

(No Model.)

2 Sheets—Sheet 1.

F. A. MAGEE.  
HOT WATER HEATER.

No. 544,440.

Patented Aug. 13, 1895.

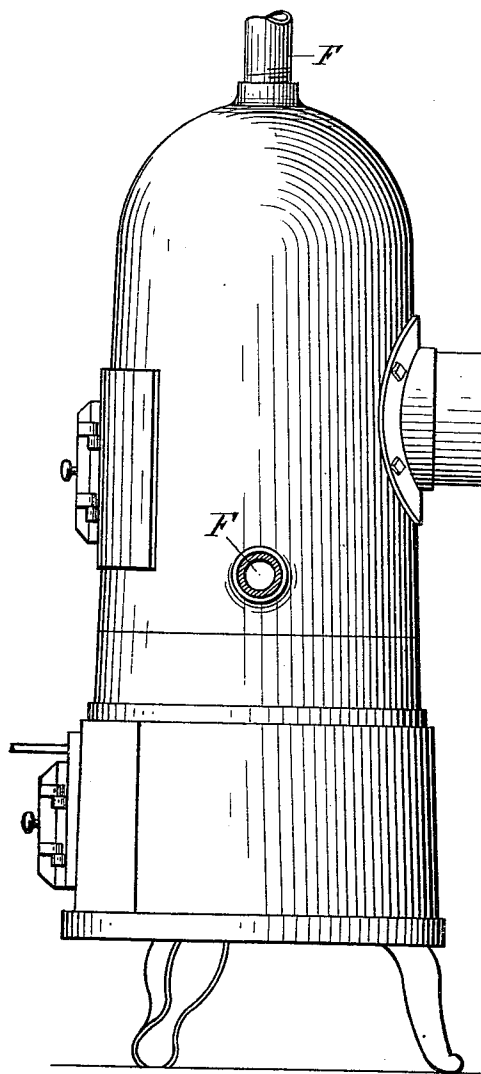


Fig. 1.

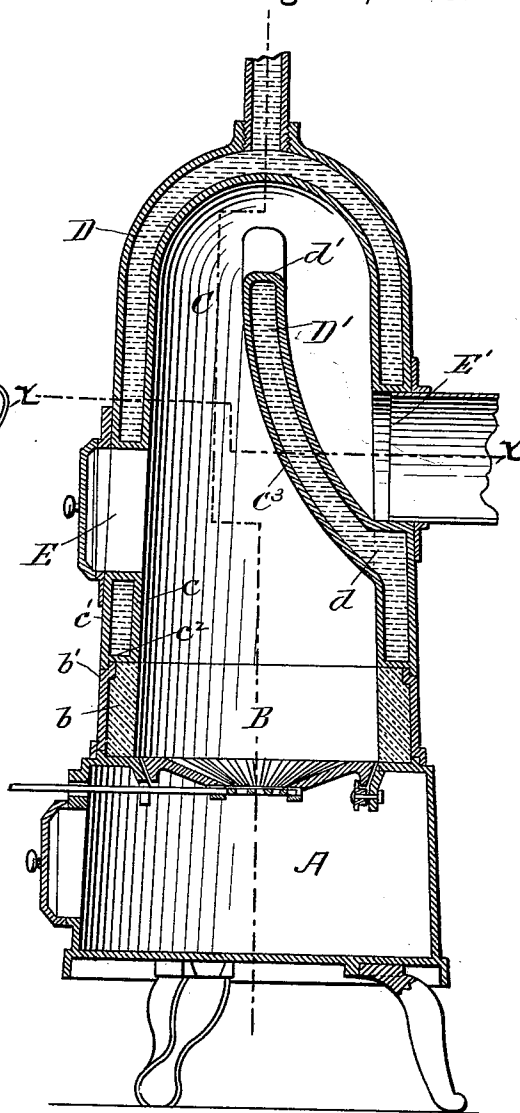


Fig. 2.

