

Albert G. Bearup and Patrick Carraker Jr.
Improved Steam Radiator.

No. 118,779.

Patented Sep. 12, 1871.

Fig. 1.

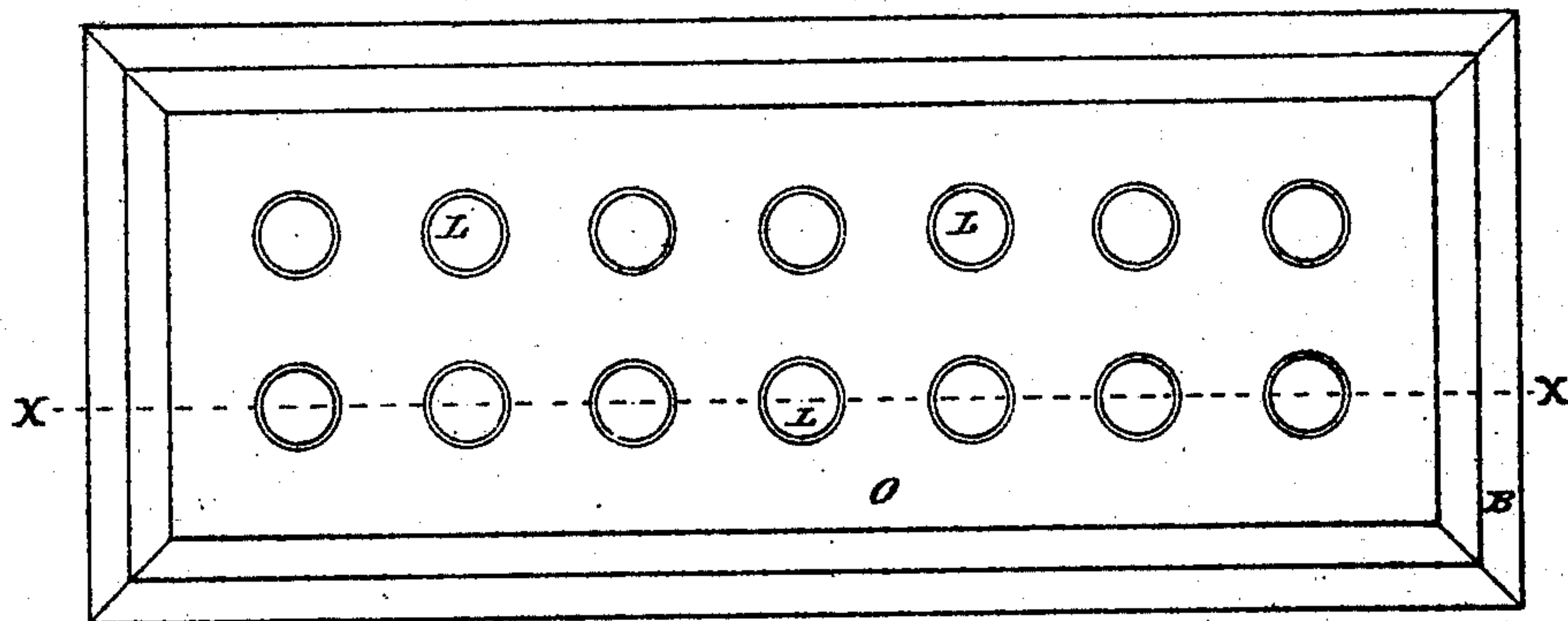
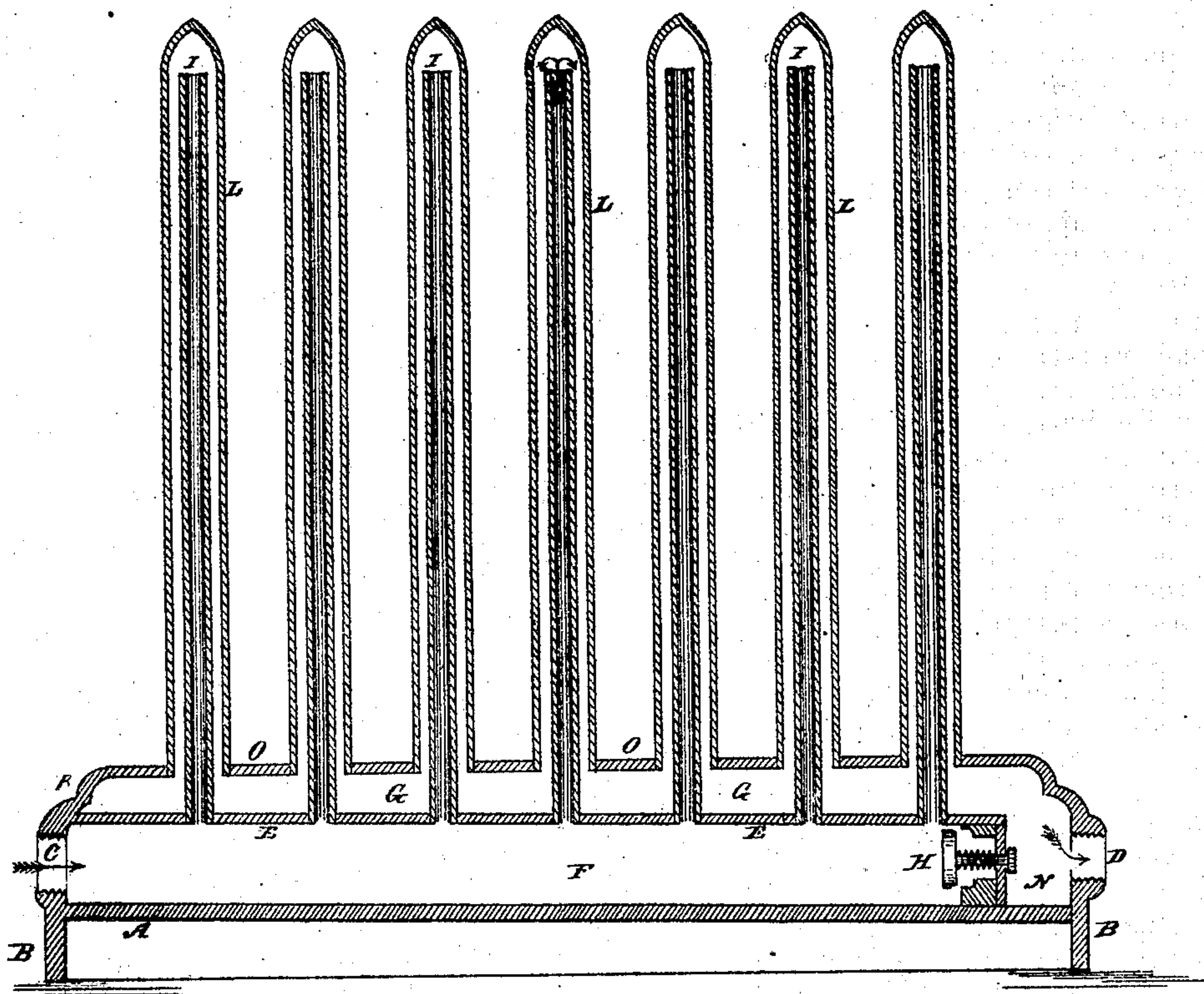


