

(No Model.)

2 Sheets—Sheet 1.

I. BROOKE.  
ATTACHMENT FOR HEATERS.

No. 578,808.

Patented Mar. 16, 1897.

Fig. 2.

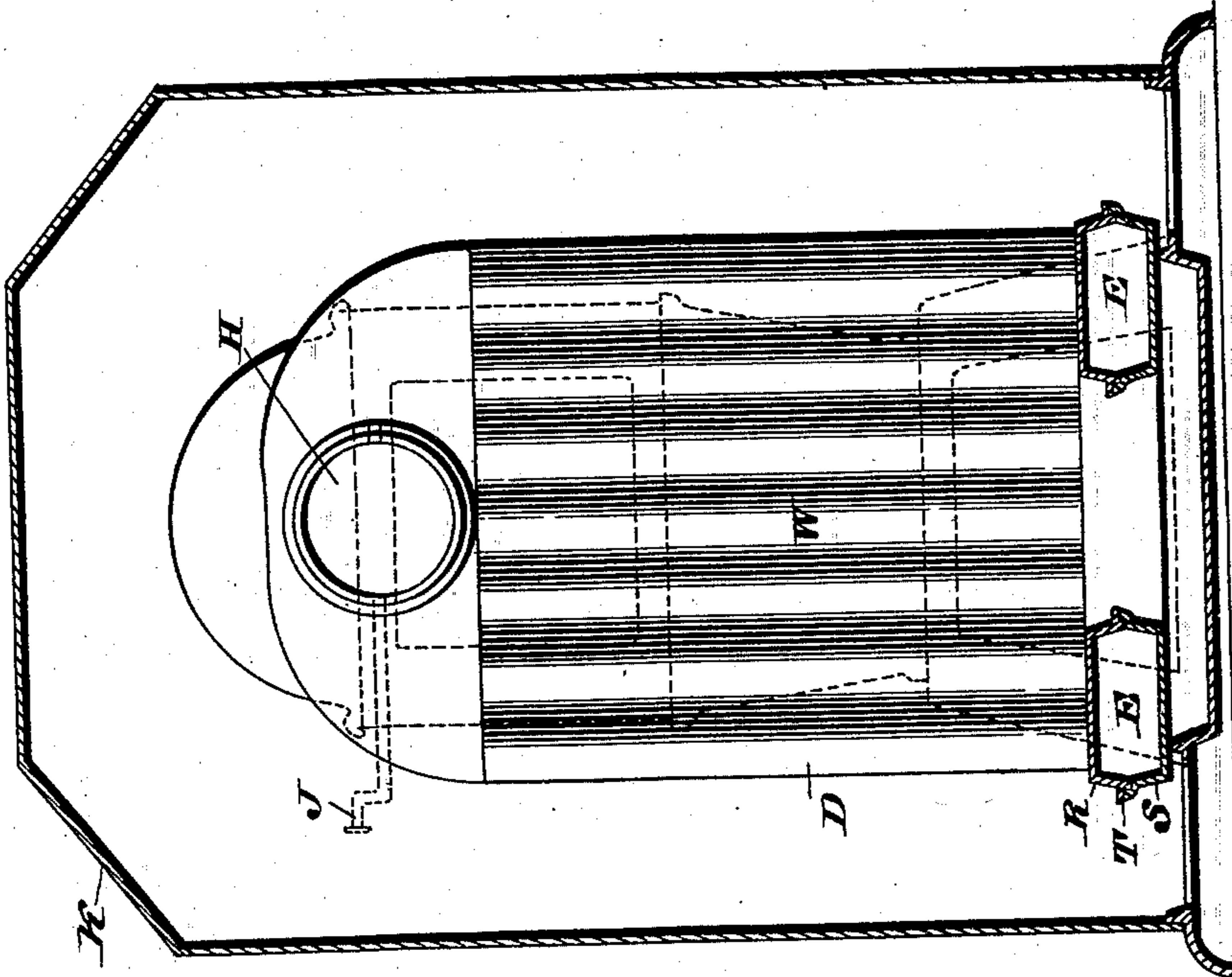
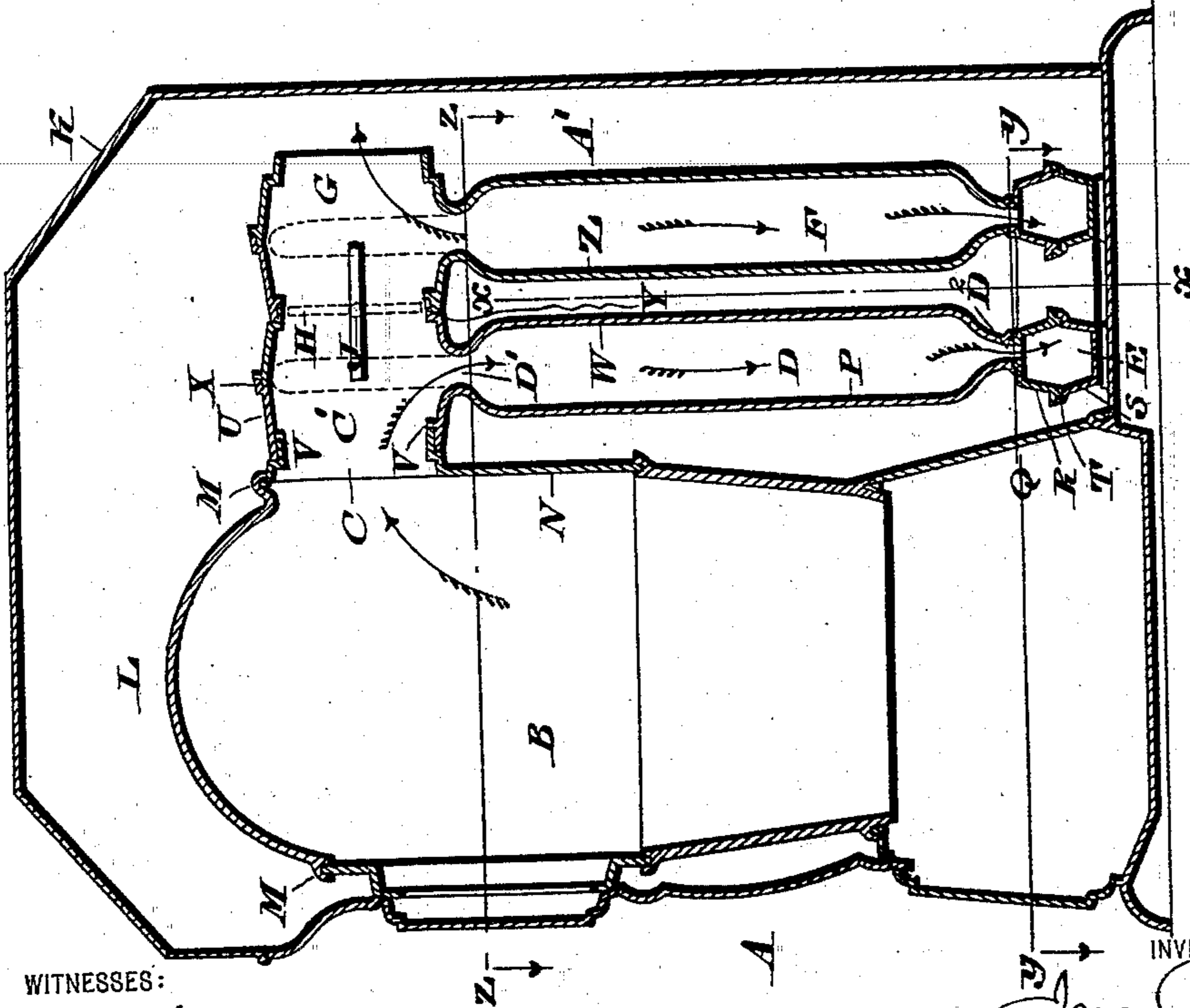


