

No. 768,816.

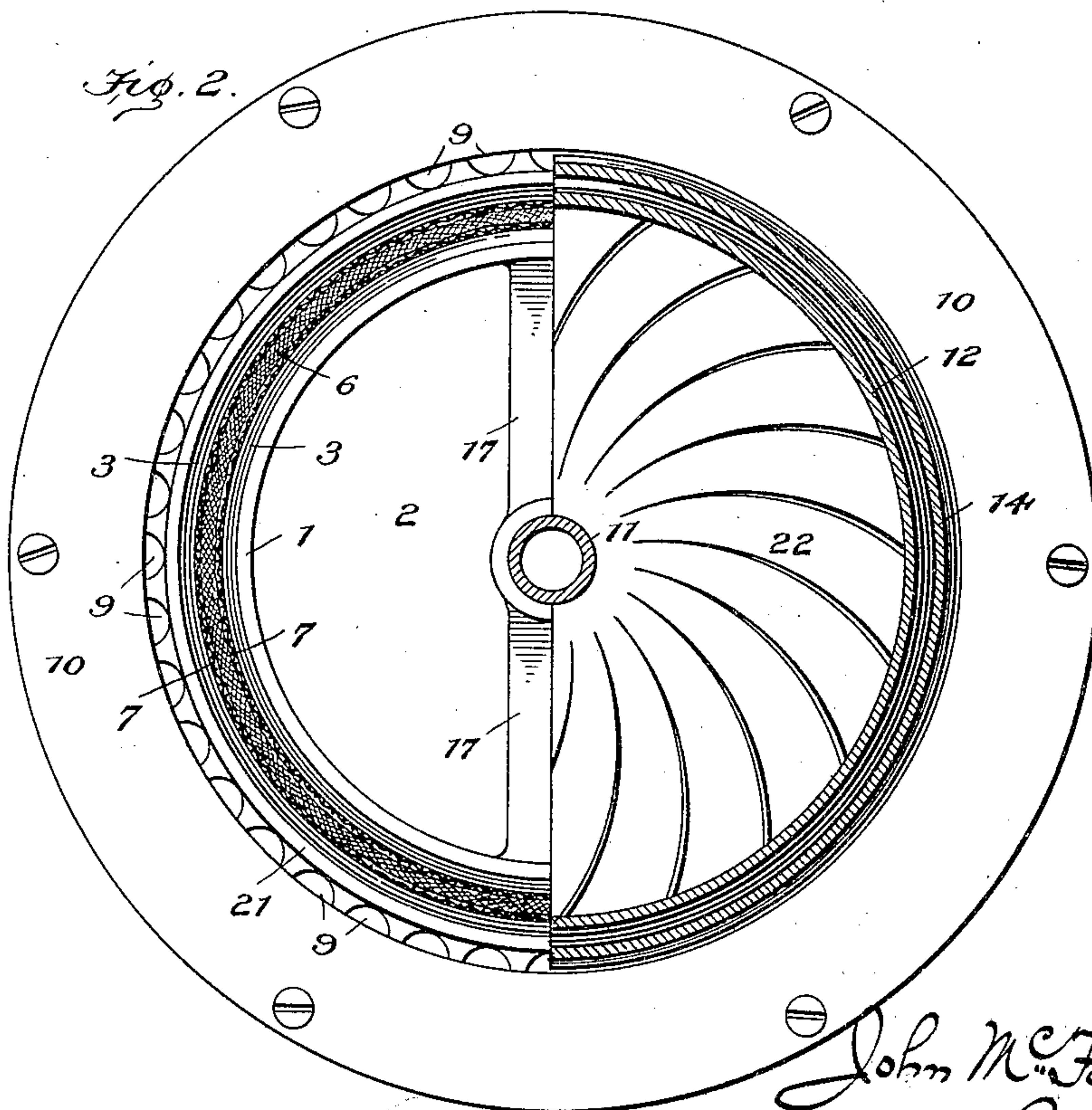
