

No. 824,441.

PATENTED JUNE 26, 1906.

R. P. SCALES & J. F. McELROY.

AUTOMATIC STEAM TRAP.

APPLICATION FILED APR. 24, 1902.

2 SHEETS—SHEET 1.

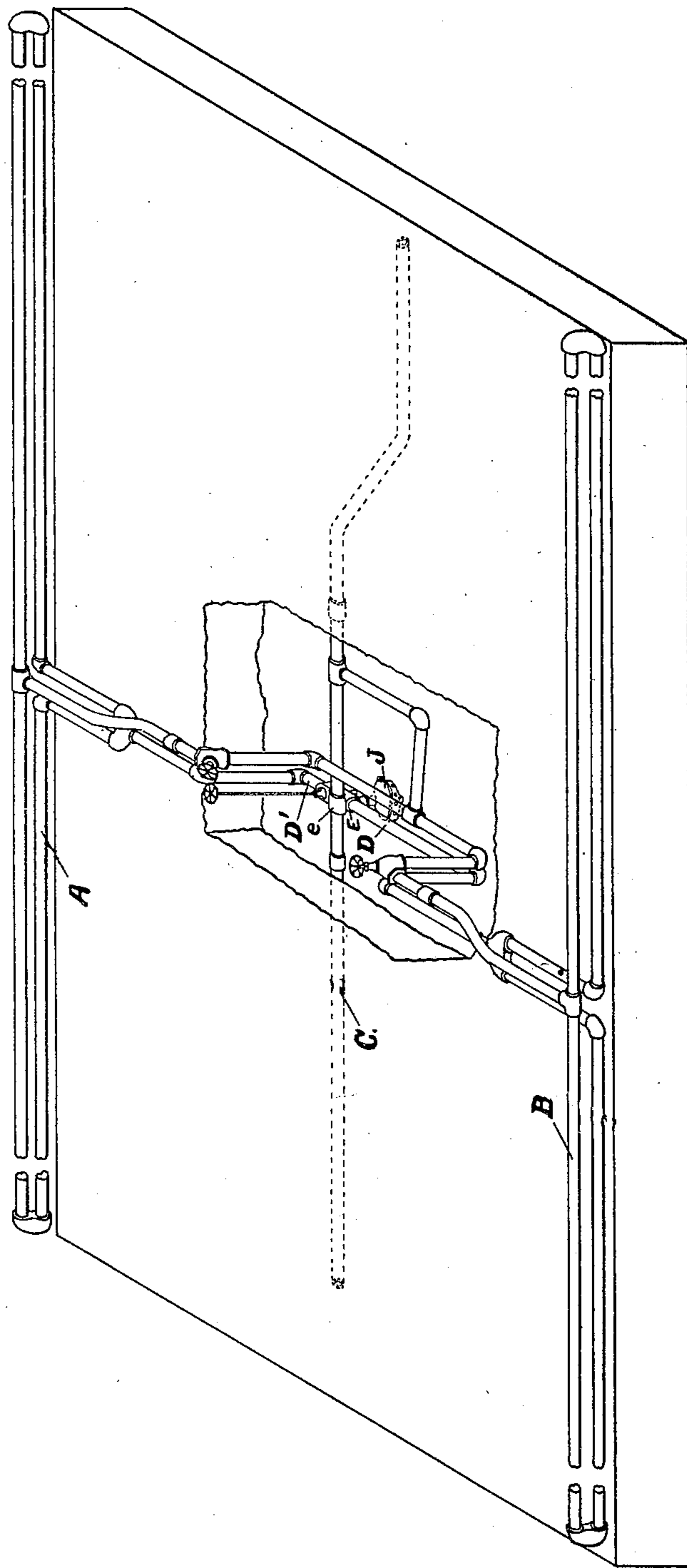


Fig. 1

Witnesses.
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by

Inventors.
James F. McElroy
Richard W. Scales
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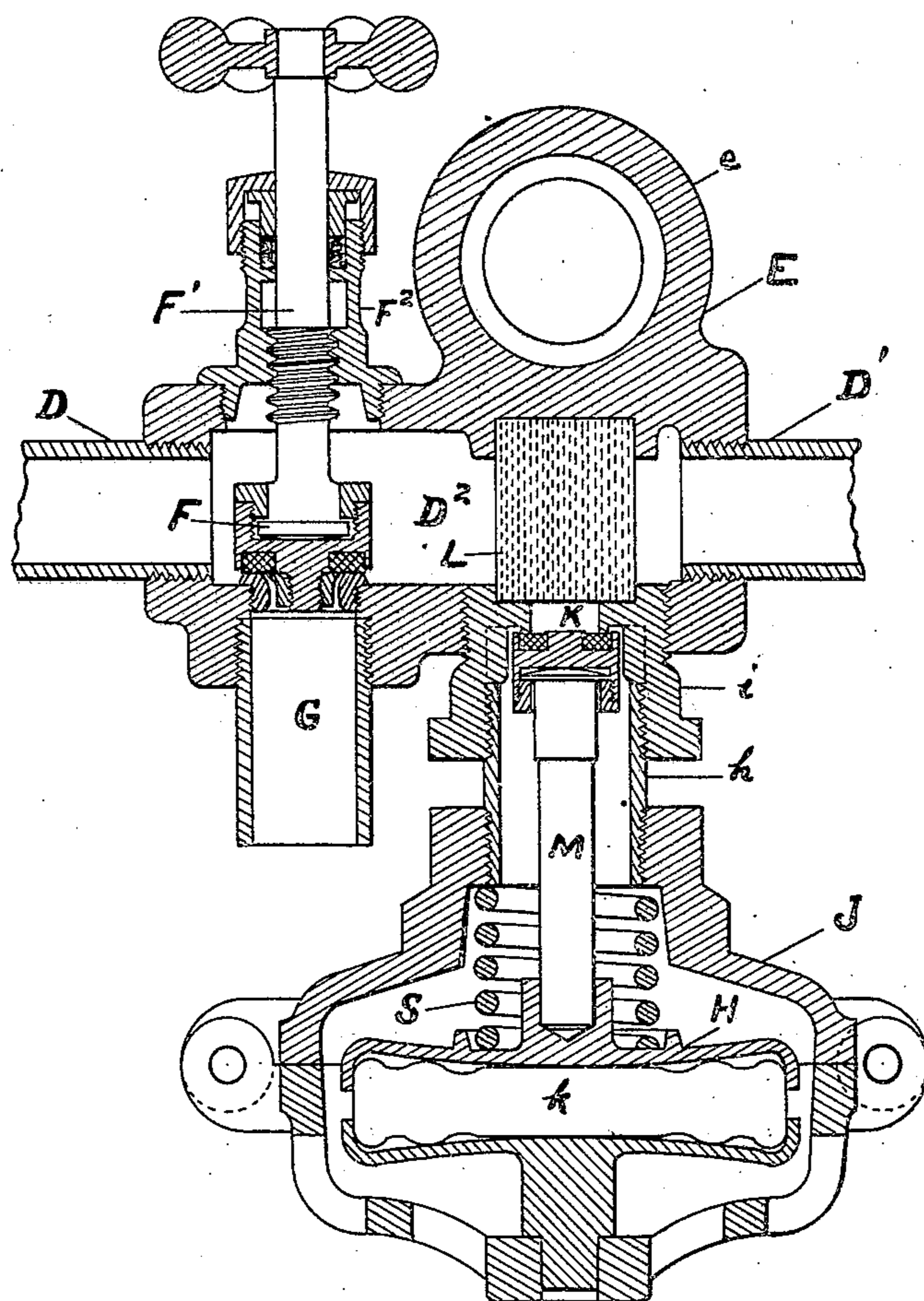


Fig. 2

Witnesses

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UNITED STATES PATENT OFFICE.

RICHMOND P. SCALES AND JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNORS TO CONSOLIDATED CAR HEATING COMPANY, OF ALBANY, NEW YORK, A CORPORATION OF WEST VIRGINIA.

AUTOMATIC STEAM-TRAP.

No. 824,441.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed April 24, 1902. Serial No. 104,567.

To all whom it may concern:

Be it known that we, RICHMOND P. SCALES and JAMES F. McELROY, citizens of the United States of America, and residents of Albany, county of Albany, State of New York, have invented certain new and useful Improvements in Automatic Steam-Traps, of which the following is a specification.

Our invention relates to devices for heating by the circulation of steam, hot water, or other fluid.

The object of our invention is to provide a means for keeping the drip-pipe warm enough to prevent freezing in extremely cold weather; and, further, to provide for automatically opening and closing said drip-pipe and for meeting the difficulty of expansion and contraction without adjustment of the parts.

We attain these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view, with parts broken away, of a car-heating system supplied with our invention. Fig. 2 is a section.

Similar letters refer to similar parts throughout both views.

