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PORTABLE HYDROCARBON BURNER

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Fig. 1

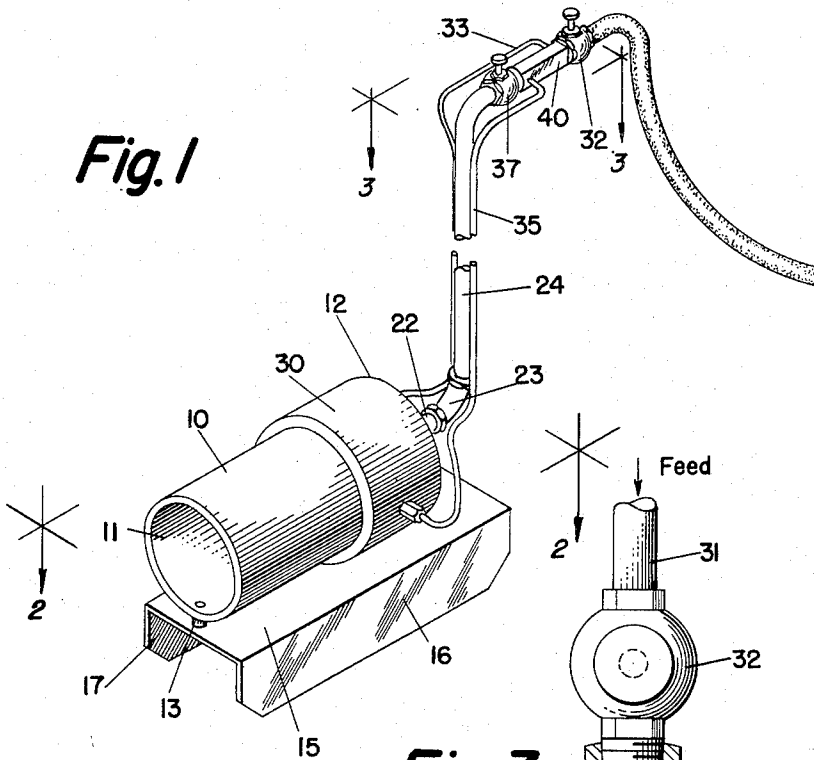


Fig. 2

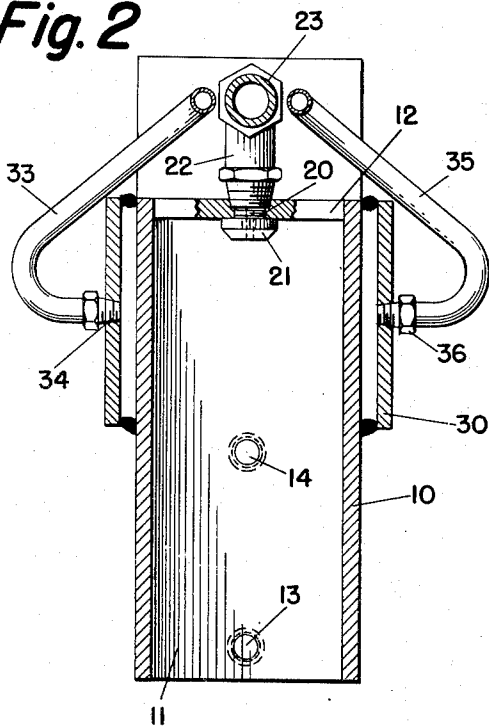
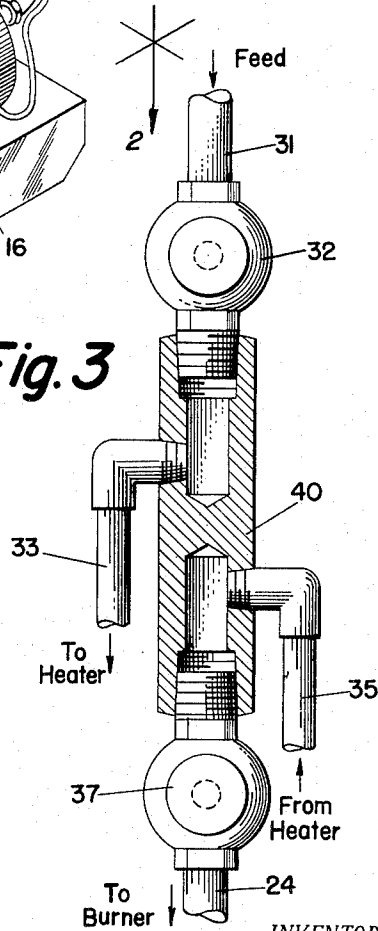


