

(No Model.)

2 Sheets—Sheet 1.

J. C. NORTON.
HOT WATER HEATING APPARATUS.

No. 568,872.

Patented Oct. 6, 1896.

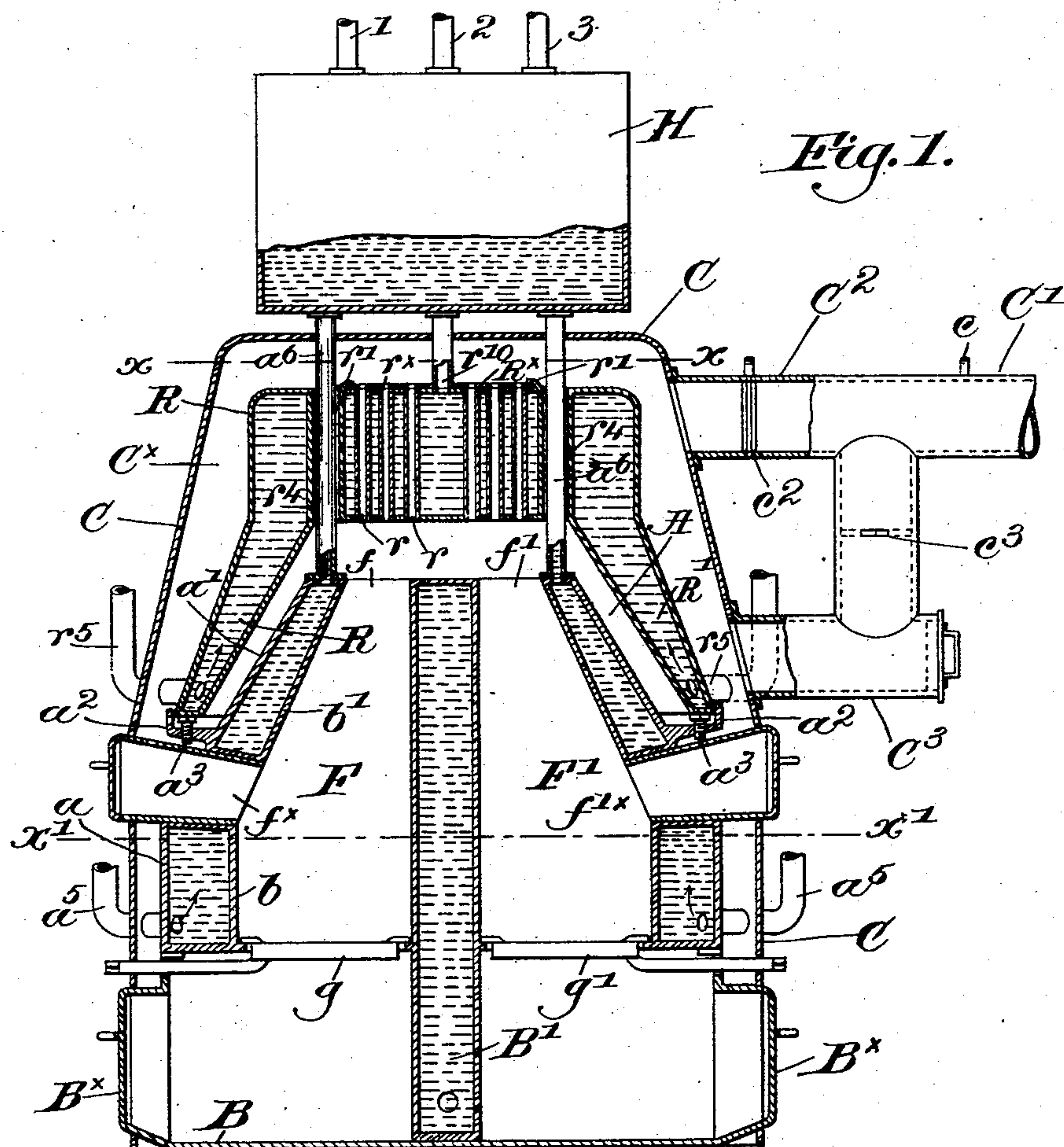
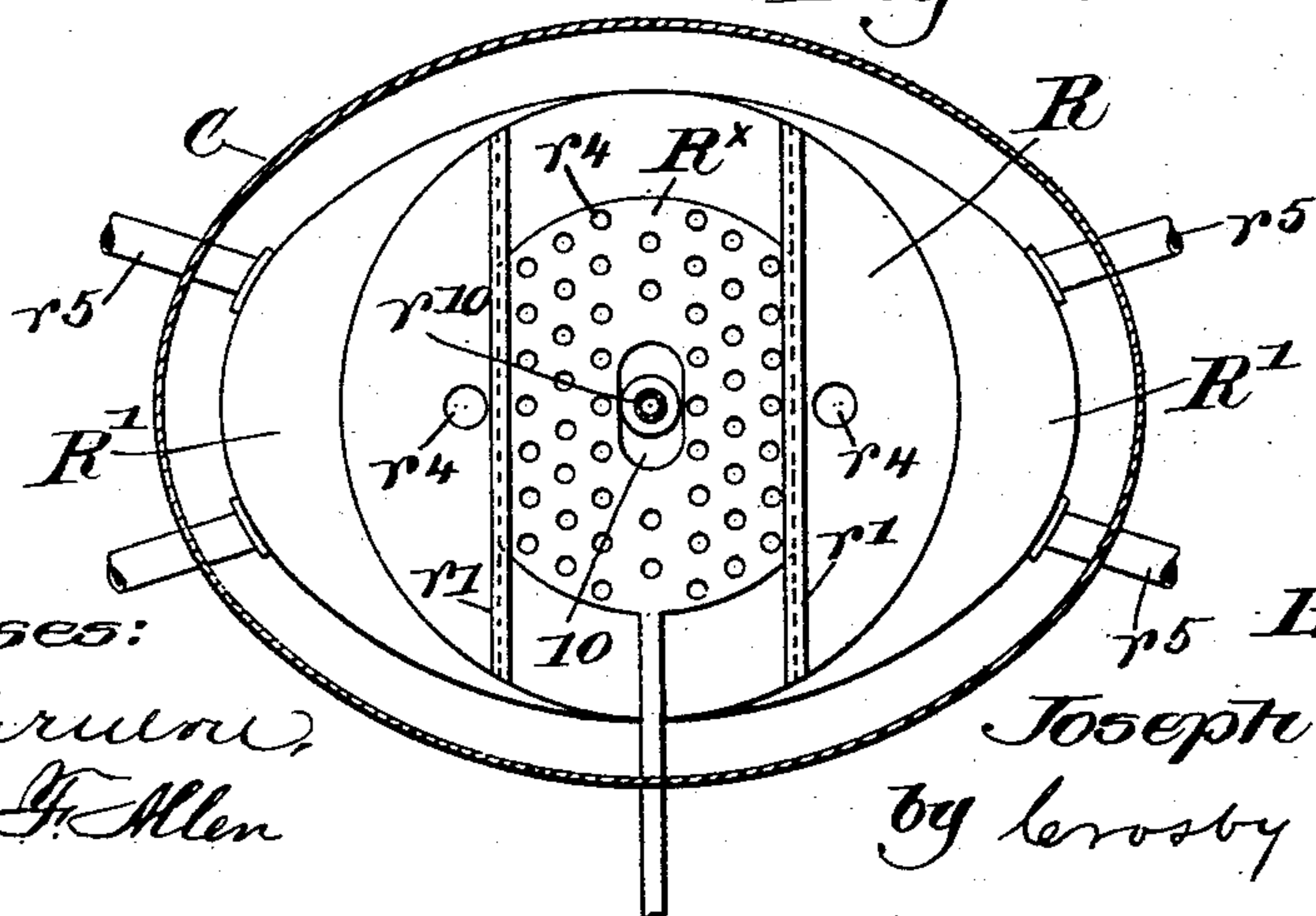


Fig. 2.



