C. R. KITTLE & G. E. HARPHAM.

HYDROCARBON BURNER.

APPLICATION FILED MAY 20, 1904. RENEWED MAY 21, 1906.

908,776. Patented Jan. 5, 1909.

Fig. 1.

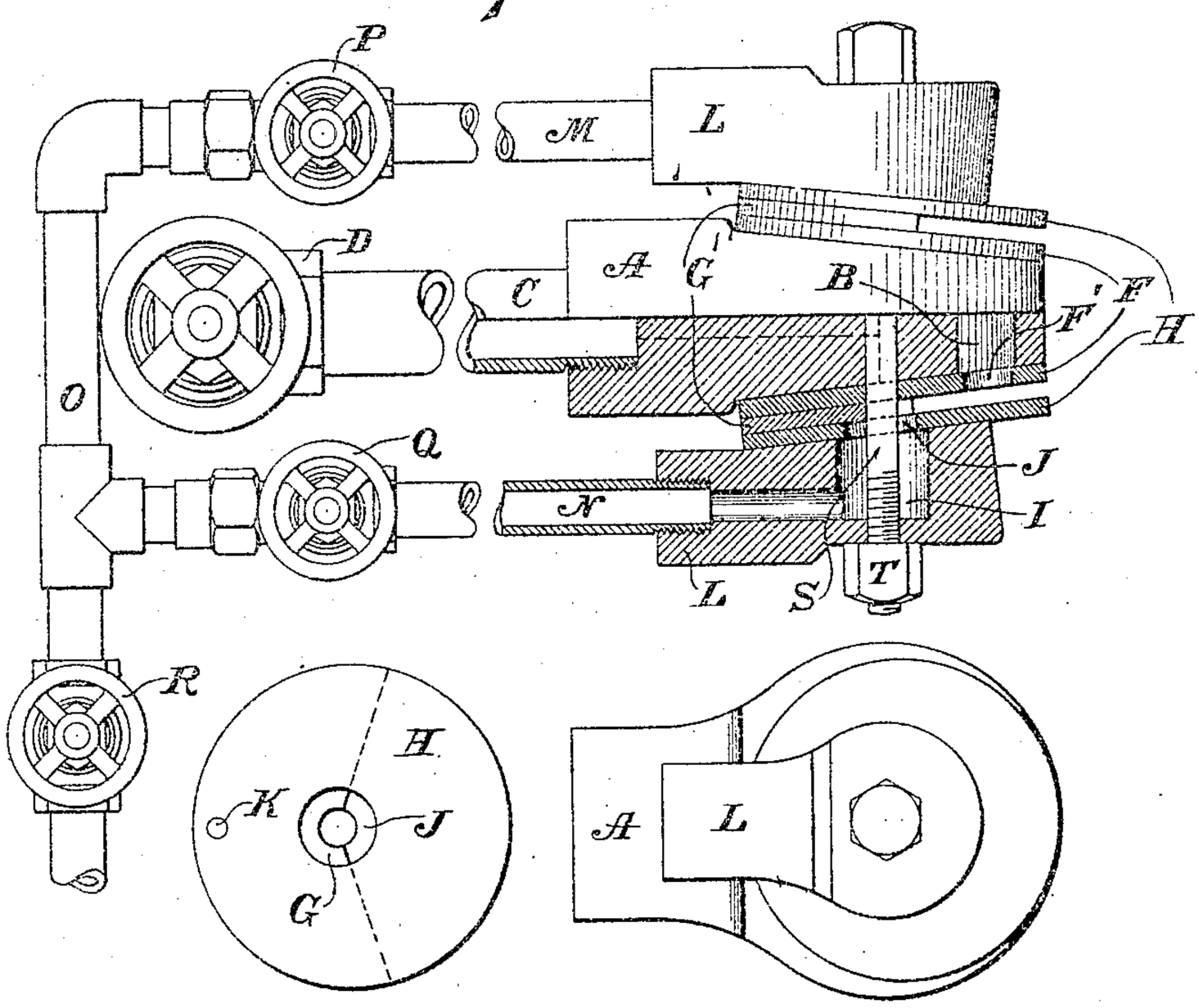

Fig. 4.

Fig. 2.

