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FLASH TUBE SYSTEM FOR GAS BURNERS

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Fig. 1.

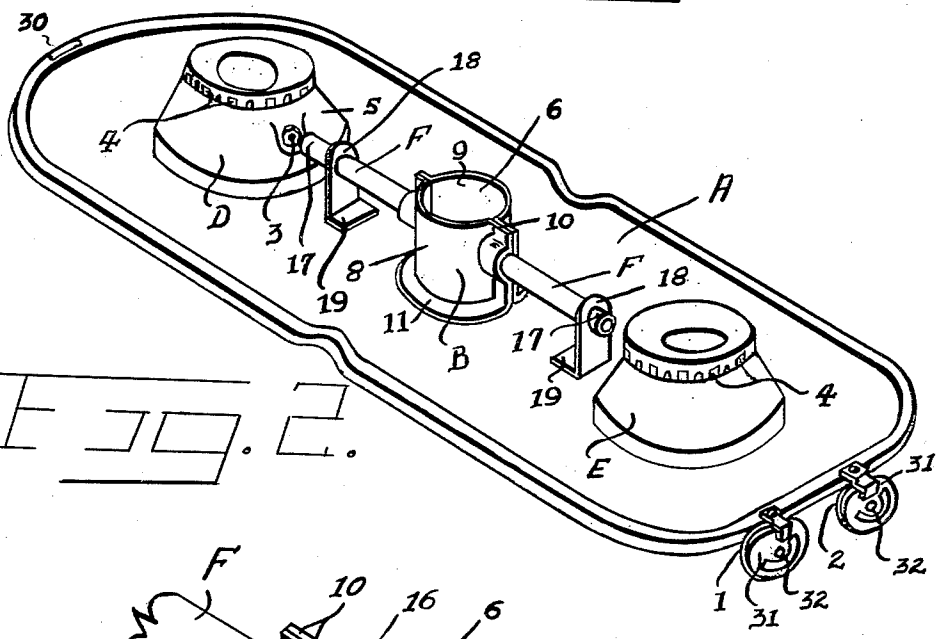
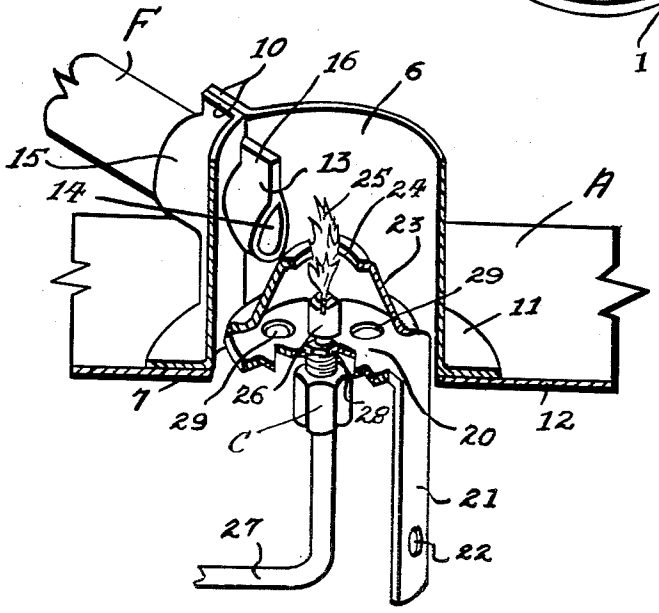


Fig. 2.



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FLASH TUBE SYSTEM FOR GAS BURNERS

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2 Claims. (Cl. 158—115)

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This invention relates to a lighter system for use in combination with one or more gaseous fuel burners which are disposed in spaced relationship to a constant burning pilot burner and although not so limited in scope the invention is particularly suitable for use in combination with the cooking top burners of a range and such an embodiment of the invention is illustrated in the accompanying drawings as a means for conveying an understanding of the inventive concept.

More particularly the lighter system is what is commonly referred to as a flash tube lighter because an open-ended hollow tube extends between the pilot light and the burner for the purpose of conveying fuel from the burner to the pilot burner and directing the flash, when the fuel is ignited by the pilot burner, back to the burner. Broadly such a lighter system has been known and used but the present invention embodies novel features of construction which result in a much improved operation over lighter systems as heretofore existed.

