

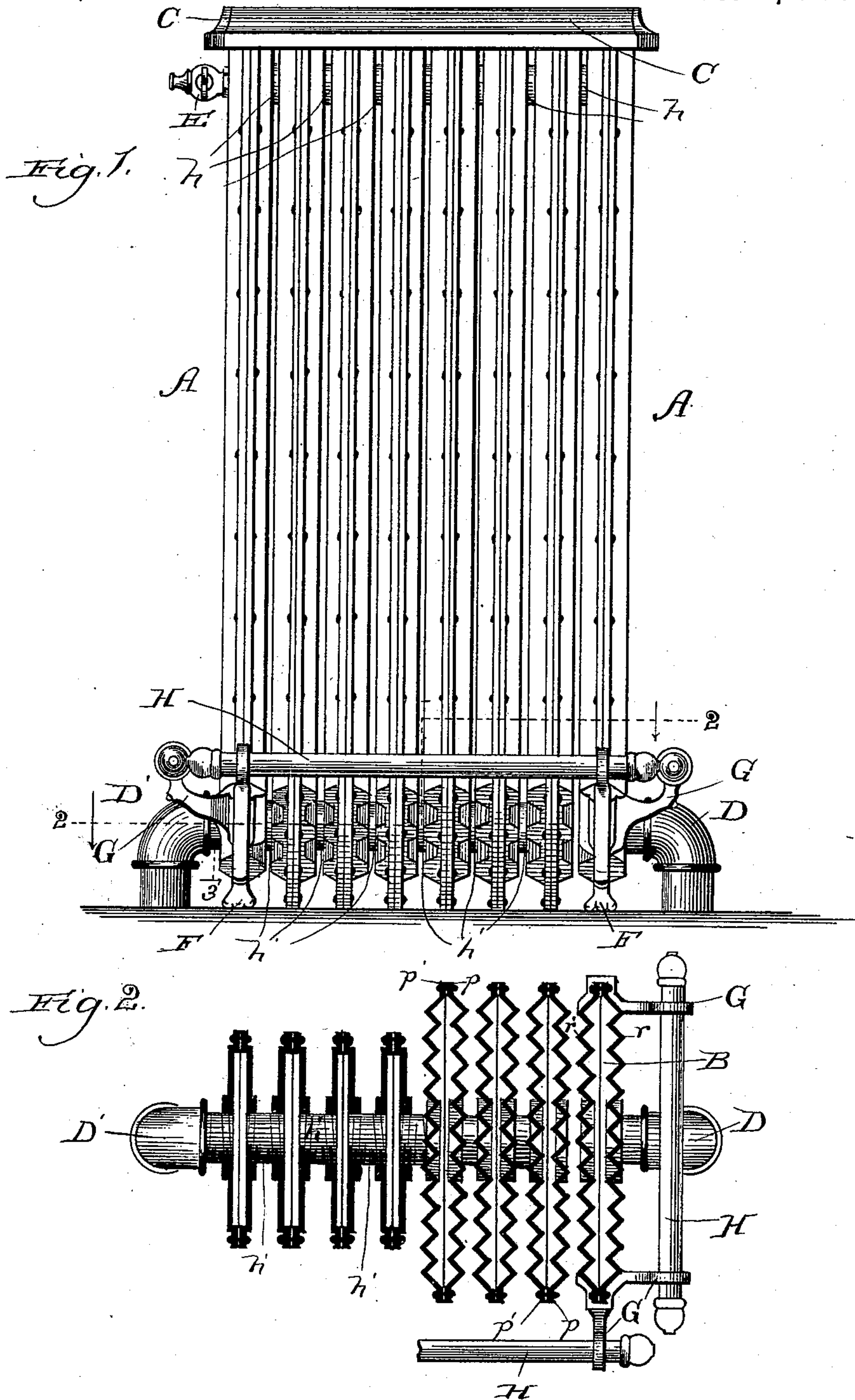
(No Model.)

2 Sheets—Sheet 1.

R. F. BROWN.
RADIATOR.

No. 374,518.

Patented Dec. 6, 1887.



Witnesses:
Chas. E. Gaylord,
Fred Cox.