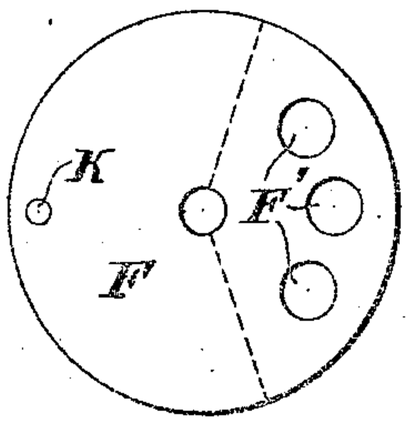

Fig. 5.

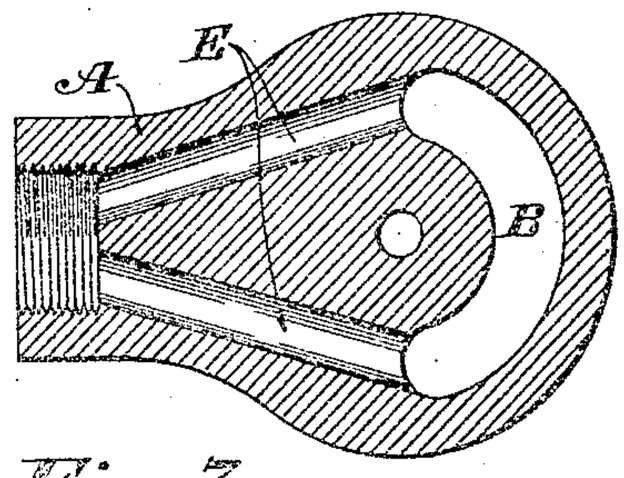

Fig. 3.

WITNESSES

Chas. L. Hyde.

Imile Bachelier.

INVENTORS

Charles R Kittle

George E. Harpham

BY Hazard & Harpham

ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES R. KITTLE AND GEORGE E. HARPHAM, OF LOS ANGELES, CALIFORNIA.

HYDROCARBON-BURNER.

No. 908,776. Specification of Letters Patent. Patented Jan. 5, 1909.

Application filed May 20, 1904, Serial No. 208,940. Renewed May 21, 1906. Serial No. 318,090.

To all whom it may concern:

Be it known that we, CHARLES R. KITTLE and GEORGE E. HARPHAM, both 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 invention relates to a burner designed to burn crude petroleum by the aid of steam or compressed air or other expansible fluid; and the object thereof is to provide an efficient burner for that purpose. We accomplish this object by the burner described herein and illustrated in the accompanying drawings in which:—

Figure 1 is a side elevation partly in section of our improved burner. Fig. 2 is a plan of the burner tip. Fig. 3 is a central horizontal section of the oil chamber of the tip. Figs. 4 and 5 are details of the steam, oil and separating plate.

In the drawings A is the casing of the oil distributing chamber B of the burner tip which is connected by the pipe C with a suitable oil supply, not shown. On the pipe C is a regulating valve D by means of which the supply of oil passing to the burner tip is regulated. The oil pipe is screwed into the rear end of the casing and is connected by channels E with the distributing chamber. These channels are preferably bored through the material of which the casing is constructed which is preferably cast iron or steel. The top and bottom of the distributing chamber is closed by perforated plates F which will be called the oil closure plates. These plates have one or more perforations F′ for the passage of oil out of the chambers. The size and number of these perforations are regulated by the capacity desired. Above and below these top and bottom plates are the spreader plates G. Above and below these spreader plates are the plates H which we will call steam closure plates which form one portion of the casing of the steam or atomizing fluid chambers I of which there are two, one above and one below the oil chamber. These steam plates are cut out in the center to form steam ports J′. These steam plates extend outwardly as far as the oil plates. The oil, spreader and steam plates are preferably riveted together by a rivet passing through a hole K shown in Figs. 4 and 5 in the rear portion of the plates. The casings L of the steam chambers are threaded for the reception of pipes M and N which are connected to pipe O which leads to a suitable supply of steam or other expansible fluid not shown. The pipes M and N are provided with regulating cocks P and Q by means of which the steam to the respective steam chambers is independently regulated. A cock R on the pipe O enables the operator to cut-off the entire supply of steam therethrough. For a burner designed for a 250 horse power boiler three ¼ inch perforations in each plate give satisfactory results.

