

123,386

PATENT



SPECIFICATION

Application Date, Feb. 19, 1918. No. 2953/18.

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COMPLETE SPECIFICATION.

Electric Gas Lighters.

I, JOHN WILLIAM MACKENZIE, of the Firm of Wheatley & Mackenzie, Patent Agents, of 40, Chancery Lane, London, England, do hereby declare the nature of this invention (a communication to me from abroad by Safety Gas Lighter Corporation, a corporation duly organized under the laws of the State of Virginia, of 312½, South Jefferson Street, Roanoke, Virginia, United States of America); and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention pertains to electric gas lighters and the object thereof is to provide means from an ordinary alternating electric light circuit and appliances to be used in connection therewith whereby an electric spark may be conveniently and safely obtained therefrom at the gas burner. The invention therefore consists in the arrangement and connection of the various parts and in the improved formation of certain of the elements used, all as will be herein described and claimed.

In the drawings which form a part of this specification, Figure 1 is in general a longitudinal, sectional view taken along the central axis of the lighting handle and showing the assembled contents thereof.

Figure 2 is an end view of the outer head of the resistance unit contained within the handle.

Figure 3 is a detached end view of the electric connection used in connection with this head.

Figure 4 is a vertical, sectional view of the handle taken on the line 4—4 of Figure 1.

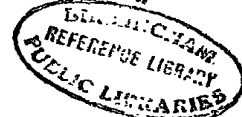
Figure 5 is an outside or plan view of the entire handle.

Figure 6 is a fragmentary section of the handle and the outer end of the resistance element, taken on the line 6—6 of Figure 5.

Figure 7 is a general view, partly in diagram, showing how the handle is connected for use. The scale of Figures 2, 3, 4, and 6 is somewhat enlarged over that of Figures 1, 5, and 7 in order to show the construction more clearly.

Referring to the drawings the handle 7 comprises a hollow body or tube, made of an insulating material such as wood or hard rubber, its ends being closed by an integral head 8 and a removable head 9, the latter being screw-threaded to the body of the handle. Contained within this handle is a resistance element 10, leading to the outer end of which is an electric wire 11 which conducts current from the ungrounded side of a house-lighting circuit as will be later described. This wire passes through an opening in the outer end of the head 9 and is knotted at 12 inside the head to protect the connection between this wire and the resistance unit from mechanical strains. To the inner end of the resistance unit is attached a current-conducting leaf spring 13

[Price 6d.]



which terminates near to but slightly above the inner end of the electrode 14, this latter being secured as by pressing, in a suitable opening in the integral head 8 and extending through that head to the exterior. This electrode is provided with an insulating shield 15 for a portion of its length but both the inner end and the outer point of the electrode are exposed. 5

The entire resistance unit with the leaf spring attached to it is adapted to be entered in the outer end of the handle and positioned between the inner end of the resistance unit and the inner end of the electrode is a push button 16 which is disposed in and extends through the wall of the handle. This push button is constructed of insulating material and at its inner end is provided with a way or channel 17 through which the leaf spring is inserted as the unit is entered, thus serving to stay the resistance unit against rotation within the handle. At the same time the leaf spring prevents the removal or loss of the push button. This channel 17 is formed by bradding a fibre washer 18 to the bottom of the push button, the shims or spacers 19 at the edges serving to provide the necessary opening for the leaf spring. When the button is depressed from the outside the free end of the leaf spring is brought into contact with the electrode and the circuit completed thereto. 10 15

The resistance unit 10 is formed with a core or spool 20 of insulating material, having a slightly enlarged head at each end, these also being formed of insulating material. These heads are of such size as to fit snugly within the cavity of the handle. A bolt 21 passes longitudinally through a central hole in the core and through both heads, the head of the bolt being let into the outer face of the outer head 22. At the inner end of the bolt and on the inner face of the inner head 23 the leaf spring 13 is secured beneath the nut 24 of this bolt and the entire device may thus be drawn firmly together by means of this single bolt. In order, however, that current may not pass through this bolt and short-circuit the resistance wire the outer face of the head 22 is covered with a circular shield 25 which entirely overlies the same and covers the bolt head. This shield is secured to the head 22 by means of a pair of spaced bolts 26 which are isolated from the central bolt and which pass in a reverse direction through the head 22, the heads of these bolts being slightly let into the inner face of this head but preferably projecting inwardly a slight distance also in order to form anchors where they are compressed or drawn against the outer end of the core 20. By drawing up the nuts 27 of these bolts the shield may be secured to the head 22. This shield is made of slightly larger diameter than the cavity of the handle and its edges overlie the outer end of the same. When the head 9 is screwed up the shield is firmly held in place and the entire resistance unit thus held against longitudinal displacement within the handle. 20 25 30 35

