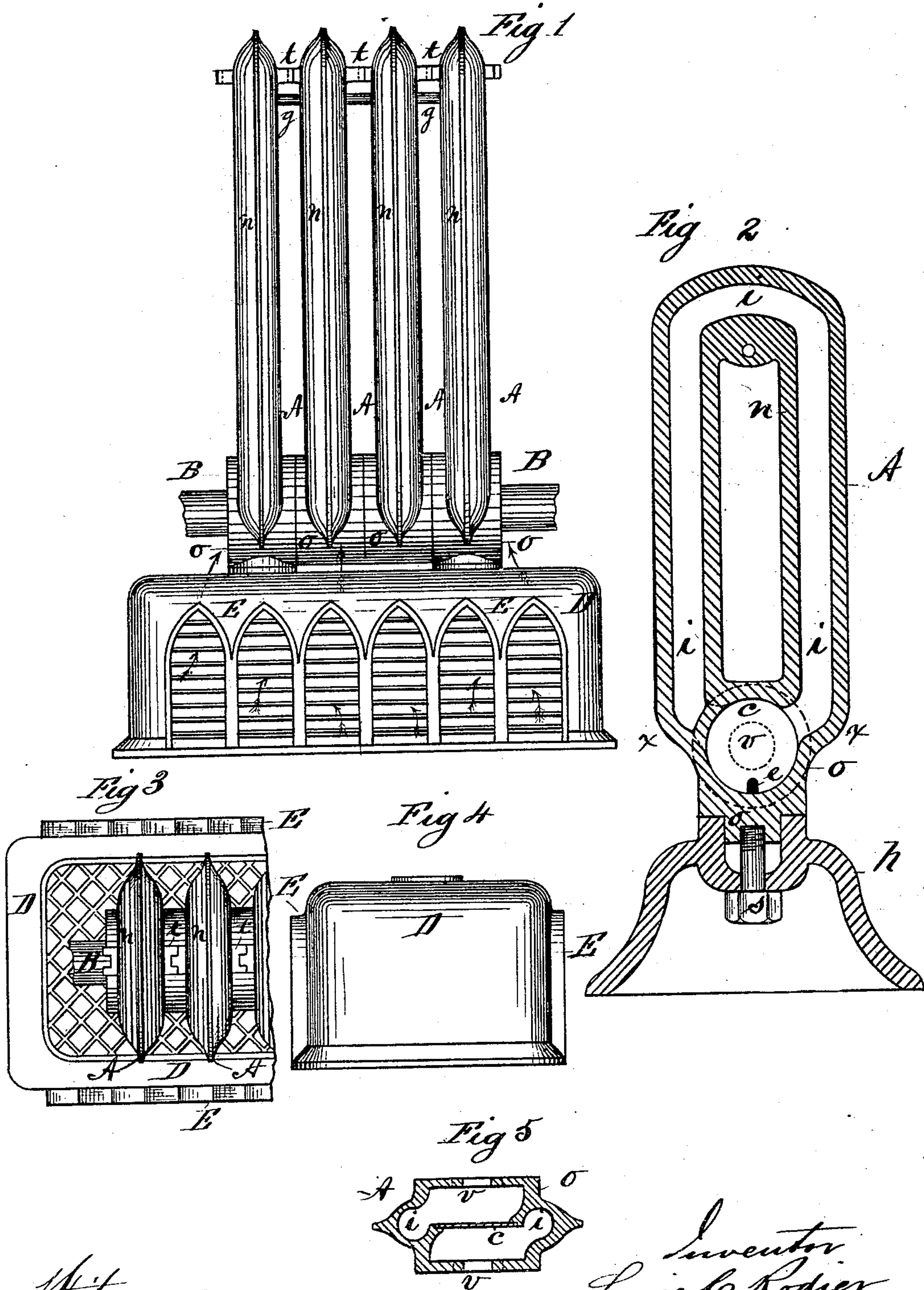


(No Model.)

L. C. RODIER.
Steam Radiator.

No. 238,529.

Patented March 8, 1881.



Witnesses.
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UNITED STATES PATENT OFFICE.

LOUIS C. RODIER, OF WESTFIELD, MASSACHUSETTS, ASSIGNOR OF ONE-
FOURTH TO GEORGE T. MOORE, OF SAME PLACE.

STEAM-RADIATOR.

SPECIFICATION forming part of Letters Patent No. 238,529, dated March 8, 1881.

Application filed November 9, 1880. (No model.)

To all whom it may concern:

Be it known that I, LOUIS C. RODIER, a citizen of the United States, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Steam-Radiators, of which the following is a specification.

My invention relates to the details of construction of the steam-passage through radiators, and to the construction of radiators consisting of a series of independently-circulating sections or stands, the object being to simplify said construction, and to compel a direct circulation of steam through the radiator from end to end and through each section thereof, from the entrance to the exit, in succession, and to obviate the possibility of air-filled space in a radiator while the steam inlet and outlet are open.

In the drawings forming part of this specification, Figure 1 is a side elevation of a compound radiator consisting of a series of single radiators or sections embodying my improvements. Fig. 2 is a vertical section of one of said single radiators or sections set upon a single base. Fig. 3 is a plan view of a portion of Fig. 1, showing two of the single radiators thereon. Fig. 4 is an end view of the compound radiator-base. Fig. 5 is a transverse section through the base of the single radiator, Fig. 2, on the line *x x*.

