

(No Model.)

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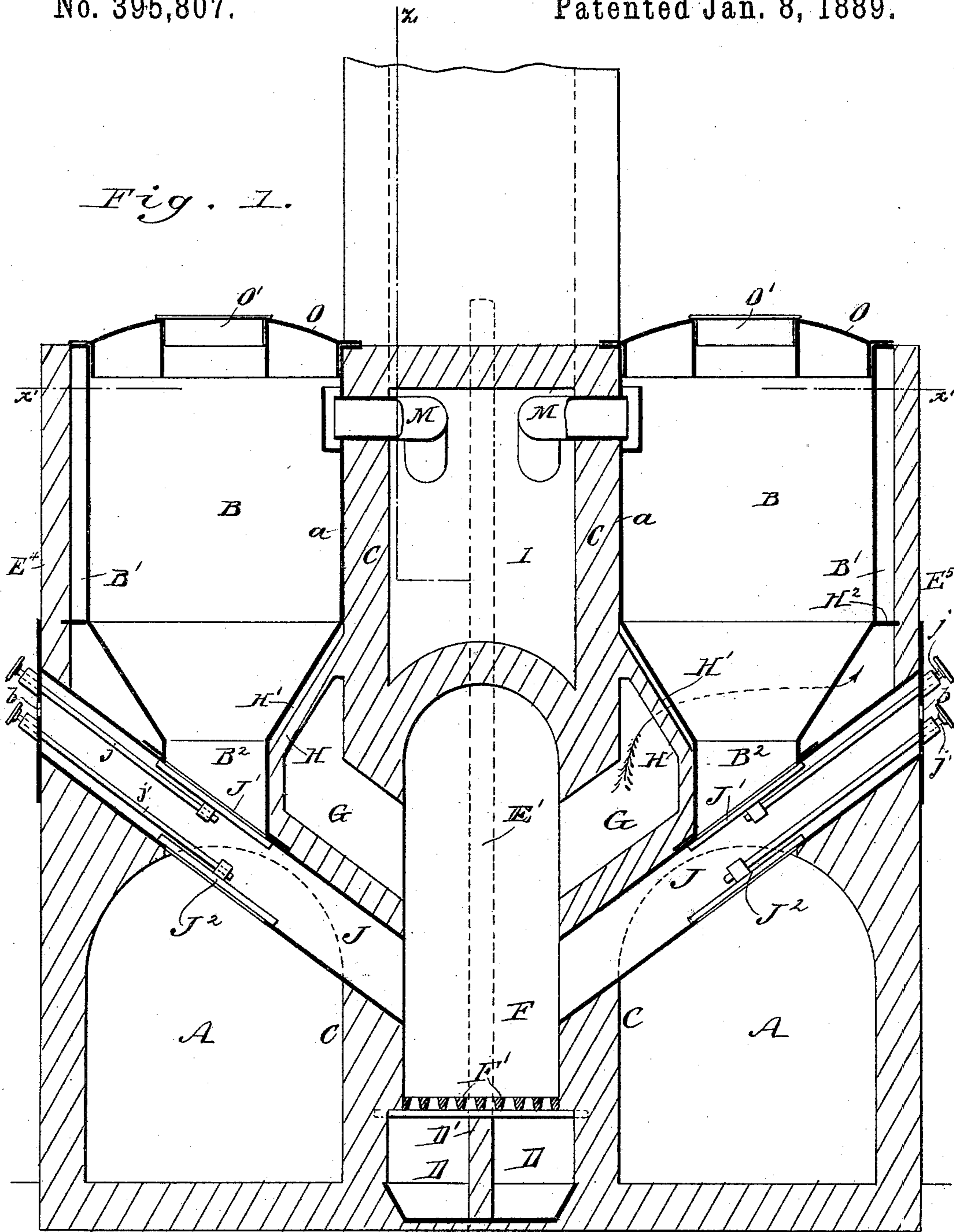
W. H. BLISS.

FURNACE FOR DESTROYING REFUSE MATTER.

No. 395,807.

Patented Jan. 8, 1889.

Fig. 1.



WITNESSES:

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*C. Sedgwick*

INVENTOR:

*W. H. Bliss*

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ATTORNEYS.

(No Model.)