Fig. 1.



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INVENTOR

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ATTORNEY.

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Fig. 4.

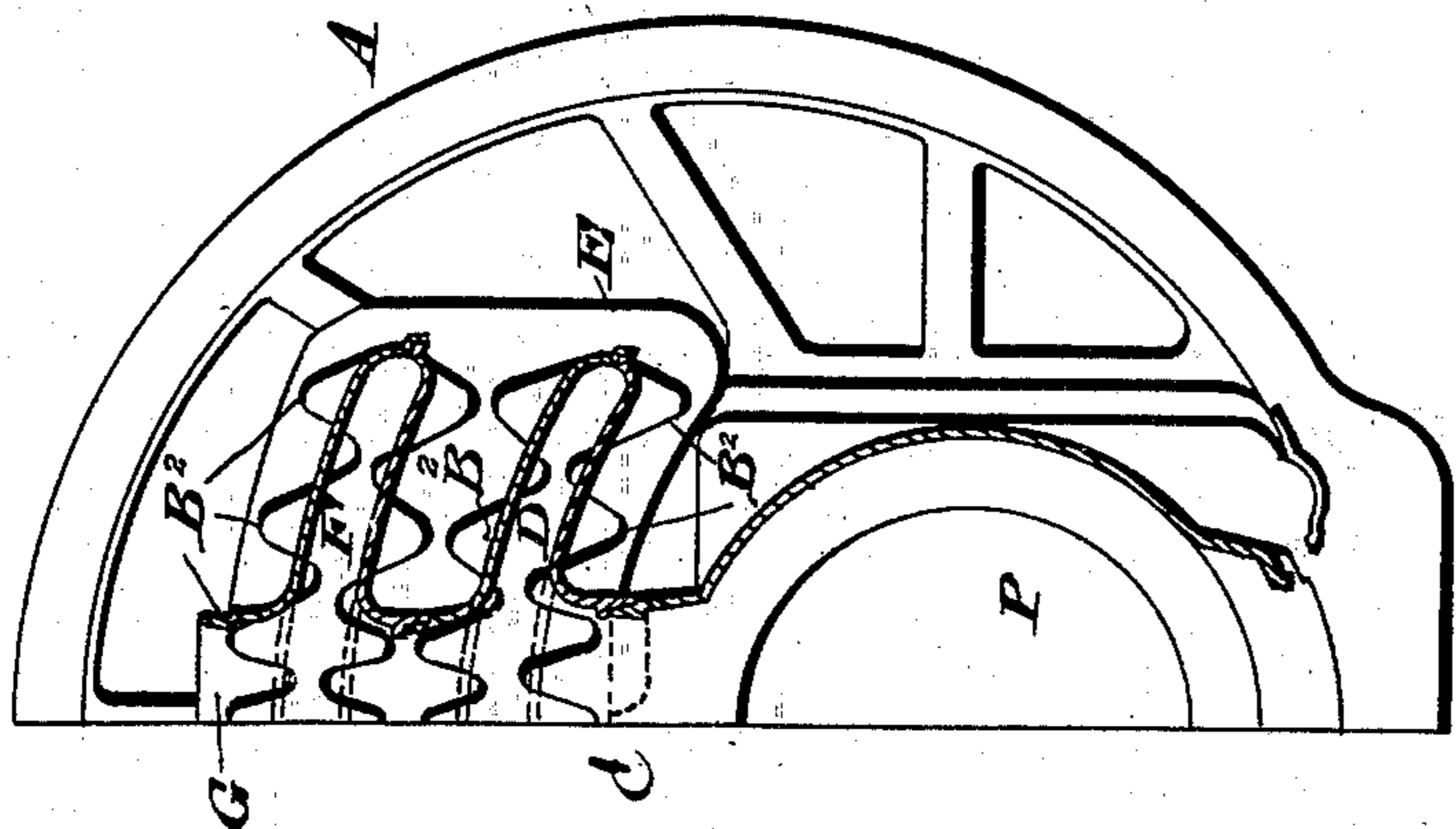
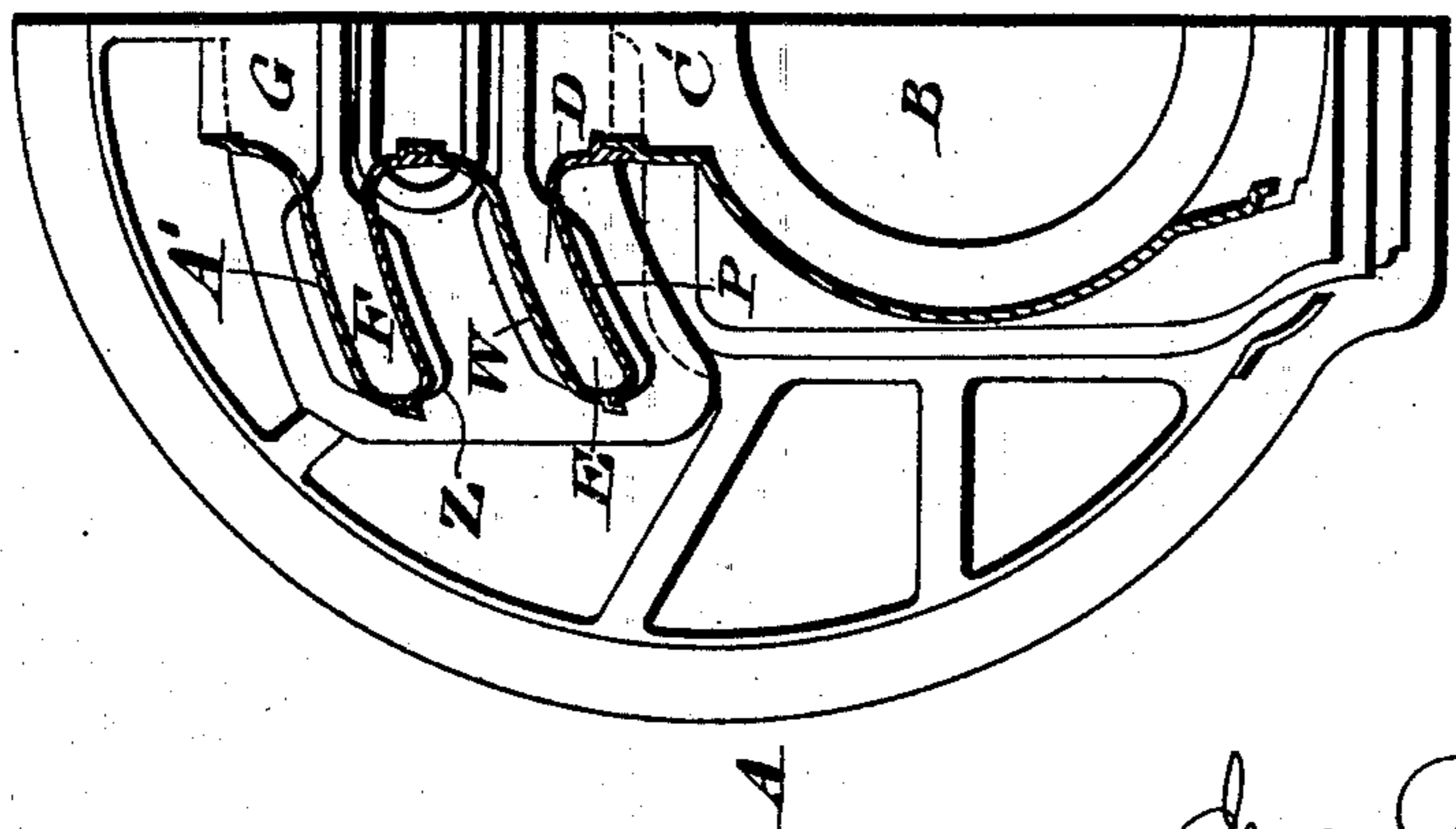


