July 24, 1928. 1,678,058

W. C. COLEMAN

LIQUID HYDROCARBON BURNER

Filed Oct. 6, 1925 2 Sheets-Sheet 1

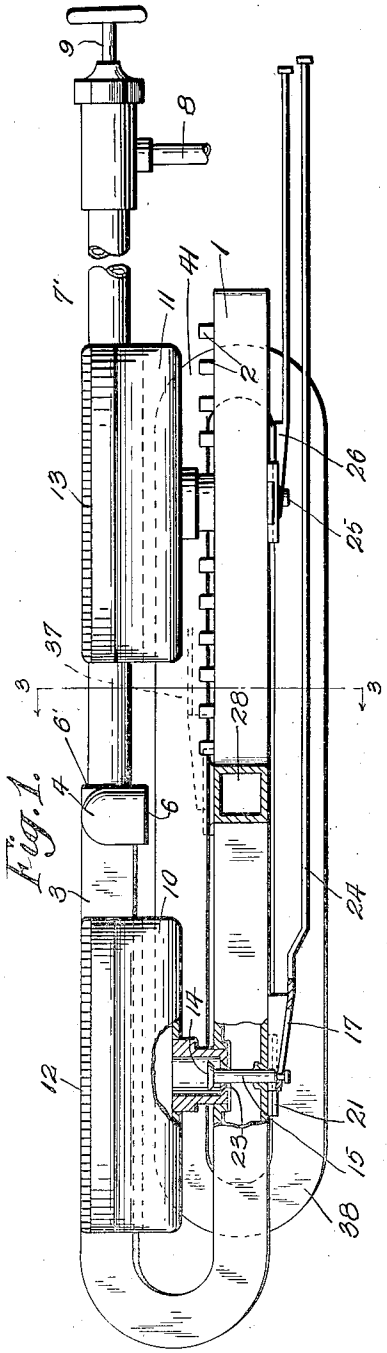

Fig. 1.

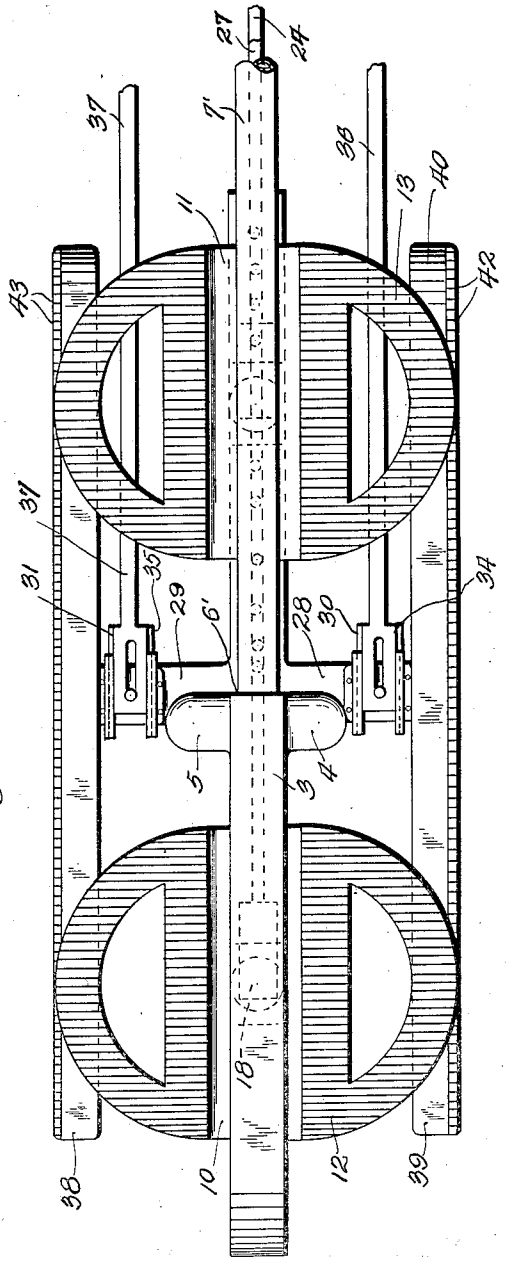

Fig. 2.

INVENTOR.

W. C. Coleman.

BY

B. J. Finds

ATTORNEY.