Inventor:
Royal F. Brown.
By *Dyrenforth & Dyrenforth*
Attys.

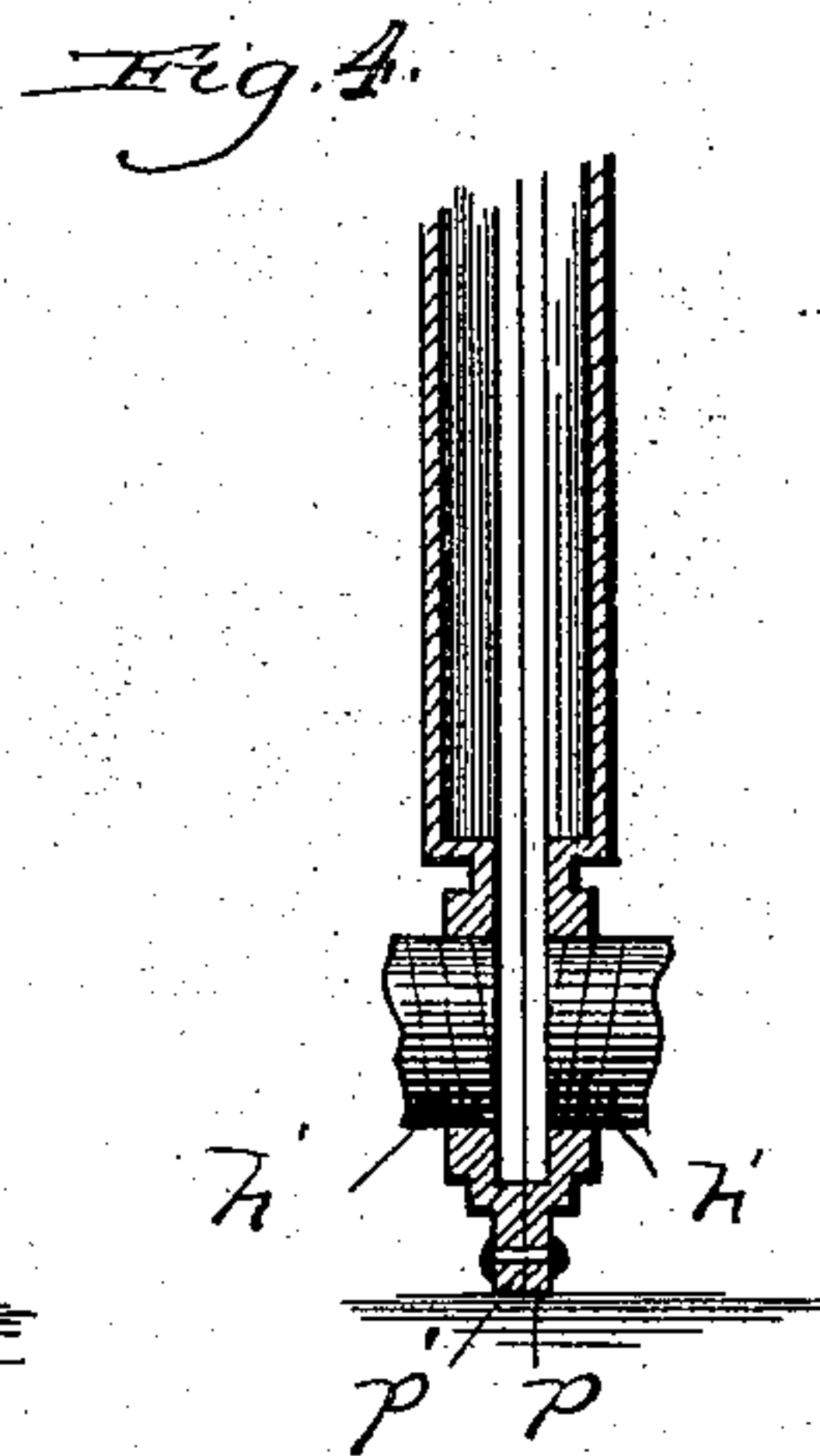
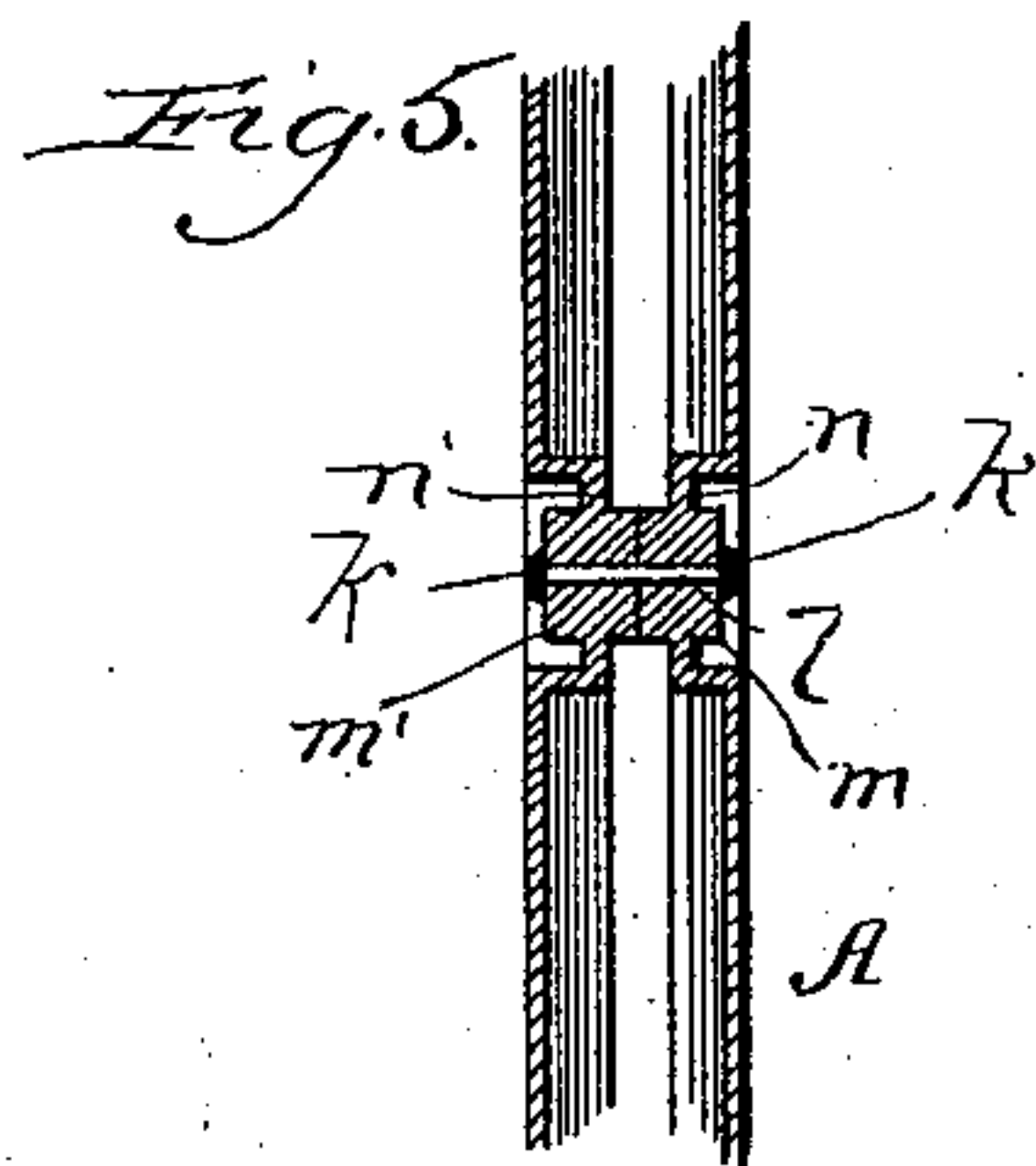
