

- [54] **PILOT CLAMP AND SHIELD**
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- [52] U.S. Cl. .... **431/191, 431/350**
- [51] Int. Cl. .... **F24c 3/10**
- [58] Field of Search ..... **431/191-194, 350**

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[57] **ABSTRACT**

A combined clamp and shield for a pilot burner is disclosed able to secure the pilot burner to a burner support and to shield a flame of the pilot burner from atmospheric disturbances and to shield adjacent structures from the flame and heat thereof. The combined clamp and shield can be incorporated into a unitary piece which is easy to manufacture. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

[56] **References Cited**

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**17 Claims, 4 Drawing Figures**

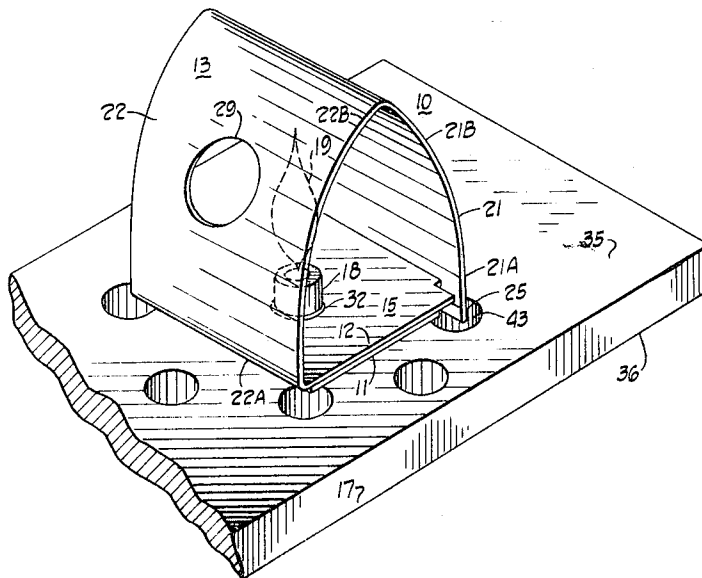


Fig. 1

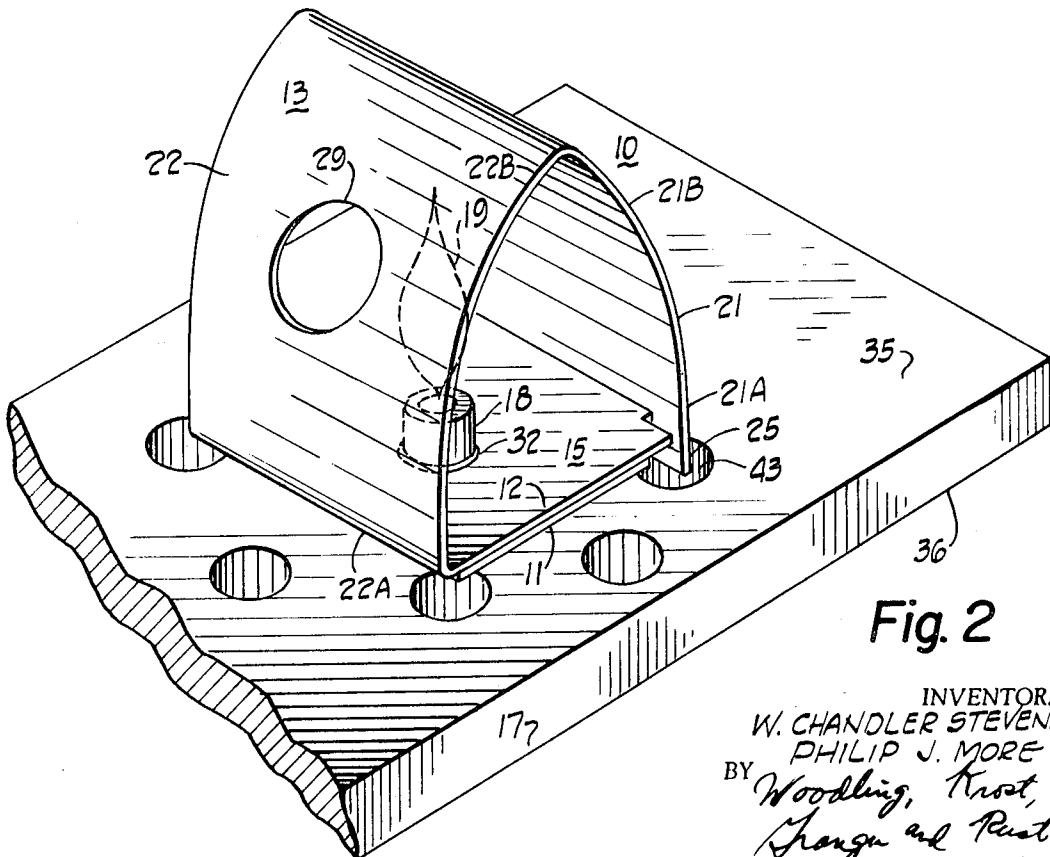
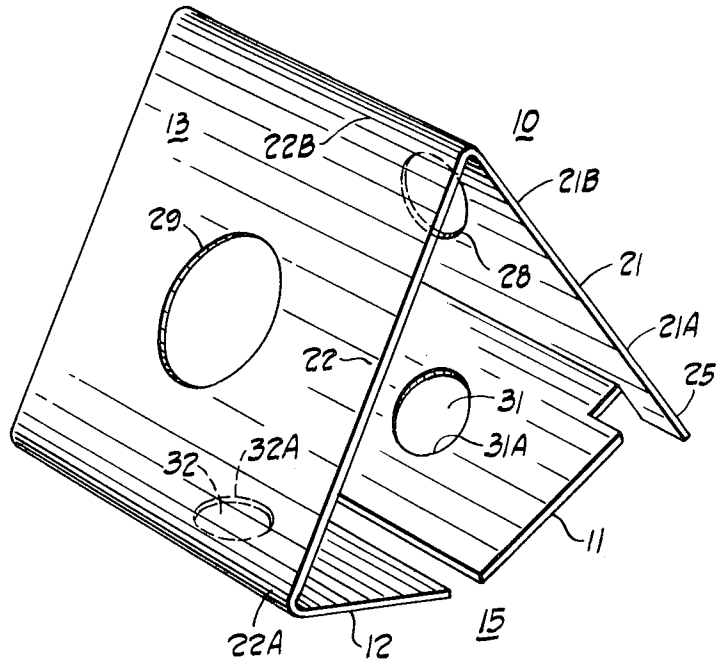


Fig. 2

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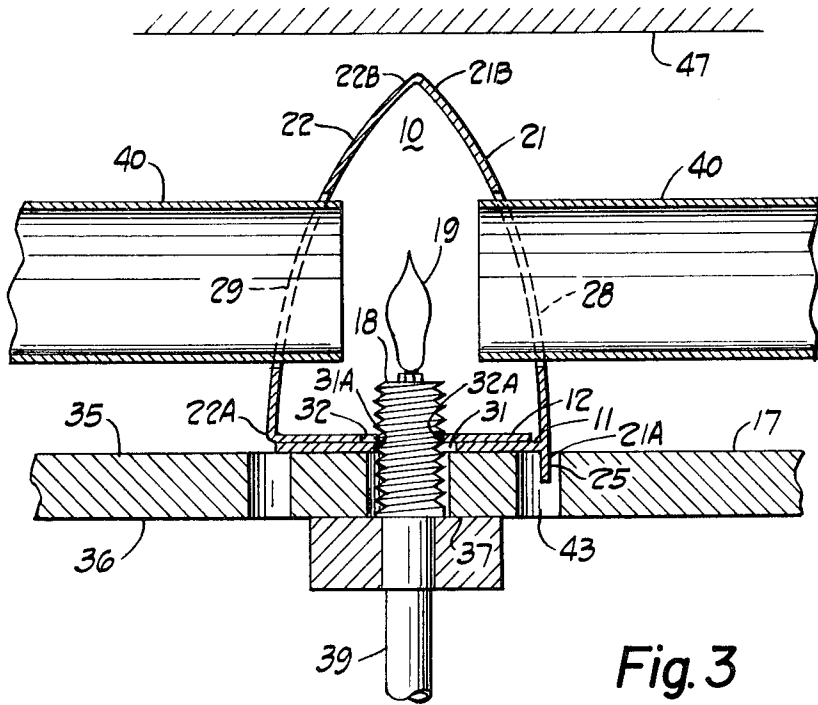


