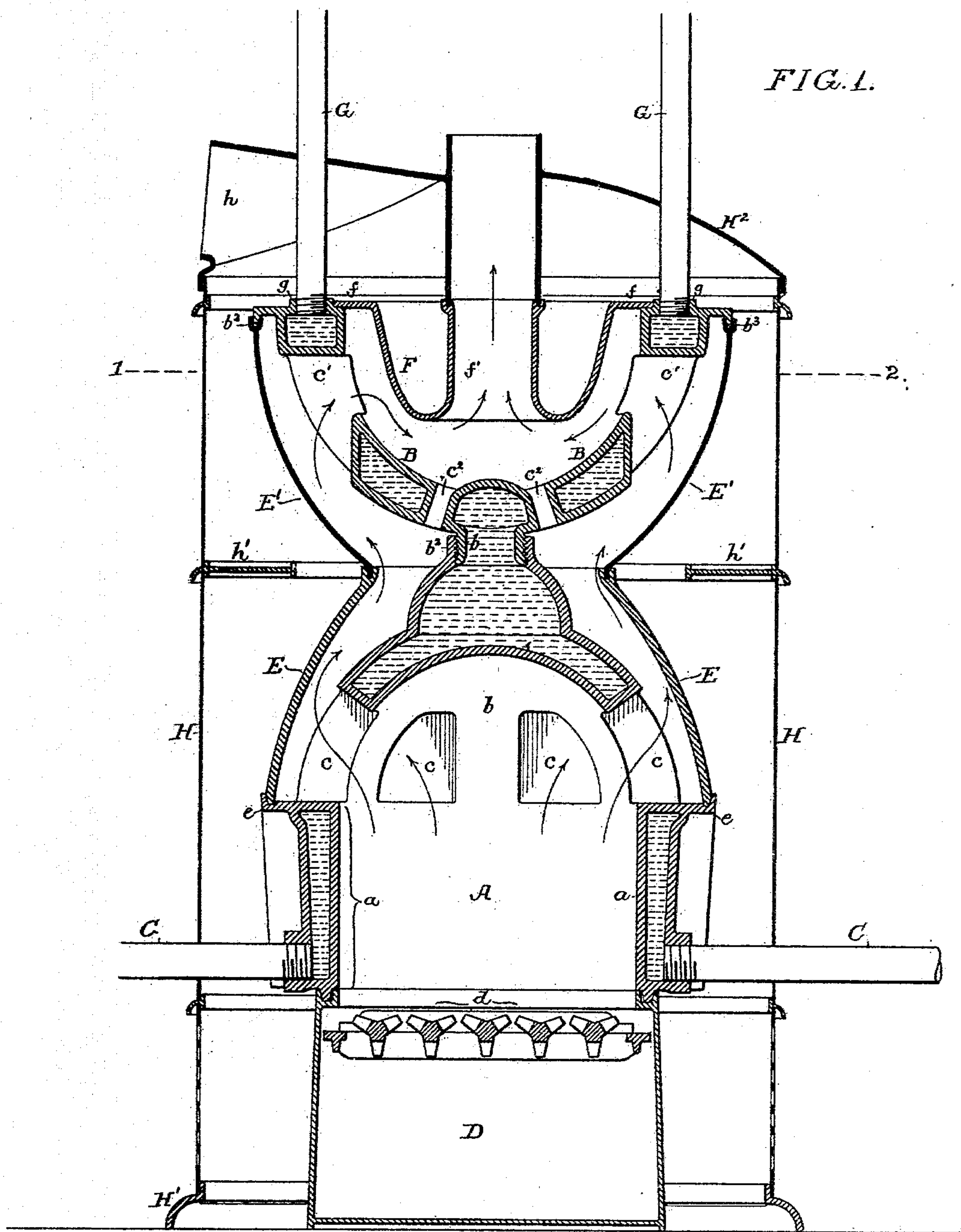


A. C. MOTT.  
HOT WATER FURNACE.

No. 516,102.

Patented Mar. 6, 1894.



Witnesses:  
R. Schlicher.  
William H. Barr

Inventor:  
Abram C. Mott  
By his Attorneys  
Howson & Howson

(No Model.)

