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AUTOMATIC GAS BURNER LIGHTER

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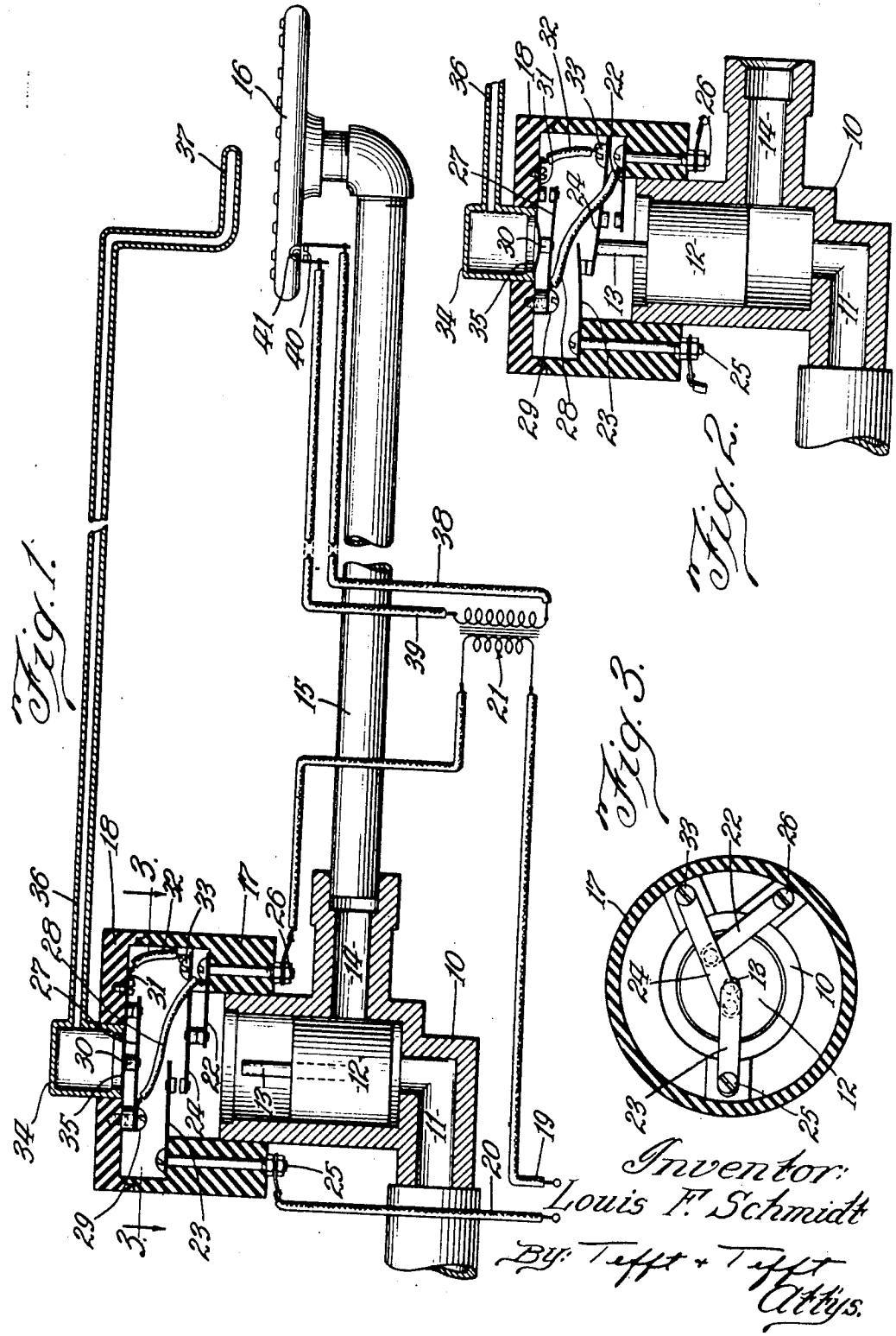


Fig. 1.

Fig. 2.

Fig. 3.

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AUTOMATIC GAS BURNER LIGHTER

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1 Claim. (Cl. 200—82)

This invention relates to automatic gas burner lighters and has particular reference to improvements in such lighters to make them adaptable for use in domestic gas ranges or similar applications.

Automatic lighters of this type as heretofore constructed have been too large, too complicated, and too expensive for domestic appliance applications. For this reason such devices have been equipped if at all with manually operable torch jet lighters which in themselves are somewhat objectionable on account of the necessity of keeping a small jet flame continuously burning. Moreover, such lighters are not well adapted for ovens and the like and their use has been largely confined to the ordinary open cooking burner, leaving the more confined and dangerous oven burners devoid of any such equipment. Such burners are particularly dangerous because the gas flame if extinguished for any reason, permits the burner to discharge unburned gas.

The particular object of this invention is to provide a simple, compact, low cost electric burner lighter adaptable for use on domestic gas ranges or similar devices.

