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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

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This invention relates to improvements in gas pilot burners, and more particularly to a pilot burner for providing an elongated, narrow sheet of flame for heating a bulb of a thermally responsive safety device in gas ovens, heaters, and the like, throughout a substantial portion thereof.

It is an object of this invention to provide a gas burner comprising a normally horizontally disposed tubular member having an elongated opening or slot in the side wall thereof, from which combustible gas may flow to produce an elongated sheet of flame of uniform height throughout its length.

Another object of this invention is the provision of an improved gas pilot burner of the above mentioned character comprising a body member having an inlet opening and a gas passage leading into the tubular member, the inlet passage being preferably threaded to receive a connector in the form of a nipple having an orifice member therein to restrict the flow of gas under pressure into the tubular member, and the burner including a turbulence effecting means disposed between the orifice and the elongated opening of the tubular member to prevent the gas emanating from the orifice being carried by its own inertia to the far end of the tubular member before passing through the elongated slot or opening to be burned, the turbulence effecting member thereby assuring a flame of uniform height throughout its length.

Other objects and advantages of the invention will become apparent from the following detailed description of a preferred form of pilot burner embodying the invention, the description being taken in conjunction with the accompanying sheet of drawings forming a part of this specification, and in which:

FIG. 1 is a side elevation of a pilot burner embodying the present invention;

FIG. 2 is a plan view of the pilot burner of FIG. 1;

FIG. 3 is a longitudinal sectional view of the pilot burner taken substantially along line 3-3 of FIG. 2;

FIG. 4 is a top view, and FIG. 5 is a sectional view taken from a central portion of the pilot burner illustrating another embodiment of the invention;

FIG. 6 is an enlarged perspective view of a turbulence effecting element.

In the form of the invention illustrated in FIGS. 1, 2, and 3 of the drawings there is provided a pilot burner assembly, generally indicated at 10, which is shown in FIG. 1 in association with a gas supply pipe 11 and arranged to provide a sheet form of flame \( F \) impinging on a temperature sensing bulb \( 12 \) of a thermally responsive safety device (not shown), or the like. The pilot burner assembly 10 comprises a body member 14 having an internally threaded inlet opening 15 leading to a central passage 16. A neck portion 17 surrounding passage 16 extends from body 14 and is counterbored at 16a to receive and hold a horizontally extending burner tube 20 which is axially aligned with the passage 16. The opposite end of burner tube 20 is crimped closed as at 21, and an elongated gas outlet opening or slot 22 is formed in the wall of the tube and extends parallel to the long axis thereof.

A nipple 24 has a threaded portion 25 threadedly received in the threaded inlet opening 15 of body 14 and is provided with a central passage 26 in alignment with passage 16. Nipple 24 has another threaded portion 27 which serves to connect the burner assembly to the interiorly threaded end of a supply pipe 11 which leads to a suitable source of combustible gas under pressure. Nipple 24 and burner body 14 are conveniently provided with flats 24a and 14a respectively to facilitate turning by wrenches or other suitable tools.

A disc-like restrictor member 30 having a small central orifice 31 defined therein, is pressed into passage 26 and serves to restrict the flow of combustible gas into the open end of burner tube 20. In order to prevent the gas, which passes through orifice 31 in the form of a narrow jet of relatively high velocity, from being carried by its own inertia to the far end of burner tube 20 where it would pile up and cause a flame of non-uniform height to be produced as shown in dotted lines in FIG. 1, the burner assembly of this invention includes a turbulence effecting element 33 between orifice 31 and outlet slot 22.

Turbulence effecting element 33 is, in the present example, in the form of a corrugated wire pressed into passage 16 and the open end of tube 20. One end 33a of element 33 extends into inlet opening 15 of body 14 where it is clamped or retained between body 14 and the inner end of threaded portion 25 of nipple 24. Element 33 is preferably formed to require pressing into position so that it is centered in passage 16 in alignment with orifice 31 so that gas passing under pressure through the orifice impinges directly against the element 33 which is given a turbulent motion as it passes therefrom. The size of element 33 is such that it causes only a minor reduction in effective cross-sectional area of passage 16 and tube 20. Because of the turbulizing effect of element 33 on the gas as it enters tube 20, piling up of the gas adjacent the closed end of the tube is avoided and the gas passes relatively evenly out slot 22 to produce an elongated flame having a regular and uniform height throughout the length thereof.

Referring to FIGS. 4, 5, and 6, there is illustrated therein a modified pilot burner 40 in which parts corresponding to parts of the embodiment of FIGS. 1, 2, 3, 4, and 5 for corresponding reference numerals applied thereto. In burner 40 a turbulence effecting element 41 replaces the wire element 33. Element 41 comprises a thin strip of sheet metal which is bent to form a single corrugation 41a, an offset end portion 41b, and a straight end 41c. End 41c is inserted in passage 16 and tube 20 while end 41b is disposed in the path of gas flowing through orifice 31. Turbulence effecting element 41 is held in place by abutment of the corrugation 41a against the surface surrounding passage 16 and the end 41b retained by nipple 24. The width of end 41c is sufficient to prevent any possibility of the element being displaced so as to move end 41b out of the path of the gas jet from orifice 31.

From the foregoing detailed description of pilot burners embodying the present invention, it will be appreciated that there has been provided by each embodiment an improved burner capable of producing a shaped flame which is uniform in height throughout its length, and it will be appreciated that this has been achieved by the provision of a novel turbulence effecting member between the orifice and the outlet opening of the burner tube.

Although the present invention has been described in considerable detail and with reference to a specific pilot burner assembly embodying the invention, it is understood that the invention is not limited thereby, but rather the invention includes all those modifications, adaptations, and uses as are reasonably embraced by the scope of the claims hereof.

Having thus described my invention, I claim:

In a pilot gas burner or the like a relatively small diameter and lengthy tubular member closed at one end and open at the other end and having a relatively narrow
burner opening slot extending along one side longitudinally of said member and terminating substantially short of said open end, a fuel supply conduit element attached to said member at the open end portion thereof and having a fuel passageway wall tapering toward said open end of said member, a corrugated wire having one end portion lying against said tapering passageway wall and having the corrugated portion thereof extending transversely of said tubular member and intermediate said open end and the end of said burner opening slot toward said open end and engaging opposite inside walls of said tubular member, and means to secure said one end portion to said tapering passageway wall.

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