Sept. 4, 1956 A. C. MUNN 2,761,497

PILOT BURNER

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Fig. 1

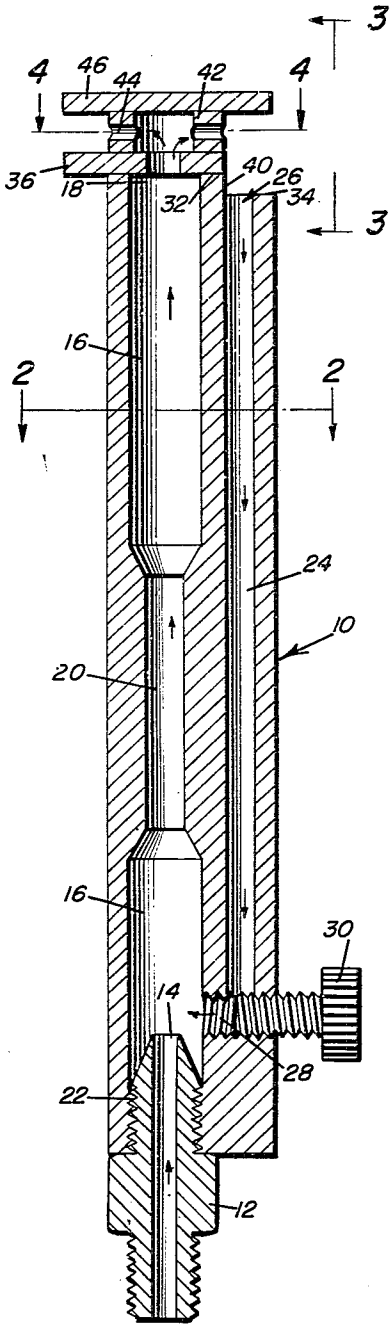


Fig. 2

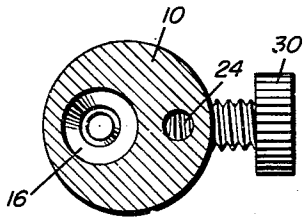
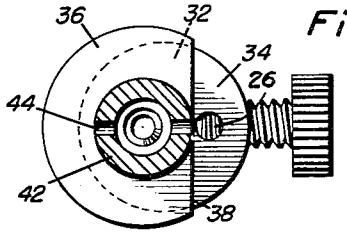


Fig. 4



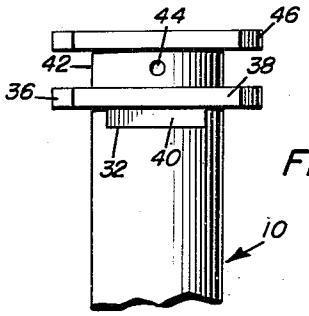


Fig. 3

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PILOT BURNER

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1 Claim. (Cl. 158—115)

The present invention relates to pilot burners and more particularly relates to a pilot burner having a novel burner tube construction to eliminate the clogging of the air inlet holes by foreign matter such as lint and the like.

A primary object of the invention is to provide a burner tube construction having an air inlet constructed in a manner to open in the path of the combustion flame at the mouth of the burner whereby the dust and lint in the air are ignited and decomposed to purify the air traveling through the air intake or inlet preventing clogging of the air inlet and assuring continual mixture of the primary air with the combustion fuel.

Another very important object of the invention is the provision of a pilot burner tube of the above described character that is equally adaptable for use with either manufactured or natural gasses as well as liquified petroleum and other similar fuels.

Yet another object of the invention, ancillary to the primary object is the provision of a pilot burner tube wherein the primary air is admitted through a longitudinal bore in the tube running parallel to the fuel and air mixture outlet bore of the tube, which primary air inlet bore opens remote from the burner orifice at the combustion zone of the mixture.

A still further object of the invention is to provide a primary air inlet into the burner tube which opens adjacent the combustion zone of the tube and wherein a baffle is provided at the combustion zone such that the flame always extends across the mouth of the air inlet.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the burner tube mounted on a burner nozzle in cross section to disclose the interior construction of the tube;

Figure 2 is a cross sectional view of the burner tube taken substantially along the plane of the section line 2—2 of Figure 1;

Figure 3 is a detail view of the upper end of the burner tube taken substantially in the plane of section line 3—3 of Figure 1;

Figure 4 is a cross sectional view of the deflecting means at the combustion zone of the burner tube taken substantially along the section line 4—4 of Figure 1.

Referring to the drawings in detail, the burner tube is designated in its entirety by the numeral 10. As will be noted, this tube is of the Bunsen type with certain fundamental distinctions which will become subsequently apparent.

The tube or body 10 is mounted on a fuel nozzle 12 having a burner orifice 14 opening into a fuel mixture outlet bore 16 having a mouth 18 opening into the upper end of the tube. The mixture outlet bore 16 is formed with a venturi restriction 20 in the central portion thereof

to increase the velocity flow of the gas mixture through the mixture outlet and stimulate the entrance of the primary air into the lower portion of the outlet bore to mix with the fuel.