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

ALBERT G. BEARUP AND PATRICK CARRAHER, JR., OF NEW YORK, N. Y.

IMPROVEMENT IN STEAM HEATERS.

Specification forming part of Letters Patent No. 118,779, dated September 12, 1871.

To all whom it may concern:

Be it known that we, ALBERT G. BEARUP and PATRICK CARRAHER, Jr., of New York, in the county and State of New York, have invented certain Improvements in Steam Heaters or Radiators, of which the following is a specification.

Our invention consists in a radiator heated by steam, which presents the following novelties: The first one consists in an automatic or self-acting valve for the outlet of the air. This valve, when steam is being turned on, allows the air to pass out directly, and closes itself when the radiator is filled with steam. Thus the heater is at once discharged of its air, which, in mingling with the steam, would otherwise diminish its heating effect; at the same time it serves for the outlet of the water, which may condense in the lower chamber. The second improvement consists in an inclined partition and bottom, from which the condensed steam or water can flow out, thus preventing freezing in winter, when the radiator is not in use.

Figure 1 is a plan of our apparatus. Fig. 2 is a vertical transverse section of the same according to the line *x x* drawn across Fig. 1.

A A is the bottom of the heater, consisting of a slightly inclined cast-iron plate. B B is an iron casting forming the outer wall of the chamber into which steam is conveyed. C is an opening for the introduction of the steam, while the opposite aperture D is provided for the escape of the air and condensed steam. E E is a slightly-inclined plane, forming a partition between the two steam-chambers F and G. H is a self-acting or automatic valve attached to the one end of the lower chamber F. This valve consists of a hollow Munce's metal tube, with a thread cut upon the outside. There is a cross-bar across the top, cast with the tube. A valve works from the bottom, with a spiral spring through the bar cross the head of this tube. The valve-rod can easily be adjusted, in case of the spiral spring giving out, by taking out the pin at the head of

the bar. The vertical pipes I I, which are open on both ends, are screwed and tapped in partition E, and inclosed in the pipes L L, which are closed on the top. The plate O O represents the top of the steam-chamber G. In the apparatus described the steam arrives from the boiler by the inlet C and passes through I I and L L; these emit or radiate the heat they have absorbed from the steam. When the latter is turned on the air inclosed in the heater is partly driven out by way of H N, since the valve H is open as long as the heater is not entirely filled with steam; partly it is expelled through the pipes. When the radiator is filled with steam the valve closes automatically by the pressure exerted from within. In this manner the care of opening and closing a special stop-cock, which in the ordinary heaters is attached half-way to one of the pipes L, is entirely dispensed with; but the great advantage gained by this valve consists in that, by turning on steam, most of the air is at once driven out, while in the ordinary heaters, especially if the steam is turned on suddenly, a large amount of air will remain in them, being compressed against the sides, and will thus materially diminish the caloric effect of the steam otherwise obtained. The second novelty in our radiator consists in the inclined partition E and inclined bottom A, from which the condensed steam or water will flow into space N, whence it may be drawn off by D.

We claim as our invention—

1. The employment of a self-acting valve, H, on the base for the discharge of the atmospheric air and water of condensation, substantially as herein described.

2. The inclined partition E and bottom A, substantially as and for the purpose hereinbefore described.

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Witnesses:

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