Nov. 4, 1952 L. H. HOWARD-JONES 2,616,947

CIGARETTE OR THE LIKE LIGHTER

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FIG. 1.

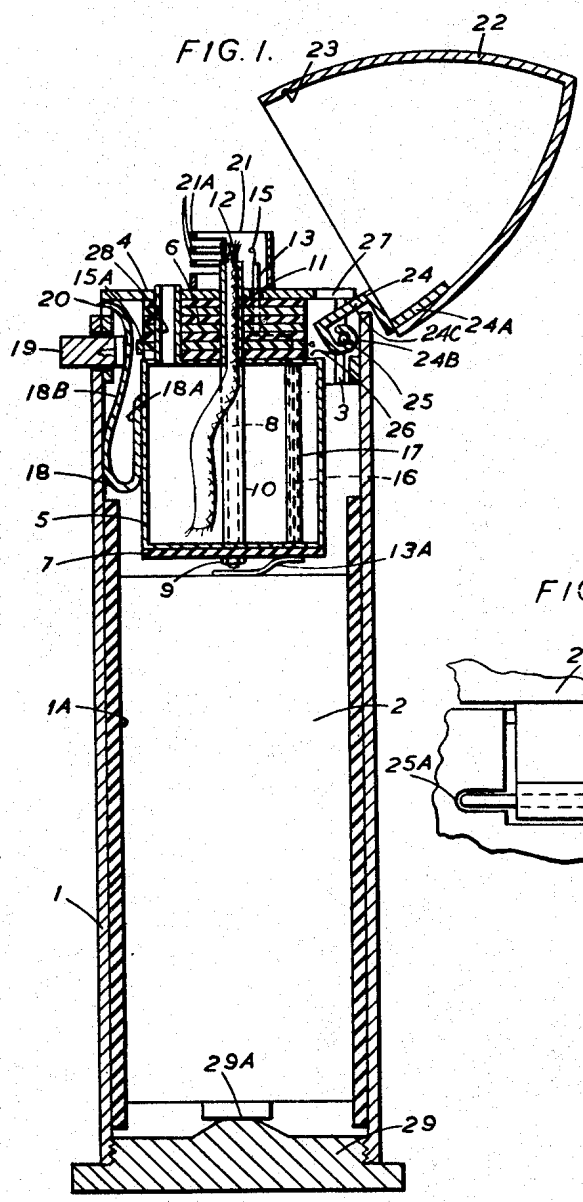

FIG. 5.

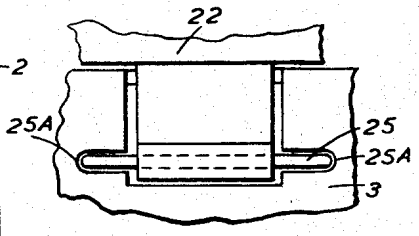

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FIG. 2.

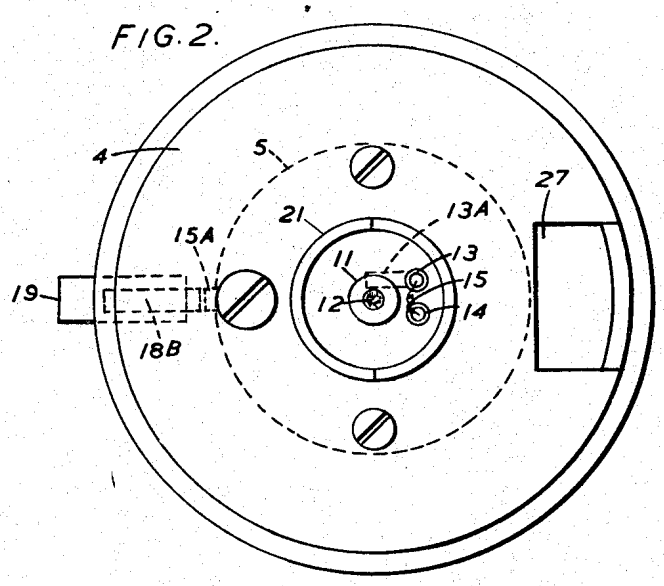

FIG. 3.

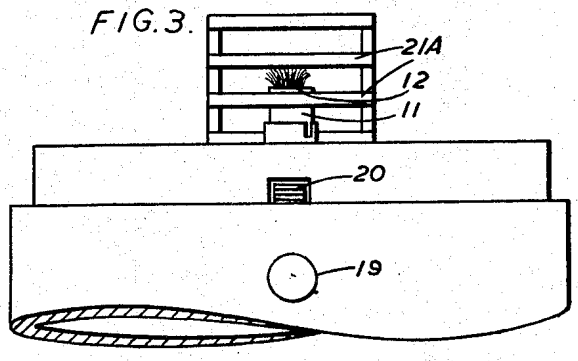

FIG. 4.

