

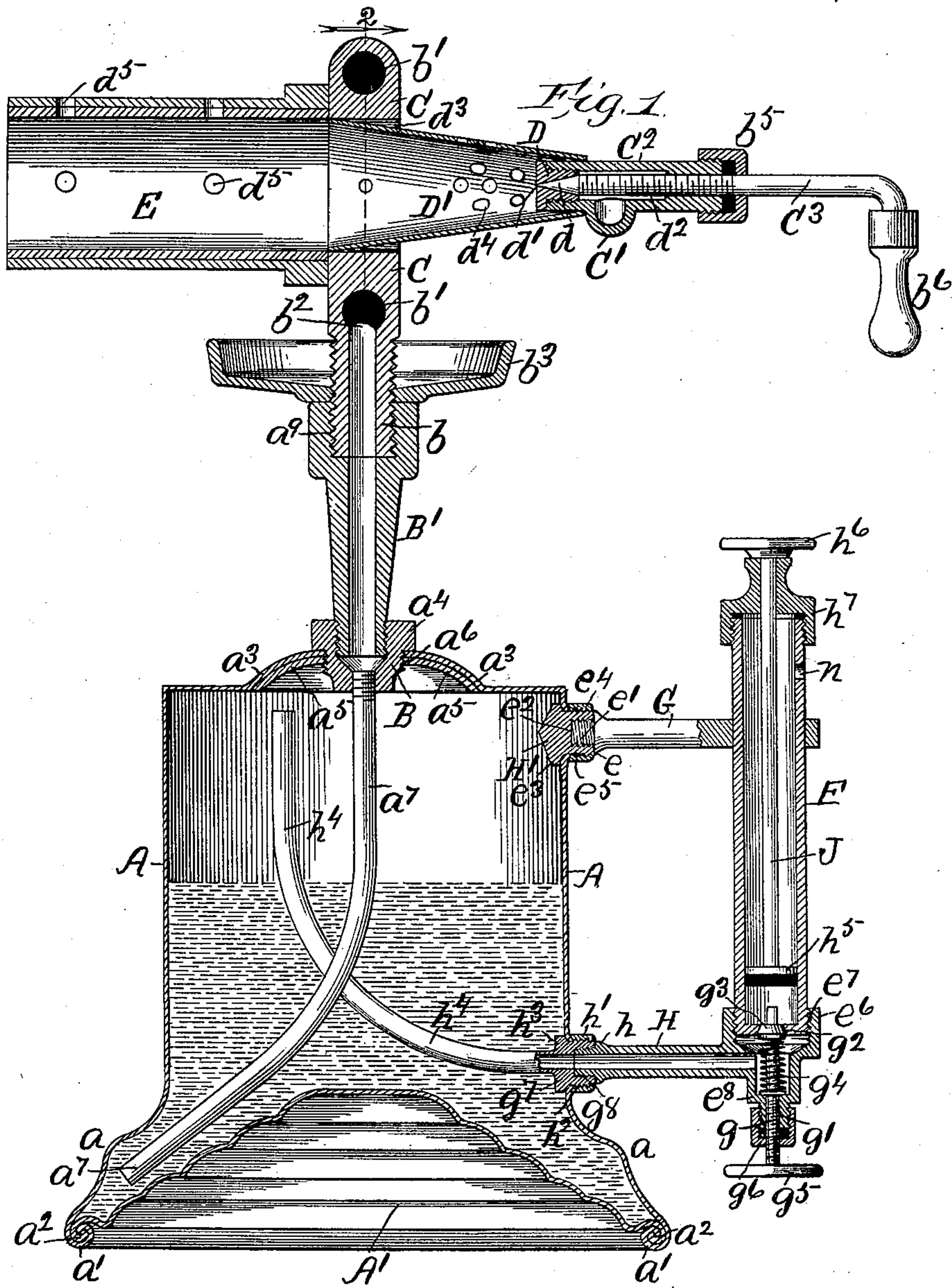
(No Model.)

2 Sheets—Sheet 1.

J. C. DUPEE.
BRAZING APPARATUS.

No. 594,345.

Patented Nov. 23, 1897.



Witnesses:
E. E. Gaylord,
Lute J. Allen

Inventor:
John C. Dupee.
By L. B. Coupland & Co.
Attys.

