M. H. CRANE & J. K. ABBOTT.

STEAM-RADIATOR.

No. 180,703. Patented Aug. 8, 1876.

Fig. 1

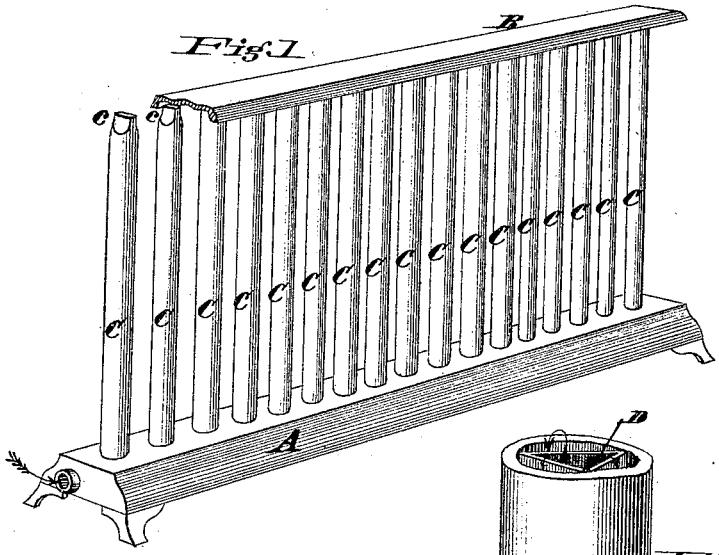


Fig. 2

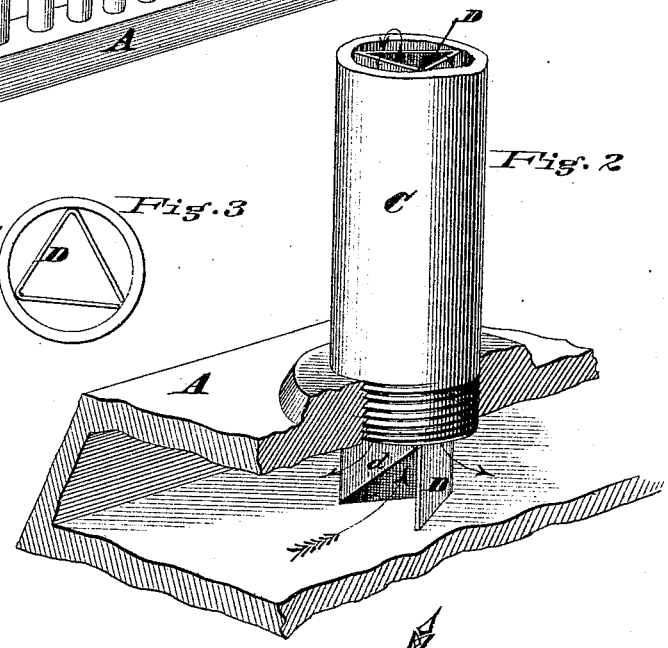


Fig. 3

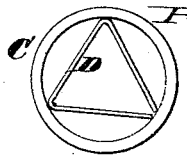
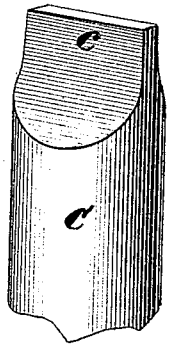


Fig. 4



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UNITED STATES PATENT OFFICE.

MARTIN H. CRANE AND JOSHUA K. ABBOTT, OF CINCINNATI, OHIO, ASSIGNORS TO CRANE, BREED & CO., OF SAME PLACE.

IMPROVEMENT IN STEAM-RADIATORS.

Specification forming part of Letters Patent No. **180,703**, dated August 8, 1876; application filed July 11, 1876.

To all whom it may concern:

Be it known that we, MARTIN H. CRANE and JOSHUA K. ABBOTT, both of Cincinnati, Hamilton county, State of Ohio, have invented an Improvement in Steam-Radiators, of which the following is a specification:

Our improvement in the first part is designed to afford a circulating device for each pipe of the radiator, which will be self-sustaining, and give also a single central channel for the ingress of steam, and several exterior channels for the escape of air and condensed vapor, and our improvement in the second part is designed to afford a convenient and cheap means for closing the ends of the pipes of the radiator, and for the attachment of a wrench.

Our invention consists, in the first part, in combining with each pipe of the radiator, an open-sided tube made of sheet metal bent to triangular form in cross-section, and left open at the edges of the sheet from which it is bent, so that a central passage is afforded for the entrance of steam, three exterior passages for the escape of air or condensed vapor, and such flexibility secured in the tube itself, as will enable it to be self-sustaining in the steam-pipe.

Figure 1 is a perspective view of a radiator, partly sectioned, which illustrates one part of our improvement, and Fig. 4 is an enlarged perspective view of the upper end of one of the pipes, showing the same feature of invention. Fig. 2 is a perspective view, partly in section, representing the interior improvement, and Fig. 3 is a cross-section of the same.

A is the base of the radiator, and B the cap, the radiator being what is known as the single pipe style. Each pipe C is fitted with a plate, D, of sheet metal, bent into triangular shape, as shown, the edges of the plate, after bending, being left slightly separated from each other, so that the tube may be contracted and forced into place, and by its elasticity secure itself in the position in which it is placed. This form of tube, therefore, gives four lines of contact for its support interiorly in the radiator-pipe, and it gives a free central entrance for the steam, and three exterior passages for the escape of air when the steam is first put on, and for the escape of condensed steam when the radiator is in full operation, so that the steam is conducted dry to the top of each pipe, and not being called upon to pass up through or in connection with condensing steam and falling water. Each tube D is cut away on one side, at the bottom *d*, as shown in Fig. 2, so as to give free access to the steam when the pipes occupy a position near the bottom of the radiator. Each radiator-pipe is flattened at the upper end *c*, and welded, so as to close or seal this end of the pipe thereby, and form a cross-section, suited for the attachment of a wrench, by which the tube may be screwed in or removed.

We claim—

1. In combination, with radiating-pipe C, the flexible triangular tube D, constructed and applied, substantially as and for the purpose specified.

2. A radiator-pipe, having flattened welded end *c* to serve the double function of hermetically sealing the pipe, and forming a head for a wrench, substantially as and for the purpose specified.

In testimony of which invention we hereunto set our hands.

JOSHUA K. ABBOTT.
MARTIN H. CRANE.

Witnesses:
EDGAR J. GROSS,
JOHN E. JONES.