Fig. 3

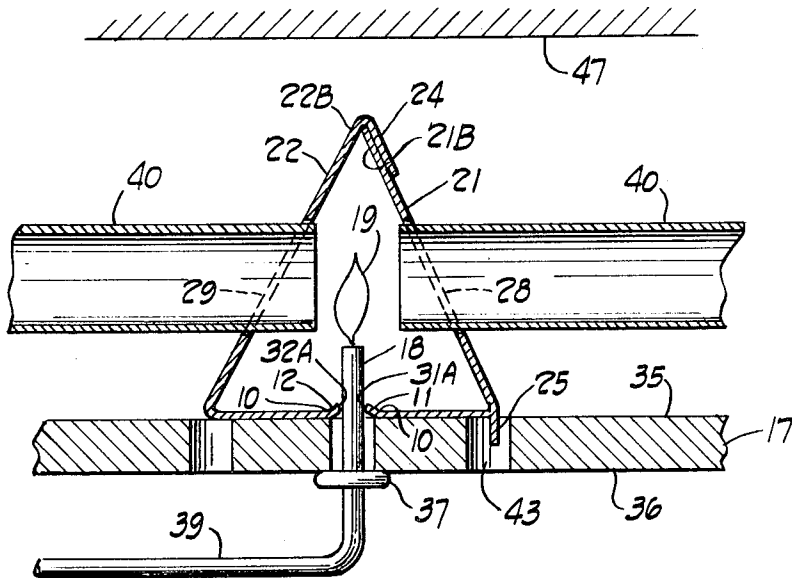


Fig. 4

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## PILOT CLAMP AND SHIELD

## BACKGROUND OF THE INVENTION

This invention relates to a combined clamp and shield and more particularly to a combined clamp and shield for a pilot burner in a gas device.

A pilot burner is a small gas burner which is located in proximity to an end of a flash tube which is connected between a main burner and the pilot burner. The pilot burner burns continuously in order to ignite the main burner upon the actuation of gas to the main burner. Such a pilot burner can be found in typical gas devices such as gas ranges or refrigerators and the like.

The prior art has known many types of clamps and shields to secure a pilot burner to a burner support. The pilot burners generally had a stop which would engage with the bottom surface of the burner support to allow a portion of the pilot burner to extend above the top surface of the burner support. The pilot burner would be secured to the burner support by a nut engaged with either the top surface or bottom surface of the burner support. This arrangement required three extra parts. A shield was required to protect the pilot flame from being extinguished by atmospheric disturbances. A second shield was required to protect an adjacent structure such as the cook top from the heat and the flame of the pilot burner and a support was required to support the end of the flash tube near the pilot burner.

Attempts have been made to simplify the four parts by using parts which would have a dual purpose. For example, combined fastening nuts and shields for atmospheric disturbances or winds are known to the prior art. However, these structures still required an extra shield for heat and used expensive threads to fasten the pilot burner to the burner support. In addition, the apertures within the windshield of the flash tubes did not always align with the position of the flash tubes due to the fact that the threads within the nut were not always established in the same position relative to the apertures. Finally, these prior art clamps and shields were generally difficult to install and required a separate subassembly line to install the pilot burners on the burner supports.

Therefore, an object of this invention is to produce a combined clamp and shield means for a pilot burner which functions as a shield against atmospheric disturbances and as a shield against heat for adjacent structures.

Another object of this invention is to produce a combined clamp and shield means for a pilot burner which has no screw threads.

Another object of this invention is to produce combined clamp and shield means for a pilot burner which is able to support an end of a flash tube.

Another object of the invention is to produce a combined clamp and shield means for a pilot burner which can be incorporated into a single part.

Another object of the invention is to produce a combined clamp and shield means for a pilot burner which is easy to manufacture.

Another object of this invention is to produce a combined clamp and shield means for a pilot burner which is easy to install.

Another object of this invention is to produce a combined clamp and shield means for a pilot burner which is inexpensive.

