C. R. LAMBERT.

BURNER.

APPLICATION FILED MAR. 29, 1913.

1,137,148. Patented Apr. 27, 1915.

Fig. 1.

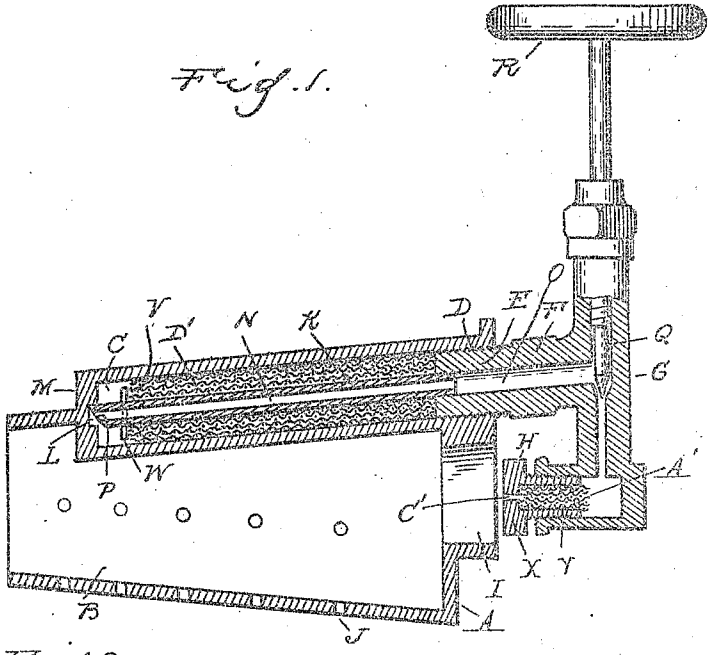


Fig. 2.

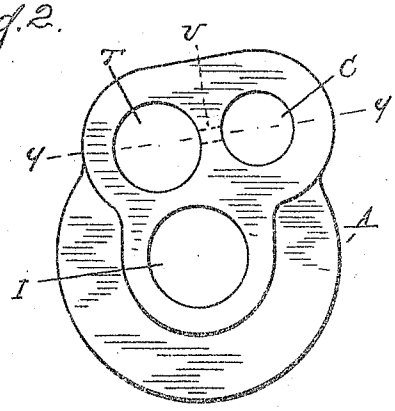
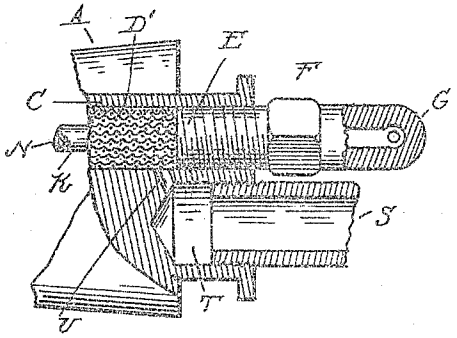


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

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BURNER.

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To all whom it may concern:

Be it known that I, CHARLES R. LAMBERT, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Burners, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to burners of the type employed in torches and plumbers' furnaces, and has among the objects thereof to provide a construction of burner in which the hydrocarbon fuel not only will be effectively vaporized but will also be filtered, thereby removing therefrom free carbon; further to produce a simple construction that may be easily and cheaply manufactured.

Other objects of the invention will more fully hereinafter appear.

The invention resides in the peculiar construction, arrangement and combination of parts as herein described and as particularly pointed out in the claims.

In the drawings: Figure 1 is a longitudinal section through a burner embodying my invention; Fig. 2 is an end elevation with certain parts removed; and Fig. 3 is a fragmentary section of the structure shown in Fig. 1, in the plane of the line *y*—*y* of Fig. 2.