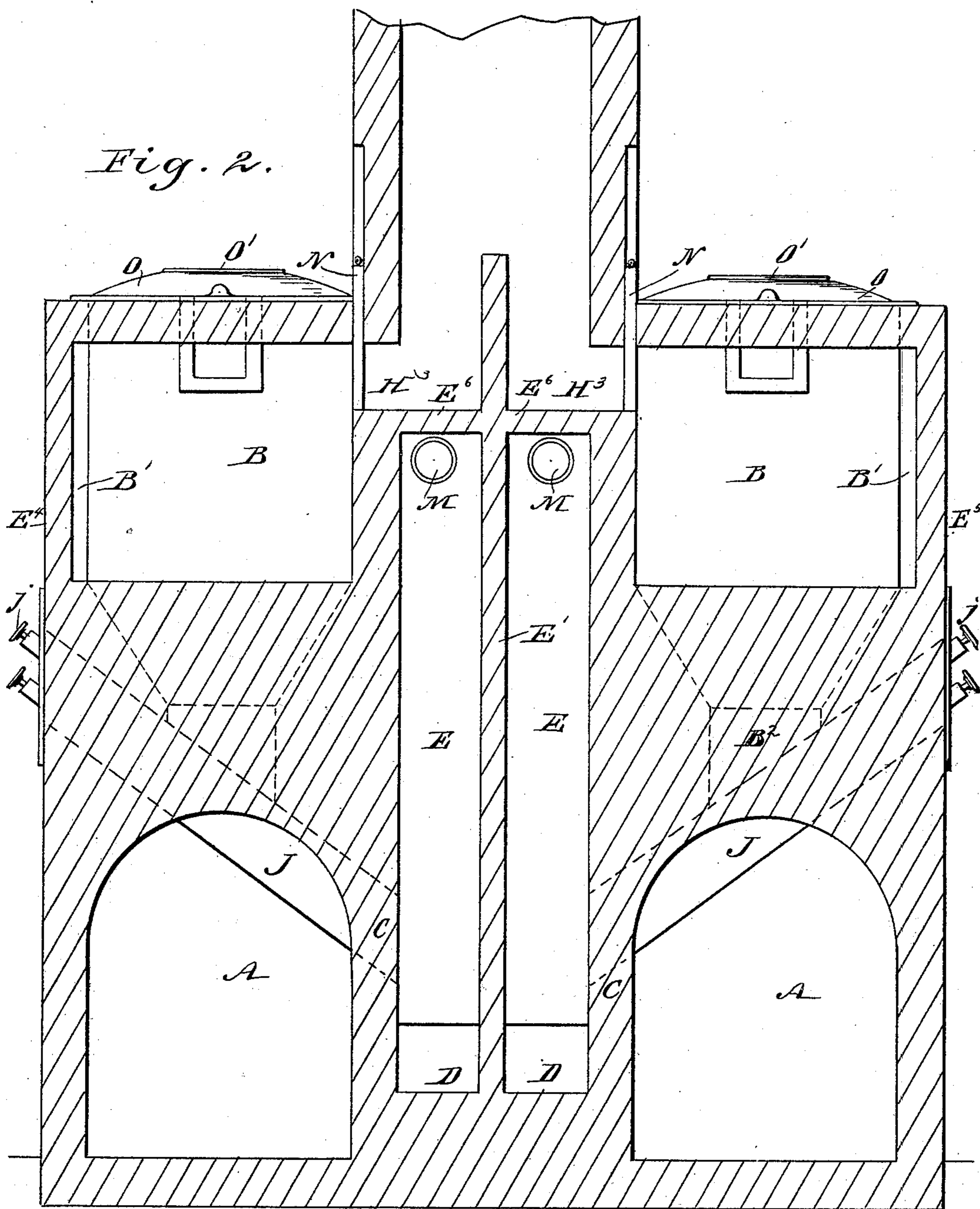
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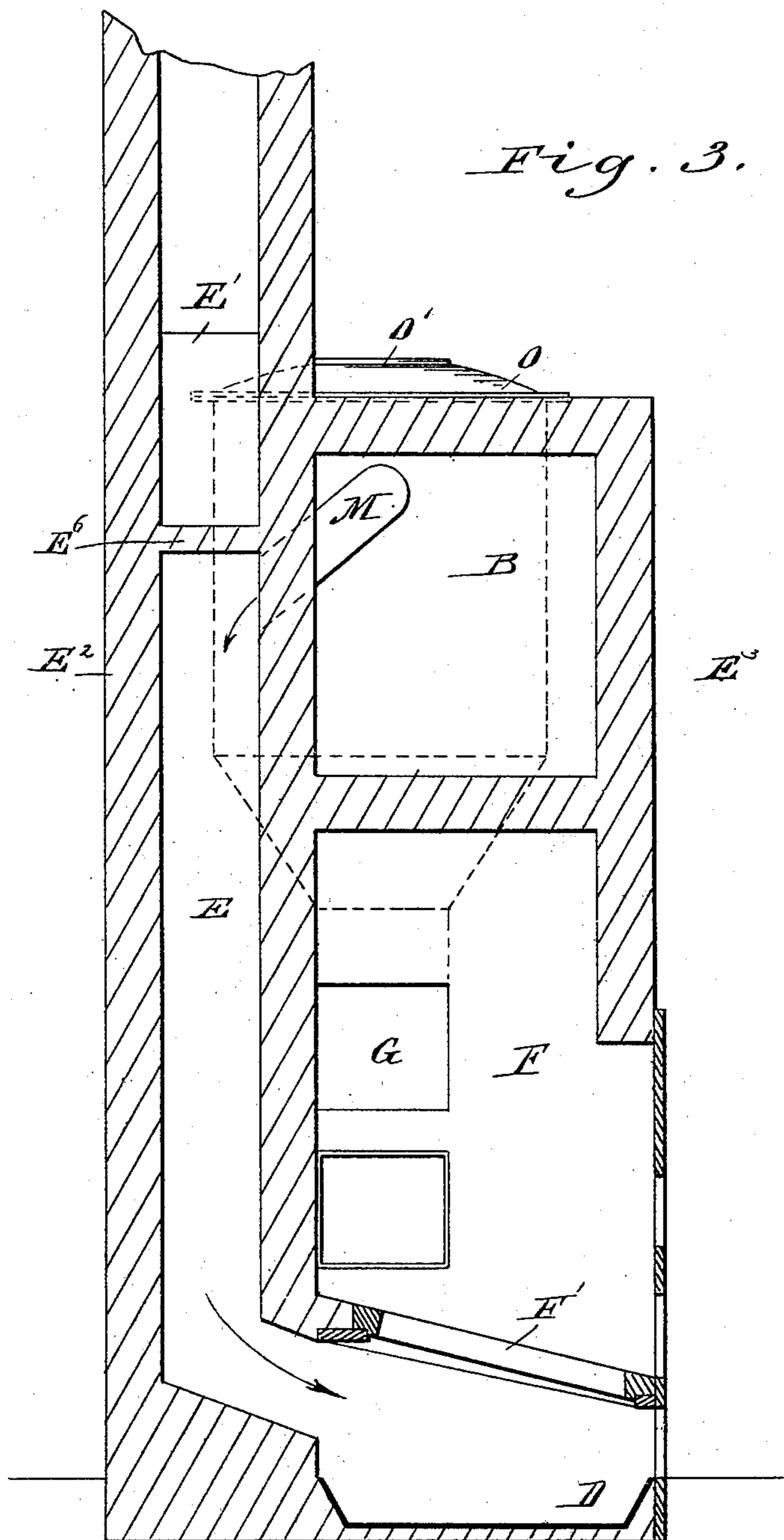
