United States Patent [19]

Herr

[11] 3,735,099

[45] May 22, 1973

[54] CIGARETTE LIGHTER

[76] Inventor: **Harry C. Herr**, 404 Willow Road, Savannah, Ga.

[22] Filed: **Feb. 24, 1971**

[21] Appl. No.: **118,459**

[52] **U.S. Cl.**.....**235/91 R**, 116/133, 431/253

[51] **Int. Cl.**.....**G06m 1/00**, G09f 9/00

[58] **Field of Search**.....235/91 R, 91 B, 91 D, 235/91 E, 1 C; 116/133; 431/253, 152

[56] **References Cited**

UNITED STATES PATENTS

831,068	9/1906	Helms	235/91 B
1,030,786	6/1912	Manchester	235/91 B
2,636,469	4/1953	McKay	235/91 R
2,757,867	8/1956	McKay	235/91 R
3,493,172	2/1970	Bromage	116/133

FOREIGN PATENTS OR APPLICATIONS

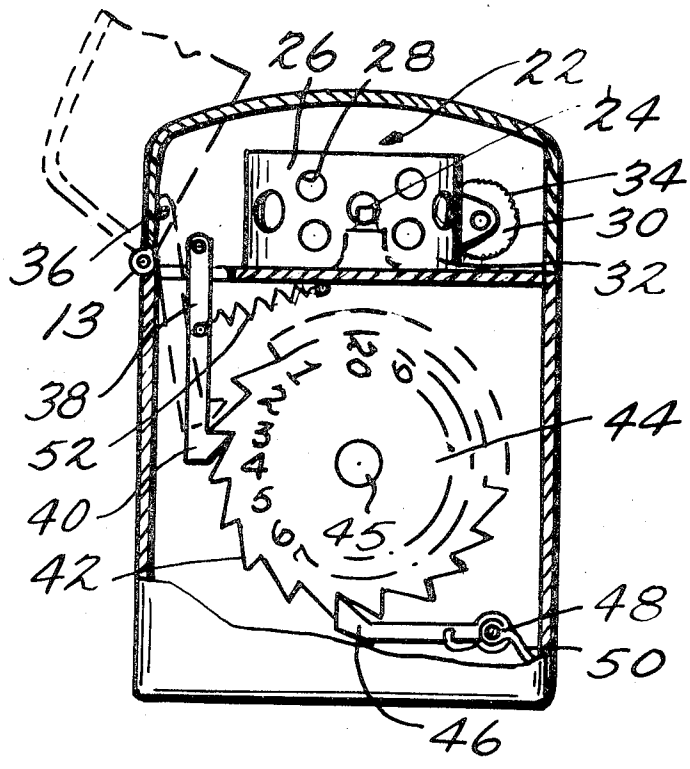
785,954	11/1957	Great Britain	431/253

Primary Examiner—Stephen J. Tomsky
Attorney—Cushman, Darby & Cushman

[57] **ABSTRACT**

A warning device for a cigarette lighter includes a counter wheel which indicates the cumulative total of times the cover of the lighter has been opened to expose the flint and wick. Thus, the counter indirectly indicates the number of cigarettes consumed by the lighter's owner which acts as a device for discouraging smoking.

6 Claims, 7 Drawing Figures



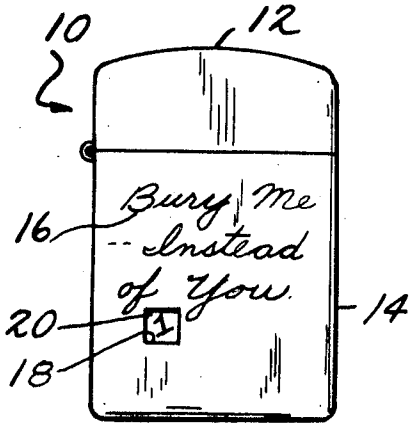


Fig. 1.

