

No. 683,215.

Patented Sept. 24, 1901.

J. P. MARSH.
AIR VALVE.

(Application filed Jan. 25, 1896.)

(No Model.)

Fig. 1.

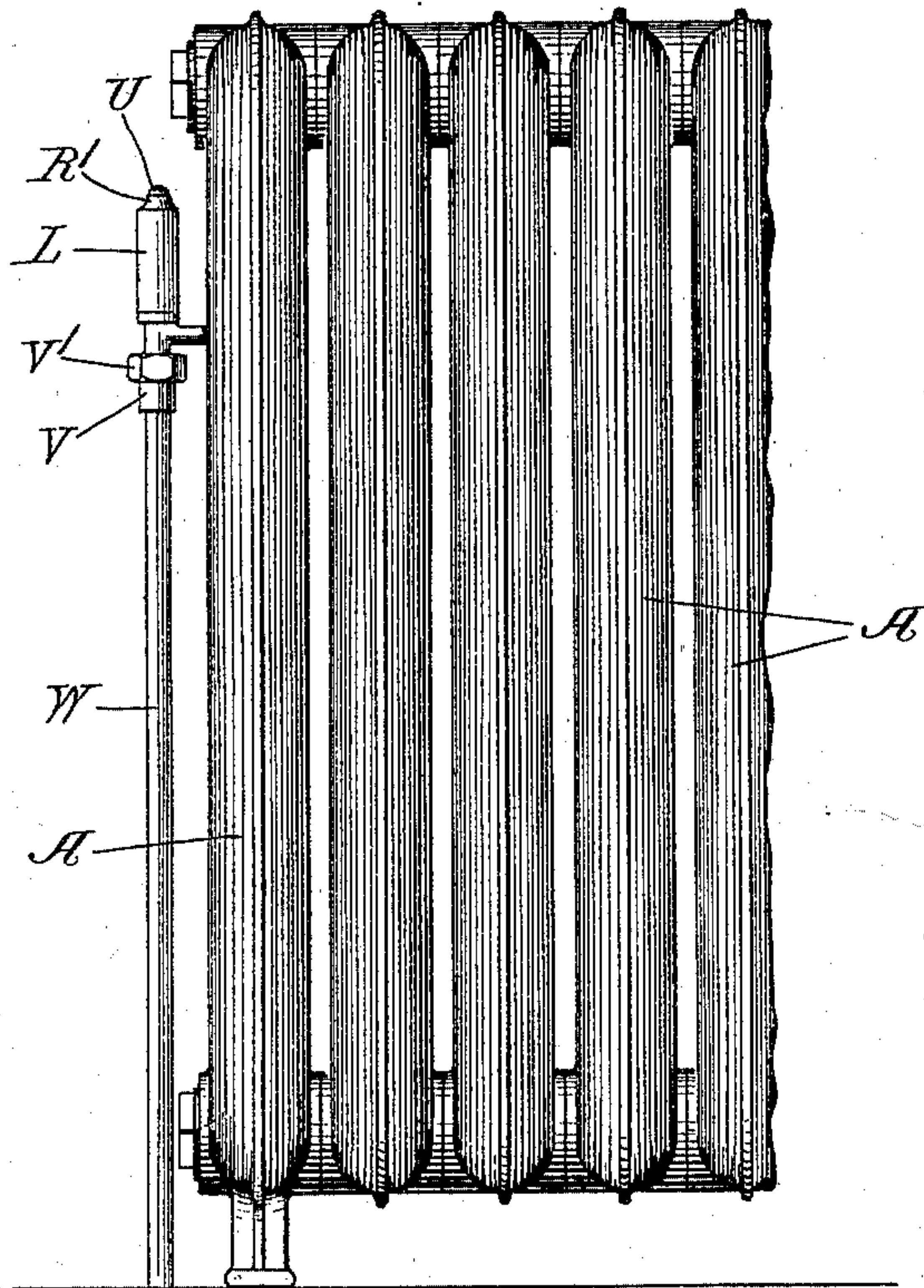
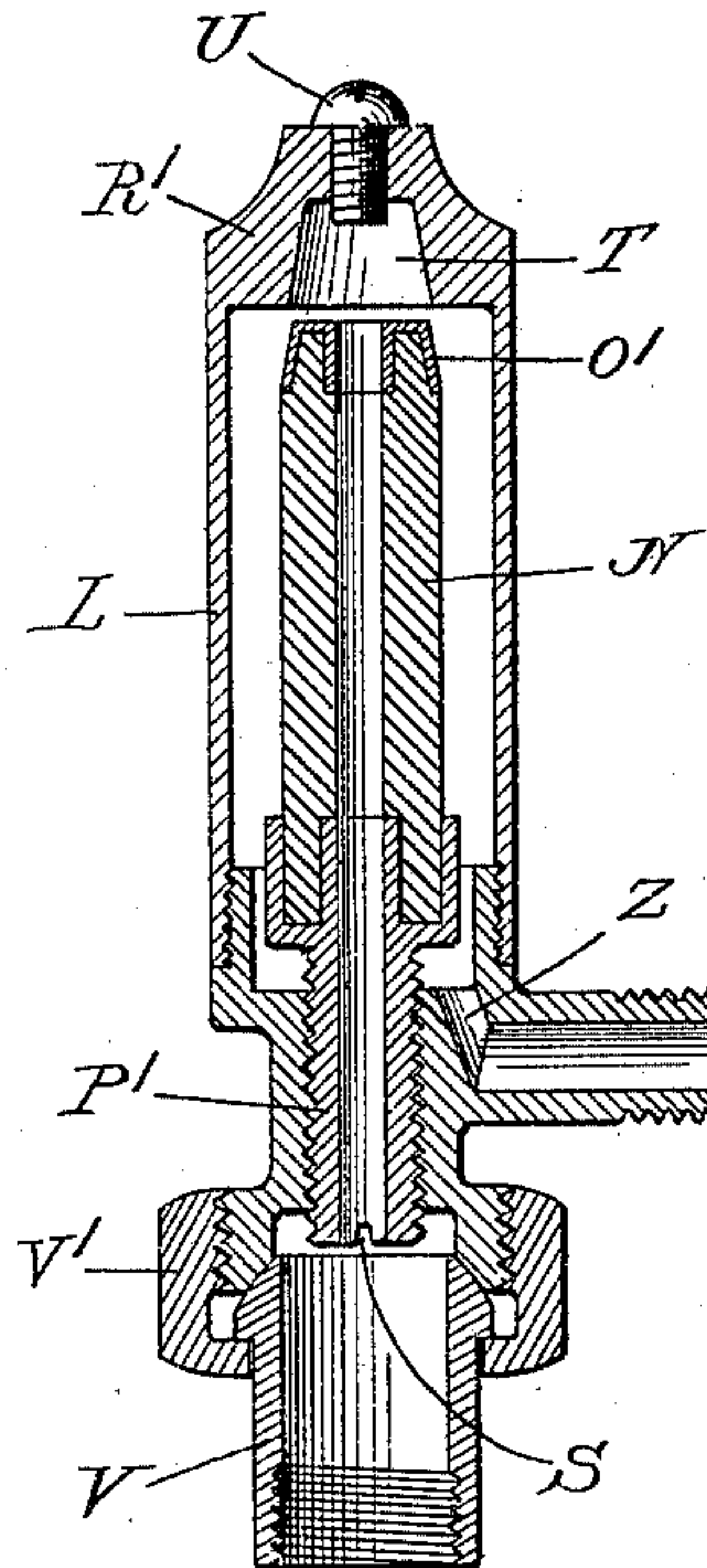