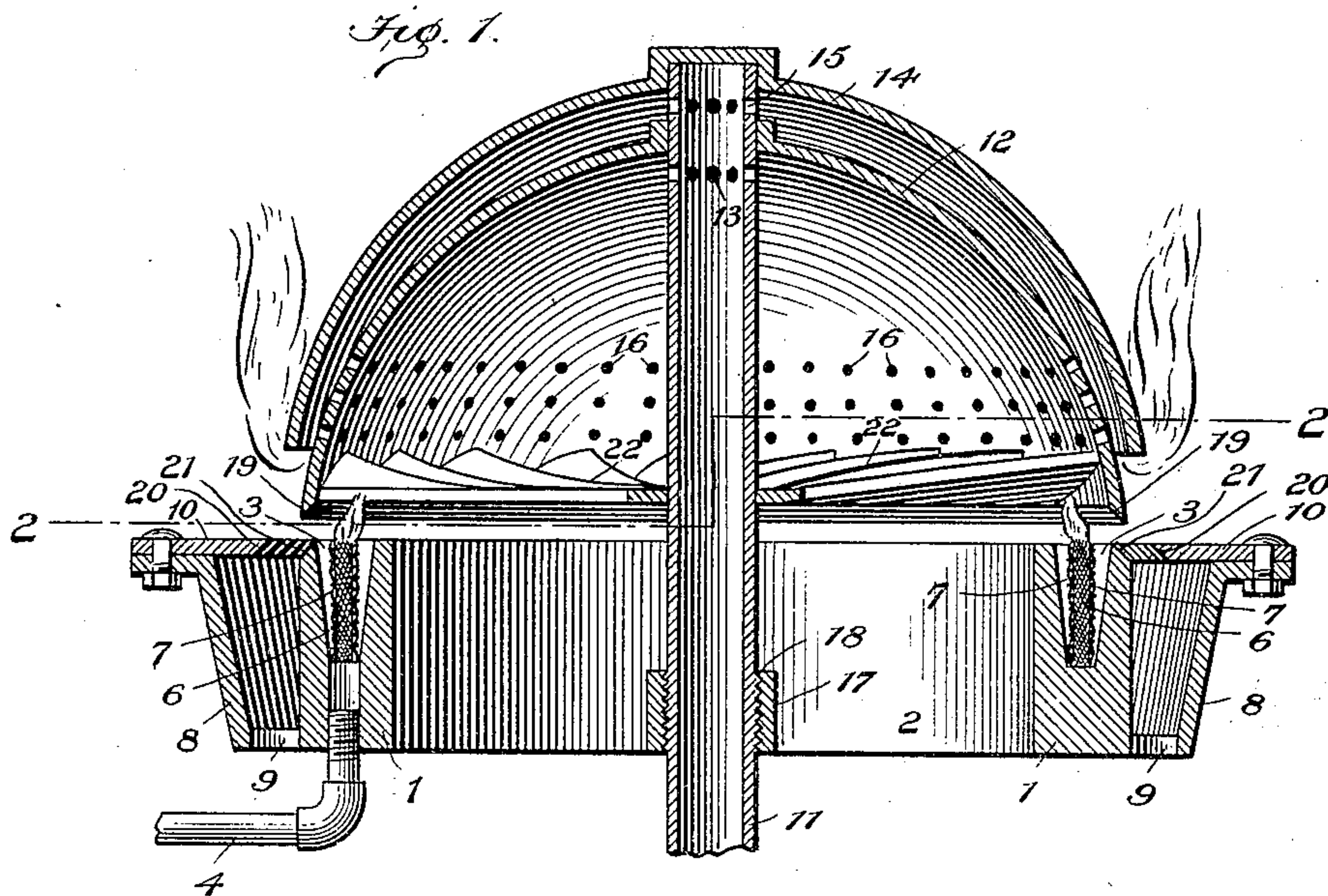
PATENTED AUG. 30, 1904.