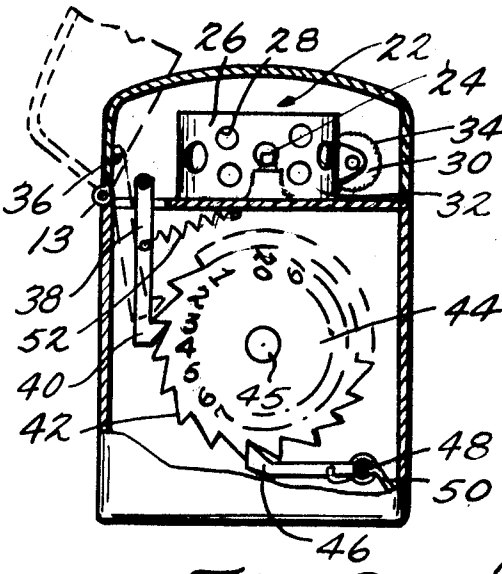


Fig. 2.

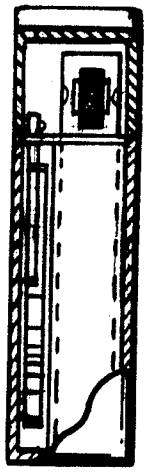


Fig. 3.

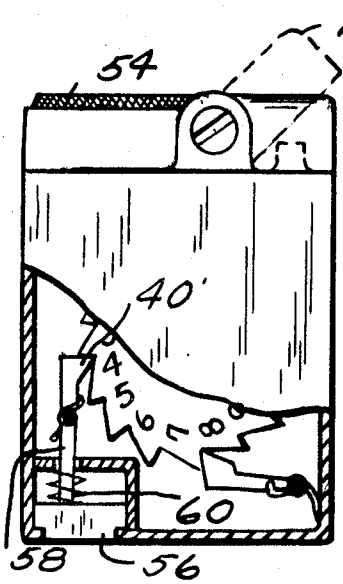


Fig. 4.

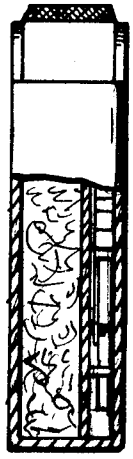


Fig. 5.

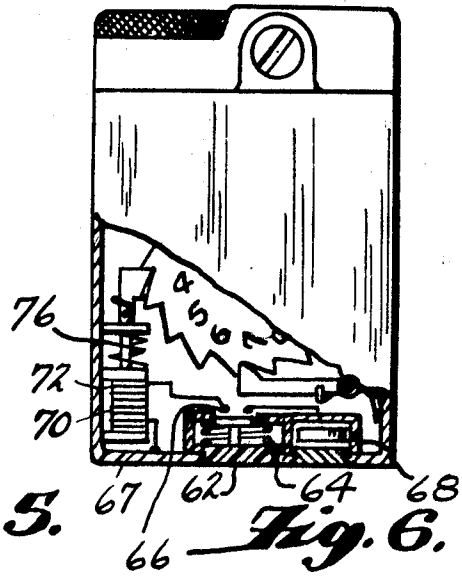


Fig. 6.

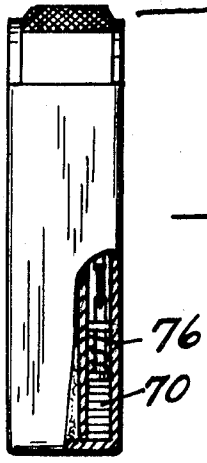


Fig. 7.

INVENTORS
HARRY C. HERA

BY Cushman, Darby & Cushman
ATTORNEYS

CIGARETTE LIGHTER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to cigarette lighters.

2. Description of the Prior Art

Cigarette lighters known to the prior art have had at least two major disadvantages. First, these lighters use at least one replaceable substance. Whether it is the flint, the fuel or the wick, the useful life of the lighter does not exceed the life of the least durable item and the unexpected exhaustion of the least durable item causes embarrassment and frustration.

Of course, the life of the least durable item is related to the usage of the lighter so that a counter which would indicate the number of uses of the lighter would help to prevent any embarrassing lighter failure. When the lighter had been used the maximum number of times suggested by the manufacturer the user could then replace the least durable item before it caused a lighter malfunction.

