Nov. 22, 1966 H. A. McINTOSH ETAL 3,286,762

COMBINATION PILOT BURNER AND THERMOCOUPLE MOUNT

Filed Dec. 3, 1964

FIG. 1.

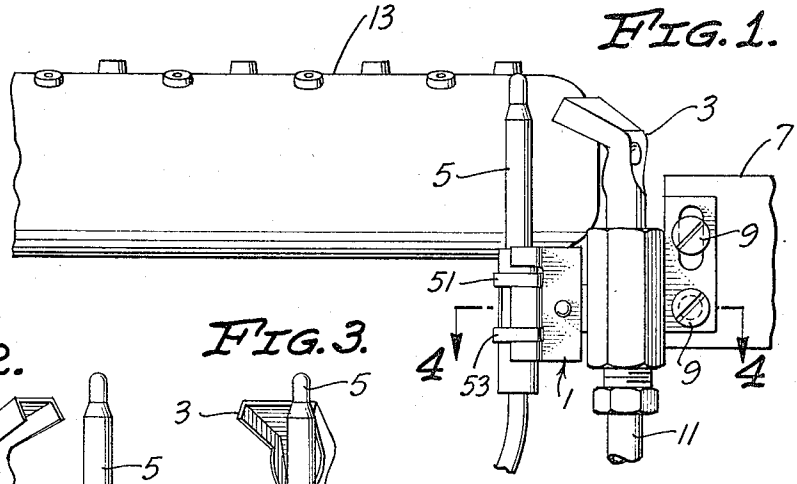


FIG. 2.

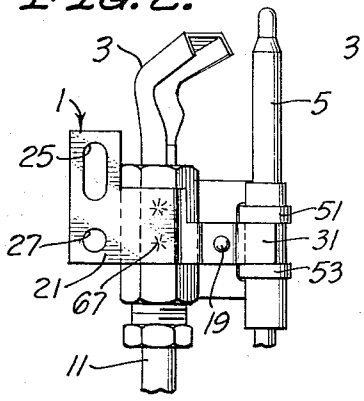


FIG. 3.

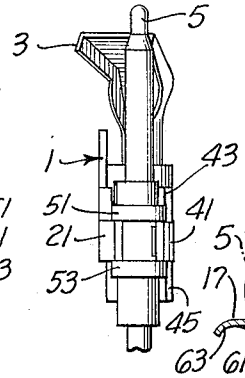


FIG. 4.

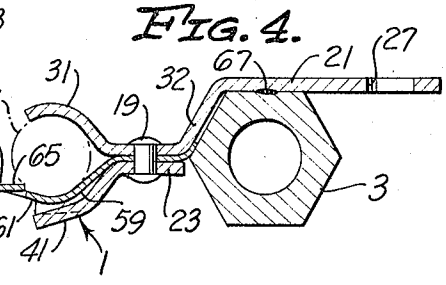
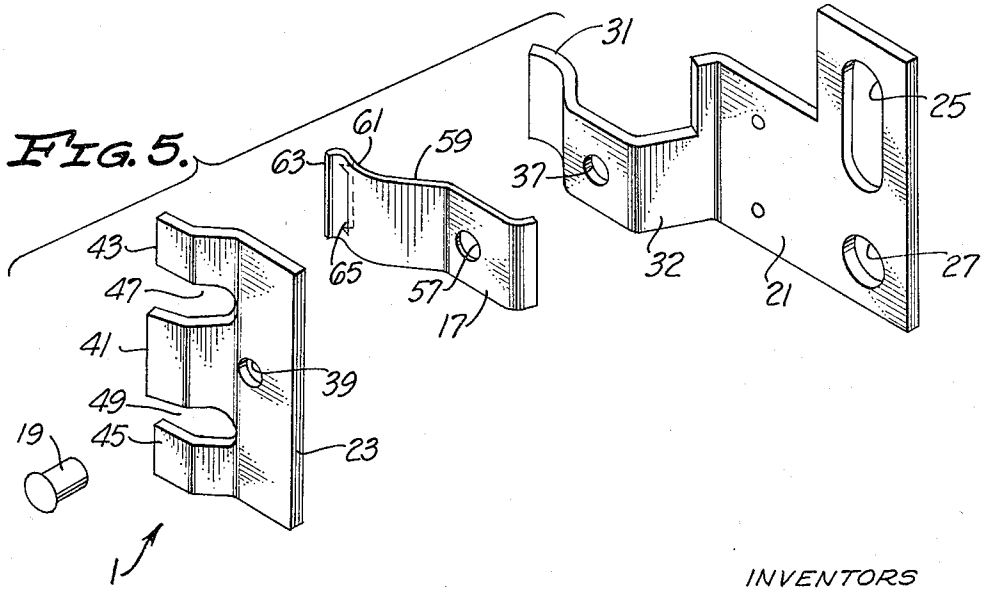


FIG. 5.