In the drawings we have shown the oil chamber casing tapering toward the front as we deem this the best construction, because the flame can be thrown upwardly by admitting more steam into the lower steam chamber than in the upper one, or downwardly by admitting more steam into the upper chamber than in the lower chamber, or can be thrown centrally by admitting the same quantity into each. If desired however, the faces of the oil chamber may be made parallel. The steam and oil chambers and the plates are securely united by a bolt S which passes therethrough and is provided with a nut T on its end. It will be seen that by this construction we have provided two steam jets, or two jets of air or other expansible fluid for the atomization of the oil and that the oil is delivered into the path of two streams of expansible fluid, thereby producing the maximum of atomization with a minimum use of expansible fluid. It will also be seen that the extent to which the spreader plates are cut out determine the spread of the flame. We have also found in practice that when a small fire is desired the steam may be cut off entirely from one of the steam chambers and the oil will only issue out of the oil chamber into the path of the steam from the active steam chamber, thereby enabling us to burn a very small fire. We have also found in practice that the extension of the steam plate as far as the oil plate and by having the spreader plate widening toward the front that there is a suction on the oil from the oil chamber which does not exist when the steam chamber terminates before the oil ports are reached as shown in our Patent No. 712143 of date Oct. 28th. 1902. It will also be seen that the oil steam and spreader plates are each independently removable so that the spread of flame or capacity of the burner can be quickly changed by changing such plates. When compressed air is used to

atomize the oil the spreader plates are thinner than when steam is used.

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

1. In a hydrocarbon burner, two expansible fluid chambers, and an oil chamber intermediate said fluid chambers, said chambers being separated at their front portions and provided with ports, the ports in the oil chamber being in front of the ports in the fluid chamber and being adapted to discharge oil into the path of the fluid from the fluid chambers at substantially right angles to the flow of said fluid.

2. In a hydrocarbon burner two independently controlled expansible fluid chambers, and an oil chamber between said fluid chambers, all of said chambers having ports so located that the oil from the oil chamber is discharged into the paths of the fluid from the fluid chambers within the burner at substantially right angles thereto.

3. In a hydrocarbon burner an oil chamber provided with ports in two sides thereof; independently regulated expansible fluid chambers having ports in the rear of the ports of the oil chamber adapted to discharge the fluid therefrom across the path of the oil issuing from the oil chamber.

4. In a hydrocarbon burner an oil chamber provided with a closure having ports therein; an expansible fluid chamber provided with a closure having a port therein at the rear of the ports of the oil chamber and adapted to discharge fluid across the ports from the oil chamber; said closure of said fluid chamber extending parallel with the closure of the oil chamber and to a point beyond the oil ports and being removable; a spreader plate between the closure of the oil and fluid chambers in contact with both, said spreader plate being cut out at its central front portion as described whereby said oil and fluid are discharged from a common outlet.

5. In a hydrocarbon burner an oil chamber having the top and bottom tapering toward the front; closure plates having ports therein secured to said chamber; expansible fluid chambers one above and one below said oil chamber, said fluid chambers having closure plates with ports therein, said ports being back of the ports of the oil chamber and being adapted to discharge fluid across said oil ports, the closure plates of the oil and fluid chambers at each side of the oil chamber having their adjacent outside surfaces parallel; spreader plates between said oil and fluid chamber closure plates.

6. In a hydrocarbon burner an oil chamber wider at the rear than at the front; closure plates having ports therein removably secured to said chamber; independently regulated expansible fluid chambers one above and one below said oil chamber; closure plates removably secured to said expansible fluid chambers; said last plates having ports therein back of the ports of the oil chamber and being parallel to the closure plates of said oil chamber; spreader plates between said oil and fluid chamber closure plates.

7. In a hydrocarbon burner an oil chamber; a closure plate having ports therein for said chamber; an expansible fluid chamber; a removable closure plate for said fluid chamber having a port therein at the rear of the oil chamber ports, said closure plates extending to the front of the burner and being parallel; a spreader plate between said closure plates said spreader plate being cut out at its central front portion as described, whereby said oil and fluid are discharged from a common outlet.

In witness that we claim the foregoing we have hereunto subscribed our names this 14th day of May, 1904.

CHARLES R. KITTLE.
GEORGE E. HARPHAM.

Witnesses:
MARGARETE C. NICKELESON
ARTHUR W. HARRISON.