Fig. 3



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PORTABLE HYDROCARBON BURNER

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1 Claim. (Cl. 126—271.2)

The present invention relates to hydrocarbon burners and more particularly to improvements in a burner unit for burning liquid hydrocarbons, such as propane, butane and the like.

Burners for burning liquid hydrocarbons such as propane or butane are well known. Liquid hydrocarbon burners for use in heating melting kettles or the like are also well known. Such melting kettle burners are generally mounted in operative position within the melting kettle structure. On the other hand, prior to this invention, liquid hydrocarbon burners that are especially designed to burn propane or butane have not been readily adapted for use in a melting kettle due to difficulties in lighting and controlling the burner. Furthermore, vaporization of the highly compressed butane or propane gases frequently forms ice at the nozzle which sometimes plugs the same to prevent escape of the fuel.

It is an object of this invention to provide portable liquid hydrocarbon fuel burner unit especially adapted to burn liquid propane or the like and that may be readily lowered into operative position in a melting kettle, thereafter be easily controlled, and which is not plugged by ice formation.

A feature of the invention is the provision of an improved fuel burner unit mounted on a platform support and having means associated therewith for preheating the liquid fuel together with fuel feeding means and associated control valves extending from the burner in a handle form with the valves at the upper end of the handle whereby the entire burner unit may be readily raised or lowered and controlled in a melting kettle or the like.

Further objects, features and the attending advantages of the invention will be apparent with reference to the following specification and drawing in which:

Fig. 1 is a perspective elevational view of the burner unit of the invention;

Fig. 2 is a section on the line 2—2 of Fig. 1; and

Fig. 3 is a section on the line 3—3 of Fig. 1.

Referring to the drawings, it should be understood that the burner unit of the invention is especially adapted for use in melting kettles although a melting kettle is not shown since its structure is well known. It may be pointed out, however, that the burner unit of this invention is especially adapted to be raised or lowered within the melting kettle enclosure.

The burner unit of the invention is comprised of an open ended cylindrical combustion chamber 10 having open end 11 and transversely extending bar 12 extending across the opposite end. The combustion chamber 10 is secured in any suitable manner such as by bolts 13, 14, to the upper side of a flat table-like supporting base surface 15 with the axis of the combustion chamber generally parallel to the plane of the base surface 15. The table base 15 is provided with depending leg portions 16 and 17 which are arranged to support the burner unit with the plane of the table surface 15 and the axis of the cylindrical combustion chamber 10 generally parallel to the surface upon which the burner unit may be resting.

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A burner nozzle 20 which may be of conventional design is secured to a member or bar 12, the latter being rigidly secured across one end of the open ended cylindrical combustion chamber 10 by means of welding or the like. As shown in Figure 2 of the drawings, an aperture is formed through the member 12 so that the nozzle 20 may be inserted therethrough. The nozzle end 21 extends within the combustion chamber generally along the axis thereof while the inlet end 22 of the nozzle extends outwardly of the combustion chamber end and is rigidly connected by a pipe elbow 23 to the rigid fuel feed pipe 24. Air has access to the combustion chamber through the open spaces above and below the transversely extending member 12. As shown, the nozzle 20 is rigidly secured to the transverse member 12 by means of the nozzle end 21 and rigid inlet end 22. It will be noted that the arrangement of the pipe elbow 23 and rigid fuel feed pipe 24 is such that the feed pipe extends upward generally at right angles to the axis of the combustion chamber 10 and therefore may be used as a handle when lowering, raising or otherwise moving the burner unit. Also, the feed pipe 24 should be of such length that it will extend upwards out of a melting kettle when the burner unit is in operative position therein.