A designates the body of the burner, preferably formed of an integral casting provided with a large chamber B to receive the flame and a filtering and vaporizing chamber C of considerably less size. The chamber C is closed at its outer end and has the inner end provided with internal threads D for engaging the externally threaded end E of the outlet conduit F. The latter has an extension G terminating in an atomizing nozzle H extending laterally therefrom and positioned to discharge into the chamber B, which is open ended, but the opening I into which the nozzle H discharges is somewhat restricted in size. Also the walls of the flame-receiving or combustion chamber are provided with a plurality of apertures J, establishing communication between the interior of the chamber B and the atmosphere.

K is an extension of the outlet conduit, of considerably less size than the cross-sectional area of the chamber C and this extension preferably has a threaded engagement at one end with the conduit E, while the other end engages a seat or bearing L in the end M of the chamber C.

N is a bore or passage extending through the extension K and opening at one end into the bore O of the outlet E. The other end of this extension is in communication with the interior of the chamber C. In order to prevent the bearing L from sealing the free end of the member K, the latter is cut away or beveled as indicated at P.

Q is a needle valve controlling the bore or passage in the outlet conduit that leads to the atomizing nozzle H, and R is an operating handle for the valve Q.

S is the fuel supply conduit, which is attached to a bore or compartment T, and U is a passage connecting the compartment T with the chamber C.

While any suitable type of atomizing nozzle might be employed, I desire to use the novel structure shown in the drawings. Thus the nozzle H is formed by a hollow nut X provided with a bore Y, and having a restricted discharge opening C′ extending through the front wall thereof.

In the operation of the device so far described, the hydrocarbon fuel passes from the supply through the conduit S into the compartment T and from the latter into the chamber C by way of the passage U. The fuel then travels longitudinally of the chamber C to the outer end thereof. The heat of the flame in the chamber B will cause the walls of the chamber C to become sufficiently heated so that the fuel passing through the chamber C will vaporize. From the outer end of the chamber C the vaporized fuel passes through the extension K and the outlet conduit F to the nozzle H, and discharges from this nozzle by way of the restricted passage C′ to the combustion chamber B.

Upon the vaporizing of the hydrocarbon fuel, more or less free carbon is formed and these free particles of carbon tend to collect at and close the restricted passages of the burner, particularly the opening C′ and the opening controlled by the member Q. In order to eliminate this objection, I arrange in the vaporizing chamber a filter through which the vaporized fuel must pass before it enters the member K. This filter may be of various materials, it being illustrated in

the drawing as formed by a plurality of plies of fine mesh screen D′, sufficient in size to fit tightly against the walls of the chamber C, but having the outer ends V thereof spaced slightly from the beveled end P, as by a pin W on the member K. This filtering material serves the further function of dividing the oil into a plurality of channels, and assists in a complete vaporization of the fuel. A further filter, as the screen A′, is arranged in the bore Y of the nozzle. The arrangement of the filter D′ is preferably such that it may be removed, the construction in the drawing allowing the filter to be detached upon the withdrawal of the member K. Also the filter A′ may be removed from the nozzle.

While I have shown and described one form of my device there are various changes which might be made without departing from the scope of my invention.

What I claim as my invention is:

1. In a burner, a body portion having a flame-receiving chamber and a vaporizing chamber, a nozzle communicating with the flame-receiving chamber and being in communication with the vaporizing chamber, a fuel supply opening into the vaporizing chamber, and filtering means within said nozzle for a vaporized fuel.

2. In a burner, a body portion having a flame-receiving chamber and a vaporizing chamber closed at one end, a nozzle communicating with the flame-receiving chamber, an outlet conduit for the vaporizing chamber communicating with the nozzle, an extension of the outlet conduit in communication with the vaporizing chamber only adjacent the closed end of the latter, a fuel supply opening into the vaporizing chamber adjacent the opposite end, and filtering means associated with the outlet conduit adjacent to said nozzle.

3. In a burner, a body portion having a flame-receiving chamber and a vaporizing chamber closed at one end, a nozzle communicating with the flame receiving chamber, an outlet conduit for the vaporizing chamber communicating with the nozzle, an extension of the outlet conduit within the vaporizing chamber and in communication therein with the vaporizing chamber only adjacent the closed end of the latter, a fuel supply opening into the vaporizing chamber adjacent the opposite end, atomizing means associated with the outlet conduit adjacent to said nozzle, and a plurality of plies of fine mesh screens filling the space in the vaporizing chamber between the walls thereof and said extension.

