

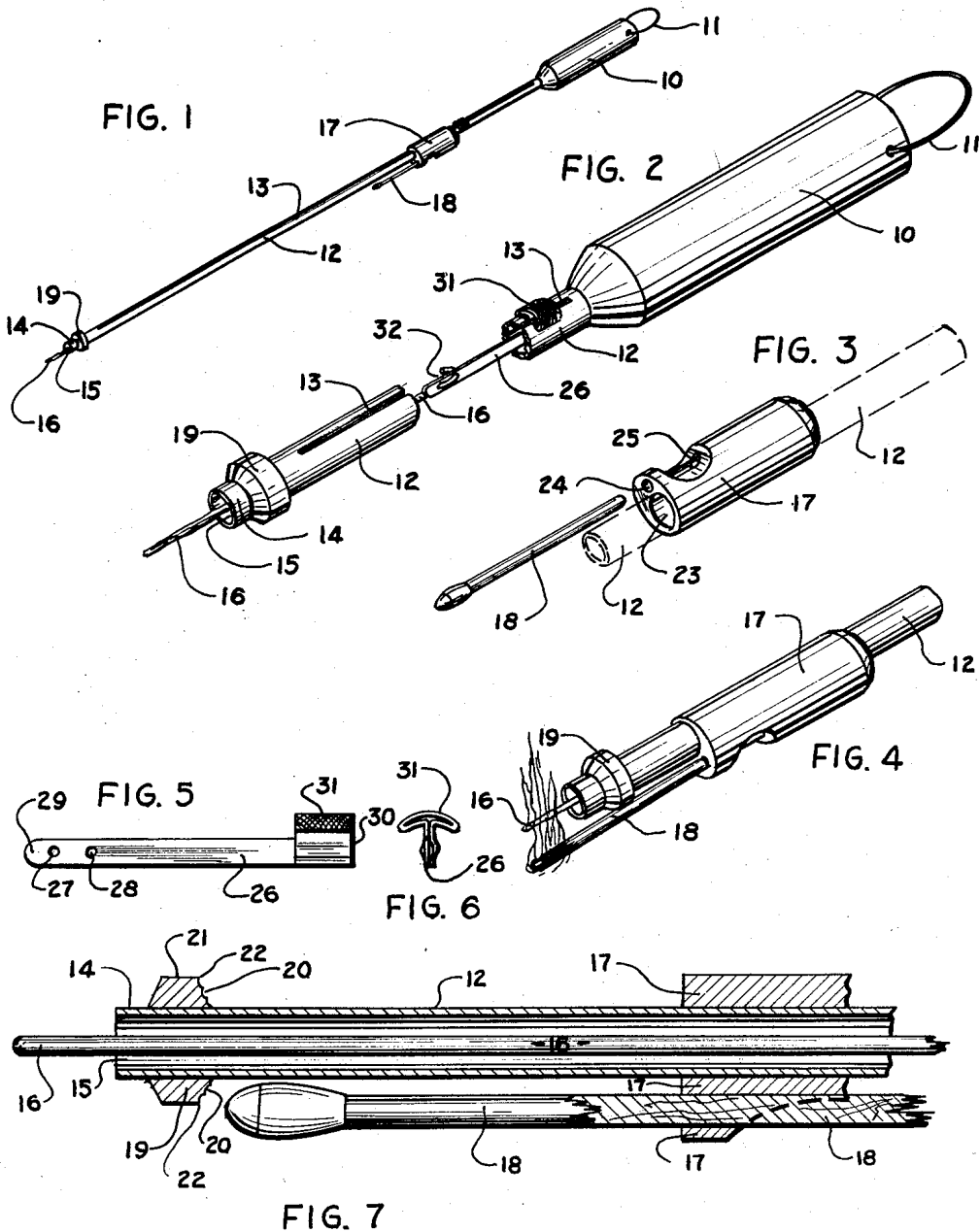
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R. G. ELLIOTT

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SAFETY LIGHTER

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INVENTOR.  
RAYMOND G. ELLIOTT  
BY *R. W. Hodgson*