2 Sheets—Sheet 2.

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FIG. 2

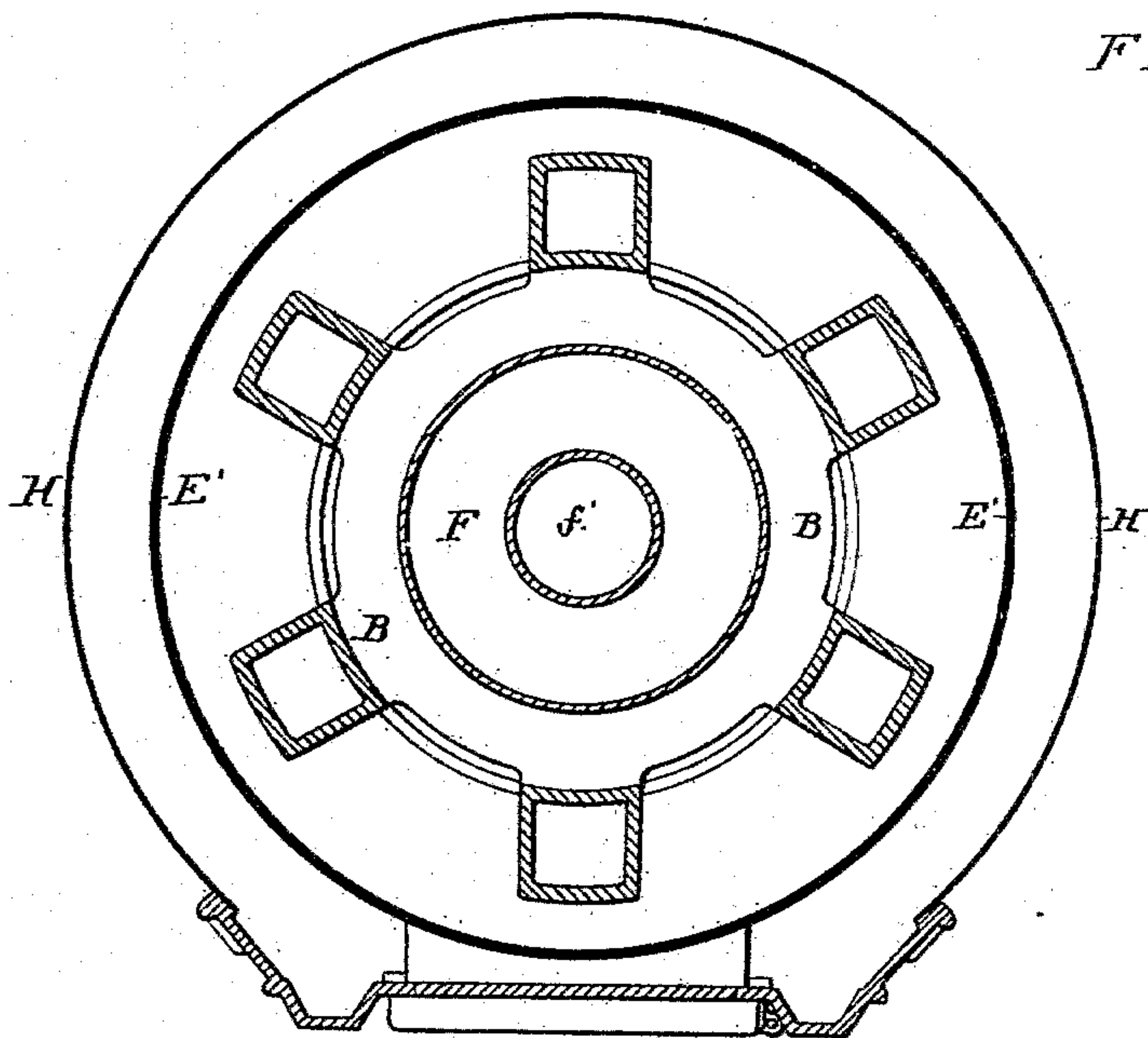


