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2,682,920

FLASH TUBE STRUCTURE FOR GAS LIGHTERS

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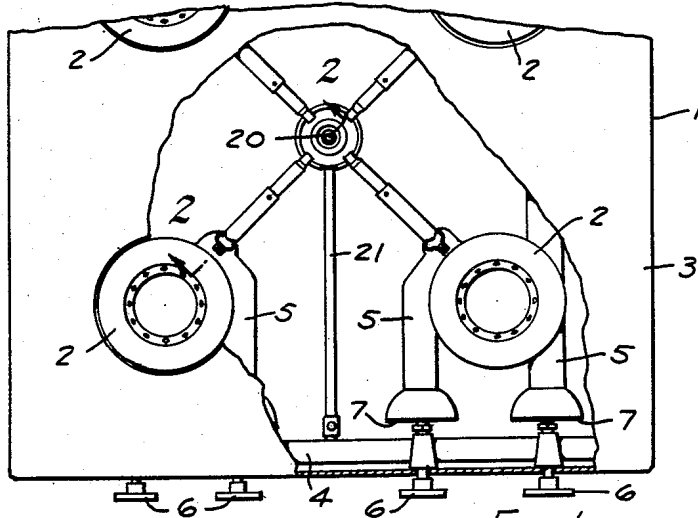


FIG. 1.

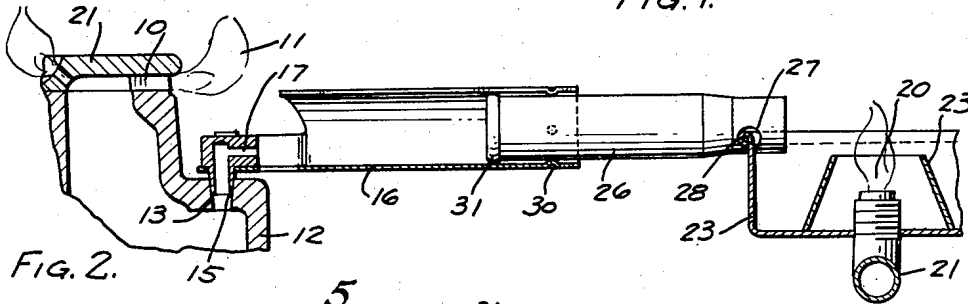


FIG. 2.

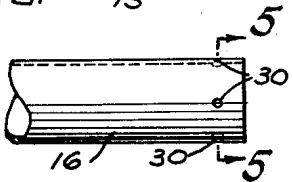


FIG. 3.

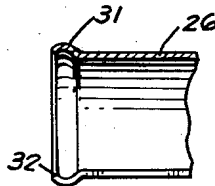


FIG. 4.

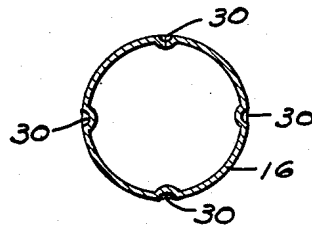


FIG. 5.

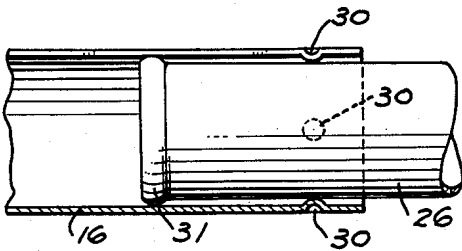


FIG. 6.

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FLASH TUBE STRUCTURE FOR GAS LIGHTERS

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1 Claim. (Cl. 158—115)

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This invention relates to a flash tube structure for the lighting system of gas burners.

The invention is concerned particularly with the flash tube structure of the type ordinarily employed with the top burners of gas ranges. A gas range usually involves several top burners and the ignition system embodies a relatively centrally disposed pilot flame with a flash tube extending from each burner to the pilot flame.