Witnesses:

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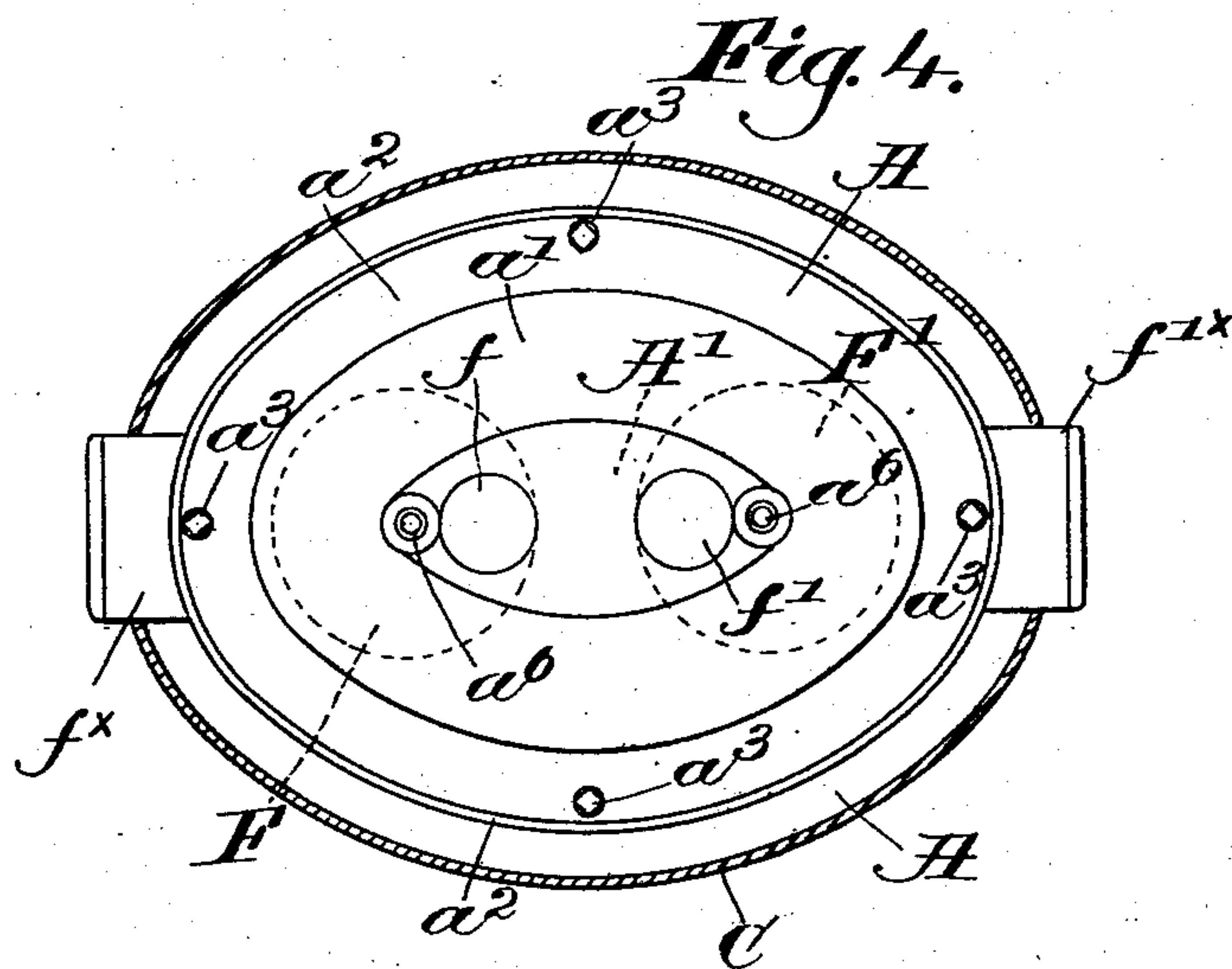