## SUMMARY OF THE INVENTION

The invention may be incorporated in a gas device having a device structure and a pilot burner means for a pilot flame and positioned to extend outwardly from a first support surface of a burner support, the provision of a combined clamp and shield means for the pilot burner means, comprising, in combination, clamping member means having clamping surface means, said clamping member means being engaged relative to the first support surface of the burner support, urging means establishing said clamping surface means to bind the pilot burner means, and shield means integral with at least one of said clamping member means to shield the device structure from the flame and heat thereof.

Other objects and a fuller understanding of the invention may be had by referring to the following description and claims, taken in conjunction with the accompanying drawing.

## BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an isometric view of the invention;

FIG. 2 is an isometric view of the preferred embodiment of the invention installed upon a burner support and clamping a pilot burner means;

FIG. 3 is a vertical sectional view of the installed invention shown in FIG. 2; and

FIG. 4 is a vertical sectional view of a modification of the preferred embodiment.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 illustrates a combined clamp and shield means for a pilot burner means comprising clamping member means shown generally as 15, urging means 10 and shield means 13. The clamping member means 15 includes a first and a second clamping member 11 and 12, respectively, having clamping surface means or clamping surfaces 31A and 32A. The clamping surfaces 31A and 32A, shown in FIG. 1, are formed by the apertures 31 and 32 in the first and second clamping members 11 and 12, respectively.

The shield means 13 includes a first side member 21 and a second side member 22. The first and second side members 21 and 22 have provisions shown as apertures 28 and 29 to cooperate with flash tubes from a main burner. Each of the first and second side members 21 and 22 has a clamping end 21A, 22A and a junction end 21B, 22B, respectively. The clamping ends 21A and 22A of the first and second side members 21 and 22 are shown in FIG. 1 to be integral with the first and second clamping members 11 and 12, respectively.

The urging means 10 includes the junction ends 21B and 22B of the first and second side members 21 and 22 being integral with each other and being composed of a resilient material. Although many types of resilient metallic materials can be used in this invention, 301 or 302 spring stainless steel has been found to be ideally suited for use on gas ranges.

FIG. 2 illustrates the combined clamp and shield means shown in FIG. 1 installed upon a burner support 17 having a first and a second support surface 35 and 36, respectively, and binding a pilot burner means 18. The pilot burner means 18 is positioned to extend outwardly from the first support surface 35. The clamping member 11 is shown engaged relative to the first sup-

port surface 35 of the burner support 17. The urging means 10 urges the first and second clamping members 11 and 12 to move relative to one another such that the clamping surfaces 31A and 32A, not shown in FIG. 2, move towards each other to bind the pilot burner means 18. The urging means in FIG. 2 is shown urging the clamping ends 21A and 22A of the first and second side members 21 and 22 to move away from each other into the position illustrated in FIG. 1. The shield means 13 shields a flame 19 from atmospheric disturbances and shields any device structure in proximity to the pilot burner means 18 from the flame 19 and heat thereof. A tab means 25 engaged with a tab hole 43 prevents rotation of the combined clamp and shield means on the burner supports 17.

The installation of the combined clamp and shield means can best be illustrated in FIG. 3. The pilot burner means 18 has stop means 37. The pilot burner means 18 is positioned to extend outwardly from the first support surface 35 of the burner support 17 with the stop means 37 engaged with the second support surface 36. The first and second side members 21 and 22 are compressed by an installer against the urging means 10 until the clamping members 11 and 12 are substantially adjacent to one another as shown in FIGS. 2 and 3. The combined clamp and shield means is then established such that the first clamping member 11 is engaged relative to the first support surface 35. In the illustrations shown in FIGS. 2 and 3, the first clamping member 11 is directly in contact with the first support surface 35 of the burner support 17. The tab means 25 is aligned with the tab hole 43 of the burner support 17. After the combined clamp and shield means is established in this position, the installer removes the force compressing the first and second side members 21 and 22 toward each other and the urging means 10 urges the clamping surfaces 31A and 32A to bind the pilot burner means 18 as shown in FIGS. 2 and 3. The flash tubes 40 are established to cooperate with the apertures 28 and 29. In this embodiment, the apertures 28 and 29 support the ends of the flash tubes to eliminate the need for an additional support. The tab means 25 prevents the clamp and shield means from rotating in accordance with American Gas Association standards, so it will be in the correct position to receive the flash tubes.