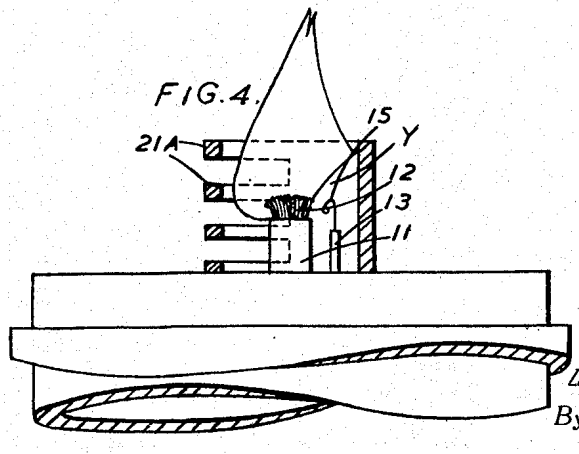

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FIG 6

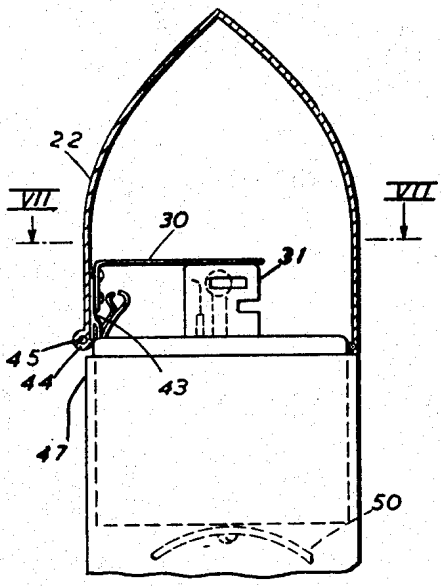


FIG 8

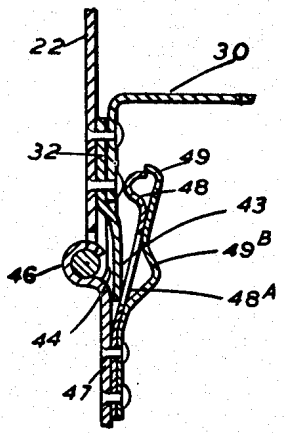


FIG 7

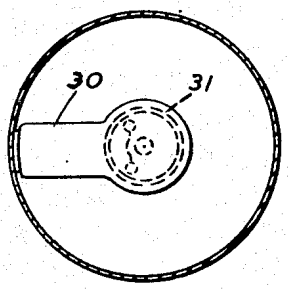
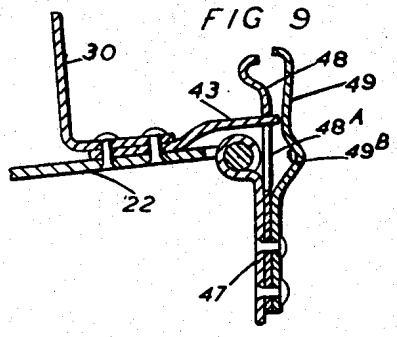


FIG 9



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UNITED STATES PATENT OFFICE

2,616,947

CIGARETTE OR THE LIKE LIGHTER

Leonard Hamilton Howard-Jones, Belfast, Northern Ireland

Application March 19, 1947, Serial No. 735,610
In Great Britain October 30, 1945

6 Claims. (Cl. 175—91)

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This invention relates to cigarette or the like lighters and more especially to cigarette lighters of the larger type for table use.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:

Fig. 1 is a sectional side elevation of the lighter and cap,

Fig. 2 is an enlarged plan view of the lighter, with the cap removed,

Fig. 3 is an enlarged fragmentary front view of the lighter,

Fig. 4 is an enlarged fragmentary side view of the lighter showing the cowl in section,

Fig. 5 is an enlarged fragmentary view of the hinge fitting, with lower casing removed.

Fig. 6 is a fragmentary side elevation, partly in section, showing a modified form of lighter.

Fig. 7 is a sectional plan view on the line VII—VII of Fig. 6.

Fig. 8 is a sectional detail view to a larger scale, and

Fig. 9 is a similar view but showing the cap in open position.

