

W. H. LOTZ.  
Hot-Air Furnaces.

No. 156,362.

Patented Oct. 27, 1874.

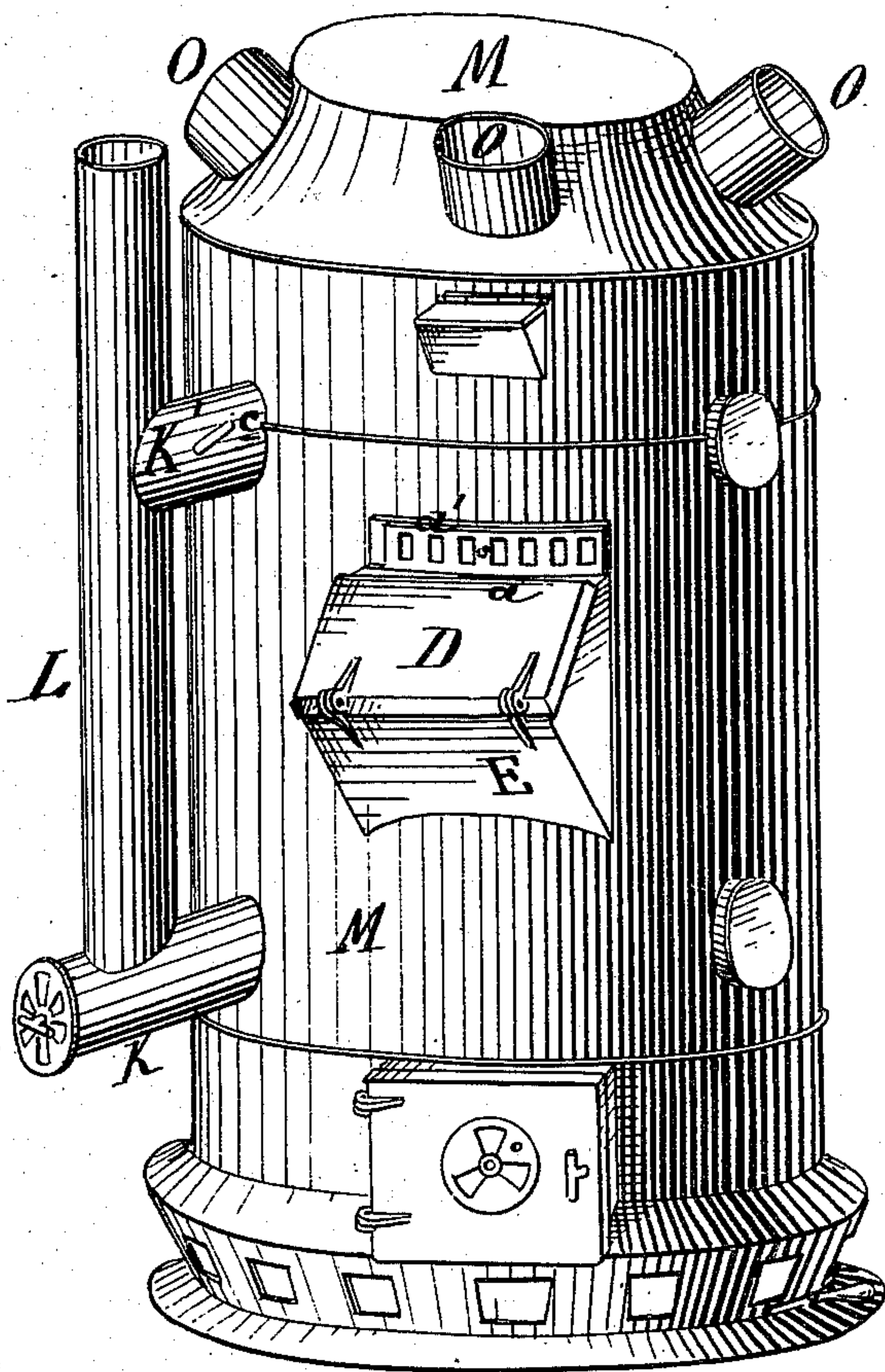


Fig: 1

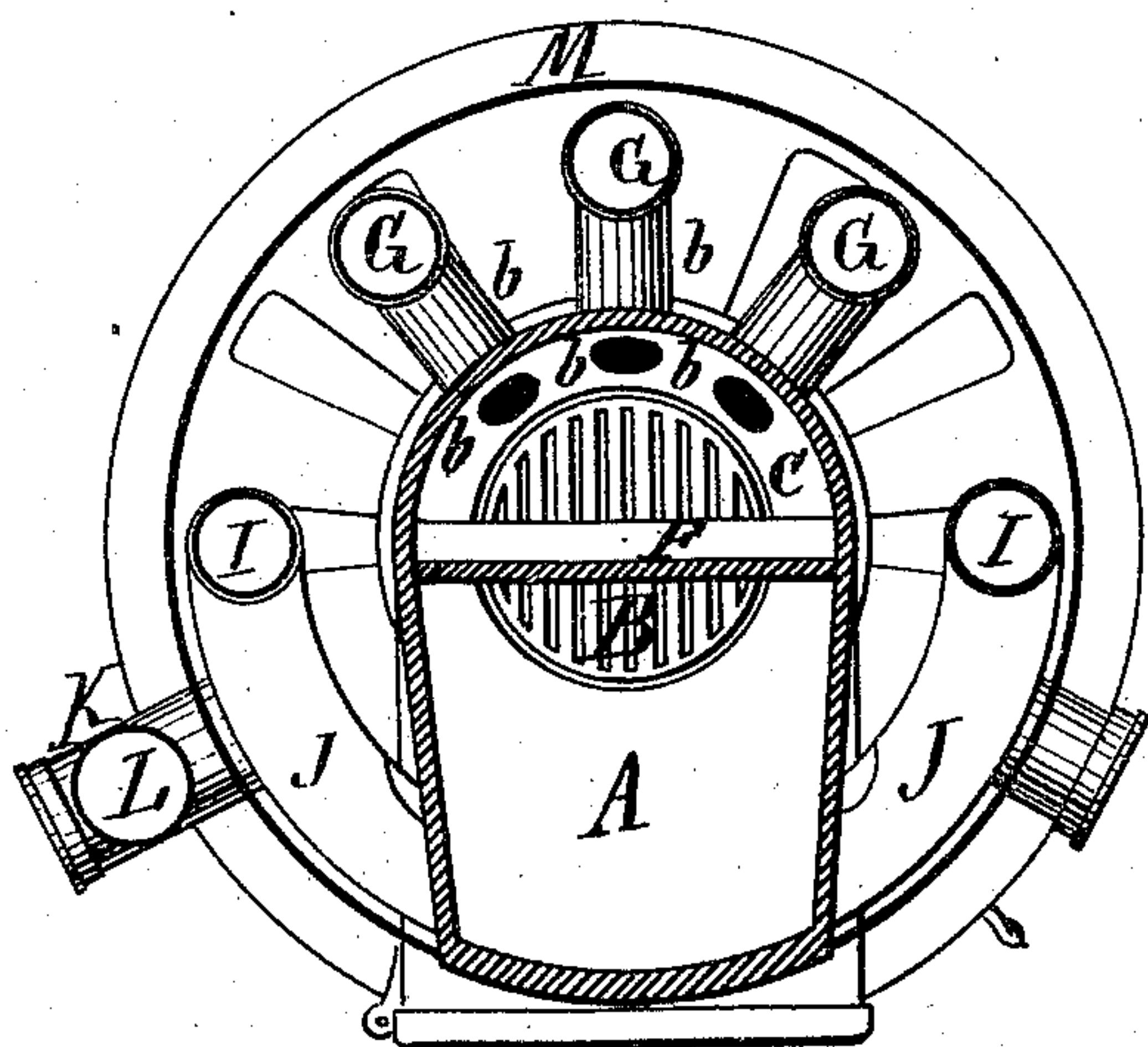


Fig: 2.

