United States Patent

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[54] GAS AND LIQUID FUEL BURNER
2 Claims, 3 Drawing Figs.

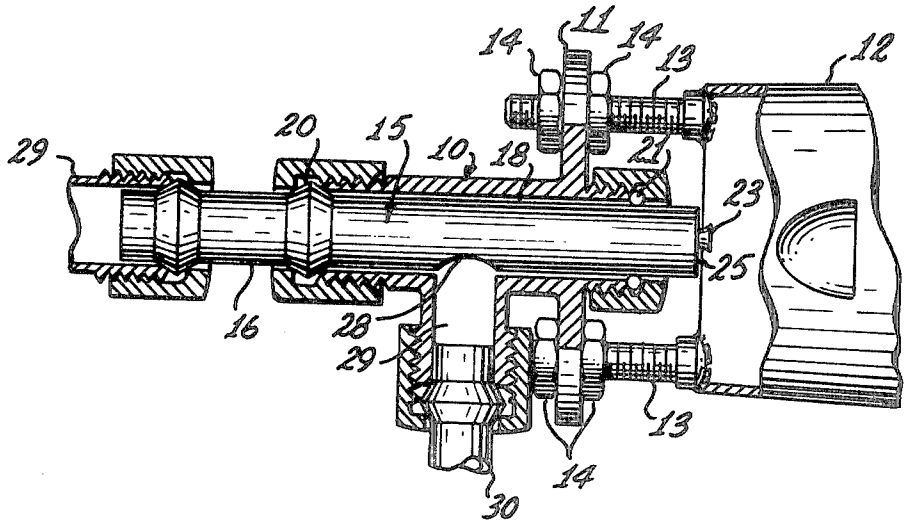
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[50] Field of Search 431/351-354; 239/419.5, 424

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ABSTRACT: A nozzle for a fuel burner utilizing air asperation to draw the fuel from the nozzle tip and mix with the fuel in a highly efficient manner while providing a simple construction utilizing conventional pipe fittings to construct the device.



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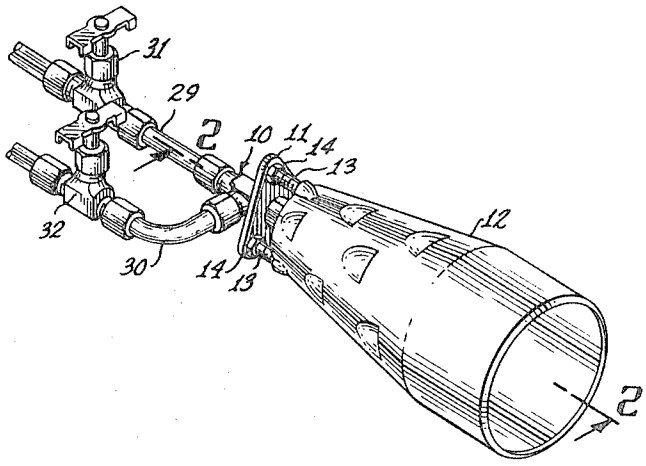


Fig-1

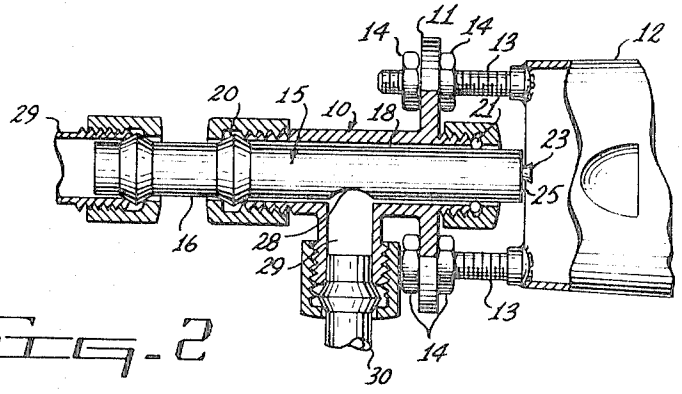


Fig-2

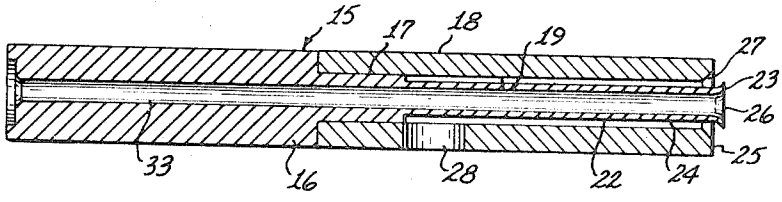


Fig-3

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GAS AND LIQUID FUEL BURNER

BACKGROUND OF THE INVENTION

This invention is directed to fuel burner nozzles, and is particularly directed to and improved nozzle in which the air aspiration is brought in at right angles to the fuel discharge jet passageway of the nozzle.