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## ATTACHMENT FOR HEATERS.

SPECIFICATION forming part of Letters Patent No. 578,808, dated March 16, 1897.

Application filed November 5, 1896. Serial No. 611,089. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC BROOKE, a citizen of the United States, residing at Pottstown, in the county of Montgomery, State of Pennsylvania, have invented a new and useful Improvement in Attachments to Heaters, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of novel construction of attachment to heaters whereby the radiating-surface has a much greater internal capacity for radiating heat than either the inlet or outlet of the smoke-collar, whereby heat is retained in the heating-chambers for a much longer period than heretofore without materially retarding the draft.

It further consists of novel details of construction, all as will be hereinafter set forth, and specifically pointed out in the claims.

Figure 1 represents a vertical longitudinal section of attachment to heaters embodying my invention. Fig. 2 represents a vertical section on line  $x x$ , Fig. 1. Fig. 3 represents a partial section on line  $y y$ , Fig. 1, showing especially the contour of the auxiliary heater. Fig. 4 represents a partial section on line  $z z$ , Fig. 1, showing especially the contour of the corrugated walls of the auxiliary heating-chamber.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a heater, the same being provided with grate, ash-pits, doors, and the other appliances of the usual construction.

B designates a combustion-chamber, and C the smoke-collar thereof, which leads to the lateral passage C'.

