

(No Model.)

E. R. STASCH.  
HOT AIR FURNACE.

No. 489,994.

Patented Jan. 17, 1893.

Fig. 1.

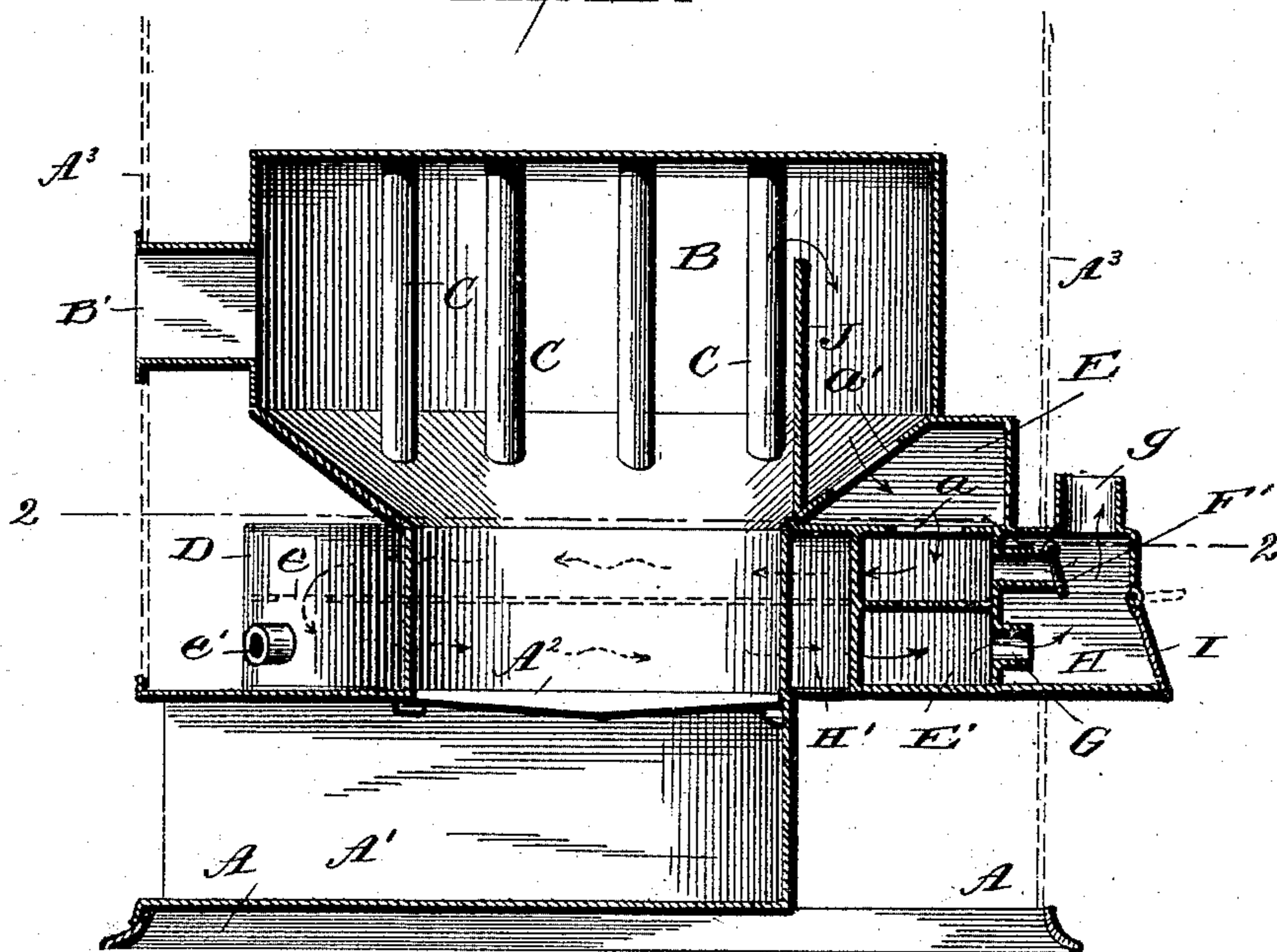
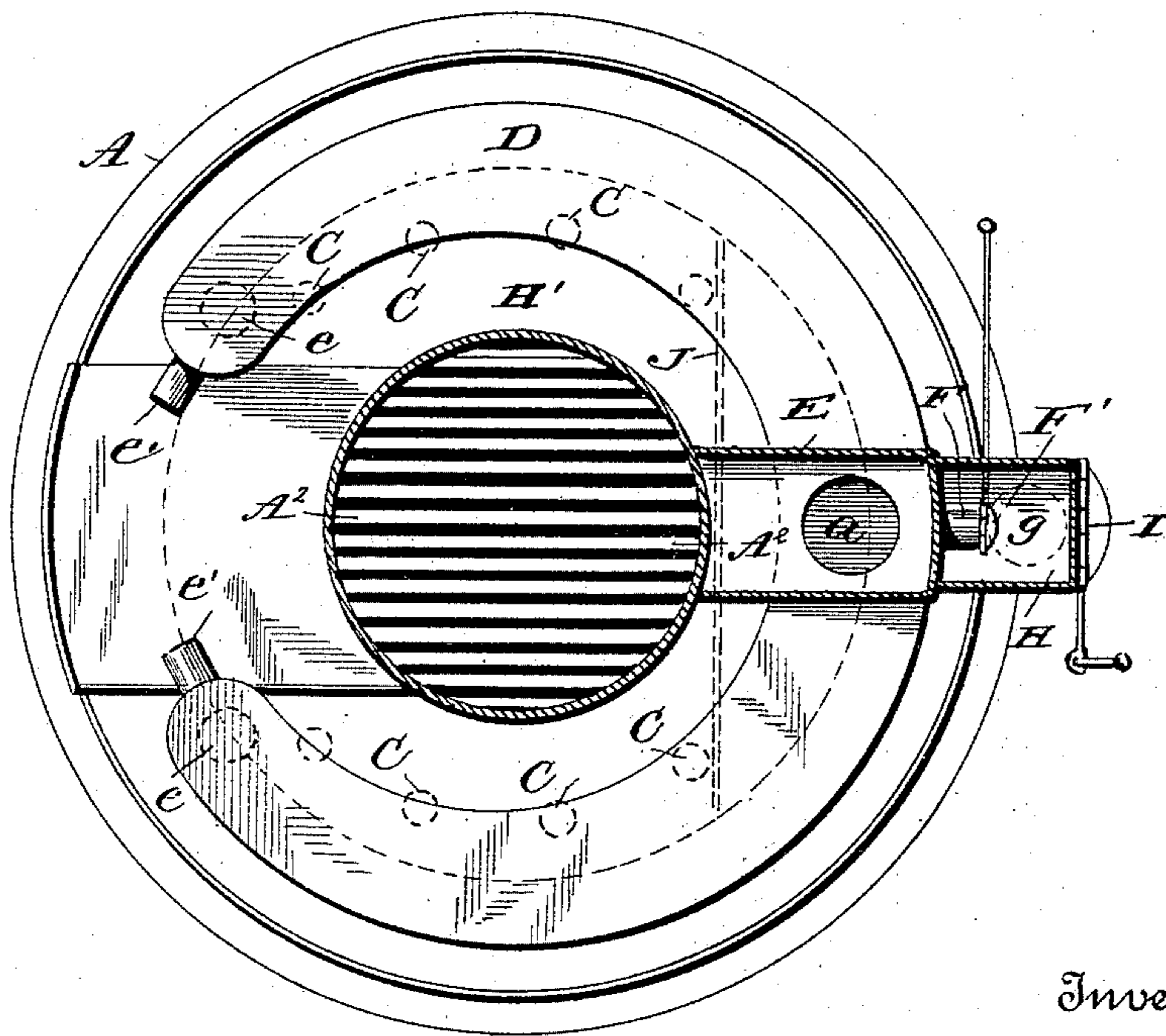


