

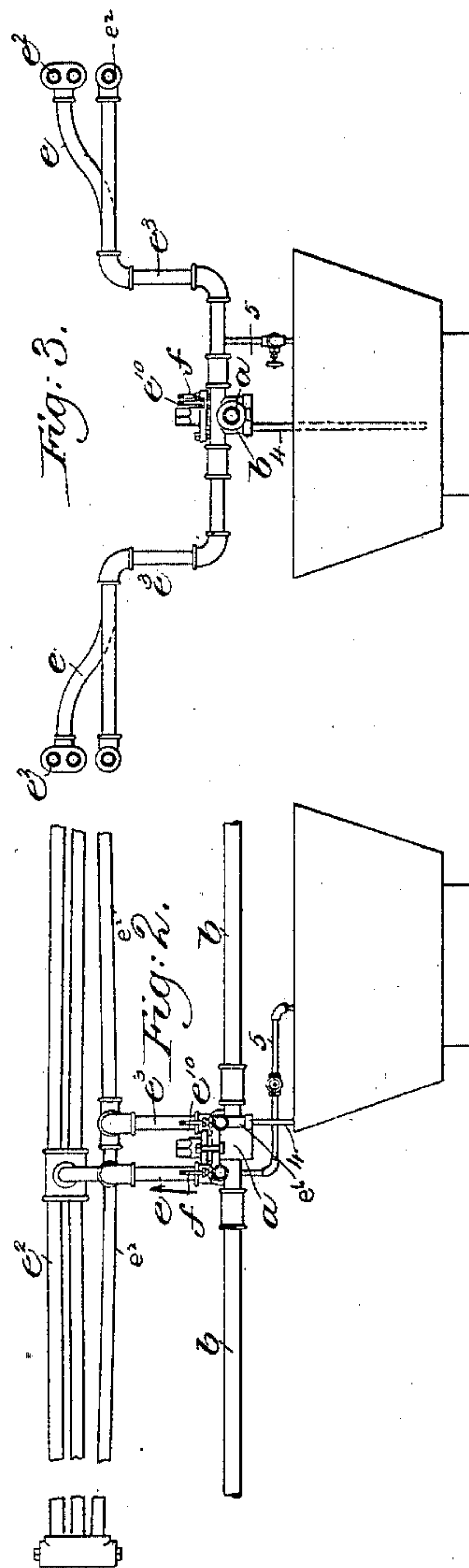
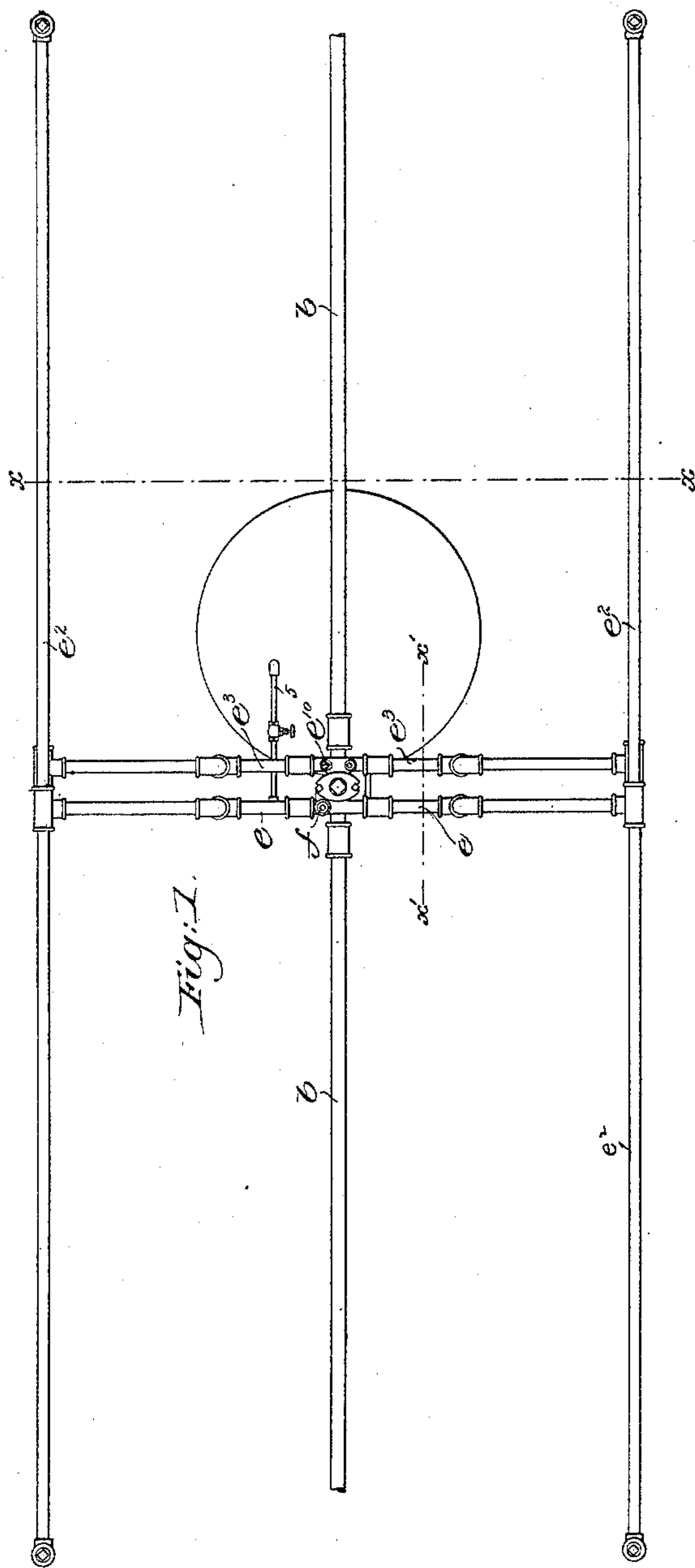
(No Model.)