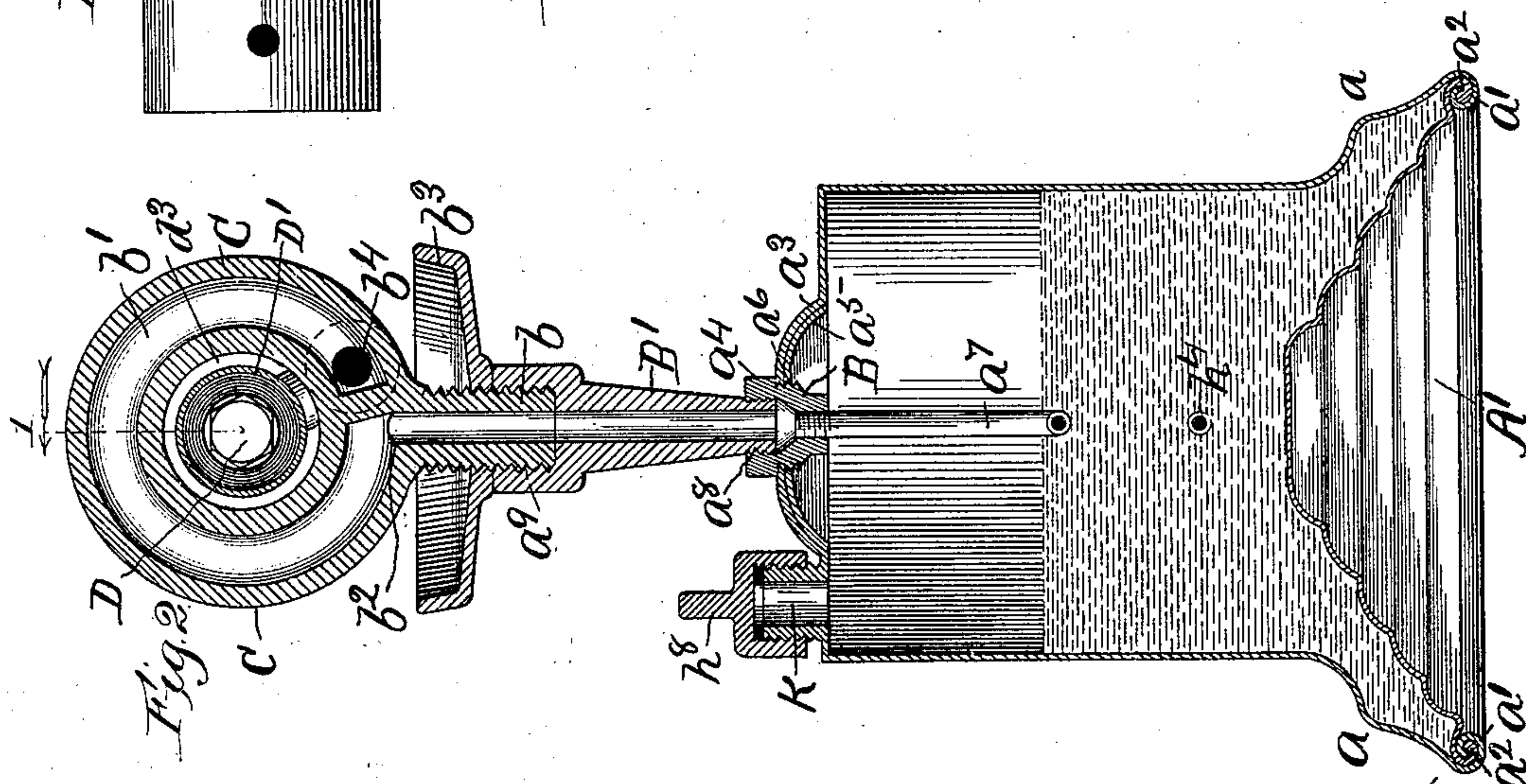
