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FLASH TUBE LIGHTER STRUCTURE FOR GAS BURNERS

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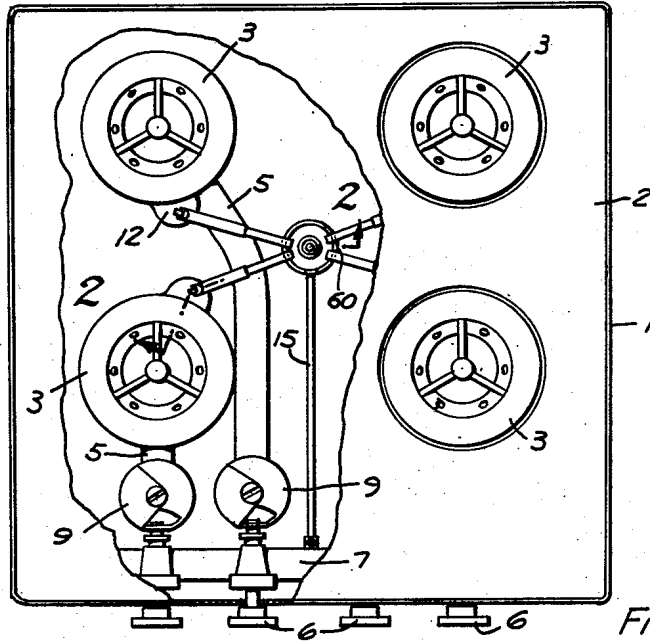


FIG. 1.

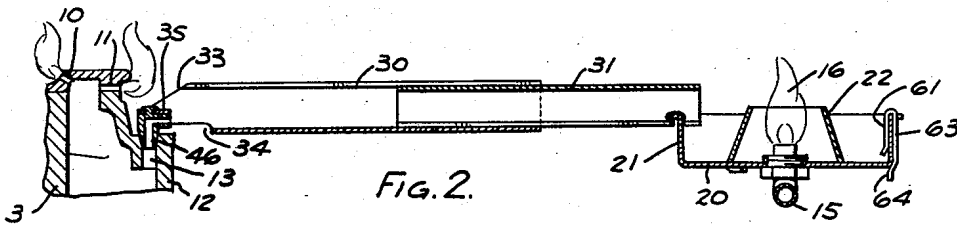


FIG. 2.

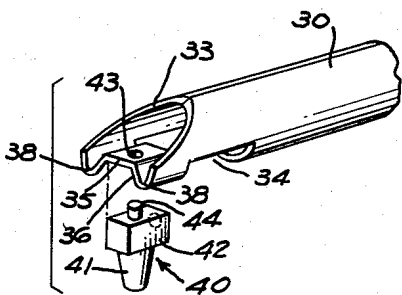


FIG. 3.

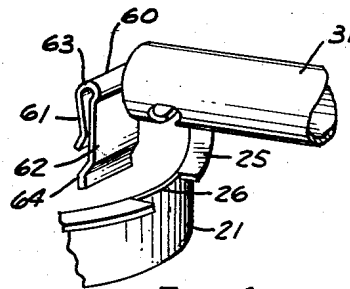


FIG. 4.

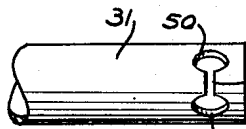


FIG. 5.

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FLASH TUBE LIGHTER STRUCTURE FOR GAS BURNERS

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1 Claim. (Cl. 158—115)

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This invention relates to the structure of lighter mechanism for the top burners of gas ranges. Gas ranges usually have a plurality of so-called top burners and quite frequently there are four of such burners. These are the burners employed at the top portion of a range and are used for such purposes as frying or otherwise cooking food stuffs in vessels.

The system of ignition usually employed embodies a relatively centrally disposed pilot flame and a flash tube extending from the flame to each burner, so that as gas is supplied to a burner some gas travels through the flash tube to the pilot flame where it is ignited and the resultant flash back ignites the gas issuing from the burner.

The invention aims to provide an improved flash tube structure, and particularly, improved construction at the end of the flash tube which is associated with the burner. The invention also aims to provide an improved construction for the ends of the flash tubes which are positioned adjacent the pilot flame. This construction usually embodies what is termed a housing, which is a structure in the nature of a support surrounding the pilot flame, which supports and which is connected to the inner ends of the flash tubes.

Fig. 1 is a general and somewhat schematic view illustrating four top burners of a range and showing the pilot housing and flash tube arrangement.

Fig. 2 is an enlarged cross sectional view on line 2—2 of Fig. 1, showing a part of a burner and the pilot flame and housing.

Fig. 3 is a separated view of perspective nature illustrating the burner end of a flash tube and a tip element.

Fig. 4 is a separated view illustrating the pilot end of the flash tube, part of the housing and a spring clip.

Fig. 5 is a view showing the structure of the pilot end of the flash tube.

In Fig. 1, a portion of a range is illustrated at 1 and it has a top plate 2 with apertures therein for four burners, each indicated at 3. The burners, of course, may be of any desired construction. Each burner has a mixing tube 5 into which gas may be furnished by a control valve 6, the valve being arranged to control the flow of gas from a manifold or pipe 7, and in conjunction with the mixing tube, is a controlling element 9 for introducing primary air. The top plate 2 is cut away to show the above described structure for two of the burners, it being

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understood that the other two have similar equipment.

As shown in Fig. 2 a burner 3 has ports 10 and 11 for the escape of combustible fuel to support the flames as shown, and each burner may have an extension 12 provided with a port 13 for association with a flash tube.