J. McFARLANE.

BURNER.

APPLICATION FILED JULY 23, 1903.

NO MODEL.



Witnesses

Edwin L. Bradford
E. L. Bradford

Inventor

John McFarlane

ॐ

Kelsey Lough

Attorneys:

UNITED STATES PATENT OFFICE.

JOHN McFARLANE, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
OF ONE-HALF TO GEORGE E. TRUETT, OF WASHINGTON, DISTRICT OF
COLUMBIA.

BURNER.

SPECIFICATION forming part of Letters Patent No. 768,816, dated August 30, 1904.

Application filed July 23, 1903. Serial No. 166,731. (No model.)

To all whom it may concern:

Be it known that I, JOHN McFARLANE, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has relation to burners; and it consists in the novel construction and arrangement of its parts, as hereinafter shown and described.

The object of my invention is to provide a burner especially adapted for burning hydrocarbon oils; and it consists, primarily, of an open retort carrying a wick which is suitably supplied with hydrocarbon. The oil is vaporized in said retort and passes under the perforated plate, which acts as a gasifier and a mixer, a suitable number of blades being located under said plate for the purpose of facilitating the mixing of the said vapor with the air. A second plate is located over the first said plate, said second plate acting as a spreader and burner for the gas thus produced. Suitable air-feeds are provided for supplying air both to the vapor and the gas.

In the accompanying drawings, Figure 1 is a transverse sectional view of the burner. Fig. 2 is a horizontal sectional view of the burner cut on the line 2 2 of Fig. 1.

The retort 1 is made circular in form, the open center 2 of which constitutes a vertical air-passage. The upper edge of said retort is provided with a continuous duct 3, which constitutes an oil-retaining gutter of the retort. The oil-supply pipe 4 leads into the bottom of said duct 3 at one or more points. A continuous wick 6 is located in the duct 3, said wick being made of asbestos or any other suitable material and is bound on each vertical side with a perforated ring or plate 7. Said wick is centered in the duct 3 and is of less thickness than the distance between the inner walls of the said duct, the space between the sides of the wick and the walls of

the duct being utilized for the reception of oil and the vaporization of the same. The retort 1 is surrounded by an annulus 8, which at its upper edge converges away from the retort and in its bottom is provided with suitable perforations 9. The ring 10 is secured in a horizontal position to the upper edge of the annulus 8, the inner edge of said ring extending to within a short distance of the outer side of the retort 1, the ring 10 being substantially in horizontal alinement with the upper edge of the retort. The central air-tube 11 passes through the opening in the retort 1, and the plate 12 is fixed to said tube, said tube being provided with the perforation 13 just below the plate 12. The upper end of the tube 11 extends above the plate 12 and supports the plate 14, the upper end of said tube being closed and said tube having the perforations 15 just below the plate 14. The plates 12 and 14 are convexo-concave, substantially as shown in Fig. 1, the upper plate 14 being imperforated, while the lower plate 12 is provided with the perforations 16, which are located between the edge of the plate and the elevated closed intermediate portion thereof. The plate 12 is nested within the plate 14. Consequently the edge of the plate 14 passes below the openings 16 of the plate 12.

Any suitable means may be provided for adjusting or regulating the distance between the edge of the plate 12 and the upper end of the retort 1. As shown, this means consists of a cross-piece 17, having at its middle an internally-screw-threaded section adapted to engage the thread 18 on the exterior of the tube 11. It will be seen that by revolving said tube 11 the plate 12 and its attachments may be raised or lowered with relation to the retort 1 and its attachments. The inner edge of the plate 12 is beveled, as at 19, and the inner edge of the ring 10 is also beveled, as at 20, and the edge of the retort 1 is beveled, as at 21.

A series of radially-extending blades 22 are located under the plate 20, said blades being

preferably formed by stamping out of a piece of sheet metal and slitting it toward the center from its edge and then twisting the blade up at the proper angle.