The other major disadvantage of cigarette lighters is that they are often used to light cigarettes which are then smoked to the detriment of the smoker. Many devices are known to help a smoker quit his habit including certain warnings which are appended to smoking materials. One of the problems with known warnings, however, is they they do not provide a running total of the cumulative danger of smoking and they do not provide a new eye-catching warning with each use of smoking materials.

SUMMARY OF THE INVENTION

In view of the disadvantages described above it is a fist object of the invention to provide a lighter which is less likely to malfunction due to the exhaustion of fuel, flint etc. It is another object of the invention to provide a lighter which provides a dynamic and cumulative warning to the user of the dangers of smoking.

Both of the above objects can be accomplished by associating a counter-indicator device with a lighter so that with each use of the lighter the counter-indicator is activated to indicate a new cumulative total for uses.

Basically, the present invention resides in a device which causes a detent to index a ratchet wheel each time the cover of the cigarette lighter is opened. The wheel is contained within the lighter case and faces a window formed in the side thereof. Further, numerals in arithmetic order are arranged on the wheel so that a constantly increasing number appears at the window as the cover is repeatedly opened.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a side view of a first embodiment of the invention;

FIG. 2 shows a side view identical to the view of FIG. 1 but partially in section;

FIG. 3 shows an end view, partially in section, of the first embodiment of the invention;

FIG. 4 shows a side view, partially in section, of a second embodiment of the invention;

FIG. 5 shows an end view, partially in section, of the second embodiment of the invention;

FIG. 6 shows a side view, partially in section of the third embodiment of the invention; and

FIG. 7 shows an end view, partially in section of the third embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows a side view of a fist embodiment of the invention. The cigarette lighter in general is indicated by reference number **10.** This lighter has a movable cover **12** and a case **14** to which the cover is pivotally attached. A legend **16** is embossed, painted or otherwise affixed to the side of the case **14** which is presented in this figure. This legend alerts the smoker to the dangers of his habit and preferably draws his attention to the window **18** formed in the side of the case **14** and protected by the transparent cover **20.** The window **18** contains a number which represents the total number of times the lighter has been used.

The manner by which this number is related to the lighter's operation will now be discussed in detail with respect to the two major types of cigarette lighter construction.

In the first type the cover **12** is merely hinged to the case **14** at hinge **13** and spring loaded to the closed position as shown in FIGS. **1, 2** and **3.** In the closed position the cover **12** encloses the fire producing portion of the lighter, indicated generally by numeral **22.** This portion includes the wick **24** which is connected to a source of liquid fuel contained within the case, a wind guard **26** surrounding the wick but allowing some air circulation thereto through perforations **28,** a friction wheel **30** mounted on the wind guard for rotational motion and a flint **32** which is in contact with the periphery of the serrated edge **34** of wheel **30.**

In operation, the cover **12** must be first removed from the area of the fire producing portion and then the wheel **30** is rotated causing the serrated edge **34** to stroke the flint **32** and create a spark which ignites the fuel which has soaked up through the wick **24** to an area adjacent the flint.

Obviously, the foregoing is a summary of only one of a number of fire producing systems possible in a cigarette lighter. The important thing to note is that the cover **12** must be removed before the fire producing portion can be activated. Thus a connection which moves with the cover can give a reasonably good indication of the number of times the lighter is used. Such a connection is provided by holding pin **36** which is fixedly attached to the inside of cover **12** and link **38** which is pivotally attached at one end to rotate about pin **36.** The other end of link **38** is formed into a detent **40** which engages the serrated edge **42** of ratchet wheel **44.** The wheel **44** has a sequential series of numbers and is mounted for rotation about the axis **45** which is affixed to the case **14.** The wheel **44** is restrained from rotating in the counterclockwise direction by the pawl **46** and the pawl is, in turn, also mounted to the casing **14** by pin **48** about which it can rotate. The pawl is urged towards the serrated edge **42** of the ratchet wheel by the tension spring **50** and the detent is urged towards the serrated edge by the tension spring **52.**

