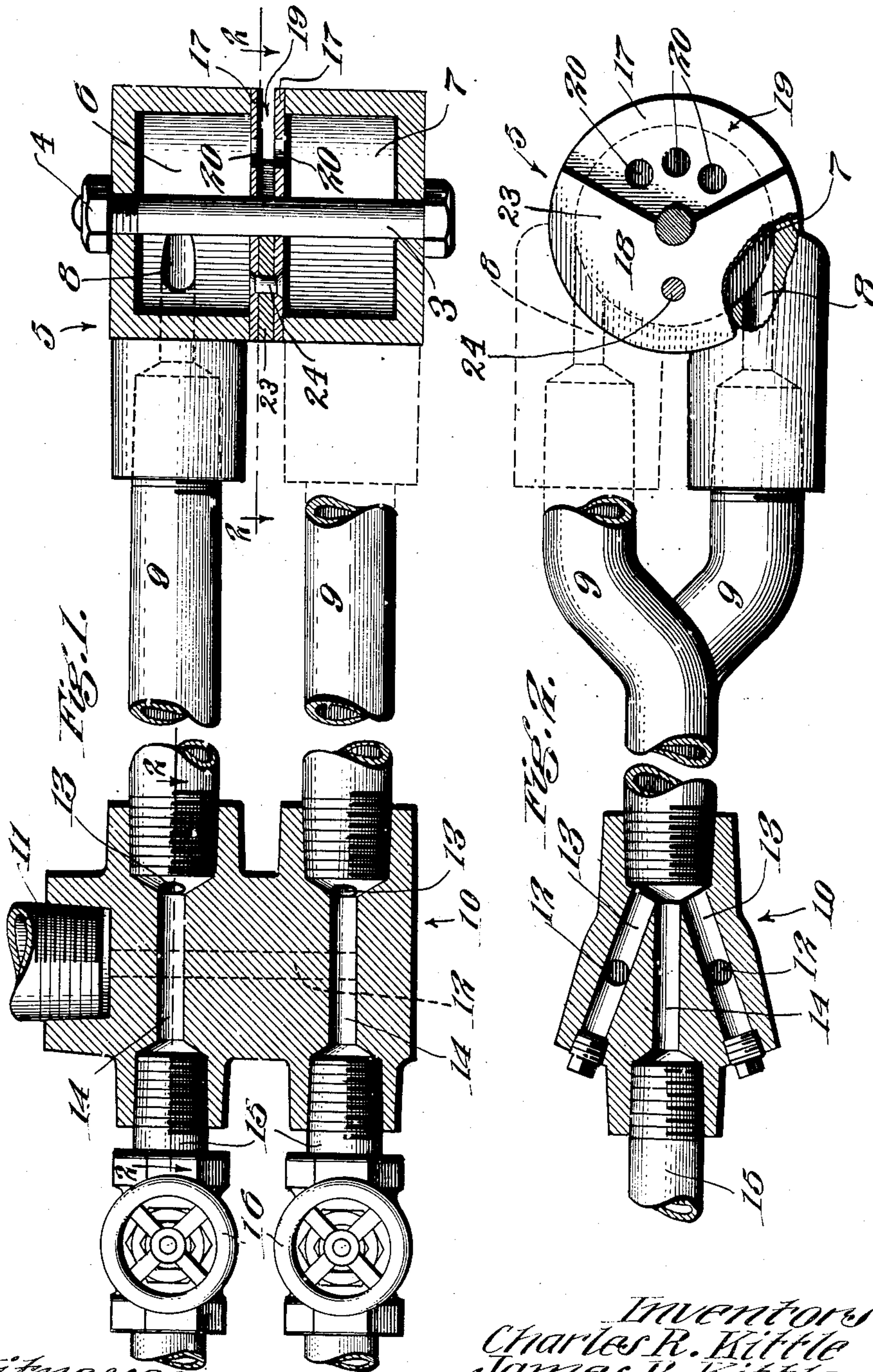


C. R. & J. R. KITTLE.
HYDROCARBON BURNER.
APPLICATION FILED FEB. 27, 1908.

930,193.

Patented Aug. 3, 1909.



Witnesses
Wm. C. Barkley
John S. Allen

Inventors
Charles R. Kittle
James R. Kittle
Hazard & Halsey
 Attorneys.

UNITED STATES PATENT OFFICE

CHARLES R. KITTLE AND JAMES R. KITTLE, OF LOS ANGELES, CALIFORNIA.

HYDROCARBON-BURNER.

No. 930,193.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed February 27, 1908. Serial No. 418,033.