July 24, 1928. 1,678,058

W. C. COLEMAN

LIQUID HYDROCARBON BURNER

Filed Oct. 6, 1925 2 Sheets-Sheet 2

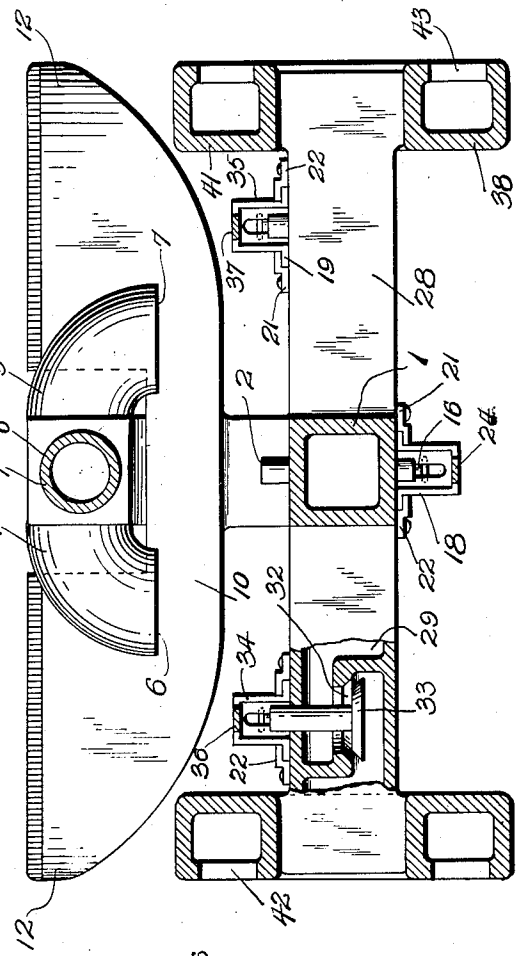

Fig. 3.

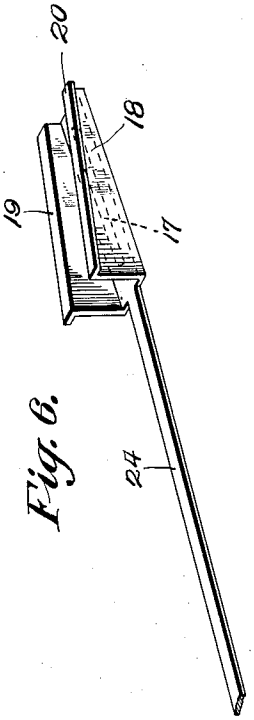

Fig. 6.

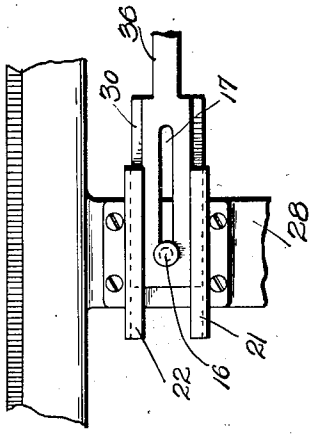

Fig. 4.

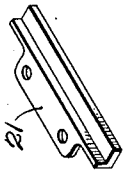

Fig. 5.

INVENTOR.
W.C. Coleman.
BY
B. F. Lewis
ATTORNEY.

Patented July 24, 1928. 1,678,058

UNITED STATES PATENT OFFICE.

WILLIAM C. COLEMAN, OF WICHITA, KANSAS.

LIQUID-HYDROCARBON BURNER.

Application filed October 6, 1925. Serial No. 60,759.

This invention relates to an oil burner of that class particularly adapted to be introduced into the fire space of an ordinary coal range or cook stove but it is not necessarily limited to such use.

The primary object of the invention is to provide an inexpensive easily constructed efficient burner having burner members adapted to heat the top of the stove, the oven or the water space but primarily the intention of the invention is to provide a burner which will efficiently mix the vaporized hydrocarbon and air and deliver it in proper proportional quantities to the different burner elements. It is also the purpose of the invention to insure heat application to the vapor generator or vaporizer so that when the hydrocarbon content of the fuel enters the Bunsen end of the burner it will be sufficiently volatile to eliminate liability of its being condensed in contact with the air. I have provided a novel means for controlling the various elements and I have I believe provided a very efficient burner structure the details of which will be apparent by reference to the following description in connection with the accompanying drawings, in which:—

Figure 1 is a side elevational view of the burner constructed in accordance with my invention, one of the side burner elements being removed and one of the conduits for one of the burners being shown in section.

Figure 2 is a top view of the burner structure.

Figure 3 is an enlarged sectional view on the line 3—3 of Figure 1 with parts broken away.

Figure 4 is a detail view of one of the valve actuators and the guide therefor.

Figure 5 is a detail perspective view of one of the actuator guides, and

Figure 6 is a detail perspective view of one of the valve actuators.

Referring now to the drawings by numerals of reference, 1 designates a manifold provided at its upper face with burner jets 2. At one end of the manifold is a goose neck or Bunsen tube 3 which constitutes the mixing chamber for the fuel, it being apparent that air may pass into the Bunsen tube through the inverted U-shaped air inlet conduit consisting of two wings 4 and 5 having open ends 6 and 7 and which discharge into the Bunsen adjacent to the Bunsen inlet 6′. The vaporized hydrocarbon fuel content will be introduced into the inlet 6 from the vaporizing tube 7′ which is disposed longitudinally of the burner structure and which lies immediately over the jets 2 so that the heat from the combusted fuel issuing from the jets 2 will maintain the vaporizer or generator 7′ hot enough to change the fuel content, that is the gasoline or oil, from the liquid phase to the vapor phase. The liquid fuel content is fed into the vaporizer 7′ through a tube 8 the port area being controlled by the valve on the stem 9 as will be well understood.

