

July 28, 1959

G. B. TABER

2,897,336

ELECTRIC CIGARETTE LIGHTER

Filed Oct. 13, 1958

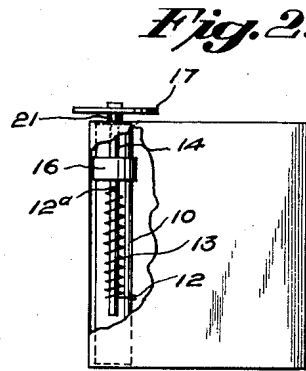
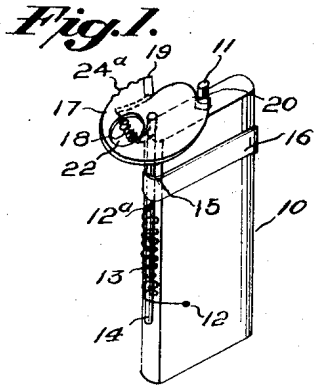


Fig. 3.

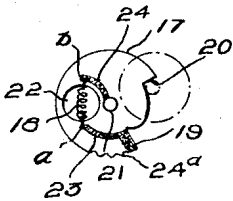


Fig. 5.

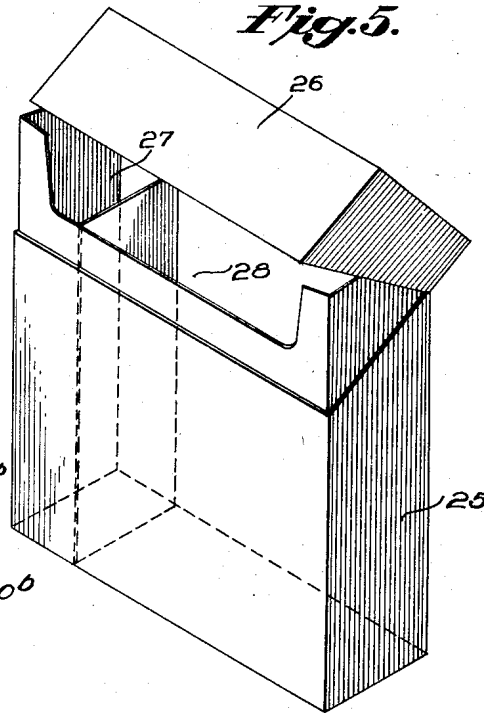


Fig. 4.

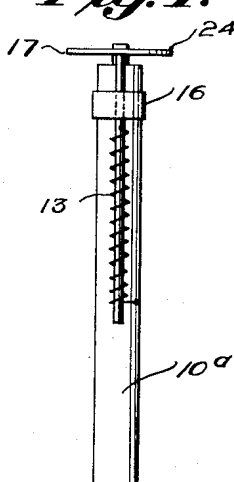
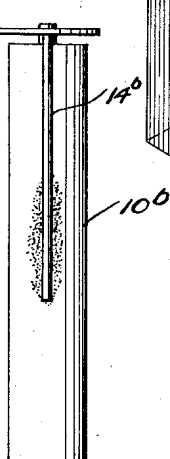


Fig. 6.



INVENTOR.

Gilbert B. Taber.

BY

Herbert M. Birch

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2,897,336

ELECTRIC CIGARETTE LIGHTER

Gilbert Benham Taber, Washington, D.C.

Application October 13, 1958, Serial No. 767,038

5 Claims. (Cl. 219—32)

The present invention relates to an electric lighter for cigarettes and the like and particularly to an electric lighter of miniature size for incorporation in a package of cigarettes during the packaging of the cigarettes, although it may be used separately if desired.

A primary object is to provide a dry cell type cigarette lighter having a novel on and off control arrangement of the electric lighter filament.

Another object is to provide a novel manual igniter arrangement adapted to be self-extinguishing.

Still another object is to provide an extremely economical unit, which may be discarded after a period of use and replaced with a new unit at a cost approximately within the range of a supply of matches for a period of substantially equal duration.

Yet another object is to provide a mass production item having both mechanical and advertising utility.

With these and other objects in view, the invention consists in the construction, arrangement and combination of parts hereinafter described and particularly pointed out in the claims, it being understood that it is not intended to limit the invention to the details of construction.

In the drawings like parts throughout the several views are given like numerals and are thus identified in the following detailed description:

Figure 1 shows a general assembled view of the present invention using a single wafer-like battery for packaging in a standard cigarette package;

Figure 2 is a side elevational view of the filament support disk, the pivot shaft, pintle clip and return spring therefor wrapped in a cigarette package between the usual metal foil and the outer trademark label, but with the outer cellophane wrapping removed;

Figure 3 is a bottom plan view of the printed circuit formed on the underside of the lighter filament disc and showing its connection to the pivot shaft;

Figure 4 shows a general assembled view of a single battery of circumference and length equal to a cigarette adapted to fit in a standard cigarette package in place of one of the usual cigarettes therein;

Figure 5 is an assembled view of a "flip-top" case having a compartment for housing a lighter made according to the present invention utilizing one or more dry cells in series and having a cigarette compartment for cigarettes;

Figure 6 shows another embodiment of the pivot shaft, wherein the same is of the torsion bar type and is fixed to the side of the battery case.

