

No. 618,768.

Patented Jan. 31, 1899.

J. R. BAPTY.
ASSAY FURNACE.

(Application filed May 11, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

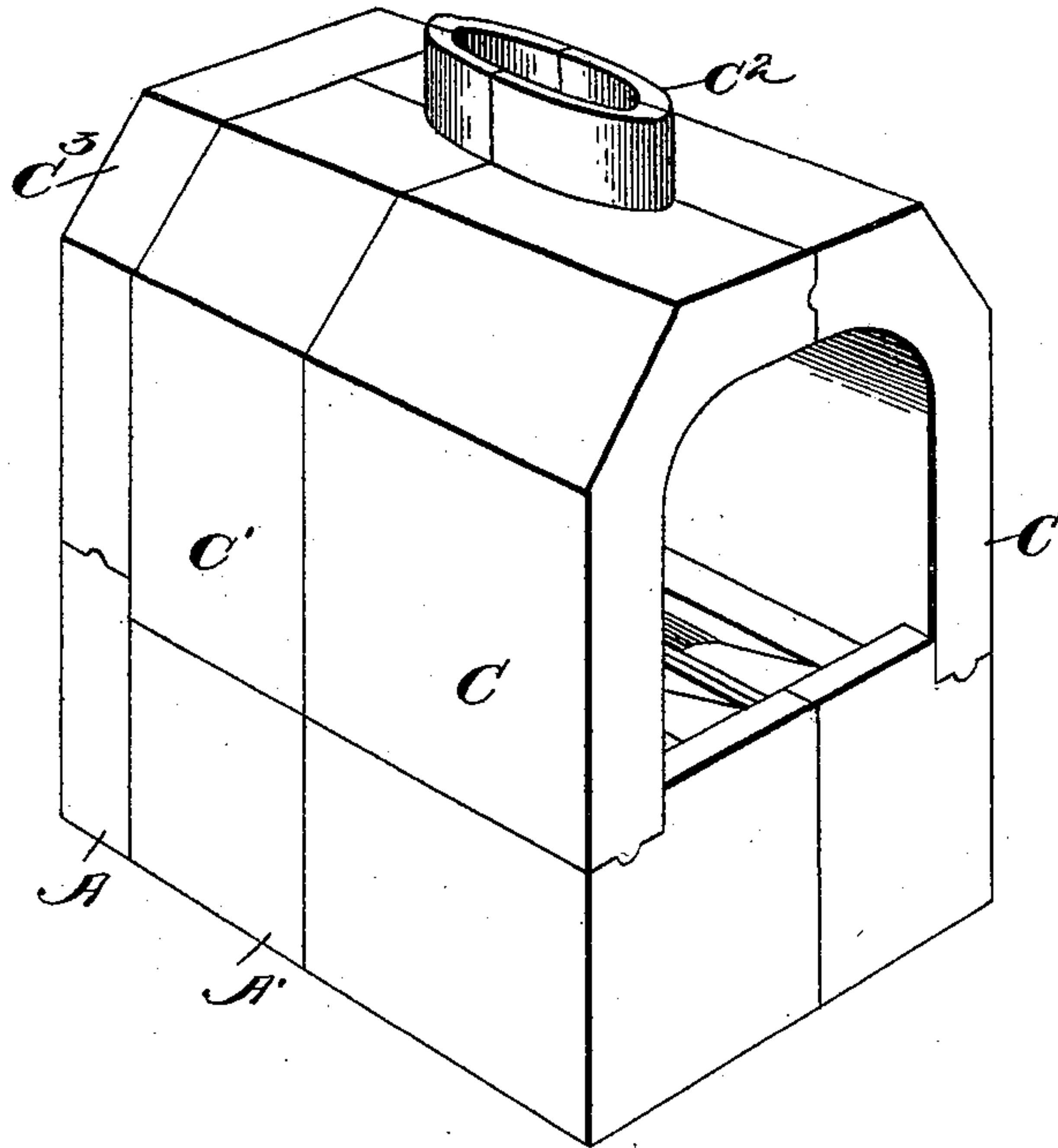


