

J. T. KELLY.
STEAM-RADIATOR.

No. 179,027.

Patented June 20, 1876.

Fig. 1.

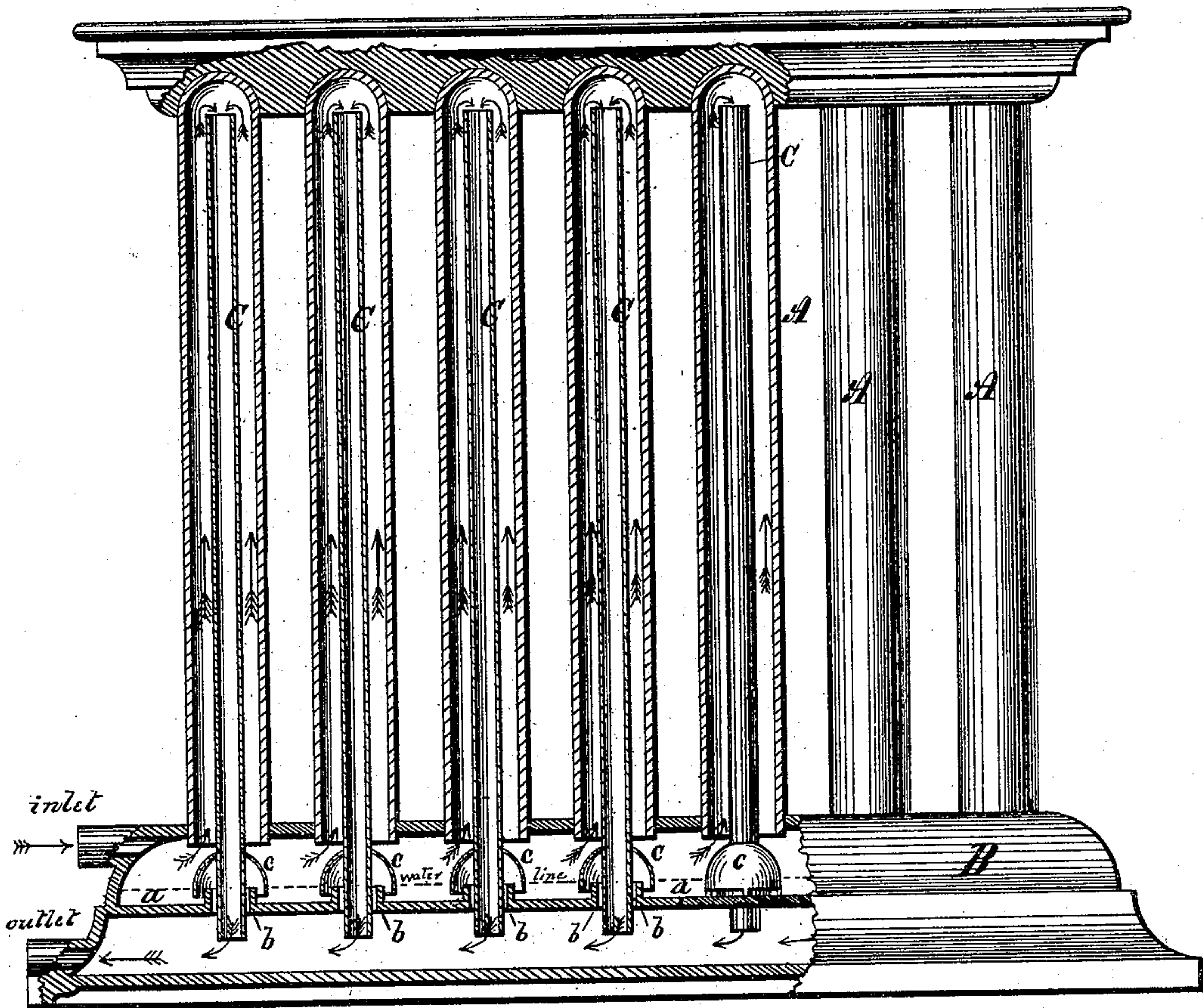
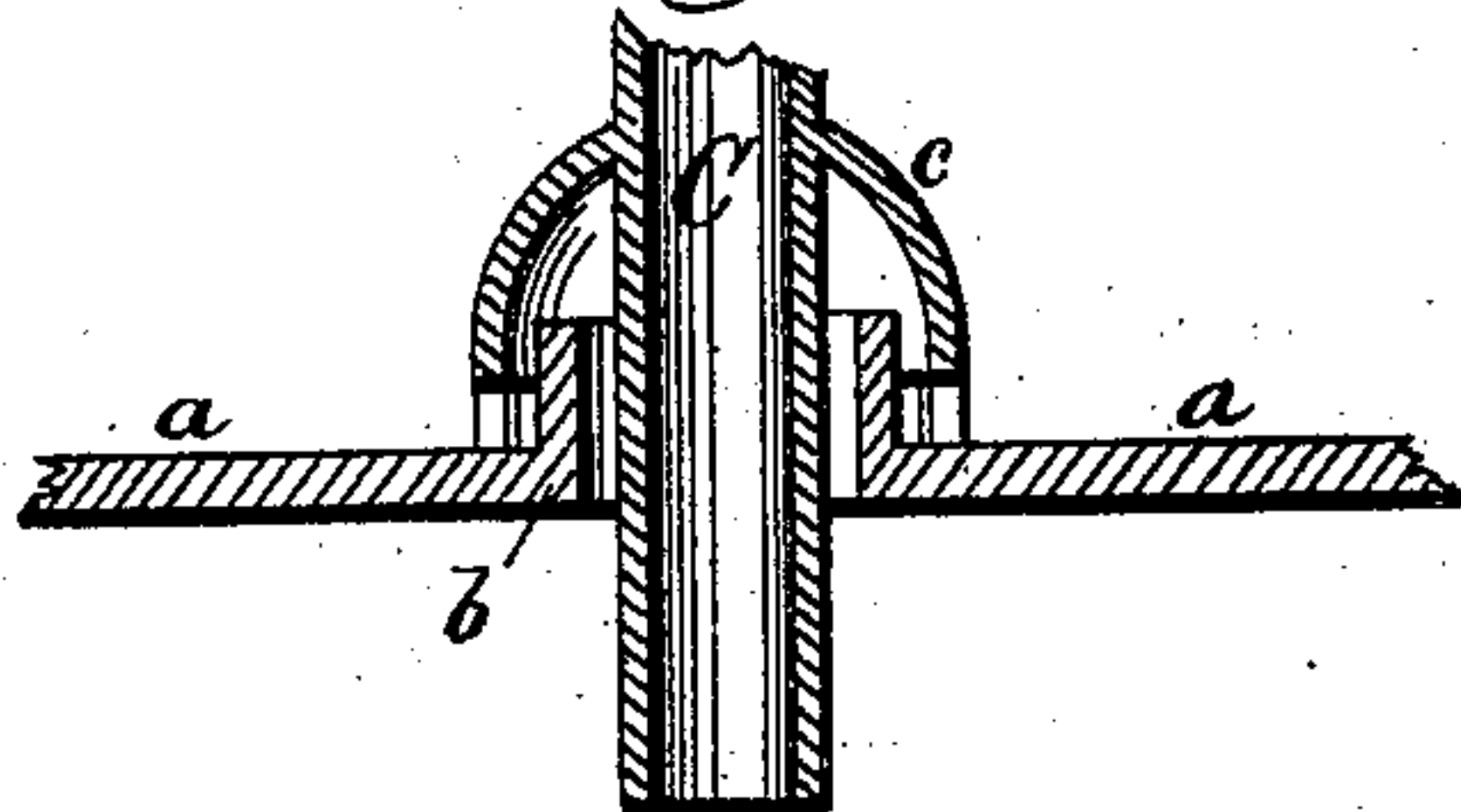