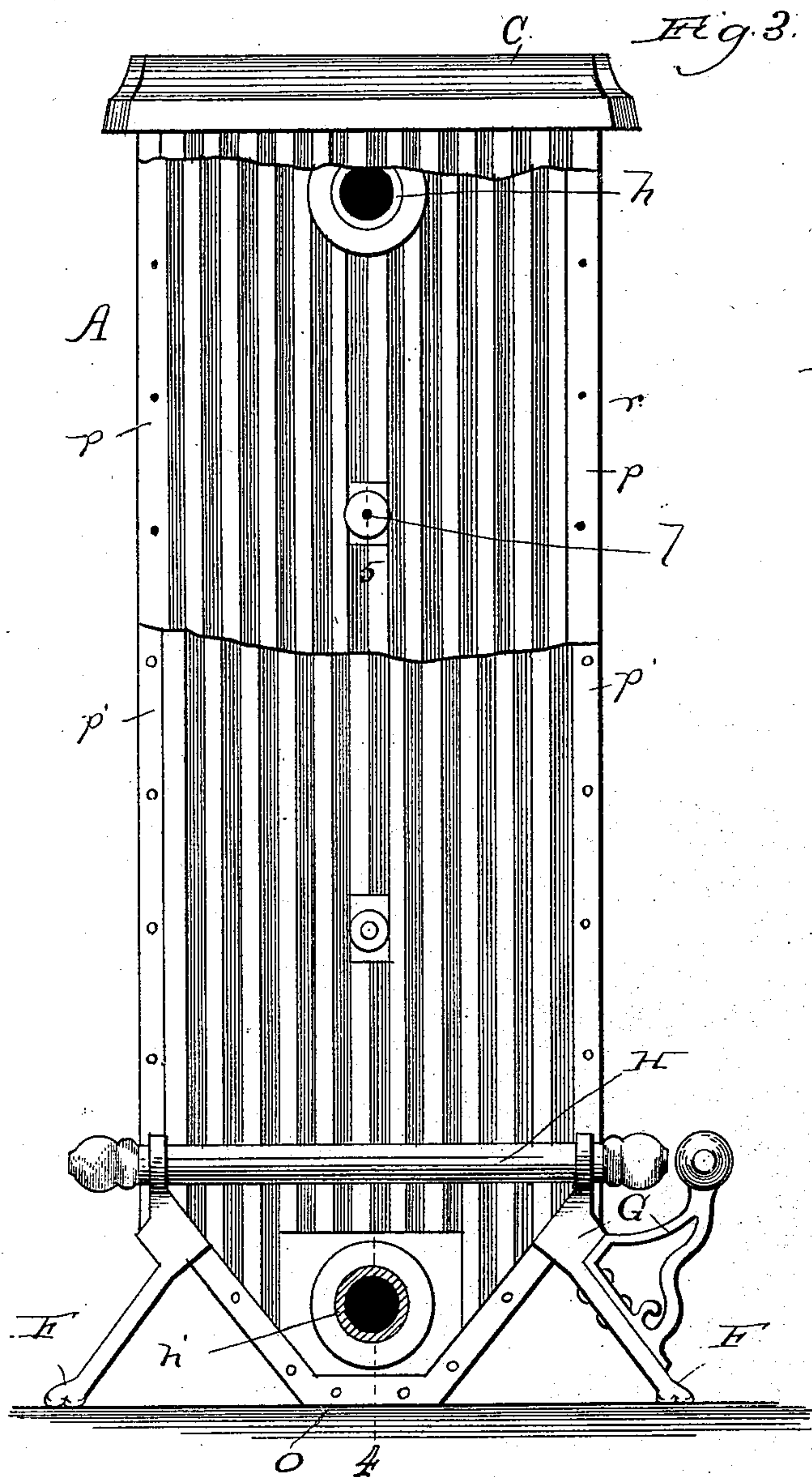
(No Model.)