5 The operation of the device is as follows: The oil is admitted through the pipe 4 into the duct 3, where it is taken up by the wick 7. It is then ignited, and the flame from said wick passes up by the blades 22 against the
10 under side of the plate 12. The said flame is fed by air passing through the passage 2 of the said retort 1 and simultaneously by air passing up through the perforations 10 along the outer side of the retort 1 and within the
15 annulus 8 and by the inner edge of the ring 10. The said retort 1 being heated, the air comes in contact with the side thereof and is expanded and has a tendency to rise with promptness. The space under the inner edge
20 of the ring 10 and between the inner wall of the annulus 8 constitutes an air-cushion which contains cooler air. The lateral pressure of the warm air coming in contact with the afore-said cushion has a tendency to shunt the warm
25 air over the edge of the retort and under the plate 12, the beveled surfaces 19, 20, and 21 facilitating the passage of the air under the said plate. The said air coming in contact with the vapor arising from the duct 3 is
30 mixed with the same in passing through the space between the blades 22, and this mixture also mixes in a similar manner with the air that is passing up through the passage 2. The mixture then produced comes in contact with
35 the under side of the plate 12, where it is heated and the vapor is gasified. At the same time air is injected into the mixture through the perforation 13 in the pipe 11, and the mixture passes through the perforation 16 in the
40 plate 12 under the plate 14, where it is temporarily held and fed out at the edge of said plate and is ignited, forming a slight bank of fire. While the mixture is under the plate 14 more air is fed to it through the perfora-
45 tions 15 in the pipe 11. It will thus be seen that in stages of transforming the hydrocarbon into a gas it is frequently mixed with air and kept continually in a state of agitation, and consequently the gas produced contains
50 a sufficient quantity of air to insure combustion without smoke, soot, or other objectionable features.

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

1. In a hydrocarbon-burner a vaporizer, a plate located over the same and adapted to receive against its under side vapor and air, said
60 plate having an elevated, concaved, imperforated, central portion which serves as a mixer for the air and vapor and a second concaved plate located over the first said plate in such

position as to serve as a burner for the mixture.

2. In a hydrocarbon-burner a vaporizer, a
65 plate located over the same and adapted to receive against its under side vapor and air, said plate having an elevated, concaved, imperforated, central portion which serves as a mixer for the air and vapor and a second imperforated concaved plate located over the first said
70 plate in such position as to serve as a burner for the mixture.

3. In a hydrocarbon-burner a vaporizer, a
75 plate located over the same and adapted to receive against its under side vapor and air, said plate having an elevated, concaved, imperforated, central portion which serves as a mixer for the air and vapor and a second concaved plate located over the first said plate in such
80 position as to serve as a burner for the mixture, the first said plate being nested in the second said plate.

4. In a hydrocarbon-burner a vaporizer, a
85 plate located over the same and adapted to receive against its under side vapor and air, said plate having an elevated, concaved, imperforated, central portion which serves as a mixer for the air and vapor and a second concaved plate located over the first said plate in such
90 position as to serve as a burner for the mixture and an air-pipe supporting both said plates and having air-outlets under each.

5. In a hydrocarbon-burner a vaporizer, a
95 plate located over the same and adapted to receive against its under side vapor and air, said plate having an elevated, concaved, imperforated, central portion which serves as a mixer for the air and vapor and a second concaved plate located over the first said plate in such
100 position as to serve as a burner for the mixture and an air-pipe supporting both said plates and having outlets under each the said outlets under the lower plate being located above the lower line of the imperforated cen-
105 tral portion of the plate.

6. In a hydrocarbon-burner a vaporizer, a
110 plate located over the same and adapted to receive against its under side vapor and air, said plate having an elevated, concaved, imperforated, central portion which serves as a mixer for the air and vapor and a second concaved plate located over the first said plate in such
115 position as to serve as a burner for the mixture and an air-pipe supporting both said plates and having outlets under each, said outlets being located in close proximity to the respective plates.

7. In a hydrocarbon-burner having a vaporizer the upper corner of the edge of which
120 is beveled, a plate located over said vaporizer and having a beveled edge opposite the beveled edge of the vaporizer, a ring surrounding said vaporizer and having a beveled edge

opposite the beveled edge of the vaporizer, all of said beveled edges extending substantially in the same direction.

5 8. In a hydrocarbon-burner a vaporizer, a plate located over the same and adapted to receive against its under side vapor and air, said plate having an elevated, concaved, imperforated central portion which serves as a mixer for the air and vapor, a second plate located

over the first said plate in such position as to serve as a burner for the mixture, and blades located under the first said plate.

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

JOHN McFARLANE.

Witnesses:

EARLE B. PRINCE,
GEORGE CALVERT.