

[54] **SELF-CLEANING ELECTRICALLY
IGNITED LIGHTER**

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FOREIGN PATENTS OR APPLICATIONS

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[51] **Int. Cl.²**..... **F23D 11/38**

[58] **Field of Search** 431/32, 121, 122, 132,
431/255, 256

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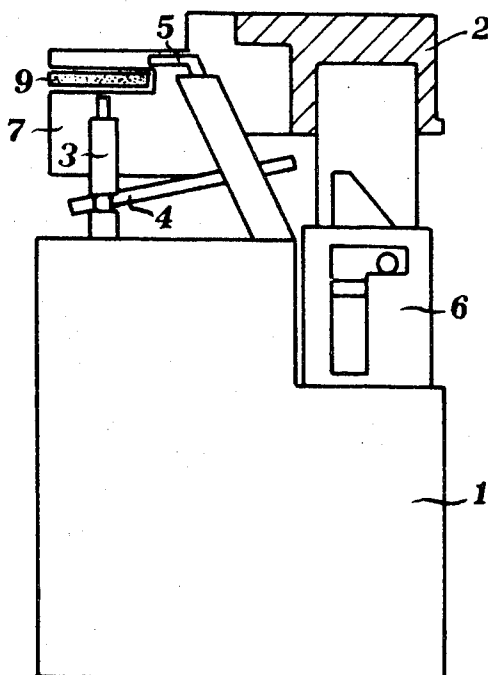
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[57]

ABSTRACT

Accumulation of combustion products on a burner of a lighter that serves as one electrode of an electric ignition system is prevented by cleaning brushes or pads moved by actuation of the lighter mechanism that rub the surface of the burner before ignition and after extinction.

8 Claims, 4 Drawing Figures



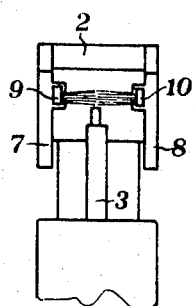


FIG. 2

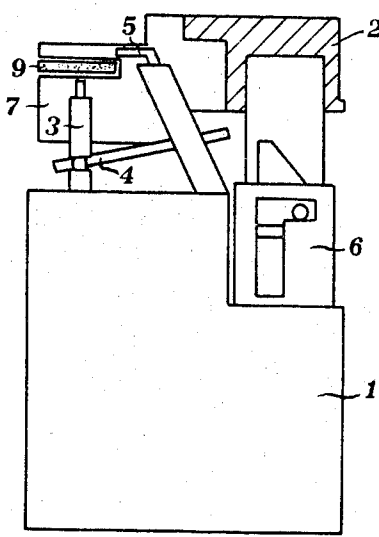


FIG. 1

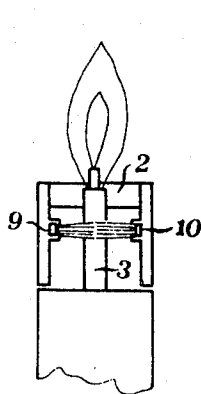


FIG. 4

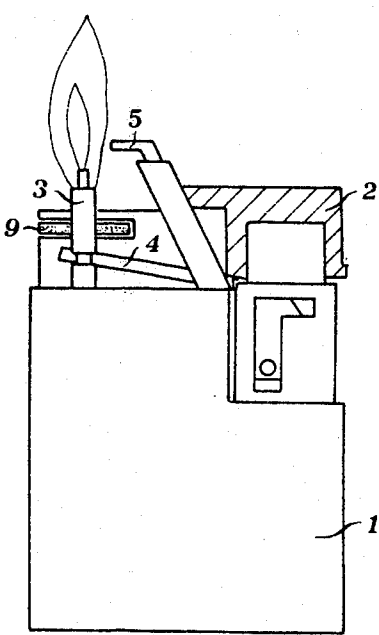


FIG. 3

SELF-CLEANING ELECTRICALLY IGNITED LIGHTER

The present invention relates to an improved gas-fueled electrically ignited lighter.

In such lighters the electrical ignition may be electrically powered, for example, by a battery, by a magnetic device or by a piezoelectric device, and in each case the burner is as a rule also one of the ignition electrodes. Now this last circumstance has a disadvantage because products of combustion are deposited and accumulate on the burner surface which in time form an encrustation and then interfere with reliable ignition and may even prevent ignition on repeated attempts.

It is an object of the present invention to provide a gas-fired electrically ignited lighter in which the ignition electrode and especially the portion of the burner that serves as an electrode is maintained in clean condition.

SUBJECT MATTER OF THE PRESENT INVENTION

Briefly, burner cleaning means operated by the actuating mechanism of the lighter are provided. The burner cleaning means include at least one brush or at least one cleaning pad of elastic material and these means are arranged to be moved relative to the burner and in contact therewith with every actuation of the lighter so as to clean the burner when it is not actually lit, thus before ignition or after extinction, or both. Preferably the movement of the cleaning means and of the actuating means is parallel to the axis of a tubular-shaped burner or the like, so that the motion may be transmitted to the cleaning means by the actuating means by the provision of a pair of parallel carrier brackets on opposite sides of the burner into which the cleaning means in the form of brushes or pads may be replaceably mounted in holding grooves having a reentrant cross section, such as T or dovetail cross section.

In this manner it is possible to subject the burner automatically to a doubly effective cleaning process in each operation of the lighter, so that there will always be a sufficiently clean burner for reliable ignition.