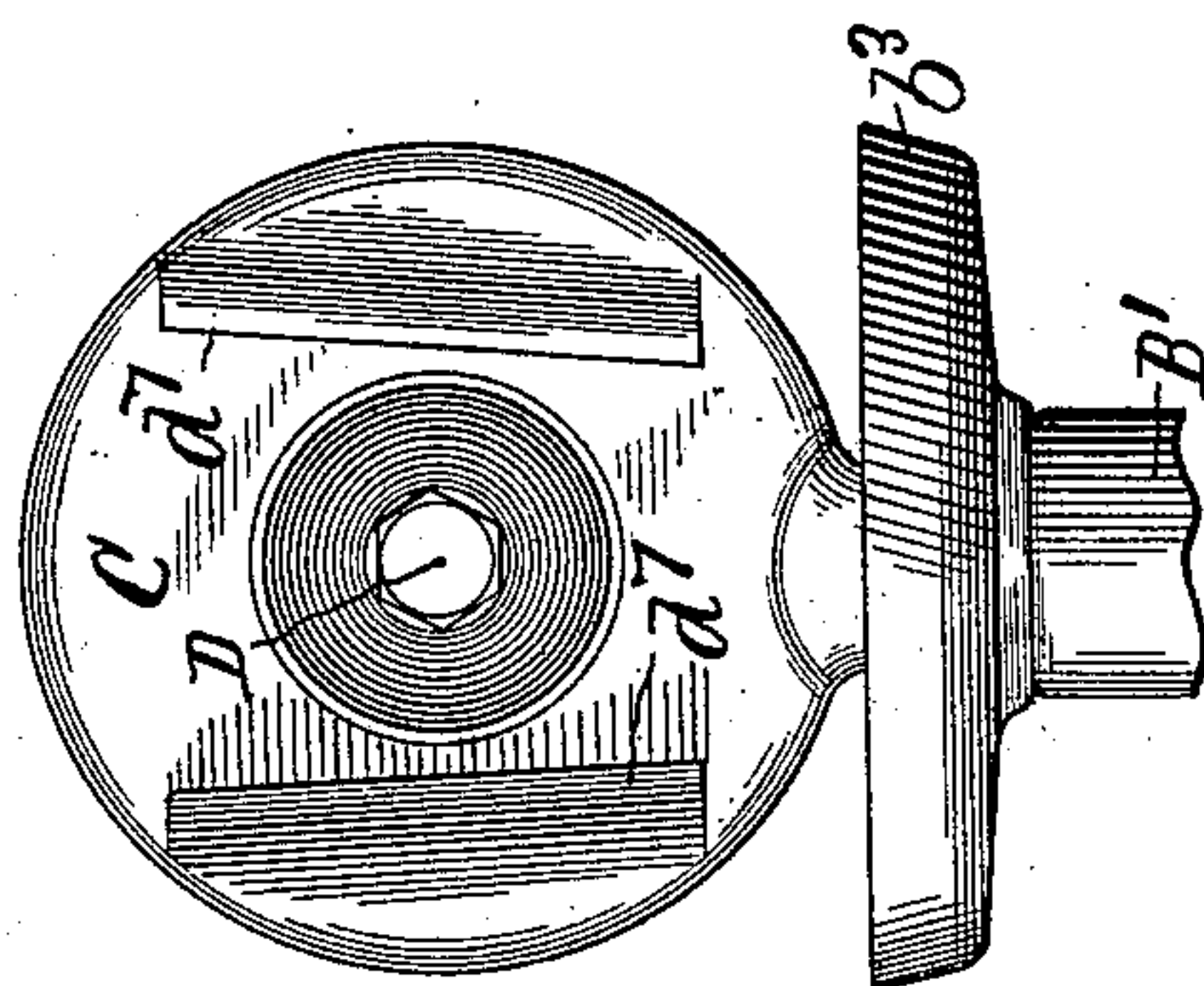
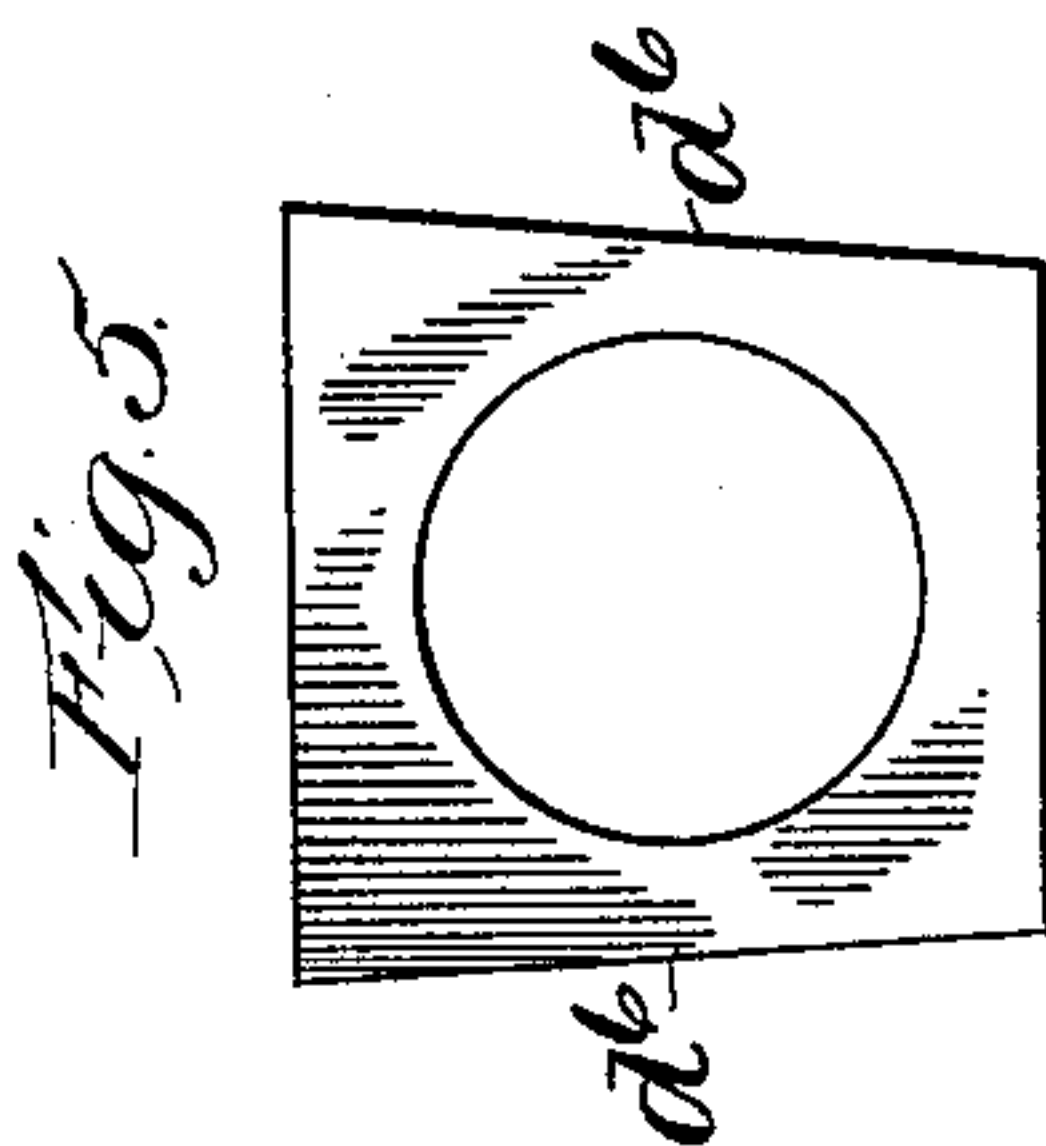
