

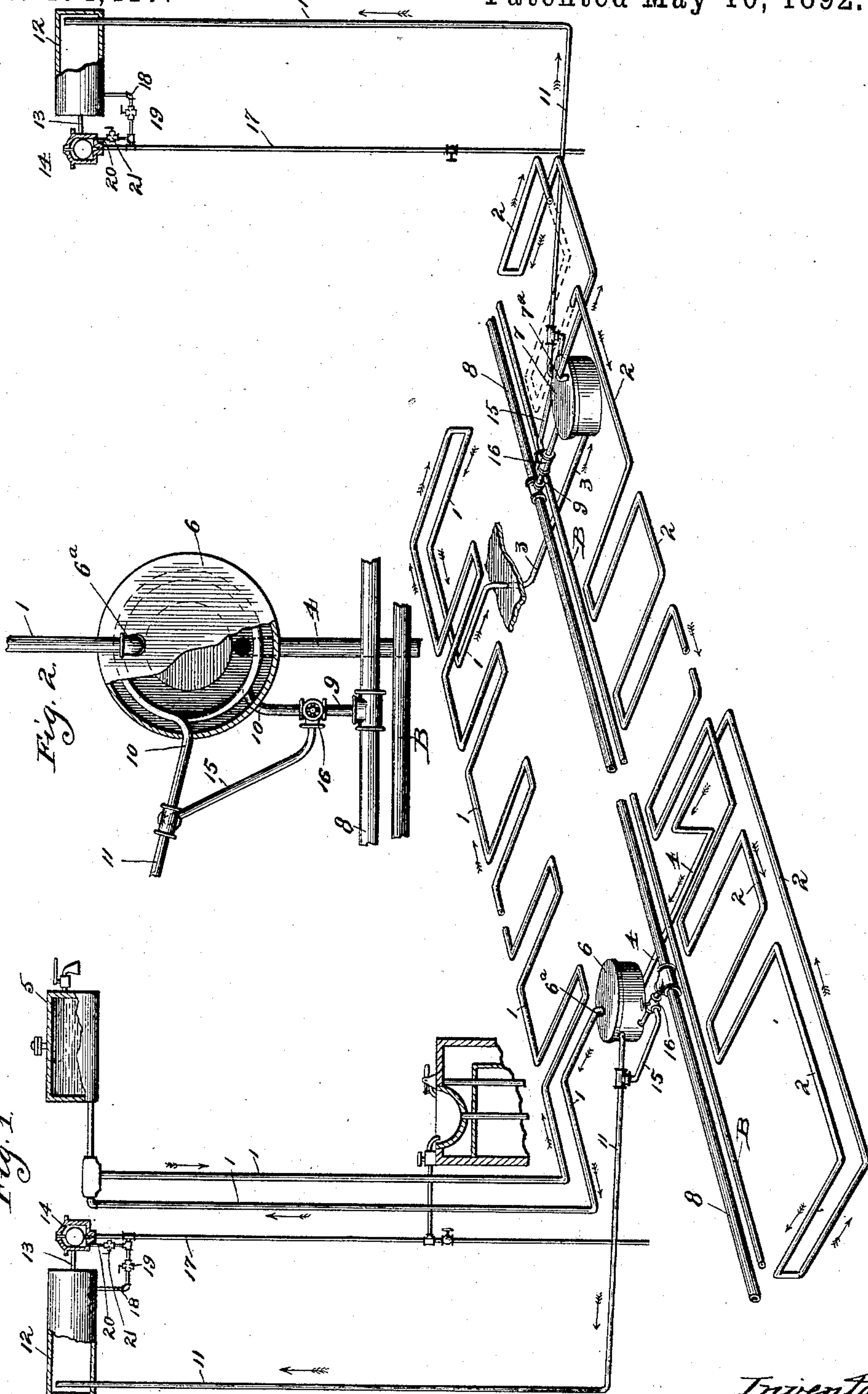
(No Model.)

2 Sheets—Sheet 1.

J. Q. C. SEARLE.
APPARATUS FOR HEATING RAILWAY CARS.

No. 474,417.

Patented May 10, 1892.



Witnesses
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Inventor
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(No Model.)