WITNESSES

H. W. Myrhead.

J. W. Dolan.

INVENTOR

Frank A. Magee

by his Atty.

Clark & Raymond

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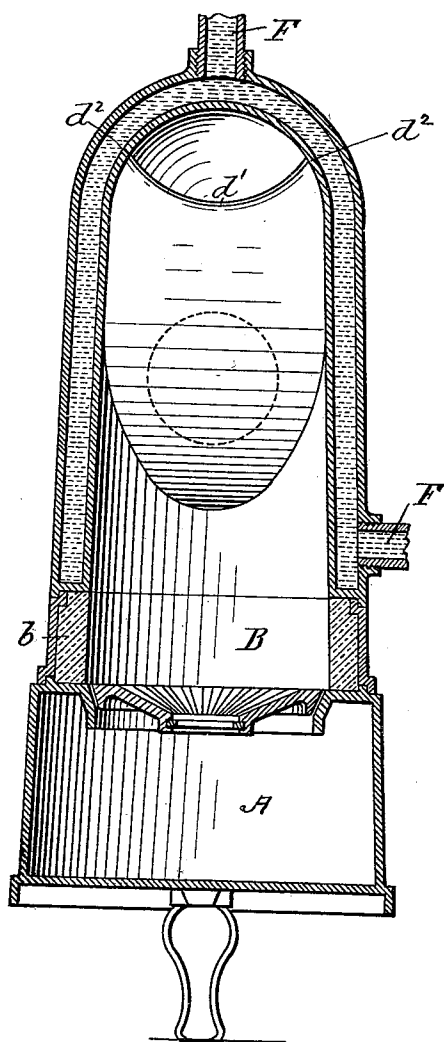


Fig. 3.

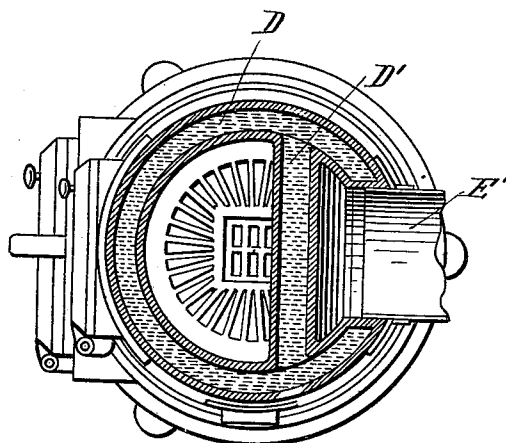


Fig. 4.

WITNESSES  
*H. W. Myerhead*  
*J. W. Dolan*

INVENTOR  
*Frank A. Magee*  
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# UNITED STATES PATENT OFFICE.

FRANK A. MAGEE, OF WENHAM, ASSIGNOR TO THE MAGEE FURNACE COMPANY, OF BOSTON, MASSACHUSETTS.

## HOT-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 544,440, dated August 13, 1895.

Application filed May 20, 1895. Serial No. 550,025. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK A. MAGEE, a citizen of the United States, residing at Wenham, in the county of Essex 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.

The invention relates to a water-heater in which the water-heating chamber is arranged to surround the combustion-chamber and a portion of the fire-pot, if desired, and in which, also, the water-chamber is extended across the combustion-chamber by so shaping or forming the inner shell of the heater as to provide a narrow hollow partial partition extending from the back of the combustion-chamber below the escape-port upwardly and inwardly to near the top of the combustion-chamber, the cavity whereof is connected at the bottom and at the sides with the water-heating chamber. This hollow partition serves to largely increase the water-heating capacity of the heater, in that it increases the area subjected to the action of the products of combustion, and in that it is arranged to receive the direct impact therefrom and then to deflect them to the front of the heater, causing them to traverse the entire inner side of the heater at the front to the top and then downward upon the opposite side of the partition and the opposite side of the combustion-chamber to the escape-port.