Due to the fact that the gas ranges have different dimensions, and the burners are placed differently relative to each other, and, further, due to the fact, even in ranges of the same construction, the distance between the pilot flame and the burners vary because it is not necessary to maintain close tolerances in this respect, a flash tube is ordinarily comprised of two tube sections telescopingly arranged and thereby adjustable as to length. An object of the invention is to provide a flash tube structure, embodying two tube sections but which, when assembled, are effectively and strongly held or locked together so that one cannot be readily displaced or removed from the other. Yet the structure provides for a telescoping arrangement so that one tube easily slides relative to each other without substantial friction, and which may slide relative to each other easily even after the structure has an accumulation of material thereon resulting from long use. Furthermore, the two tube sections may relatively rotate on their axes. The two tube sections may, of course, be separated from each other by exertion of some force thereon when it is desired to or necessary to separate them.

The invention is disclosed in the accompanying drawings:

Fig. 1 is a general view illustrating the top burner section of a gas range.

Fig. 2 is an enlarged cross sectional view taken substantially on line 2—2 of Fig. 1 showing the flash tube, a portion of the burner and the pilot flame and its housing.

Fig. 3 is a view showing one end of one of the tube sections.

Fig. 4 is a cross sectional view of the other tube section.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 3, showing structure of one tube section.

Fig. 6 is a partial view showing how the two tube sections telescope with each other.

In Fig. 1, a portion of a range is illustrated at 1 and it is indicated as having four gas burners 2. A top plate 3 is cut away to expose some of the underlying structure. There is a mani-

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fold or pipe for supplying gas as shown at 4 and each burner has a mixing tube 5 into which gas may be entered by a control valve 6. The mixing tube of each burner is provided with an air control 7 for entrance of primary air into the mixing tube. Suffice it to say that when a valve is turned to on position for its respective burner, gas is supplied to the burner and the issuing gas is ignited by the ignition system.

As shown in Fig. 2, a burner 2 has ports 10 for flames 11 and the burner may have an extension 12 provided with a port 13. This port is for the purpose of receiving a tip 15 mounted at one end on a flash tube 16 and the tip has a passage 17 therein of angular form, one end of which communicates with the interior of the burner and the other of which is directed toward the interior of the tube 16.

The gas for the pilot flame 20 is supplied by a pipe 21 which is connected to the manifold 4. A so-called pilot housing is shown as being in the form of a cup 23 mounted on the upturned end of the tube 21 and in addition thereto, a frusto-conical guard 23 may surround the burner to protect the flame 20. The cooperating flash tube section 26 is formed with an aperture 27 for engaging a bead or enlargement 28 on the rim of the cup. The construction at this inner end or pilot flame end of the flash tube, may conveniently be of the type shown in my Patent No. 2,295,001 of September 8, 1942.

Insofar as the present invention is concerned, the detailed manner by which the tube section 16 is associated with the burner, and the details of the construction by which the tube section 26 is associated with the pilot housing 23 may be varied. Suffice it to say, with the structure shown, both tube sections are held against turning rotatably on their axes. In other words, since the tip 15 is located in a port 13 tube section 16 cannot turn on its axis; since the aperture 27 engages the enlargement or bead 28, the tube section 26 cannot turn on its axis.

As shown in Figs. 3 and 5, the tube 16, which may conveniently be formed from a blank of sheet metal fashioned into tubular shape with the edges in abutting relationship, is provided with several inwardly extending teats or bumps 30. These may be formed by merely displacing the metal with a suitable tool leaving a slight depression in the outer surface. They may be placed in the metal blank before it is fashioned into tubular form. The teats are circumferentially spaced from each other, and as shown in

Fig. 5, there are four teats. The teats are spaced inwardly from the end of the tube.

