

W. L. GARLAND.
STEAM HEATING SYSTEM.
APPLICATION FILED SEPT. 26, 1907.

959,504.

Patented May 31, 1910.

2 SHEETS—SHEET 1.

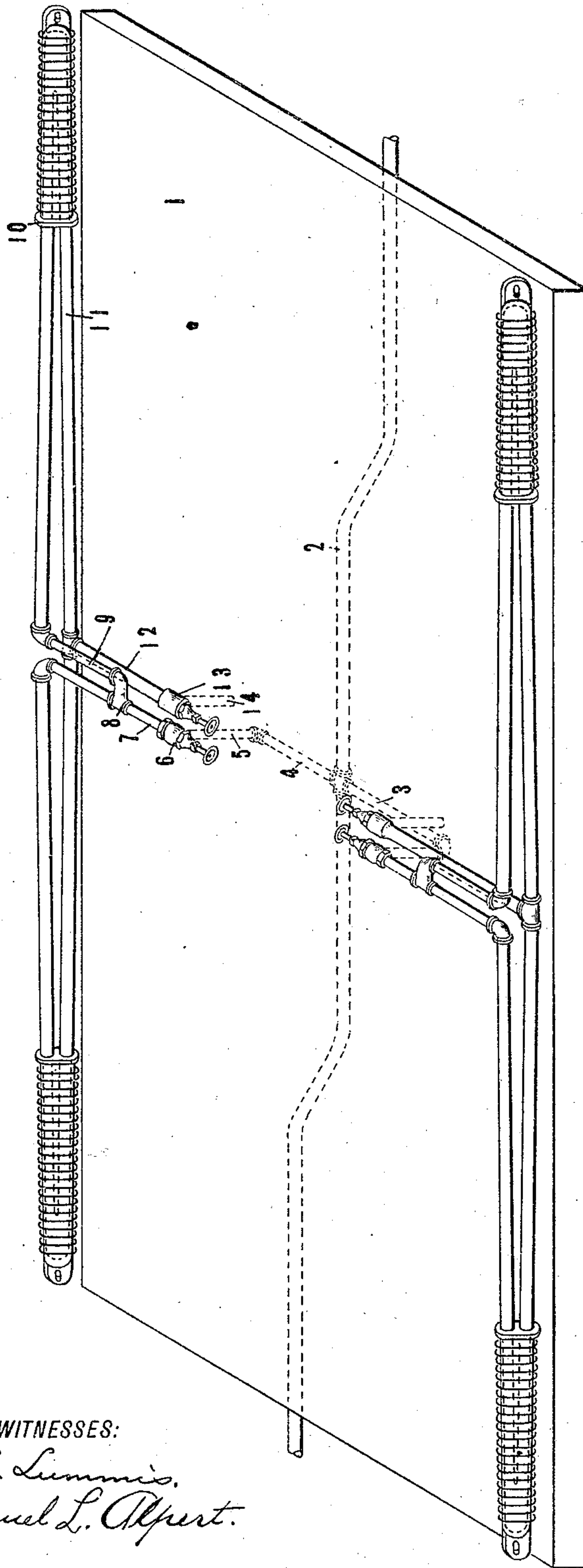


Fig. 1-

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2 SHEETS—SHEET 2.