3 Sheets—Sheet 1.

J. H. SEWALL.  
CAR HEATING APPARATUS.

No. 483,813.

Patented Oct. 4, 1892.



Witnesses.

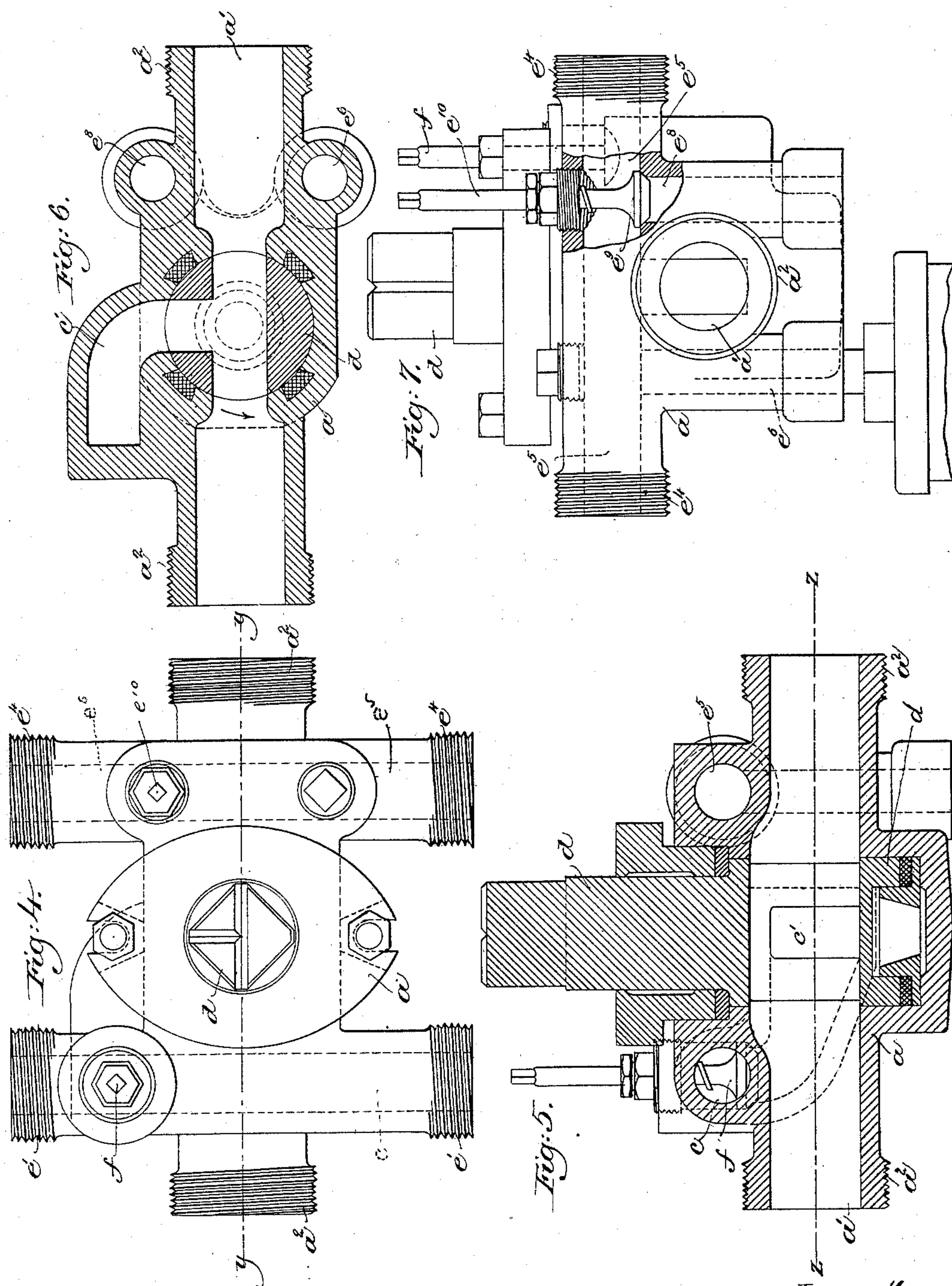
