

(No Model.)

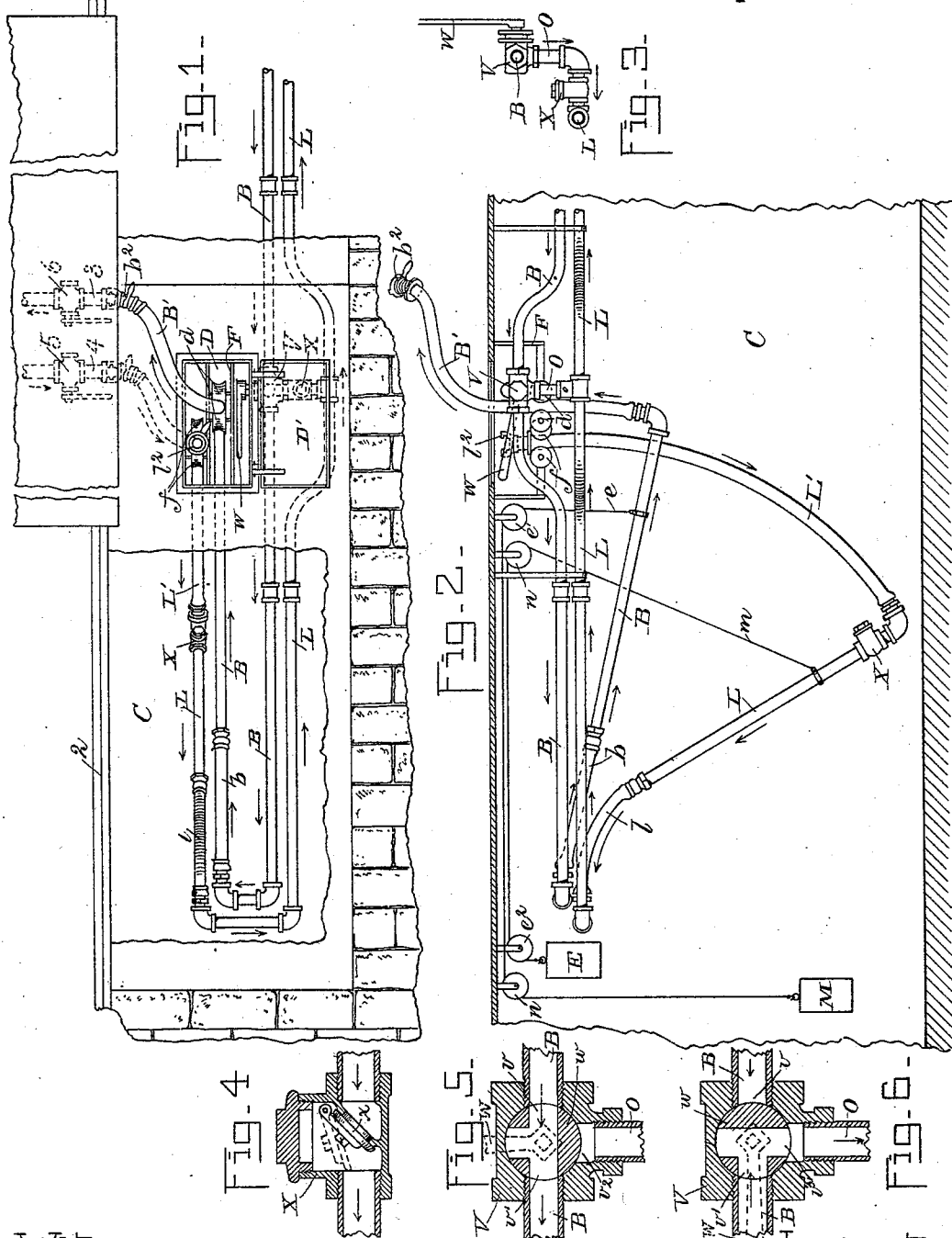
2 Sheets—Sheet 1.

J. F. McELROY.

APPARATUS FOR SUPPLYING RAILWAY STORAGE HEATERS WITH HOT WATER.

No. 536,838.

Patented Apr. 2, 1895.



Witnesses =

John W. Fisher
Frederick W. Cameron.