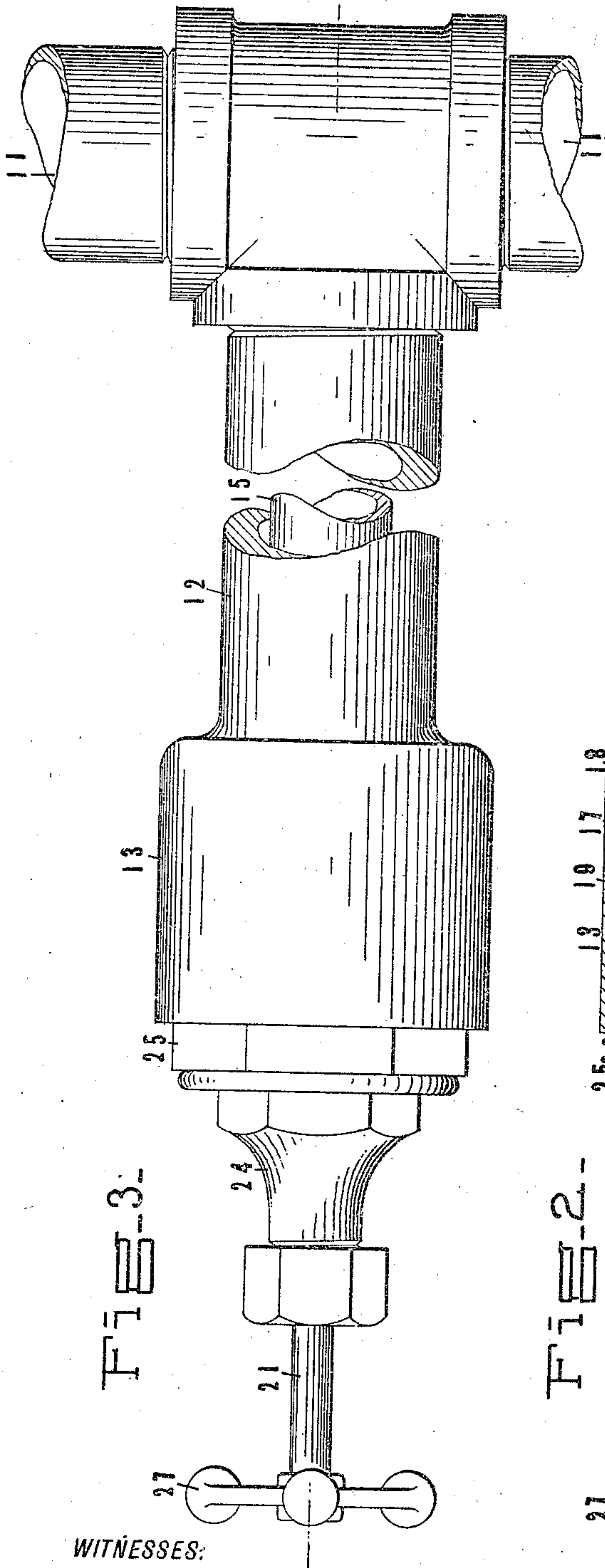


Fig-3-

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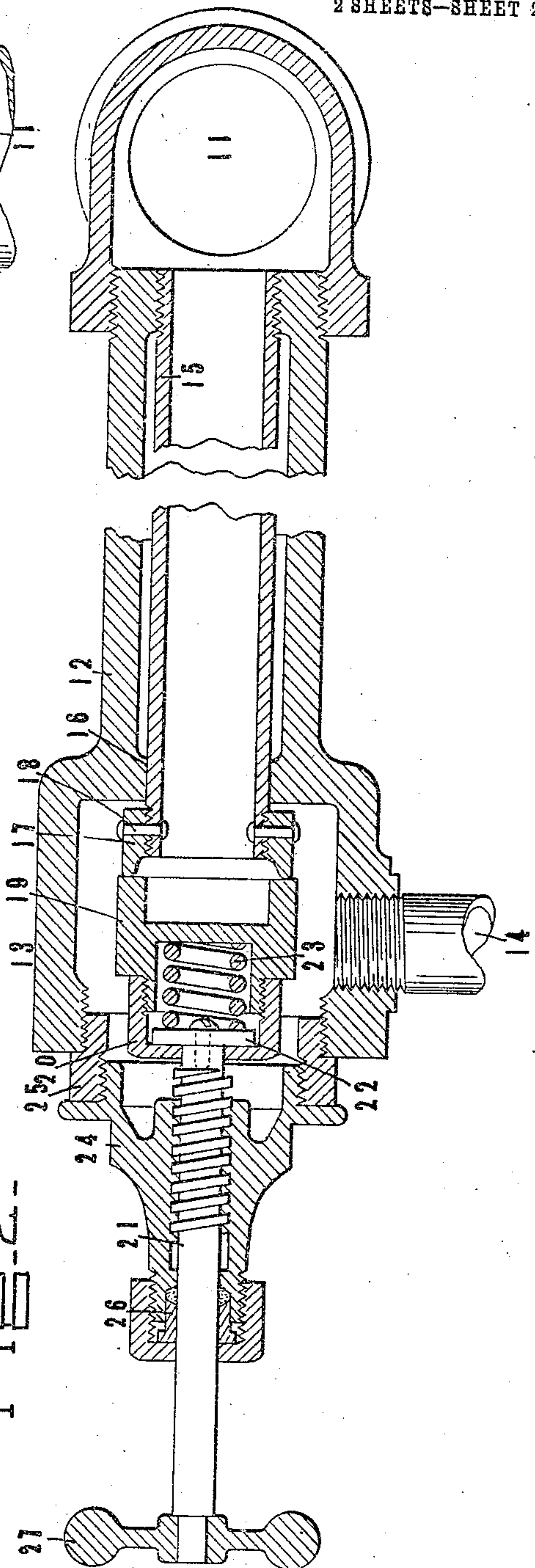


