Aug. 21, 1923. 1,465,422

W. C. COLEMAN

HYDROCARBON FUEL BURNER

Original Filed June 17, 1921

Fig. 1.

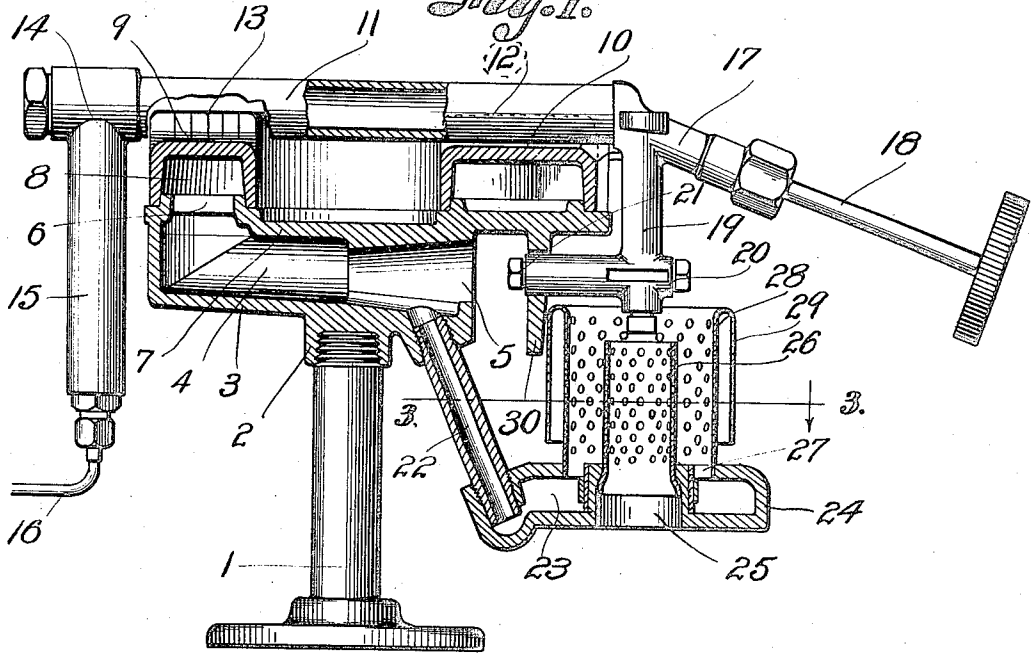


Fig. 3.

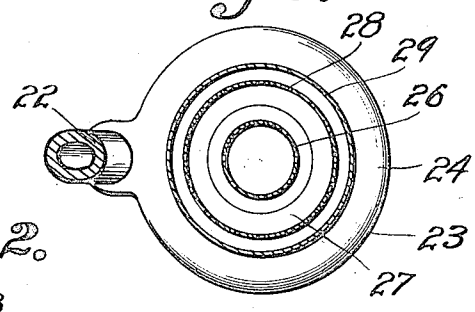
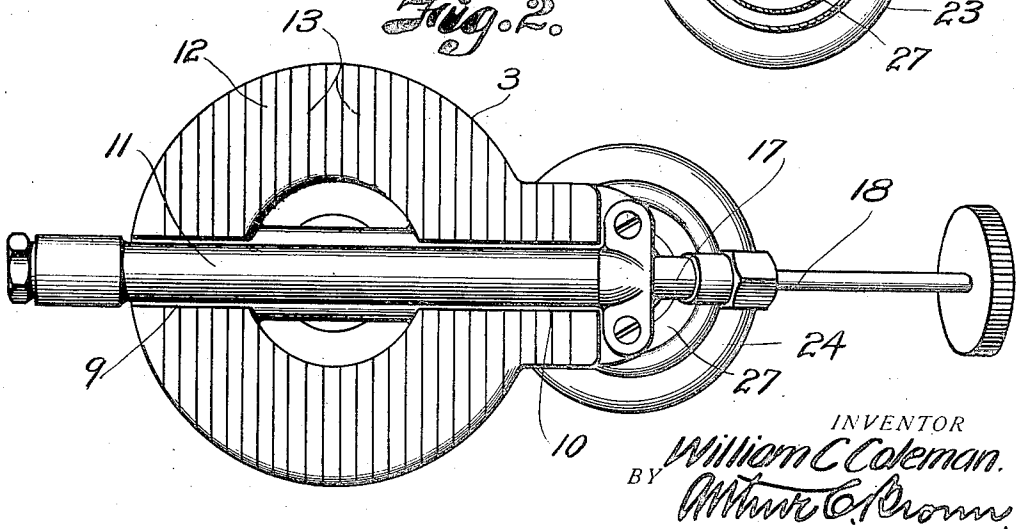


Fig. 2.