The lighter is generally in the form of a pillar or column of which the main lower part consists of an open top casing or cylinder 1 having an insulating liner 1A and forming a receptacle for a battery 2. The upper part consists of a shorter casing or cylinder 3 slidably fitted into the top of the cylinder 1 and is closed at the top by a plate 4. A fuel chamber 5 is located below the plate 4 and is spaced therefrom by an insulating block 6, which consists of a series of laminations to enable easier wiring. An insulating plate 7 is provided on the bottom of the chamber 5. The plate 4, chamber 5, block 6 and plate 7 are held together by bolts 8 and nuts 9, and bolts passing through guide tubes 10 provided in the chamber 5. The cylinder 3 forms a sliding fit in the cylinder 1. A tube 11 provided on top of the chamber 5 guides the wick 12 upwards through the block 6 and extends for a short distance above the plate 4. Projecting upwards from the block 6 through apertures in the plate 4 are two metal rods 13 and 14 which are spaced apart and slightly to the rear of the tube 11. Soldered to and connecting the rods 13 and 14 is a fine resistance wire 14 which is located slightly to the rear of the wick 12. The rod 13 is connected to a spring contact-strip 13A located on the bottom of the chamber 3, the connection being made by a wire 16 which passes through a tube 17 in the chamber 3. The contact-strip 13A contacts the battery 2. The rod 14 is connected to contact 15A on the front of the block 6.

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In the circuit there is a switch which consists of a substantially U-shaped spring-metal strip 18 which is located between the front of the chamber 3 and the cylinder 1. The leg 18A of the strip 18 contacts the chamber 5 and the leg 18B contacts the cylinder 1 and extends upwards past a press-button 19 to which it is attached and projects through a slit 20 in the front of the cylinder 3. On top of the plate 4 there is mounted centrally a cylindrical cowl 21. The cowl surrounds the portions of the tube 11, wick 12 and rods 13 and 14 extending above the plate 4, and also the resistance 15. The cowl 21 is open at its top end and the front half of the cowl consists of an air-inlet or grille formed by a series of horizontal bars 21A spaced vertically apart.

The upper part is closed by a cap 22 which is of substantially conical shape and which has a hinge connection at the rear. The cap 22 is provided with an indent 23 in its inner front surface, and when the cap is in the closed position the end of the metal strip 18 which extends through the slot 20 acts as a catch and engages the indent and holds the cap closed. The hinge connection at the rear, consists of a hook-shaped member 24 which is attached at one end to the inside of the cap at 24A, and at the other end a curved portion 24B freely embraces a pin 25 which is mounted in opposed slots 25A in the wall of the cylinder 3. The pin 25 is rounded at each end to fit flush with the upper casing 3, so that when said casing is fitted into the lower casing 1, the pin is held in position by the two casings. One end of a leaf-spring 26 is connected to the curved portion 24A and the other end presses downwardly on the top of the chamber 5 when the cap is closed. The plate 4 is recessed at 27 to accommodate the hinge 24. When the cap 22 is open the portion 24C of the hinge 24 rests on the top of the cylinder 1.

To operate the lighter, the button 19 is pressed to release the catch formed between the end of the strip 18 and the indent 23. At the same time, the strip contacts the contact 15A closing the electric circuit. The resistance 15 glows and lights the wick 5. It will be understood that when the catch is released, the cap springs open under the action of the leaf spring 26.

As a result of the grille being located only at the front of the cowl, air for combustion enters largely at the front and thus there is substantially no flow of air up past the resistance 15, so that there is a sort of dead zone Y (Fig. 4) which is at comparatively low temperature. Thus the life of the resistance 15 is not shortened by over-

heating which would cause the resistance to become brittle and to oxidise. Moreover, the soldered joints between the rods 13 and 14 do not become overheated and melted and therefore also have a longer life. The cowl 21 also protects the resistance 15 from mechanical damage.

A filler-tube 28 is provided on top of the chamber 5 and extends for a short distance above the plate 4. The lower end of the cylinder 1 is tapped and is closed by a screwthreaded cap 29 which contacts the battery 2 at 29A.

The cowl 21 may only partly surround this wick and resistance and may be completely open at the front.