In conventional and previously known and used flash tube lighter systems the flash tubes ordinarily are not in a permanently fixed position relative to the pilot burner and the burner or burners or if they have been fixed relative to the pilot they were not permanently fixed relative to the lighter port or ports of the burner with which they are associated. For correct functioning as a lighter system with all the various kinds of gases which are today in use correct alignment and positioning of the individual parts of the system is necessary. Incorrect assembly or reassembly of the loose and not permanently positioned parts of lighter systems heretofore in use has resulted in very poor operation and in many instances in complete failure of the lighter systems to function. It has been common practice in ranges to make the cooking top burners flash tubes as well as spill-over trays, when said are a part of a range, removable so that they can be cleaned and it will be obvious that in the reassembly of these parts a housewife or one unskilled in the art an improper reassembly or an incorrect positioning of the assembled parts is a frequent occurrence and that this, for the reasons pointed out, can result in a poor operation or complete failure of the lighter system to function.

The primary object of the invention is the provision of a novel and improved flash tube lighter system for automatically igniting a gaseous fuel burner from a distant pilot burner.

A further object of the invention is the provision of a flash tube type lighter system in which

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the tube or tubes thereof are permanently fixed in their relationship to the burner lighter ports and to the constant burning pilot burner to assure that in assembly and reassembly of the system proper and dependable operation will be positive.

Another object of the invention is the provision of a flash tube lighter system wherein there are no openings through which a draft or flow of air can take place between the end of a flash tube and the adjacent lighter port of a burner and to thereby obviate air draft interference with a proper ignition operation which, when drafts can occur, is particularly disastrous to proper operation on low-line fuel pressures.

Another object of the invention is the provision of a lighter system which is simple and durable of construction, comparatively simple and cheap of manufacture, yet highly efficient in operation and which can be quickly applied to and removed from a range without danger of adversely affecting proper operation of the system.

Other objects, novel features of construction together with improved results will appear in and be understood from the following description when read in the light of the accompanying drawings in which several embodiments of the inventive concept are illustrated.

In the drawings:

Fig. 1 is a perspective view of the invention.

Fig. 2 is an enlarged detailed view, partly in vertical section, through the constant burning pilot burner with one end of a flash lighter tube appearing in full lines.

Referring now to the construction appearing in Figs. 1 and 2 of the drawings, A is a metallic tray suitably removably supported in an opening in the cooking top of a gas range. Such trays are commonly referred to as "burner" trays, or "spill-over" trays, or "boil-over" trays, and the manner in which it is supported upon the range is not critical to the present invention other than that said support be such that the pilot burner housing B of the tray can be properly positioned in respect to the constant burning pilot burner C.

In the form of the invention being described the lighter system serves two spaced gaseous fuel burners D and E which together with their fuel mixing tubes 1 and 2 are formed as a part of the tray A. The specific construction or nature of these burners and their mixing tubes is not critical it being necessary only that the burners have a lighter port 3 disposed in ignition relationship to the main burner ports 4 of the burn-

ers. In the present instance each of the burners is provided with a lighter port in the side wall 5 of the burner head and this port, which receives its fuel from the burner head, faces the pilot burner housing B.

The pilot burner housing is a hollow tubular member which extends upwardly from the tray and has an open upper end 6 and a lower open end 7. The housing is permanently secured to the tray in some suitable manner as by welding and in the present instance comprises two semi-circular shaped parts 8 and 9 each having at its vertical edges flanges 10 and at its bottom a flange 11. The flanges 10 of the housing parts are placed into abutment and suitably secured, as by welding, while the flanges 11 are utilized for securing the housing to the top 12 of the tray.

The flash tubes F are hollow open-ended tubes each having one end crimped as at 13 to provide a tube end 14 which is of reduced diameter to the remaining portion of the tube. This end of the tube is associated with the pilot light housing B and rigidly secured thereto. The tube passes between the abutting flanges at one edge of the pilot burner housing and the flanges are shaped or formed as at 15 for the passage of the tube. Crimping of the tube end forms a fin 16 which lies between a pair of flanges 10. The reduced end of the tube and its fin can be welded or otherwise suitably secured in the described position so as to assure permanent positioning of this tube end.

It is not new in flash tube lighter systems to reduce the diameter of that end of the flash tube which is associated with the pilot burner. This reduction of tube diameter has been accomplished in numerous ways in the past but the present manner of accomplishing this is extremely simple and inexpensive and is believed to be novel. The purpose of the reduced diameter of the tube is to accomplish more efficient burner lighting when low gas pressures or low gas rates are encountered.

The opposite end 17 of the flash tube is in spaced aligned relationship to the burner lighter port 3 and is permanently secured in this position by a standard or bracket 18 disposed near the tube end 17 and permanently secured to the tube and to the bottom 12 of the tray. For convenience in attaching the standard to the tray it is provided with a foot or base 19 which may be welded or otherwise suitably rigidly secured to the tray bottom.