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UNITED STATES PATENT OFFICE

WILLIAM C. COLEMAN, OF WICHITA, KANSAS.

HYDROCARBON-FUEL BURNER.

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To all whom it may concern:

Be it known that I, WILLIAM C. COLEMAN, a citizen of the United States, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Hydrocarbon-Fuel Burners; and I do 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 drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to hydrocarbon fuel burners and particularly to a burner for converting gasoline into heat.

One of the objects is to generally improve a burner of this type and to provide means whereby an improved priming burner will be provided for initially converting the liquid into fuel vapor or gas so that it will be rendered more easily ignited at the burner ports.

With these objects in view, the invention consists in certain novel parts and arrangements of parts, all of which will be specifically described hereinafter, reference being had to the accompanying drawings, in which—

Fig. 1 is a view partly in side elevation and partly in section of a burner constructed in accordance with my invention.

Fig. 2 is a top plan view of the burner, and

Fig. 3 is a sectional view on the line 3—3 of Fig. 1, looking in the direction of the arrow.

Referring now to the drawings by numerals of reference:

1 designates a base or standard which may be of any preferred construction and which supports the main burner block in an appropriate manner. The standard or base is shown as having threaded connection with the socket 2 of the burner 3 but any means may be employed for securing the two together. The burner block is shown as having a hollow portion 4 constituting a subjacent chamber for the mixture consisting of the hydrocarbon and air and having a conical inlet 5 and an outlet 6 discharging above the disk 7 into a substantially circumferential chamber 8, having slight depressions 9 and 10 at diametrically opposite points to provide recesses for the reception of the main gasifying or vaporizing chamber 11.

The top 12 of the burner block is provided with a plurality of substantially equidistant, parallel burner slots 13, through which the vaporized or gasified hydrocarbon fuel may pass to be ignited into a flame, the heat of which not only serves for industrial purposes but will also heat the vaporizing chamber 11 to a sufficient temperature to vaporize the incoming hydrocarbon fuel entering at the inlet 14 through the port 15 connected by a pipe 16 to a suitable source of hydrocarbon supply.

The discharge end of the vaporizing chamber 11 is provided with a needle valve casing 17 in which is a needle valve 18 of appropriate construction to shut off communication between the vaporizing chamber 11 and the depending port 19, which communicates with it.

The lower end of the depending port 19 is provided with an L-shaped extension 20 having a discharge opening at 21 to direct the oil or the vapor, as the case may be, into the conical opening 5. The L-shaped tubular extension 20 is an initial vaporizing chamber which will initially vaporize the hydrocarbon content of the fuel mixture before the main vaporizing chamber becomes hot enough to perform this function.

The conical opening 5 has a depending port 22 communicating with a hydrocarbon oil chamber 23, which it supports. The chamber consists of a hollow casing 24, the lower wall of which is provided with a central opening 25, supporting an upstanding perforate tubular member 26, which extends through a larger opening 27 in the top wall of the chamber 24. The edge of the larger opening supports a spaced, tubular, perforate casing 28, parallel with the tube 27 and having a depending socket or protective

wall 29, connected to its upper edge, the top of the perforate sleeve 28 extending beyond the upper end of the tubular member 26 and terminating adjacent to the L-shaped extension or fuel delivery nozzle 20, which is supported at one end by the depending portion 19 and at the other by the perforate lug 30 so that its discharge end 21 will be in line with the center of the conical opening 5.

