June 29, 1948. E. H. MUELLER 2,444,142

LIGHTER FOR GAS BURNERS

Filed Aug. 9, 1945

FIG. 1.

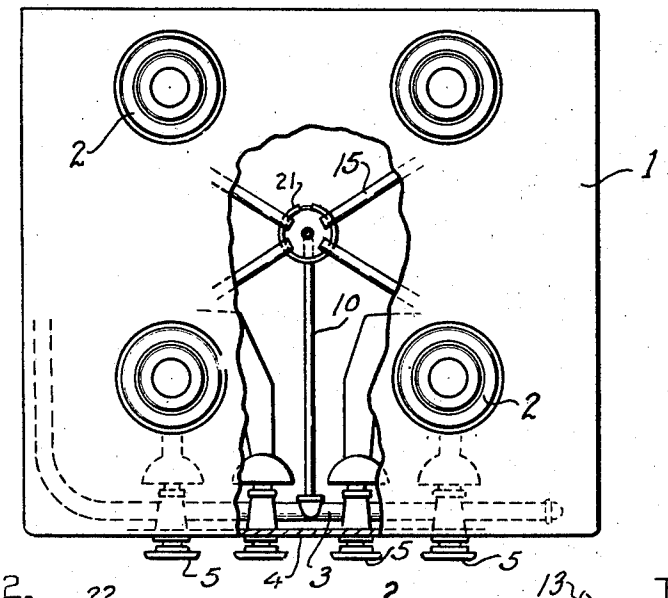


FIG. 2.

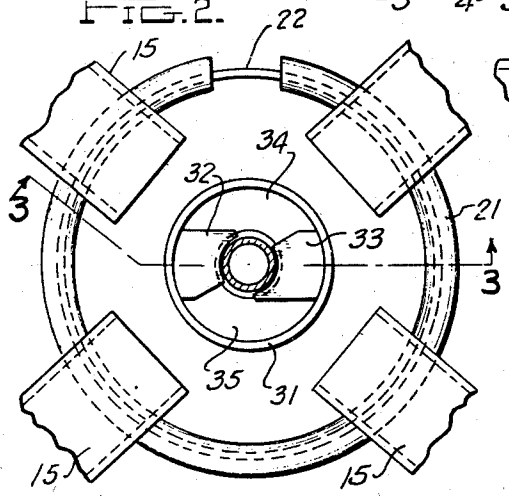


FIG. 3.

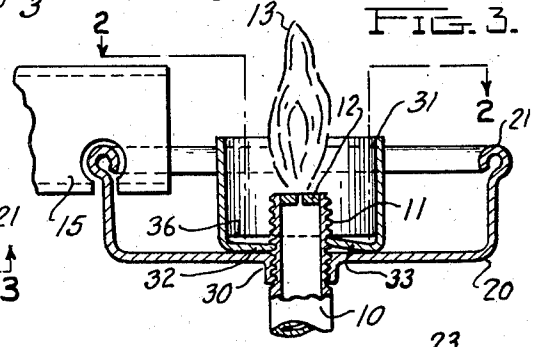


FIG. 4.

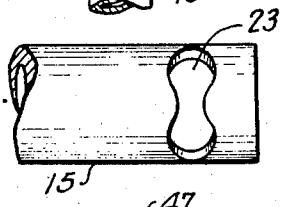


FIG. 5.

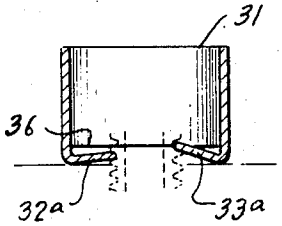


FIG. 6.

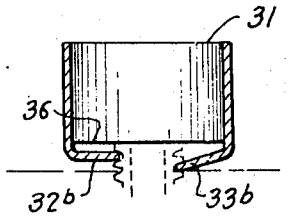
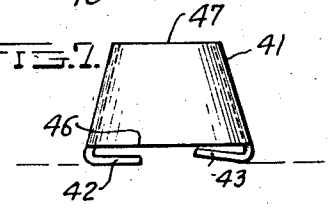


FIG. 7.



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LIGHTER FOR GAS BURNERS

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3 Claims. (Cl. 158—115)

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This invention relates to lighters for gas burners such as are used in a gas range or other gas burning appliances. It has to do particularly with a lighter of an automatic nature which employs a constantly burning pilot flame with a flash tube arranged for causing the ignition of each relatively remotely positioned burner.