Fig. 2.



Witnesses

Phos. A. Watterson.

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JOHN T. KELLY, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN STEAM-RADIATORS.

Specification forming part of Letters Patent No. **179,027**, dated June 20, 1876; application filed December 9, 1875.

To all whom it may concern:

Be it known that I, JOHN T. KELLY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Radiators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is an elevation, partly sectional. Fig. 2 is a detail view of trap.

This invention relates to steam-radiators in which steam radiates up through upright pipes open at one end, and down through internal pipes open at both ends, the steam entering one chamber and passing out through another; and has for its object the forcing of circulation regularly through the pipes up and down before escaping.

To this end, my invention consists in making the interior pipes loose at both ends, and providing them with steam-traps, as herein-after described and claimed.

In all radiators of this description the interior pipe is fastened at one end necessarily, and steam is not necessarily forced to circulate, since it can pass off through the opening for water-waste without circulating at all.

Referring to the drawings herewith, my invention is adapted to the form of radiator having upright pipes A, closed at top, and open at bottom into the upper of two chambers formed in the base B. They are simply screwed therein.

The base B has a continuous horizontal diaphragm, *a*, which divides the base into two chambers, the upper being connected with the steam-inlet pipe, and the lower with the exhaust, as shown.

The diaphragm *a* is perforated under each of the pipes A, and the edge of each perforation is surrounded by the vertical rising flange *b*. Smaller than these perforations in diameter are the interior pipes C, open at both ends, above, extending inside pipes A nearly to their tops, and below through the perforations in diaphragm *a* into exhaust-chamber of base B. They are provided with the inverted

cups *c*, which are larger in diameter than the flanges *b*, and extend below the top edges of same. They are supported at that point by small legs; or the cups may extend to the diaphragm, and have portions cut away. The result is the same; but they must be supported in such a manner that an open passage is left between all. No further fastening or support is needed.

This construction leaves a clear space between the pipes C, cups *c*, and flanges *b*, to form a water-way when the water of condensation accumulates to an excessive amount, and to form, with the water, a steam-trap between the two chambers of the base.

The operation is as follows: Steam being admitted at the inlet-pipe into upper chamber of base B, it condenses into water rapidly until the apparatus is warmed. By that time enough water will have formed on top of diaphragm *a* to lute the open spaces between flanges *b* and cups *c*. The live steam will then be forced to travel up the pipes A, and then down the pipes C into the lower chamber, passing off through waste-pipe to the boiler. If water be in the upper chamber at first, the circulation will begin sooner. Should the water accumulate more, it will overflow the flanges *b* into lower chamber, thence to the boiler. Thus the water can never be in injurious excess.

The steam cannot get out of the upper chamber, save by circulating up through the radiating-pipes A and down through the pipes C, during which action the pipes A can absorb the heat from the live steam before it gets out of reach. The circulation is thus forced by the traps, and the hot steam must give its full benefit to the radiating-pipes.

Another advantage of my construction is, that in the possible forming of the water into ice no harm can arise by its formation, for, since the pipes C are loose at both ends, should ice form it will push them up slightly. When the ice melts they will resume their normal position.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a radiator or heater of the class described, the water-luted steam-traps, consist-

ing substantially of the flanges *b* and cups *c* around the openings between the chambers, substantially as shown and specified.

2. In combination with the pipes *A* of a radiator, the interior pipes *C*, open at both ends, and adjustable therein, substantially as described, so as to be free to move, as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 7th day of December, 1875.

JOHN T. KELLY.

Witnesses:

GEO. M. JONES,

THOS. J. MCTIGHE.