Referring to Figs. 6 to 9, it will be noted that the cap 22 has an angled plate 30 attached inside to act as a snuffer which, as shown in Fig. 6, closes down on the cowl 31 when the cap is closed. The snuffer acts to reduce evaporation when the cap is closed and it also serves to extinguish the flame promptly as the lid is closed. In the absence of a snuffer and if a piece of foreign matter should be jammed between the cap and the casing so that the lid does not spring open, on operation of the button there may be a slight puff or explosion inside the cap, but this is avoided by a snuffer. The plate 30 is preferably of a resilient nature so that it will not impede the full closing of the cap when the plate contacts the top of the cowl. The cap has a hinge plate 32 which has a central upset tail or stop piece 43 and two side parts 44 bent round the hinge pin 45 which rotates in a curved extension 46 of the casing 47. When the cap 22 is closed it pushes inwardly the two leaf springs 48, 49 which are attached to the casing 47 and which jointly throw open the cap when the button is pressed. As the cap flies open the tail 43 enters a slot 48A and as it nears the full open position shown in Fig. 9, the bottom end of the tail engages the inclined surface 49B and forces the spring 49 away from the spring 48. Thus the cap is frictionally braked as it nears its full open position which is determined by the tail 43 engaging the top of the slot 48A. Thus shock or sudden stopping of the cap is mitigated. In the full open position the tail passes over centre with respect to the spring 49 and engages a straight upper part of the spring 49 which thus lightly holds the lid open and prevents it inadvertently closing when the lighter is inclined, say in the process of lighting a cigarette.

In the arrangement shown in Figure 6 the contact strip for the battery consists of a bow-shaped spring strip 50 attached at its middle and with its ends projecting downwardly. Such strip admits of the battery being inserted upside down, the free ends ensuring adequate electrical contact with the bottom of the battery of which the usual terminal rests on the closure cap at the foot of the casing. This upside down location of the battery is advantageous as it protects the top of the battery from the effect of any petrol that may be spilled from the fuel chamber.

I claim:

1. A device for affording and igniting a flame of gas, including a source of electrical energy, a reservoir for holding an easily volatilized liquid, a wick passageway, wick means held therewithin for lifting and vapourizing said liquid, said wick means dipping at the lower end thereof into said liquid and extending at the upper extremity thereof above said passageway, a cowl of generally cylindrical form having at one portion of the lateral periphery thereof an open air-inlet grille, said upper projecting portion of said wick means terminating in a horizontal plane lying substantially mid-way between the planes formed respectively by the upper peripheral edge and the lower peripheral edge of said cylindrical cowl, a substantially horizontally extending electro-thermal conversion unit positioned within said cowl at a portion thereof located substantially 180° from the position of said grille, with respect to said wick means, means for conveying electrical energy from said source thereof to said electro-thermal conversion unit, said electro-thermal unit having the top thereof positioned between the bottom and top edges of said cowl and functioning so as to convert said electrical energy into thermal energy at a temperature sufficiently elevated to initiate the combustion of gas supplied from said wick means with air entering said cowl via said grille, means for determining the discharge of said electrical energy from said source into said electro-thermal unit, manually operable means for actuating said discharge determining means, gas-barrier means in cap-like form, for surrounding said cowl and the contents thereof with a mass of relatively inert air when said device is inoperative, a spring-biased hinge upon which said gas-barrier means are mounted so as to angularly rotate over a number of degrees sufficient substantially to afford free access of the circumambient atmosphere to the interior of said cowl via said grille, when said device is operative spring-release means for determining said rotation of said gas-barrier means, and means connecting said spring-release means for determining said rotation of said gas-barrier means, and means connecting said spring-release means to said manually operable actuating means, whereby depression of said manually operable means substantially simultaneously actuates said spring-release means and said discharge determining means, thereby determining the rotation of said gas-barrier means, the access of air to said wick means, the operation of said electro-thermal conversion unit and the ignition of the air-gas mixture present in the vicinity of said upper projecting portion of said wick means and the consequent lighting of a flame emanating from said wick means, and said cowl functioning to entrap sufficient of said air-gas mixture therewithin, so as to afford substantially instantaneous initiation of combustion of said mixture upon functioning of said electro-thermal conversion unit, and said cowl also functioning so as to admit therewithin only air sufficient in quantity to maintain said flame solely at regions of the cowl interior relatively remote from the region adjacent to said electro-thermal conversion unit, whereby the effective life of said electro-thermal unit is improved and said flame may be kept in existence over relatively prolonged periods of time while protecting said electro-thermal conversion unit from undue oxidation of the surface thereof.

2. A device according to claim 1, in which the grille consists of horizontal bars interspaced vertically from top to bottom of the cowl.

3. A device according to claim 1, in which the cowl is of cylindrical shape.

4. A device according to claim 1, in which the top of said electro-thermal conversion unit is in the same horizontal plane as the projecting top portion of said wick means.

5. A device according to claim 1, in which the

top of said electro-thermal conversion unit is located slightly below the level of the top of the wick means.

6. A device according to claim 1, in which said grille has three air-inlets, said air-inlets consisting of horizontal slots, of which two are located one at each side of the wick and resistance and at substantially the height of the top of the wick while the third extends between the other two at the side remote from the resistance and below the level of the wick.

LEONARD HAMILTON HOWARD-JONES.

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