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SHIELD MEANS FOR PILOT BURNERS AND THERMOCOUPLE OF GASEOUS FUEL BURNERS

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FIG. 1

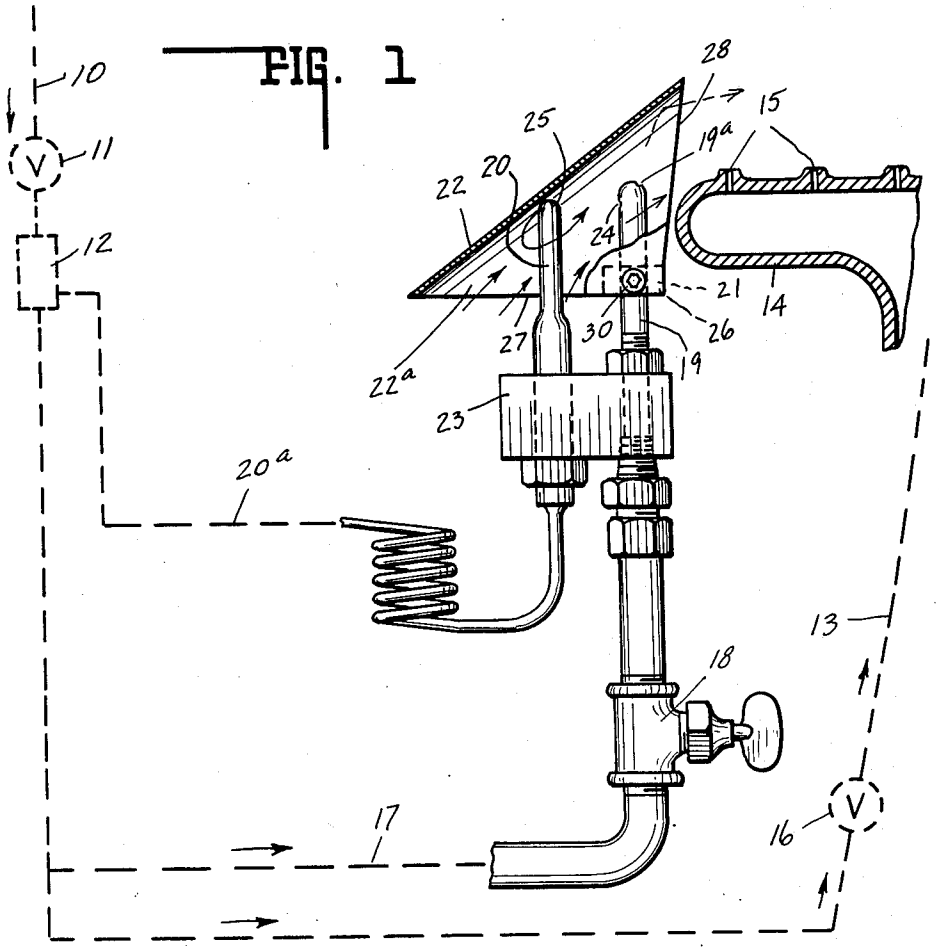
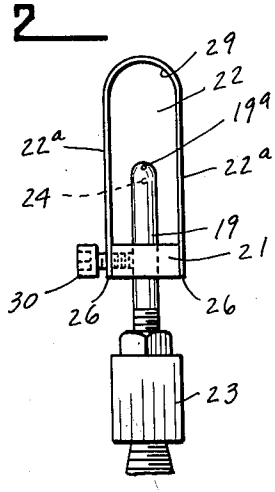


FIG. 2



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SHIELD MEANS FOR PILOT BURNERS AND THERMOCOUPLE OF GASEOUS FUEL BURNERS

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4 Claims. (Cl. 136—4)

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This invention relates to shield means for a pilot burner and thermocouple of gaseous fuel burners.

Such automatic control at this stage is usually a thermocouple disposed so as to be subject to heat from the pilot burner when lit and effective to hold open, through suitable control means, an automatic shut off valve upstream of the burner manual control valve or valves and upstream of the pilot burner supply or take off.

The present invention has for its chief object to so dispose such a pilot burner and thermocouple and the burner such that pilot burner blow out is prevented, carbonization of the same and thermocouple is prevented and upon a fall of gas main pressure the protective arrangement is equally effective so long as any gas is supplied to said pilot burner.

A second object of the present invention is to provide such a control which is effective within half the time permitted by the American Gas Association to wit forty-five seconds as compared to ninety seconds for control response effectiveness.

A third object of the present invention is to provide a pilot burner which requires but one quarter the present supply of gas utilized by present day pilot burner structures, and which produces a bluer pilot flame.