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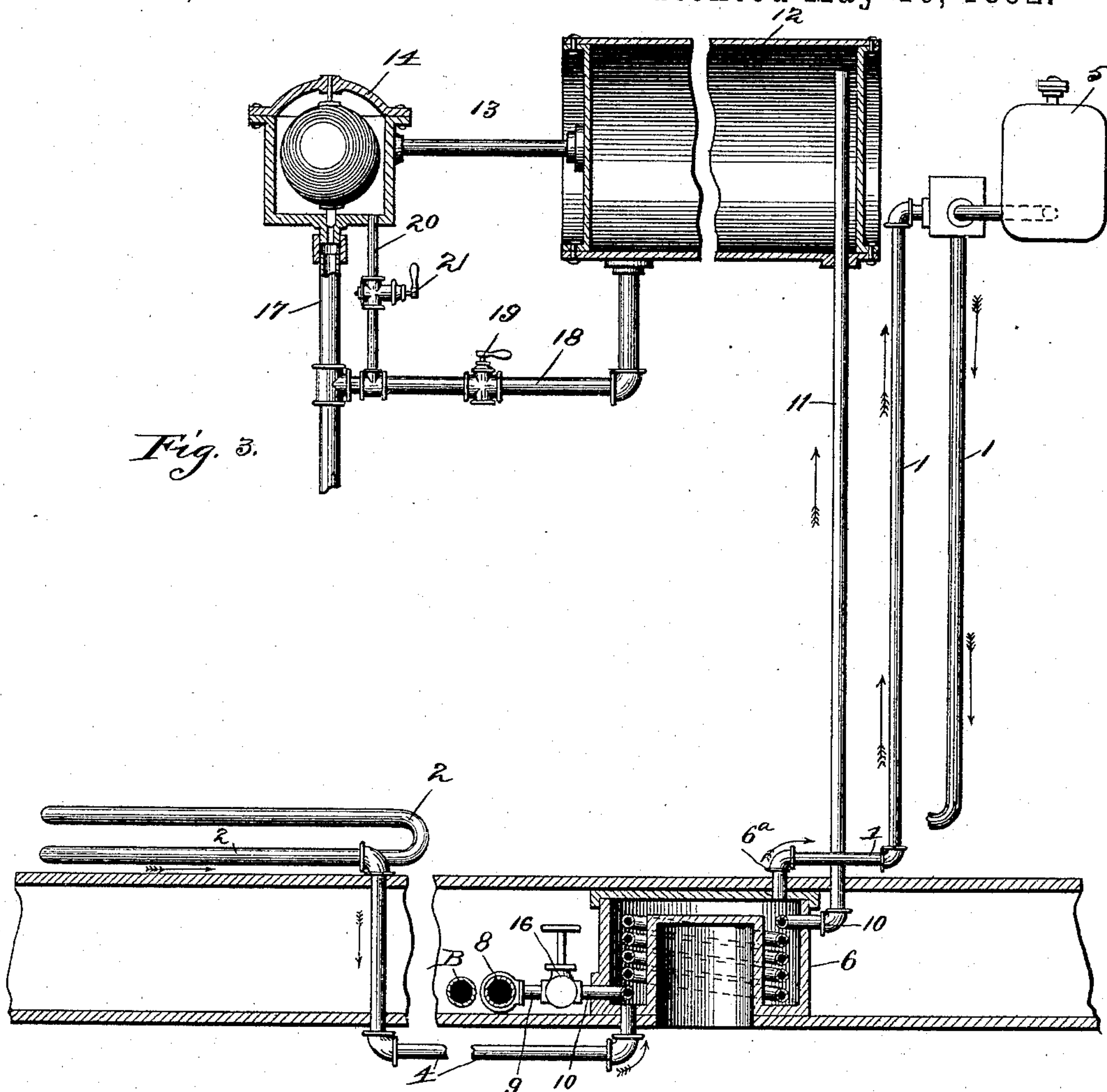


Fig. 3.