In principle a cleaning means can also be so arranged as to operate on the second ignition electrode that is spaced a short distance away from the burner, but this has been found to be as a rule unnecessary, because deposits of products of combustion and the like that occur on this electrode do not impair its operation.

The invention is further illustrated by way of example with reference to the accompanying drawings in which:

FIG. 1 is a schematic side view, partly in cross section, of a gas-fueled piezoelectrically ignited lighter, shown in its rest position;

FIG. 2 is an end view, partly broken away, of the lighter shown in FIG. 1;

FIG. 3 is a schematic side view, partly in section, of the lighter of FIG. 1 in its operated position; and

FIG. 4 is an end view of the lighter in the operated position.

The piezoelectrically ignited gas-fueled lighter shown by way of illustration in the drawings comprises in the usual way a casing 1 containing a fuel container and the piezoelectric ignition device of which the depressable button 2 of its actuating mechanism extends out of the casing 1. Depression of the button 2 into the operated position shown in FIG. 3 causes an opening of the fuel

connection between the fuel container (not shown) and a burner 3 by means of a so-called valve lever 4 and at the same time tensions a striking hammer, not further shown, in a chamber 6 and finally releases the hammer to produce a sudden deformation of a piezoelectric element (not shown), which in turn generates an electrical pulse that causes a spark breakdown between the burner 3, operating as one electrode, and a neighboring additional electrode 5, thereby igniting the gas coming out in a jet from the burner 3.

As shown particularly in FIG. 2, projecting arms 7 and 8 are provided on the previously mentioned actuating button 2, which are parallel and spaced from each other on opposite sides of the burner 3. On the inner sides of the two projecting arms 7 and 8, directly above the free end of the burner in the position shown in FIGS. 1 and 2 are brushes 9 and 10. The bristles of each of these brushes preferably extend slightly into the opposite brush. The base members of the brushes 9 and 10 are slidably mounted in T-shaped grooves on the inner side of the arms 7 and 8 so as to be replaceable.

Of course other kinds of connections between the brushes 9 and 10 and the arms 7 and 8 may be used. Thus the bases of the brushes can be slipped into grooves of dovetail profile or, if replaceability of the brushes is not imperative, the brushes can be simply affixed to the inner side of the arms 7 and 8 with an adhesive. Furthermore, other kinds of cleaning means, such as cleaning or scouring pads of elastic material, such as synthetic resin foam or the like, may be used.

Actuation of the button 2 downwardly to ignite the lighter now also produces a downward motion of the brushes 9 and 10, by which the burner 3 is brushed clean from the top down on all sides. Of course the movement is so arranged that the brushes 9 and 10 at least approximately reach their lower end position shown in FIGS. 3 and 4 before ignition takes place, in order to avoid singeing the brushes.

Upon release of the button 2 there is produced, as usual, an automatic restoration of the button 2 into its rest position, illustrated in FIGS. 1 and 2, which turns off the fuel supply to the burner and thus extinguishes the flame. As is evident from the drawings, during this return movement the brushes 9 and 10 again in their movement past the burner 3 brush it off, so that any deposit of products of combustion on the burner are immediately removed.

From the above description it is clear that maintenance of the burner 3 in a clean condition is accomplished in this manner with a relatively simple and economical construction, and, furthermore, that the particular form of the cleaning arrangement is obviously not limited to the particular shape and disposition illustrated. Such a cleaning device can be provided for practically any form of lighter, quite independently of whether the lighter actuating mechanism has a push button, a slider, a flip-cover or the like as its external operating member. In any of these cases there is no difficulty to provide corresponding arms or levers which will move the brushes or the like relative to the burner in brushing contact, either in parallel to the burner axis or else in some other direction, which may also be transversely across the burner. As a further example, the cleaning means may also take the form of a roller or the like and perform the cleaning operation by its rotation. It will thus be seen that although the invention has been specifically described with reference to a particular illustrative embodiments, variations are possible

within the inventive concept.

I claim:

1. Lighter comprising: a controllable gas jet burner (3) and electric ignition means (5, 6) therefor;

manually operable actuating means (2, 4) for causing fuel gas to be released to said gas jet burner and for producing an electric spark in said ignition means to ignite said fuel gas at said burner; cleaning means (9, 10) movable relative to said burner for cleaning the burner surfaces thereof, and means (7, 8) linking said actuating means and said cleaning means for operating said cleaning means.

2. Lighter as defined in claim 1, in which said cleaning means comprises at least one brush.

3. Lighter as defined in claim 1, in which said cleaning means comprises at least one cleaning pan of elastic material.

4. Lighter as defined in claim 1, in which said cleaning means, linking means and actuating means are so arranged as to produce relative movement of said cleaning means past said burner surfaces in contact therewith prior to ignition of said fuel gas upon actuation of said actuating means.

5. Lighter as defined in claim 4, in which said cleaning means, linking means and actuating means are so arranged as to produce relative movement of said cleaning means past said burner surfaces in contact therewith following the extinction of a flame at said burner upon the release of said actuating means.

6. Lighter as defined in claim 5, in which said cleaning means are movable in a direction at least approximately parallel to an axis of symmetry of said burner.

7. Lighter as defined in claim 5, in which said actuating means comprises a depressable member movable in a direction at least approximately parallel to the axis of symmetry of said burner and in which said linking means includes two spaced parallel carrier means projecting from said depressable member, said cleaning means consisting of two members, one mounted on each of said carrier means.

8. Lighter as defined in claim 7, in which said members of said cleaning means are replaceably mounted in grooves of reentrant cross section provided in said carrier means.

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