In the drawings, Figure 1 is a view in side elevation of a heater having the features of my invention. Fig. 2 is a vertical central section thereof. Fig. 3 is a view in vertical section upon the dotted line of Fig. 2, and Fig. 4 is a horizontal section upon the dotted line  $x x$  of Fig. 2.

The heater has the ash-pit A, the fire-pot B, and the combustion-chamber C. The lower part of the fire-pot is preferably lined with fire-brick  $b$ . The upper part of the fire-pot and the combustion-chamber C and the water-heating chamber or cavity D D' are preferably formed by one casting, which rests upon the ring  $b'$  and above the fire-brick. This casting has the fire-pot opening E, adapted to be closed by a door, and the escape-port E',

from which the funnel extends. The casting preferably is very slightly conical from its base upward to its rounded top, and it has the inner shell  $c$  and outer shell  $c'$  united at their bottoms at  $c^2$  and separated from each other to form a narrow cavity or space entirely surrounding the combustion-chamber and preferably a part of the fire-pot and forming the water-heating chamber D. The inner shell  $c$  has extending outward from the back part of the combustion chamber, below the escape-port E, a hollow section or partition  $c^3$ , and it extends forward and upward in the combustion-chamber and to the sides of the shell  $c^2$  as well, and its cavity forms the water-heating section D', which is connected at its bottom  $d$  and at its sides with the main water-heating chamber. The upper edge  $d'$  of this partition approaches very nearly the top of the combustion-chamber, and it is curved from its center upwardly in each direction, (see Fig. 3,) and the connection between its cavity or water-heating chamber D' and the chamber D extends from the sides to the point  $d^2$ . (See Fig. 3.) This hollow partition greatly increases the water-heating capacity of the heater by increasing the area subjected to the action of the products of combustion, by disposing a water-heating chamber where it will receive the greatest amount of heat, and also upon both sides by receiving the highest impact of the heat and then deflecting and guiding it so that it is thrown against the front of the combustion-chamber and caused to take an upward course about the top and downward against the other side of the combustion-chamber and against the rear wall of the partition to the escape-port.

It will be understood that the water-heating chamber is supplied through the inlet F or any other suitable place or places, and that the heated water leaves the heating-chamber by the pipe F', extending from the top of the heater; and it will also be seen that the water-heating chamber D is in the main vertical to the outlet F, and that the water-heating chamber D' is also in the main vertical, connecting at its sides with the water-heating chamber D, and that where the chambers are not vertical the friction upon the passing water is reduced as much as possible by curving such

parts of the chamber in the direction of the flow of the water, one object of my invention being to interpose as little friction or resistance to the rapid flow of the water through the heater as possible.

While it is desirable to extend the water-heating chamber into the fire-pot, yet it may begin above the fire-pot. The connection between the water-heating chamber D' and the chamber D may be from the center of the top of the hollow partition to the top of the water-heating chamber directly, and this connection may be used instead of the said connections, or in conjunction with the said connections, as may be desired; and I consider that my invention would be practiced in part if the partitions were solid instead of hollow, as certain of the beneficial effects of the invention would therefore be obtained, and in such case it could be cast integral with the inner plate c, or it could be made separate and attached thereto.

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 inlet pipe F, the water chamber D conical in shape surrounding the combustion chamber, the water chamber D' extending almost vertically from the lower part of the combustion chamber below the escape port E' to the upper part thereof, connected at its sides with the water chamber D, and the outlet F', as and for the purposes described.

2. The combination in a hot water heater of the water chamber D surrounding the fire-pot and combustion chamber and the water chamber D' extending from the lower back portion of the combustion chamber to the upper central portion thereof, connected with the water chamber D at the sides, and having a curved top, as and for the purposes described.

3. The combination in a hot water heater of the water chamber D, conical in shape and the water chamber D' extending vertically through the combustion chamber and cast integral therewith, as and for the purposes described.

FRANK A. MAGEE.

In presence of—

J. M. DOLAN,

E. L. FORD.