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3,286,762
COMBINATION PILOT BURNER AND THERMOCOUPLE MOUNT

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2 Claims. (Cl. 158—123)

This invention relates to a combination pilot burner and thermocouple mount.

A pilot burner, which produces a continuous flame is usually provided to ignite a main gas burner. It is frequently desirable to mount a thermocouple adjacent the pilot burner. The flame from the pilot burner keeps the thermocouple sufficiently warm so that it transmits a signal to a control apparatus indicating that the pilot flame is burning properly. Conversely, should the pilot flame be extinguished, the thermocouple would cool quickly and transmit a signal indicating that the flame no longer burns. It is desirable to mount the thermocouple at a fixed distance from the pilot burner. It is also desirable to mount the thermocouple and the pilot burner on a single mount and to provide means for releasably attaching the thermocouple to the mount.

Accordingly, it is an object of this invention to provide a single mount for both a pilot burner and a thermocouple.

Another object of this invention is to provide a mount which will firmly hold the thermocouple in place.

A further object of this invention is to provide a mount which will releasably hold a thermocouple so that it can be quickly and easily installed and removed manually without the need for any tools whatsoever.

Still another object of this invention is to provide a thermocouple mount which can be easily installed on a supporting structure adjacent a main burner.

The objects of the invention may be realized by providing bracket means having two curved divergent arms and a curved resilient lock spring positioned between the arms. When a thermocouple or other cylindrical object is manually forced between the lock spring and one of the arms, it is held securely against the arm by pressure of the resilient spring. To assure that the thermocouple is not inadvertently removed from the bracket, a ridge or tab is provided on the resilient lock spring to bear against the thermocouple and make inadvertent removal of the same more difficult. A still more secure hold on the thermocouple is obtained through the use of upper and lower holding arms which bear laterally against the side walls of the thermocouple.

The invention will be better understood from the following description taken in connection with the accompanying drawing, and its scope is pointed out in the appended claims.

In the drawing:

FIG. 1 is a side elevation of the mount of the present invention carrying a thermocouple and pilot burner and installed for use with a gas burner;

FIG. 2 is a side elevation of the pilot burner, thermocouple, and mount;

FIG. 3 is a front elevation of the pilot burner, thermocouple, and mount;

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 1 showing the pilot burner, thermocouple, and mount; and

FIG. 5 is an exploded view of the mount of the present invention.

FIG. 1 shows a typical combination in which the mount of the present invention may be employed. A mount **1** carries a pilot burner **3** and a thermocouple **5**

and is attached to a supporting structure **7** by any suitable means such as threaded fastener **9**. The gas, which may burn continuously in pilot burner **3**, is supplied through a conduit **11**. The thermocouple, which is heated by the pilot flame, transmits a signal indicating whether the pilot flame is burning properly. The pilot burner **3** is mounted adjacent a main burner **13** so that the flame from the pilot burner may ignite the main burner.

The mount **1** is so constructed and arranged that the thermocouple **5** may be easily, manually inserted and removed from the mount without the use of any tools. The mount firmly holds the thermocouple **5** and prevents it from rocking. The mount rigidly carries the pilot burner **3** and may be quickly and easily installed on the supporting structure **7**.

A preferred form of the mount is shown in FIGS. 4 and 5. There, a curved resilient lock spring **17** is shown attached by any suitable means such as a rivet **19** to a bracket means. The bracket means includes a mounting bracket **21** and a back bracket **23**.

The mounting bracket is preferably formed from a single sheet-like strip of metal and has apertures **25** and **27** adjacent one end thereof so that it can be secured by the threaded fasteners **9** to the supporting structure **7**. The mounting bracket has a curved arm **31** at the other end thereof and an intermediate portion **32**. The curved arm **31** curves outwardly for a major portion of its length and then curves slightly inwardly so as to be adapted to firmly grasp a cylindrical member such as the thermocouple **5**. The mounting bracket is also provided with an opening **37** through the intermediate portion thereof for passage of the rivet **19** therethrough.

The second element of the bracket means is the back bracket **23** which also is preferably formed from a single sheet-like strip of metal. The back bracket is provided with an aperture **39** so that it may be secured by the rivet **19** to the mounting bracket. The back bracket has a protecting arm **41**, which generally diverges with respect to the curved arm **31** to form a generally Y-shaped section, and upper and lower holding arms **43**, **45** which are spaced from the protecting arm **41**. The holding arms are curved so as to cooperate with the curved arm **31** to engage and rigidly mount the thermocouple **5**. Openings or spaces **47** and **49** between the holding arms and the protecting arm **41** provide room for flanges **51** and **53** of the thermocouple **5**.