To all whom it may concern:

Be it known that we, CHARLES R. KITTLE and JAMES R. KITTLE, citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

Our said invention which relates to a new and useful burner for hydro-carbons to be burned with steam in generating heat, is an apparatus which consists of a pair of chambers of circular contour which are held in operative position by means of a bolt and nut or their equivalent, said bolt passing through a hole in the center of the outer ends of the chambers and through the center of a somewhat thick disk situated between the inner ends of the two circular chambers. The bolt retains the two circular chambers and their connections also the somewhat thick disk in operative position and relationship as hereinafter set forth. A tangential inlet is constructed in one side of each of the aforesaid circular chambers, and the front end of a pipe of any desired length is connected to each such chamber (there being a separate pipe for each chamber) by being fastened into the tangential opening therein. At their rear ends the pipes are attached to a chamber whereinto steam is led, and the hydro-carbon and steam burned are led from any convenient source of supply into each pipe directed tangentially into each circular chamber. Supply pipes conveying the hydro-carbon to the burner are each provided with a valve for regulating the flow of hydro-carbon into the burner.

The portion of the apparatus to which the rear ends of the pipes are connected constitutes a mixer of the hydro-carbon and steam, both of which in passing through the pipe entering each of the circular chambers tangentially and at opposite sides thereof cause the hydro-carbon and steam to circulate or rotate in each chamber, and in direction the opposite of said rotation in the other chamber.

Between the two circular chambers there is situated a relatively thick disk wherein a radial opening is formed extending with its wider dimension from the periphery of the disk toward the central bolt on which the said disk and circular chambers are mounted, the said bolt holding this disk and the chambers in operative relationship. Communi-

cation from the two circular chambers to the discharge port in the disk is effected by one or more holes being made through those portions of the disk which constitute the walls of the aforesaid radial opening therein. The mixed hydro-carbon and steam issue through these openings into the discharge port in the disk, whereat they are ignited, by entering into combustion with the heated air in the furnace or other chamber wherein mixed hydro-carbon and steam are to be burned.

Upon the annexed drawings, Figure 1,—is a vertical section of our improved burner. Fig. 2,—is a horizontal section taken on line 2—2 of Fig. 1.

Referring to the drawings, the burner is marked 5 and it consists essentially of upper and lower chambers 6 and 7. These chambers are preferably cylindrical in configuration and inlets 8 thereinto are placed tangentially on opposite sides of the chambers as shown at Figs. 1 and 2. These inlets are directly connected to pipes 9, the pipes being of any length requisite to place the burner in a suitable position in a furnace. The pipes 9 connect at their rear ends to a fuel mixer, 10, adapted to supply the proper mixture of steam and oil to the pipes and thence to the burner.

The mixer 10 is supplied with steam through pipe 11 connecting with its upper end and communicating directly with two steam passages 12 crossed by two horizontal passages 13 converging toward each other, as shown in Fig. 2, to communicate with the pipes 9. Immediately between each horizontal set of passages 13, and also communicating with the pipes 9, is an oil passage 14. These passages 14 are bored horizontally through the mixer and are supplied with oil by pipes 15, controlled by valves 16. By means of these controlling valves the amount of oil fed to either of tubes 9 may be regulated for the purpose of equalizing and directing the flame.

Between the chambers 6 and 7 is provided a somewhat thick member 17. This member consists of plates 17 held apart by a spacer 18 which has a sector cut out of its front edge, leaving an outlet space 19 between plates 17. The plates are provided with a series of outlet openings 20, disposed oppositely to each other, so that the outflowing streams of fuel will impinge directly upon each other without striking any part of the burner and thus wearing that part.

In the operation of the burner the mixed fuel is supplied to the two chambers from the mixer, as before described. Upon entering the chambers a circular flow is set up by virtue of the tangential placement of the inlets to the chambers. The directions of circulation in the chambers are opposite to each other and the fuel sprayed or atomized is forced through outlets 20 into the space 19 wherein it enters into combustion with highly heated air in the furnace thus developing a high temperature therein.

Having described our invention what we claim as new and desire to secure by Letters Patent is:—

1. A hydrocarbon burner, comprising a pair of circular chambers, a member having a radial outlet common to both chambers, said member being situated concentrically between said chambers, a bolt and nut by which the chambers and said member having a radial outlet are operatively carried and united, tangential inlets into said circular

chambers arranged on opposite sides, outlets from said chambers into said common radial outlet, and means to supply hydrocarbon and steam to each of said tangential inlets. 25

2. A hydrocarbon burner comprising a pair of circular chambers having a common burner outlet, said chambers having tangentially arranged oil and steam inlets on opposite sides. 30

3. In a hydrocarbon burner, a pair of circular chambers whose outlets discharge against each other, said chambers having tangentially arranged hydrocarbon and steam inlets on opposite sides. 35

In witness that we claim the foregoing we have hereunto subscribed our names this 21st. day of February, 1908.

C. R. KITTLE.
J. R. KITTLE.

Witnesses:

EDMUND A. STRAUSE,
OLLIE PALMER.