Referring to the drawings in detail and first with particular reference to Figure 1, and Figures 2 and 3, there is shown an uncovered battery or dry cell 10 having the usual negative metal casing with a positive center pole 11. Secured to the side of the casing by a drop of solder 12, such as silver solder, is one end of a coiled spring 13 with a pivot shaft 14 extending through the convolutions of the spring and the other end of spring

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similarly secured by solder 12a to the shaft adjacent the underside of a filament disk 17. Said shaft also extends through the lateral loop 15 on an insulated pintle clip 16 or the like yieldably clamped around the battery. The insulated clip 16 may be permanently or non-permanently clipped or strapped on the battery 10 as desired with the oscillatable shaft 14 extending through the pintle loop or the shaft may be a torsion shaft 14b, see Figure 6, and be of spring material, to thereby act as a torsion spring when the novel disk of insulation 17 is turned with the calibrated printed circuit elements formed thereon, as will now be explained, to close a circuit through a lighter filament 18 to the positive pole of the battery 10. The filament 18, for example, may be made of Nichrome wire or approximately .0063" diameter and mounted in a 3/32" diameter hole or opening 22 in the disk 17 in coiled lengths of approximately 1 1/16".

The disk 17 is preferably circular with a cut-out segment to provide contact portion 19 and a circumferentially opposed abutment or stop portion 20. The disk center is secured at the underside to the pivot shaft 14 as by solder 21, see Figure 3, and offset eccentrically from the center of the disk is the opening 22 across which extends the wire filament 18 adapted to become incandescent when the disk is turned to circuit closing position. The printed circuit elements on the underside of the insulation of which the disk 17 is formed comprise an arcuate metallic coating 23 leading from contact section or portion 19 to a point (a) adjacent the filament opening 22 and a second arcuate coating 24 leading from the center of the disk at the pivot shaft connection to a point (b) adjacent the filament opening diametrically opposite to the adjacent point (a) of coating 23. These points a and b are secured by solder to the respective ends of the wire filament 18, see Figure 3.

The peripheral edge of the disk 17 may be notched or roughed to facilitate turning the disk 17 to filament circuit energizing position against the biasing action of the spring 13 or the torsion shaft 14b, if the spring is eliminated as in Figure 6.

In the operation of the embodiment of Figures 1 through 3, the disk 17 is normally biased by the spring 13 so that the insulated abutment edge 20 is stopped by or abutted against the positive pole 11 of the battery 10. Now when it is desired to light a cigarette by energizing the filament 18 to incandescence, the user engages the roughened edge 24 of the disk 17 and turns the same against the action of the spring 13 until the contact portion 19 touches the battery pole 11. This causes the circuit to be completed through the arcuate conductor coatings 23, 24 and spring 13 to the metal case of the battery, whereupon the filament glows to permit the user to light his cigarette. As soon as the cigarette is lighted, the disk is released and the disk is returned by spring 13 to its neutral or non-circuit closing position.

In Figure 4, the battery 10a may be the size of a king-size cigarette and is merely inserted in the cigarette package during the packaging operations at the factory.

When the torsion rod or spring shaft arrangement of Figure 6 is used, the device operates in the same manner and hence the foregoing description suffices for this embodiment also. The torsion rod 14b is suitably secured to the metal battery case 10b by solder or the like.

In Figure 5, there is shown a case or box 25 with a "flip-top" cover 26 and a first compartment 27 for housing one of the present novel complete lighter units, and a second relatively larger compartment 28 for cigarettes. The case may be made of cardboard as a standard package or of transparent plastic. The lighter unit, when the batteries wear out, may be thrown away and replaced with another unit, if used with a plastic container, since the lighter unit may be made for only a few cents, or

if sold as part of a standard cigarette package, it is simply discarded with the empty cigarette box or package.

Although the present invention is described in detail for only several embodiments thereof, it is to be expressly understood that the invention is not limited thereto, as various changes may be made in the design and arrangement of the parts without departing from the spirit and scope of the invention, as will now likely occur to others skilled in the art. For a definition of the scope of the invention, reference should be had to the appended claims.

What is claimed is:

1. A cigarette lighter comprising a dry cell with a metal case and a positive pole, a disk of insulation, a shaft connected thereto, conductive coating formed on the underside of said disk, said disk having an opening dividing the coating and forming electric leads to the said pole and said case respectively, a wire filament across the disk opening connected diametrically to the said leads on each side of the openings, and means adapted to bias said disk to an off-circuit position.

2. The cigarette lighter described in claim 1, wherein the said means is a spring connected between the said shaft and said case.

3. An electric lighter for cigars, cigarettes or the like comprising a disk having a filament opening with a printed circuit thereon leading from the center of the disk, a filament in said printed circuit extending diametrically across said opening, a metal shaft secured to the center of the disk in said circuit, a battery with a metal casing and a positive pole, means connected to the side of the battery formed with a pintle loop, said shaft extending through said loop to pivot therein and a coil spring around the said shaft having one end soldered to the said battery

casing and the other end to the said shaft, said disk having a cut-out portion to form an abutment portion and a circuit closing contact portion for alternate contact with said battery pole.

4. An electric lighter for cigarettes comprising a dry cell with a metal case and a positive pole, a disk of insulation, a torsion rod soldered to the center of the disk and secured to the said metal case of the battery, a spirally formed conductive coating leading from the soldered connection between the disk and the said rod to a point on the peripheral outer circumferential edge of the disk, an opening in the disk separating a section of the said coating, a wire filament transverse the opening soldered at each end to connect said coating together, and notches formed on a peripheral edge of the disk to facilitate partial turning of the disk to a circuit closing position against the torque of said torsion rod, to thereby energize said filament.

5. In combination, a plastic case having a compartment for an electric cigarette lighter, said lighter comprising a battery, a rotary disk with a filament opening and formed with conductor coatings thereon to each side of the opening, a wire filament transverse the opening and soldered to the said coatings at each respective diametric side of the opening, a shaft secured to the disk, and spring means connected between the said battery and a point on the said shaft adapted to bias said disk and the contact end of the conductor coatings out of circuit closing position until the disk is manually turned.

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