

(No Model.)

3 Sheets—Sheet 1.

W. M. BARBER.
HOT WATER HEATER.

No. 576,297.

Patented Feb. 2, 1897.

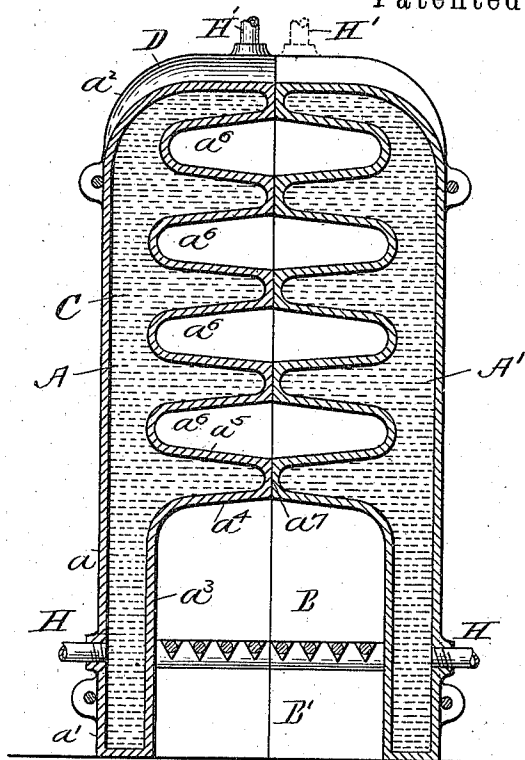


FIG. 1.

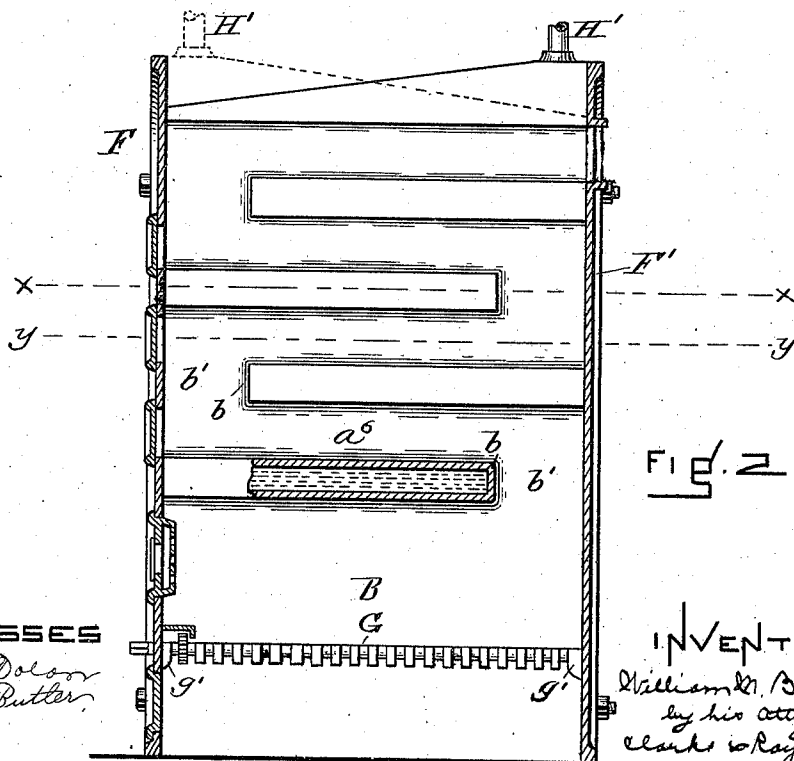


FIG. 2.

WITNESSES

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Clark & Raymond

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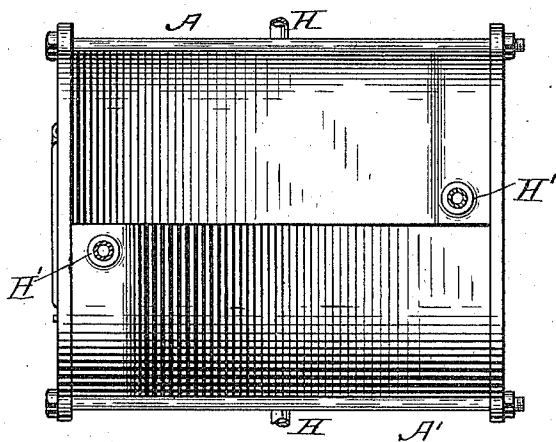


Fig. 3.

