circuit simple and easily-operated means whereby the heating medium may be conducted directly to the radiating-circuit of the adjacent car without regard to the relative position of the accumulators or radiating-manifolds therein, and whereby, also, the circuit may be terminated at either end of the car or the steam wholly cut off.

It is my purpose, in other words, to provide each car independently with a radiating-circuit consisting of two branches, one conveying the live steam to the radiating-manifolds and the other returning the circulation to its source, the two branches being combined at each end of the car with means whereby the circuit may either be wholly closed, or the direct and return branches be caused to directly communicate with the corresponding branches of the adjacent cars; or, on the contrary, whereby the two currents may be crossed at either or both extremities of each independent radiating-circuit; or, finally, whereby a connected circuit composed of any number of independent radiating-circuits may be at any moment terminated at any point in the train and the direct and return branches thrown into communication.

It is a feature of my invention, also, that by means of the devices by which the purposes already named are effected I am also enabled to perfectly regulate and control the temperature of each car at any moment.

The invention consists to these ends in the several novel features of construction and new combinations of parts hereinafter fully

set forth, and then definitely pointed out in the claims following this specification.

Referring to the accompanying drawings, Figure 1 is a plan view of the valve-casing 55 and valve constituting my invention. Fig. 2 is a central vertical section of Fig. 6 at the line *x x*. Fig. 3 is a similar section on the line *y y*. Fig. 4 is a detail perspective of the valve-core removed. Fig. 5 is a horizontal section showing the terminals of an independent radiating-circuit, and illustrating my invention. Fig. 6 is a similar section showing the parts in a different position. Fig. 7 is a similar section showing the manner of terminating the radiating-circuit and converting it at any point into a direct and return branch.

In the said drawings, the reference-numeral 1 designates a valve-casing of substantially cylindrical form and having an interior cylindrical chamber in which is seated a valve-core 2, which turns freely on its axis within said chamber, but is fitted therein steam-tight.

Within the body of the valve-core 2 are formed two similar curved steamways 3, which open through the cylindrical face of the valve-core at intervals of ninety degrees. Intermediate of these openings are ports which form the terminals of steam-passages 4 and 5, the former passing diametrically through the body of the valve-core 2, but curved or carried upward above the steamways 3, as shown in Fig. 2, while the latter is carried beneath said steamways 3, as shown in Fig. 3. The ports or open ends of the two diametrical steam-passages 4 and 5 are located, as shown in Figs. 5, 6, and 7, between the open ends of the steamways 3, and, like the latter, at intervals of ninety degrees of arc measured on the cylindrical surface of the valve-core.

Upon the flat top of the core 2 is formed or mounted a lug 6, adapted to receive a key by which the valve-core may be turned, the latter being held in its seat by an annulus 7, screwed to the casing and lying in a circular rabbet formed on the core.

Entering the valve-casing 1 are steam-pipes 8 and 9, tapped into the cylindrical shell at intervals of ninety degrees, two similar pipes 10 and 12 being connected to the opposite side of the casing at a similar interval. It will be

seen that the four pipes thus arranged bear exactly the same relation to the cylindrical valve-casing that the openings or terminals of the steamways bear to the cylindrical valve-core. Suitable openings are formed in the casing 1, whereby these pipes may communicate with the steamways of the core.

In the installation two of the pipes entering the valve-casing—as, for example, the pipes 8 and 9—form the radiating-circuit for a single car, the pipe 8 being the direct branch conveying the live steam, while the pipe 9 forms the local return branch conveying the circulation back to the locomotive or other source for the heating medium. These pipes extend throughout the car, and at one or more points in the direct branch 8 are located accumulators or radiating-manifolds of any suitable construction. At or near each end of the car, or, in other words, at each end of each local or independent radiating-circuit, is placed a valve casing and core 1 and 2, with the former of which pipes 8 and 9 communicate in the manner described. With each valve-casing also two other pipes, 10 and 12, have communication in the manner already described, said pipes being carried to a point where they may connect with a suitable flexible coupling, by which the radiating-circuit of one car is connected temporarily with that of an adjacent car coupled to the first.

It will be understood that in all cars the radiating-manifolds are necessarily connected with and supplied from the direct branch or live-steam pipe 8 of the local radiating-circuit.

Let it now be supposed that two cars equipped as set forth are coupled together. If these cars are both headed in the same direction, or, in other words, if the direct branches of their radiating-circuits are upon the same side—as, for example, upon the right-hand side of both cars, looking toward the locomotive—then by turning the valve-core 2 into the position indicated in Fig. 5 the live-steam branches 8 of the local or independent radiating-circuit will be brought into direct communication through one of the steamways 3, with the pipe 10, which has communication with the live-steam branch leading to the corresponding pipe in the following car; but let it be supposed that either by accident or necessity the following car has been turned end for end, thus bringing its live-steam branch pipe 10 upon the left-hand side of said car, then by a further turn of the valve-core 2 the steamways 4 and 5 are brought into direct communication with the pipes 8 and 9 upon one side and the pipes 10 and 12 upon the other, and as the steam-passages 4 and 5 cross each other diametrically in the core 2, as already described, the live steam is carried from the pipe 8 to the pipe 12, which has connection by the intermediate coupling between the cars with the live-steam branch of the following car, as indicated in Fig. 6. Again, on the other hand, let it be sup-

posed that the following car be detached and that the car containing the radiating-circuit 8 and 9 is the last car of the train, or the last car to which the heating system is to be extended, then by a further turn of the valve-core 2 one of the curved steamways 3 is brought into communication at one end with one of said pipes, as 8, and at the other end with the return branch 9 of the independent or local radiating-circuit. Finally, by turning the valve-core to bring one of its imperforate faces intermediate between the several entrances to the steam-passages therein over the openings in the valve-casing which communicate with the pipes 8 and 9 and 10 and 12 the steam is wholly cut off and all circulation of the heating medium is prevented.