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**SAFETY LIGHTER**

Raymond G. Elliott, Pomona, Calif., assignor of one-tenth to Gadget-Of-The-Month Club, Inc., Los Angeles, Calif., a corporation of California

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This invention relates to devices for lighting domestic furnaces and industrial burners of all kinds and, more particularly, to a simple device having a wick therein which may be entered unlighted into a normally inaccessible combustion chamber. When the wick is positioned adjacent the burners, a match disposed in a sliding carrier is ignited by mechanical means adjacent the wick thereby lighting the wick which in turn may be used to light one or a plurality of burners interiorly of the combustion chamber.

Statistics concerning fires and accidents occurring during the process of lighting burners, heaters, floor furnaces and similar equipment, indicate that most of the injury and damage is caused by igniting fuel or fuel fumes which have escaped exteriorly of the enclosed and properly vented combustion chamber.

Typical is the case of a person lighting a furnace through a typical inspection door. As the lighted match is advanced toward the open door, previously liberated combustible gas which accumulates around and within the combustion chamber when no draft exists to carry it outwardly through the flue, is ignited before the match is entered through the door, thus drawing additional gas outwardly through the door and creating a sudden flash of flame around the person holding the match.

In the past there have been a number of lighting devices of the torch or flame applicator type which provided more or less satisfactory means for applying flame to remote places, and there have been a few lighters in which the flame was generated after the operative end of the devices were placed adjacent the burners, but those of the latter category were intended mainly for industrial purposes and were dependent upon batteries and spark coils for the generation of a pilot flame and hence were quite impractical both in size and operative requirements for use in domestic applications.

My invention has been made with the foregoing considerations in mind and can be said to have a plurality of important objectives.

One important object of my invention is the provision of a safety lighter device which may be introduced unlighted into the enclosed fire box or combustion chamber of a furnace and lighted when its operative end is adjacent the burner or other source of the fuel supply.

Another important object of my invention is the provision of a device of the character described which is minimal in size and entirely mechanical in operation, and requires no accessory equipment other than common materials present and available in the average household.

A further important object of my invention is the provision of a device of the character described which is adapted to provide a flame of brief duration or, when desired, a continuing flame for multiple lighting at various points.

An additional important object of my invention is the provision of a device of the character described having means for extinguishing the pilot flame when no longer

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required without removing the device from the combustion chamber.

In brief, the safety lighter device of my invention includes a longitudinally extended tubular main body having an axially aligned slot therein, and a handle member at one end and a paraffin impregnated wick disposed in the longitudinal bore of the tubular body and extending outwardly from the end thereof spaced from the handle, there being push-pull lever means positioned outwardly of the slot for extending the wick.

A cylindrical weighted match carrying member is slidably disposed upon the tubular body between the handle and the end spaced therefrom by means of a longitudinal non-axial bore therethrough adapted to slidably receive the tubular body.

A second longitudinal bore, dimensioned to receive the stick end of a conventional stove match therein, is disposed inwardly from one circular end of the carrier member, and is diametrically spaced from the through bore therein. A striker ring is affixed to the end of the tubular body adjacent the section of wick extending outwardly thereof, and is provided with a sharp inwardly disposed circumferential edge spaced outwardly from the tube so as to engage the head of a match sliding down the tube in the match carrier.

As previously indicated, the tube receiving bore through the cylindrical match carrier is off center, and the match receiving bore is disposed in the area of greatest radius relative to the through bore. This area is preponderant in weight and rotates downwardly under the tube as the carrier slides downwardly thereon so that when it reaches the end of the tube the lighted match is automatically positioned so that the flames arising therefrom immediately surround the wick.