The chief feature of the present invention resides in the disposition initially set forth herein and the association with the pilot burner, thermocouple and burner of a shield which is triangular in elevation and U-shaped in section providing two openings substantially in quadrature.

Other objects and features of the invention will be set forth more fully hereinafter.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

In the drawing, Fig. 1 is an elevational view, partly diagrammatic, of a gas burner fuel supply, a pilot burner, a portion of a main burner and thermal control, the shield being shown in central section.

Fig. 2 is an end elevation of the pilot burner, thermal element and shield looking into the latter from the burner side.

In Fig. 1 of the drawings, 10 indicates a main gas supply line, 11 the master, manually operable cut off valve, 12 the automatic valve downstream thereof, 13 the main supply to the burner 14 having ports 15. In said supply 13 is the manual valve 16.

A branch line 17 downstream of valve 12 and

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upstream of valve 16 includes manual valve 18 controlling the gas supply to the pilot burner fixture 19. Disposed adjacent thereto and slightly spaced therefrom is the thermocouple 20 having operative connection 20a to the automatic valve 12 as shown, it being understood as long as the thermocouple is being heated and does not cool off said valve 12 will be disposed in open valve position. Through means conventional to the gas industry upon thermocouple cooling the said valve automatically closes and cuts off the gas supply to both burner or burners and the pilot burner. All the foregoing is broadly old in the gas industry and no claim per se is made thereto.

Suitably and adjustably mounted upon either the pilot burner 19 or the thermocouple 20, and herein the former, is a base 21. To this is secured, see Figs. 1 and 2, the shield 22. The shield and pilot burner are preferably but not necessarily of stainless steel. Herein 23 indicates a suitable mounting bracket for both pilot burner 19 and couple 20.

Herein pilot burner 19 has a port 19a directed upwardly and toward burner 14. It also has port 24 directed laterally and toward the tip 25 of the couple 20. The shield 22 includes two substantially triangular side walls 22a spaced apart by and secured to base 21 and at the vertex 26 of said shield. The lower edges 27 define a large, horizontally disposed opening. The substantially vertical edges 28 define a large vertically disposed opening. The upper edges of the two triangular sides 22a are connected by a curved portion 29.

The shield is adjusted vertically and clamped as by screw 30 so that the flame from port 24 is directed upon tip 25 of couple 20 and passes over same and thence downwardly toward opening 27. However, air entering this opening deflects the flame oppositely and upwardly and it follows the roof of the shield, which is disposed in slightly spaced relation to tip 25. Thus this tip is always free of carbon deposit and the couple activity is not diminished in use.

The flame issuing from port 19a is directed upwardly and merges with the looping flame aforesaid and passes out from the shield and over the burner to ignite gas issuing therefrom when the manual control valve is opened. The looping flame burns off any carbon on the pilot burner tip so that it also is substantially free from carbon deposit even after long use.

The structure herein disclosed is effective for control purposes even upon lowering of gas main pressure. Both flames are very blue. The intensity is about four times that of conventional

pilot burner flames even though but one fourth of the conventional pilot burner gas supply be utilized herein.

The shield is so disposed that it is normally out of the range of the main burner flames. This invention has been successfully utilized upon side arm heaters and also automatic heaters. It is to be further noted that upon undue main pressure reduction, the flame from port **24** fails to loop so that the returning flame does not heat the couple **20**. Thereupon the automatic valve becomes effective for cut-off. Also the shape and disposition of the shield is such that the flame from port **24** is protected and will not "pop out." Thus even if the flame from port **19***a* were blown out the gas therefrom would be immediately reignited from the looping portion of the flame from port **24**.

While the invention has been illustrated and described in great detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character.

The invention claimed is:

1. Shield means for the pilot burner and thermo couple of a gaseous fuel burner comprising an inverted substantially U-shaped shield having side walls and an arcuate hood portion bridging the upper ends of said walls, said shield including two openings disposed approximately transversely of each other and having free communication beneath the hood, means for supporting said hood above and about the thermo couple and the pilot burner, said hood being disposed in immediate proximity to the active end of the thermo couple, said pilot burner having a port opening towards said thermo couple, and a second port opening oppositely from said first port and upwardly towards said hood.

2. Structure as defined by claim 1 wherein the shield has substantially triangular sides with a U-shaped bridging portion at the hypotenuse edges of said sides.

3. Structure as defined by claim 2 wherein the vertices of said triangular sides are disposed at opposite sides of the pilot burner and operatively connected thereto below the ports thereof.

4. Structure as defined by claim 3 wherein means is provided for adjustably clamping said shield in adjusted position upon the pilot burner to dispose the U-shaped bridging portion in immediate proximity to the tip of the thermocouple.

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