The manifold has two outlets 10 and 11 for the horizontal burners 12 and 13, the burners 12 and 13 are split burners but are fed from a common source connected to the manifold 1 in a well understood manner. Each burner is controlled by a separate valve one of these being best shown in Fig. 1 as comprising a poppet valve 14 having a depending stem 15 with a notch 16 adapted to be engaged by edges of a slat 17 in a wedge shaped member 18 having outstanding flanges 19 and 20 receivable in guides 21 and 22 so that when the wedge is moved in one direction the pocket valve will be unseated from its seat 23 but when the wedge is moved in an opposite direction the valve will be seated. The wedge is provided with an elongated handle 24 adapted to be accessible from the outside of the stove, the upstanding port 11 has a valve similar to that shown in the port 10 and its stem 25 may be actuated by a wedge shaped actuator 26 provided with a handle 27 similar to the handle 24. Extending from each side of the manifold 1 is a burner delivering conduit, there are two of these shown in Fig. 2 and are there designated 28 and 29, the port 28 is provided with a valve control 30 and a similar control 31 is provided for the port 29. By reference to Fig. 3 it will be observed that the horizontal ports 28 and 29 have valve seats 32 in which the poppet valves 33 are adapted to seat and that they are adapted to be controlled by the wedges 34 and 35 having handles 36 and 37. Therefore the amount of fuel delivered from the manifold through the side burners 38 and 39 can be controlled, the side burners 38 and 39 are shown as comprising hollow loops 40 and 41 with saw cut openings 42 and 43 for the escape of the fuel so that it can be combusted. The manner in which the gas openings or vapor openings are formed is im-

material but I have shown saw cut openings for convenience of illustration. It will be seen that there is individual control for each burner element, that is the burner element 12 may be controlled to the exclusion of the other elements 13, 40 and 41 and that any of the other burners 13, 40 and 41 may be controlled to the exclusion of the remaining ones and that all of the burners may be lighted at the same time but in causing all of the burners to be lighted all of the controlling devices must be employed.

When the parts are assembled the generator 7′ must be first heated to vaporize the hydrocarbon. This vaporized fuel will discharge into the Bunsen end of the burner and vapor will pass out through the burner tips 2 even if all the controls are closed because the tips 2 are at all times in open communication with the manifold. Therefore as soon as the generator 7′ begins to vaporize the liquid fuel the tips 2 will supply sufficient fuel or flame to the vaporizer 7′ to keep it hot, the amount of liquid being vaporized depending of course upon the port area controlled by the valve on the end of the stem 9. If it is desired to ignite fuel from the burner 12 only the control for burner 13, 40 and 41 may be closed, but whenever any one burner is supplied with fuel mixture that entire burner will be discharging combustible mixture, the controls effect the burner elements individually but they are not so arranged that there can be any fractional control of any one burner element, the burners can be "turned down" or "turned up" but the position of the control which effects the opening and closing or seating and unseating of the valve structure. The side burners are shown as comprising open loops as I believe this to be the most efficient form of side burner, but I do not wish to be limited to the exact arrangement shown.

I claim:—

1. A burner comprising a manifold, a goose neck at one end of the manifold to provide a mixing chamber, elongated ported elements for the passage of air into the mixing chamber, a vaporizing tube communicating with the mixing chamber, horizontal burners above the manifold, one of said burners lying on either side of the mixing chamber, another of said burners having ports lying on both sides of the generating tube, jets on the manifold in line with and below the generating tube, horizontally disposed conduits communicating with the manifold, and vertically disposed side burners communicating with the conduits, the side burners having discharge openings in their outer faces, and means for valving the burners.

2. A burner comprising a manifold, a goose neck at one end of the manifold to provide a mixing chamber, elongated ported elements for the passage of air into the mixing chamber, a vaporizing tube communicating with the mixing chamber, horizontal burners above the manifold, one of said burners lying on either side of the mixing chamber, another of said burners having ports lying on both sides of the generating tube, jets on the manifold in line with and below the generating tube, horizontally disposed conduits communicating with the manifold, and vertically disposed side burners communicating with the conduits, the side burners having discharge openings in their outer faces, and separate valve means for each of the burners.

3. An oil burner comprising a lower longitudinally disposed manifold, an upper longitudinally disposed mixing tube communicating with the manifold, a vapor generator discharging into the mixing tube, a plurality of top horizontal burner elements arranged in spaced relation with and connected to the manifold, side burners consisting of tubular loops disposed in substantially vertical planes at opposite sides of the oil burner and having upper and lower burner portions, burner conduits extending laterally from the manifold and connected with the side burner between the upper and lower burner portions thereof and communicating with each of the same, and valves for controlling the top and side burners.

In testimony whereof I affix my signature.

WILLIAM C. COLEMAN.