Certain variations of the embodiment described herein and further important objects of the present invention will become apparent in the following detailed description of one preferred form thereof when examined together with the references to the drawings, in which:

Figure 1 is a diagrammatic view in perspective showing a safety lighter constructed according to the principles of the invention;

Figure 2 is a similar perspective view, considerably enlarged, and with a central portion broken away to show details of the interior construction;

Figure 3 is a diagrammatic perspective view of the match carrying member of the assembly;

Figure 4 is a schematic view similar to that of Figure 3 showing the method by which the match ignites the wick;

Figure 5 is a side elevational view of the wick adjustment means;

Figure 6 is an end elevational view of the wick adjustment member seen in Figure 5, and

Figure 7 is a diagrammatic view showing certain portions of the assembly in longitudinal section and portions of the wick and match in side elevation.

Reference is again made to Figure 1 showing a safety lighter device constructed according to my invention which is seen to include a handle portion 10 having a ring bail 11 extended therefrom, a tubular longitudinally extended main body portion 12 having a slot 13 disposed therein from adjacent the handle 10 to a point adjacent the end 14 spaced from the handle, and a wick member 16, a portion of which is outwardly extended through the aperture 15 of the tube 12.

A match carrying member 17 of generally cylindrical conformation and having a match 18 positioned therein is also shown in this figure to be slidably mounted on the tubular body 12 so that when the carrier 17 slides to the end 14 of the tube 12 the head of the match 18 comes into contact with the sharp rim of the striking ring 19

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which is fixedly attached to the tube 12 adjacent the end 14 thereof. The mechanical means for striking the match are clearly indicated in the enlarged diagram of Figure 7 which shows the tube 12, the striking ring 19 and the match carrier 17 and part of the match stick 18 in longitudinal section, and the wick member 16 and the match head and shoulder 18 in side elevation. It will also be observed in Figure 7 that the striking ring 19 is provided with a plurality of circular grooves of progressively increased diameter on its inwardly disposed surface 20 so that the outer groove is terminated at the circumferential edge 21, thereby presenting a sharp outer circumferential rim as seen at 22.

As can be seen in Figure 3 the match carrying member 17 is of generally cylindrical conformation and is provided with a through bore 23 adapted to receive the tube member 12 slidably therethrough. It will further be noticed that the bore 23, although paralleling the longitudinal axis of the cylinder 17, is disposed substantially off center, and a match receiving bore 24 is entered parallel to the bore 23 in the cylinder area of greatest radius relative to the bore 23. A finger notch 25 is provided in the match carrying member 17 to facilitate entering the match within the bore 24 and the subsequent removal of the burned stick therefrom.

Because of the greater weight in the area of the cylinder 17 in the section thereof being of greatest radius relative to the bore 23, when the device is held in the diagonally downward position indicated in the Figures 1-4, the match carrying cylinder 17 will rotate downwardly relative to the tube as it slides lineally thereon so that its heavier area will be under the tube upon arrival at the end 14 thereof, and the match 18 being ignited by forceful contact with the rim 22 of the striking 19 will be beneath the wick 16 and flame upwardly thereabout as shown in Figure 4.

As indicated in Figure 1 and more clearly shown in Figure 2 a longitudinally extended wick member 16 is disposed interiorly of the axial opening 15 of the tube 12 and is removably attached to a push-pull manually operated positioning member 26 which is disposed through the slot 13 and is slidable lineally within the tube 12.

Details of the conformation of the positioning member 26 are shown in the side elevational view thereof in Figure 5 to include a longitudinal section defining a thin band of strap material having holes 27 and 28 there-through adjacent its end 29 which is normally disposed toward the end 14 of the tube 12. An upward extension of the strap 26 adjacent its end 30 spaced from the holes 27 and 28, is bent laterally to provide a convolute arcuate double fold best seen in the end view thereof shown in Figure 6, and its upwardly disposed surface 31 which is positioned outwardly of the longitudinal slot 13 is roughly finished, as by knurling, to facilitate movement of the part with a thumb or finger-tip. The band 26 is dimensioned so that it may be slipped inwardly of the slot 13 in the tube 12 and is dimensioned in length so that when moved downwardly in the slot 13 to the end 14, the end 29 together with the holes 27 and 28 therein will extend outwardly of the aperture 15 at the end 14 of the tube permitting the wick 16 to be entered through the holes 27 and 28 in the manner indicated at 32 in Figure 2.