Fig. 2.



Witnesses  
L. C. Hills  
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# UNITED STATES PATENT OFFICE.

EMIL R. STASCH, OF CORNING, NEW YORK, ASSIGNOR TO THE CORNING MANUFACTURING COMPANY, OF SAME PLACE.

## HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 489,994, dated January 17, 1893.

Application filed July 26, 1892. Serial No. 441,287. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL R. STASCH, a citizen of the United States, residing at Corning, in the county of Steuben, State of New York, have invented certain new and useful Improvements in Hot-Air Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in hot air furnaces, and it has for its objects among others to provide for the more ready heating of the air, for the automatic escape of accumulated gases and  
15 compactness in structure and arrangement of parts. I extend the combustion chamber laterally over the radiating chamber and provide within the combustion chamber a vertical partition for the purpose of compelling  
20 the products of combustion to pass first upward and then downward and into the radiating chamber which latter has a horizontal diaphragm with an outlet beneath the same for the products of combustion into the flue  
25 and an outlet above the diaphragm for the escape of the gases, said upper outlet being provided with an automatically operating valve which is forced open by the accumulated gases and automatically closes after the  
30 gases have escaped. The radiating chamber is provided with suitable means for cleaning when desired.

Other objects and advantages of the invention will hereinafter appear and the novel  
35 features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part  
40 of this specification, and in which

Figure 1 is a central vertical section through my improved hot air furnace. Fig. 2 is a horizontal section thereof through the line 2 2 of Fig. 1.

45 Like letters of reference indicate like parts in both of the views where they occur.

Referring now to the details of the drawings by letter, A designates the base, A' the ash pan, and A<sup>2</sup> the grate all of known construction.  
50

A<sup>3</sup>, dotted lines, designates the surrounding jacket.

B is the combustion chamber provided with suitable feed openings B' and this chamber is of a diameter nearly or quite equal to that  
55 of the radiating chamber arranged beneath the same and which will soon be described. The lower portion of this chamber directly above the fire pot is tapered inward and through this tapered or inclined wall extend  
60 the vertical tubes C which pass through the combustion chamber, being open at the top and also at their lower ends which are located over the radiating chamber.

D is a radiating chamber surrounding the  
65 fire-pot as seen best in Fig. 2 and independent of the combustion chamber except but for a communication therewith as will soon be described. This communication is afforded  
70 through a small chamber E at the rear of the furnace, the bottom of which forms the top of the radiating chamber as seen in Fig. 1, the openings *a a'* being in the top of the radiating chamber and the inclined wall of the combustion chamber at a coincident point as seen  
75 in Fig. 1. This radiating chamber has a substantially central horizontal diaphragm E' as seen in Fig. 1 which extends nearly the whole length of the said chamber, there being openings *e* at the ends affording communication  
80 between the upper and lower part of the chamber. The ends of the radiating chamber are provided with suitable man holes or analogous provisions *e'* for the purpose of affording access thereto for cleaning. The upper  
85 compartment of this chamber has an outlet F which is closed by an automatic damper or valve F' as seen in both views and the lower compartment has an outlet G through which the products of combustion pass to the  
90 chimney as seen in Fig. 1. The two outlets communicate with a chamber H which has a neck *g* for connection with the chimney or flue and this chamber is also provided with an automatic air-inlet valve I of known construction and operating in the usual way.  
95

J is a vertical partition or diaphragm within the combustion chamber and extending a greater part of the distance from the top of the fire-pot to the top of the combustion cham-  
100

ber and located so that the products of combustion will be caused to pass upward upon one side of the partition and then downward upon the other side and thence through the opening *a* in the top of the radiating chamber, around the said chamber above its diaphragm and then back through the lower compartment and out through the outlet *G* and chamber *H* and neck *g* to the chimney; the course of the products of combustion is illustrated by the arrows in Fig. 1. In case an abnormal quantity of gases accumulate in the radiating chamber or the small chamber the same will automatically open the valve *F'* and escape when the valve will automatically close. There is a space *H'* between the radiating chamber and the fire-pot. While the valves *F'* and *I* are designed to be automatic in their action I have shown them as provided with means, as handles, whereby they may be operated by hand when desired.

The extension of the combustion chamber radially over the radiating chamber is considered of prime importance as it subjects the air to the greatest amount of heat which is thereby more readily heated, and the tapered wall of the combustion chamber permits of this arrangement without enlarging the space occupied by the same.

What I claim as new is;—

1. A hot air furnace provided with a vertical diaphragm in its combustion chamber, a radiating chamber around its fire-pot with a horizontal diaphragm, and an interposed chamber communicating with the combustion

and radiating chambers with an air chamber between the radiating chamber and the combustion chamber, as set forth.

2. The combination with the combustion chamber and the radiating chamber having horizontal diaphragm an automatic gas outlet, of a chamber into which said outlet communicates and which in turn communicates with the chimney, as set forth.

3. The combination with the combustion chamber having tapered portion in proximity to the fire-pot, of a radiating chamber around the fire-pot having communication with the combustion chamber, and vertical flues within the combustion chamber with their lower ends extending through the tapered portion of the combustion chamber, as set forth.

4. The combination with the fire-pot, and the combustion chamber having tapered lower portion and vertical flues, of a horizontally-divided radiating chamber around the fire-pot and communicating with the combustion chamber, as set forth.

5. The combination with the fire-pot and horizontally-divided radiating chamber, of a combustion chamber having tapered lower portion and extending over the area covered by the radiating chamber and communicating therewith, as set forth.

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

EMIL R. STASCH.

Witnesses:

HEATH SUTHERLAND,  
L. C. HILLS.