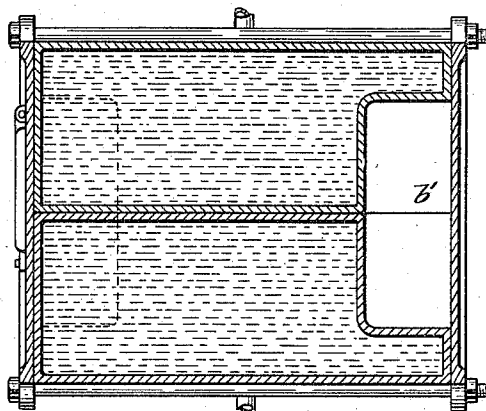


Fig. 4.

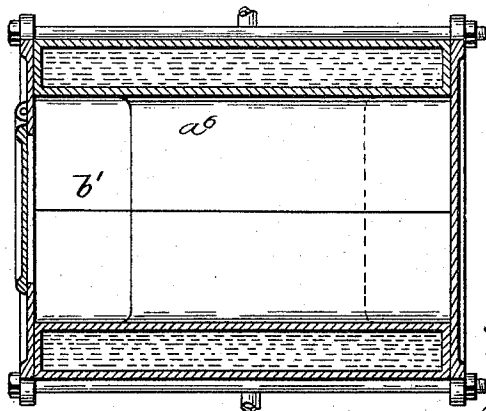


Fig. 5.

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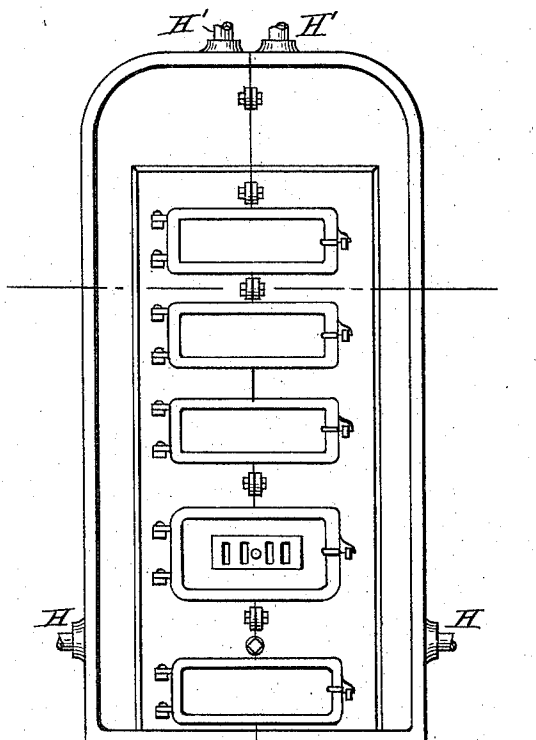


Fig. 6

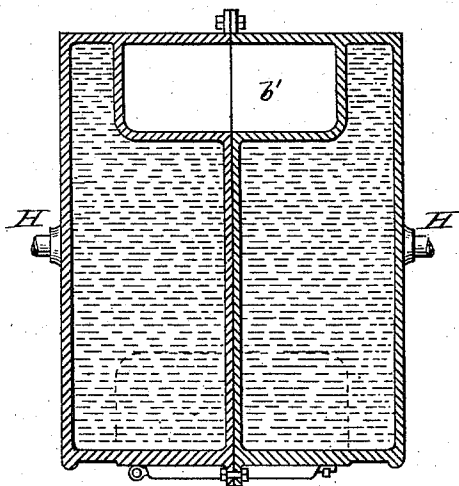


Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM M. BARBER, OF SOMERVILLE, MASSACHUSETTS.

