

(No Model.)

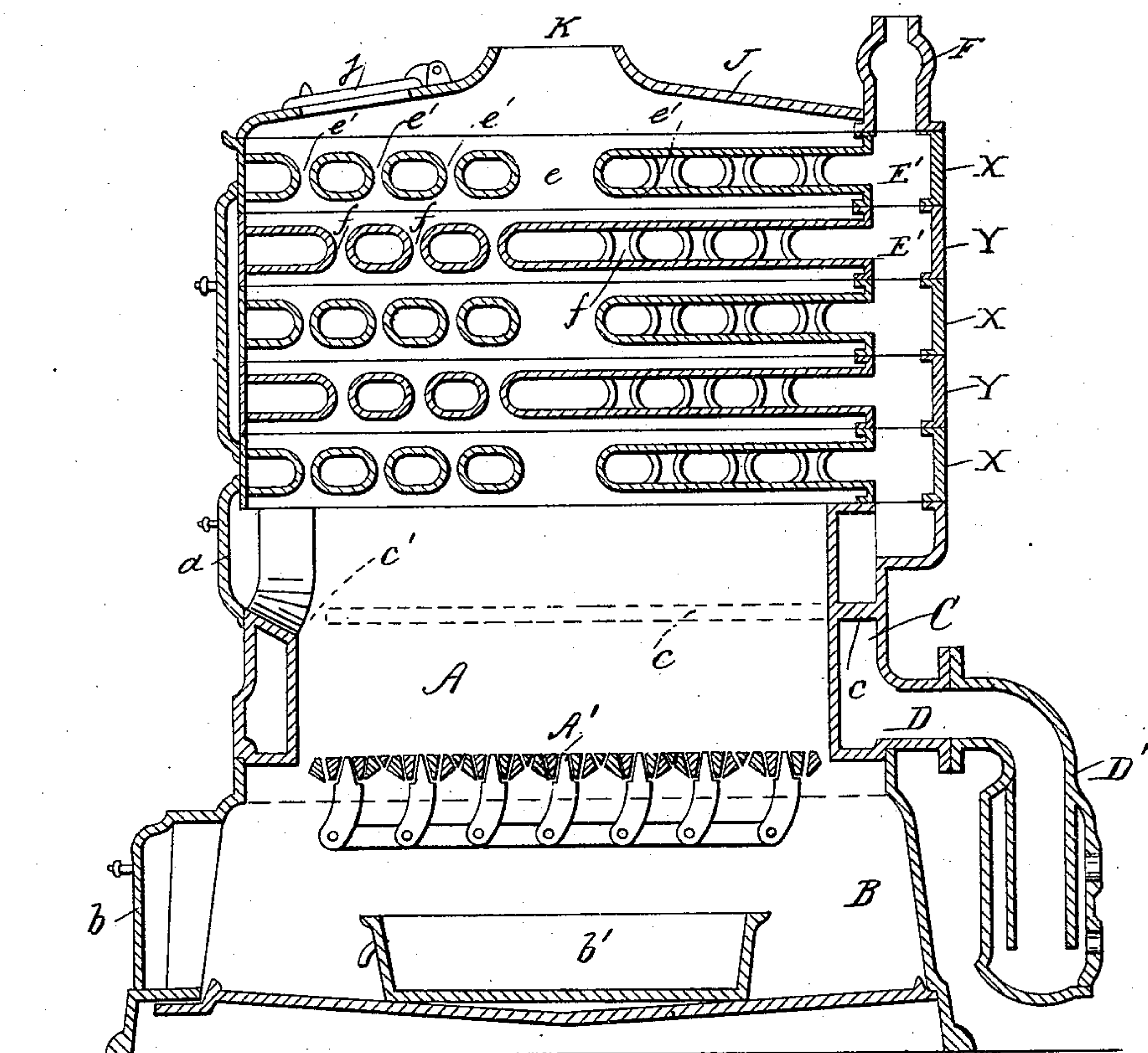
3 Sheets—Sheet 1.

E. A. MANNY.  
HOT WATER FURNACE.

No. 586,974.

Patented July 27, 1897.

FIG. 1.