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES P. MARSH, OF CHICAGO, ILLINOIS.

AIR-VALVE.

SPECIFICATION forming part of Letters Patent No. 683,215, dated September 24, 1901.

Application filed January 25, 1896. Serial No. 576,841. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. MARSH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Air-Valves, of which the following is a description.

My invention relates to relief air-valves for radiators, such as are employed in connection with steam-heating plants.

I do not of course wish to be understood as necessarily herein setting out all the various forms of the device which would come within my present invention; neither do I desire to be limited to the specific construction shown.

Referring to the drawings, Figure 1 is a side view of a portion of a radiator, showing a valve embodying my invention in position. Fig. 2 is a vertical section through a valve embodying my invention.

Like parts are indicated by the same letters in both figures.

A A are radiator-sections. In the valve shown in Fig. 2 the valve is provided with a projection to screw into the radiator. The valve-body L contains an expansion valve-piece N, which may be preferably tubular. Within the valve-body is also situated the movable or adjustable valve-support P', so that the valve-support may be moved to adjust the valve. This adjustable valve-support P' is preferably screw-threaded into the bottom of the body, and some means for adjusting it is provided—such, for example, as the groove S—whereby it may be turned. In Fig. 2 the cap R' serves as a valve-seat, and it may be formed like the frustum of a cone, as indicated at T, to serve as a valve-seat for the protecting end piece O' when that is used.