HOT-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 576,297, dated February 2, 1897.

Application filed April 13, 1896. Serial No. 587,309. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. BARBER, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Hot-Water Heaters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

Its object is to provide a simple and cheap construction, and one that will economize the use of fuel. It is made in two sections, which are adapted to be cast from the same pattern, and each of which is complete in itself in so far as its waterspace or chamber is concerned, and which are put together face to face to form the ash-pit, fire-pot, combustion-chamber and flue.

In the drawings, Figure 1 is a view in vertical section of a heater having the features of my invention. Fig. 2 is a view in vertical central section principally lengthwise the heater. Fig. 3 is a view in plan thereof. Fig. 4 is a view in horizontal section upon dotted line *xx* of Fig. 2. Fig. 5 is a view in horizontal section upon the dotted line *yy* of Fig. 2. Fig. 6 is a view in front elevation. Fig. 7 is a view in horizontal section upon the dotted line of Fig. 6, showing a modification to which reference will hereinafter be made.

A A' comprise the two sections or parts forming the heater. Each part is a cast-iron shell having the vertical or straight outer wall *a* rising from its base *a'* to the top *a''*, and the inner wall *a'''*, which is vertical in the ash-pit and fire-box sections, and which then extends outward and inward, as indicated at *a'' a'''*, any desired number of times to form recesses *a''''* and also the straight surfaces *a'''''*. The recesses are connected with each other alternately at the back and at the front by making the walls *a'' a'''* of a horizontal length less than the depth of the wall *a*, (see Fig. 2,) where the walls *a'' a'''* extend to the point *b*, forming passages *b'*, the first from the combustion-chamber B and the others from the recesses *a''''* at alternate ends thereof, the cavity bounded by these walls forming the water-heating chamber C, and the upper part of each section has the rounded cap D, which is inclined from one end *b* downward. (See Fig.

2.) Each section as thus constructed is adapted to be cast from the same pattern, and the two are put together as represented in Figs. 1 and 2, the faces *a''* of each contacting and bringing into line the companion recesses forming the complete combustion-chamber B and ash-pit B', and the recesses *a''''* and openings *b'* therefrom forming flues which travel from the rear of the combustion-chamber upward and forward, then upward again and backward, and so on, to the escape-port E. The two sections are held together by means of the front plate F, the rear plate F', and the tie-rods *f*, which connect the two plates together, one on either side of each section, and which may have, if desired, extending nuts.

The front plate F has openings to the ash-pit, combustion-chamber, and flues closed by suitable doors. The back plate has the opening for the escape-port.

The grate-bars G are supported upon ledges or supports *gg'*, carried by the front and back plates, and their forward ends may extend through holes in the front plate. (See Fig. 2.)

The front and rear plates, it will be seen, also form walls for the flue. Circulation in each section is obtained by the water-inlet H and the water-outlet H', which is from the highest point of each section. The casing may be covered upon its exterior with asbestos paper or other non-heat-conducting material, and it may in some instances be incased within a shell arranged to provide an air-space about it.

The advantages of the invention arise from simplicity and cheapness of the construction, combined with the effectiveness of the arrangement of the flues in relation to the heating-surfaces of each section.

While I have described the sections as having separate front and back plates F F', the equivalents of the plates may be cast integral with each section, and when such construction is employed I prefer to unite the two sections by abutting flanges upon the exterior of each, and bolts or screws passing through said flanges. (See Figs. 6 and 7.)

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination in a hot-water heater of the sections A, A', each having the outer wall

a , the inner wall a^3 with the inwardly-curved surfaces a^4 , a^5 and the straight surfaces a^7 , the said surfaces a^7 of each section being adapted to be brought into contact with the corresponding surfaces a^7 of the other section, as and for the purposes described.

2. In a hot-water heater the combination of the sections A, A', each having the outer wall a , the inner wall a^3 with the inwardly-project-

ing walls a^4 , a^5 , the said walls a^4 , a^5 being made of a less length horizontally than the wall a and the openings b' , as and for the purposes described.

WILLIAM M. BARBER.

Witnesses:

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J. M. DOLAN.