Lighters of this type are generally known to those in the industry, and in a gas range, for example, the pilot flame is usually more or less centrally located with the several burners spaced around the same. A flash tube extends between the pilot flame and each burner so that when gas is supplied to a burner, some of the gas flows through the flash tube, is ignited by the pilot flame, and the resultant back flash ignites the burner.

The present invention is directed particularly to what is commonly termed the pilot house; that is the structure located at the pilot flame. The invention aims to provide an improved protector or shield for the pilot flame. The shield is in the form of a wall, which may be circular, and which surrounds the pilot flame and protects it from drafts and also protects it from the blast of the flash when a burner is ignited, so that the flame is not likely to be extinguished. In this connection the shield comprises a simplified structure which can be manufactured with facility and assembled with facility and which serves also as a holding or locking agency for the so-called pilot house which supports the ends of the flash tubes.

Structures showing the invention are disclosed in the accompanying drawing:

Fig. 1 is a plan view representing four burners of a gas range and illustrating the lighter structure.

Fig. 2 is an enlarged view taken substantially on line 2—2 of Fig. 3 showing some of the structure of the shield and also illustrating the pilot house structure.

Fig. 3 is a view taken substantially on line 3—3 of Fig. 2.

Fig. 4 is an elevational view of one end of one of the flash tubes.

Fig. 5 is a sectional view illustrating a modified arrangement of a pilot flame shield.

Fig. 6 is a sectional view similar to Fig. 5 showing another modified arrangement.

Fig. 7 is a sectional view similar to Figs. 5 and 6 showing a still further modified form.

In Fig. 1 a portion of a gas range is illustrated and while this is subject to large variation, the structure shown in Fig. 1, has a tube plate 1,

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provided with openings for each of the burners indicated at 2. A gas supply pipe or manifold is illustrated at 3 and the same may advantageously be disposed behind a panel 4 and the several burners are individually controlled by valves 5, the operating handles of which project through the panel 4.

A small pipe or conduit 10 connects into the supply pipe 3 and it extends to a relatively centralized position where its free end is turned upwardly and threaded at 11. A suitable jet piece 12 may be fitted into the open end of the tube and with this construction there is a constant flow of gas and a relatively permanent pilot flame 13 burns at the end of the tube 10; the gas therefor issuing through the orifice in the jet piece 12. As illustrated in Fig. 1, there is a flash tube 15 extending from a position in proximity to the flame 13 to each of the gas burners. This particular construction may be substantially as illustrated in my Patent No. 2,295,001, of September 8, 1942.

There is a so-called pilot house or supporting structure for carrying the inner ends of the flash tubes, and as shown in Fig. 3, this is in the form of a cup 20, the metal of which is fashioned to provide a bead 21. The bead is cut away or removed at least in one location as shown at 22, and each flash tube has adjacent its inner end a sort of figure 8 opening 23 as shown in Fig. 4. This opening has enlarged end portions at a restricted central portion as illustrated. A flash tube is applied to the supporting cup by passing the restricted portion of the opening into the notch 22 and then shifting the tube along the bead 21 so that the metal portions defining the restricted part of the notch engage under the bead. Thus, the flash tubes are individually adjustable circumferentially about the pilot flame which is at the center of the supporting cup but each is held securely against displacement or removal from the cup. This structure corresponds to that in my above mentioned patent.

The relative position of the open end of a flash tube and the pilot flame is as substantially illustrated in Fig. 3 and when gas is supplied to any one of the burners by the opening of its valve 5, some of the gas passes through the flash tube to the pilot flame where it is ignited, and there is a resultant flash back through the tube which ignites the gas issuing from the burner. There may be a considerable wave of gas or blast in the flash tube incident to the explosion, and this affects the flame 13 because it necessarily is in proximity to the inner open end of the flash tube.

Accordingly, a shield is provided for the pilot flame. While the idea of shielding a flame is elementary and no doubt has been practiced since the memory of man runneth not, the present invention provides a new and ingenious structure.

The pilot house or supporting cup **20** has a hub **30** which is threaded onto the end of the gas tube **10**. The shield preferably comprises a stamping and is of sheet metal having a circumscribing upstanding wall **31** which surrounds the gas tube. The bottom of the shield is cut away save for inwardly extending fingers or arms **32** and **33**. This leaves resultant openings **34** and **35** and preferably the lower edge of the wall **31** is elevated from the bottom of the cup as illustrated at **36** so that atmospheric air may enter the lower portion of the shield and pass upwardly to aid in the support of the flame **13**. Thus, there is a circumferential air entrance opening interrupted only by the two arms **32** and **33**. The arms **32** and **33** are preferably offset relative to each other substantially corresponding to the pitch of the thread **11** on the tube **10**, and the distance between the arms is such as to provide an interrupted opening so that the arms may engage the thread and the shield screwed onto the tube **10**. In Fig. 3, the arm **32** is positioned so that it is normally parallel with the bottom of the cup while the arm **33** extends angularly in the direction which may be considered upwardly.

