

(No Model.)

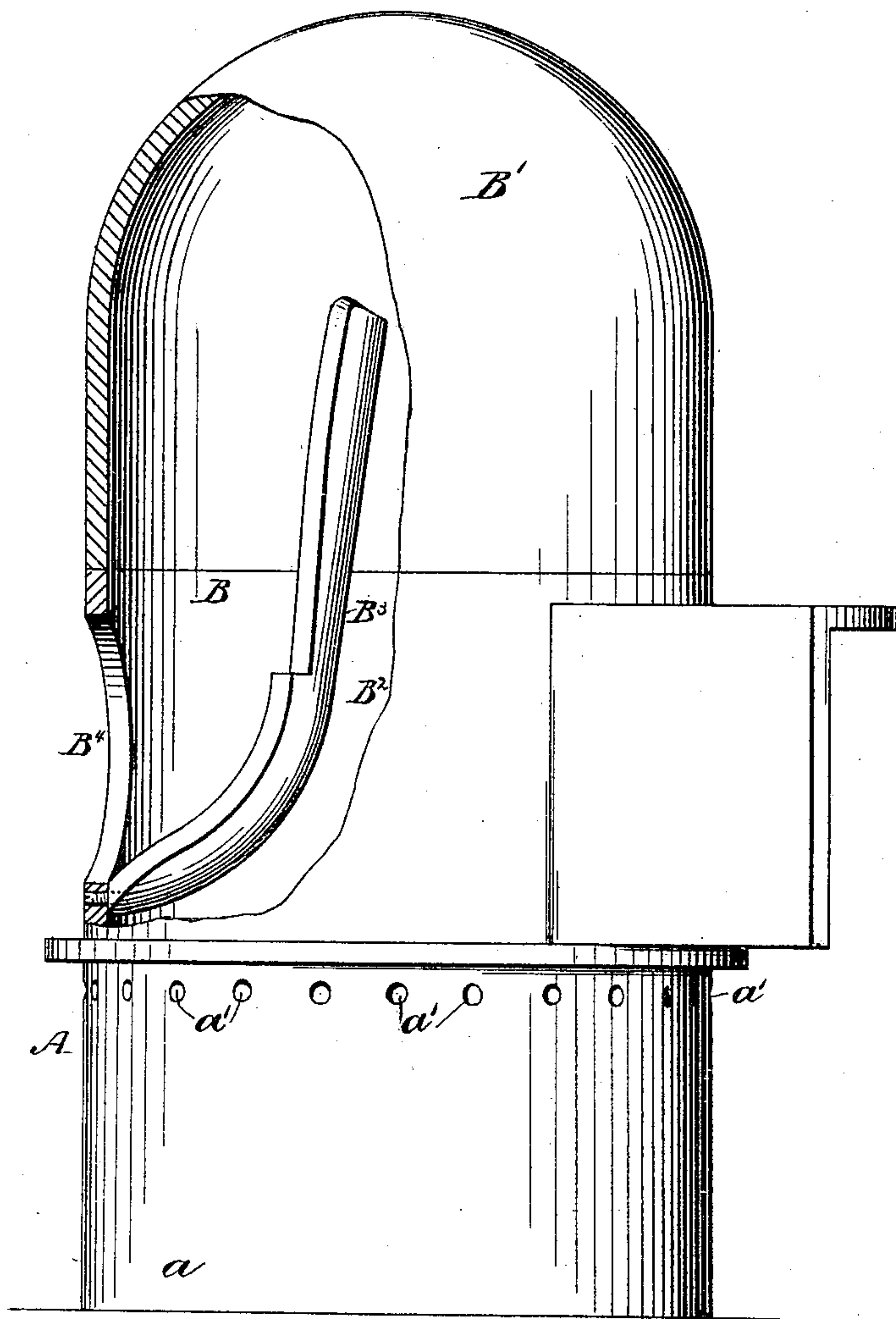
2 Sheets—Sheet 1.

J. MARION.
HYDROCARBON BURNER.

No. 370,151.

Patented Sept. 20, 1887.

Fig. 1.



WITNESSES:

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(No Model.)

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Fig. 2.