Fig-2-

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UNITED STATES PATENT OFFICE.

WILLIAM L. GARLAND, OF LLANERCH, PENNSYLVANIA, ASSIGNOR TO SAFETY CAR HEATING & LIGHTING COMPANY, A CORPORATION OF NEW JERSEY.

STEAM-HEATING SYSTEM.

959,504.

Specification of Letters Patent.

Patented May 31, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM L. GARLAND, residing at Llanerch, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Heating Systems, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to steam heating and more especially to steam heating apparatus adapted for use in railway cars or like structures.

One of the objects of the invention is to provide improved means for regulating the discharge of the water of condensation from steam heating apparatus of the above type.

Another object thereof is to provide an improved form of thermostatic regulating device for heating apparatus of the above type whereby the whole apparatus while automatically regulated will be contained within the system.

Another object of the invention is to provide a regulating means for the heating system wherein the danger of freezing will be substantially eliminated.

A further object is to provide an improved thermostatic regulating device for heating systems of the above character which is capable of being manipulated to provide a convenient means for blowing off the water of condensation.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings wherein is illustrated one of the various possible embodiments of my invention: Figure 1 is a view in perspective showing the floor plan of a railway car equipped therewith. Fig. 2 is a vertical sectional view of the discharge conduit for the radiating system. Fig. 3 is a top plan view of the discharge conduit.

Similar reference characters refer to simi-

lar parts throughout the several views of the drawings.

Referring now to the drawings, 1 indicates the floor of a railway car upon either side of which is arranged radiating systems, each system receiving its supply of steam from the train pipe 2 through branch pipes 3 and 4 respectively.

Inasmuch as the radiating systems arranged upon either side of the car are identical in construction and operation, a description of one thereof, it is thought, will suffice to impart a clear understanding of my invention.

Connected with a riser 5 extending upwardly from branch pipe 4 is a valved elbow 6 from which extends a feed pipe 7. This feed pipe leads into a branch elbow 8 from which lead radiating pipes 9, said radiating pipes leading in opposite directions to the end of the car to return fittings 10. Return radiating pipes 11 lead from return fittings 10 and are connected by means of a T fitting with a common discharge conduit 12 which extends inwardly toward the center of the car above the floor thereof.

The discharge conduit 12 at its outer end is provided with an enlarged portion 13 which constitutes a valve chamber and from which leads a discharge or drip pipe 14, the latter extending through the floor of the car and discharging into the atmosphere. Secured to the inner end of discharge conduit 12 and in the present instance threaded therein is a tubular member 15 which extends longitudinally therethrough, and at its outer end enters valve chamber 13, the outer end of said tubular member being guided by means of shoulders 16 formed interiorly of discharge conduit 12. A valve seat 17 is threaded to the outer end of tubular member 15, and in the present instance is fixedly secured thereto by means of rivets 18.

Coöperating with valve seat 17 is a valve member 19, said valve member having on its rear portion an apertured cap 20 through which extends a valve stem 21. The inner end of valve stem 21 carries a collar 22 which seats interiorly of cap 20 and a spring 23 is interposed between collar 22 and valve member 19. It will be understood that an inward movement of the valve stem

will through spring 22, cause valve member 19 to be pressed against its seat. The intermediate portion of valve stem 21 is threaded into a cap 24 which is carried by a bushing 5 25, said bushing being externally threaded to engage threads formed internally of the outer end of discharge conduit 12. Cap 24 is provided with a gland 26 to prevent leakage about the valve stem and said valve 10 stem at its outer end is provided with an operating handle 27.