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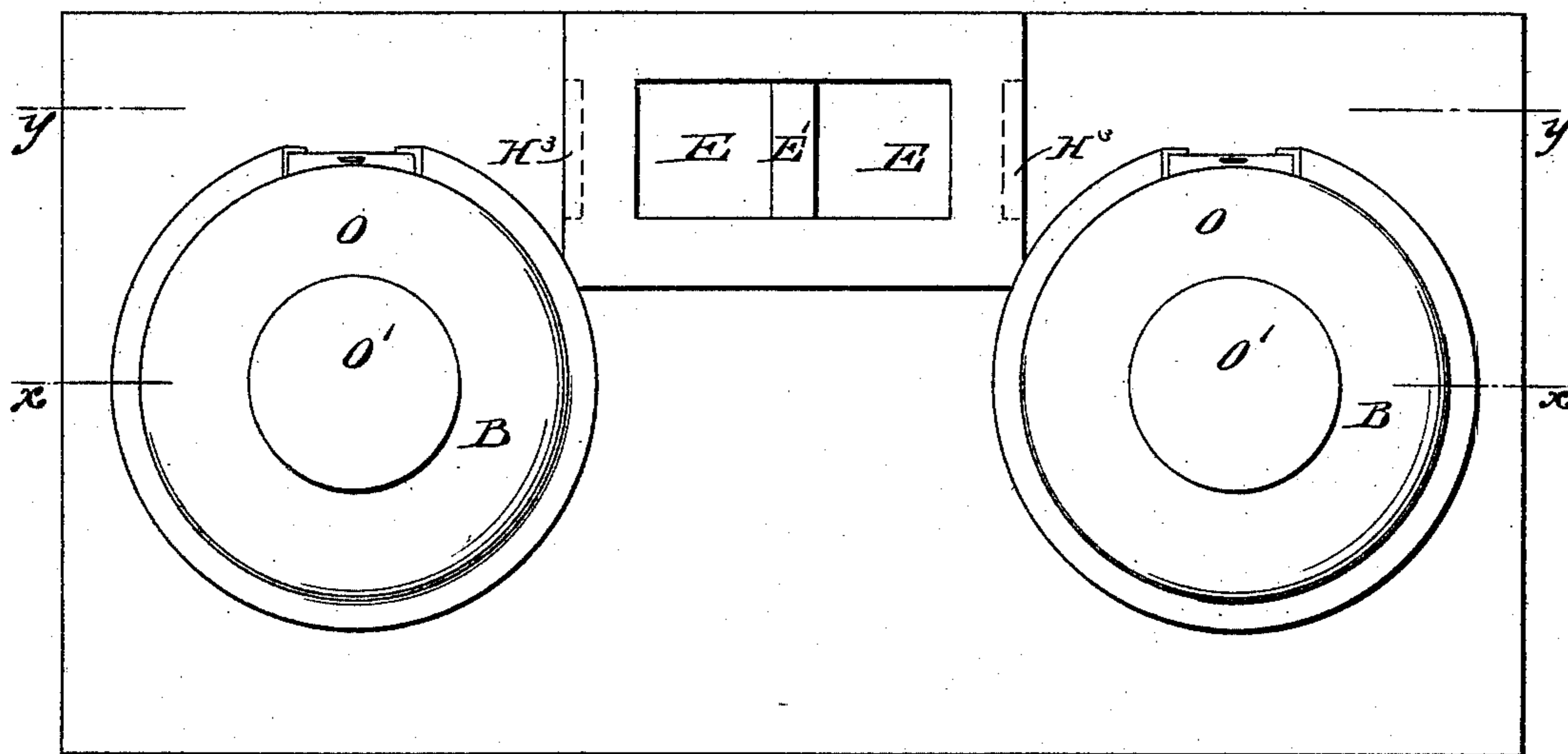
W. H. BLISS.