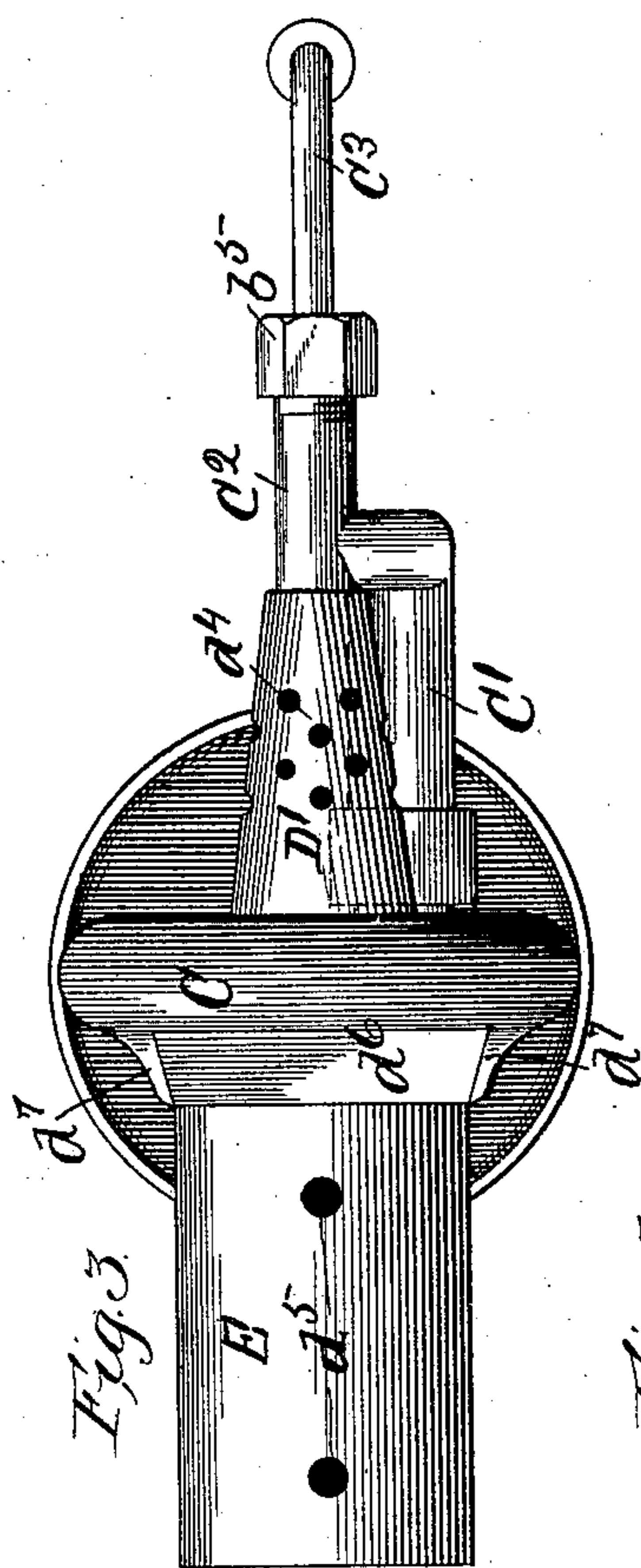
(No Model.)