The radiator-pipes A and B are arranged in any suitable manner within the apartment to be heated and are provided with the drip-pipes D D', which enter and deposit their contents in the fitting E, as shown in Fig. 2, the fitting E being provided with a collar e, through which passes the train-pipe C, thereby supporting the fitting and its attachments and at the same time by hot metallic contact conveying heat to the other portions of said fitting and the drip-pipes secured to same. We preferably thread the ends of the drip-pipes D D' to mesh with threads in the fitting E. We also connect to the fitting E in hot metallic contact therewith a blow-off pipe G, controlled by a valve F, operated by a valve-stem F', engaging with the casing F² and the fitting E. We arrange a screen L, preferably of a cylindrical form and placed around and above the valve K, operated by the thermostatic cell k, which is within the case H or other suitable trap. The valve K, the valve-stem M and their connections, including the cell k and its enveloped casing H, spring S, and hinged trap-casing J or the parts of the trap employed may all be removed from contact with the

fitting E by unscrewing the nut I, which meshes with the fitting E. The pipe h is also provided with screw-threads at each end, one end engaging with the nut i, the other with the trap-casing J. The parts being thus separably connected are easily and quickly removed for repairing and changing without necessitating the delay of the car for that purpose. This is an important consideration in attachments for railway-cars, since it is extremely important that any necessary repairs or alterations in the apparatus should be made if possible without necessitating the laying off of the car.