D designates an upright flattened auxiliary heating-chamber, which is provided with corrugations B<sup>2</sup> throughout its length, whereby the extent of radiating-surface is greatly increased, said upright chamber extending from the passage C' to the box E, which is suitably supported and whose relative proportions and area in cross-section will be apparent from Figs. 1 and 2, it being further evident that said chamber D is of much greater width than thickness.

The heated gases and products of combus-

tion which pass into the box E are conducted around the same and make their escape into the upright chamber F, which is also provided with corrugations extending throughout its length similar to chamber D, the heated air and products of combustion after passing upwardly through said chamber F being discharged into the passage G and being conducted thence to any desired point by any suitable means.

H designates a damper, which is pivotally mounted intermediate the passages C' and G and is provided with a handle J, by means of which it is actuated according to requirements.

K designates a casing surrounding the heater, which may be attached thereto or mounted thereupon in any suitable manner.

In the preferred embodiment of my invention I provide the top L of the combustion-chamber with the lips M, which are supported upon the upper section N of said chamber, while the chamber D is composed of the section P, which is supported at its lower extremity at the point Q upon the upper section R of the box E, said section R being supported upon the lower section S of said box and provided with a joint T, it being noticed that the inlet and exit passages or necks D' and D<sup>2</sup>, respectively, to the chamber D are contracted, so as to retard the passage of the hot gases therethrough, thereby causing said gases to be retained in said chamber for a considerable period and so give up a maximum quantity of their heat-units before passing out of the heater.

The left-hand upper portion U of the chamber C' is supported upon the neck V of the chamber N, while the right-hand section W of the corrugated chamber D contacts with the section U at the point X, said section W being provided with a neck Y, against which the adjacent section of the corrugated chamber F contacts, said chamber F being constructed and supported and assembled in substantially the same manner as the chamber D, as described, said chamber F being formed of the sections Z and A', which, it will be noted, are substantially identical with the sections P and W, respectively, which compose the chamber D.

The operation is as follows: When the fire is first started, the damper H is placed in the position seen in full lines in Fig. 1 and a free draft is obtained, but as soon as the fire is well under way the damper H is turned in upright position, as seen dotted in Fig. 1, and the heat and products of combustion are conducted downwardly through the neck D' to the corrugated chamber D, and thence through the neck D<sup>2</sup> to the box E, and after passing around the latter up through the corrugated chamber F to the passage G and outwardly to any desired point, it being thus apparent that the heat and products of combustion are retained for a much greater time within the heater by employment of the auxiliary flattened corrugated chambers D and F, and that in addition a very extensive heating-surface is produced, the progress of the hot gases being retarded to the desired extent by the employment of the necks D' and D<sup>2</sup> and the annular chamber E.

It will of course be understood that suitable cleaning-out doors may be provided for the box E and for such other points as may be deemed expedient, and it will also be evident that changes may be made by those skilled in the art which will come within the scope of my invention, and I do not therefore desire to be limited in every instance to the exact construction I have herein shown and described.

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

1. In a heater, a smoke-outlet, an upright, corrugated chamber into which the products of combustion may be directed, an annular box with which said chamber communicates, a second upright chamber supported upon said box, a passage with which the latter

chamber communicates, and an outlet for the heater, leading to any desired point.

2. In a heater, a smoke-outlet, a flattened upright corrugated chamber into which the products of combustion may be directed, an annular box with which said chamber communicates, a second flattened corrugated upright chamber extending from said box, a passage with which the latter chamber communicates, each of said chambers having contracted necks, and an outlet for the heater leading to any desired point.

3. A heater having an outlet therefrom for the products of combustion, a longitudinal passage extending directly therefrom to the atmosphere and having a damper therein, a plurality of flattened corrugated upright auxiliary heating-chambers opening out of said longitudinal passage, and a lower annular box with which said flattened corrugated chambers communicate, and a casing surrounding said heater.

4. In a heater having a combustion-chamber, the outlet-passages C' G, communicating therewith, chambers D and E communicating with said passages, and having a contracted neck at top and bottom, said chambers having greater width than thickness, and consisting of the sections P and W, having corrugations therein, and the annular box E, into which said chambers discharge, said box having an opening at the top communicating with said chambers and consisting of the upper and lower sections R and S, suitably joined together, in combination with a damper located intermediate said passages C', G.

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Witnesses:

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