From the foregoing description a single flash tube only has been described but it is to be understood, and this is evident from the drawings, that the second flash tube is of identical construction and similarly secured in place in proper relationship to the pilot burner housing and burner lighter port of the other burner.

The construction thus far described permanently and properly positions the flash tubes in respect to the burner lighter ports and the pilot burner housing. Proper positioning of the pilot burner housing in respect to the pilot burner is also necessary and is assured in the manner immediately hereinafter described. The pilot burner comprises a plate or disc 20 provided with an arm 21 having therein a passageway 22 for the reception of a bolt or screw for rigidly attaching the plate to the range. The plate at its upper side carries a flame shield 23 having therein a passageway 24 for the constant burning pilot flame 25 burned by the pilot light jet 26. This jet and its fuel supply conduit 27 are rigidly secured to the plate 20 by a nut 28 or the like. An air supply to the jet and flame is obtained through suitable passageways 29 in the pilot plate 20. The size and configuration of the pilot plate 20 is substantially that of the interior of the pilot burner housing B to assure proper positioning of the reduced ends 14 of the flash tubes in respect to the pilot flame. When the tray is associated with a range the tray-carried pilot burner housing telescopically receives in its lower end the plate of the pilot burner which automatically properly positions these tube ends for satisfactory operation.

In a lighter system of this type automatic ignition of a burner is obtained in the following manner. The fuel valve to the desired burner is opened thus delivering fuel to the burner head. A portion of this fuel escapes through the burner lighter port 3 and traverses the associated flash tube and becomes ignited by the pilot burner flame. This ignition results in what is commonly referred to as a "flash" which is guided by the tube back to the lighter port and causes the ignition of fuel thereat. The flame of the ignited lighter port ignites the fuel escaping from the main burner ports 4.

The tray has at one of its ends an opening 30 adapted to receive the end of a bracket or the like which is rigidly secured to the range body. Each of the burner mixing tubes at its inlet end is provided with an air controlling shutter 31 having centrally a passageway 32. The last named passageway loosely receives but is supported upon a conventional fuel injection jet which is supported by and has communication with the main fuel supply manifold of the range. The foregoing arrangement not only properly positions the tray for reception of the pilot burner but provides an arrangement whereby the tray can be quickly and readily mounted upon and removed from a range.

The construction provides a flash tube lighter system in which the tray can be removed for cleaning and replaced in the range by a housewife or other unskilled person without danger of erroneous reassembly which would result in unsatisfactory operation or failure of the system to function.

What I claim is:

1. In combination with the pilot burner of a gas range, a spill-over tray having a burner rigidly secured thereto and provided with a lighter port disposed in ignition relationship to the main burner ports, the tray being provided with an opening having an upwardly extending circumferential collar adapted to receive and surround the pilot burner and the flame burned thereby, the tray collar comprising a pair of semi-circular pieces each provided at its longitudinal edges and at its bottom with a flange, the longitudinal flanges of the pieces being in abutment and secured to one another, the bottom flanges of the collar pieces being secured to the tray top, a flash tube having an end terminating adjacent and being disposed in gas reception alignment with the lighter port of the burner, means interconnecting the tray and the tube adjacent said named end for rigidly and immovably securing said tube end in the aforestated position, and the other end of the flash tube passing through the collar between the longitudinal flanges thereof and terminating adjacent the pilot burner flame.

2. In combination with a pilot burner of a gas range, a spill-over tray having a pair of burners rigidly secured thereto in spaced apart relation-

ship, the opposed sides of said burners being each provided with a light port disposed in ignition relationship to its main burner ports, the tray at a point intermediate the burners being provided with an opening having an upwardly extending circumferential collar adapted to receive and surround the pilot and the flame burned thereby, the tray collar comprising a pair of semicircular pieces each provided at its longitudinal edges and at its bottom with a flange, the longitudinal flanges of the pieces being in abutment and secured to one another, the bottom flanges of the collar pieces being secured to the tray top, a flash tube in association with each burner, each flash tube having an end terminating adjacent and being disposed in gas reception alignment with the lighter port of a burner, means interconnecting the tray and each of said tubes adja-

cent the said named ends thereof for rigidity and immovably securing said tube ends in the aforestated position, and the other end of each tube passing through the collar between the longitudinal flanges thereof and terminating adjacent the pilot burner flame.

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