Encircling both of the bolts 26 and forming a washer for the nuts 27 is a loop of sheet metal 28 which also forms an electric connector. The end of the wire 11 terminates and is secured beneath this washer and is anchored by one of the nuts 27. Anchored beneath the other nut 27 and beneath the washer 28 is the outer end of a length of resistance wire 29 which then passes through slots in the edge of the shield 25 and head 22 and is wrapped in a spaced helical path upon the surface of the core 20, between the heads 22 and 23, the inner end of the resistance wire being secured beneath the leaf spring by means of the bolt 21. After being wrapped upon the coil 20 the resistance wire and the spool is coated with varnish or the like and there is then applied over the wire a wrapper 30 of sheet asbestos or other heat insulating and current insulating material, thus maintaining the spacing of the wire upon the spool and protecting the handle from noticeable heat when used for short periods only. 40 45 50

In use I attach the wire 11 to the one side of the alternating electric lighting system of a house and extend this wire 11 to bring the lighting unit within reach of the gas burner, shown at 31. The other wire of the lighting system is usually grounded, as at 31' or if not already grounded must be so connected to use my appliance. I also make certain that the gas pipe 32 leading to the 55

burner is also properly buried in the ground or in electric connection with the ground 31. By now turning on the gas and bringing the electrode to touch the metal of the gas burner, at the same time momentarily depressing the push button, a spark will occur that will ignite the gas. The current passing
5 through the resistance wire 29 prevents short circuiting the current. Likewise, the grounding of the one side of the electric circuit and of the gas pipe is more safe than simply connecting that side of the circuit thereto and more safe than bringing the two sides of the circuit in contact at the burner. For with alter-
10 nating circuits it is evident that if the one side were connected to the gas stove without the intervention of the ground, serious discharges and shocks might result.

Thus my device is one convenient of use and manufacture and provides safety from short circuits, accidental electric shocks and fires. At the same time I am enabled to use the ordinary lighting circuit of a house for furnish-
15 ing the spark for gas lighting without the use of storage batteries, spark coils, etc.

I have thus described an embodiment of my invention. Other embodiments within the scope of the appended claims are possible without departing from the spirit thereof.

20 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In an electric gas lighter, a hollow handle having an integral head at one end thereof and a removable head at the other end, an electrode extending
25 through the integral head and rigidly secured therein, a wire extending through the said removable head, a resistance unit formed to fit within the hollow of the main handle and adapted to be entered therein upon the removal of the said head, said wire being connected to the one end of the said resistance unit, and a normally open switch arranged between said resistance unit and said
30 electrode and adapted to establish connection therebetween.

2. An electric gas lighter, as set forth in Claim 1, including means cooperat-
ing between the unit and the handle for retaining the unit in its normal position.

3. An electric gas lighter, as set forth in Claim 1, wherein said resistance
35 unit comprises a cylindrical insulator with heads at either end thereof, a length of resistance wire coiled on the said insulator between the said heads in a helical path, the ends thereof extending through the opposite heads, the one being connected to a source of electrical energy and the other end to the electrode.

4. An electric gas lighter, as set forth in Claim 1, wherein said electrode
40 embodies a current carrying core and an insulating shield surrounding the same, the core of the electrode being exposed at the outer and inner point of the same, and the said shield and electrode extending within and being pressed into a hole in the handle.

5. An electric gas lighter, as set forth in Claim 3, wherein the resistance
45 unit has a head of insulating material at each end and means for securing the heads to the core of the unit, said means comprising a securing member which passes through both of the heads and through the core and which clamps the said parts together, the said securing member being exposed at one head and
50 forming a resistance wire terminal and being insulated at the other head.

6. An electric gas lighter, as set forth in Claim 5, wherein said securing
55 member comprises a bolt which passes through both of the heads and through the core to clamp the said parts together, and wherein a shield of insulating material is positioned upon the outer face of the outer head and cover the adjacent end of the said securing bolt.

7. An electric gas lighter, as set forth in Claim 6, including a pair of

additional bolts passing in reversed direction through the head and the shield with respect to the central bolt and securing the same together, the said bolts being isolated from the central bolt, one of said additional bolts forming means for the attachment of one end of the resistance wire, the other forming means for the attachment of the unit to an outside source of current, and a connector 5 between the said two additional bolts.

8. An electric gas lighter, as set forth in Claim 7, wherein the said connector comprises a loop of sheet metal adapted to encircle the bolts and to form a clamping washer.

