

No. 618,139.

Patented Jan. 24, 1899.

G. H. & P. J. SHERMAN.
HYDROCARBON BURNER.

(Application filed Sept. 27, 1897.)

(No Model.)

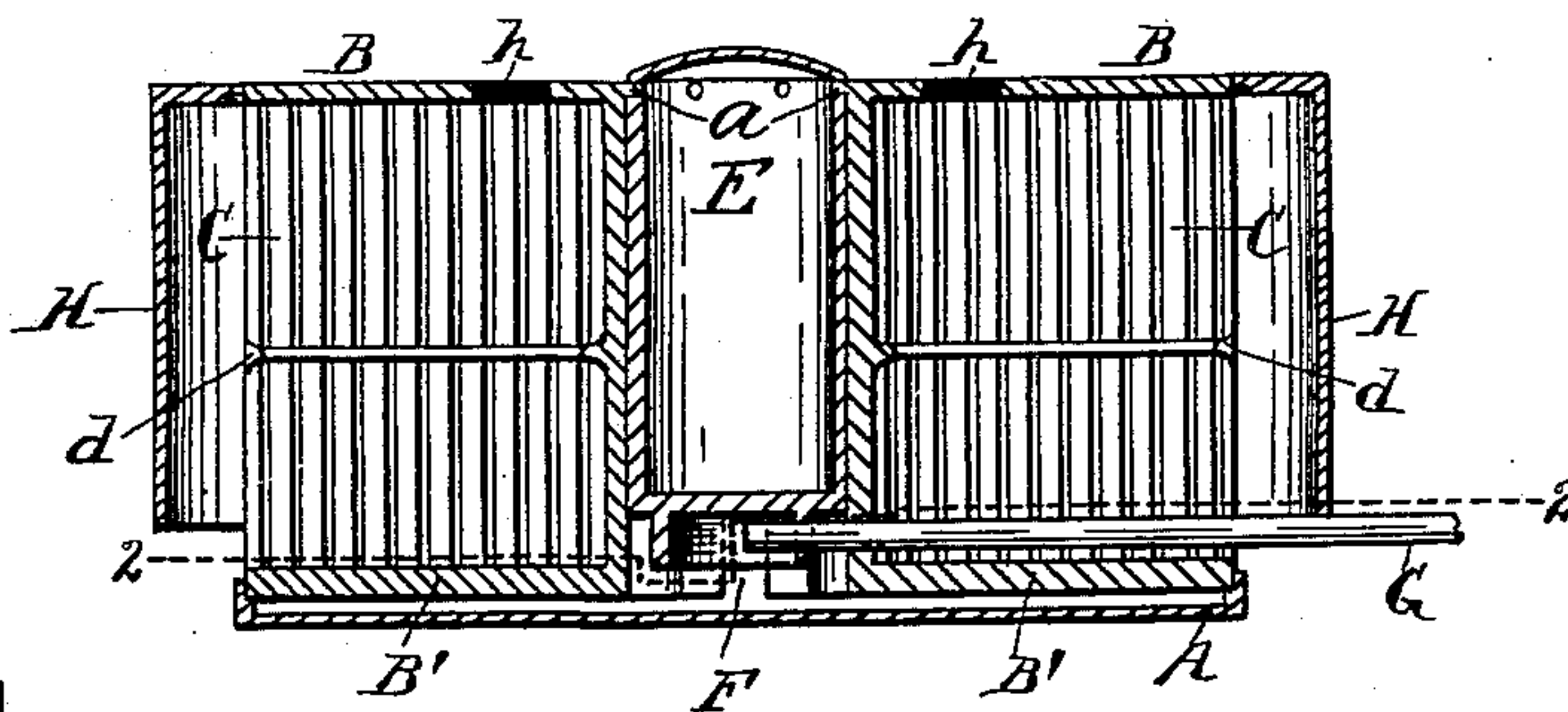


Fig. 1.