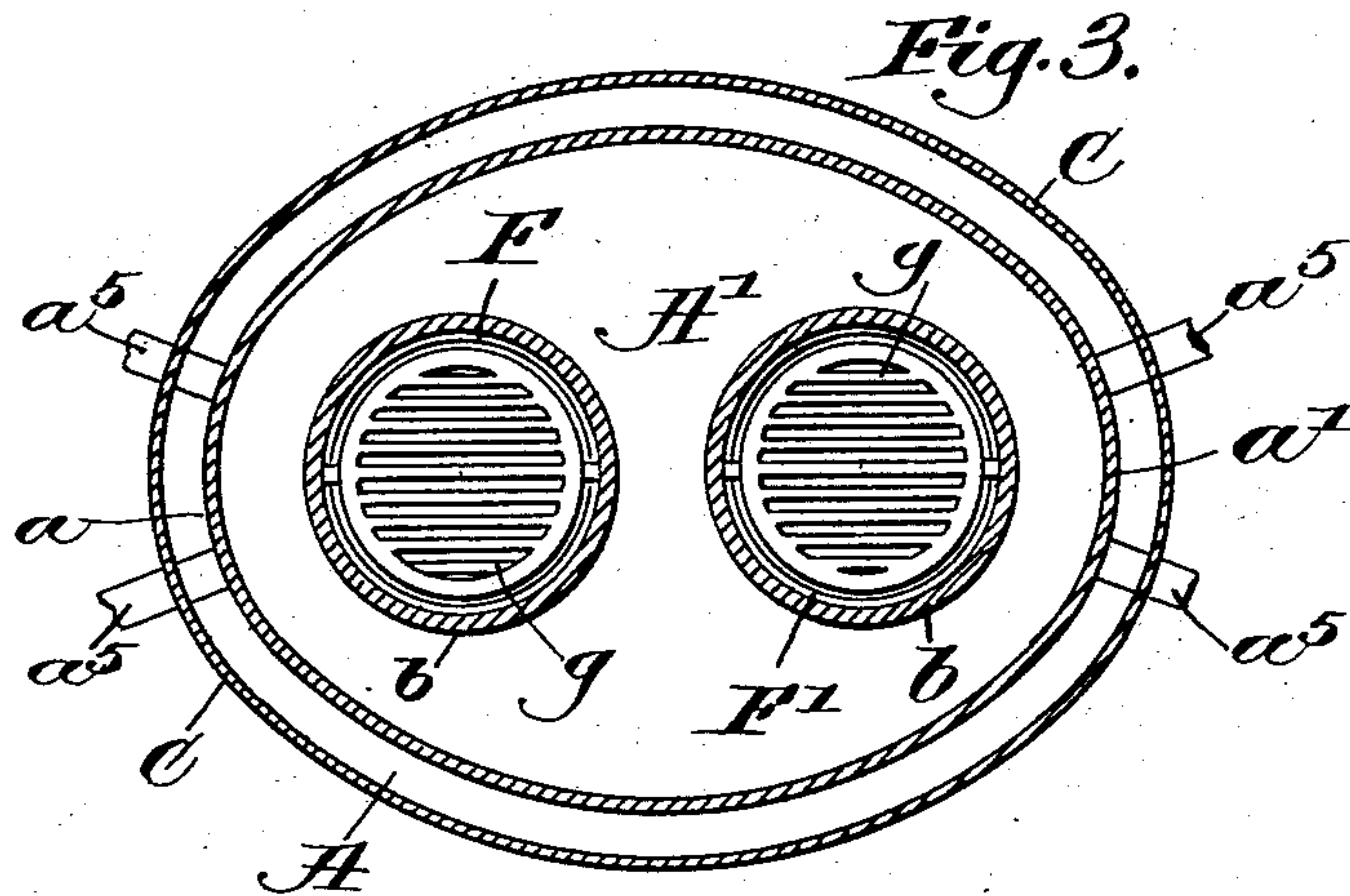
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UNITED STATES PATENT OFFICE.