Attest  
Edward Barthel.  
Chas. E. Hunt

Inventor:  
Wm. H. Lotz  
per Attorney  
Jno. S. Sprague

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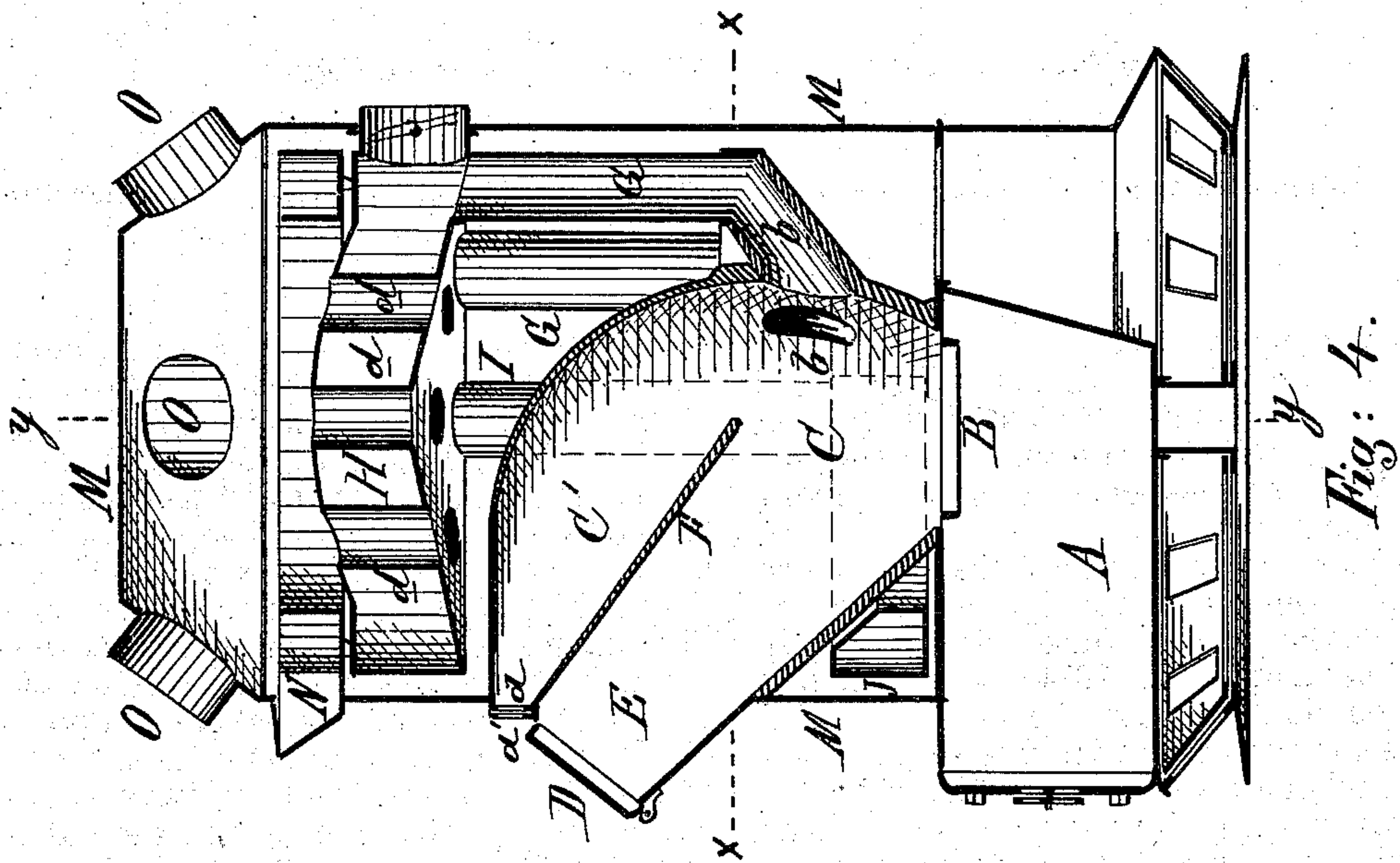


Fig. 4.