9. An electric gas lighter, as set forth in Claims 1, 2 and 5, wherein the 10 resistance unit has a portion of substantially the same cross section as the cavity of the handle, there being another portion at the outer end of the unit formed of greater dimension than said cavity and adapted to overlie the end of the tube and to restrain the unit against inward movement, the said head being formed to restrain the unit against outward movement. 15

10. An electric gas lighter, as set forth in Claims 1 and 5, including a wrapper of heat insulating and current insulating material disposed around the core of the resistance unit between its heads and covering the resistance wire, the same being applied in such manner as to retain the resistance wire in its spaced relationship. 20

11. An electric gas lighter, as set forth in Claim 1, including a leaf spring extending from the inner end of the unit to adjacent the inner end of the electrode but normally out of contact therewith, a push button extending through the wall of the handle between the unit and the electrode and adapted when depressed to deflect the leaf spring into contact with the electrode, the 25 said push button having an opening through its lower end and the leaf spring being disposed within the opening.

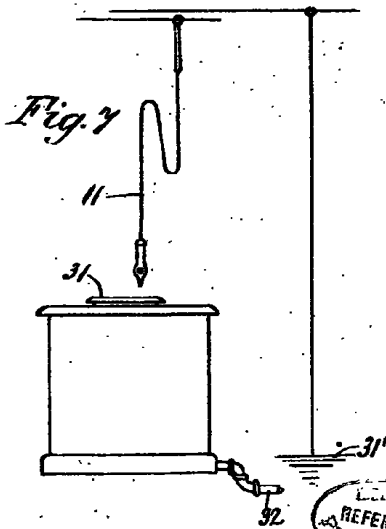
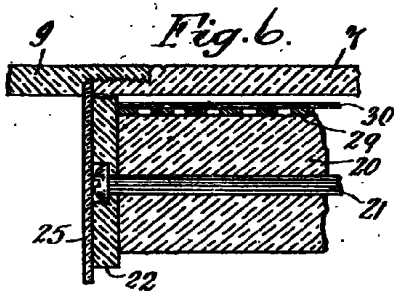
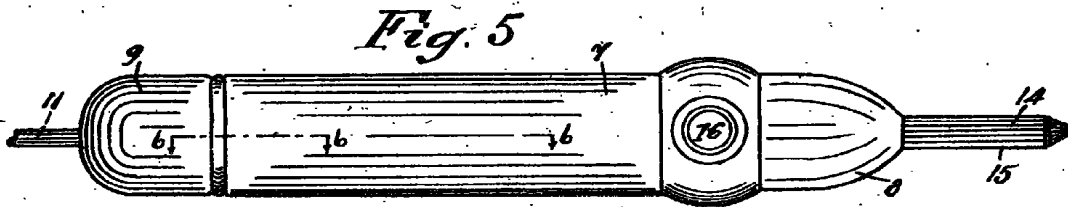
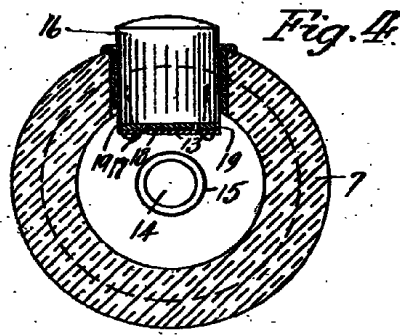
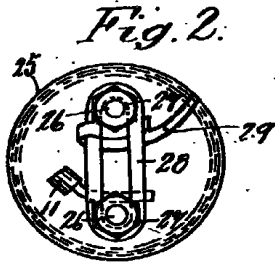
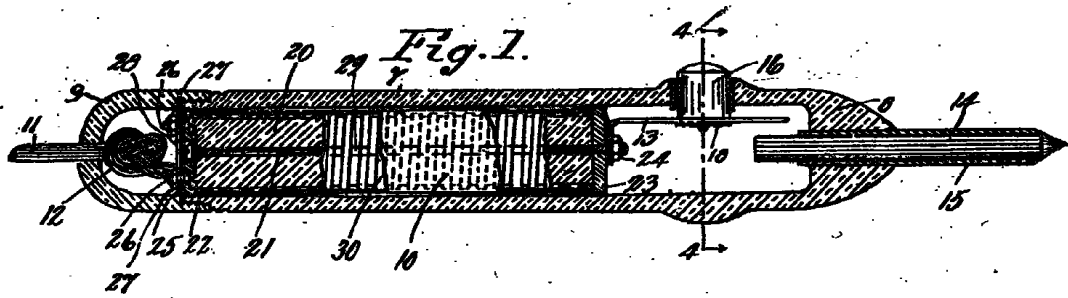
12. An electric gas lighter, as set forth in Claim 1, connected in an electrical circuit having one side thereof grounded, the electrode being adapted to be brought into momentary contact with a gas burner having a metallic connec- 30 tion with the ground.

13. An electric gas lighter, substantially as described and shown, and for the purpose set forth.

Dated this 19th day of February, 1918.

WHEATLEY & MACKENZIE, 35
40, Chancery Lane, London, W.C. 2,
Agents.

[This Drawing is a reproduction of the Original on a reduced scale.]



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