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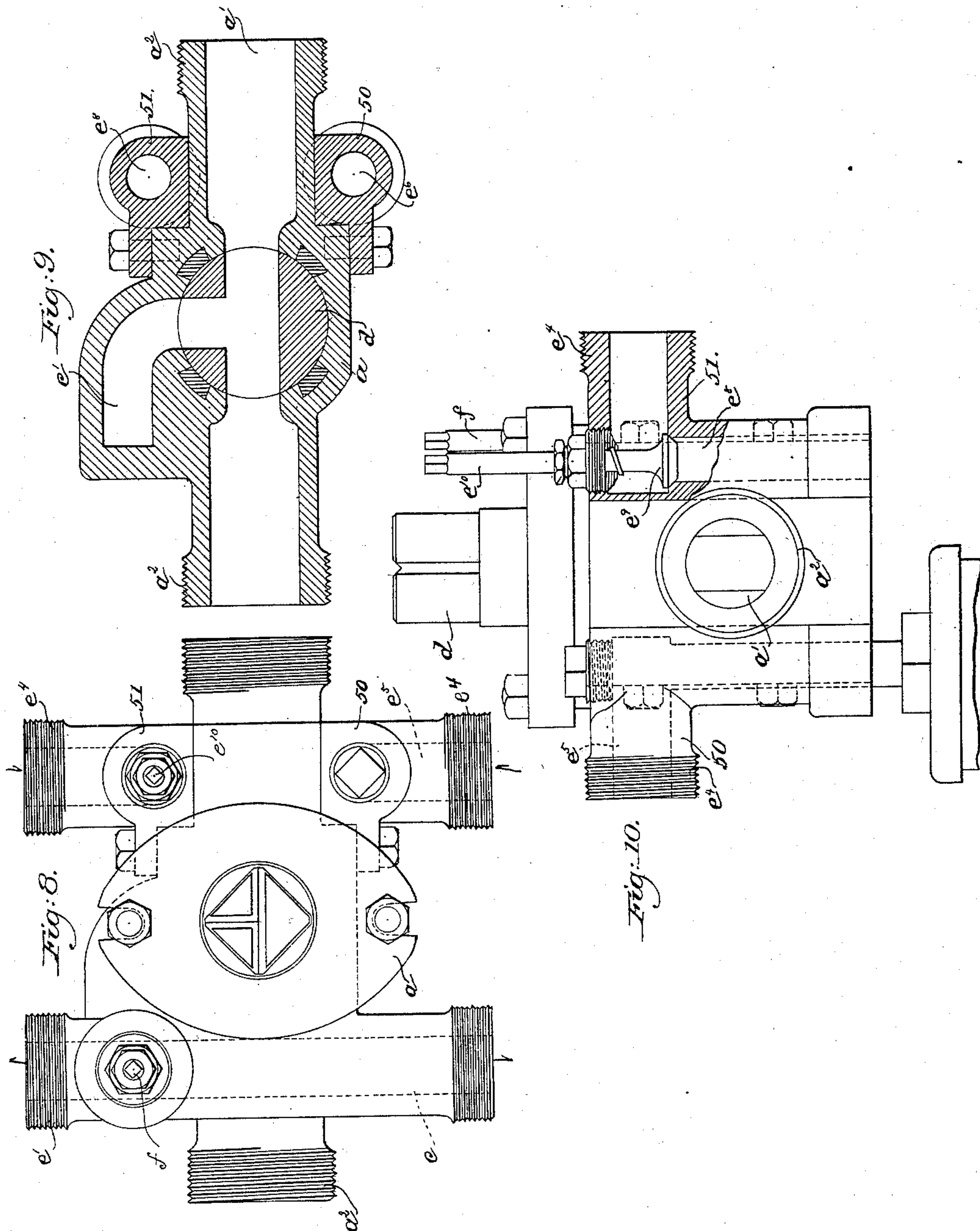
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# UNITED STATES PATENT OFFICE.