Witnesses  
A. Page  
W. Clarke

Emilien Alfred MANNY, Inventor

By Attorney J. Marion

(No Model.)

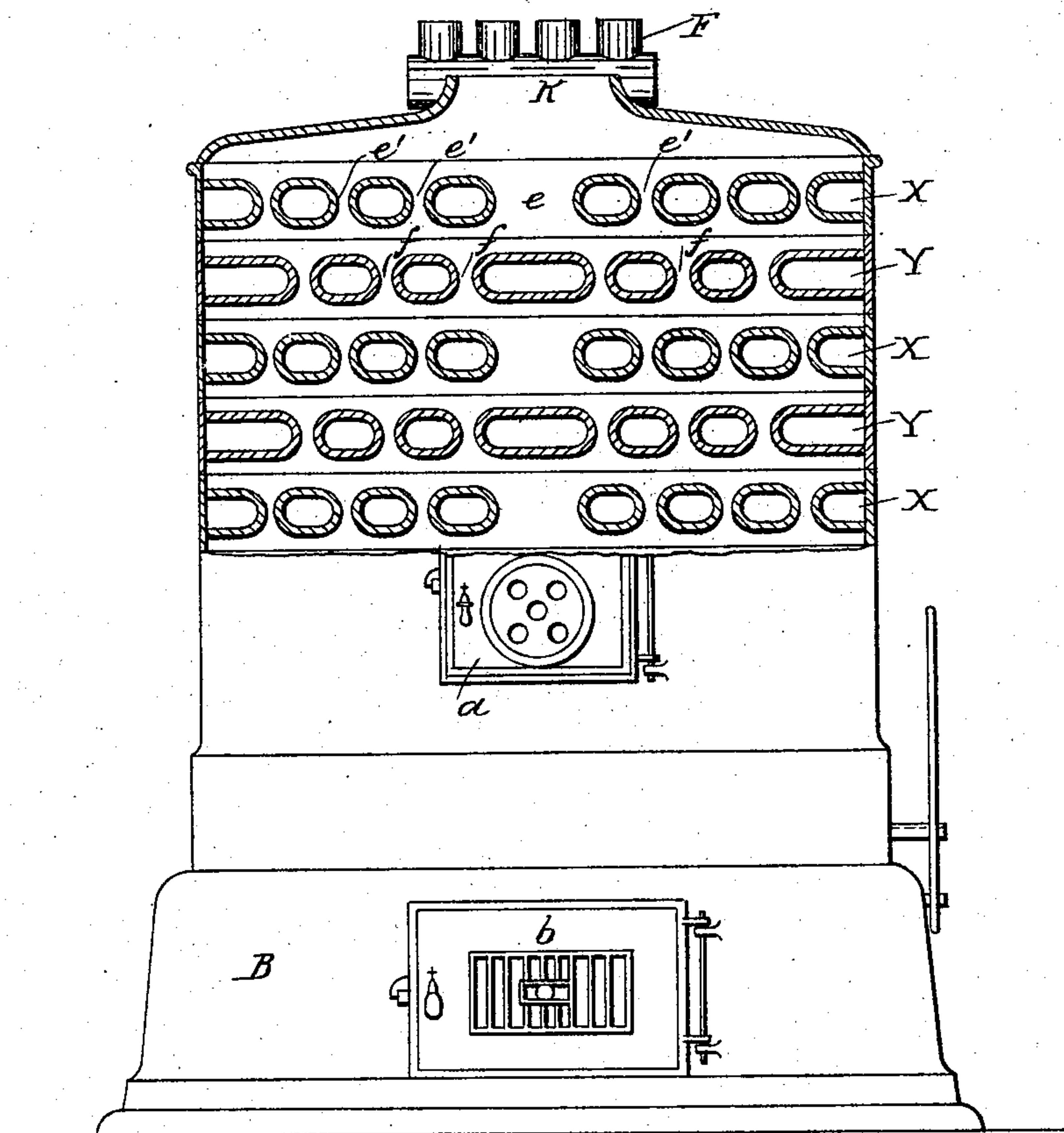
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FIG. 2.