The wick member 16 which is shown extended from the end aperture 15 of the device in Figures 1, 2 and 4, and shown in greater detail in Figures 2 and 7, is composed of paraffin impregnated fibre having substantially the same longitudinal rigidity as stiff twine so that it is easily enterable through the holes 27 and 28 yet has sufficient rigidity so that it may be moved inwardly and outwardly of the aperture 15 of the tube 12 in response to corresponding movements of the positioning slide 26.

During experimental and actual use tests, the safety lighter device as described hereinbefore was found to be adaptable to various applications. In cases where only

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one burner was to be lighted, the wick was retracted interiorly of the tube and only a match was used. In other instances wherein it was necessary to wait for fuel to accumulate or for combustible gas to form, the wick was moved outwardly of the tube and ignited before the flame of the match died out, and for other purposes, such as lighting church candles, in which neither the danger of explosions nor the problems of inaccessibility were involved, the wick was lighted directly by the match without placing the match in the match carrier for automatic striking and positioning as previously described.

Numerous modifications and variations of the present invention will occur to those skilled in the art after a careful study hereof. All such, properly within the basic spirit and scope of the present invention are intended to be included and comprehended herein as fully as if specifically described, illustrated and claimed herein.

The exact compositions, configurations, constructions, relative positionings, and cooperative relationships of the various component parts of the present invention are not critical, and can be modified substantially within the spirit of the present invention.

The embodiments of the present invention specifically described and illustrated herein are exemplary only, and are not intended to limit the scope of the present invention, which is to be interpreted in the light of the prior art and the appended claims only, with due consideration for the doctrine of equivalents.

I claim:

1. A safety lighting device for igniting burners, floor furnaces and other combustion devices in which the pilot flame must be applied to generally inaccessible areas, comprising: a generally tubular main body having an axial bore opening from one end and a handle member affixed to the other end thereof; a longitudinally extended wick member movably disposed within said bore; means accessible outwardly of said tubular body for moving a portion of said wick member outwardly of said bore; match head abutment means fixedly carried by said tubular main body adjacent said bore opening; and match carrier means slidably mounted on said tubular main body for striking the head of a conventional match against said match head abutment means and igniting and positioning it so as to ignite said portion of said wick extended from said tube.

2. The device in accordance with claim 1 being further characterized by said tubular body having a longitudinal slot disposed through the periphery thereof and extended from a point adjacent said handle to a point adjacent said open end of said tube; a wick positioning slide member conformed in the manner of a right angular strap, one lineal section thereof being slidably disposed in said bore and having holes therein adjacent its outward end adapted to receive and bind therein the inner end of said wick member, and the other lineal section of said strap being extended outwardly of said bore through said longitudinal slot, and being bent laterally outwardly of said tube to provide a pressure surface by which it and the wick attached thereto may be moved lineally of said tube.

3. The device in accordance with claim 2 and being further characterized by said wick being elongate in form and composed of paraffin impregnated fibrous substance providing a degree of longitudinal rigidity whereby said wick may be readily pushed lineally of said bore.

4. The device in accordance with claim 3 in which said match carrier means comprises a generally cylindrical carrier member of solid generally heavy substance having a large and a small bore therein oppositely spaced from and parallel to the longitudinal axis thereof, said large bore being extended through said cylinder and being dimensioned to receive said tube slidably therein, and said small bore being adapted to receive removably therein the stick end of a conventional match with the head

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of said match disposed toward said open end of said tube; and in which said match head abutment means comprises a striker ring having a sharp peripheral rim disposed toward said match and spaced outwardly from said tube whereby it is engageable with the head of said match when said carrier member is moved adjacent thereto.

5. The device in accordance with claim 4 in which the cylindrical body of said match carrier adjacent the match receiving bore therein is heavier than that portion of said cylindrical body diametrically opposite therefrom relative to the longitudinal axis of said tube receiving bore.

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6. The device in accordance with claim 5 and being further characterized by said match carrier having a transverse groove entered inwardly from the circumferential periphery thereof so as to intersect said match receiving bore.

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