In operation, when the cover **12** is rotated about its hinge **13** to expose the fire producing portion **22** the detent **40** is drawn upwards by pin **36** and link **38** which causes the wheel **44** to index one step in the clockwise direction and place the next higher sequential number on the wheel in registry with the window **18.**

The second embodiment of the invention, illustrated in FIGS. **4** and **5** is similar to the first embodiment except that in the second embodiment the cover **12'** and

the wheel 30' (not shown) are both activated by the depression of the button 54. When depressing the button 54 a portion of the operator's hand also engages the button of the case 14' which, in turn, causes the push button 56 to be depressed.

The depression of button 56 causes the link 58 which is attached thereto to move upwards against the action of spring 60 (which spring biases button 56 to its inoperative position). A detent 40' is attached to the other end of link 58 from the button and it acts in a manner identical to the detent 40 discussed above with respect to the first embodiment. The remaining elements in the second embodiment are identical in construction and operation to those discussed with respect to the first embodiment and therefore need not be discussed here.

The third embodiment of this invention which will presently be described with reference to FIGS. 6 and 7 could be applied to either of the major types of cigarette lighter construction but for the sake of simplicity this embodiment will be discussed only with respect to the Ronson type.

In FIG. 6 the push button 56 is replaced by push button 62 which is spring loaded by spring 64 to a neutral position flush with the bottom of the lighter case but which button, when depressed, causes the contact 66 which is connected thereto to complete an electrical circuit.

The circuit thus completed, starts at the battery 68 and proceeds to the coil 70 of the solenoid 72. The circuit then returns through the contact 66 to the other side of the battery 68. Thus, when the circuit is completed, power is transferred from the battery 68 to the coil 70 and the solenoid armature 72 is activated to extend the detent 74, which is connected thereto and which engages a ratchet wheel, a fixed distance thus indexing the ratchet wheel. When the button 62 is released spring 64 returns it to the neutral position, the electrical circuit is opened the solenoid deactivated and the detent is urged to its original position by spring 76.

Since the other elements shown in FIGS. 6 and 7 are identical in construction and operation to the elements described above they need not be discussed further at this point. All that need be said is that a new cumulative use total is portrayed each time the button 62 is depressed. Since the button 62 is depressed each time the cover is removed, the cumulative total gives an indication of cumulative lighter uses and thus cumulative cigarettes smoked.

While the above description covers the two preferred embodiments of the invention, it is understood by those skilled in the art that many modifications are possible within the scope of the invention. For example, ratchet wheel could be placed on both of the broad sides of the lighter's case to insure that the counter-indicator would always be turned towards the user.

In addition, a plurality of numeral bearing wheels could be interlocked in a known manner to indicate in a number of windows a larger number than is possible to represent by a single wheel.

Also, the electronic counter system, which was described above with reference to FIGS. 6 and 7, could be modified such that the push button is replaced by a capacitance sensor which would produce a signal each time the lighter is grasped by a human hand.

What is claimed is:

1. A cigarette lighter comprising:
a casing;
a cover;
pivotable means attaching said cover to said casing;
a number indicating means housed within said casing and successive visually identifiable numbers disposed thereon and visibly seen through said casing; and,
means attached to said cover for sequentially advancing said visually identifiable numbers on said number indicating means upon opening said cover.

2. A cigarette lighter as in claim 1 wherein said casing includes a window aligned with said visually identifiable numbers as said advancing means is sequentially operated.

3. A cigarette lighter as in claim 2 wherein said number indicating means is a wheel and said advancing means being a detent mechanism.

4. A cigarette lighter as in claim 3 wherein said wheel is a ratchet wheel having a detent mechanism.

5. A cigarette lighter as in claim 4 having a spring loaded pawl in association with said ratchet wheel to prevent rotation of said wheel in a direction opposite to that effected by the advancing detent mechanism.

6. A cigarette lighter of claim 5 wherein said detent mechanism is in association with said cover and the ratchet wheel which on moving said cover causes said detent mechanism to effect rotation of said ratchet wheel.

* * * * *