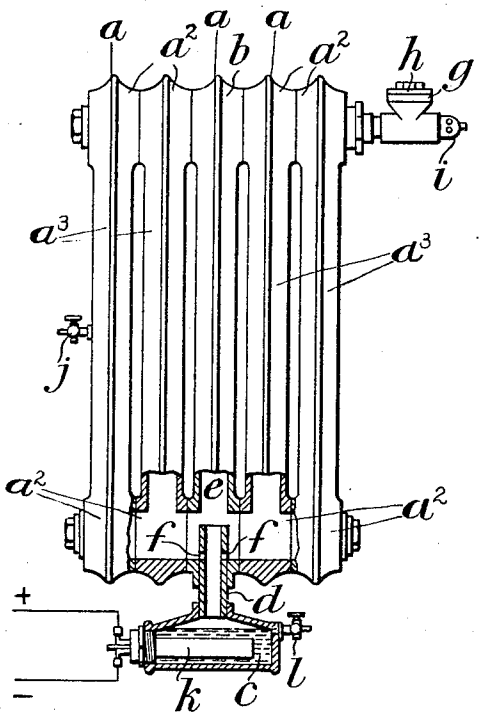
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STEAM HEATED RADIATOR.

APPLICATION FILED JULY 9, 1918.

1,289,052. Patented Dec. 24, 1918.



Witnesses.

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UNITED STATES PATENT OFFICE.

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STEAM-HEATED RADIATOR.

1,289,052. Specification of Letters Patent. Patented Dec. 24, 1918.

Application filed July 9, 1918. Serial No. 244,118.

To all whom it may concern:

Be it known that I, CHARLES REED ALLENSBY, a subject of the King of Great Britain, residing at 66 Wigmore street, London, England, have invented new and useful Improvements in Steam-Heated Radiators, of which the following is a specification.

This invention relates to self contained heat radiators of the kind wherein the radiating surface is heated by steam generated from a small body of water heated by any suitable means and wherein a small external boiling or steam generating chamber is fixed below the radiator tubes or sections.

According to the present invention the boiling chamber is arranged as an extension of one of the radiator sections and a single connecting element only is provided between the boiling chamber and the radiator, which element serves both for the flow of the steam and the return of the water of condensation. This connecting element is in the form of a pipe, which has its lower end connected to the boiling chamber and its upper end extending into the radiator. The upper end of the pipe extends into close proximity to the lower end of one of the vertical tubes of the radiator, so that it will direct steam up said tube and cause the directed steam to exert a drawing action on any steam which may have descended in the other vertical tubes of the radiator. In this manner a continuous circulation of the steam will be insured. The boiling chamber is of such size, that the water contained therein will be of insufficient quantity to fill the lower horizontal passage of the radiator and consequently a sufficient space will be left between said passage and the upper end of the connecting pipe, to permit the directed steam to entrain any steam which has descended into said passage. A cap closed opening is provided in the radiator to fill the boiling chamber and said chamber is provided with a gage-cock to indicate the amount of water in the boiling chamber.

The invention will be readily understood by reference to the accompanying drawing, which shows a side view of a radiator having a portion broken away to show the attachment of the steam pipe. This view also shows the boiling chamber in section.

The radiator consists of five ordinary sections a, each of which includes two horizontal or end headers a^2 connected together by a vertical tube a^3. The headers a^2 of adjacent sections are connected together in the usual manner to form the complete radiator. The central section which I have additionally indicated by the reference character b has the interior of its vertical tube designated e and a pipe d passes through the bottom header of this section and extends upwardly as shown. A boiling chamber c is connected to the lower end of the pipe d.

As shown the pipe d is extended upwardly into close proximity to the lower end of the vertical tube a^3 in the radiator section b, so that the steam will pass up the passage e in said tube, while the majority of the water of condensation will return through the vertical tubes of the other sections of the radiator. A hole or holes f is or are formed in the pipe d, level with the bottom of the radiator space, to allow the water of condensation to return to the boiling chamber c.

If desired the pipe d may be extended into the lower end of the passage e, but it is necessary to have the pipe d unconnected to the vertical tube, so that a space will be provided between the inner surface of the passage e and the outer surface of the pipe d. This space will permit the pipe d to act as a nozzle and cause the rising steam to entrain any uncondensed steam, which may descend through the sections at the sides of the central section. In this manner a continuous circulation for the steam will be provided.

In the drawing, the boiling chamber c is shown as being separately constructed and the connecting element d is in the form of a pipe. It is to be understood, however, that the said connecting element, and also the boiling chamber c may be cast integral with the section b, or, if desired, the said boiling chamber and connecting element may be in one piece and attached to said section b.

It is essential that the quantity of water used in the boiling chamber be of insufficient quantity to entirely fill the interiors of the lower headers a^2 for if these headers are filled with water at any time, said water will act as a seal for the lower ends of the vertical tubes a^3 and prevent the steam, rising from the pipe d, from entraining any steam which may descend through the vertical tubes at the sides of the central tube b. To this end, the radiator is provided with

a filling funnel *g* closed by a removable cap *h* to allow of introducing the proper amount of water into the radiator and a pet cock *l* is applied to the boiling chamber for indicating when a predetermined quantity of water has been introduced into said chamber. A safety valve *i* is fixed to the radiator, as shown. *j* indicates an air cock to release air from the interior of the radiator. *k* indicates an electrical heating element in the boiling chamber.

What I claim and desire to secure by Letters Patent is:—

The combination with a radiator having a series of sections, each including a plurality of horizontal headers connected together by a vertical tube, of a boiling chamber arranged beneath the radiator and having means for heating water in the chamber, means to permit water to be introduced into said chamber, manually operated means for sealing the filling means, and a vertical pipe connected to the boiling chamber and extending upwardly through the bottom of the radiator and terminating in close proximity to the lower end of the vertical tube of one of the sections for directing steam upwardly through the vertical tube of that section and for causing said steam to entrain any steam which may descend into the lower headers of the other sections, said pipe having an aperture in its wall arranged within the radiator for returning the water of condensation to the boiling chamber.

CHARLES REED ALLENSBY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."