The pilot flame 16 is supplied with gas by a small tube 15 connected into the manifold 7 and the inner end of the tube 15 is turned upwardly. A so-called housing is in the form of a cup having a bottom portion 20 mounted on the up-turned end of the tube 15 to be supported thereby, and a side wall or flange 21. A protective guard for the flame may take the form of a frusto-conical element 22 secured to the bottom of the housing and surrounding the flame 16.

The top edge of the flange 21 is provided with an enlargement, herein shown as an out-turned rim 25. This rim extends completely around the top edge of the wall 21 and is provided with a notch 26. This housing construction is similar to the construction disclosed and claimed in U. S. Patent No. 2,295,001 of September 8, 1942.

The flash tube structure is comprised of two tube sections 30 and 31 telescopically assembled. The tube 30, which may be fashioned from a flat blank of sheet metal, has its upper portion cut back at an incline, as shown at 33, while the lower side is provided with a cut out to provide an opening 34 for secondary air. Thus the wall portions at 33 extend angularly downwardly from the top median line of the tube to a location at the extreme end thereof which is in proximity to a horizontal diametral plane to the tube. The wall of the tube and especially the wall which forms the lower portion of the tube at the burner end is fashioned to provide a transverse portion which includes a flat seat 35, and parts 36 which join with the side walls of the tube at reversely bent portions 38. Thus the portions 36 extend upwardly from the lower portions 38, and the seat is in proximity to the horizontal diametral plane through the tube.

A tip generally illustrated at 40, has a tapered portion 41 arranged to be received in the aperture 13, and a body 42 arranged to rest upon the seat 35. The seat 35 is provided with an aperture 43 for receiving an integral stud 44 which is passed through the aperture 43 and the metal of which is flattened or riveted to attach the tip to the seat. The body 42 engages between the portions 36 and thus is held against turning. The strip has an angular passage 46 extending

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therethrough, one end of which opens into the burner, and the other end of which opens in the direction of or into the flash tube.

The tube part 31 is arranged to be secured to the housing 21 and for this purpose it is provided with an aperture in its wall as shown in Fig. 5. This aperture is somewhat in the shape of a figure 8 having enlarged end portions 50 and a smaller central portion 51. To place a tube on the housing the aperture is aligned with the notch 26 and the tube is passed downwardly, and then the tube is shifted circumferentially relative to the housing and the rim 25 engages in the large portions 50 of the notch. The cross dimension of the narrow part 51 is less than the dimension of the rim 25 and, therefore, the tube is held against disengagement. Also it may be shifted circumferentially.

In use the several flash tubes are mounted after the manner shown in Fig. 1, there being a flash tube for each burner. As above set forth, when gas is supplied to a burner, some gas passes through the passage 46 in the tip and into the flash tube and flows to the pilot flame 16 and is ignited thereby. The resultant explosion or back flash ignites the gas issuing from the burner ports 11. Gas issuing from the ports 10 may obtain ignition from the flames issuing from ports 11.

Lighter assemblies are furnished to manufacturers of stove ranges and such manufacturers have different desires. Some desire to have the lighter housing and the flash tubes supplied to them in disassembled manner. Then when the lighter structure is being assembled into a range the flash tubes are, at that time, mounted upon the housing in the above described manner.

However, some manufacturers prefer to have the lighter structure in a more assembled manner and specifically desire to have the flash tubes assembled on the housing. In order to keep the flash tubes permanently assembled on the housing so that they will not become accidentally removed therefrom a spring clip is employed as illustrated at 60. This spring clip may be formed from a single piece of suitable metal of yielding characteristics having an arm 61 for fitting inside the flange 21 and an arm 62 for fitting outside the flange 21, the two arms being connected by a bight portion 63. The outer arm 61 has a formed end portion providing a sort of detent part 64 for yieldingly engaging under the point of intersection between the flange 21 and the bottom 20, and slightly underlying that corner as illustrated in Fig. 1. When the tubes are thus to be permanently assembled to the housing, they are first applied to the housing, and then the spring

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clip 60 is applied to the housing with the bight portion thereof lying in the notch 26. Thus the notch is plugged or closed, so to speak, and the flash tubes cannot be removed as long as the spring clip is in place.

Thus this structure makes it feasible for a manufacturer to provide one basic structure which is capable of supplying the desires of different manufacturers to wit: Those who desire to receive the lighter structure disassembled and to those which desire to receive the lighter structure in assembled condition. The difference is that in the latter case the spring clip is employed. Otherwise the structure is the same. Since the manufacturing setup can be limited to one basic structure, manufacturing costs are reduced which, of course, is reflected in the price to the ultimate user which is progress in this useful art.

I claim:

A flash tube structure for the lighting system of a gas burner, wherein the burner has a port and a flash tube extends from the burner to a point adjacent a pilot flame; a tube member having an end for association with a burner, said end having wall portions formed to extend angularly downwardly from the top median line of the tube to the extreme end of the tube at a location in proximity to a horizontal diametral plane through the tube, said end being formed with an aperture in its underside for secondary air, the extreme end of the tube having opposite portions extending from the lower part of the tube upwardly and within the adjacent and opposite tube wall portions toward the said horizontal diametral plane, a flat seat portion connecting said last two opposite portions, said flat seat portion being disposed adjacent the horizontal diametral plane through the tube member and having an aperture therein, and a tip seated on the underside of said seat portion, said tip having a projecting stud passing through said aperture, the material of the stud being flattened above said seat portion to hold the tip secured to the seat portion, said tip having flat sides embraced by the said opposite upwardly extending portions and adapted to be inserted in the aperture in the burner and having a passage therein for directing gas from the burner into the flash tube.

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