Dec. 16, 1941. A. KANTER ET AL 2,266,046

HYDROCARBON BURNER

Filed April 30, 1938

Fig. 1.

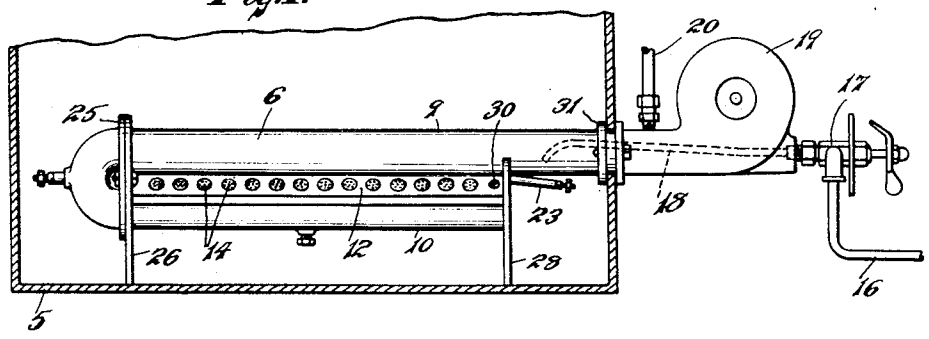


Fig. 2.

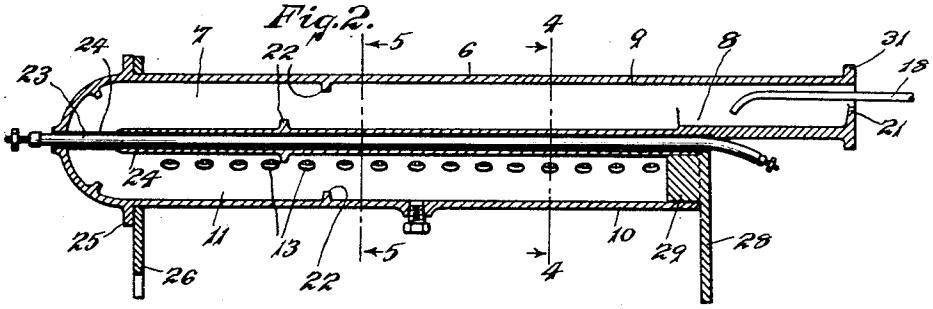


Fig. 3.

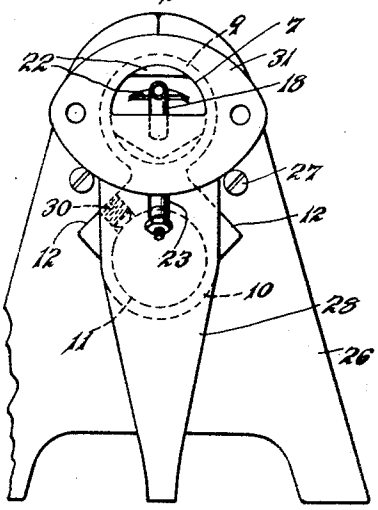


Fig. 4.

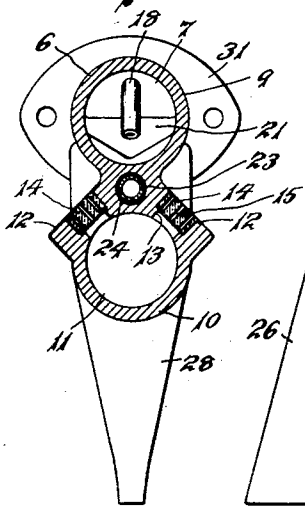
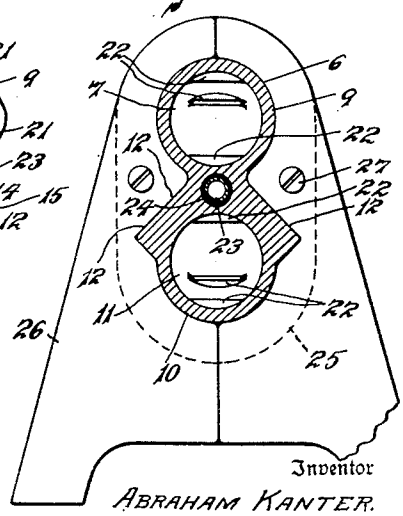


Fig. 5.



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2,266,046

HYDROCARBON BURNER

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Application April 30, 1938, Serial No. 205,265

2 Claims. (Cl. 158—63)

This invention relates to hydrocarbon burners and particularly to that type of such burners having means for vaporizing the fuel by the combustion thereof on said burner.

An object of this invention is to provide a burner for hydrocarbon fuel which is highly efficient in its operation from the standpoint of fuel consumption, lack of carbonization and attention required.

Another object of this invention is to provide a burner which is extremely simple and therefore economical to construct and a further object is to provide such a burner having novel advantages for increasing the efficiency thereof as well as simplifying its construction.

Further objects and advantages of our invention will be clearly understood from the following description and from the accompanying drawing in which:

Figure 1 is a view in side elevation of our improved burner showing the same installed within a heater partially shown in section.

Figure 2 is a side view showing our improved burner in central vertical section with portions thereof removed therefrom.

Figure 3 is a front end view in elevation.

Figure 4 is a view in vertical section on line 4—4 in Figure 2.

Figure 5 is a similar view on line 5—5 in Figure 2.