Gas is directed to the pilot burner means 18 through a gas tube 39 to establish the flame 19 on the pilot burner means 18. The first and second side members 21 and 22 shield the flame 19 from atmospheric disturbances to prevent the flame from being blown out. In addition, the first and second side members 21 and 22 shield the device structure 47 from the flame 19 and heat thereof. For example, in a gas range, the pilot burner has a tendency to cause rusting of a cooking top if the underside of the cooking top is not protected from the direct effects of the pilot flame. In such a case, the first and second side members 21 and 22 protect the cooking top from the direct effect of the flame 19.

The urging means 10 produces sufficient force to bind the pilot burner means 18 without the use of costly threaded parts. However, the invention can be used effectively on smooth, grooved or threaded pilot burner means 18 as shown in FIGS. 2 and 3, respectively. This eliminates the necessity of modifying existing pilot

burner means 18 in order to take advantage of the present invention.

FIG. 4 illustrates a modification of the embodiment shown in FIGS. 1-3. The first and second clamping members 11 and 12 terminate in clamping surfaces 31A and 32A, respectively, and are each urged by the urging means 10 to bind the pilot burner means 18. The junction ends 21B and 22B of the first and second side members 21 and 22, are joined by a member 24 integral with the second side member 22. Member 24 can either be crimped or welded to the first side member 21. The pilot burner means 18 is shown as a smooth wall gas tube having a stop means 37 which engages with the second support surface 36 of the burner support 17. The combined clamp and shield means is prevented from rotating by the tab 25. The installation of the combined clamp and shield means shown in FIG. 4 is accomplished by forcing the assembly against the urging means 10 onto the pilot burner means 18 until at least one of the first and second clamping members 11 and 12 are engaged relative to the first support surface 35 of the burner support 17. The urging means 10 is substantially adjacent to the first support surface 35 and establishes the clamping surfaces 31A and 32A to bind the pilot burner means 18. The urging means 10 are integral with the first and second clamping members 11 and 12 and are deformed when the combined clamp and shield means is forced onto the pilot burner means 18. The urging means 10 force the first and second clamping surfaces 31A and 32A into the surface of the pilot burner means 18 to engage therewith.

The illustrations in FIGS. 1-4 show provisions for the combined clamp and shield means to support or cooperate with two flash tubes. Variations within the scope of this invention allow the combined clamp and shield means to support a greater number of flash tubes. For example, a combined clamp and shield means having six side members and a horizontal cross-section of a hexagon could be used to support two, four or six flash tubes. Clamping member means using either of the variations shown in FIGS. 3 and 4 are compatible with such a structure.

Although FIGS. 1-4 illustrate a combined clamping and shield means for a pilot burner means as a unitary resilient metallic material, the invention can be incorporated into a plurality of pieces. However, in most applications, it is desirable to use a single piece to reduce installation time. The combined clamp and shield means illustrated in FIGS. 1-3 can be installed by an installer without the use of tools.

The material used for the combined clamping and shield means need not be a resilient metallic material as illustrated in FIGS. 1-4. Any material or combination of materials that offer resiliency and substantial imperviousness to the pilot flame are equally suitable as a construction material such as metalized asbestos, plastic coated asbestos and the like.

Tests by the inventor have shown that the disclosed invention works equally well on threaded or grooved pilot burner means and smooth pilot burner means. In addition, the inventor has shown that the shield means operates as well or better than the prior art in terms of American Gas Association's standards for pilot burner blow-out. Finally the inventor has demonstrated that the use of this invention produces a substantial savings

in material and construction costs of the combined clamp and shield means over the prior art in addition to a substantial savings in time and personnel on the assembly of the gas device.

The present disclosure includes that contained in the appended claims, as well as that of the foregoing description. Although this invention has been described in its preferred form with a certain degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination of arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

What is claimed is:

1. In a gas device having a pilot burner means for a pilot flame and positioned to extend outwardly from a first support surface of a burner support, the provision of a combined clamp and shield means for the pilot burner means, comprising in combination,

clamping member means having clamping surface means,

said clamping member means being engaged relative

to the first support surface of the burner support,

urging means establishing said clamping surface means to bind the pilot burner means,

and shield means integral with at least one of said clamping member means to shield the flame.

