

1,294,380.

E. O. BENSON.
VACUUM HEATING SYSTEM.
APPLICATION FILED DEC. 12, 1918.

Patented Feb. 18, 1919.

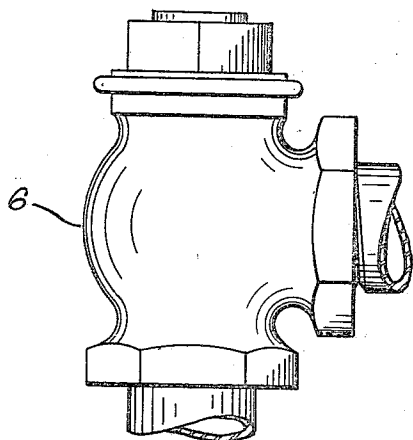


Fig. 1

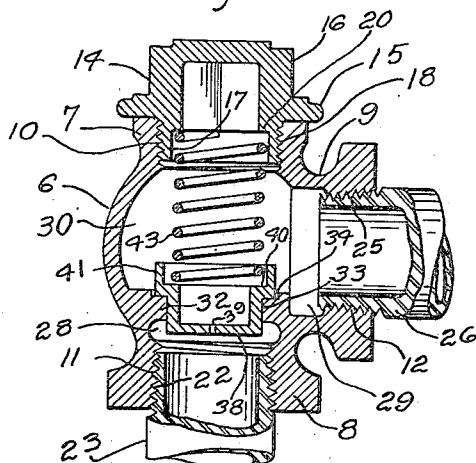


Fig. 2

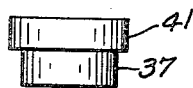


Fig. 3

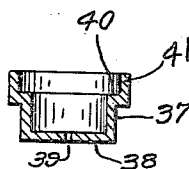


Fig. 4

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VACUUM HEATING SYSTEM.

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Specification of Letters Patent.

Patented Feb. 18, 1919.

Application filed December 12, 1918. Serial No. 266,373.

To all whom it may concern:

Be it known that I, EDGAR O. BENSON, a citizen of the United States, residing at Cranston, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Vacuum Heating Systems, of which the following is a specification.

My invention relates to vacuum check members for use on steam radiators.

The essential objects of my invention are to trap or catch scale; to check the steam and induce the same to liquefy or condense in the radiator; to facilitate the withdrawal of the hot water by the vacuum pump; and to secure these ends in a structure wherein the parts are accessible, easily assembled, and minimum in number.

To the above ends essentially my invention consists of such parts and combinations of parts as fall within the scope of the appended claims.

In the drawings which form a part of this specification,

Figure 1 is a side elevation of my novel device,

Fig. 2, a vertical central section of the same, and

Figs. 3 and 4, an elevation and section respectively of the check member.

Like reference characters indicate like parts throughout the views.

My apparatus is housed in a casing of any convenient shape best adapted for association with the constituent pipes of the gravity or vacuum system in which it is incorporated. In the present instance the casing is of angular type comprising a swelled body 6, having top, bottom and side necks 7, 8, and 9 provided with internal threads 10, 11, and 12 respectively. Closing the neck 7 is a plug comprising a body 14, a flange 15, a squared head 16 and a tubular shank 17 provided with threads 18 engaging threads 10. In the interior of the shank is an annular seat or shoulder 20.

The thread 11 engages a thread 22 on a pipe 23 leading to the air pump. Thread 12 engages a thread 25 on the pipe 26 leading to the steam radiator. The necks 8 and 9 bound the outlet 28 and 29 respectively, from and to the chamber 30 in the casing. Transversely of the outlet integral with the casing body is a partition 32 provided with an opening 33 and an annular channel or depression, or seat 34 around the upper por-

tion of the opening. Mounted in the opening and seat is a cup shaped check member comprising a cylindrical side wall 37, a bottom 38 provided with a central perforation 39, a lateral annular shoulder 40, and a vertical flange 41 on the shoulder.

A helical compression spring 43 has one end pressing against the seat 20 and embraced by the shank 17, while its other end rests upon the seat 40 of the check member, protected by the flange 41.

The body 37 of the latter member is a sliding fit in the hole 33 and the spring presses the shoulder 40 into tight contact with the seat 34.

The condensed steam flows from the radiator through the inlet 29 into the chamber 30 whence it is drawn through the perforation 39, outlet 28 and pipe 23 by the pump.

It will be noted that no valves are present in this apparatus; that the parts are few, that they are readily accessible by the removal of the plug 14; and that the cup base 38 collects all scale.

It will be noted that the perforation 39 is so small that it causes the steam to condense into water before it is taken away by the pump, or by gravity when a gravity system is used. Therefore no steam is wasted.

I claim:—

1. In a device of the character described, the combination with a hollow casing provided with an inlet opening and an outlet opening, a partition across the outlet opening provided with a hole, a check member comprising a side wall loose in said hole, a bottom provided with a central opening, and a shoulder resting on the partition, and a spring resting on said shoulder.

2. In a device of the character described, the combination with a hollow casing provided with an opening in its top, an inlet opening in its side, and an outlet opening in its bottom portion, a plug removably mounted in the first opening, a partition in the casing across the last opening provided with a hole and with an annular channel around the hole, a check member comprising a side wall loose in the hole, a bottom seated in the channel and a flange on the shoulder, and a helical spring on the shoulder within the flange and pressing against the plug.

3. In a device of the character described,

the combination with a hollow casing provided with a threaded opening in its top, a lateral inlet opening, and an outlet opening in its bottom, of a hollow plug having
5 threaded engagement in the first opening, an internal seat in the plug, a partition in the casing across the outlet opening provided with a hole, a hollow check member com-

prising a side wall in the hole, a bottom provided with a perforation, a shoulder on the partition, and a flange on the shoulder, and a helical spring engaging the last mentioned shoulder and the shoulder in the plug.
10 In testimony whereof I have affixed my signature.

EDGAR O. BENSON.