In order to burn liquid hydrocarbons such as propane or butane the annular fuel heating chamber 30 is positioned around the burner end of the cylindrical combustion chamber 10. Liquid fuel from the flexible feed line 31 is passed through a control valve 32 into an inlet pipe 33 of the fuel feed piping. The inlet pipe 33 extends along the rigid feed pipe 24 and is connected at its lower end 34 to the fuel heater 30. A fuel outlet pipe 35 is also connected at its lower end 36 to the fuel heater 30 at a point spaced from the connection of the fuel inlet pipe at 34. The fuel outlet pipe 35 also extends along the rigid fuel feed pipe 24 and connects at its upper end with the rigid fuel feed pipe 24 by means of the control valve 37.

As shown by Fig. 3 of the drawing, the fuel to be heated passes from line 31 through the control valve 32 into the inlet pipe 33 to the heater 30 and thence into the outlet pipe 35 and through the control valve 37 into the rigid fuel feed pipe 24 to the burner nozzle 20. The arrangement is such that both valves 32 and 37 are located at the upper end of the rigid fuel pipe 24 which is formed at the upper end so that the valves 32, 37 and the threaded connector body member 40 extend generally parallel to the axis of the combustion chamber 10. Thus according to the invention, the rigid fuel pipe 24 forms a convenient handle for moving the burner after ignition. Also, the described location of the valves 32 and 37 enables the burner to be easily controlled in any position such as when the burner unit is in operative position within a melting pot. Another advantage is that the fuel is vaporized, at least in part, in heater 30 so that ice formation is not observed.

When a liquid petroleum gas is utilized as the hydrocarbon fuel, the ignition of the burner is accomplished by opening valve 32 to admit fuel to the annular fuel heater 30 and valve 37 is opened to feed the fuel into the rigid feed pipe 24 and nozzle 20, after which the fuel may be ignited by any suitable means. The efficiency of the burner is greatly increased after the temperature in the annular fuel heater 30 has been raised to in turn heat the fuel passing therethrough. After the burner is ignited, it may be readily lowered into a melting pot or otherwise moved to an operating position by means of the handle formed by the rigid fuel pipe 24 and the rigid parts connected thereto.

Various modifications may be made within the spirit of the invention and the scope of the appended claim.

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What is claimed is:

A liquid hydrocarbon fuel burner unit comprising in combination, a supporting base having a flat table surface and depending leg portions, an open-ended cylindrical combustion chamber secured to the upper side of said table surface with its axis generally parallel to the plane of said surface, said chamber having a member secured across one end thereof, a burner nozzle secured to said member and having a nozzle end extending within said chamber and a feed end extending without said chamber, a rigid fuel feed pipe extending from the free end of said nozzle upwardly at generally right angles to the axis of said chamber and the plane of said table surface, the upper end of said feed pipe being bent to extend generally parallel to the axis of said chamber, an elongated connector member, said connector member having first and second conduits extending from each end thereof inwardly and terminating short of each other to leave a solid portion of the connector member between said conduits, the first of said conduits being connected to the end of said fuel pipe so that said connector member is a continuation of said fuel pipe to provide a handle extending generally parallel to the axis of said combustion chamber, an annular liquid fuel heating chamber surrounding said combustion chamber adjacent said nozzle, liquid fuel feed piping extending along said rigid fuel feed

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pipe including an inlet pipe and an outlet pipe connected at their lower ends to spaced points of said heating chamber, means connecting the second of said conduits in said connector member to a source of fuel supply, the upper end of said inlet pipe being connected to the second of said conduits in said connector member and the upper end of said outlet pipe being connected to the first conduit in said connector member, a valve positioned closely adjacent said connector member for controlling the fuel supply to said annular heating chamber and a second valve positioned closely adjacent said connector member for controlling the amount of heated fuel from said annular heating chamber to said combustion chamber.

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