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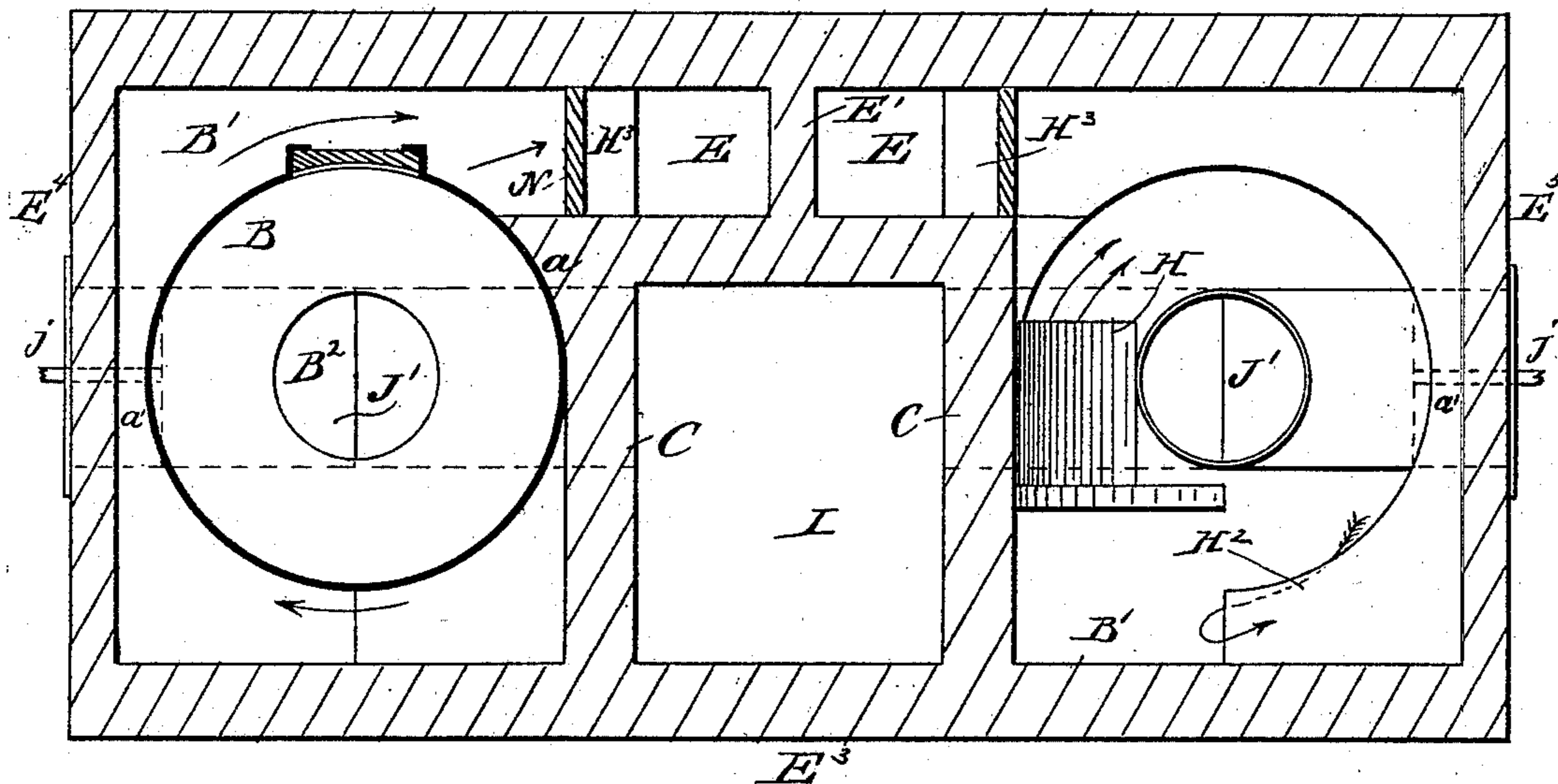
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*Fig. 4.*