2 Sheets—Sheet 2.

R. F. BROWN.
RADIATOR.

No. 374,518.

Patented Dec. 6, 1887.



Witnesses:
Chas. E. Gaylord
Fred Cox.

Inventor:
Royal E. Brown,
By Dyerforth & Dyerforth
Attys

UNITED STATES PATENT OFFICE.

ROYAL F. BROWN, OF CHICAGO, ILLINOIS.

RADIATOR.

SPECIFICATION forming part of Letters Patent No. 374,518, dated December 6, 1887.

Application filed May 17, 1887. Serial No. 233,486. (No model.)

To all whom it may concern:

Be it known that I, ROYAL F. BROWN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Radiators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improvement in the class of devices located in the apartments to be heated by the radiation from their surfaces of the heat transmitted to them from hot water or steam passed through them from the heating apparatus with which they are connected.

It is the object of my improvement to provide a radiator of a construction which shall contain a large area of heating-surface in a comparatively small space, and which shall at the same time, and as a result of the construction, afford a highly-ornamental device.

To this end my invention consists in the general construction of my improved radiator; and it also consists in certain details of construction and combinations of parts, all as hereinafter fully set forth.

In the drawings, Figure 1 shows my improved hot-water radiator in side elevation. Fig. 2 is a sectional view taken on the line 2 of Fig. 1 and viewed in the direction of the arrow. Fig. 3 is a similar view taken on the line 3 of Fig. 1 and viewed in the direction of the arrow, showing the radiator in broken end elevation; Fig. 4, a sectional view taken on the line 4 of Fig. 3, and Fig. 5 a sectional view taken on the line 5 of Fig. 3.

The radiator A comprises a series of cast-metal chambers, B, surmounted by an ornamental cap, C, and resting on the floor as the base. Each of the chambers, which is of the peculiar construction hereinafter described and of the full width of the radiator, may constitute a radiator in itself, the number of chambers intercommunicating, as hereinafter described, depending upon the size of the apartment to be heated.

Each chamber B is formed of two wide cast-metal plates, r and r' , hollowed out lengthwise on one side between their edges to produce lateral flanges p and p' . The plates are

tapered on opposite sides toward their lower edges to produce, when adjusted together, as hereinafter described, the narrow base o , the inclined edges being likewise flanged, as shown, and also the upper edge. Each plate r and r' is serrated longitudinally throughout its entire extent to produce on opposite surfaces the zigzag form in cross-section illustrated in Fig. 2, and the two are bolted together face to face at their flanges to produce a chamber, B, between them. The plates r and r' are each provided in the casting centrally between the lateral edges with two corresponding depressions or rectangular recesses, n , one above the other, equally distant, or substantially so, from the respective ends, and having centrally within them on opposite sides of each plate square perforated lugs m , which abut against each other on the inner sides of the plates when the latter are adjusted together to form a chamber and bolts l are passed through the coincident openings in the abutting lugs, and secured by means of ornamental heads k , the whole affording additional means, besides the bolted flanges, for strengthening the chamber and securing together the serrated plates forming it.

As it is possible to cast the chambers B entire, I do not, of course, confine them to being formed of separate plates r and r' ; nor do I confine myself to the details of construction thus described, as the broad feature of my improvement consists in having the opposite flat sides of each chamber longitudinally or vertically serrated or corrugated, whereby when two or more such chambers are placed together, as shown, side by side in a radiator the adjacent corrugations or serrations on opposing flat surfaces of each two chambers B will coincide in the sense that the projecting lateral edges bounding each longitudinal depression of a serration on one outer surface of a chamber coincide with corresponding projecting lateral edges bounding each longitudinal depression forming a serration on the opposing outer surface of an adjacent chamber, thus producing between each pair of chambers B numerous longitudinal or vertical air-passages, each of equal diameter throughout and unobstructed or non-tortuous. The areas of these vertical passages are comparatively

large without, in order to obtain such desired large areas, preventing the attainment of the primary object of my improvement—namely, that of affording a large area of heating-surface in a comparatively small space. By having the vertical passages between the chambers B as large as my construction with the longitudinal corrugations permits the volume of air to be heated (for the purpose of circulating in and imparting its heat to the apartment to be heated) which can pass through the numerous passages between adjacent chambers is accordingly great, and the effectiveness of the radiator correspondingly increased.