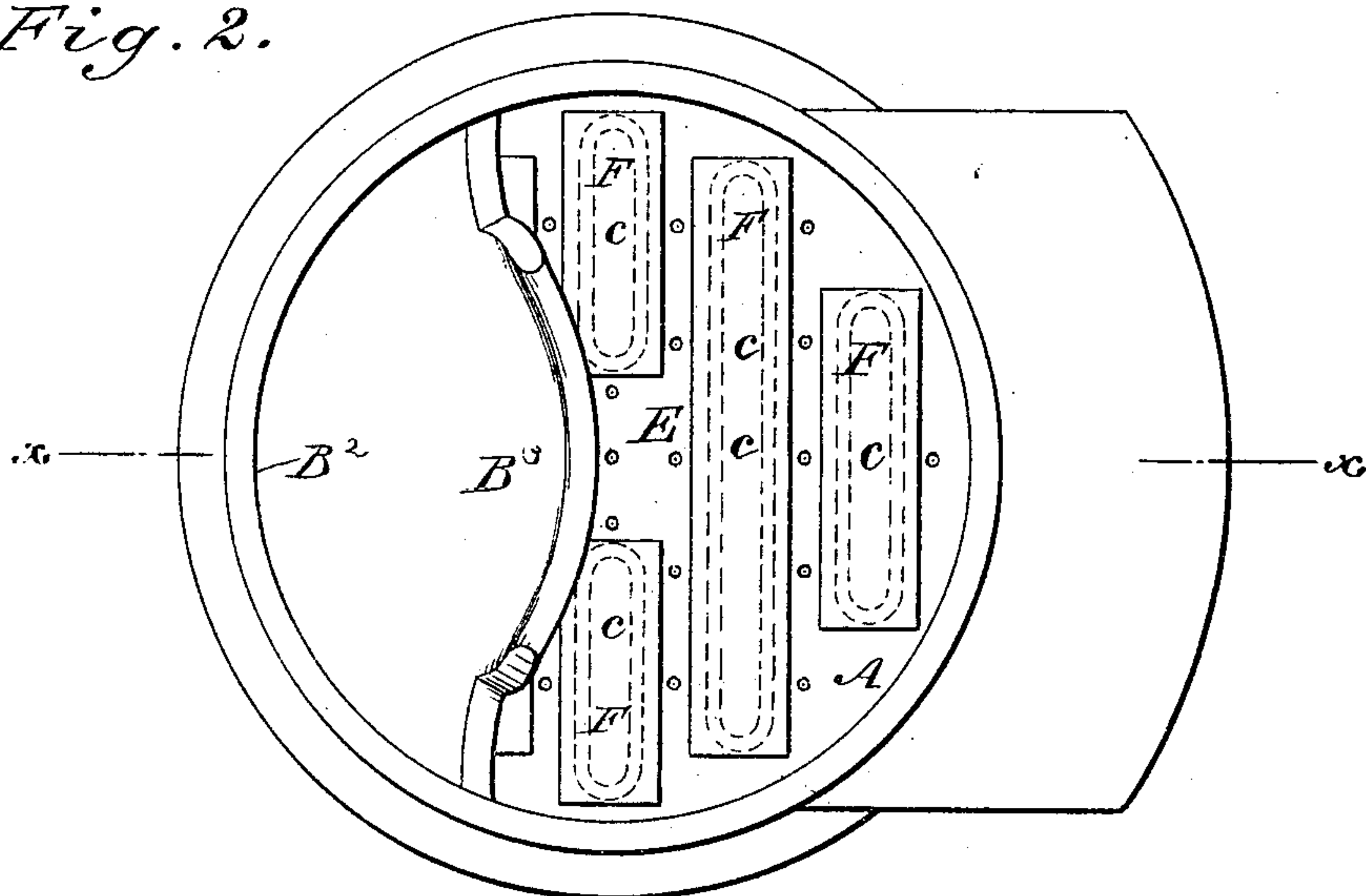