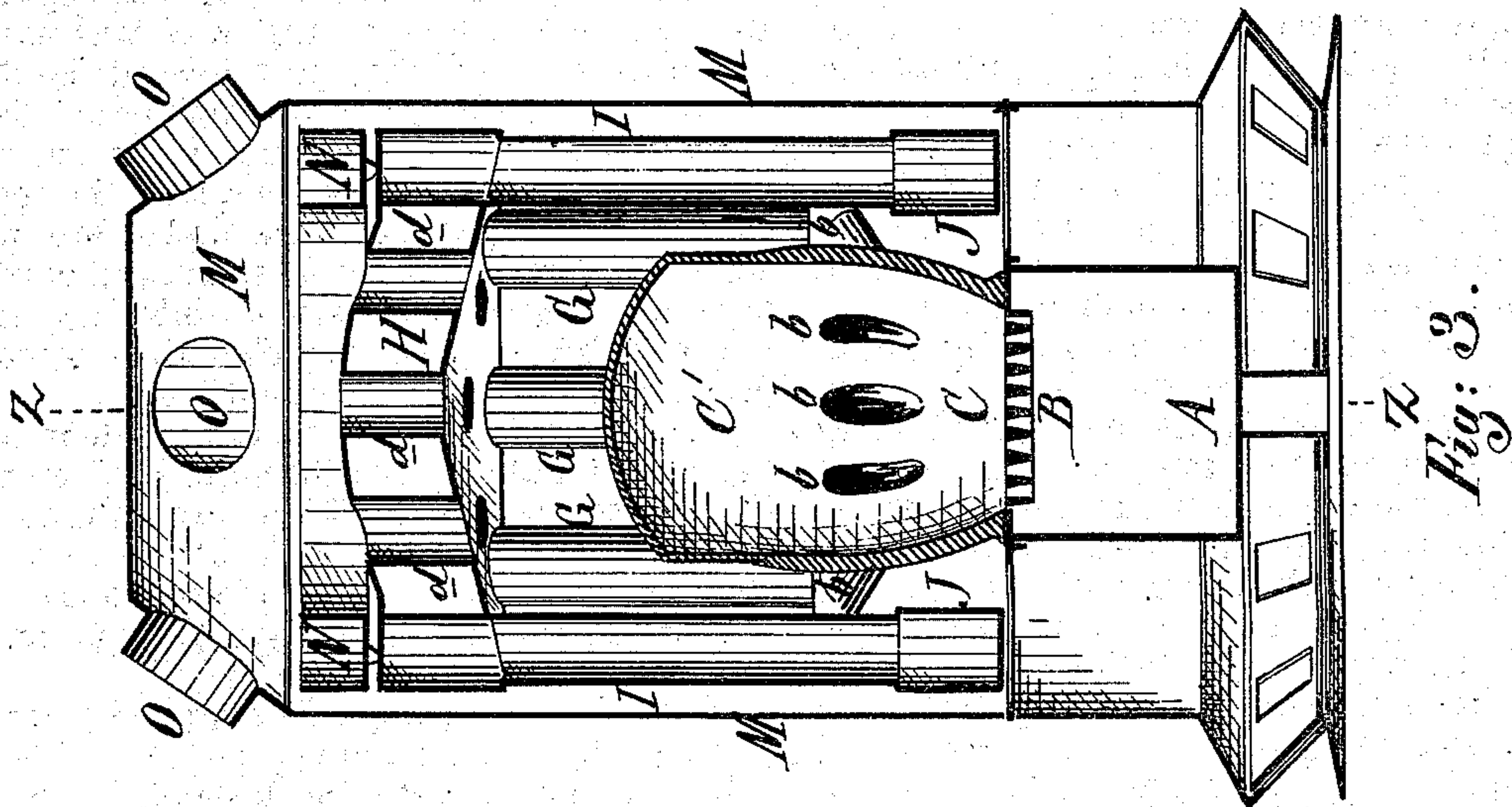


Fig. 3.