2. A combined clamp and shield means as set forth in claim 1, wherein said shield means includes,

side member means to shield the flame from atmospheric disturbances.

3. A combined clamp and shield means as set forth in claim 1, including tab means to engage with the burner support to prevent rotation.

4. A combined clamp and shield means as set forth in claim 1, wherein said urging means is substantially adjacent to the first support surface.

5. A combined clamp and shield means as set forth in claim 1, wherein said clamping member means includes a first and a second clamping member each having a clamping surface,

and said urging means includes means urging said first clamping member to move relative to said second clamping member.

6. A combined clamp and shield means as set forth in claim 2, wherein said side member has provisions to cooperate with a flash tube.

7. In a gas device having a pilot burner means for a pilot flame and a burner support having a first and second support surface, the provision of a combined clamp and shield means for the pilot burner means, comprising in combination,

stop means for the pilot burner means,

the pilot burner means positioned to extend outwardly from the first support surface of the burner support with said stop means engaged with the second support surface,

a first and a second clamping member each having a clamping surface,

said clamping members being substantially adjacent to each other,

said first clamping member being engaged with the first support surface of the burner support,

urging means for said clamping members urging said clamping surfaces to bind the pilot burner means, and shield means integral with one of said clamping members to shield the the flame.

8. A combined clamp and shield means as set forth in claim 7, wherein said clamping surfaces include the surfaces formed by apertures within said clamping members.

9. A combined clamp and shield means as set forth in claim 7, wherein the combined clamp and shield means is a unitary resilient metallic material.

10. A combined clamp and shield means as set forth in claim 7, wherein said shield means includes a first and a second side member integral with said first and second clamping member, respectively, to shield the flame from atmospheric disturbances.

11. A combined clamp and shield means as set forth in claim 10, including an aperture within said side members to cooperate with a flash tube from a main burner.

12. A combined clamp and shield means as set forth in claim 11, wherein an edge of said aperture in said first side member supports an end of a flash tube from a main burner.

13. A combined clamp and shield means as set forth in claim 10, wherein said urging means includes said first and second side members being integral with each other and being of a resilient material.

14. A combined clamp and shield means as set forth in claim 13, wherein said urging means urges said clamping surfaces to move toward each other.

15. In a gas device having a pilot burner means for a pilot flame and a burner support having a first and second support surface,

the provision of a combined clamp and shield means for the pilot burner means, comprising in combination,

stop means for the pilot burner means,

the pilot burner means positioned to extend outwardly from the first support surface of the burner support with said stop means engaged with the second support surface,

a first and a second clamping member each having a clamping surface formed by apertures within said clamping members,

shield means including a first and second side member,

said first and second side member each having an aperture to cooperate with a flash tube from a main burner,

said first and second side members each having a clamping end and a junction end,

said clamping ends of said first and second side members being unitary with said first and second clamping members, respectively,

said clamping members being substantially adjacent to each other,

said first clamping member being engaged with the first support surface of the burner support,

urging means for said clamping members including said junction ends of said first and second side members being unitary with each other and being of a resilient material urging said clamping surfaces to move toward each other to bind the pilot burner means,

said first clamping member being engaged with the first support surface of the burner support,

urging means for said clamping members including said junction ends of said first and second side members being unitary with each other and being of a resilient material urging said clamping surfaces to move toward each other to bind the pilot burner means,

said first clamping member being engaged with the first support surface of the burner support,

urging means for said clamping members including said junction ends of said first and second side members being unitary with each other and being of a resilient material urging said clamping surfaces to move toward each other to bind the pilot burner means,

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said shield means shielding the flame from atmospheric disturbances,  
and tab means on the combined clamp and shield means to prevent rotation on the burner support.

16. A combined clamp and shield as set forth in claim 15, wherein said urging means urges said clamping ends of said first and second side members to move away from each other.

17. A gas device comprising in combination, pilot burner means for a pilot flame, a burner support having a first support surface, said pilot burner means positioned to extend out-

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wardly from said first support surface of said burner support, clamping member means having clamping surface means,

said clamping member means being engaged relative to said first support surface of said burner support, urging means establishing said clamping surface means to bind said pilot burner means,

and shield means integral with at least one of said clamping member means to shield the flame.

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