JOSEPH C. NORTON, OF LYNN, MASSACHUSETTS.

HOT-WATER HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 568,872, dated October 6, 1896.

Application filed July 13, 1896. Serial No. 598,974. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. NORTON, of Lynn, county of Essex, State of Massachusetts, have invented an Improvement in Hot-
5 Water Heating Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object the production of a novel and efficient apparatus for rapidly and thoroughly heating water, the construction of the apparatus being strong and durable and convenient to set up and operate, means being provided for regulating
15 the heat and for running the apparatus with one or more substantially independent fire-pots.

20 The various features of construction embodying my invention will be hereinafter described in the specification and particularly pointed out in the claims.

Figure 1 is a vertical sectional view of a hot-water heating apparatus embodying my
25 invention. Fig. 2 is a transverse section thereof on the line $x x$. Fig. 3 is a similar section on the line $x' x'$, Fig. 1, and Fig. 4 is a top or plan view of the fire-pots with the reservoir omitted.

30 Referring to Figs. 1, 3, and 4, I have shown the water-shell A as a casting comprising an outer wall $a a'$, the former of which is elliptical in cross-section, but upright, while the part a' slopes inwardly and upwardly to form
35 a substantially elliptical cone. The inner wall $b b'$ corresponds in general contour to the outer wall, but I have herein shown two such walls within the outer wall to thus make a water-space A' , which divides the water-
40 shell into two fire pots or chambers $F F'$, opening at $f f'$ at their upper ends into the space within the external casing C of the heater.

Suitable grates g and g' are provided for the fire-pots, the water-shell resting upon a
45 base B, divided by a partition B' into compartments, one for each of the fire-pots, and each provided with a suitable door B^x , through which the ashes may be withdrawn and the draft regulated in usual manner.

50 As best shown in Fig. 1, each of the fire pots or chambers is provided with a feed-

opening $f^x f'^x$, respectively, so that one or more of the fire-pots may be used, as desired.

Owing to the inner separating part a' of the shell the various fire-pots are independent one of the other, and if only a small fire
55 is required one may be used, and more in proportion to the heat desired.

While I have shown herein the exterior of the shell as elliptical in form, it will be obvious that it may be made otherwise, and by making the dividing portion of the shell to correspond more than two fire-pots may be
60 provided.

The products of combustion pass from the
65 fire-pot, through the openings $f f'$, into the general combustion-chamber C^x , and pass thence to the chimney by means of the main outlet C' , communication being effected therewith by a two-way outlet $C^2 C^3$, respectively.
70

A damper c in the main outlet C' regulates the draft, and I have also provided dampers c^2 and c^3 in the part $C^2 C^3$ for a purpose to be described, the outlet C^2 being at or near the
75 upper end of the combustion-chamber C and the outlet C^3 near its base.

The wall portion a' of the water-shell is provided with an annular upturned flange a^2 , provided at suitable intervals with headed
80 bolts or screws a^3 , (see Fig. 1,) upon which rests the lower edge of the water-reservoir R, the upturned flange preventing lateral displacement of the reservoir, while the bolts provide means for properly leveling in the
85 erection of the furnace.

The water-reservoir consists of a cylinder main or body portion having a series of vertical flues r extended therethrough from its lower to its upper side and controlled by a
90 suitable damper R^x , having openings r^x therein, (see Fig. 2,) which may be brought to register with the flues to permit free passage of the products of combustion through the main part of the reservoir, or the flues may be more or less closed by properly moving
95 the damper. As shown in Fig. 2, the damper is suitably guided between ribs or ridges r' on top of the reservoir-body. The lower part of the reservoir depends from the main or body portion to form an annular outwardly-
100 flaring extension R' , which is supported by the bolts a^3 described, the said extension

projecting over the upper part of the water-shell, as clearly shown in Fig. 1. The water-shell A is provided with suitable water-inlets a^5 , and inlets r^5 convey the water to the
 5 reservoir, entering the latter at the lower part of the extension R' , while the inlets a^5 enter the shell at or near its base.

The reservoir is cored out at r^4 to admit the passage therethrough of pipes a^6 , which
 10 connect the upper end of the water-shell A with a water-head H, above the apparatus and exterior to its casing, from which head hot water is distributed, as desired, by means of pipes c' , c^2 , and c^3 .

