

No. 868,084.

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J. GOGEL.
HYDROCARBON BURNER.
APPLICATION FILED AUG. 28, 1905.

Fig. 1.

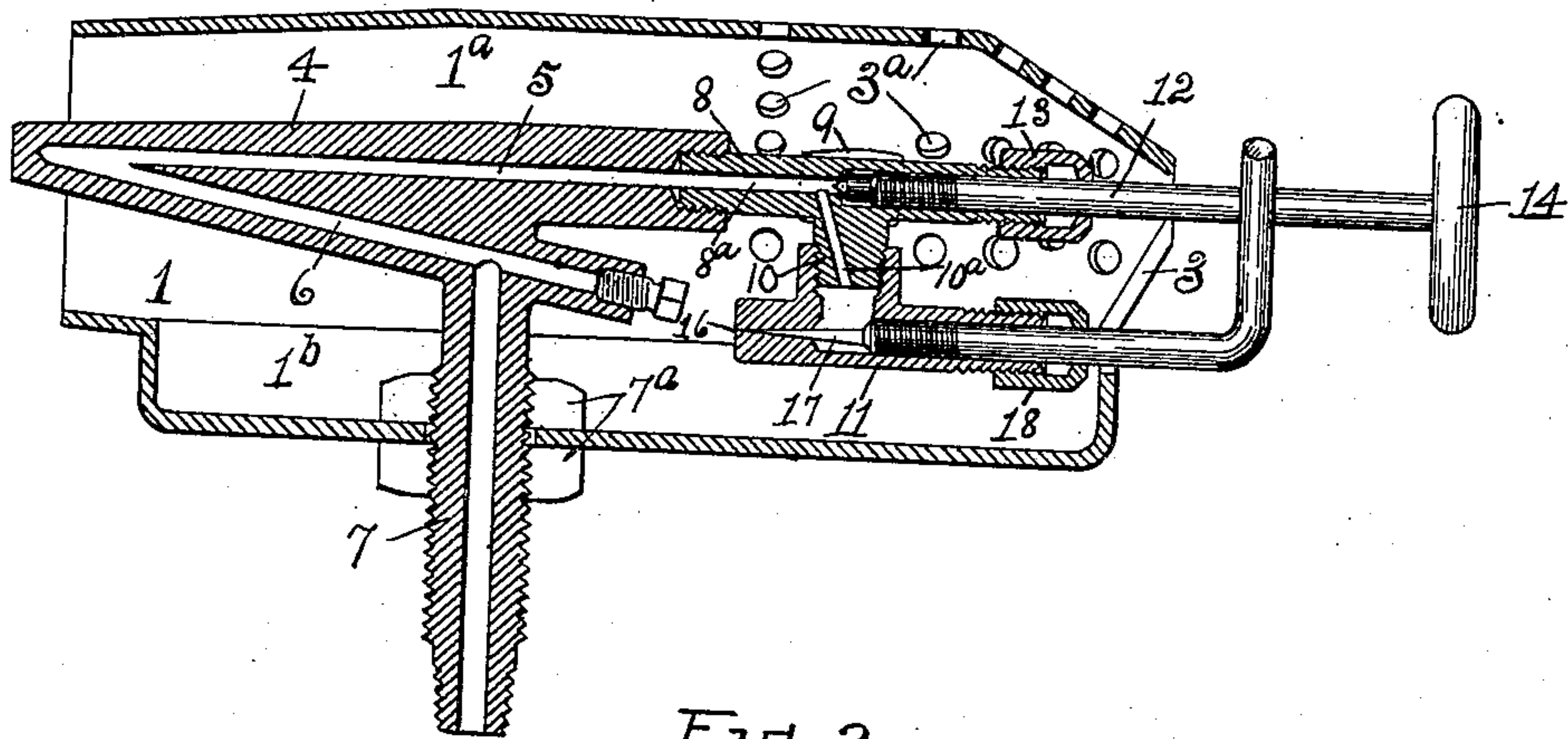
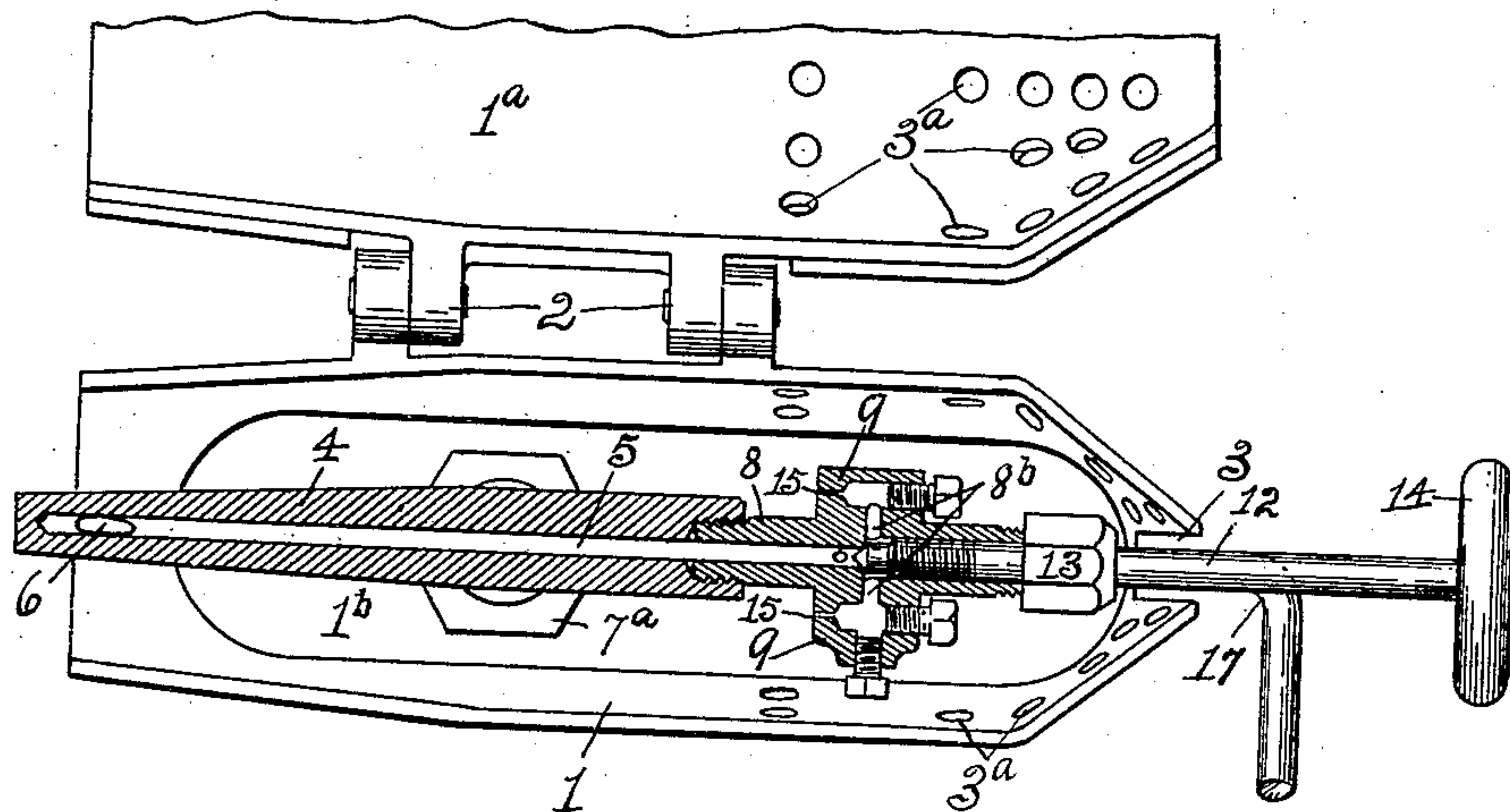