In the installation it will readily be perceived that a series of cars may be coupled together to make up a train, and that by the directing-valve the live steam may be carried throughout the train and directly through the radiating-manifolds, and then returned through the connected return branches of the communicating independent radiating-circuits, and this may be done without regard to the manner in which the cars are coupled up, or, in other words, without regard to the possibility of one or more cars of the train being turned end for end, thereby bringing the direct or live-steam branch of the radiating-circuit upon one side while the corresponding branches of the adjacent cars are upon the other side of the respective cars. This is effected by simply turning the valve-core to bring the diametrically-crossing ports 4 and 5 into communication with the live-steam and return pipes 8 and 9 upon one side and with the reversely-presented live-steam and return pipes on the following car, which are coupled to the pipe-sections 10 and 12, having communication with the valve-casing 1. Again, let it be supposed that the train is “cut” or uncoupled at any given point. In this event the valve-core 2 at the rear end of the last car is simply turned to bring the open ends of either one of the curved steamways 3 into communication with the two branches 8 and 9 of the local radiating-circuit, whereby said valve-core constitutes the terminal of the radiating-circuit, throwing the heating medium from the direct to the return branch of the radiating-circuit. This result, as well as those previously described, can be effected at either end of the car. Finally, by simply operating any one of the valve-cores 2 to throw the live-steam branch into communication with the return-branch from the connected car I am able to instantly reduce the temperature of any one of the independent radiating-circuits, and thereby control or regulate the same at any time and to any suitable degree. By operating the valve-core in this manner it will readily be seen that the live steam is diverted from the direct branch and the dead steam or return current of the heating medium is carried through the radiating-

manifolds, thereby producing an immediate reduction of temperature. When the desired reduction is effected, the valve is simply returned to its original position, or such other adjustment is made as circumstances may require.

In order to guide the operator in the several adjustments of the valve-core, I may attach an index 13 to the stem of the latter and provide upon an immovable part of the valve-casing a series of points 14, suitably marked, to denote that when the index is turned to register with said points in succession the connection will be made first by way of the direct or live-steam branches; second, from the live-steam branch to the return branch of the connected radiating-circuit; third, from the live-steam branch to the return branch of the same independent circuit; or, fourth and finally, to the position where the steam is wholly cut off.

Having thus described my invention, what I claim is—

1. In a connected system of heating for railway-cars, the combination, with a series of independent radiating-circuits each consisting of a direct and a return branch, of a valve-casing having communication therewith and also with pipe-sections communicating with the direct and return branches of the connected car, said valve-casing having a valve-core provided with two curved steamways capable of registering with all four pipe-openings simultaneously and having also two crossing steamways by which the direct and return branches may be brought into communication at the same time, substantially as described.

2. In a connected system of railway-heating, an independent or local radiating-circuit composed of a direct or live-steam branch and a return branch, a valve-casing at each end of the independent radiating-circuit with which said branches have communication at stated intervals, pipe-sections entering said valve-casing at like intervals and coupled to the connected independent radiating-circuit, and a cylindrical valve-core in each valve-casing having two curved steamways opening at such points that they may communicate with the connected direct and return branches, or with the local direct and return branches, and provided also with two crossing steamways, one carried over and the other below the curved steamways, and having their openings intermediate of those of the curved steamways, whereby the direct

and return connected branches may be brought into communication, substantially as described.

3. In system of steam-heating for railway-cars, the combination, with a direct and return branch, one receiving steam from and the other returning it to a source of steam-supply, of a cylindrical valve-casing with which said branches communicate at intervals of ninety degrees, a valve-core seated in said casing and having two steamways emerging at intervals of ninety degrees and provided with two crossing steam-passages, both emerging on the cylindrical face of the core half-way between the openings of the curved steamways, and two pipe-sections adapted to connect with the adjacent independent radiating-circuit, said pipe-sections entering the valve-casing at intervals of ninety degrees, whereby a turn of the core may connect the direct branches, the direct and return branches of the independent circuit or of the same and a connected circuit, or cut off the steam entirely, the turn of the core being guided by an index on one part and a guide or graduate on the other part, substantially as described.

4. In a system of steam-heating for railway-cars, the combination, with a local or independent radiating-circuit composed of a direct or live-steam branch 8 and a return branch 9, of a valve-casing 1, having a valve-core 2, provided with curved steamways 3, and with crossing diametrical steam-passages 4 and 5, the curved steamways opening at intervals of ninety degrees, and the cross-passages opening between the ends of the steamways 3, and pipe-sections 10 and 12 at each end of the local radiating-circuit and entering the valve-casing 1 at intervals of ninety degrees, whereby the curved steamways 3 may be turned to connect the direct branches 8 and 10 of the connected independent circuits, or the cross-passages 4 and 5 be brought to connect the direct and return branches of the connected circuits, or one of the steamways 3 be thrown into communication with the direct and return branch of the local circuit, or the steam wholly cut off, substantially as described.

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

ROBERT I. HAMPTON.

Witnesses:

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JAMES A. RUTHERFORD.