FIG. 4

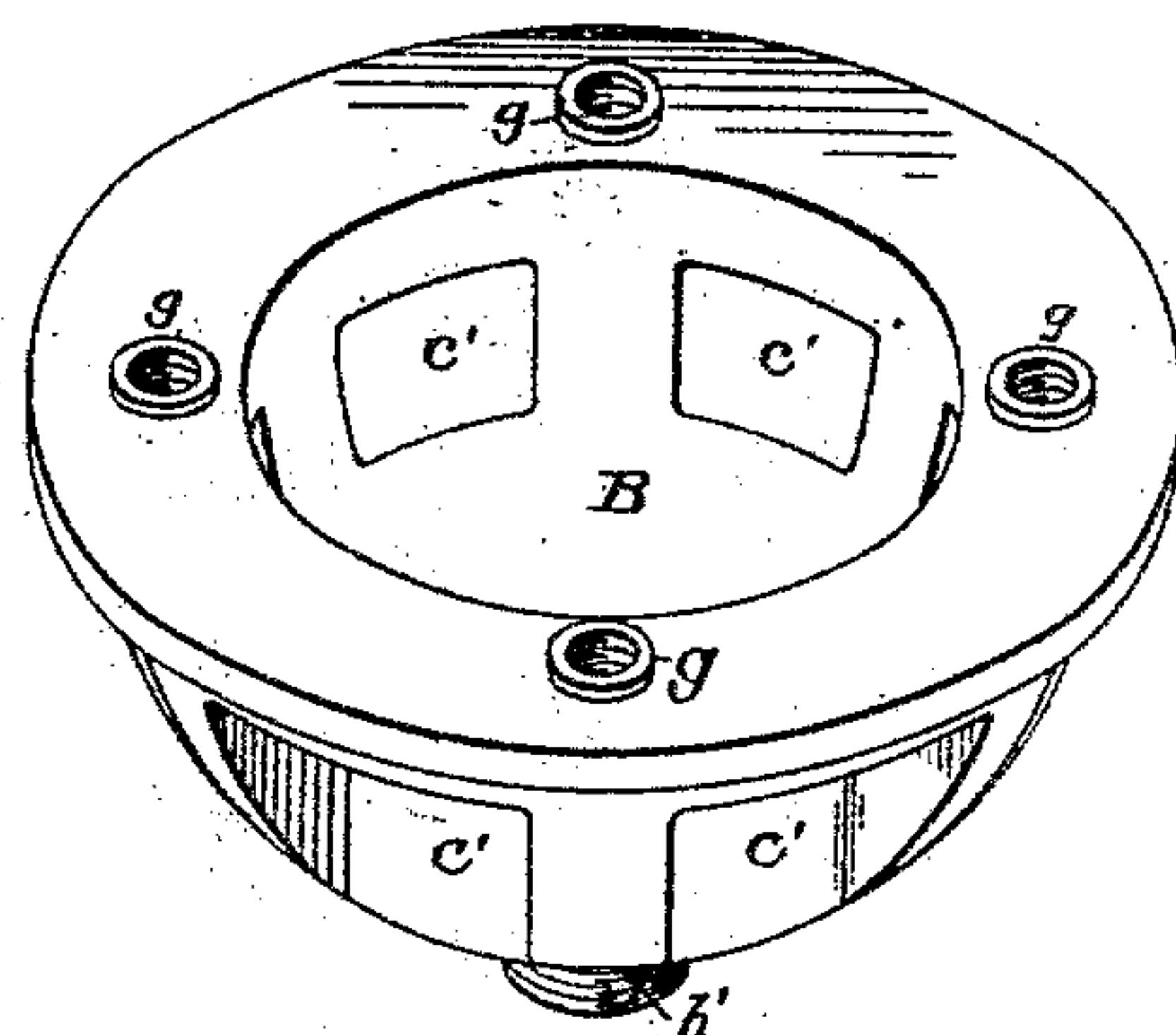
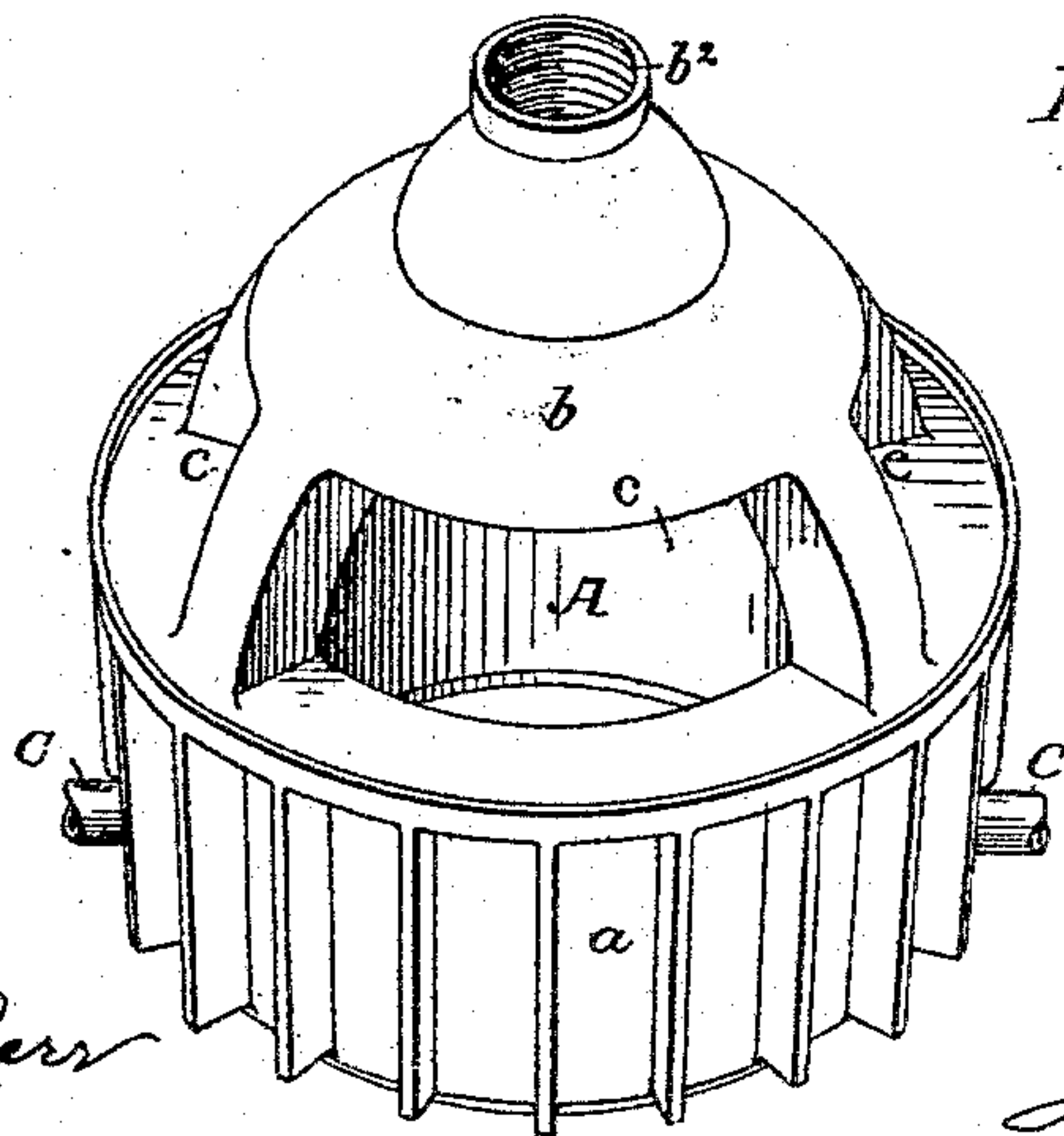