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# UNITED STATES PATENT OFFICE.

WILLIAM H. LOTZ, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 156,362, dated October 27, 1874; application filed September 8, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM H. LOTZ, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Hot-Air Furnaces, of which the following is a specification:

The nature of my invention relates to certain improvements on the furnace for which Letters Patent of the United States were issued to me August 11, 1874; and it consists in the combination, with the fire-pot having near the bottom of its rear flue-sockets, of a sloping fuel-chute and a combustion-chamber, preferably sloping downwardly to the rear, and having openings and a register at its upper front end above the fuel-chute for supplying oxygen to the gases for combustion, as more fully hereinafter set forth.

Figure 1, Sheet 1, is a perspective view of the furnace. Fig. 2 is a horizontal section taken on the plane  $x x$  in Fig. 4. Fig. 3, Sheet 2, is a transverse vertical section on the line  $y y$  in Fig. 4, which is a longitudinal vertical section on the line  $z z$  in Fig. 3.

In the drawing, A represents the ash-pit, having a grate, B, hung in an opening in its top plate. C is the fire-pot, having the general form of a zone of a hollow sphere, except the front wall, which is inclined, as seen in Fig. 4. The fire-pot is surmounted by a combustion-chamber, C', the whole bearing a general resemblance to a "Bessemer converter." D is a feed-door for the introduction of fuel into a chute, E, leading into an inclined magazine, the bottom of which is formed by said chute and the inclined front wall of the fire-pot, while the top is formed by an inclined transverse diaphragm, F, extending clear across the combustion-chamber from a point above the feed-door to about the plane of the top of the fire-pot. The upper part of the combustion-chamber extends to and through the casing of the furnace. Just above the feed-door a series of slots,  $a$ , are made in the said chamber, over which slides an air-register,  $a'$ .  $b b$  are outlet flue-sockets, cast with the fire-pot at the back thereof, near the bottom, and inclined upward, with a collar on each to receive a vertical flue, G, the upper end of which enters the bottom plate of a radiating-drum, H, above the combustion-chamber. At each side of this radiator a drop-flue, I, connects it with a segmental flue-chamber, J, which en-

velops the front half of the fire-pot, and from which a lateral flue, K, extends through the casing M, where it connects with the smoke-flue L. There is also a direct-draft flue, K', connecting the radiator H with said smoke-flue L, and is provided with a damper,  $c$ , by opening which a direct draft may be had when desired. The radiator H has a number of vertical flues,  $d$ , extending through both heads, through which the uprising volume of air flows in divided currents, whose temperature is raised by the heat radiated from the walls of said tube. N is an annular water-pan, supported by short legs, resting on the radiator; and O are openings in the top chamber of the casing, through which the warmed air is conducted to the various apartments.

The fuel in combustion lies in a pile on the grate sloping back and down from the mouth of the magazine, at the angle on which coal will naturally slide, and having less depth at the back of the fire-pot the draft will naturally draw through that part toward the flue-outlets, while the gases of combustion have ample space above the diaphragm to rise and expand into; here, the air entering the register and being heated on its downward passage, mingles with them in such a proportion as to insure their combustion, while they must ignite, before entering the flue-outlets, by coming in close contact with the hot coal.

The air-register above the fuel-door also has the advantage, that through the openings therein the condition of the fire can be inspected, and the admittance of air into the combustion-chamber can be regulated thus, as to always secure a thorough combustion of the gases.

What I claim as my invention, and desire to secure by Letters Patent, is—

In combination with the fire-pot C and the outlet-flue sockets  $b$ , near the bottom at the rear of said fire-pot, and the sloping fuel-chute E, the combustion-chamber C', preferably sloping downwardly to the rear and the openings  $a$  and register  $a'$  at the upper front end of said chamber above the fuel-door, for the purpose set forth.

WILLIAM H. LOTZ.

Witnesses:

ABRAHAM GOTTLIEB,  
WM. HEINEMANN.