Fig. 2.



WITNESSES:

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HYDROCARBON-BURNER.

No. 868,084.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JACOB GOGEL, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Burners; 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, reference being had to the accompanying drawing, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to burners of the blow-torch or force-blast type for use in plumbers', brazers', and other furnaces requiring an intense heat and in which hydrocarbon oils are employed as a fuel.

The primary objects of my invention are the provision of a simple, cheap and efficient burner of this class that has its generating chamber located within the shell or combustion-chamber in the path of the flame, whereby the flame or blast is caused to surround and impinge upon the wall or casing thereof to find an exit from the combustion-chamber, thus maintaining said wall or casing at a high heat while the burner is in operation and causing a more effectual generation of the oil therein; that is provided with a pilot-light having its jet positioned to discharge its flame on a portion of the generating-chamber whereby to maintain the same at a proper generating temperature for starting when the main burners or jets are turned off; and that is provided with a shell or combustion chamber having a hinged portion adapted to be opened to permit access to the interior thereof, and a starting-pan formed integral with a portion of its casing.

Further objects of the invention as well as the operation, construction and arrangement of the parts thereof are fully described in the following specification, and shown in the accompanying drawing, in which,—

Figure 1 is a central, longitudinal, vertical section of the burner comprising my invention with the cover or hinged section of the shell closed, and Fig. 2 is a plan view of the same with the cover or hinged section of the shell in open position and partially broken away and the generator and burners in horizontal section.

Referring to the drawing, I represent the lower or fixed section and 1^a the cover or hinged section forming the shell or combustion-chamber of my invention, said sections being hinged together at 2 and when closed preferably forming a tubular member having its forward end open and slightly reduced in size and its rear end formed approximately in conical shape and closed, except for the slot 3, through which the shanks of the valves of the burners pass, and the perforations 3^a for the admission of air to the combustion chamber. The bottom of the fixed section 1 of the shell is formed with a starting-pan 1^b which is open to the interior of the shell

and forms a portion of the casing thereof, as shown, thus combining the starting-pan with the shell formation.