15 A pipe r^{10} connects the top of the reservoir R with the head H, the damper being shown in Fig. 2 as slotted at 10 to permit the passage of said pipe without interfering with the operation of the damper. Now, if the damper R^x is open, as shown in Figs. 1 and 2, the
 20 products of combustion will pass from the fire-pots or other flues r , heating the water in the reservoir, and out at the top of the latter, and thence normally through the outlet C^2 and main outlet C' , the dampers c^2 being
 25 at such time open and the damper c^3 closed.

If it is desired to cause the products of combustion to pass not only up through the body portion of the reservoir, but also down
 30 about the exterior of its extension R' , the damper c^2 is closed and the damper c^3 open, and it will be obvious by an inspection of Fig. 1 that the desired path of the products of combustion will be thus attained.

35 By shutting the damper R^x the products of combustion must pass up out of the fire-pots and then down between the extension R' and the inclined water portion of the shell A' , and then up and out through either the outlet C^2
 40 or C^3 , as desired, thus providing for various regulations of the heat.

The water-shell is continuous and the water can circulate entirely around the fire-pots and between them, and passing thence, as heated,
 45 to the head H, while the water entering the bottom of the reservoir is heated before it reaches its upper part on its way to its head.

A very convenient, simple, and effective apparatus is thus attained, and one wherein
 50 the water is thoroughly and rapidly heated.

My invention is not restricted to the precise construction and arrangement herein shown, as the same may be modified or rearranged without departing from the spirit and
 55 scope of my invention.

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

1. In an apparatus of the class described,
 60 a plurality of independent fire-pots, a continuous water-shell surrounding and separating said pots, and a separate feed-opening for each pot, extended through the water-shell, whereby any or all of the fire-pots may be
 65 used as desired, substantially as described.

2. In an apparatus of the class described, a water-shell comprising an outer wall and a plurality of inner walls, to form a plurality of independent fire-pots, the said inner walls extending between and forming the dividing
 70 water-space between the fire-pots, substantially as described.

3. In an apparatus of the class described, a water-shell having its exterior elliptical in cross-section, and forming with its inner wall
 75 a plurality of independent fire-pots separated by a water-space, a grate in each pot, a feed-opening for each pot, whereby one or all of the fire-pots may be used, and inlet and outlet openings for the water, substantially as
 80 described.

4. In an apparatus of the class described, a water-shell comprising an outer wall and a plurality of inner walls, to form a plurality of independent fire-pots, and a separate grate
 85 and feed-opening for each pot, the said inner walls extending between and forming the dividing water-space between the fire-pots, and also extending below the grates to separate the ash-pits, substantially as described.
 90

5. In a hot-water heating apparatus, a fire-pot, a surrounding, externally-conical water-shell, a water-reservoir having flues there-
 95 through above said fire-pot, a depending flaring base for said reservoir, a head, and connections between it, the reservoir and water-shell, substantially as described.

6. In an apparatus of the class described, a water-shell, an inclosed fire-pot, a water-reservoir, means to support it on said shell,
 100 flues extended through the reservoir, a damper therefor, a water-head, and connections between it, the shell and reservoir, substantially as described.

7. In an apparatus of the class described,
 105 a water-shell, a plurality of fire-pots therein, an exterior casing, a water-reservoir within it and having an annular, depending extension surrounding the upper part of the shell, a two-way outlet for the products of combustion, and means to regulate the passage of
 110 said products, substantially as described.

8. In an apparatus of the class described, a water-shell, a plurality of fire-pots therein, an exterior casing, a water-reservoir within
 115 it and having an annular, depending extension surrounding the upper part of the shell, a series of flues in the central portion of the reservoir, a regulator therefor, means to adjustably support the reservoir on the shell, a
 120 water-head, and connections between it, the water shell and reservoir, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of
 125 two subscribing witnesses.

JOSEPH C. NORTON.

Witnesses:

EDWARD F. ALLEN,
 FREDERICK L. EMERY.