Inventor
James F. McElroy
Ward & Cameron
Attorneys

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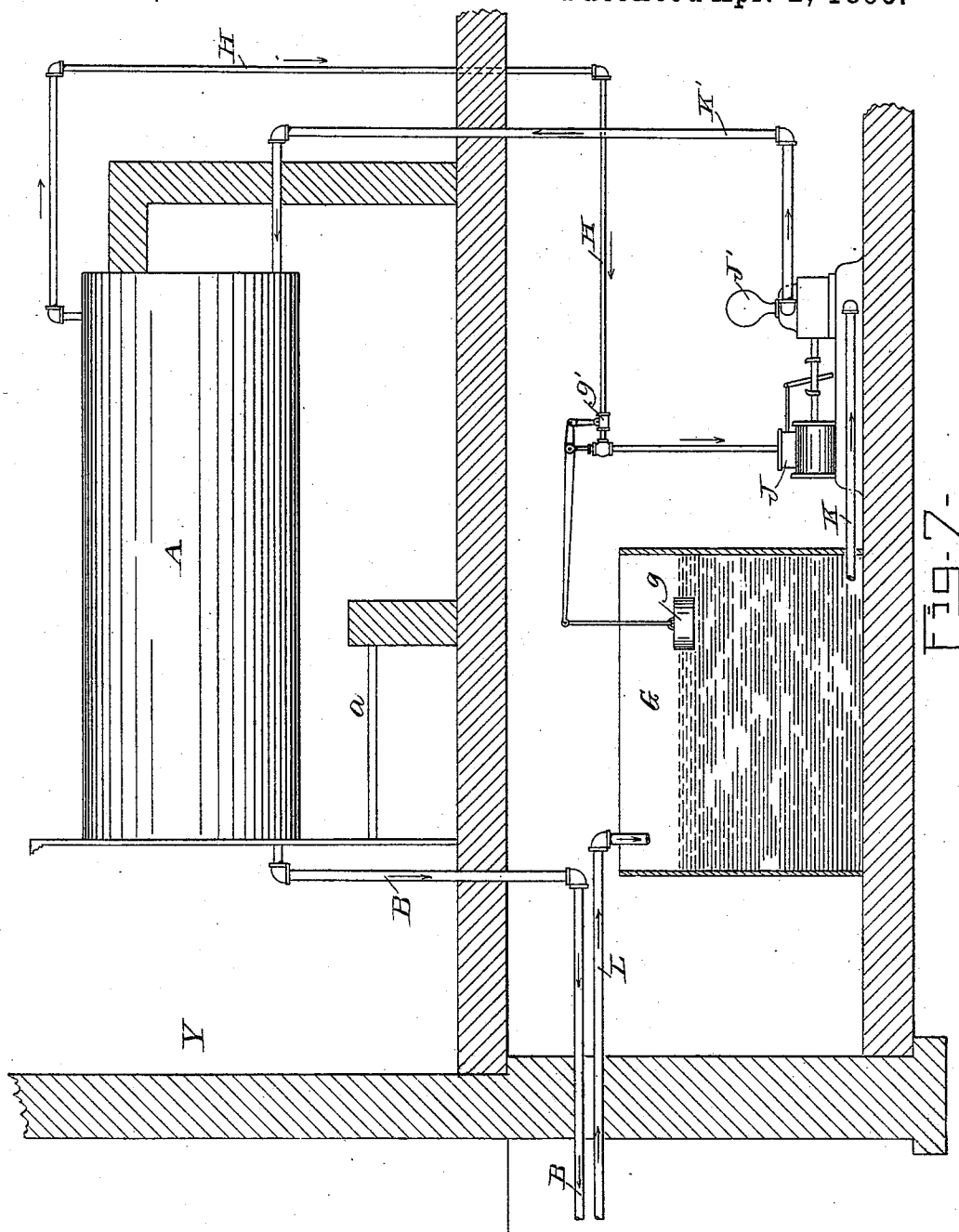
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James F. McElroy
by *Ward & Cameron*
Attorney.

UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNOR TO THE CONSOLIDATED CAR-HEATING COMPANY, OF SAME PLACE.

APPARATUS FOR SUPPLYING RAILWAY STORAGE-HEATERS WITH HOT WATER.