Sandwiched between the mounting bracket and the back bracket is the curved resilient lock spring **17**. The lock spring is preferably formed from a single sheet of metal and secured to the bracket means by the rivet **19** which passes through an opening **57** in the spring. The lock spring in its normal or unstressed position curves away from the curved arm **31** for a first portion of its length as indicated at **59** and then curves toward the curved arm **31** for a second portion of its length as shown at **61** to form, with the curved arm **31**, a generally Y-shaped section for releasably retaining the thermocouple **5**. At the end of the lock spring is a lip **63** for deflecting the lock spring outwardly. A tab **65** is provided on the lock spring and protrudes rearwardly toward the intermediate portion **32** of the mounting bracket and inwardly toward the curved arm **31**. When the thermocouple is inserted in the mount, the tab **65** is urged by the resilient lock spring into engagement with the side wall of the thermocouple to assure that the thermocouple will not be inadvertently released from the mount.

The pilot burner **3** is suitably, rigidly secured to the mounting bracket **21** as by a spot weld **67**. The mount and the pilot burner are then secured on the supporting structure **7** by the fasteners **9**. To insert the thermocouple **5** into the mount, the thermocouple is manually forced between the lock spring and the curved arm **31**.

As the thermocouple is urged inwardly, the lock spring is urged outwardly until its curved surfaces allow it to snap to the position shown in FIG. 4, where it firmly holds the thermocouple at a fixed distance from the pilot burner. The tab **65** bears against the side of the thermocouple to guard against inadvertent removal and to further secure the thermocouple in the mount. To remove the thermocouple, the lip **63** is manually urged outwardly until there is sufficient clearance to allow the passage of the thermocouple out of the mount.

Several modifications of the embodiments disclosed herein will readily become apparent to those having ordinary skill in the art. For example, the mounting bracket and the back bracket need not be separate elements but may be integral. The brackets need not be of the specific design illustrated but may assume various configurations.

Although exemplary emobdiments of the invention have been disclosed, it will be understood that other applications of the invention are possible and that the embodiments disclosed may be subjected to various changes, modifications, and substitutions without necessarily departing from the spirit of the invention.

What is claimed is:

1. A mount for a pilot burner and cylindrical thermocouple for attachment to a supporting structure comprising:

a mounting bracket having at least one aperture adjacent one end thereof, the other end of said mounting bracket forming a curved arm, said mounting bracket having an intermediate portion connecting said ends;

a back bracket attached to said intermediate portion and having a protecting arm generally diverging with respect to said curved arm, said intermediate portion and said arms forming a generally Y-shaped section;

a curved resilient lock spring fixed at said intermediate portion between said brackets, said lock spring following said protecting arm and normally curving away from said curved arm for a first portion of its length and then normally curving toward said curved curved arm for a second portion of its length, said curved arm and said lock spring forming a portion of a cylindrical section for releasably retaining said thermocouple;

a tab on said lock spring, said tab protruding rearwardly toward said intermediate portion and inwardly toward said curved arm to firmly secure said thermocouple; and

a pilot burner fixed to said mounting bracket and clamping a portion of said spring thereagainst.

2. A pilot burner and thermocouple mount for attachment to a supporting structure comprising:

a mounting bracket for a thermocouple having a pair of spaced annular ribs, said bracket having at least one aperture adjacent on end thereof, the other end of said mounting bracket forming a curved arm for engaging the thermocouple between said ribs, said mounting bracket having an intermediate portion connecting said ends;

a back bracket attached to said intermediate portion and having a protecting arm generally diverging with respect to said curved arm, said back bracket having curved upper and lower holding arms for engaging the thermocouple with said ribs disposed in the spaces between said curved and holding arms;

a curved resilient lock spring clamped between said mounting and back brackets at said intermediate portion and positioned between said curved arm and said protecting arm for engaging the thermocouple between said ribs so that said thermocouple may be releasably retained between said lock spring and said curved arm;

a tab means on said lock spring for firmly securing said thermocouple between said lock spring and said curved arm; and

a pilot burner rigidly mounted on said mounting bracket.

References Cited by the Examiner

UNITED STATES PATENTS

2,918,244	12/1959	Laney	248—214
3,113,754	12/1963	Jansson	24—81.3 X
3,159,203	12/1964	Zulian	158—123
3,194,524	7/1965	Trumbull	248—229 X
3,208,505	9/1965	Craemer	158—123

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