Heretofore, air aspirated nozzles of the above-cited type was applied at an angle directed in the direction of discharge of the fuel jet outlet to cause the nozzle to provide the necessary atomization and mixing of the fuel and air. This required costly and difficult to make jet elements for the nozzles. These elements of the burner were special in nature and could not be made from standard pipe fittings. Also, in former devices it was difficult to vary or change the jet inserts for different types of fuels and character of flame performance desired.

SUMMARY OF THE INVENTION

One of the objects of this invention is to provide a simple jet structure for a fuel burner that is easy to assemble and change for different fuels.

Still another object is to provide a burner jet arrangement in which the aspirating air come in at right angles to the jet axis and surrounds the jet while aspirating the fuel as the air leaves the end of the jet element.

It is also an object to provide a straight cylindrical jet which may readily be mounted in standard pipe fittings to form the burner assembly.

Another object is to provide a straight elongated jet tube surrounded by the aspirating air chamber in which the outer discharge end of the jet is flared into bell shape outwardly of the discharge opening of the aspirated air passageway.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a general perspective view of a gas burner incorporating the features of this invention.

FIG. 2 is an enlarged fragmentary sectional view of the burner on the line 2–2 of FIG. 1.

FIG. 3 is an enlarged sectional view of the jet element of the nozzle structure of the burner.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As an example of one embodiment of this invention, there is shown a gas and liquid fuel burner having a main support element **10** which may take the form of a conventional pipe T having an integral flange **11** to which is secured the burner flame shroud **12** by suitable studs **13** and nuts **14**.

The nozzle element **15** comprises a cylindrical shank portion **16** having a reduced front end diameter **17** upon which is securely fitted the air supply sleeve **18** having an air supply

passageway bore **19**. The members **16—18** are appropriately secured by suitable seals **20** and **21** in the T-fitting **10** as best seen in FIG. 2.

The reduced diameter portion **17** has a jet extension tube **22** terminating in a flared bell-shaped flange **23** at its outer end. The air passageway **24** formed by the bore **19** surrounding the jet extension tube **22** terminates in the radially outwardly extending surface **25** set back rearwardly from the outer face **26** of the flange lip **23**. A beveled edge surface **27** is formed at the outer end of the bore **19**.

Rearwardly of the sleeve **18** and adjacent the end of the shank **16** is laterally disposed air inlet port **28** formed in the sleeve **18**. This port **28** is aligned with lateral air passageway **29** of the pipe T **10**. Gas or liquid fuel is supplied from pipe **29** while compressed air is provided by pipe **30**, each controlled by suitable valves **31** and **32** respectively. As the fuel proceeds through the fuel jet passageway **33** and out the end **26**, air flowing out over the beveled edge **27** and across the flange lip **23** aspirates the fuel laterally to cause it to combine with the air as ignition takes place.

I claim:

1. A fuel burner comprising:
   A. a main support element having the form of a pipe T;
   B. a burner flame shroud mounted on the main support;
   C. a nozzle element in the main support element characterized by:
   D. a cylindrical shank portion including a fuel jet passageway having:
   E. a reduced front end;
   F. an air supply sleeve having an air supply passageway bore securely fitted to the reduced front end of the cylindrical shank;
   G. a jet extension tube formed on the outer end of the reduced front end of the shank;
   H. a flared bell-shaped flange having a lip formed on the outer end of the jet extension tube;
   I. the air supply passageway bore of the sleeve surrounds the jet extension tube and terminates in a radially outwardly extending surface set back rearwardly from the outer face of the bell-shaped flange lip;
   J. a beveled edge surface on the outer end of the air supply passageway bore of the sleeve;
   K. a laterally disposed air inlet port formed in and rearwardly of the air supply sleeve and adjacent the end of the shank;
   L. a fuel supply connected to the fuel jet passageway; and
   M. an air supply connected to the laterally disposed air inlet port.

2. In a burner as in claim 1 wherein the main support pipe T element serves as the fuel and air supply connections to the nozzle element.