*Fig. 5.*  $E^2$



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# UNITED STATES PATENT OFFICE.

WILLIAM H. BLISS, OF NEWPORT, RHODE ISLAND; EDWARD NEWTON  
ADMINISTRATOR OF SAID WILLIAM H. BLISS, DECEASED.

## FURNACE FOR DESTROYING REFUSE MATTER.

SPECIFICATION forming part of Letters Patent No. 395,807, dated January 8, 1889.

Application filed November 16, 1887. Serial No. 255,305. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. BLISS, of Newport, in the county of Newport and State of Rhode Island, have invented a new and  
5 Improved Furnace for Carbonizing and Destroying Refuse Matter, of which the following is a full, clear, and exact description.

My invention relates to a furnace constructed for destroying or carbonizing refuse  
10 matter, and which is intended more particularly for the disposal of house garbage, offal, and other substances, utilizing the same either as fuel or fitting it for use as fertilizer.

The invention consists, principally, in constructing the furnace with retorts in which  
15 the refuse is subjected to heat, said retorts being connected to flues leading back to the fire-grate, so that the fumes and gases will be consumed in the furnace.

The invention also consists in connecting  
20 the retorts with inclined chutes leading to the furnace, so that the material in the retorts, after having been carbonized or reduced to dryness, may be discharged into the furnace  
25 and burned.

The invention also consists in so constructing the furnace that the contents of the retorts may be discharged into a chamber or other receptacle and used for fertilizer.

30 The invention finally consists of the construction, arrangement, and combination of parts, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification,  
35 in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of my improved furnace, taken on the line  $x x$  of Fig. 4. Fig. 2 is a similar view taken on the line  
40  $y y$  of Fig. 4. Fig. 3 is a transverse sectional elevation taken on the line  $z z$  of Fig. 1. Fig. 4 is a plan view; and Fig. 5 is a sectional plan on the line  $x' x'$  of Fig. 1, the right-hand retort being removed.