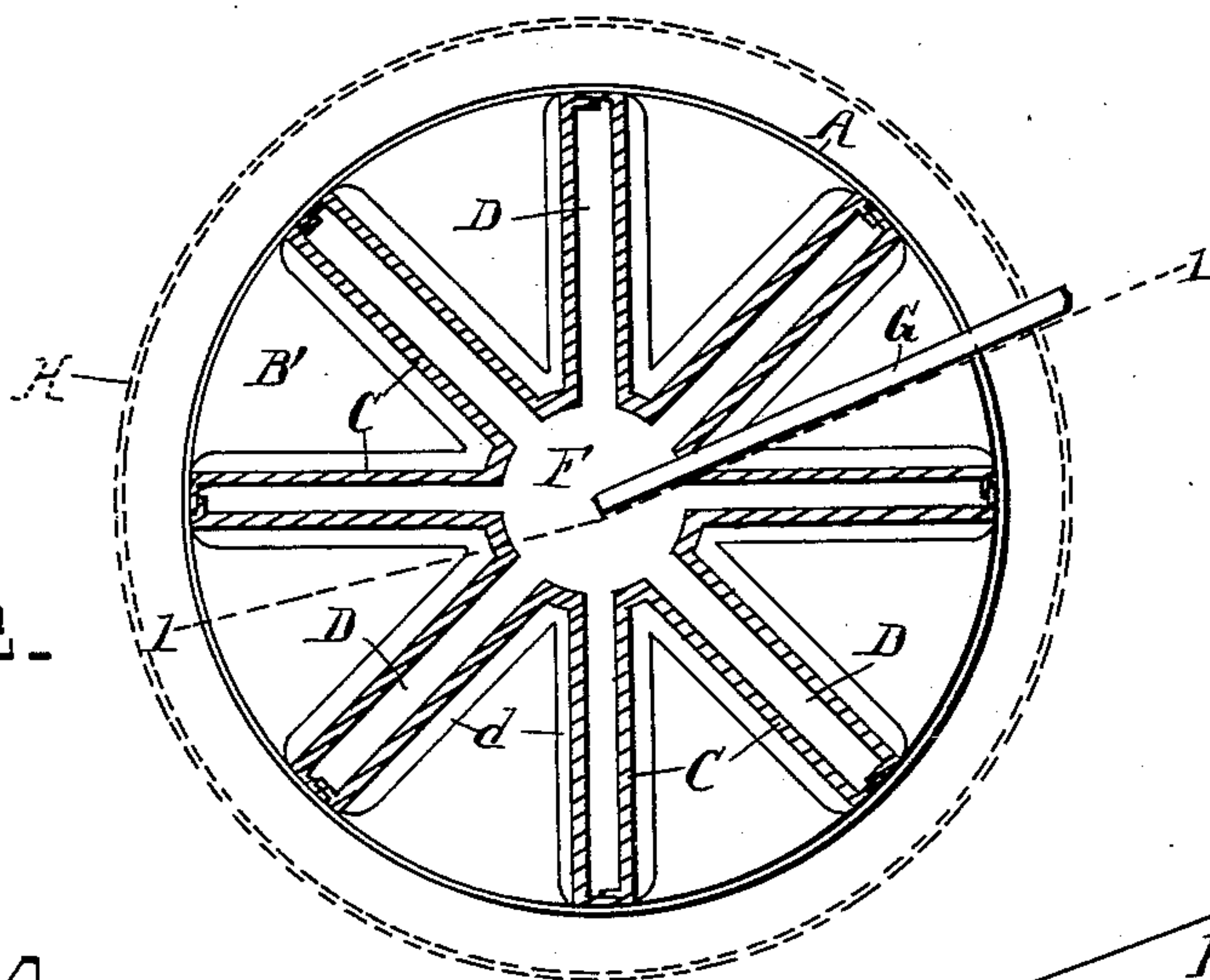


Fig. 2.