Witnesses  
*A. Page*  
*W. Clarke*

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By Attorney *J. Marion*

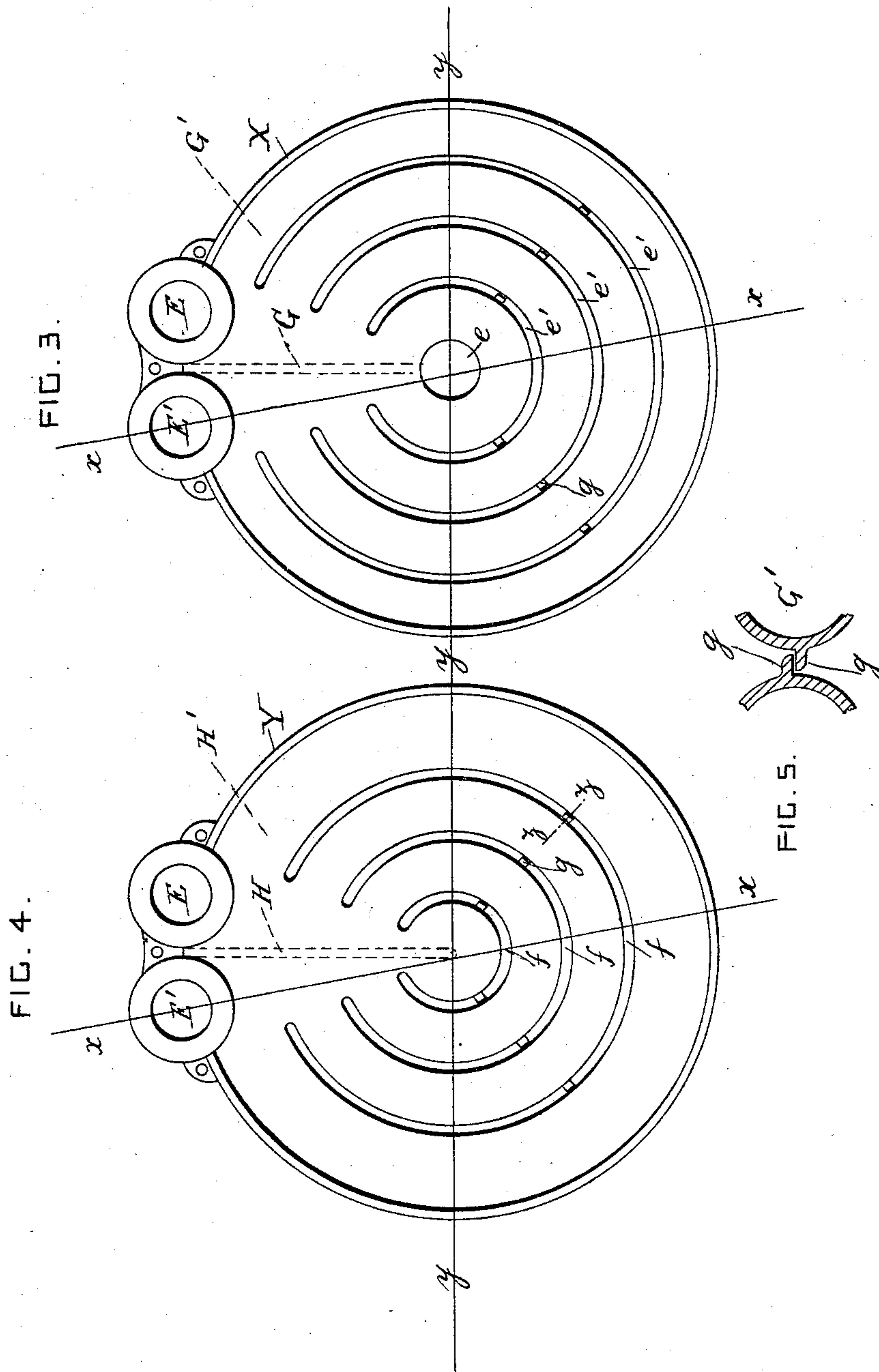
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*A. Page.*  
*W. Clarke.*

Emilien Alfred MANNY, Inventor

By Attorney *J. A. Marion*



# UNITED STATES PATENT OFFICE.

EMILIEN ALFRED MANNY, OF BEAUHARNOIS, CANADA, ASSIGNOR OF ONE-HALF TO CYRILLE GUIMOND, OF SAME PLACE.