U is a screw-plug in the top of the cap R', which when removed permits the interior of the valve to be cleaned. The lower end of the valve is provided with the coupling-pieces V V', whereby connection is made with the return or discharge pipe W. The adjusting part is accessible through the chamber or inclosure whence leads the discharge-pipe. In the form shown in Fig. 2 a passage-way Z leads from the connection with the radiator to the interior of the valve.

As previously stated, I do not wish to be limited to the particular or precise form of

construction herein shown. Some of the features illustrated are capable of separate use, as well as conjoint use, and others are capable of modification.

The use and operation of my invention, keeping in mind its several features, are as follows: When the parts are all brought firmly into connection, the connection V is set in place, so as to complete the way or connection with the return-pipe system. When the system is cold, the expansion-piece N is reduced in length and the valveway opened, and if the steam be turned on it will pass through the passage Z, which is arranged so as to be controlled by the valve-piece, and into the body of the valve and then out through the connections below and into the return-pipe system. It will be seen that the function of the expansion valve-piece is to control the passage of the steam from the radiator to the discharge. If a vacuum system is employed, which is that to which my device is best adapted, the action of the suction or drawing from the valve through the return-pipe W will draw the water, cold air, and steam from the radiator into the valve-casing and thence out. Of course it will be understood that when the steam becomes sufficiently clear and hot the expansion-piece will expand and seat itself against the valve-seat, and thus stop the flow. In Fig. 2, to which I shall now refer, the expansion-piece is supported upon a movable support, which is in like manner moved to fix the normal distance between the valve and its seat by any suitable means, the adjusting means being accessible through the chamber or inclosure whence leads the discharge-pipe; but the connection with the return-pipe system must in this case be opened, the valve being turned to one side and the screw-driver or other implement being introduced from below. In other words, or more broadly speaking, the adjustment is accomplished by first interrupting the connection between the valve and the return-pipe system. This arrangement insures the non-interference of unskilled or unauthorized persons and leaves the valves as originally set or for proper adjustment by the mechanic in charge. I prefer to have the expansion-piece so arranged that its engagement with its valve-seat is on a large circle, so to speak.

In other words, I prefer to have the construction such that the opening made by a slight longitudinal contraction of the expansion-valve is relatively very large, and thus a much freer exit is furnished for the water, the cold air, and steam from the radiator than in other cases. This is of the highest importance, because these expansion-valves are necessarily short and cannot of course have any very great longitudinal motion.

The interior expansion valve-piece N is preferably of some material of the nature of vulcanite or the like, such expansion-pieces and materials being well-known in this art. The screw U illustrated at the top of the valve shown in Fig. 2 is a mere suggestion and is not ordinarily considered necessary, and, in fact, is not commonly used. When the device is constructed as shown in Fig. 2, the expansion-piece may be liable to more or less injury about its upper extremity, since the current of water or steam passes about its upper end and then over its upper surface and down through its interior aperture. Hence in some cases it may seem best to cover such tube inside and out, as well as across its upper surface.

Generally speaking, the device has a valve-chamber containing the expansion-valve and an adjustment-chamber below the valve-chamber, the two chambers being connected, the valve controlling this connection. It is necessary to disconnect the valve from the waste-pipe in order to manipulate or adjust this connection.

I claim—

1. In a relief-valve, the combination of a valve-body with an expansion-valve in said body, an inlet which opens into said valve-body, a valve-seat in said body and opposed to said valve so that when the seat and valve are in contact a closed chamber is formed, a

discharge-pipe connected with said body, an adjusting part connected with that end of the valve opposite to the seat and accessible through the chamber or inclosure whence leads the discharge-pipe, so that the adjusting part is permanently inclosed.

2. In a relief-valve, the combination of a valve-body with a tubular expansion-valve projecting upwardly in said body, a valve-seat in the upper end of said body and opposed to the upper end of said valve, so that when the seat and valve are in contact a closed chamber is formed about the valve, an inlet which opens into said chamber at its lower end, a discharge-pipe connected with said body below, an adjusting part connected with the lower end of the valve and accessible through the chamber or inclosure whence leads the discharge-pipe, so that said adjusting part is permanently inclosed.

3. In a relief-valve, the combination of a valve-body with a tubular expansion-valve in said body, a valve-seat in said body and opposed to one end of said valve, so that when the seat and valve are in contact a closed chamber is formed, an inlet which opens into said chamber, a discharge-pipe connected with said body, an adjusting part connected with that end of the valve opposite to the seat and within the chamber or inclosure whence leads the discharge-pipe, so that such adjusting part is permanently inclosed, said adjusting part comprising a screw-threaded portion projecting at one end into the valve-chamber and at the other end into the inclosure below, and means in the chamber below for turning said screw-threaded part.

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Witnesses:

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