Fig. 2

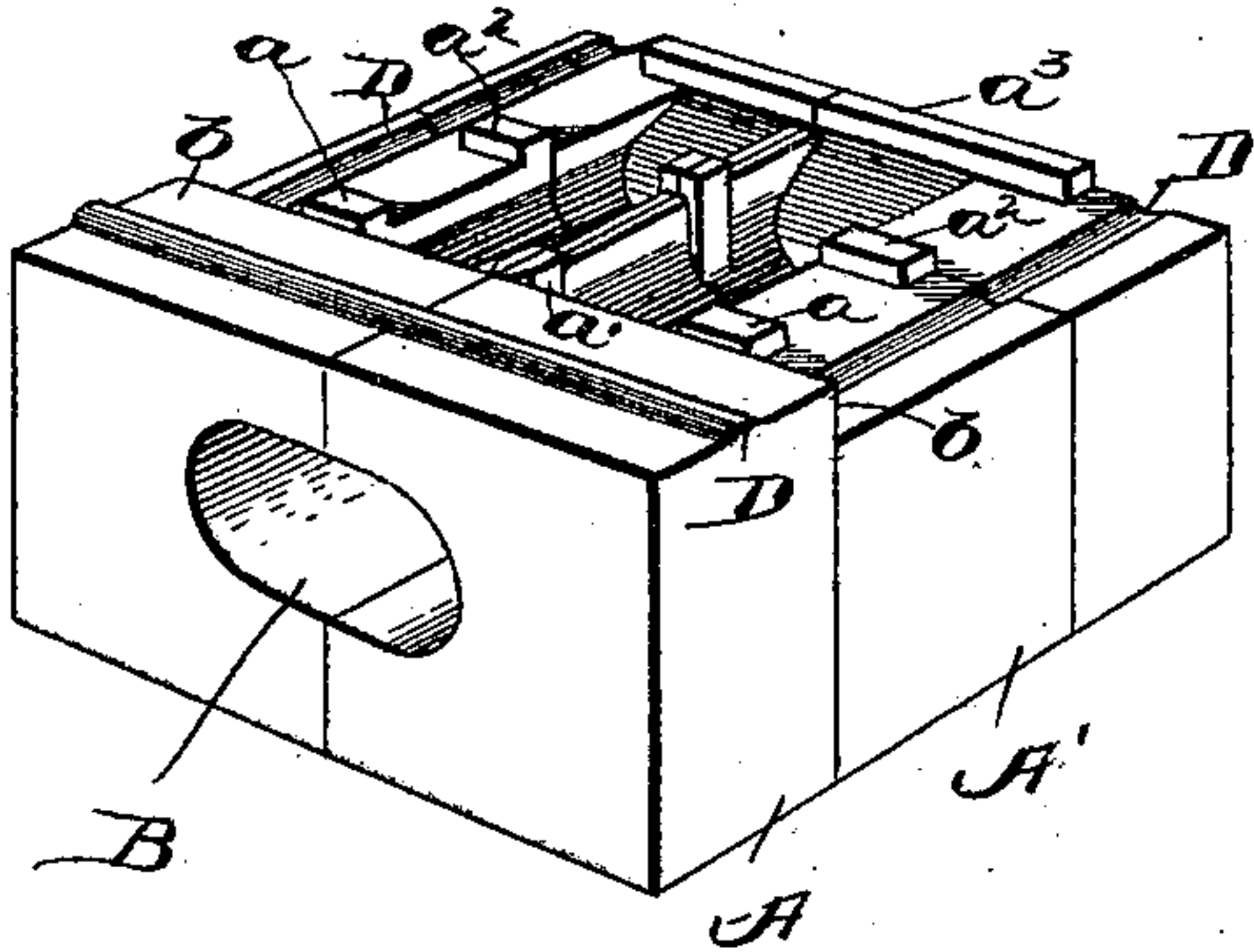
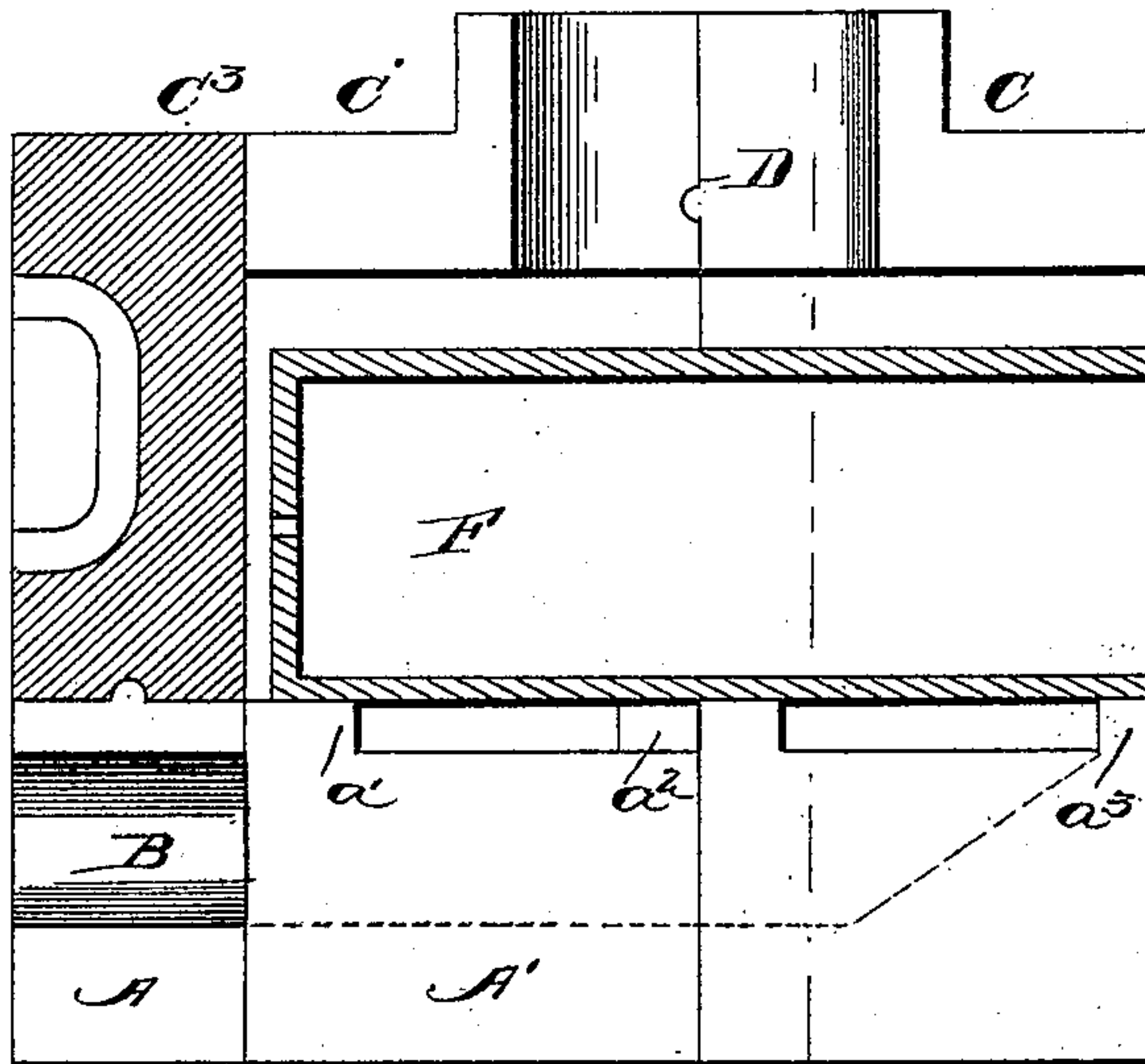


