

(No Model.)

J. H. HUTCHINSON.
RADIATOR ATTACHMENT.

No. 599,708.

Patented Mar. 1, 1898.

Fig. 1.

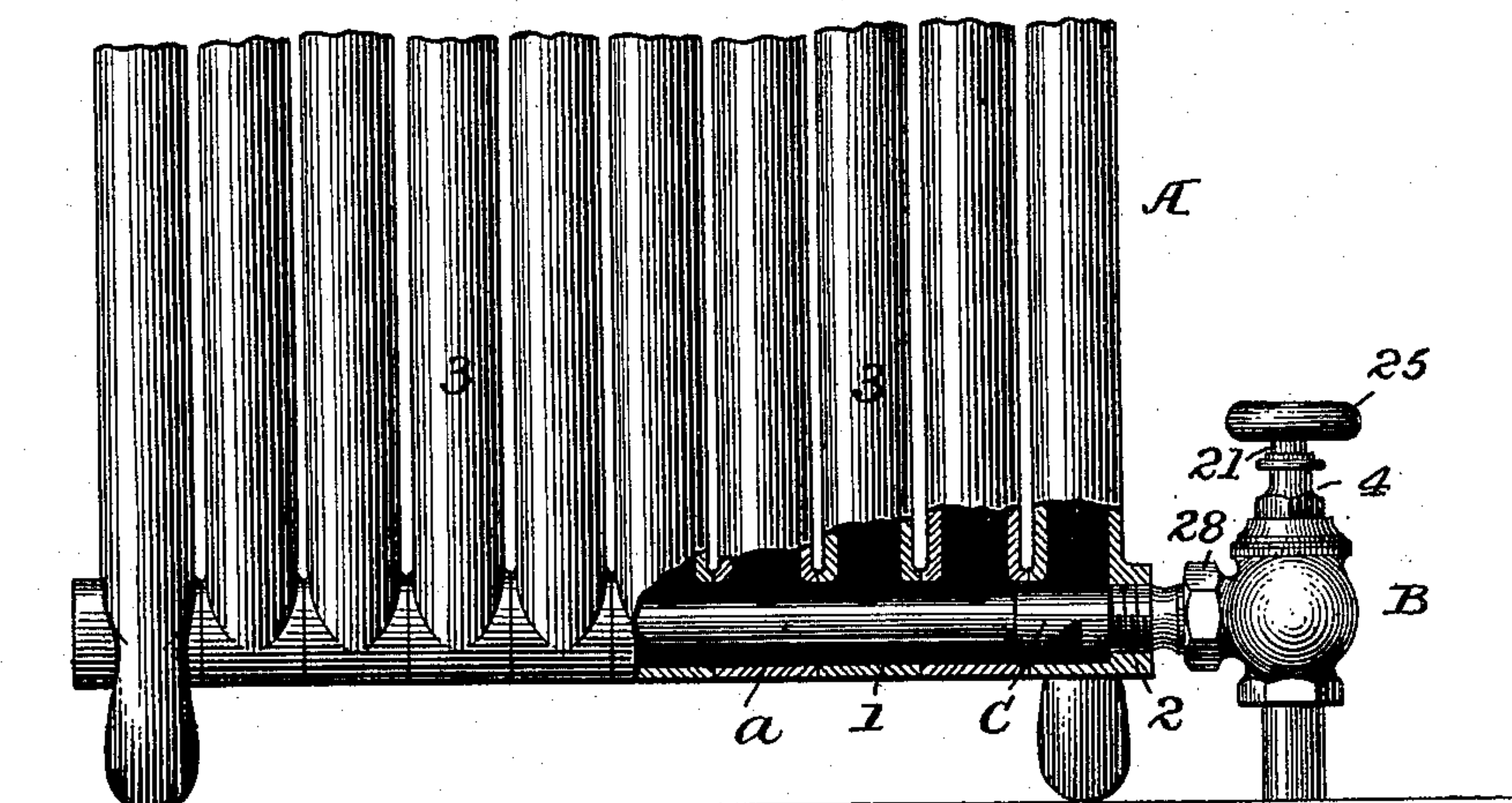
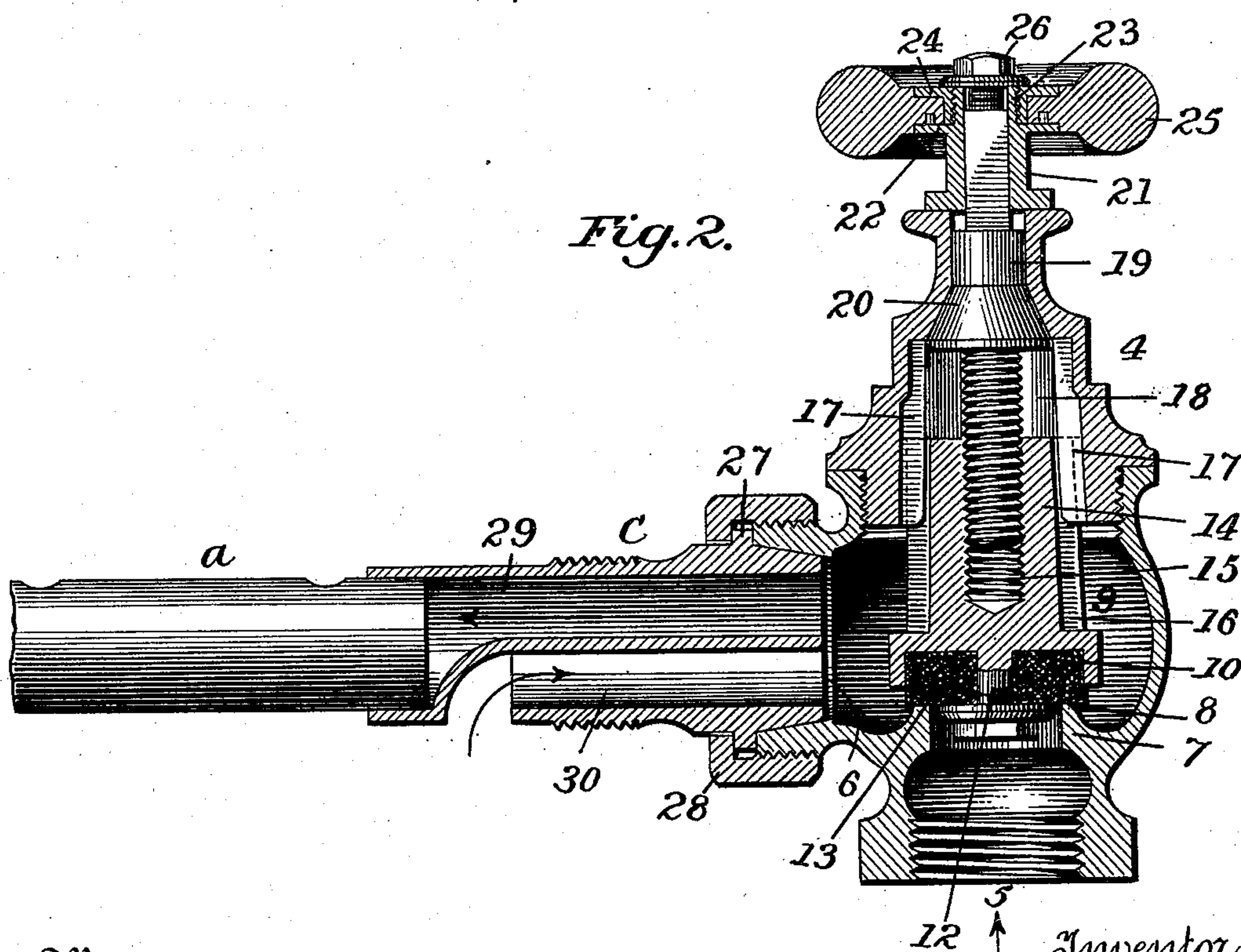