45 The furnace is constructed principally of masonry, and should be about twenty-two feet long and eleven feet wide, and stand, without the chimney, about twenty feet in height. There is a space, A, inside of the walls at each  
50 end of the furnace six feet in width and nine

feet in height, or thereabout, with arched roofs. Said chambers A are for the removal of the carbonized matter from the retorts B above, which matter may be used as fertilizer. Two division-walls, C, of brick separate these  
55 chambers A from the ash-spaces D D and return-flues E E. These division-walls extend to the top of the structure and form the sides of the flues E. Said two return-flues E E are closed at the top by the walls E<sup>6</sup>, and they  
60 start from the ground, and the two ash-spaces D formed by the division-wall D' connect each with one of the said return-flues. E' is the wall that separates the flues E E. E<sup>2</sup> is the back wall of the structure, E<sup>3</sup> the front  
65 wall, and E<sup>4</sup> and E<sup>5</sup> are the end walls thereof.

F represents the fire box or furnace proper, provided with the grate-bars F' at the bottom. The retorts B are held in chambers B' B', and are by preference made of wrought-  
70 iron and funnel-shaped at the bottom, terminating in a tube or collar, B<sup>2</sup>. Said spaces or chambers B' communicate with the furnace F through the inclined flues G, so that the heat from the furnace passes through said  
75 flues and first strikes against a deflecting-wall, H, of fire-brick, arranged to protect the cones of the retorts from the direct action of the heat. This wall H is separated from the cone  
80 by the air-chamber H'. The heat passes to the edge of this wall, thence circulates around the cones of the retorts below the plate H<sup>2</sup>, as shown by the arrows in Fig. 5, and then passes back and circulates around the main body of the retort, again above said plate H<sup>2</sup>, and thence  
85 into the chimney-flue through openings or passages H<sup>3</sup>. (See Fig. 2.)

The retorts rest against the inner walls, C, at  $a$ , being separated at all other parts by an air space or flue six inches, or thereabout, in  
90 width at the smallest distance, as shown at  $a'$ , in Fig. 5. The space I above the furnace F is formed for the purpose of receiving a steam-boiler, to be used, if desired, for generating steam for power.

Below the retorts are built into the walls the inclined chutes J, with which the retorts are connected by means of the tubes or collars B<sup>2</sup>. Each chute J is provided with two  
95 valves, J' and J<sup>2</sup>, the former closing the tube  
100

B<sup>2</sup> and the latter closing a corresponding opening at the bottom of the chute. These valves are operated by means of rods *j j'*, reaching to the outside of the furnace, and they are adapted for such operation that the contents of the retort can be discharged into the furnace F or into the chamber A. If both valves are opened, the contents will drop into the chamber A; but if only the valve J' be opened the contents will drop into the chute J and slide down the same into the furnace F, where it will be consumed as fuel. Openings *b b* are formed at the outer ends of the tubes to admit of the insertion of a rod or plate for cleaning the chutes, and dampers N N are placed in the chimney-openings H<sup>3</sup> H<sup>3</sup> to cut off the flame from the retort at the time of discharging its contents.

M M represent pipes connecting the retorts with the flues E E, by which the steam and gases generated within the retorts are carried down to the bottom of the furnace F and discharged under the grate-bars F', and pass thence up to the fire in the furnace, where they are destroyed, so that no odors escape from the furnace.

The retorts are tightly closed by the large annular covers O O, in each of which is formed a small cover, O', which is to be removed to introduce small substances into the retorts without removing the large covers; but when

bulky substances are to be introduced the large cover O may be removed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A furnace for destroying refuse material, constructed to form a fire-chamber, F, side retort-chambers, B', side flues, G, connecting the furnace with the said retort-chambers, and the return-flues E, connecting the retort-chambers with the furnace F below the fire-grates F', substantially as and for the purposes set forth.

2. In a furnace for destroying refuse material, the fire-chamber F and connected retort-chambers B' and retorts B, in combination with the chutes J, connecting the retorts with the fire-chamber, substantially as and for the purposes set forth.

3. The retorts B, return-flues E, and the pipes M, connecting the said retorts with the said return-flues, and the fire-chamber F, connected with the return-flues, and the passages G, connecting the fire-box to the retort-spaces, in combination with the chutes J, valve J', chambers A, and valve J<sup>2</sup>, substantially as and for the purposes set forth.

WILLIAM H. BLISS.

Witnesses:

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