The tube 26 may likewise be formed from a blank of sheet metal fashioned into tubular form, with abutting edges, and the telescoping end of this tube section is provided with a sort of bead formation 31. This bead formation may be formed in the blank while it is in flat form by merely subjecting it to a pressing operation and the extreme end of the tube section 26, which is the extreme end of the bead formation, extends inwardly so that the extreme end as shown at 32, is smaller in diameter than the larger portion of the bead.

The two tube sections are shown in telescoped relationship in Fig. 6. The outside diameter of the bead 31 is so dimensioned that it has a nice non-binding fit with the interior of the tube sections 16. The diameter of the major portion of the tube section 26 is somewhat smaller than the interior diameter of the section 16 to the end that the outside surfaces of the tube section 26 has a nice sliding fit with the apices of the teats 30.

In making the original assembly, the beaded end of tube 26 may pass freely into the telescoping end of the tube 16 until it strikes the teats. Then, additional pressure is needed to force the bead beyond the teats. This is facilitated because of the end portion 32 of the bead engages the teats cam fashion and which may slightly expand the tube 16 as the bead moves over the teats. After the bead has been pushed beyond the teats, the tubes are telescoped as shown in Fig. 6. In this condition, a substantial clearance at 34 is provided between the outer wall of the tube section 26 and the inner wall of the tube section 16. The two tubes, in effect, contact with each other at the bead and at the apices of the several teats.

Thus the two tube sections may slide easily relative to each other axially and also they are freely rotatable relative to each other. The teats hold the tube sections strongly together so that there is no chance for an accidental displacement or separation. The teats act as a guide, keep the tube sections in substantial alignment without undue looseness and offer a minimum of friction to relieve sliding movement.

Sometimes the tube sections are shipped to a range manufacturer with the tube sections assembled to the housing 23 and assembled with each other and with this present construction there is no danger of the tube sections 16 becoming separated from the tube sections 26. Sometimes, at the manufacturer's specifications, the lighter assembly is shipped to the manufacturer in disassembled relationship, that is, with the flash tubes disassembled from the housing 23 and disassembled from each other. However this may be, and regardless of how the structure is shipped to a range manufacturer, the lighting system is ultimately assembled in a range when the range is completely assembled and ready to be put into

use. Heretofore, it has been found occasionally that a tube section of the lighter system would be missing for one reason or another, the same having fallen off, or otherwise separated from the assembly. When this occurs the entire range is faulty and cannot be put into use. This situation entails the difficulty of obtaining another flash tube section possibly even to the end that another range is "robbed" of its tube, which is undesirable because the other range is then defective. With this construction the tube sections 16 and 26 are strongly held together so that there is no likelihood of separation or the loss of one tube section from another.

Of course, the tube sections may be separated from each other when, after usage, it is desirable to disassemble the structure for cleaning purposes or for other purposes. A person is strong enough to grasp the two tubes and pull them apart. And even though the tubes become quite dirty in use with accumulated substance thereon, they telescopingly slide relative to each other in an easy manner because of the clearance 34. The contact, which is only at the bead 31 and the teats 30 materially reduces the area of surface in frictional engagement.

I claim:

A flash tube structure for the igniting system for a gas burner wherein a flash tube extends from a gas burner to the pilot flame of a pilot burner comprising, a relatively large tube section formed of a resilient metal with abutting axial edges and having one end constructed for association with one burner, a relatively small tube section having one end constructed for association with the other burner, the relatively large tube section having a plurality of circumferentially arranged inwardly convex teats thereon which are spaced inwardly from its opposite end, the relatively small tube section having a radially outwardly convex external bead thereon immediately adjacent its opposite end, said tubes being telescoped together with said bead providing a sliding fit with the interior surfaces of the relatively large tube section and with the teats forming a sliding fit with the outside surfaces of the smaller tube section, the convex surfaces of said bead and teats being cooperable to cam said abutting edges of the large tube section resiliently apart when said opposite end of the smaller tube section is forced into and out of said opposite end of the larger tube section, whereby to removably hold said tube sections against separation while permitting relative axial and circumferential movement therebetween.

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