FIG. 3



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# UNITED STATES PATENT OFFICE.

ABRAM C. MOTT, OF PHILADELPHIA, PENNSYLVANIA.

## HOT-WATER FURNACE.

SPECIFICATION forming part of Letters Patent No. 516,102, dated March 6, 1894.

Application filed May 5, 1893. Serial No. 473,083. (No model.)

*To all whom it may concern:*

Be it known that I, ABRAM C. MOTT, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain  
5 Improvements in Hot-Water Furnaces, of which the following is a specification.

The object of my invention is to so construct a water heating furnace that the hot water sections or boilers will be subjected to  
10 the direct action of the products of combustion and to so arrange the inlet and outlets of the water sections that they will not be exposed in the combustion chamber.

A further object of my invention is to utilize the waste radiated heat from the furnace for heating one or more rooms as fully described hereinafter.

In the accompanying drawings:—Figure 1, is a vertical sectional view of my improved  
20 heater. Fig. 2, is a sectional plan view on the line 1—2, Fig. 1. Fig. 3, is a detached perspective view of the lower section of the furnace. Fig. 4, is a detached perspective view of the upper section of the furnace.

25 A is the lower water section, comprising the fire pot *a*, and the dome *b*. In this dome are openings for flues *c*, for the passage of the products of combustion from the fire pot. The fire pot is hollow and communicates with  
30 the hollow dome, as shown in Fig. 3, so that water will circulate from the inlet pipe or pipes *C*, tapped into the lower portion of the fire pot section through the said fire pot section up to the dome *b*, directly above the fire.  
35 Mounted on the lower water section A is an upper water section B, shown in Fig. 4; this section is cup shaped and has a nipple *b'*, which is screw threaded, and is adapted to a screw threaded projection *b<sup>2</sup>* on the lower  
40 boiler section A. The upper water section B has passages *c'* formed in it near its upper edge for the passage of products of combustion, and has a series of small passages *c<sup>2</sup>* near the center to allow the soot or dirt, which  
45 will accumulate in the furnace, to pass away and not lodge upon the upper surface of the section; the upper water section communicates with the lower section through the nipple *b* so that the water will circulate through  
50 the sections.