Fig. 3



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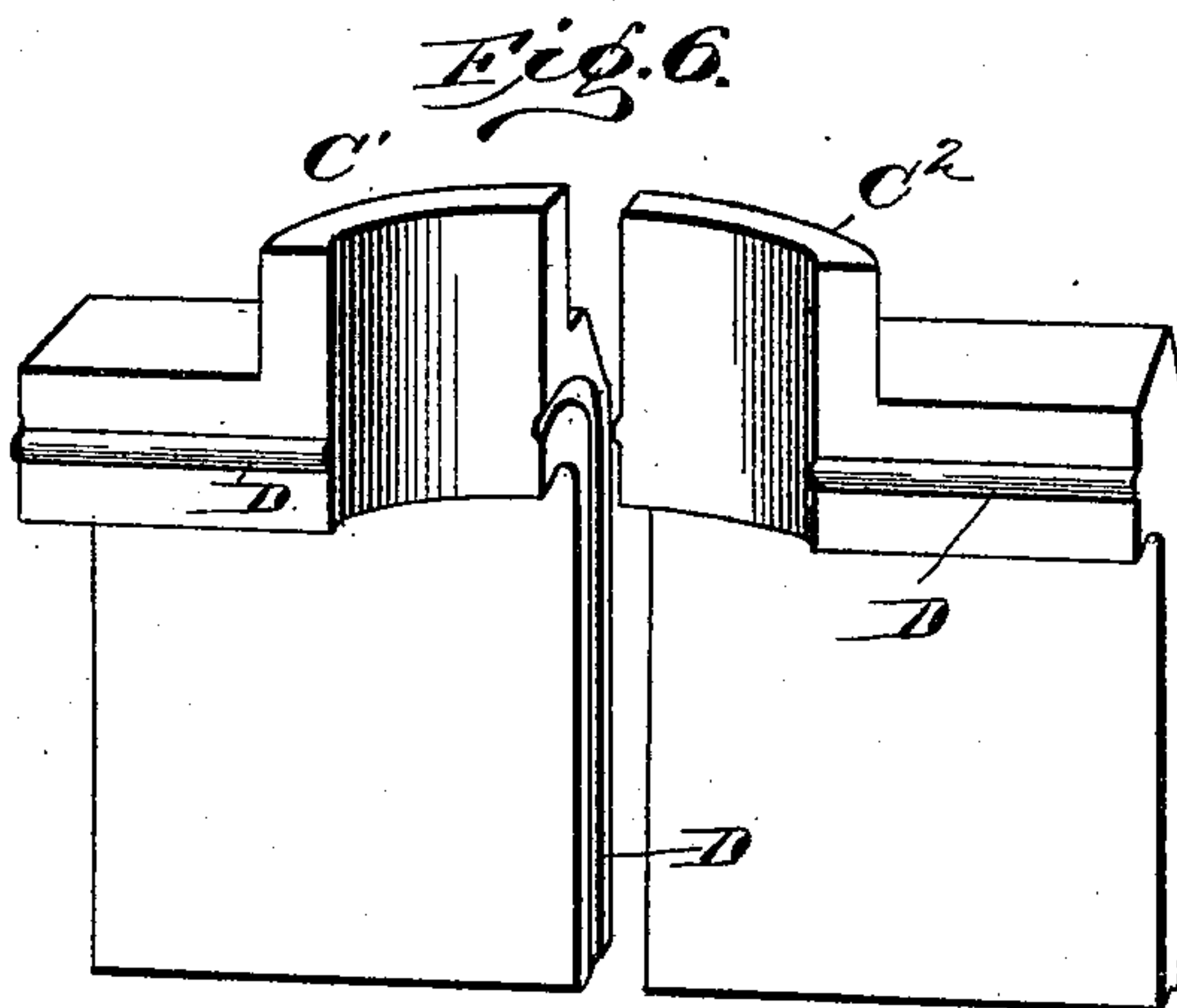
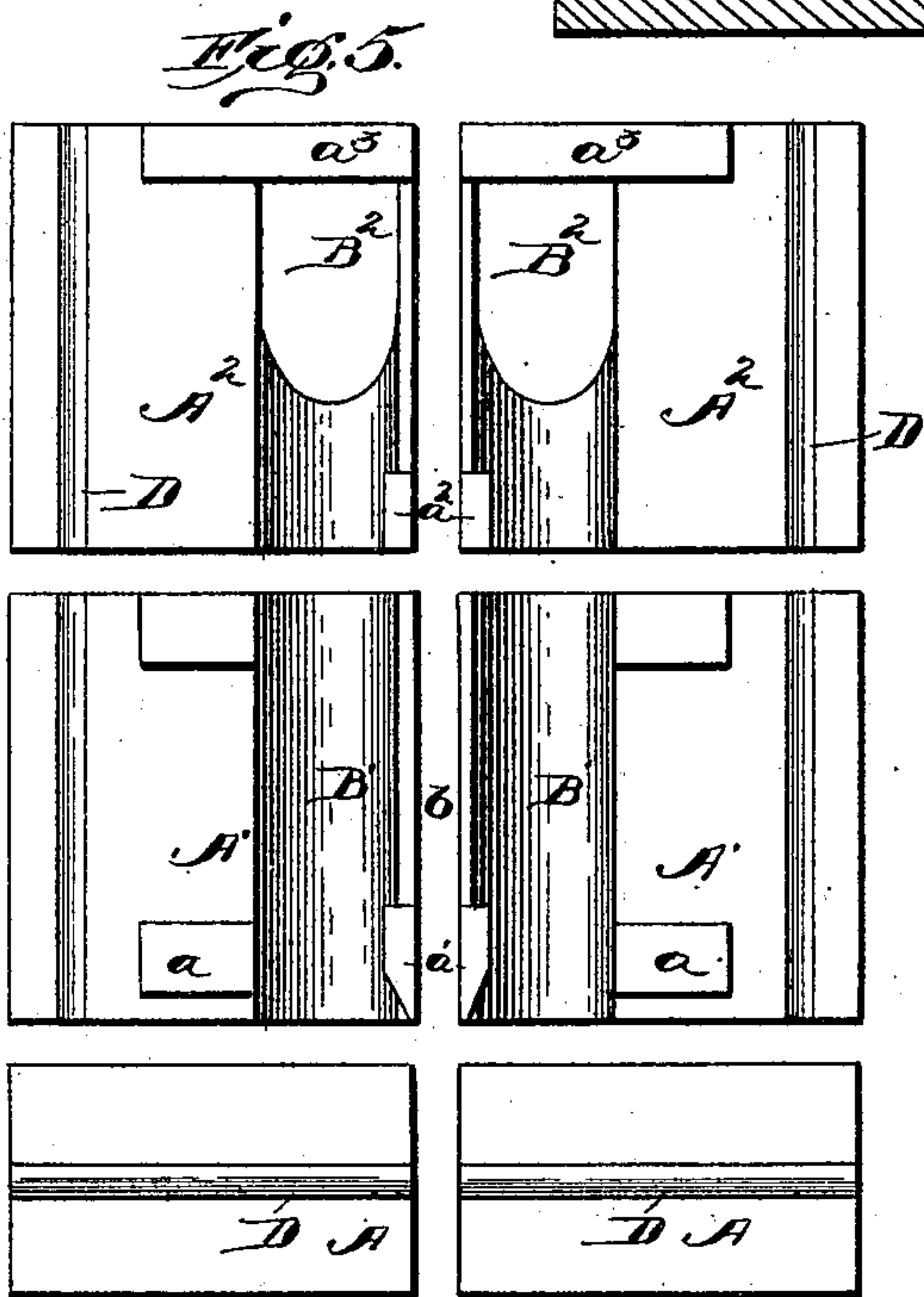