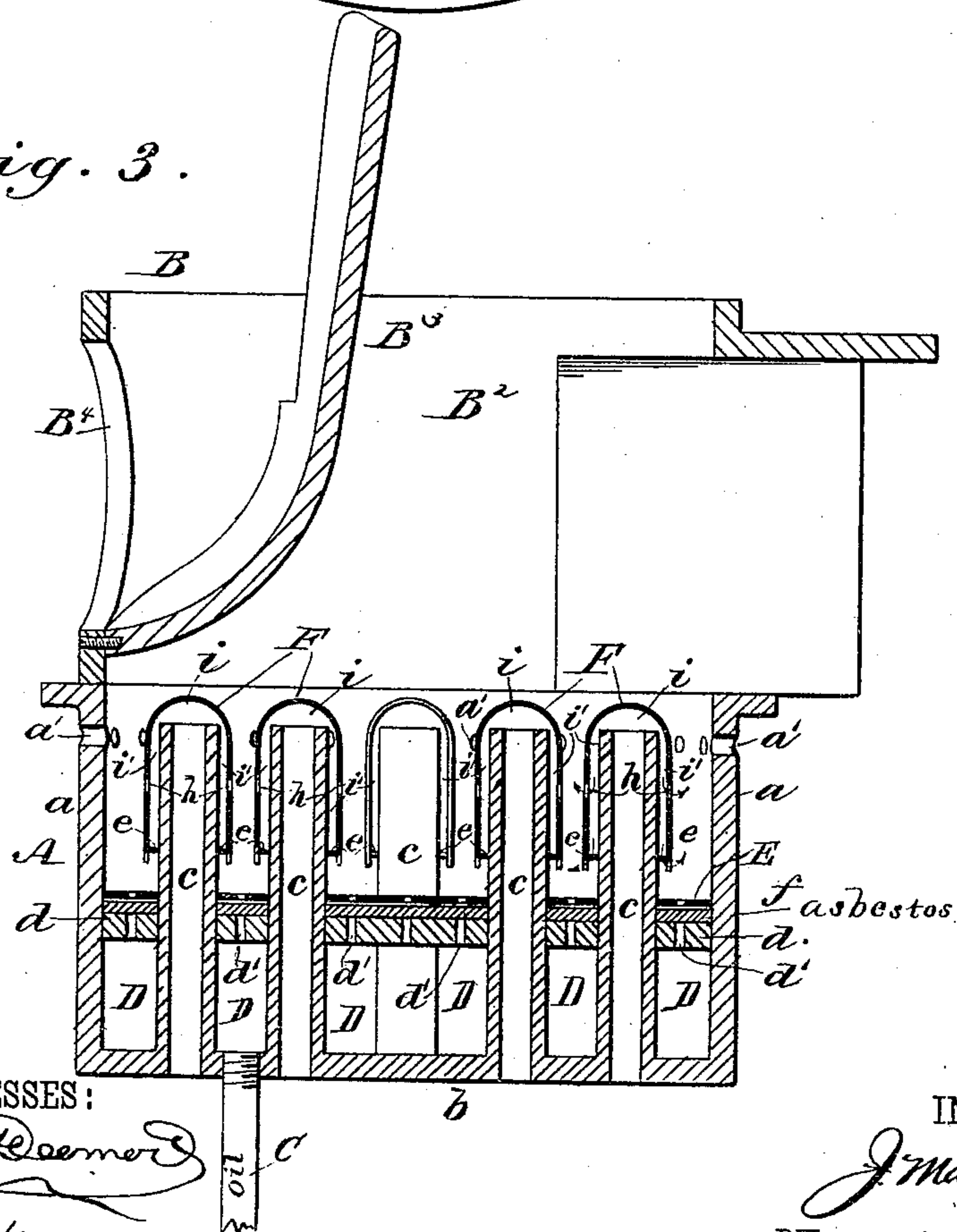