I am aware that it is not broadly new to provide radiators having the same general object as my improved device and comprising chambers of the width of the radiator and corrugated or serrated internally and externally; but in all such radiators known to me the corrugations are transverse of the chambers, whereby when the latter are placed together the corrugations of adjacent surfaces fit into each other, leaving vertically tortuous or obstructed passages between them, which are necessarily narrow, by comparison, to avoid making the radiator large in proportion to the heating-surface it affords. Such radiators do not, owing to the narrowness of the passages, permit circulation between the chambers of volumes of the surrounding cool air so large as mine allow, and are hence not so effective as my construction. To make them equally effective, the chambers would have to be placed sufficiently far apart to produce passages between them corresponding in area with those in my device. This would obviously, however, frustrate the primary object—namely, to cause the smallest possible space to be taken up by the radiator and at the same time afford the largest area of heating-surface.

As hereinbefore stated, any desired number of chambers B are connected together to produce a radiator of required heating capacity for the apartment to contain it, the manner of connection for a hot-water radiator being that clearly shown in Fig. 1 of the drawings, and comprising short screw-couplers *h*, connecting the chambers near their upper ends in a manner to form a practically continuous passage between the extreme chambers, and similar screw-couplers, *h'*, connecting in like manner, near their lower ends at the line of communication of the inlet-pipe D at one end of the radiator and the outlet-pipe D' at the opposite end thereof, all the chambers B but that at which the inlet-pipe enters. Where the inlet and outlet pipes D and D' communicate with the chambers B, the latter are strengthened, as shown in Fig. 4, by increased thickness of the metal.

The usual stop-cock, E, is provided in line with the coupling-joints *h* on the last chamber B of the series, through which to permit, upon opening it, the air in the chamber or cham-

bers to discharge with the admission of hot water to the radiator, or of cold water when filling.

Hot water introduced into the device rises in the first chamber B before entering the other chambers to fill them, and discharges through the outlet-pipe D'.

As shown and described, my improved radiator is adapted only for hot-water heating. Without departing from the spirit of my invention, however, the chambers B may be connected in the ordinary way, and preferably by means of the screw-coupling joints to adapt the radiator to steam-heating. The extreme chambers B are provided at their lower tapering ends with ornamental feet F, secured to the flanged edges on opposite sides of the two chambers. Each foot carries a lateral and an end bracket, G, the brackets affording supports for ornamental metallic-headed rods H extending along the sides and ends of the radiator toward its base and providing foot-rests.

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

1. In a radiator, a flat-sided chamber, B, corresponding in width to that of the radiator and longitudinally serrated internally and externally on opposite sides, whereby when two or more chambers are placed together to form the radiator the adjacent serrations on opposing flat surfaces shall afford vertical passages each of equal diameter throughout, substantially as described.

2. In a radiator, a chamber, B, corresponding in width to that of the radiator and formed of two cast-metal plates, *r* and *r'*, correspondingly tapered at the edges toward their lower ends to produce the flat base *o*, each plate being hollowed out on one side, flanged at its edges, longitudinally serrated on both sides, and provided with corresponding recesses *n*, containing perforated shoulders *m*, and the two secured together at the flanges and perforated shoulders *m*, with the hollow portions facing each other and the shoulders *m* abutting, substantially as described.

3. In a radiator, a chamber, B, corresponding in width to that of the radiator and formed of two cast-metal plates, *r* and *r'*, correspondingly tapered at the edges toward their lower ends to produce the flat base *o*, each plate being hollowed out on one side, flanged at its edges, longitudinally serrated on both sides, provided with corresponding recesses *n*, containing perforated shoulders *m*, and thickened near its lower end, the two plates being secured together at the flanges and perforated shoulders *m*, substantially as described.

4. In a radiator, the combination of a series of chambers, B, each formed of two metal plates, *r* and *r'*, correspondingly tapered at the edges toward their lower ends to produce the flat base *o*, each plate being hollowed out on one side, flanged at its edges, and longitudinally serrated on both sides, and the two se-

cured together at the flanges with the hollow portions facing each other, couplings *h* and *h'*, connecting adjacent chambers to cause them to intercommunicate, respectively, near their
5 upper and lower ends, an inlet-pipe, *D*, an outlet-pipe, *D'*, feet *F*, secured laterally to the extreme chambers *B* and carrying brackets

G, and rods *H*, supported in the brackets, substantially as described.

ROYAL F. BROWN.

In presence of—

FRED DOX,
J. W. DYRENFORTH.