SPECIFICATION forming part of Letters Patent No. 536,838, dated April 2, 1895.

Application filed April 3, 1893. Serial No. 468,797. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McELROY, of the city and county of Albany, State of New York, have invented a new and useful Improvement in Apparatus for Supplying Railway Storage-Heaters with Hot Water, of which the following is a specification.

My invention relates to improvements in apparatus for charging with hot water storage heaters in street cars at the supply station; and the objects of my invention are, first, to provide a hot water supplying apparatus by means of which the pipes and drums in a car may be filled with hot water at boiler pressure; second, to arrange the supply and return pipes in such a manner that they will be placed beneath the surface of the earth when not in use, and, third, to connect up the supplying and return pipes in such a manner that the water may be turned off in the charging pipe and be turned out of both pipes into the return tank, thereby avoiding the possibility of freezing of the pipes and their connections, and the couplings may be broken without allowing hot water to escape and injure the person handling the hose. I accomplish these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan of my piping showing the side of a car and connections. Fig. 2 is a view of the apparatus placed in the vault. Fig. 3 is a detail view of the pipe connecting the return with the charging pipe. Fig. 4 is a detail view of the check valve X. Fig. 5 is a section through the three-way valve V showing the ports v v' open. Fig. 6 is a detail view of the three-way valve V showing the ports v v^2 open, and Fig. 7 is a vertical section of the station house, showing the hot water boiler, return tank and connections.

Similar letters and numerals refer to similar parts throughout the several views.

Within the boiler house Y, I place the boiler A (Fig. 7) which is an ordinary hot water boiler provided with means for heating the same illustrated by furnace grate a , and having a pipe B entering the boiler near its lowest point and extending downward beneath the

surface of the earth, and then extending into the vault C beneath the surface of the earth and near the street car tracks 2, and provided with a hose b making a hinged joint in such a manner that that portion of the pipe B connecting with the hose b may be moved in a vertical plane. At the end of the pipe B, I connect the hose B', which is provided at its end with a coupler joint b^2 , for the purpose of coupling upon the supplying pipe 3 in the car. The hose B' passes upward through the vault and out into the open air through the opening D, and may be brought in contact with the charging pipe 3 in the storage heater on the car.

For the purpose of supporting the hose B' and assisting in raising and lowering the same, I attach to the pipe B between the hose b and B', a chain or rope e passing over pulleys e' n and having at its end a compensating weight M.

In order to assist in guiding the hose B' in its passage through the opening D, I arrange the sheave d on each side of the hose B', said sheaves properly and suitably secured within the sides of the box F at the opening D.

Beneath the boiler A below the surface of the earth, I place a return tank G open at the top and provided with a float g operating a valve g' in a steam pipe H connecting the top of the boiler A with a small engine J. The engine J operates the pump J' which is connected by means of a pipe K with the bottom of the return tank G and also by means of the pipe K' with the bottom of the boiler A.

In the top of the return tank G, I arrange the return pipe L, which passes out beneath the surface of the earth into the vault C and is connected up by means of short hose l and L', similar to that of the pipe B, and provided with a chain or rope m passing over pulleys e^2 , also provided with a compensating weight E to assist in raising and lowering the hose L'.

Within the opening D and secured to the side of the box F, I arrange the sheaves f to guide the hose L'. At the end of the hose L, I arrange a coupler joint l^2 , which is to be connected with the coupler on the end of the return pipe 4 of the storage heater on the car.

In charging a storage heater, the water passes through the pipe B from the bottom of the boiler A and through the hose B', entering the charging pipe 3 in the car. The returning water from the car passes out through the discharge pipe 4 into the hose L' and returning through pipe L empties into the return tank G. When a sufficient amount of water has entered the tank G to raise the float *g*, the valve *g'* in the pipe H is opened, which allows the steam from the top of the boiler A to enter the cylinder of the engine J, which pumps the water from the bottom of the return tank G through the pipe K' into the bottom of the boiler A, and when the water in the return tank G is lowered, the float *g* closes the valve *g'* and the steam is shut off from the engine J.