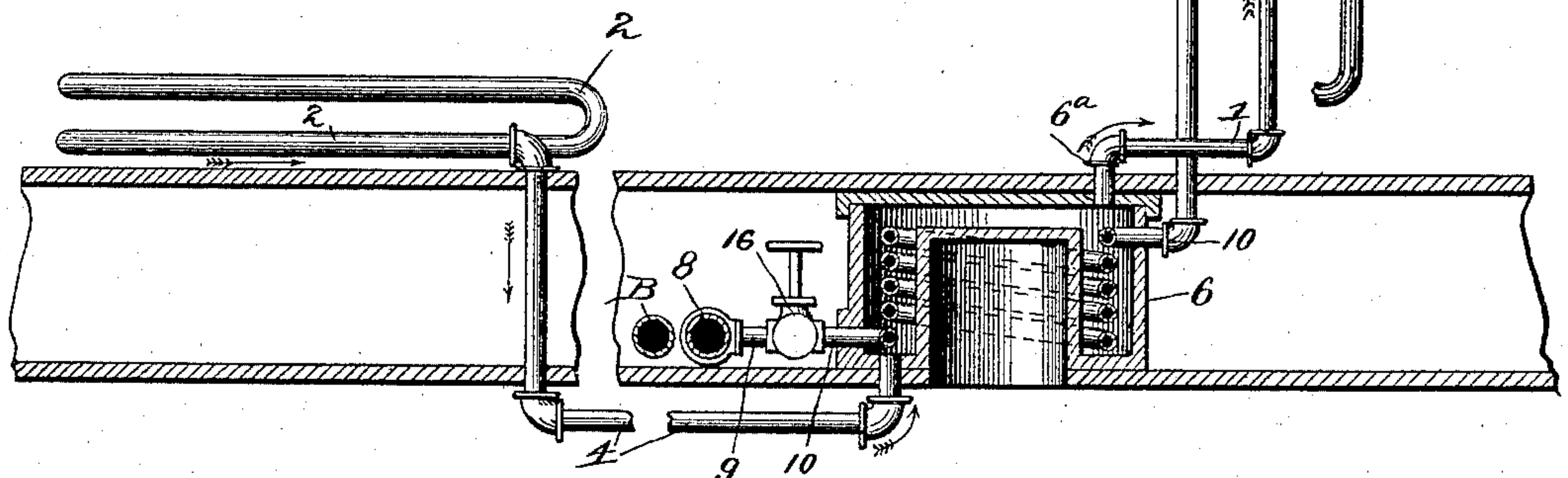


Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN Q. C. SEARLE, OF CHICAGO, ILLINOIS.

APPARATUS FOR HEATING RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 474,417, dated May 10, 1892.

Application filed November 2, 1889. Serial No. 329,096. (No model.)

To all whom it may concern:

Be it known that I, JOHN Q. C. SEARLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Heating Railway-Cars, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in car-heating apparatus; and the invention consists in the peculiar application of a steam-heated liquid-circulating passage to the cross-over pipes connecting the two sides of the heating apparatus, whereby the liquid is heated and circulated in a most expeditious manner and the heat is most evenly distributed throughout the car.

It also embraces means whereby the steam after having been used for heating the liquid may at once be disposed of automatically, and thereby prevent the collection of condensed steam in the train-supply pipe or branches thereof while the cars are being heated, and it embraces means whereby the accumulation of condensed steam in the train-supply pipe may be prevented while any of the cars of the train are not being heated.

In the drawings, Figure 1 is a perspective view of my improved heating apparatus. Fig. 2 is a plan view of one of the steam-heated liquid-circulating passages partly in section. Fig. 3 is a transverse section of the car, showing the first steam-heated liquid-circulating passage, condensing-chamber, and steam-trap in section. Fig. 4 is a transverse section of the car, showing the second steam-heated liquid-circulating passage 7, heating-pipes 1 and 2, and train-pipe 8, connected thereto.

The numerals 1 and 2 are the heating and circulating pipes upon the first and second sides of the car, connected by the cross-over pipes 3 and 4.

5 is an expansion-drum for the expansion of the liquid when heated.

6 is a steam-heated liquid-circulating passage whose upper portion communicates with the outflow portion of the pipes 1, that heat the first side of the car, and its lower portion communicates by the cross-over pipe 4 with the pipes 2, that heat the second side of the car.

7 is a steam-heated liquid-circulating passage whose lower portion communicates by

means of the cross-over pipe 3 with the pipes 1, that heat one side of the car, and its upper portion communicates with the pipes 2, that heat the other side of the car and return the cooled liquid to the steam-heated circulating-passage, from which the liquid begins to circulate when heated. These steam-heated circulating-passages 6 and 7 are applied one to each cross-over pipe and to the circulating-pipes in such a way that the liquid when heated in the passage 6 will pass out of the vertical portion 6^a to the pipes 1, that heat the first side of the car, and then be delivered by cross-over pipe 3 into the lower portion of liquid-circulating passage 7, from which it may pass out of the vertical portion 7^a to the pipes 2, that heat the second side of the car, and then be delivered into the lower portion of the steam-heated circulating-passage, from which the liquid begins to circulate when heated.

8 is a train-supply pipe that communicates with a source of steam-supply.

9 is a branch pipe that communicates with the supply-pipe, and by means of a coil 10, (in the circulating-passage 6,) a pipe 11, condensing-chamber 12, and pipe 13 with a trap 14, into which the condensed steam may pass; or the chamber 12 may be omitted and the pipe 11 may be connected directly with the trap 14, from which the condensed steam may automatically and periodically be discharged, and thereby prevent its accumulation in the couplings, train-pipe, and branch pipes while the car is being heated.

15 is an auxiliary branch pipe that communicates with the branch steam-pipe 9 and with the pipe 11 and is controlled by a cock or valve 16, whereby the condensed steam may pass through the pipe 11 to the chamber 12 and trap 14; or, if preferred, the chamber 12 may be omitted and the pipe 11 may be connected directly with the trap 14, from which the condensed steam can be disposed of, as before described, (without passing through the steam-heated circulating-passage 6,) and thereby prevent the accumulation of condensed steam in the supply-pipe and couplings of one end while the car is not being heated.