JAMES H. SEWALL, OF PORTLAND, MAINE, ASSIGNOR TO THE CONSOLIDATED CAR HEATING COMPANY, OF WHEELING, WEST VIRGINIA.

## CAR-HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 483,813, dated October 4, 1892.

Application filed May 17, 1889. Serial No. 311,173. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. SEWALL, of Portland, county of Cumberland, State of Maine, have invented an Improvement in Car-Heating Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention relates to an improvement in car-heating apparatus; and it consists in the construction and arrangement of parts hereinafter described, and definitely pointed out in the claims.

15 In the drawings forming part of the specification, wherein like letters of reference indicate corresponding parts in the several views, Figure 1 shows a plan view of a main steam-pipe, circulation-pipes, valve, and auxiliary boiler illustrating one embodiment of my invention; Fig. 2, a side elevation of the valve and auxiliary boiler and a portion of the circulation-pipes, the view being taken on the dotted line  $x'x'$ , Fig. 1; Fig. 3, a cross-section  
25 of the parts shown in Fig. 1, taken on the dotted line  $xx$ ; Fig. 4, a plan view of the valve; Fig. 5, a longitudinal section of the valve shown in Fig. 4, taken on the dotted line  $yy$ ; Fig. 6, a horizontal section of the valve shown in Figs. 4 and 5, taken on the dotted line  $zz$ , Fig. 5; Fig. 7, a right-hand end view of the valve shown in Fig. 4; and Figs. 8, 9, and 10, views of a modification to be referred to.

35 The valve forming the essential feature of this invention consists of a valve-case  $a$ , formed with a steam-passage  $a'$  through it from end to end. A main steam-pipe  $b$  is joined to the valve-case at  $a^2$ , so that the passage  $a'$  will constitute the main steam-pas-  
40 sage.

The valve-case  $a$ , as shown in Figs. 1 to 7, has two independent non-communicating passages, one of which is shown as a transverse  
45 port or passage  $c$ , (see dotted lines, Fig. 4,) and a curved port or passage  $c'$  (see Fig. 6) connects the said port or passage  $c$  with the main steam-passage  $a'$ . A three-way valve  $d$  is seated in the valve-case nearly central, and  
50 when in one position—such, for instance, as shown in Fig. 6—steam is permitted to pass

through the main steam-passage  $a'$  and also to pass through the port or passage  $c'$  into the passage  $c$ . When the said valve  $d$  is turned in the direction shown by the arrow, the steam-  
55 passage  $a'$  is obstructed, yet the port  $c'$  is in communication with one portion of said passage, and when the valve is turned in the opposite direction the port  $c'$  will be in communication with the other portion of the said  
60 passage  $a'$ , and hence when the car is the rearmost car of a train the steam may be admitted to the passage  $c'$  and passage  $c$ , while its onward progress is checked. Pipes  $e$  are  
65 connected with the valve-case at each side, as to  $e'$ , thereby communicating with the passage  $c$ , said pipes extending upward into the car and connecting with the circulation-pipes  $e^2$  at each side. (See Figs. 1, 2, and 3.) The  
70 pipes  $e$  form the "go" or outlet pipes. Pipes  $e^3$  are connected with the circulation-pipes  $e^2$ , which form the return-pipes, said pipes  $e^3$  being connected with or joining the valve-case  
75 at  $e^4$  and there communicating with the other independent passage, shown as a transverse passage or port  $e^5$ . (See dotted lines, Figs. 4  
and 7.) This independent passage or port  $e^5$  serves as the receptacle for the water of condensation and has leading from it a short pas-  
80 sage  $e^6$ , (see dotted lines, Fig. 7,) into which is screwed a steam-trap of suitable construction, so that the water of condensation may be removed automatically, as desired. Another  
85 short passage or port  $e^8$  (see Fig. 7) leads from the passage or port  $e^5$ , which is opened and closed by a valve  $e^9$ , adapted to be raised and  
lowered by the valve-stem  $e^{10}$ , this valve also serving as a means for removing the water of condensation.

By forming the independent passage  $e^5$  in  
90 close proximity to the main steam-passage liability of freezing is avoided. In operation steam is admitted through the port  $c'$ , passage  $c$ , pipes  $e$ , circulation-pipes  $e^2$ , and returned  
95 by pipes  $e^3$  to the passage  $e^5$ .