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH MARION, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF AND
JOSEPH CALVERLEY, OF SAME PLACE, AND BENEDICT FISCHER AND
JAMES S. VALK, BOTH OF NEW YORK, N. Y.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 370,151, dated September 20, 1887.

Application filed December 30, 1885. Renewed February 4, 1887. Serial No. 226,577. (No model.) Patented in England
August 1, 1885, No. 9,257.

To all whom it may concern:

Be it known that I, JOSEPH MARION, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Hydrocarbon-Burner, of which the following is a full, clear, and exact description, and which was patented in England August 1, 1885, No. 9,257.

My invention relates to certain improvements in hydrocarbon-burners and stoves connected therewith; and the invention 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 part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a broken side elevation of the burner and stove. Fig. 2 is a plan view of my improved hydrocarbon-burner applied to a stove having a deflector; and Fig. 3 is a sectional elevation of the same, taken on the line *x x* of Fig. 2.

A represents the hydrocarbon-burner, and B the stove, the latter composed of the dome B', casting B², and deflector B³, arranged to deflect the heat and products of combustion generated by the burner up into the dome, thence down to the opening B', through which they pass to the chimney.

The burner A is cast with the side wall, *a*, main bottom *b*, and air tubes or passages *c c*, that reach from the bottom of the burner to or nearly to the top of the wall *a*; and the burner is formed or provided with the false bottom *d*, situated some distance above the main bottom *b*, so as to form about the tubes *c* the oil-space D between the false and the main bottom. Oil is supplied to the space D through the feed-pipe C. (Shown in Fig. 3.) The false bottom *d* is perforated with small holes *d'*, through which the oil passes to the top of the false bottom *d*. Upon the upper surface of the false bottom *d* is placed a thin layer of asbestos, *f*, for distributing the oil evenly over the upper surface of the false bottom; but it may be omitted, if desired, or other material used in its stead. Upon the layer *f*

of asbestos is placed a metal plate, E, which is perforated and has slots or openings cut in it to fit over the air-tubes *c*. Over the upper ends of the air-tubes *c* are placed metal caps or hoods F. These are for deflecting the currents of air that pass up through the tubes *c* downward toward the fuel. The caps or hoods F are made somewhat larger than the tubes *c*, and are held slightly above the tubes by the inwardly-projecting tongues *e e*, so as to form the top spaces, *i*, and the side spaces, *i' i'*, and the hoods are perforated along each side, as shown at *h*, so that jets of air will issue from the hoods both at their lower edges and at the openings *h*, as indicated by the arrows in Fig. 3. The object of this distribution of the air is to cause double combustion, the first taking place at or near the surface of the fuel, and the second at a point above in the midst of the flame produced by the first combustion. This causes perfect combustion and consumes all the lamp-black and produces an intense heat with small consumption of fuel.

After the stove has been burning for a short time the plate E becomes very hot and vaporizes the oil fed below it, and the vapors and gases rise through the perforations made in the plate E, so the fuel is practically in a gaseous form before it bursts into flame from contact with the air entering at the lower edges of the caps or hoods F.

The wall *a* near its upper edge has a series of air-holes, *a'*, formed in it to admit air to the flame at a point slightly above the perforations *h* in the hoods F, so a third combustion is effected at this point; but the perforations *a'* might be omitted, as good results are produced without them.

I am aware that hydrocarbon-burners having air-inlet tubes at the bottom, with deflecting-caps placed at and over the tops of the tubes, have heretofore been used, and therefore do not claim the same, broadly; and I am also aware that a false bottom has been placed upon the bottom of the burner and provided with upwardly-projecting pins and asbestos, from the surface of which the fuel is burned; and I am also aware that various forms of burners have been constructed for atomizing hydrocar-

bon just previous to combustion, and also for burning it in a gaseous state; but I am not aware that liquid hydrocarbon has hitherto been introduced into the burner beneath a perforated plate, in contact with the upper surface of which the combustion takes place, and which is highly heated, so as to vaporize the oil beneath it and prevent the formation of lamp-black and at the same time produce a very high degree of heat. I am also aware that jets of air have been introduced into the flame over the burner and also through the bottom of the burner, and hence lay no claim to the same.

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

1. In a liquid-hydrocarbon burner, the combination, with the air-inlet tubes *c*, of the hoods *F*, placed over said tubes and formed with side openings, *h*, and held upon the tubes to form the top space, *i*, and the side spaces, *i' i'*, the openings *h* being formed below the upper ends of the tubes *c*, the hood serving to heat and to deflect the air into the flame, substantially as described.

2. The combination, with a hydrocarbon-burner having air-inlet tubes, of a false bottom having open perforations formed in it between the air-inlet tubes, through which perforations the fuel is fed, and a plate having

open perforations placed upon the perforated false bottom to receive the fuel beneath it, substantially as and for the purposes set forth.

3. The hydrocarbon-burner *A*, formed with air-inlet tubes *c*, and with a main and false bottom to form an oil-space, *D*, the false bottom having perforations *d'* formed in it between the air-inlet tubes, substantially as and for the purposes set forth.

4. The hydrocarbon-burner *A*, formed with the oil-space *D*, and air-inlet tubes *c*, and perforated false bottom *d*, in combination with the perforated plate *E*, placed upon the perforated bottom *d*, between the tubes *c*, substantially as and for the purposes set forth.

5. The hydrocarbon-burner *A*, placed beneath the stove *B*, having the perforations *a'* formed in it, in combination with the dome over the burner and the deflectors *B³* in front of the smoke-passage *B⁴*, substantially as and for the purposes set forth.

6. The burner *A*, formed with air-inlet tubes *c* and false perforated bottom *d*, in combination with the perforated plate *E* and wicking *f*, placed upon the perforated false bottom, substantially as and for the purposes set forth.

JOSEPH MARION.

Witnesses:

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