For the purpose of shutting off the water in the charging pipe, I arrange a three-way valve V, within the pipe B at its juncture with the connecting pipe O placed between the return pipe L and the charging pipe B near the opening D. The three-way valve V is provided with ports *v v' v''* and is so arranged that one of the ports may be closed by the operation of the valve handle W attached to a cylindrically formed plug *w*, as shown in Figs. 5 and 6. When the ports *v v'* are open—the flow of hot water through the pipe B is uninterrupted, as shown in Fig. 5, and the port *v''* which connects with the connecting pipe O is closed.

I arrange a check valve X within the connecting pipe O near its juncture with the return pipe L, which check valve is provided with a hinged disk *x*, so arranged that the water may pass through the valve in but one direction by lifting the disk *x*, as shown in Fig. 4. The valve is placed within the connecting pipe in such a manner that the water can pass from the pipe B toward the pipe L and cannot pass in the opposite direction. I also arrange a similar valve X within that portion of the pipe L which is between the hose *l* and L', very near the juncture of the pipe L with the hose L' and arranged in such a manner that the water can enter the pipe L from the hose L', but cannot pass in the opposite direction. Thus when the water is passing from the boiler A through the pipe B, for the purpose of charging the car, the valve V is in the position shown in Fig. 5 and the ports V V' are open.

When it is desired to shut the water off from the car, the valve 5 within the return pipe 4 on the car is first closed, and the water within the return pipe flows back to the tank G. Then the valve 6 in the charging pipe 3 on the car is closed and the valve V in the pipe B is operated in such a manner as to close the port *v* and open the port *v''*, allowing the water within the pipe B to pass through the connecting pipe O into the return pipe L, from whence it flows into the tank G.

It will be noticed that the water in the boiler A is under pressure, which causes the water

passing through the pipe B to move with rapidity and force. So great is the pressure upon the water thus entering the storage heater from the charging pipe B, that the contents of the storage heater are forced out through the return pipe 4 and into the tank G, and this is done with a rush, all the pipes and drums located in the car being completely emptied of their cold water in an extremely short period of time, and then filled with hot water from the boiler at boiler pressure, occasioned by closing the valve in the return pipe 4 on the car, while the hot water is still entering the car through the charging pipe B. When the valve has thus been closed in the return pipe 4 on the car, the force of the flow of water which has been imparted to the water in the hose will continue to drive the water out of the hose L' and pipe L into the tank G, so that when the coupling *b'* is broken, there will be no hot water within that hose to escape and injure the person handling the hose, and the hose will immediately pass through the opening D into the vault C out of the way.

When a sufficient pressure has been given to the water in the storage system, the valve V in the pipe B is closed and then the valve 6 on the supplying pipe in the car is closed and any water that may remain within the hose B' and pipe B will pass through the valve V into the return pipe L. From thence it will flow into the tank G. Thus when the coupling *b'* is broken, there will be no water to escape and injure the person handling the hose, and the hose will immediately pass into the vault C out of the way, and the cover D' may be closed.

I do not limit myself to the apparatus connected up minutely as described, but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In an apparatus for charging storage heaters with hot water, a charging pipe, a receptacle for holding hot water under pressure, communication between said charging pipe and said receptacle, a vault into which said charging pipe passes, said charging pipe provided with suitably hinged joints allowing it to be passed upward through an opening in the top of the vault and brought into contact with a storage heater placed on a car, a return pipe entering said vault and capable of being attached to a car after passing through said opening in the top of the vault, a three-way valve placed in said charging pipe, a pipe connecting said charging pipe with said return pipe communicating with said three-way valve, a check valve placed in said connecting pipe near its juncture with said return pipe, substantially as described and for the purpose set forth.

2. In an apparatus for charging storage heaters with hot water, a vault placed beneath the surface of the street, a charging pipe, a return pipe in said vault, each of said pipes

provided with a hinged portion capable of
being elevated through the top of said vault
and brought into contact with a storage heater
placed on a car, compensating weights ar-
5 ranged to assist in elevating said pipe, a re-
ceptacle containing hot water under pressure
with which said charging pipe is connected,

with a tank with which said return pipe is
connected, all substantially as described and
for the purpose set forth.

JAMES F. McELROY.

Witnesses:

EDWIN A. SMITH,
WILLIAM P. EDDY.