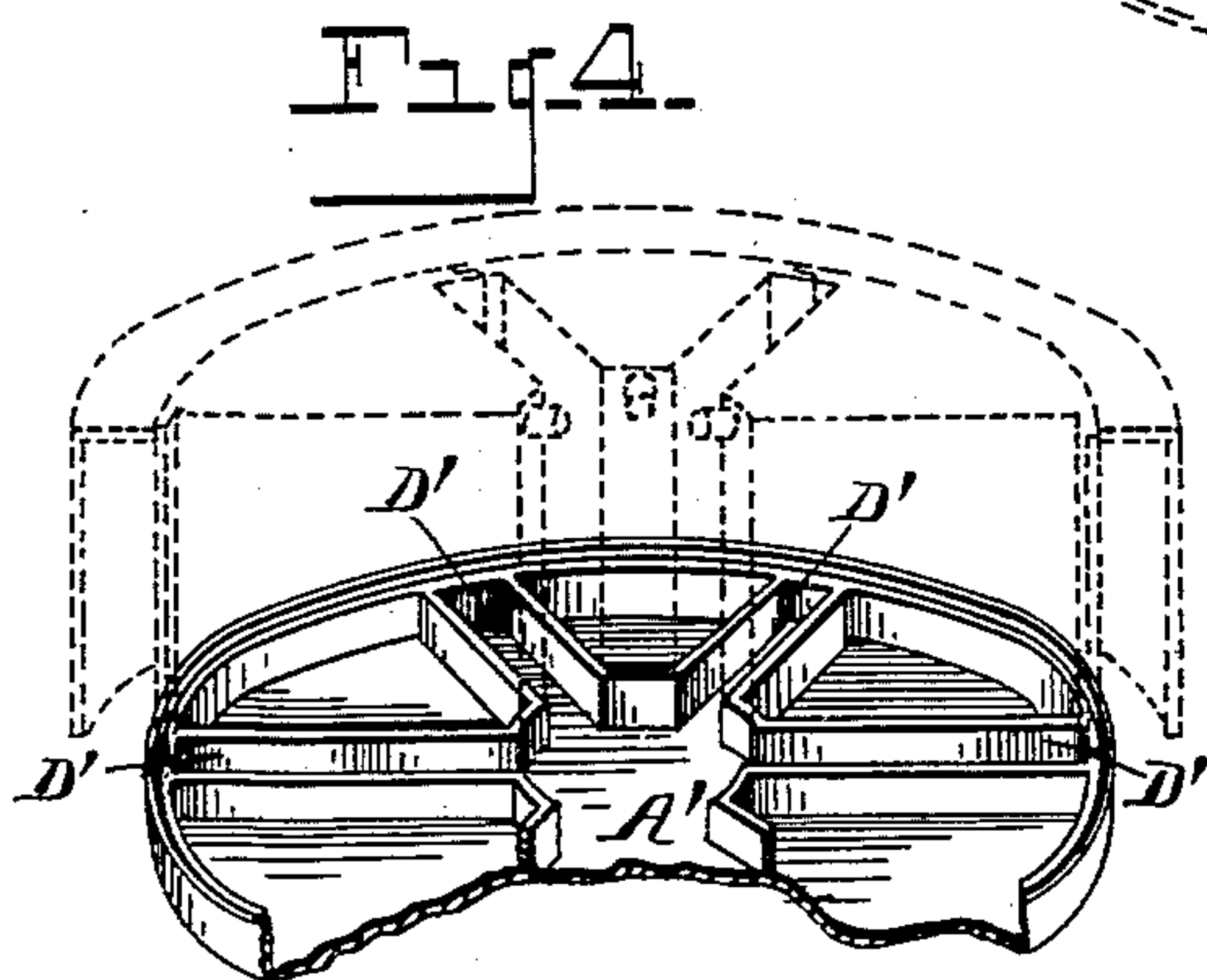


Fig. 4.