As illustrated in the drawing, the numeral 5 denotes the bottom portion of a heater of a type which is adapted to receive our improved burner. The numeral 6 denotes the burner proper which consists of a tubular body formed in the shape of a retort comprising an upper vaporizing chamber portion 7, having a fuel receiving portion 8 contained within an upper tube 9. A lower tube portion 10 forms a vapor distributing chamber 11 having oppositely slanting walls 12 with openings 13 therein in which disks 14 are mounted with jet openings 15 for the passage of fuel vapors from the said distributing chamber.

Fuel is supplied to said burner through a fuel supply pipe 16 communicating, through a fuel control valve 17, with a nozzle 18 which delivers the said fuel directly into the fuel receiving portion 8 of the vaporizing chamber 7.

In order to provide a positive draft for moving the vapors from the fuel through the said burner and out of the jets, a blower 19 of a conventional type is provided. The said blower has a jet pipe 18 extending therethrough and connected to a gas supply pipe 20 for a purpose to be hereinafter described.

As shown in the drawing, it will be noted that a dam wall 21 is provided at the entrance to the vaporizing chamber 7.

Baffle ribs 22 are provided on the walls of the vaporizing and distributing chamber.

An electric pre-heating element 23 is mounted within a tube 24 which extends lengthwise of said burner in the relatively thick wall separating the said vaporizing chamber from the distributing chamber. This heating element may be of any suitable conventional type and removable mounted within the said tube 24.

In order to support the said burner, a flange 25 is provided and supporting foot sections 26 are secured thereto, at the opposite sides of the burner body, by means of screws 27.

A foot 28 is attached to the burner, near the opposite end thereof by means of a plug extension 29 which fits in the end of the lower tube portion 10 and is retained therein by means of a set screw 30.

The said burner may be connected as desired to the heater 5 by means of the flange 31 at the front of the tube forming the vaporizing chamber.

The operation of our improved oil burner is as follows:

When it is desired to ignite the burner, it is first pre-heated by energizing the heating element 23 through an electrical connection therewith, not shown, for a short period of time. After the burner has been pre-heated by said element, the same is de-energized and the valve 17 is opened, permitting fuel to enter the jet pipe 18 and the fuel receiving portion 8 of the chamber 7. The blower 19 is started in operation at the same time that the fuel valve 17 is opened. Upon striking the heated surface of the burner, in the fuel receiving portion 8, the said fuel will become vaporized and be forced, by the air current created by the blower, through the said vaporizing chamber 7, into the distributing chamber 11 and out through the jets 15 therefrom into the atmosphere of the heating chamber in the heater 5 where the vapors from said fuel are burned at the said jets 15. The said jets project the products of combustion outwardly, in a relatively diverging direction from the slanting walls 12, to heat the said heater 5 and at the same time heat the tube 9 which is disposed above the said jets in a position to receive heat from the combustion which takes place at said jets.

It will be noted that the said burner tubes are cast in one piece and cross-sectionally in the shape of a figure 8 having the jets on the lower

portion so that combustion thereon will heat the upper portion.

In the passage of the vapors through the burner as they are being moved therethrough by the air currents, it has been found highly advantageous to provide the baffle ribs 22 so as to distribute the flow of said vapors and thereby more thoroughly mix the fuel molecules with the air that is being driven through the said burner.

It has been found by numerous tests that the said baffle ribs are extremely important; as they cause the vapors passing through the jets 15 to burn thereon in a constantly even flame. Where the said baffle ribs have not been used, the flames on the jets would fluctuate to a considerable extent, on account of uneven mixture of fuel and air, and in many cases the flames would become extinguished either from too much fuel or too much air in the mixture.

Furthermore, our improved burner can be installed even by an unskilled person and still give very satisfactory results since the baffles have made accurate adjustment of the burner unimportant.

In cases where the electric pre-heating element is provided, it is not necessary to have the pipe 20 for connecting a supply of gas to said burner. The said supply is intended solely for use when it is desired to pre-heat the said burner by means of fuel gas instead of by electric energy. When fuel gas is used for pre-heating the burner, the supply of gas is turned on through the pipe 20 at the same time that the blower 19 is started. This forces the gas directly through the burner and out through the jets where it is ignited. The combustion therefrom will pre-heat the burner to a point where the said gas may be shut off and the supply of hydrocarbon fuel can be started through the valve 17.

While we have described and illustrated one embodiment of our invention, it is to be understood that the novel elements disclosed may be used in other types of burners without departing from the scope of the appended claims.

We claim:

1. A burner comprising a unitary body having a horizontally disposed vaporizing chamber, means for supplying fuel to said vaporizing chamber, a vapor chamber underlying said vaporizing chamber and parallel therewith, rows of jets separated by said body and in opposite sides thereof on a plane below said vaporizing chamber and communicating with said vapor chamber to direct flames from said jets for heating said vaporizing chamber along the length thereof; the said body having an elongated opening extending therethrough between the said vaporizing and vapor chambers, a tube in said opening and electric heating means removably disposed within said tube and projecting from the ends of said body.

2. A fuel burner of the character described comprising an elongated body made from a single casting and including a vaporizing chamber in the upper portion of said body, a vapor chamber underneath said vaporizing chamber and communicating therewith at one end of the said body, the said body having flat sloping surfaces in the sides thereof and below the said vaporizing chamber and said surfaces having burner jets therein communicating with the said vapor chamber, electric heating means in said body between said chambers, means for supplying fuel into said vaporizing chamber, a flange integral with said body and means secured to said flange for supporting said body.

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