17 is a drain-pipe leading from the trap 14 and communicating with the chamber 12 by a pipe 18, which is provided with a cock 19, by which the condensed steam may be drawn

off and prevent freezing while the car is not in service.

20 is a drain-pipe communicating with the trap 14 and pipe 17, and is provided with a cock 21, by which the condensed steam therein may be drawn off by hand and prevent freezing while the car is not in service.

The steam-heated circulating-passage 7, that is connected to the cross-over pipe 3, is provided with similar means for heating the circulating liquid on the second side of the car should a strong wind blowing against that side of the car make it necessary to have hotter pipes on that side than the liquid heated in the circulating-passage 6 would alone produce. It is also provided with similar means for removing the condensed steam and to prevent its accumulation in the supply-pipe and couplings of that end of the car, either while being heated or when the steam is shut off from the circulating-passage 7. The course of the circulation is shown by the arrows.

B is a return train-pipe, which I make no claim to, and therefore omit any further description of it.

I am aware that it is not new to heat a circulating system by steam, nor to force steam into a closed tank to be condensed and used again for heating purposes, nor to force it into an open tank to heat the water and keep it from freezing and return it again to the circulating system to be used as before. I am also aware that steam has been used to force the water from a circulating system into a tank above the heating-pipes to be held there while the car is not in use and is not being heated; but when again put in service the water in said tank has been returned to the circulating-pipes to be used again to heat the car. I am also aware that a blow-out cock has been placed at the end of a train-pipe to blow the condensed steam through it onto the ground in a continuous stream while the car is in motion. My invention, however, is for an entirely different purpose and operates in an entirely different manner. Instead of forcing the condensed steam into a tank to be used again or into an open tank or trap to be returned and used again or blowing it through a single cock in a continuous stream at the rear of the train, I provide each car with one or more liquid-heating passages, which receive the steam and condensings from the train-pipe and immediately and continuously deliver the same into a chamber or trap, where it remains until enough has accumulated therein to cause an automatic discharge lasting only a few moments, when the opening is again automatically closed, thereby preventing any unnecessary waste of steam, and as this discharge will take place at different intervals on the several cars of the train the train-pipe will be continually freed at different points, so that the steam will be as effective for use to heat the last car as for the first car of the train.

I do not claim, broadly, the use of steam for heating a circulating liquid, nor for forcing the condensed steam into a tank to be used again, nor for blowing it out of the end of a train-pipe; but,

What I claim as my invention is—

1. In a car-heating apparatus, the combination, with the liquid-circulating pipes that are located on the opposite sides of the car, of cross-over pipes located intermediate said circulating-pipes, steam-heated liquid-circulating passages located on opposite sides of the car, communicating with said cross-over pipes and with said circulating-pipes, and a train-pipe for supplying steam to heat said liquid-circulating passages.

2. In a car-heating apparatus, the combination, with the train-pipe and liquid-circulating pipes that are located on the opposite sides of the car, of cross-over pipes located intermediate said circulating-pipes, steam-heated liquid-circulating passages located on opposite sides of the car, communicating with said cross-over pipes and with said circulating-pipes, an expansion-chamber located above and communicating with the circulating system, branch pipes leading from the train-pipe to and in operative contact with said steam-heated liquid-circulating passages, a cock or valve in said branch pipes, and a chamber or trap for discharging the condensed steam while the car is being heated.

3. In a car-heating apparatus, the combination, with the train-pipe and liquid-circulating pipes that are located on the opposite sides of the car, of cross-over pipes located intermediate said circulating-pipes, steam-heated liquid-circulating passages located on opposite sides of the car, communicating with said cross-over pipes and with said liquid-circulating pipes, an expansion-chamber located above and communicating with the circulating system, branch pipes leading from said train-pipe to and in operative contact with said steam-heated liquid-circulating passages, an auxiliary branch pipe communicating with said train-pipe, a cock or valve in said auxiliary branch pipe, and a chamber or trap for discharging the condensed steam when the car is not being heated.

4. In a car-heating apparatus, the combination, with the liquid-circulating pipes 1 and 2, the cross-over pipes 3 and 4, communicating with said liquid-circulating pipes, and the liquid heating and circulating passages 6 and 7, communicating with said cross-over pipes, of the train-pipe 8 for supplying heat to the liquid heating and circulating passages, a steam-trap 14, communicating with a liquid heating and circulating passage, and the valved branch pipe 15, communicating with said trap and with the train-pipe.

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