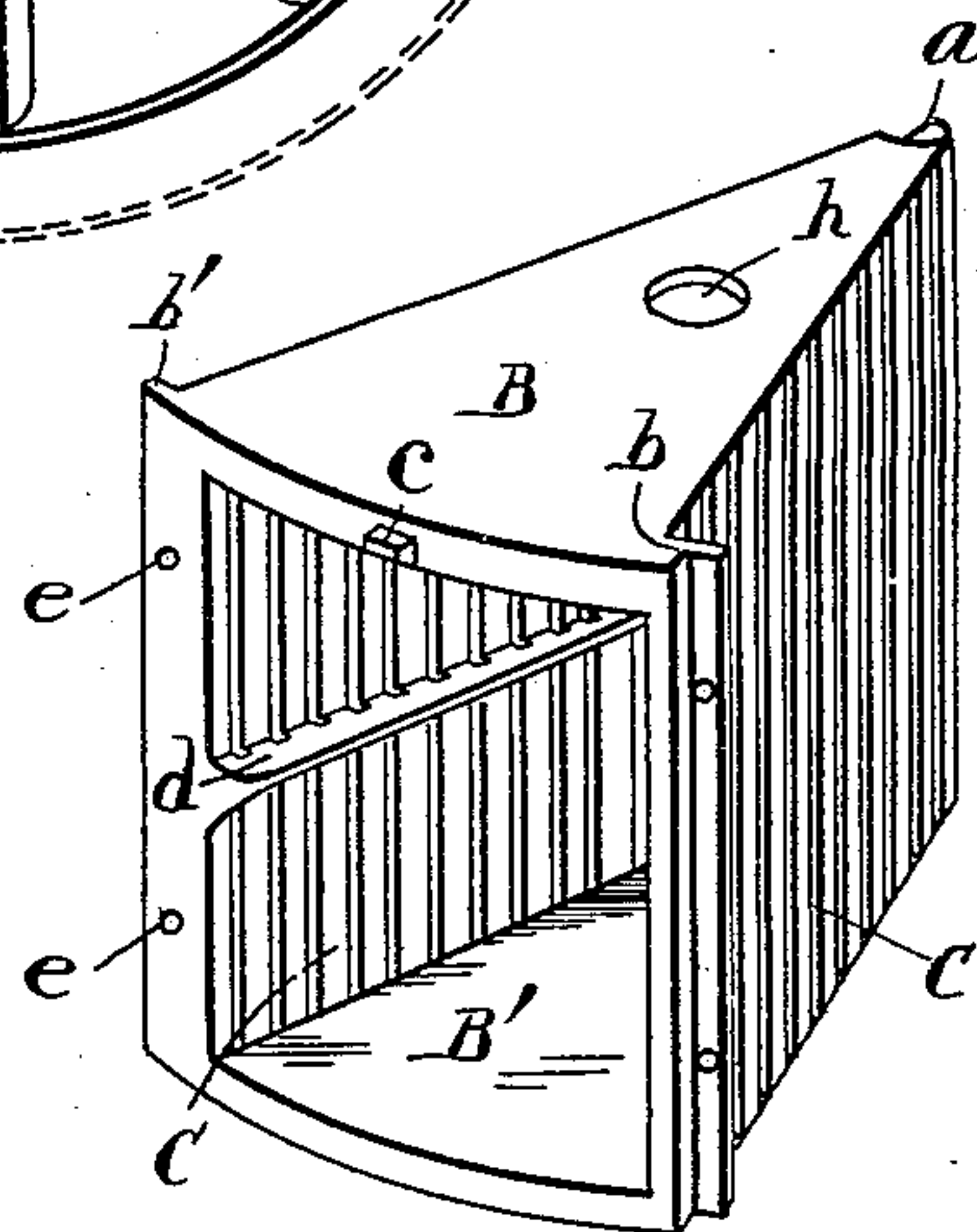


Fig. 3.

WITNESSES

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HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 618,139, dated January 24, 1899.

Application filed September 27, 1897. Serial No. 653,171. (No model.)

To all whom it may concern:

Be it known that we, GEORGE H. SHERMAN and PETER J. SHERMAN, citizens of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented certain new and useful Improvements in Hydrocarbon-Burners; and we do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in hydrocarbon-burners; and it consists in the construction and arrangement of parts hereinafter fully set forth, and pointed out particularly in the claims.

The object of the invention is to produce a hydrocarbon-burner of simple and inexpensive construction and in which the arrangement is such as to effect a complete vaporization of the hydrocarbon fuel and a perfect mixing of oxygen therewith, so as to attain a high degree of combustion, producing a burner of great efficiency which is at the same time economical and durable. This object is attained by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a vertical transverse section as on line 1 1 of Fig. 2. Fig. 2 is a horizontal section as on line 2 2, Fig. 1. Fig. 3 is an enlarged perspective of one of the prismatic sections of the burner. Fig. 4 is a modification in perspective showing the sections or segments of the burner by stipple lines as seated upon a base having channels which contain the vaporized fuel.

Referring to the letters of reference, A in Fig. 1 designates a shallow pan, preferably circular in form, in which the prismatic sections or segments comprising the burner are arranged in radial order. These sections or segments of the burner, as will be seen on referring to Fig. 3, are hollow triangular prisms having a solid top and bottom B and B', respectively, and having vertically-slotted sides C. The inner or converging point of said prismatic section is closed and is provided near the upper end with a projecting

lug *a*. The outer face of said section is curved concentric with the circular pan and is entirely open to permit of the free ingress of air to the interior of said section.

The vertical sides of the outer or diverging ends of the prismatic sections of the burner are provided with laterally-extending flanges *b b'*, respectively, which are adapted to interlock, as shown in Fig. 2 and by stipple lines in Fig. 4, when said segments are placed together in the formation of the burner, said flanges serving as a means to secure said sections together and to space said sections so as to form a vertical channel D between the opposed slotted sides thereof, as clearly shown in Fig. 2, forming chambers or spaces in which the combustion of the vapor takes place.

The converging points of the segments of the burner terminate at the outer wall of the hollow central tube E, which forms the center of the burner and which is provided with a series of apertures at the top, that receive the projecting lugs *a* on said segments, as shown in Fig. 1, to retain them properly in place. Below the bottom of the central portion E of the burner is a vapor-chamber F, into which the fuel-pipe G discharges and which communicates with all the spaces D between the prismatic segments of the burner to effect an equal distribution of the vapor and cause the flame to burn alike from all of said flame-spaces D.