The section A is mounted upon a suitable foundation frame D as clearly shown in Fig.

1, and a grate *d* is mounted upon this section in the ordinary manner. On a grooved flange  
*e* extending from the upper portion of the  
55 fire pot is mounted the cylindrical shell E, curved inward to conform with the dome *b*, and mounted on this shell is a second shell E' conforming in shape with the upper water section B. The upper shell E' is adapted to a  
60 groove in the shell E, and is also grooved to receive a flange *b<sup>3</sup>* depending from the upper water section B. These shells E, E' direct the products of combustion as they pass through  
65 the openings *c* of the section A, against the outer surface of the dome of said section and against the outer portion of the section B. The products of combustion then pass through the  
70 openings *c'* and are deflected against the inner surface of the said section B, by a dished deflecting plate F, having a flange *f* mounted  
75 on the upper boiler section and having a tubular projection *f'* on which the smoke flue is mounted, it in fact forming a continuation of the said flue.

In the upper portion of the water section B are a series of openings *g* in which are secured the hot water outlet pipes G. Surrounding the structure above described is a casing  
80 H, preferably of sheet metal. This casing is mounted on a base ring H', and mounted on this casing is a dome H<sup>2</sup>, having one or more flue openings *h*, which are connected to the heating drums for directing the hot air through  
85 the house. Openings are formed in the lower portion of the casing for the admission of air, as clearly shown in Fig. 1. One or more deflectors *h'* may be used if found necessary.

It will be seen by the above description that the products of combustion are directed in a  
90 circuitous path through the furnace coming in direct contact with the water sections in their passage through the furnace, and as the discharge of the products of combustion is at the center sufficient space is given for the  
95 proper coupling of the hot water pipe to the boiler.

By making the water heater in two sections as shown and coupling them together with  
100 one central coupling I avoid the intricate couplings usually employed and lessen the liability to leak, as this central joint is the only joint exposed to the direct action of the products of combustion.



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

1. The combination of a water heating structure reduced in diameter at the center, a fire pot and grate, and inlet and outlet for the water, with a casing surrounding said structure and conforming thereto whereby the products of combustion are directed against the same, substantially as specified.
2. The combination in a water heating furnace, of the lower section A forming the fire pot and the dome, a section B mounted above said section A and communicating therewith, openings in the said sections for the passage of the products of combustion, and deflectors for directing the products of combustion through the furnace, substantially as described.
3. The combination in a water heating furnace, of the fire pot, a water dome mounted upon said fire pot, openings in said dome for the products of combustion, a boiler section mounted on said dome and connected therewith, openings in said section for the passage of the products of combustion, deflecting plates surrounding said sections, and a deflecting plate mounted above the upper water section, and a smoke flue, substantially as described.
4. The combination in a water heating furnace, of the lower water section forming the fire pot *a* and dome *b*, said dome having passages for the products of combustion, an outlet opening in the upper portion of said dome, a cup shaped water section B mounted above the water section A, having an opening in its base communicating with the lower section, passages in said upper water section, and deflecting plates for directing the products of combustion through the furnace, substantially as described.
5. The combination in a water heating furnace of the lower water section A, forming a fire pot, and the dome with openings in said water section for the passage of the products of combustion, an upper boiler section cup

shaped in form, and coupled to the lower section only at the center, inlet pipes coupled to the exterior of the fire pot section, and outlet pipes coupled to the upper ring of the upper water section, and a casing inclosing the said sections, substantially as described.

6. The combination of the lower water section A forming the fire pot and the dome, openings in said dome for the passage of the products of combustion, a cup shaped water section B mounted upon the section A, and communicating with it at the center, deflecting plates E and E', conforming substantially to the shape of the water sections and a cup shaped deflector F mounted on the upper water section and forming the smoke flue, inlet and outlet openings for the said water sections, substantially as described.

7. The combination of the lower water section A having a reduced dome, the upper water section B having a reduced base and mounted on said lower water section, deflecting plates surrounding said sections and conforming thereto, and a casing surrounding the entire structure, and inlet and outlet openings for the passage of air, substantially as described.

8. The combination of a water heating structure reduced in diameter at the center, a fire pot and grate, and inlet and outlet for the water, with a casing surrounding said structure and conforming thereto whereby the products of combustion are directed against the same, and an outer casing having inlet and outlet for air and a deflector by which the air is directed against the casing which incloses the combustion chamber and water heater, substantially as described.

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

ABRAM C. MOTT.

Witnesses:

FRANK E. BECHTOLD,  
WILLIAM A. BARR.