Mounted centrally within the forward end of the shell or combustion-chamber in longitudinal relation therewith is the generating-chamber 4 of the burner which generator is shown in the drawing as being provided with the horizontally-disposed longitudinal bore 5, which has its forward end closed, and with the rearwardly-extending bore 6, which communicates at its forward end with the forward end of the bore 5 and projects downwardly from such point of communication at an oblique angle to and in a vertical plane with the bore 5. The bore 6 is closed at its rear end and communicates adjacent to said end with the bore or channel of the vertically-disposed downwardly projecting stem 7, which extends through an opening in the bottom of the starting-pan 1^b and is tapped into a pipe (not shown), which leads to a suitable tank in which the hydrocarbon oil is stored. The generator 4 is secured in position within the shell by means of the nuts 7^a, which are threaded to the stem 7 and engage the opposing surfaces of the casing at the rim of the opening in the starting-pan.

Tapped into the rear end of the generator 4 in longitudinal alinement therewith is the member 8, which is formed intermediate of its ends with the oppositely-disposed chambered bosses 9 and the downwardly extending boss 10, which latter boss is tapped into the horizontally-disposed chambered member 11, as shown. The member 8 is formed longitudinally thereof with a horizontal bore 8^a, communicating at its forward end with the bore 5 in the retort, and transversely thereof with the horizontal bore 8^b, which intercepts the bore 8^a and communicates at its ends with the chambered portions of the bosses 9, while the boss 10 is formed with a bore 10^a, which communicates at one end with the bore 8^a in advance of the bore 8^b and at its other end with the chambered portion of the member 11. A cone-valve 12 is threaded in the rear end of the bore 8^a of the member 8 and adapted to seat in said bore between the points of interception of the bores 8^b and 10^a therewith, and has its stem projecting through a stuffing-box 13 and provided with a gripping-means 14. Each of the bosses 9 is provided in its forward face with a restricted orifice 15 through which the gas or vapor is discharged to the interior of the combustion-chamber, where it mixes with air taken in through the perforations 3^a to form a perfect combustion, the discharge from said orifices being controlled by the valve 12. The member 11, which forms the pilot-light of the burner, is also provided through its forward end with a restricted orifice 16, the discharge of gas or vapor from which is controlled by a needle-valve 17, the stem of which is threaded in said member 11 and passes through a stuffing-box 18 in parallelism with the valve 12.

From the above description it will be apparent that in the operation of my burner the gas is generated in the generator 4 in the first instance by igniting some of the fuel oil that has been permitted to flow into the starting-pan 1^b by an opening of the valve 17 in the pilot-light. When the hydrocarbon oil in the generator has been sufficiently vaporized by the heating of the generator the valves 12 and 17 are opened, thereby permitting a small stream of the gas or vapor to be discharged from the orifices in the bosses 9, which are termed the main jets, and the orifice in the pilot-light 11, which streams are then ignited. The combustion of the air and gas, which mix in the combustion chamber, aided by the heavy air-pressure in the storage tank causes a very strong blast to encircle the generator and be discharged from the mouth of the shell. Should the burner not be in constant use the main jets may be shut off and the pilot-light left burning sufficiently to maintain the re-tort at a generating temperature, thereby causing a considerable saving in fuel and at the same time keeping the burner in readiness for the main jets to be opened and lighted at any time without the delay and inconveniences of first generating gas in the generator.

With this construction of burner it will be apparent that it may be used either as a two or three jet burner, as the pilot light may be closed or left burning when the main jets are on; and that by encircling the generator with the blast a more efficient generation of gas therein is obtained than is possible by the forming of the generator in the walls of the shell or combustion-chamber of the burner, in which case it is subjected to a certain degree of cooling by contact of the atmosphere therewith.

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

1. In a hydrocarbon burner, the combination with the burner proper and the generator, of a shell encircling the generator and comprising a fixed and a movable part, the line of separation of which extends longitudinally of its axis, said fixed part being formed on its lower side in parallelism with its axis with a depressed or stepped portion which is integral with its wall and forms a starting-pan.

2. A hydrocarbon burner comprising an horizontal generator, a part having valve-controlled jet-orifices therein, and an horizontal shell surrounding said generator and part and consisting of an upper hinged part and a lower fixed part, the lower fixed part having a starting pan formed integral with its bottom and extending substantially the entire length thereof and directly under the generator and orifice part, substantially as described.

3. A hydrocarbon burner comprising a generator, a burner part tapped into one end of the generator and having a main channel in direct communication with the generator and formed with laterally disposed bosses having jet-orifices in communication with said main channel, a valve for closing the main channel in advance of its communication with said jets, a pilot-light part carried by said burner part and having a jet-orifice in valve-controlled communication with the main channel in advance of the valve in said main channel, and a shell encircling the generator and said burner parts and having its forward end open and its rear end closed except for air admission perforations, said shell consisting of a lower fixed part and an upper hinged part the line of separation of which extends longitudinally thereof.

In witness whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

JACOB GOGEL.

Witnesses:

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