Fig. 2.



Witnesses

Witnesses
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RADIATOR ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 599,708, dated March 1, 1898.

Application filed September 19, 1896. Serial No. 606,431. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. HUTCHINSON, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Radiator Attachments, of which the following is a specification.

This invention relates to certain new and useful improvements in steam-radiators; and it is the object to insure the perfect circulation of steam in the radiator and prevent the retention therein of the water of condensation.

With these ends in view the invention consists of the novel construction, combination, and arrangement of the parts hereinafter more particularly specified.

In the accompanying drawings, forming a part of this specification, and in which like letters and numerals of reference indicate corresponding parts, Figure 1 is an elevation, partly in section, of a radiator and valve. Fig. 2 is an enlarged detail sectional elevation of the valve and its casing.

Heretofore great difficulty has been experienced in radiators, more especially those having no return-pipe, by reason of the collection and retention of water of condensation in the radiator, thereby preventing the ready and effective heating thereof. This is caused by the opposition offered by the collected water to the entrance of the steam to the radiator and its free circulation therein, and if the steam be under much pressure its tendency is to force the body of water to the closed end of the radiator, thereby filling said end and preventing it from becoming heated. By the use of the present invention these objections are overcome and the water of condensation is allowed to freely flow from the radiator to the boiler and the live steam is utilized to aid such flow instead of retarding it, as formerly.

Referring more particularly to the drawings, A designates a radiator of any approved construction, provided at its bottom with a longitudinal chamber 1, having an inlet-port 2 and with which communicate the tube-sections 3. Extending through the length of the chamber 1 is a perforated distributing-pipe *a* for the steam, the perforations of which are preferably in alinement with the passages in the tube-sections.