## HOT-WATER FURNACE.

SPECIFICATION forming part of Letters Patent No. 586,974, dated July 27, 1897.

Application filed February 19, 1897. Serial No. 624,238. (No model.) Patented in Canada May 7, 1896, No. 52,207.

*To all whom it may concern:*

Be it known that I, EMILIEN ALFRED MANNY, a citizen of the Dominion of Canada, residing at Beauharnois, in the county of Beauharnois, Province of Quebec, Canada, have invented certain new and useful Improvements in Hot-Water Furnaces, (for which I have obtained a patent in Canada, No. 52,207, dated May 7, 1896;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to hot-water furnaces; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a vertical section through the furnace, taken on the line *xx* in Figs. 3 and 4. Fig. 2 is a vertical section taken on the line *yy* in Figs. 3 and 4. Fig. 3 is a plan view of one of the sections X. Fig. 4 is a plan view of one of the sections Y. Fig. 5 is a section taken on the line *zz* in Fig. 3.

A is the fire-box of the furnace.

A' is a grate of any approved construction.

B is the base of the furnace, forming a chamber for ashes, provided with a door *b*, and *b'* is an ash-pan.

A door *a* is provided through which fuel is fed into the fire-box.

C is an annular water-chamber surrounding the fire-box and provided with a horizontal partition *c*, having an opening *c'* on one side.

D is the inlet for cold water, arranged at the opposite side of the chamber C from the opening *c'*.

D' is a manifold to which the circulating-pipes are connected, and which is attached to the inlet D.

X and Y are sections of the furnace, superposed one above the other alternately in series. Each section X and Y have two openings E and E', extending vertically through it on one side. The similar openings are placed one over the other, and F is a manifold secured over the two openings of the top sec-

tion of the series. The pipes for distributing the hot water through the building are connected to the manifold F.

The segments X are each provided with a central circular opening *e* and a series of narrow openings *e'*, each formed upon the greater part of a circle and arranged concentric with the opening *e*. The products of combustion pass upward through the openings *e* and *e'*.

G is a vertical partition arranged in the chamber G', inside the segment X, between the openings E and E', and dividing the chamber into halves. The chamber G is divided into pipes by the openings *e'*.

The segments Y are each provided with a series of narrow openings *f*, each formed upon the greater part of a circle and arranged concentric and out of line with the openings *e'*. The products of combustion pass upward through the openings *f*.

H is a vertical partition arranged in the chamber H', inside the segment Y, between the openings E and E', in a similar manner to the partition G. The chamber H' is divided into pipes by the openings *f*. The pipes of each chamber G' and H' are provided with lugs *g*, as shown in Figs. 3 and 5. The adjacent lugs *g* come one above the other and prevent the pipes from warping out of shape.

J is a cover for the top section of the series, and *j* is a door in the said cover through which access may be had to the sections. K is the outlet for the products of combustion at the top of the cover J. The water circulates upward through the pipes of the sections. The peculiar form of the sections enables them to expand and contract when subjected to the heat of the fire without being broken, and the water is heated very quickly and with great economy of fuel.

What I claim is—

In a hot-water furnace, the combination, of sections X and Y arranged alternately in a series one above the other, said sections having radially-arranged partitions dividing their water-chambers into halves, and openings E and E' arranged one on each side of the said partitions and connecting the water-chamber of each section with the water-chambers of the adjacent sections, and a series of

5 narrow concentric openings  $e'$  and  $f$  each formed of the greater part of a circle, the said openings  $e'$  of the sections X being out of line with the openings  $f$  of the sections Y, and forming tortuous passages for the products of combustion, the said partitions being arranged between the ends of the openings  $e'$  and  $f$ , and the said water-chambers being

divided into pipes by the said openings  $e'$  and  $f$ , substantially as set forth. 10

In testimony whereof I affix my signature in presence of two witnesses.

EMILIEN ALFRED MANNY.

Witnesses:

J. A. MARION,

A. PAGÉ.