Another object is to provide a lighter which will automatically re-ignite an open gas burner in the event that the burner flame is extinguished for any reason.

A still further object is to provide a lighter which is energized by the conventional electric light circuit with which modern gas ranges are connected for servicing electric lights mounted integral with the range.

And a still further object is to provide a lighter which is adaptable to the full range of gas variations in both the kind and pressure of gas.

Other objects and benefits will be disclosed in the following descriptions and drawing in which:

Fig. 1 is a somewhat diagrammatic side elevation view of my lighter partly in section to better disclose the arrangement of the parts with the gas turned off;

Fig. 2 is another view of the control mechanism as shown in Fig. 1 but with the gas turned on and the burner lighted as will later be explained; and

Fig. 3 is a top plan view of the mechanism as it appears on the section lines 3—3 of Fig. 1, showing the plan arrangement of the contact springs.

Now referring to Fig. 1, I designate the valve body by the numeral 10. This valve body has a conventional gas inlet port 11 which communicates with a cylindrical opening in which a free fitting piston 12 is disposed. This piston has a contact rod 13 inserted in its upper end, the purpose of which will later be explained. Communicating with the cylinder is an outlet port 14 to which is joined a burner pipe 15 mounting a conventional gas burner 16.

Mounted on the body 10 is a contact box 17 which has a cover 18 tightly enclosing the interior opening with the valve body 10. The contact box 17 and the cover 18 are made of insulating material such as "Bakelite" or the like. Lead wires 19 and 20 from a standard electric circuit are introduced to this contact box, the lead wire 19 connecting to a high tension coil 21 and to the terminal bolt 26. The lead wire 20 connects to the terminal bolt 25 on the opposite side of the contact box.

On the upper end of the terminal bolt 26 is a contact spring 22. This spring is made of spring brass or similar material and carries a conventional contact point on its end. Similarly, a contact spring 24 is mounted above the spring 22 by the terminal bolt 33. The spring 24 has dual contact points, the one contacting the point on spring 22 and the other on the spring 23, the spring 23 being carried by the terminal bolt 25, as shown. A jump wire 28 is led from the terminal bolt 26 to a terminal bolt 29 supporting a contact spring 27 mounted in the cover 18. Likewise a jump wire 32 is connected from the terminal bolt 33 to a contact spring 31, as shown.

Tightly mounted in the top of the cover 18 is an expansion chamber 34 having a diaphragm on its inner end 35 positioned to contact the button 30 mounted on the spring 27. Leading from the expansion chamber 34 is a tight tube 36 ending in a terminal section 37 positioned over the gas burner 16.

Now returning to the electrical wiring, it will be noted that lead wires 38 and 39 are connected to the high tension coil 21 and extend to a gap sparking device 40 positioned near the burner 16. It is preferable to locate this gap sparking device below the burner, and under some conditions a special jet 41 is positioned in a manner whereby the ignited gas from this special jet assists in igniting the balance of the burner.

Now referring to Fig. 1, which shows my igniter with the gas turned off, it will be obvious that because of lack of contact between the spring points 23—24 the igniter is dormant and no current is flowing through the lead wires 19—20. The burner being cold, the air in the expansion chamber 34 and its connecting tube 36 and 37 has contracted and, therefore, the

diaphragm 35 is in its normal flat position out of contact with the point 30 and otherwise permitting contact of the points 27—31.

However, referring to Fig. 2, it will be appreciated that as soon as the gas is turned on and the piston 12 arises, the pin 13 will make contact with the points 23—24 and immediately the circuit is made and spark will be generated at the spark gap 40, thus igniting the gas as it reaches the burner.

As soon as the burner is lighted it will heat the air in the tube 37 which will expand in the chamber 34, causing the diaphragm 35 to depress and break the contact 37, thus shutting off spark after the burner is lighted.

If for any reason the burned should go out, the air in the tube 37 and chamber 34 would quickly cool and the diaphragm 35 would assume its normal position, whereupon contact would again be made and a spark generated at the point 40.

Mention has been made of the fact that the interior of the contact box 17 and cover 18 is tightly mounted on the body 10. The reason for this is to provide an air cushion for the piston 12 and to prevent gas from entering the interior of the chamber. It will be appreciated that as soon as the piston 12 has been raised to the point where it clears the port 14, the tendency for gas to pass into the interior chamber will be very much reduced.

From the foregoing description it will be well understood that I have provided a simple, compact lighter which is adapted to be mounted in domestic gas ranges or similar applications. From the description it will further be appreciated that the gas will be ignited as soon as it enters the burner, and if for any reason the burner goes out, it will be promptly re-ignited.

Having thus described my invention, I claim:

In a gas burner lighter switch, a gas valve, an insulated igniter switch box mounted on said valve, three spring switch contacts in said box, a gas actuated piston gate in said valve operable to actuate two of said contacts, and thermal expansion means attached to the box, operable to actuate the third contact, the arrangement and structure of the valve and switch box providing a tight compact control unit preventing the gas entering the switch box housing the electrical contacts.

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