The valve-casing B is provided with a detachable cap 4 and inlet and outlet openings 5 6, respectively, and it is also provided with a diaphragm 7, located intermediate the inlet and outlet ports and having a valve-seat 8 for the valve 9. This valve is provided in its lower face with a recess 10, surrounded by a flange and having a central threaded projection 12. The recess 10 is adapted to receive a gasket 13, of suitable material, through which extends the threaded projection for reception of a flanged nut which bears upon the face of the gasket and holds it in position. It will be obvious from the above that the gasket may be compressed tightly within the recess 10 and that it is prevented from spreading beyond the edge of the valve by its surrounding flange.

Upon its upper face the valve is provided with an extension or shank 14, having a central screw-threaded opening 15 and longitudinal side channels 16. These channels receive ribs 17, extending from the inner face of the cap 4, which permit the valve to be reciprocated vertically in a chamber 18 of said cap, but prevent its rotation.

The valve-stem 19 is screw-threaded at its opposite ends and at its lower end engages with the threaded opening 15 of the valve. Contiguous to its upper screw-threaded end the valve-stem is formed rectangular in cross-section, and intermediate this point and its lower end the stem is formed with a conical bearing 20, adapted to a corresponding seat in the cap 4. Resting upon the top of this cap is a bearing 21, provided with a flange 22 and an exteriorly-threaded extension 23. The bearing is formed with a central rectangular opening, through which extends the corresponding portion of the valve-stem, and the upper face of its flange is provided with a series of pins or projections. Engaging the threaded extension of the bearing is a flanged nut 24, and between the flanges of this nut and that of the washer is received the web of a hand-wheel 25, provided with recesses for reception of the pins of the flange 22, whereby rotation of the wheel independent of the bearing and nut is prevented. Bearing upon the upper face of the nut 24 is a lock-nut 26, which receives the threaded upper end of the valve-stem and serves the double purpose

of maintaining the conical portion of the stem into close contact with its seat and of locking the nut 24 against movement. From the above description it will be apparent
 5 that by turning the hand-wheel in one direction or the other the valve may be moved vertically toward and from its seat without rotating.

The outlet of the valve-casing is exteriorly
 10 screw-threaded and provided upon its interior with a conical seat for reception of the corresponding end of a union-nipple C, which forms a connection between the valve-casing and the radiator. This nipple is formed near
 15 its conical end with a flanged enlargement 27, with the flange of which a flanged coupling-nut 28 engages, the said nut also engaging the threaded portion of the outlet to force and maintain the conical end of the nipple to
 20 its seat.

The connecting-pipe extends into the longitudinal chamber of the radiator and is provided intermediate its length with an exterior threaded portion adapted to engage the
 25 threaded inlet-opening 2, the end of said nipple being connected to the distributing-pipe a. This nipple is divided by means of a diaphragm into two passages 29 30, the upper one of which extends from one end of the
 30 nipple to the other and communicates with the passage of the distributing-pipe to convey steam thereto, while the lower passage extends from one end of the nipple to a point near the opposite end thereof, opening at the
 35 bottom of the nipple into the longitudinal chamber of the radiator and serving to conduct the water of condensation therefrom back through the valve-casing.

From the above description it will be obvious that a single nipple serves as a supply
 40 and return nipple, and the communication between the boiler and radiator is controlled by a single valve, thereby materially simplifying and reducing the cost of a radiator and
 45 its connections and at the same time greatly increasing the efficiency thereof and insuring a more uniform distribution of the live steam and more perfect circulation thereof.

Without limiting myself to the precise construction shown, what I claim is—

1. The combination with a radiator having a series of tube-sections and a longitudinal bottom chamber common to all of the tube-sections, a distributing-pipe extending longitudinally through the chamber, and provided
 55 with perforations arranged to cause the steam to flow directly to the tube-sections, of a valve, a connecting-nipple between the valve and the radiator, said nipple extending into the chamber of the radiator and having a central longitudinal diaphragm forming two passages, both opening upon one side of the
 60 valve and one of said passages extending from one end of the nipple to the other and communicating with the distributing-pipe to direct the flow of steam therethrough, while the other extends from one end of the nipple
 65 to near the opposite end thereof and opens at the bottom of the nipple into the bottom chamber to permit the discharge of water from the longitudinal chamber, substantially as described. 70

2. The combination with a radiator having a series of tube-sections and a longitudinal chamber common to all of the tube-sections, of a distributing-pipe extending longitudinally through the chamber, and provided with
 75 perforations arranged to cause the flow of steam directly to the tube-sections, a valve-casing provided with a double passage and a valve-seat, a valve adapted thereto, and operating means for the valve, one of the passages of the valve communicating with the perforated distributing-pipe to direct steam
 80 therethrough, and the other communicating with the longitudinal chamber to permit the discharge of water therefrom, substantially as described. 85

In testimony whereof I have signed my name to this specification in the presence of
 90 two subscribing witnesses.

JAMES H. HUTCHINSON.

Witnesses:

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