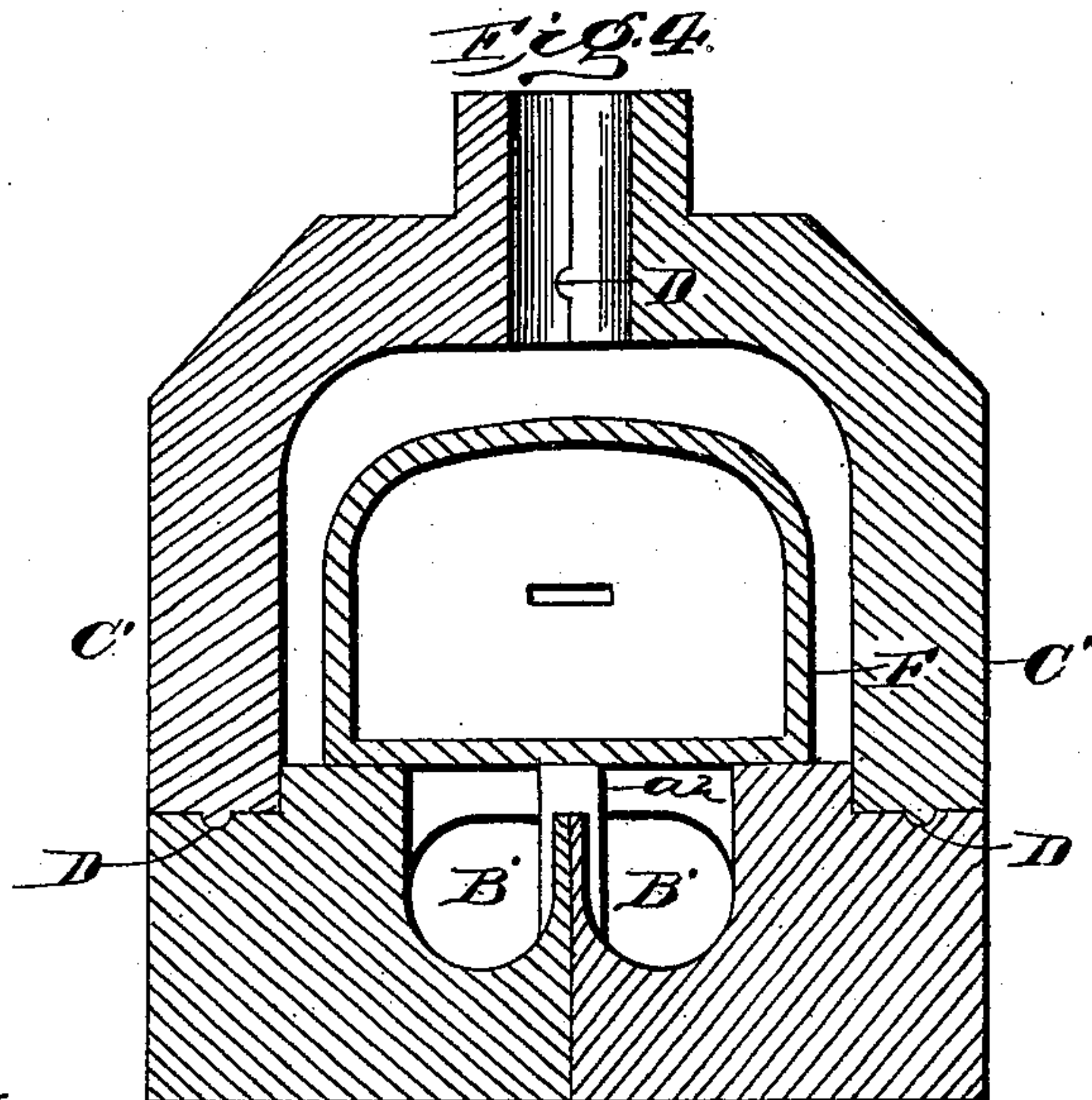
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UNITED STATES PATENT OFFICE.