In order to obstruct the passage  $c$  without turning the three-way cock  $d$ , I have provided  
a valve, as  $f$ , seated in said passage at the  
100 post  $c'$ , it serving to open or close the said port  $c'$ , as may be desired.

In case steam from the main steam-pipe is shut off I have provided an auxiliary boiler,



and a pipe, as 4, leads from one of the short passages, at  $e^6$ , for instance, down into the said boiler, while another pipe, as 5, leads from the boiler and connects with the pipe  $e$ , and when it is desired to use the said auxiliary boiler a fire will be kindled in the fire-pot, and the steam generated will pass through the pipe 6 into the circulation-pipes, returning through the pipe 4.

It is obvious that I may, if desired, omit the auxiliary boiler, or if it should be used it may be placed at any convenient point.

I have herein shown the valve-stems of the several valves as extended upwardly through the floor of the car, to be operated from the inside of the car; but it is obvious that they may be moved in any other suitable manner.

In lieu of an independent non-communicating passage formed in the valve-case into which the return-pipes lead two independent portions having passages may be employed, as 50 51, (see Figs. 8, 9, and 10,) they being bolted or otherwise secured to the valve-case instead of being formed integral therewith; or the return-pipes may themselves be held in contact, or substantially so, with the valve-case or main steam-pipe, the object being to bring the terminating portions of the return-pipes, or those portions which receive and collect or retain the water of condensation, in close contact or connection or closely adjacent to the main steam-pipe to derive warmth therefrom through the adjacent metallic parts.

I claim—

1. In a heating apparatus, the combination of a valve-case having a steam-passage  $a'$  through it from end to end, two transverse passages  $c$  and  $e^5$  and a passage  $c'$ , leading from passage  $a'$  to passage  $c$ , a three-way valve located within passage  $a'$  and controlling the flow of steam therethrough and through the passage  $c'$ , a main steam-pipe communicating with passage  $a'$ , the circulating-pipes within the car, located at each side thereof, supply-pipes leading from passage  $c$  to said circulating-pipes, and return-pipes leading from said circulating-pipes to passage  $e^5$ , substantially as described.

2. In a heating apparatus, the combination of a valve-case having a steam-passage  $a'$  through it from end to end, two independent passages  $c$  and  $e^5$ , and a passage  $c'$ , leading from passage  $a'$  to passage  $c$ , a valve located within passage  $a'$  and controlling the flow of steam therethrough and through passage  $c'$ , a valve, as  $f$ , located within said passage  $c'$ , a

main steam-pipe communicating with passage  $a'$ , the circulating-pipes within the car, located at each side thereof, supply-pipes leading from passage  $c$  to said circulating-pipes, and return-pipes leading from said circulating-pipes to passage  $e^5$ , substantially as described.

3. In a heating apparatus, the combination of a valve-case having a steam-passage  $a'$  through it from end to end, two independent passages  $c$  and  $e^5$ , the said passage  $c$  communicating with the passage  $a'$ , a valve located within passage  $a'$  and controlling the flow of steam therethrough and through the passage  $c$ , a main steam-pipe communicating with passage  $a'$ , the circulating-pipes within the car, located at each side thereof, supply-pipes leading from passage  $c$  to said circulating-pipes, and return-pipes leading from said circulating-pipes to passage  $e^5$ , and a valve, as  $e^9$ , controlling the escape from or outlet of the said passage  $e^5$ , substantially as described.

4. In a heating apparatus, the combination of a valve-case having a steam-passage  $a'$  through it from end to end, two independent or non-communicating passages  $c$  and  $e^5$ , the said passage  $c$  communicating with the passage  $a'$ , a three-way valve located within passage  $a'$  and controlling the flow of steam there- through and through the passage  $c$ , a main steam-pipe communicating with passage  $a'$ , the circulating-pipes within the car, located at each side thereof, supply-pipes leading from passage  $c$  to said circulating-pipes, return-pipes leading from said circulating-pipes to passage  $e^5$ , and an auxiliary boiler located beneath and in communication with said passage  $e^5$ , substantially as described.

5. In a heating apparatus, the combination of a valve-case having a steam-passage  $a'$  through it from end to end, independent or non-communicating passages  $c$  and  $e^5$ , the passage  $c'$ , leading from passage  $a'$  to passage  $c$ , a valve controlling the flow of steam through the passage  $c'$ , a main steam-pipe communicating with passage  $a'$ , circulating-pipes within the car, located at each side thereof, supply-pipes leading from passage  $c$  to said circulating-pipes, and return-pipes leading from said circulating-pipes to passage  $e^5$ , substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES H. SEWALL.

Witnesses:

BERNICE J. NOYES,  
MABEL RAY.