It is very important that the drip-pipes should be kept open. Otherwise the circulation of the water or steam is impaired or prevented. It has always been difficult to prevent freezing at the mouth of the drip-pipe. By our invention we make so close a metallic contact with the train-pipe that freezing is impossible in the drip-pipes. Our fitting and attachments thereto are so compact in their construction and arrangement that they take up but little room and are easily adjusted in their required positions.

The operation of our invention is apparent. The drip from the pipes D D', entering the chamber D², passes through the screen L through the opening controlled by the valve K, and when steam appears it causes the expansion of the thermostatic cell k, for the operation of the trap employed causes the closure of the valve K. When it is desired to apply blow-off pipe, the valve is raised and the contents caused to escape through pipe G.

It will be observed that the parts are put together without the usual adjusting devices heretofore employed, such as the screw ordinarily present below the thermostatic cell to adjust it up or down to compensate for the variation in the position of the valve with respect to its seat, due to the expansion and contraction of the parts or other cause. The diameter of the cell k is also shown as very large and the length of pipe h and valve-stem M as very short in comparison with prior arrangements of the same general type. The result of this construction is that the range of play in the diaphragm of the thermostatic cell is appreciably greater than any change in the length of either pipe h or valve-stem M which may be caused by expansion.

and contraction under variations of temperature and also greater than any wear which may occur in the valve and which may be added to the variations in length. Heretofore these variations have required an adjustment of the parts by means of a screw that may be turned from time to time to bring them into the relations required by the different conditions. This adjustment is objectionable for many reasons, and we have avoided it by the construction just mentioned, wherein the range of play of the diaphragm is so great that no matter what the difference in the relation of the parts may be the valve will be ultimately opened or ultimately closed within the range of movement of the diaphragm.

The desired result is best obtained with a thermostatic cell-trap when the cell is made as flexible as is consistent with the necessary strength and when, as shown in the drawings, the diameter of the cell substantially equals the distance from its median diametral plane to the seat of the valve. These relative dimensions may of course be varied somewhat without destroying the described action; but any pronounced departure from this relation seems to adversely affect the desired working of the trap according to the method above stated.

It will be noted by reference to Fig. 1 that the main part or trunk of the steam-pipe C passes through the fitting E and the radiators A B are supplied by a branch pipe from this trunk-pipe, thus insuring that the fitting shall always be heated so long as any steam is supplied to the train, whether or not the car itself is receiving steam in its radiators.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a heating apparatus, a fitting; a steam-pipe passing through said fitting; drip-pipes connected with a chamber within said fitting; a valve arranged to open and close a port in said chamber in said fitting; a thermostatic cell arranged to operate said valve; a means for mounting said valve and its attachments in connection with said fitting in

such a manner that they may be removed therefrom without interfering with or disturbing other portions of said fitting.

2. In a heating apparatus, a fitting; a collar arranged on said fitting; a steam-pipe passing through said collar; drip-pipes connected with a chamber in said fitting; a valve in said chamber in said fitting; a thermostatic cell arranged to operate said valve; a means for removably connecting said thermostatically-operated valve; a blow-off pipe in contact with said fitting; a valve to control said blow-off pipe.

3. In a car-heating system, a steam-pipe connecting by branch to the car-heaters, a fitting permanently mounted directly on the trunk part of the steam-pipe and provided with a chamber having drip connection with the car-heaters, a trap in metallic heating connection with the fitting whereby its drip connections are warmed from the steam-pipe and comprising a valve controlling the drip-outlet, a thermostatic device controlling the valve, a casing structure supporting and enclosing said device and valve, and a means for mounting said trap on the fitting in such manner as to permit its removal as a unit without disturbing the other parts.

4. In a heating system, the combination of the fitting E formed with a chamber and a collar, a steam-pipe mounted in said collar, drip-pipes connected with said fitting and entering the chamber, and a trap removably attached to said fitting and comprising the tubular member *i* screw-threaded into the fitting and having a valve-seat, a thermostat-casing J, a short pipe *h* screwing into the member *i* and casing J, a thermostatic cell in said casing, a valve K cooperating with the valve-seat, and a stem M connecting the thermostatic cell and the valve.

Signed at Albany, New York, this 17th day of April, 1902.

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Witnesses:

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