E. RUSSELL.

Radiator-Tube.

No. 168,674.

Patented Oct. 11, 1875.

Fig. 1.

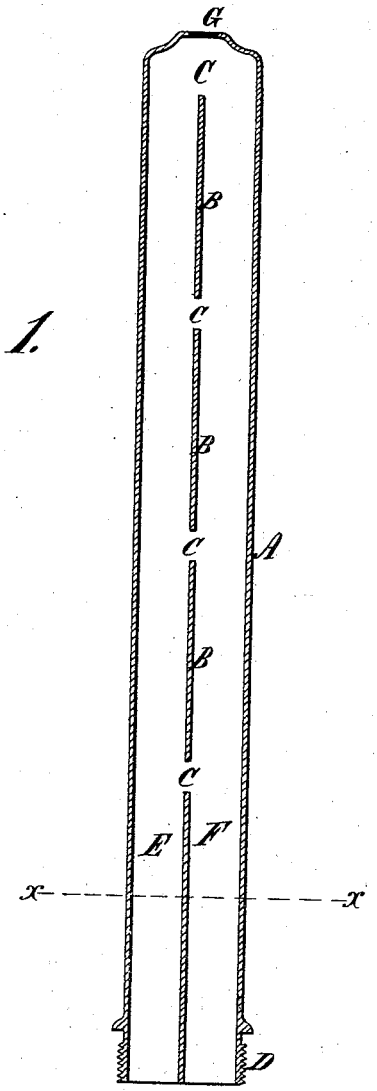
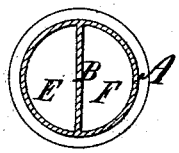


Fig. 2.



Witnesses:

Edw.ª Payson

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UNITED STATES PATENT OFFICE.

EDMUND RUSSELL, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN RADIATOR-TUBES.

Specification forming part of Letters Patent No. **168,674**, dated October 11, 1875; application filed September 27, 1875.

To all whom it may concern:

Be it known that I, EDMUND RUSSELL, of Brooklyn, New York, have invented a certain Improvement in Radiator-Tubes, of which the following is a specification:

My improvement belongs to that class of radiators in which circulation is established by the variable condensation of steam contained in two parallel passages connected with each other at their outer ends, and having a common connection with a steam-chest at their opposite ends.

One variety of this class of radiators is that for which Patent No. 138,200 was granted to me April 22, 1873, which consisted of a loop-pipe radiator, the parallel sides of which were provided with one or more cross-connections between the ends of the loop. My present invention is an improvement upon that radiator; and it consists of a straight tube provided with an inner longitudinal diaphragm, having perforations at prescribed intervals.

The object of my invention is to promote economy in manufacture.

I construct my radiator of cast-iron, and the expense of molding it is much less than the expense of molding the loop-pipe radiator, while from its simplicity of form there is less risk of losing the castings.

The accompanying drawings are as follows: Figure 1 is a longitudinal section of my radiator-tube, showing the interior diaphragm and its perforations, and Fig. 2 is a transverse section of the same through the line *x x* on Fig. 1.

The radiator consists of a tube, A, having a central web, B, cast inside of it, the web having perforations C C at intervals, as shown. A male screw-thread, D, is cut upon the lower end of the tube for engaging a female thread inside of a hole tapped in the base in the usual way. In the casting operation the core occupies the two semi-cylindrical passages E and F, and the perforations C C C C. The two semi-cylindrical cores are mutually strengthened by the cross-connections occupying the perforations C C C C. The core may project from the tube and be supported at both ends. After being cast, the upper end of the tube is closed by a cap or by a plug, as shown at G. The lower end is open for insertion into the steam-chest or base.

In this class of radiators circulation is established, when, owing to variable exposure of the exterior of the tube to currents of air, excessive condensation is induced in one or the other of the side passages. As circulation depends wholly upon variability in the conditions of exposure of the different sides of the pipe, and as the differences in exposure are very slight, it is desirable to provide several openings from one chamber into the other at different elevations, so that when, by reason of greater condensation in one of the passages than in the other, the steam in such passage falls by superior gravity, its place may be immediately supplied by the hotter steam contained in the other passage.

Straight tubes, with a central diaphragm or partition, have been used before, but the only connection between the two passages on either side of the central diaphragm has been at the upper end of the tube. In such radiators there can be no admission of steam from one passage into the other, excepting at the upper end of the tube.

In my radiator a slight excess of condensation, occurring near the bottom of one of the side passages, immediately results in the fall of the condensed steam and the entrance of the hotter steam from the other passage through one of the lower perforations in my diaphragm. By means of these perforations, at various elevations, my radiator is rendered more sensitive in respect of the facility which it affords for the establishment of circulation up one of the passages and down the other, to and from the steam-chest or base.

I claim as my invention—

In a straight radiator-tube, closed at one end and open at the other for connection with a steam-chest or base, a central longitudinal diaphragm, terminating a short distance from the closed end of the tube, and having perforations at prescribed intervals, as and for the purposes described.

EDMUND RUSSELL.

Witnesses:

WM. B. TULLIS,

EDWD. PAYSON.