As will be noted particularly from Figure 1, the mixture outlet bore 16 is longitudinally offset from the axis of the tube or shell 10 and is internally threaded where it opens into the lower end of the tube to facilitate the reception of the tube on the burner nozzle 12.

The tube 10 is further formed with an air inlet or intake bore 24 extending longitudinally within the tube parallel to the mixture outlet bore 16 and having a mouth 26 opening into the upper end of the tube, the lower end of the bore opening into a transverse bore or passage 28 through the side wall of the tube opening into the mixture outlet bore 16 adjacent the burner orifice 14.

A suitable thumb screw 30 is threaded into the transverse passage 28 and constitutes a valve for adjustably controlling the rate of flow of the primary air through the air inlet 24 to the mixture outlet 16.

The upper end of the tube 10 is in the form of a pair of vertically offset steps 32 and 34 with the mouth 18 of the mixture outlet 16 opening into the upper step 32 and the mouth 26 of the air inlet 24 opening into the lower step 34 so that these mouths are vertically stepped and closely adjacent to one another.

A first baffle plate 36 is mounted on the step 32 and has an orifice therethrough communicating with the outlet bore 16. As will be noted in Figure 4, the plate 36 has a flat edge 38 terminating in alignment with the vertical shoulder of the tube 10 between the steps 32 and 34. The remaining periphery of the plate 36 projects laterally outwardly around the tube 10.

A small hollow cylinder 42 is mounted on the plate 36 and communicates with the mixture outlet bore 16. Ignition ports 44 are formed transversely through the side walls of the cylinder and as the fuel and air mixture leaves these ports, ignition takes place. A baffle plate 46 closes the upper end of the cylinder 42. The peripheral portion of the baffle plate 46 projects laterally beyond the side wall of the cylinder 42 and vertically spacedly overlies the mouth 26 of the air inlet bore 24. Thus, as the fuel and air mixture is ignited at the ignition ports 44, the resultant flame is directed laterally outwardly from the tube 10 by the ports 44 and is baffled to always overlie or extend across the mouth 26 of the air inlet bore 24 to decompose any foreign materials which would tend to clog the air inlet prior to the entrance of the air into the mouth 26 of the air inlet. With this arrangement, clogging of the primary air inlet or inlets is eliminated.

In the past, with the Bunsen type burner tubes wherein the primary air entered through side wall openings in the tube, the air holes had a tendency to close completely off by clogging or gumming through the action of dust and lint. When such clogging occurs, the pilot light burns with a yellow flame and eventually goes out altogether when the clogging is complete. However, when the pilot light is connected to a magnetic valve to control the gas supply to an appliance or the like, the yellow flame ordinarily does not produce enough heat for the thermocouple to produce any voltage and the magnetic valve cuts off the gas supply to the appliance. This failure results in about 80 per cent of the service calls necessitated because of a failing pilot light. Further, during the yellow flame period, excessive carbon is produced which frequently necessitates cleaning of the appliance after the pilot light burner is restored to its proper operating condition. The present invention eliminates this essentially troublesome failure of pilot light burners in an inexpensive and practical manner.

From the foregoing description, the construction and

operation of the invention are believed to be readily apparent. Howevr, since numerous modifications and changes will readily occur to those skilled in the art after a careful consideration of the foregoing specification taken in conjunction with the accompanying drawing, it is not desired to limit the invention to the exact construction shown and described, but all suitable modifications may be resorted to which fall within the scope of the appended claim.

What is claimed as new is as follows:

A pilot burner comprising a vertical tubular body having upper and lower ends, a longitudinal through mixture outlet bore therein offset to one side of its axis and a longitudinal primary air inlet bore therein offset to the opposite side of its axis, said air inlet bore having an inlet mouth at the upper end of the body and a blind lower end spaced from the lower end of said body, said body having a transverse bore therein communicating the blind end of said inlet bore with said outlet bore, a fuel nozzle extended into said outlet bore from the lower end of said body to said transverse bore for velocity discharge past said transverse bore to draw primary air from said inlet bore into said outlet bore, a first transverse baffle plate on the upper end of said body with a mixture escape aperture aligned with said outlet bore and relatively

smaller than said bore, an for intimately mixing the mixture, a hollow cylinder seated on said first baffle plate concentric to said mixture bore and forming an extension thereof above said plate offset to one side of said mouth to clear the same, a pair of diametrically opposite burner ports in said cylinder one of which opens at one side and radially of said mouth close to the same to direct flame over said mouth for burning lint and dust at said mouth, and a second transverse baffle plate surmounting said cylinder and closing the same above said ports, said first baffle plate being offset to one side of said mouth to clear the same, said baffle plates extending laterally under and over the other of said ports to baffle flame laterally thereof and said second baffle plate extending over said one port and mouth to deflect flame laterally over said mouth.

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