Having thus described the structural features constituting this embodiment of my invention, the operation thereof may now 15 be understood.

At this point it may be noted that discharge conduit 12 is formed of a metal having a relatively low co-efficient of expansion, in the present instance iron, and the tubular 20 member 15 located therein is formed of a metal having a relatively high co-efficient of expansion, in the present instance brass. It should be understood, however, that said parts may be formed of other suitable metals, if desired. 25

In starting the operation of the system valve member 19 is withdrawn from its seat so that when the steam is allowed to flow into the system any water of condensation 30 present therein will be blown out and discharged therefrom through drip pipe 14. Live steam is then allowed to flow through the system until the pipes become heated, whereupon valve seat 17 is forced against 35 the valve 19, thus closing the system. When, however, a sufficient quantity of water of condensation collects within the discharge conduit 12 and cools sufficiently to cause a differential contraction between tubular member 15 and the discharge conduit 40 12, valve seat 17 is carried from the valve member and the water of condensation flows into the chamber 13 and is discharged to the atmosphere through the drip pipe. The 45 passage of live steam from the system will again cause differential expansion between the discharge conduit and the tubular member, forcing the valve against the seat. It will be evident however that valve member 50 19 may at any time be withdrawn from its seat by means of handle 27 providing a convenient manner of blowing off the water of condensation.

It will accordingly be seen that I have 55 provided an apparatus well adapted to attain, among others, all the objects and ends above pointed out in an exceedingly simple yet efficient manner. The thermostatic device constituted by the discharge conduit 60 and the expansion member therein being located in the car, there is substantially no danger of the thermostatic device becoming frozen and thus rendered inoperative and the whole regulating apparatus being self 65 contained occupies very little room within

the interior of the car. The apparatus is moreover constructed of comparatively few parts. The valve may be easily adjusted with respect to its seat from a position exterior to the system, and can be held resiliently against any desired degree of pressure 70 by means of the spring interposed between the valve stem and the valve member.

As many changes could be made in the above construction and many apparently 75 widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall 80 be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific 85 features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

Having thus described my invention, 90 what I claim as new and desire to secure by Letters Patent is:

1. In a heating system for railway cars or like structures, in combination, a discharge conduit, a tubular member threaded 95 into the inner end of said discharge conduit and extending longitudinally therethrough the outer end of said tubular member being adapted to slide in the outer end of said discharge conduit, a valve seat formed upon 100 the outer end of said tubular member, a cap mounted upon the outer end of said discharge member, a valve stem threaded in said cap and capable of manipulation from a position exterior thereto, a cap loosely 105 mounted on the inner end of said stem, a valve member secured thereto and a spring within said cap for urging said valve member toward its seat, said discharge conduit and said tubular member constituting a 110 thermostatic device to move said valve seat toward or from the valve to regulate the discharge from the heating system in accordance with the internal heat conditions thereof. 115

2. In a heating system for railway cars or like structures, in combination, a discharge conduit, a tubular member threaded at one end into the inner end of said discharge conduit and extending longitudinally thereof, 120 a valve seat formed upon the opposite end of said tubular member, a valve stem threaded into the outer end of said conduit capable of manipulation from a position exterior thereto, a flange on the inner end of said 125 stem, a cap slidably mounted upon said stem and limited in its movement by said flange, a valve member secured to said cap and having a face thereon adapted to engage said valve seat and a spring interposed between 130

said valve member and said flange adapted to resiliently press said valve member toward said valve seat.

5 3. In a heating system of the class described, in combination, a discharge conduit and a valve in said discharge conduit, said valve comprising a stem, a cap loosely mounted on the end thereof, means for retaining said cap on said stem, a valve mem-

ber connected with said cap, and a spring 10 between said retaining means and said valve member.

In testimony whereof I affix my signature, in the presence of two witnesses.

WILLIAM L. GARLAND.

Witnesses:

G. R. JEWETT,
E. E. ALBEE.