JOHN R. BAPTY, OF HELENA, MONTANA.

ASSAY-FURNACE.

SPECIFICATION forming part of Letters Patent No. 618,768, dated January 31, 1899.

Application filed May 11, 1898. Serial No. 680,368. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. BAPTY, a citizen of the United States, and a resident of Helena, in the county of Lewis and Clarke and State of Montana, have invented certain new and useful Improvements in Assay-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in assay-furnaces, particularly such as are adapted to be heated by liquid or gaseous fuel; and the invention has for its object the production of a simple, sectional, portable furnace which may be easily and quickly assembled or fractured parts replaced and in which the utmost facility for the insertion, removal, or repair of the muffle is afforded.

The invention consists in certain novel combinations and arrangements of parts and in certain novel details of construction, all as will be now described, and pointed out particularly in the appended claims.

Referring to the accompanying drawings, Figure 1 is a perspective view looking at the front of a furnace embodying my present improvements with the muffle removed. Fig. 2 is a perspective view of the base, looking toward the front of the furnace. Fig. 3 is a central vertical section taken from front to rear. Fig. 4 is a transverse section taken in a vertical plane on line $x\ x$, Fig. 3, looking toward the rear. Fig. 5 is a top plan view of the base with the sections separated. Fig. 6 is a detail perspective of two of the arch-sections.

Like letters of reference in the several figures indicate the same parts.

The body of the furnace is preferably formed of a vitreous refractory substance—such, for instance, as fire-brick—and is made sectional in order to facilitate construction, repair, and transportation, as well as to prevent warpage and destruction under the action of intense heat to which the same is subjected in use. The sections are made of such shape as to facilitate their assemblage into a unitary whole, and they are adapted to be bound together by any suitable or ordinary means.

Referring particularly to Fig. 1, it will be

seen that the furnace presents the form of a base having an arched top portion, with a discharge-flue arranged centrally thereof, while at the front end there is a large opening for the insertion of the muffle, while the fuel-opening is formed in the base at the rear end.