When it is desired to use the burner, hydrocarbon fuel, such as gasoline, will be admitted into the vaporizing chamber 11 in a liquid state and by unseating the valve 18, the hydrocarbon fuel will gravitate into the tubular portion 19, through the nozzle portion 20, into the conical inlet 5, through the tubular pipe 27, which constitutes both the conduit and a bracket for the chamber 23, and into the chamber 23, air being supplied through the opening 25 so that the liquid hydrocarbon can be ignited at the pilot burner consisting of the casting 24 and its appurtenances, the heat therefrom sufficiently heating the priming vaporizing chamber or nozzle 20 so that the oil or hydrocarbon fuel entering the same will be discharged into the conical opening 5 and into the chamber 8 to be ignited through the slots 13, it being understood that after the hydrocarbon fuel begins to vaporize, it will first gravitate through the port 22. After the hydrocarbon fuel has reached the vapor stage so as to burn through the slots 13, the heat therefrom will be sufficient to vaporize the fuel in the chamber 11 so that it will be in the form of vapor before it reaches the initial vaporizing chamber 20. Consequently, the necessity for the utilization of the priming burner after the fuel has become sufficiently vaporized will be eliminated.

The burner may be used for any suitable purpose but it is particularly adapted for use in connection with urns or cooking tanks, the particularly novel features of my invention residing rather in the pilot burner; that is, the novel construction thereof and the means for supporting it.

It will be apparent that air and gas mixing can take place in the usual manner; that is, the air can enter the inlet 5 through the space between the lug 30 in said inlet end and the fuel will at all times have sufficient force to bridge the gap between the end of the block 3 and the discharge end of the priming vaporizing chamber or nozzle 20.

What I claim and desire to secure by Letters-Patent is:

1. A burner comprising a hollow block having a mixing chamber and a chamber above the mixing chamber provided with fuel outlet openings, a liquid chamber below the block, a tubular connection between the mixing chamber and the liquid chamber, a vaporizing chamber having an L-shaped extension for directing hydrocarbon fuel into the mixing chamber, a burner carried by the liquid chamber for directing the flame onto the L-shaped extension, and a valve for controlling the effective port area of the vaporizing chamber with respect to the L-shaped extension.

2. A burner comprising a casing having a mixing chamber and a burner chamber with openings therein through which the fuel may pass, a main vaporizing chamber above the burner chamber having an inlet at one end and an outlet at the other, an initial vaporizing chamber connected to the discharge end of the main vaporizing chamber, a valve between the main vaporizing chamber and the initial vaporizing chamber, the initial vaporizing chamber discharging into the mixing chamber, a primer burner chamber below the mixing chamber, a conduit connecting the primer burner chamber with the mixing chamber, and means carried by the primer chamber and located to direct heat to the initial vapor chamber so that the liquid fuel can be initially vaporized until the burner casing becomes hot enough to vaporize the liquid in the main vaporizing chamber.

3. A burner comprising a casing having a mixing chamber and a burner chamber with openings therein through which the fuel may pass, a main vaporizing chamber above the burner chamber having an inlet at one end and an outlet at the other, an initial vaporizing chamber connected to the discharge end of the main vaporizing chamber, a valve between the main vaporizing chamber and the initial vaporizing chamber, the initial vaporizing chamber discharging into the mixing chamber, a primer chamber beneath the mixing chamber and in line with the initial vaporizing chamber, a conduit connecting the primer chamber with the mixing chamber, spaced, perforate, circumferential walls carried by the primer chamber, and a depending skirt spaced from and connected to the outer perforate wall.

4. A hydrocarbon burner having an air and vapor inlet, a vapor chamber discharging into the inlet, a tube leading from the bottom of the inlet, a burner chamber connected thereto, and spaced, perforate walls connected to the discharge end of the burner chamber.

5. A hydrocarbon fuel burner comprising a block having a mixing chamber with a flared inlet and a circumferential burner chamber above the mixing chamber communicating with the mixing chamber and having its upper face provided with slots, a main vaporizing chamber resting above the circumferential burner chamber having an L-shaped extension discharging into the flared inlet for the mixing chamber, the discharge end of the L-shaped extension being

spaced away but in line with the flared inlet, a valve for controlling the amount of fuel passing from the main vapor chamber to the L-shaped extension which constitutes an initial vaporizing chamber, and an auxiliary burner below the mixing chamber and communicating therewith, the auxiliary burner being in line with the L-shaped extension so that when the initial flow of fuel passes into the mixing chamber, it will flow into the auxiliary burner to be ignited so as to initially heat the L-shaped extension.

In testimony whereof I affix my signature.

WILLIAM C. COLEMAN.