4. In a burner, a body portion having a flame-receiving chamber and a vaporizing chamber closed at one end, a nozzle communicating with the flame-receiving chamber, an outlet conduit for the vaporizing chamber communicating with the nozzle, an extension of the outlet conduit within the vaporizing chamber and in communication therein with the vaporizing chamber only adjacent the closed end of the latter, a fuel supply opening into the vaporizing chamber adjacent the opposite end, atomizing means associated with the outlet conduit, and a filtering material carried by said extension and filling the space between the same and the walls of the vaporizing chamber.

5. In a burner, a body portion having a vaporizing chamber closed at one end and a flame-receiving chamber, a valve controlled nozzle communicating with the flame-receiving chamber, an outlet conduit for the vaporizing chamber communicating with the nozzle, a hollow extension of the outlet conduit arranged within the vaporizing chamber, there being a seat at the closed end of the latter with which the inner end of said extension is engaged, filtering material carried by said extension, and a fuel supply opening into the vaporizing chamber adjacent one end thereof, said extension communicating with the vaporizing chamber adjacent the opposite end.

6. In a burner, a body portion having a vaporizing chamber closed at one end and provided with a flame-receiving chamber, a nozzle communicating with the flame-receiving chamber, filtering means arranged in said nozzle, an outlet conduit for the vaporizing chamber communicating with the nozzle, an extension of the outlet conduit in communication with the vaporizing chamber only adjacent the closed end of the latter, there being a support in the vaporizing chamber for the free end of said extension, a fuel supply opening into the vaporizing chamber adjacent the opposite end, and filtering material substantially filling the space between the walls of the vaporizing chamber and the extension.

7. In a burner, a body portion having a vaporizing chamber closed at one end and provided with a flame-receiving chamber, openings in the surface thereof, a nozzle opening into the flame-receiving chamber, filtering means arranged in said nozzle, a needle valve connected to the nozzle, an outlet conduit for the vaporizing chamber communicating with the needle valve, an extension of the outlet conduit within the vaporizing chamber and in communication therein with the vaporizing chamber adjacent the closed end of the latter only, so arranged that the free end will not seal, a support in the closed end of the vaporizing chamber for the free end of said extension, a fuel-supply opening into the vaporizing chamber adjacent the opposite end, and filtering material carried by said extension.

8. In a burner, a body portion having a

flame-receiving chamber and a vaporizing chamber closed at one end, a nozzle communicating with the flame-receiving chamber, an outlet conduit for the vaporizing chamber communicating with the nozzle, comprising an extension within the vaporizing chamber and in communication therein with the vaporizing chamber only adjacent the closed end of the latter, and a second extension communicating with the discharge nozzle, said second extension being restricted in size and valve controlled, a fuel supply opening into the vaporizing chamber adjacent the opposite end, and atomizing means associated with the second extension.

9. In a burner, a body portion having a flame-receiving chamber and vaporizing chamber, a fuel supply opening into the vaporizing chamber, filtering means arranged in the vaporizing chamber, a nozzle communicating with the flame-receiving chamber and provided with an extension communicating with said vaporizing chamber, said extension contacting with said vaporizing chamber at the end where communication occurs, and means for preventing the stopping of communication between said extension and vaporizing chamber.

10. In a burner, a body portion having a flame-receiving chamber and a vaporizing chamber closed at one end, a nozzle communicating with the burner chamber, an outlet conduit for the vaporizing chamber communicating with the nozzle, an extension of the outlet conduit in communication with the vaporizing chamber adjacent the closed end of the latter, filtering means surrounding the extension of the outlet conduit, a pin on said extension retaining said filtering means spaced from said closed end of the vaporizing chamber, and a fuel supply opening into the last-mentioned chamber.

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

CHARLES R. LAMBERT.

Witnesses:

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