

T. P. HARDY.
Steam-Radiator.

No. 216,400.

Patented June 10, 1879.

Fig. 1.

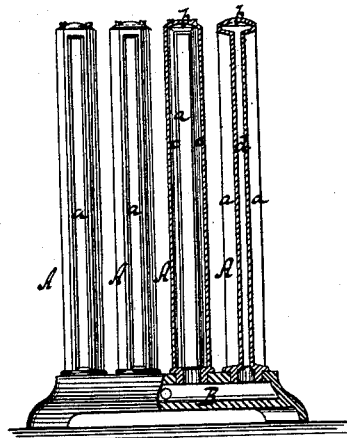


Fig. 2.

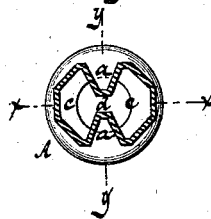


Fig. 3.

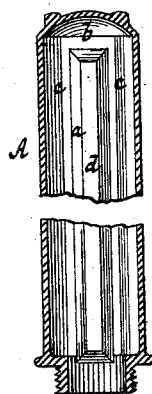


Fig. 4.

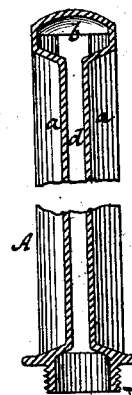


Fig. 5.



Witnesses

Otto Shipeland
Wm. Miller.

Inventor
Thomas P. Hardy

by
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his attorney.

UNITED STATES PATENT OFFICE.

THOMAS P. HARDY, OF MARION, NEW JERSEY, ASSIGNOR TO PETER P. KELLER, OF NEW YORK CITY.

IMPROVEMENT IN STEAM-RADIATORS.

Specification forming part of Letters Patent No. **216,400**, dated June 10, 1879; application filed December 11, 1878.

To all whom it may concern:

Be it known that I, THOMAS P. HARDY, of Marion, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Steam-Radiators, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a sectional elevation of a steam-radiator constructed according to my invention. Fig. 2 is a horizontal section of one of the radiating-tubes on a larger scale than the previous figure. Fig. 3 is a longitudinal section of the same in the plane *x x*, Fig. 2. Fig. 4 is a similar section in the plane *y y*, Fig. 2. Fig. 5 is a transverse section of a modification thereof.

Similar letters indicate corresponding parts.

This invention consists in a radiating-tube provided with one or more depressions, which commence near the open foot of the tube, and terminate within a short distance from the closed top thereof, leaving a narrow channel opposite their inner edge or edges, a steam-chamber above, and two more steam-chambers on opposite sides of and connected by said narrow channel, so that the radiating-surface of the tube is increased, and a circulation of the steam through said tube is effected.

In the drawings, the letter *A* designates my radiating-tube, which is preferably made of cast-iron, and which is open at its foot and closed at its top. On opposite sides of said tube are formed depressions *a a*, which commence near its open foot and terminate within a short distance of the closed top, thereby forming a chamber, *b*, and two chambers, *c c*, on the sides of the tube, while an open channel, *d*, extends from the chamber *b* down to the open foot.

In the example represented by the drawings I have shown a radiating-tube with two depressions, *a a*; but, if desired, the number of depressions may be increased, or the tube may be formed with only one depression, as shown in Fig. 5.

The radiating-tubes *A* are secured in a base, *B*, of the ordinary construction, and if steam is admitted to the same it passes up through the chambers *c c*, and down through the narrow channel *d*, between or opposite the inner edges of said depressions, thereby creating a circulation which materially increases the heating capacity of my radiator.

Furthermore by providing the tubes with depressions *a a*, their radiating-surfaces are increased, and a radiator is obtained which produces a superior heating effect with comparatively little expenditure of steam.

What I claim as new, and desire to secure by Letters Patent, is—

A metallic radiating-tube formed in one piece, and provided with one or more longitudinal depressions, which commence near the open foot of the tube and terminate within a short distance from the closed top thereof, leaving a narrow channel, *d*, a steam-chamber above, and two at opposite sides of and connected by said narrow channel, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 4th day of December, 1878.

THOMAS P. HARDY. [L. S.]

Witnesses:

W. HAUFF,
E. F. KASTENHUBER.