The base (shown particularly in Figs. 2 and 5) is preferably formed in six sections, the rear sections $A\ A$ being adapted to extend entirely across the furnace from side to side and have in their meeting edges openings or recesses which form the fuel-opening B , Fig. 2. Registering with these sections $A\ A$ are the intermediate base-sections $A'\ A'$, each provided with a fire-chamber B' , registering with the fuel-opening B , and, furthermore, each provided with upwardly-extending supporting pillars or blocks a on the outer side and intermediate pillars or blocks a' ; which latter are formed as continuations of the walls b , forming the line of separation between the two fire-chambers $B'\ B'$. The forward base-sections $A^2\ A^2$ are similarly formed save for the supporting-blocks and the particular shape of the forward end of the fire-chambers. These chambers at their forward ends are inclined upwardly or provided with inclined lower faces B^2 , which serve as deflectors for directing the flame or products of combustion upward around the muffle, as will be presently explained. The muffle-supporting blocks a^2 on these forward base-sections A^2 are centrally arranged in a position corresponding to the position of the supporting-blocks a' , and at the extreme forward ends supporting-blocks a^3 are provided, which extend across the ends of the sections a^2 a distance corresponding to the width of the opening through which the muffle is inserted.

The ends of the supporting-blocks $a\ a^3$ at each side are preferably arranged in line, and outside of them, resting upon the base blocks or sections, are the arch-sections $C\ C'$, each conforming in its inner surface to substantially the exterior conformation of the top of the muffle and each having at the top one portion of a flue or discharge-flange C^2 , whereby when the sections are assembled, as illustrated in Fig. 1, a complete discharge-opening will be formed leading from the interior of the arch. The arch is closed at the rear end, back of the muffle-chamber, by a substan-

tially flat section C³, resting upon the base-sections A and preferably recessed on the outer side, as shown, to reduce its weight. All of these sections are preferably provided with interlocking tongues and grooves D, whereby they are not only maintained in their proper relative positions, but their assemblage is facilitated.

As thus constructed the furnace forms a complete muffle-chamber, with two independent combustion or fire chambers beneath the same, and the muffle F, which is, as usual, preferably formed in a single integral piece, may be passed into the muffle-chamber from the front end of the furnace and will rest squarely upon the supporting-blocks *a*, *a'*, *a*², and *a*³, the blocks *a*³ closing the front of the fire-box or combustion-chamber and the inclines B' serving to deflect the flame or products of combustion upward around the muffle.

The central arrangement of the combustion-chambers causes the products of combustion to pass entirely around the muffle before finding escape through the discharge aperture or stack, and by providing two independent or substantially independent combustion-chambers the distribution of the flame and products of combustion is made uniform on both sides of the muffle.

The construction is such that no overhanging edges are left to crack off and fall down into the combustion-chambers, so as to retard combustion. The heat is made effective more quickly. The muffle being supported uniformly will last longer, and the top of the combustion-chambers being open when the muffle is removed permits the same to be readily reached for cleaning out any fragments of brick or clay which may be left and usually are left after the removal of an old muffle.

The furnace is particularly designed for use with gas or liquid fuel, a gasolene-burner, for instance, being arranged in the fuel-opening

B and adapted to discharge into the combustion-chambers. This is the preferred arrangement, although it is obvious that the particular kind of fuel and manner of injecting the same into the combustion-chambers are not essentially important.

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

1. An assay-furnace having a base formed in sections with separate combustion-chambers formed centrally in said sections and deflecting-surfaces at the forward end of said combustion-chambers, muffle-supporting blocks rising from said sections between the combustion-chambers and at each side thereof, arch-sections resting on said base-sections and forming the muffle-chamber whereby when the muffle is removed the combustion-chambers are open and free of access, a muffle-chamber-closing section at the rear end of the furnace and a base-section upon which it rests having an entrance-aperture for the combustion-chambers; substantially as described.

2. An assay-furnace having its base formed in sections with upwardly-extending muffle-supporting blocks thereon, the said blocks at the forward end of the furnace extending the width of the muffle-chamber, arch-sections resting on the base-sections outside of the muffle-supporting blocks and forming the muffle-chamber, a muffle resting on said blocks and bridging the muffle-chamber, a muffle-chamber-closing section at the rear end of the furnace and a base-section upon which the muffle-chamber-closing section rests having an entrance-aperture for the combustion-chamber; substantially as described.

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