2 Sheets—Sheet 2.

J. C. DUPEE.
BRAZING APPARATUS.

No. 594,345.

Patented Nov. 23, 1897.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN C. DUPEE, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
RIPLEY J. WHITE, OF SAME PLACE.

BRAZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 594,345, dated November 23, 1897.

Application filed July 2, 1895. Serial No. 554,702. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. DUPEE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Brazing Apparatus; 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.

Prior to my invention serious difficulty has been experienced in connection with the burners of hydrocarbon-furnaces for braziers' and tinner's use, in which what is commonly known as a "blow-torch flame" is employed, in that carbonization takes place in the generator and unless the soot or other carbonaceous formation is removed or the burner is so constructed as to prevent its formation it soon chokes the retort, so as to render the burner useless. In order to overcome this difficulty, burners have been constructed in separable parts, so that when necessary they could be detached and the carbonaceous matter removed from the retort; but owing to the fact that ignorant or careless users will not clean the burner and, further, that the heating of the metal so affects the joints that they cannot be satisfactorily reassembled this method has been found to be impracticable. Moreover, I have found that in retorts of considerable length "puffing" is liable to occur, which increases the tendency to carbonize.

The object of my invention is to overcome these objections and to so construct a burner of the class described that there shall be no mechanical obstruction—such, for example, as a part of the retort—placed directly within the burner-tube or mixing-chamber, that the fluid used within said burner may be fully vaporized without causing carbonization or the formation of soot or other obstruction in the generator, that puffing may be avoided, and that complete combustion may be secured, all of which is hereinafter more particularly described and claimed.

In the drawings, Figure 1 is a vertical sectional view of an apparatus embodying my improved features, said view being taken upon the line 1, Fig. 2, looking in the direction indicated by the arrow. Fig. 2 is a ver-

tical sectional view thereof, taken upon line 2, Fig. 1, and at right angles to the view shown in said last-named figure. Fig. 3 is a plan view of the burner and drip-cup. Fig. 4 is an end elevation in detail of a portion of the burner, the tube or combustion-chamber being detached; and Fig. 5 is an elevation in detail of the inner end of the burner-tube.

Referring to the drawings, A represents the usual closed tank for the reception of naphtha or other burning fluid, which tank is strongly constructed, so as to withstand any pressure to which it may be subjected. The diameter of the tank is preferably enlarged at the bottom, as at a , the lower edge a' being interlocked, as shown, with the coiled edge a^2 of the bottom A' . Tapped into flanged openings upon the side of the tank are screw-plugs $e^3 h^3$, into which, respectively, are tapped arms G H, which serve as detachable connections for the cylinder E of an air-pump. The part H is tubular and communicates with an upturned tube h^4 , attached to or integral with the part h^3 . The air-pump is provided with a screw-threaded cap h^7 , piston-rod J, handle h^6 , piston h^5 , valve g^3 , spring g^4 , regulating-spindle g for controlling the tension of said spring, hand-wheel g^5 , and cap g^6 , which forms a stuffing-box for the spindle g . The air enters the pump-cylinder through an aperture n and, forcing the valve from its seat against the closing action of the spring, enters the top of the tank through the tube h^4 . When the tank is charged, the spindle g may be screwed up against the valve, thereby locking the latter against leakage. The pressure of the air upon the fluid serves to force the latter through the retort and to the burner, as hereinafter described. The tank may be filled through the usual opening K, Fig. 2, which is closed by means of a screw-cap h^8 .