The slits in the vertical sides C of the burner are caused by sawing, as is well understood in the art, and for the purpose of strengthening the slotted wall to prevent warping thereof we employ a rib *d* on each side, which extends horizontally of the interior of said slotted walls.

The bottoms of the segmental sections forming the burner are raised a slight distance over the bottom of the pan, as shown in Fig. 1, which arrangement permits the vapor to more freely distribute itself over the bottom of the pan and insures a more uniform burning thereof in the flame-spaces D.

In the formation of this improved burner any desired number of prismatic sections are arranged radially, as shown in Figs. 1 and 2, so as to form the open spaces D between the opposed slotted walls of said sections, which spaces have communication with the hollow

interior of said sections through the slotted sides thereof.

In the operation of this improved burner the hydrocarbon fuel is allowed to flow in a small quantity through the pipe G, so as to drip onto the bottom of the pan within the central chamber F. As the fluid spreads over the surface of the pan it vaporizes and, filling the bottom of the channels or spaces D, may be ignited. The draft created by the upward passage of the caloric current causes the air to draw into said spaces D through the slotted walls C of the sections of the burner and, mixing with the rising vapor, supports combustion, the air being drawn into the hollow sections of the burner through the opening in its outer face and passing out into the channels or spaces D through the slotted walls on each side thereof. To cause a more perfect mixing of the air and vapor, we employ a hood H, which embraces the exterior of the burner and extends to a point near the lower edge thereof, which causes the inflowing air to enter at the bottom and insures a more perfect mixing of the air with the vapor before it can escape at the top of the spaces D.

This form of burner has been found to be very efficient, producing a strong flame, which is well distributed by reason of the large number of radiating channels or spaces D formed by the association of the prismatic sections forming the burner, as shown, enabling any degree of flame to be produced, which burns strongly from the flame-spaces in the burner without smoking and develops the maximum degree of heat for the quantity of fuel consumed.

In some instances it may be found desirable to employ instead of the flat pan, as shown in Fig. 1, a channeled base, as shown in Fig. 4, which is provided with a series of radiating vapor-channels D', communicating at the center, and upon the edges of which the prismatic sections of the burner are placed, so that said channels D' shall communicate with the flame-spaces between said burners. This construction, however, is no departure from the spirit of our invention and does not differ materially from that shown in Fig. 1.

The prismatic sections or segments of the burner are secured together at their overlapping edges or flanges *b b'* by means of registering apertures *e* therein, through which a screw or bolt may be passed, and projecting from the outer face of said segments is a lug *c*, which supports the hood and assists in retaining it in place.

The tops B of the segments of the burner are provided with an aperture *h*, through which a current of air escapes and mingles with the burning vapor over the top of said burner, materially aiding combustion.

Having thus fully set forth our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a hydrocarbon-burner, the combination with the vapor-containing pan of a series of hollow prismatic sections, each section having a closed inner face, a solid top and bottom, opposed apertured sides integral with said top and bottom and terminating thereat, and an outer face or side entirely open, said sections being arranged to form a flame-space between their adjacent sides which communicates with the vapor-pan.

2. A hydrocarbon-burner consisting of the combination with the vapor-containing pan of a series of hollow triangular prisms having solid tops and bottoms, opposed apertured sides integral with said tops and bottoms and terminating thereat, and an outer face or side entirely open, said prisms being arranged in radial association with their apertured sides approximately parallel and their bottoms above the plane of the vapor-container, forming flame-spaces between their adjacent vertical faces which communicate with the vapor-container.

3. A hydrocarbon-burner consisting of the combination with the vapor-container of a series of adjacent segmental sections, each section comprising a hollow triangular prism having a solid top and bottom, opposed slotted sides integral with said top and bottom and terminating thereat, and an outer side connecting the diverging slotted sides whose face is entirely open.

4. In a hydrocarbon-burner, the combination of a series of hollow prismatic sections, each section having a closed inner face, a solid top and bottom, opposed slotted sides integral with said top and bottom and terminating thereat, and having an outer side entirely open, said sections being arranged to form open spaces between them, and the vapor-containing pan located below the bottom of said sections.

5. In a hydrocarbon-burner, the combination with the vapor-container, the fuel-supply communicating with said container, the series of hollow prisms arranged radially above the vapor-container, said prisms having solid tops and bottoms and opposed apertured sides, and having lateral flanges projecting from their opposed sides, adapted to overlap and the screws or other fastening means passing through said lapping flanges.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE H. SHERMAN.
PETER J. SHERMAN.

Witnesses:

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M. A. MARTIN.