D is the compound radiator-base. E are air-circulating openings, of a window form, provided with slat-like coverings. A is the steam-circulating single radiator. *c* is a diaphragm set vertically in said single radiator across its base. *e* is a hole through diaphragm *c*. *i i* is a steam-passage through the vertical portion *n* of the radiator A. B B are pipes conveying steam either to or from the radiator. *o* is the base of the radiator A. *h* is a single radiator-base. *s* is a bolt securing stand or base *h* to the radiator A. *vv* are steam-connection openings in the base *o* of the radiator A, one on each side of the diaphragm *c*. *t t* are steady-blocks on the sides of the single radiator A, and *g* is a binding-rod passing through a web near the top of the stands or radiators A, as placed upon base D, Fig. 1.

The essential feature of my invention con-

sists in so constructing the single steam-circulating radiator A that it is practically a steam-conducting pipe, conveying a current of steam which is admitted to the base *o* through one of holes *v* up through one side of the vertical portion *n* of the radiator, and down through the opposite side thereof into the base *o* on the opposite side of the diaphragm *c* to that where it entered, and escaping from thence by the hole *v* opposite to the first-named one. Thus no air can find such a lodgment in this radiator, after steam is let on, as will prevent the steam from reaching and heating every inch of its surface which surrounds the steam-passages therein; and hence this radiator is more effective for heating purposes than any other.

The steam-circulating radiator-stand A consists of the base *o*, of circular form and hollow, as shown in Fig. 5, having its opposite flat sides perforated with the openings *v*, to which may be attached the steam-connecting pipes B B. Transversely across base *o*, and dividing it about centrally, is set the diaphragm *c*. From each side of base *o* the hollow vertical portion *n* of the radiator branches off, meeting centrally at the top, and providing a conducting-pipe from one side of base *o* to the other.

By reference to Fig. 5 it will be seen that the diaphragm *c* compels the steam which enters one of holes *v* to enter the lower end of only one of the vertical portions of the single radiator A, and passing around through passage *i*, to be discharged through the lower end of the opposite vertical portion upon the opposite side of the partition or diaphragm *c* to that where it entered. The diaphragm *c* has a hole, *e*, through it at its lower edge, located lower than the lowest point of the supply and discharge openings *v* in the base *o* of the radiator A. Said radiator A may be made of any desirable size, and, mounted upon its base *h*, may be used advantageously as a direct or indirect radiator, wherever nothing larger is needed; but when considerable heating-surface is required in one location a number of the single radiators A may be connected together, as in Fig. 1, and steam be circulated continuously through a group of any number, the steam being forced to follow successively

from one stand to another through the whole line.

Base D is provided with suitable projections on its top, as shown, upon which the two end radiators thereon may rest, secured in any suitable way, as in Fig. 1.

It will be observed that the radiators A are provided with steady-blocks *t t* upon either side thereof near the top, as in Figs. 1 and 3, which blocks interlock, as shown, when said stands are locked together in a group, whereby the end radiators support the intermediate ones in an upright position. The radiators A are connected one to the other, as in Fig. 1, in the usual manner, and a binding-rod, *g*, serves to hold their upper ends firmly together. The supply and discharge pipes B B are connected to the outer radiators of the series, and steam may be admitted at either end.

The base D, supporting the series of stands A, is made open at the top, as in Fig. 3, and its sides are provided with a series of window-shaped openings, E, provided with slat-like coverings, between which air can freely pass into the base, and from thence escape upward through the open top and flow up and around the grouped radiators, where it becomes heated. The slat-like coverings across the openings E project from the sides of base D sufficiently to allow of grinding and finishing off the edges of said slat-like coverings, so that they may be easily nickel-plated, if desired.

A compound radiator thus constructed from a series of said single radiators A is, as will be seen, a continuous coil of steam-pipe, providing a sinuous passage for the steam, through every part of which the steam must pass and penetrate.

The water which may accumulate in the base of the single radiators A can freely pass by

the diaphragm *c*, flowing through the hole *e* therein, and flow off in the direction of the out-passing steam; and since said hole *e* is lower than the lowest point in the openings *v* on each side of said base *o*, it is obvious that the passage or hole *e* will always be sealed by water, so that no steam can pass through it.

I am aware that radiators set upon a horizontal base forming a steam-chamber which is divided by partitions to cause the steam to flow up one leg and down the other of hollow radiators secured thereto are not new, and that it is common to construct radiators to be set horizontally, in which a partition is set to cause the steam to flow from one end around to the other; but I claim neither of the above-described constructions; but

What I claim as my invention is—

1. The hollow radiator A, consisting of a single casting adapted to be set vertically, and having within it a steam-passage, *iii*, leading from its horizontal feed-pipe B upon one side of the diaphragm *c* to the top of said radiator, and down to a discharge-opening upon the opposite side of said diaphragm, substantially as set forth.

2. In combination, the oblong base D, having two projections on its top side, as shown, and the series of three or more vertical radiators, A, secured together side to side, and having the steady-blocks *t t* thereon, and forming a steam-passage from one end of said series to the other end, running from the bottom to the top, and from the top to the bottom in each radiator in succession, substantially as set forth.

LOUIS C. RODIER.

Witnesses:

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