The top of the tank is raised at a^3 , and a tubular plug B, having a flange-head a^4 and screw-threaded at a^6 , is centrally tapped therein, as well as into a concave strengthening-plate a^5 . A tube a^7 is connected with the plug a^4 and extends nearly to the bottom of the tank. A tube B' is tapped into the plug B, and an internal thread a^9 at the top thereof is adapted to receive the threaded

stem b of a generator or retort C, a drip-cup b^3 being supported upon the part B' . The retort C is provided with an annular chamber b' , which communicates with the tube B' at b^2 , Figs. 1 and 2, thus forming a continuous passage from the tank. The vapor-generating chamber is circular in form, as clearly shown in Fig. 2, and extends from the inlet-opening to the point of exit b^4 , from whence the vapor passes into a tubular extension C' . A partition is interposed in the chamber, as shown in Fig. 2, between the inlet and outlet passages. A valve-tube C^2 is formed upon the outer end of the extension C' , with which is connected, in the manner shown, the usual needle-valve d , which is fitted into a corresponding removable valve-seat D. An annular space d^2 between the valve-spindle and the valve-tube communicates with the extension C' and admits the vapor to the regulating-valve, the axis of which is in alinement with that of a circular opening through the ring-shaped retort.

A tube D' , preferably tapered toward the rear, is fitted into the opening through the generator and incloses the valve-tube. Said tube, which constitutes the mixing-chamber, is provided with a series of openings d^4 at such a distance from the retort as to enable a flame to be formed, through the admixture of vapor and air, between said openings and the retort, thereby heating the latter sufficiently to vaporize the fluid which may be fed thereto.

Attached to the front of the generator C, preferably by means of the dovetailed base d^6 and flanges d^7 , Figs. 3 and 4, is the usual burner-tube E, which is provided with perforations d^5 for the admission of air to support combustion.

I have discovered, as a result of a large number of careful and costly experiments with burners of this class, that a retort made of thin metal and so arranged that it is brought into direct contact with the greater portion of the flame is liable to become overheated upon one side from the flame within and at the same time chilled upon the outside by drafts of air from without, which results in the formation of soot within the retort. This frequently hardens and encrusts until the entire chamber becomes obstructed with a hard, dense, crystalline mass of carbon. By casting the walls of the retort comparatively thick and making the ring retort of such shape in cross-section or in a section taken in

the plane of its axis that the outside of the ring may be heated through metallic conductivity, so as to prevent a chilling action from exterior drafts, and allowing the fluid to pass but once around the flame at a point where it cannot become overheated I have succeeded in producing a burner adapted to the use of high-gravity oils, such as naphtha or gasolene, that is not subject to carbonization and can be used indefinitely without becoming clogged. This construction also avoids what is commonly known as "puffing," which is an unsteady and vibratory action of the flame, resulting, presumably, from the back pressure of gas which is suddenly generated in an overheated retort of too-extended surface and the surging forward of the oil when the retort is suddenly chilled by blasts of air upon the outer walls. This pumping action, whereby fresh oil is suddenly projected into and withdrawn from the retort, I believe to be largely instrumental in the formation of soot and consequent clogging, and the fact that my improved burner does not carbonize I believe to be due largely to its steady and uniform action.

Having thus described my invention, I claim—

The combination of an oil-supply tank and means for compressing air therein, of a generator or retort in operative connection with said tank, said generator consisting of a chambered ring, as distinguished from an elongated tube having a tubular-shaped chamber therein, said ring being so shaped in a section cut through the plane of its axis as to provide a minimum distance for the heat to pass by metallic conductivity to the outside thereof, the chamber in said ring being continuous from the oil-inlet around through the ring to a point near said inlet, a rearwardly-projecting tube connecting with the end of said chamber, means for separating said chamber at the entrance of said tube from the oil-inlet, a burner upon said rearwardly-projecting tube having its opening coincident with the axis of said ring retort, a shield surrounding said burner, means for admitting air thereto, and a combustion-tube arranged in front of said retort, substantially as described.

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

JOHN C. DUPEE.

Witnesses:

L. M. FREEMAN,
L. B. COUPLAND.