When the shield is screwed tightly into position it abuts the cup **20** and thus the two parts cooperate and are, in effect, locked in position. The shield may be considered or likened to a lock nut. The parts are particularly securely held to the tube when the cup **20** has been previously screwed onto the tube to the limit of the threads **11**. In Fig. 5 both the arm **32***a* and the arm **33***a* are fashioned to incline upwardly with the arm **33***a* inclined more than arm **32***a* to accommodate the pitch of the threat. This structure lends itself to a fast and efficient assembly of the parts since the inclined arms help guide the shield into position relative to the end of the tube. Indeed the shield may be more or less pushed into position with the end of the arms riding over the threads and then the shield given a final twisting action to tighten the same down against the bottom of the pilot house. In Fig. 6 the arm **32***b* is formed at right angles to the axis while the arm **32***b* inclines downwardly relative to the shield. The shields shown in Figs. 5 and 6 are, except for the position of the arms, the same as the shield shown in Fig. 3 and the same reference characters have been applied to like parts.

It may be desirable, in order to more carefully protect the flame to ensmall the upper end of the shield thus to make a smaller opening through which the pilot flame extends. Such a structure is shown in Fig. 7 where the wall **41** of the shield is of frusto-conical form. In this form of the invention the arms **42** and **43** may be the same as those previously described and the lower edge of the wall of the shield, as illustrated at **46**, is spaced above the bottom of the cup. With this construction the opening **47** at the upper end of the shield is relatively small while the base of the shield may be of sufficient size to provide for the attaching structure and for the entrance of air under the lower edge **46**.

When the parts are assembled for operation the pilot flame, the shield and the end of a tube may be relatively positioned as substantially shown in Figs. 2 and 3. The shield lies between the pilot flame and the open end of the tube and may project upwardly a distance well above the lower portion of the flash tube. Thus, the lower portion or base of the flame is protected and the flame thus saved from being extinguished. Moreover, the shield protects the flame against any other outside drafts or air currents.

I claim:

1. In a lighter for gas burners, a gas supply tube having an upwardly extending end for furnishing gas to support a pilot flame, a supporting member secured to said end of the tube for carrying the inner ends of flash tubes which extend to burners to be ignited, and a shield for the pilot flame having a wall extending around the end of the tube, said shield having arms extending inwardly from the bottom edge of the wall and secured to the tube, said arms being spaced below the lower edge of the wall and at least one of the arms lying against the supporting member so that the bottom edge of the wall is spaced above the supporting member to provide an opening for the entrance of air.

2. In a lighter for gas burners, a gas supply tube having an upwardly extending end for furnishing gas to support a pilot flame, said end of the tube being threaded, a supporting member having an internally threaded aperture screw threaded directly onto the said end of the tube for carrying the inner ends of flash tubes which extend to burners to be ignited, a shield for the pilot flame having a wall extending around the end of the tube and lying at least partially between the ends of the flash tubes and the pilot flame, and a pair of substantially oppositely disposed arms extending inwardly from and below the bottom edge of the wall, the free ends of the arms engaging and being screw threaded onto the tube and serving to lock the support and the shield in position.

3. In a lighter for gas burners, a gas supply tube having an upwardly extending end for furnishing gas to support a pilot flame, said end of the tube being threaded, a supporting member screw threaded onto the said end of the tube for carrying the inner ends of flash tubes which extend to burners to be ignited, a shield for the pilot flame having a wall extending around the end of the tube and lying at least partially between the ends of the flash tubes and the pilot flame, said shield having a plurality of spaced arms extending inwardly from the bottom edge of the shield and the free ends of the arms being screw threaded onto the tube with at least one of the arms abutted against the supporting member to lock the parts in assembly, said arms being so disposed that the lower edge of the wall of the shield is spaced above the support to provide passageways for the entrance of air into the shield.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,747,015	Leins	Feb. 11, 1930
2,091,530	Slavin et al.	Aug. 31, 1937
2,112,000	Stuckenholt et al.	Mar. 22, 1938
2,264,905	Matthews et al.	Dec. 2, 1941