

[54] CIGARETTE LIGHTER WITH TIME LOCK

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[58] Field of Search 431/13, 14, 73, 86, 431/87, 129

[56] **References Cited**
UNITED STATES PATENTS

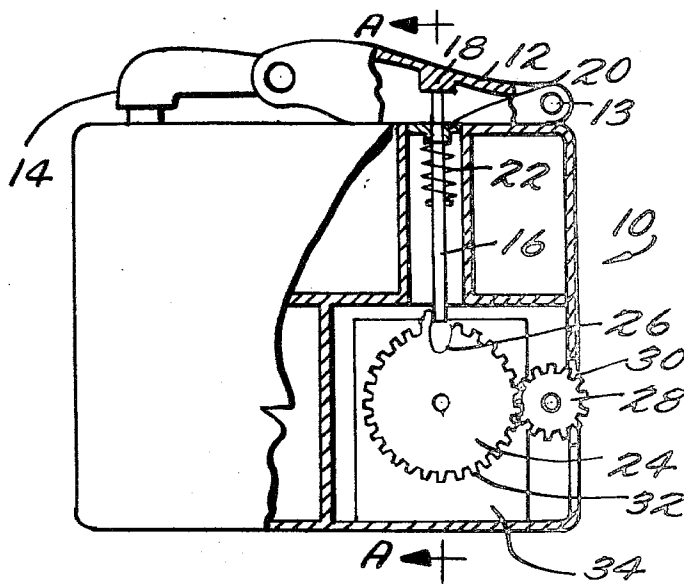
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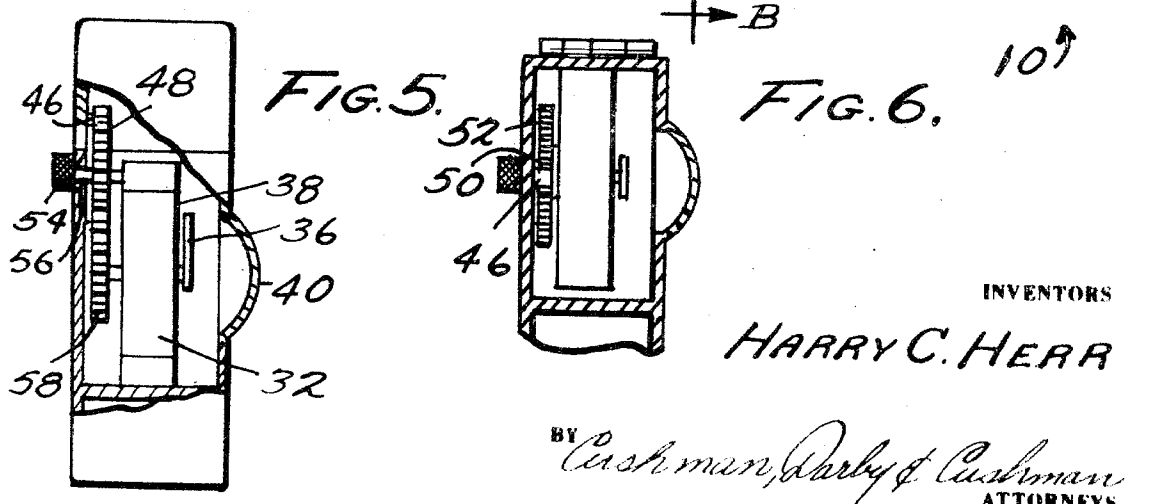
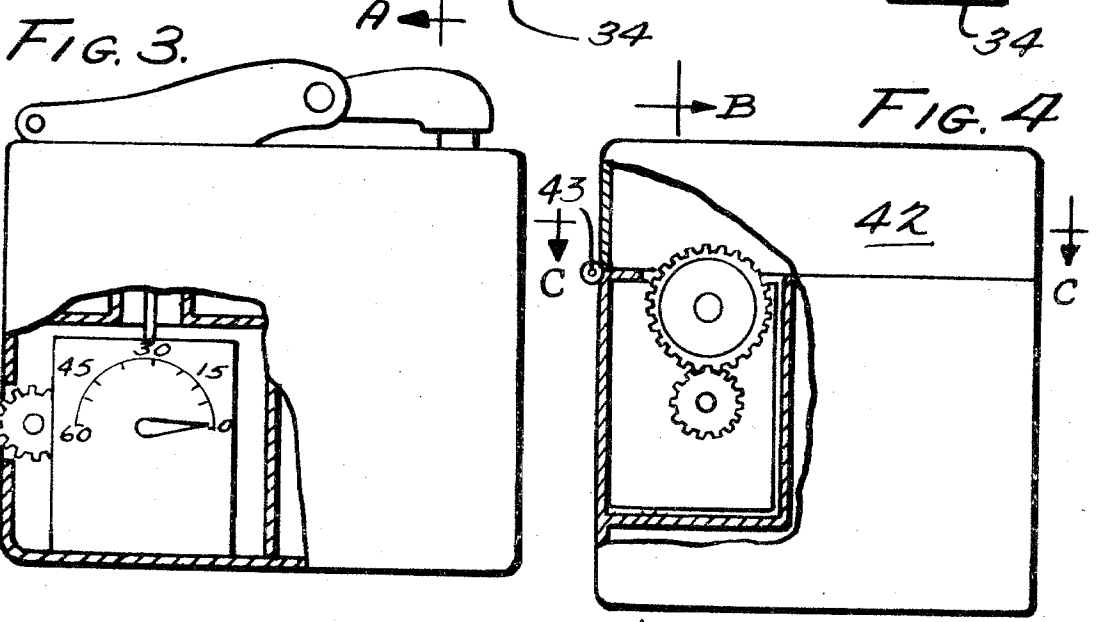
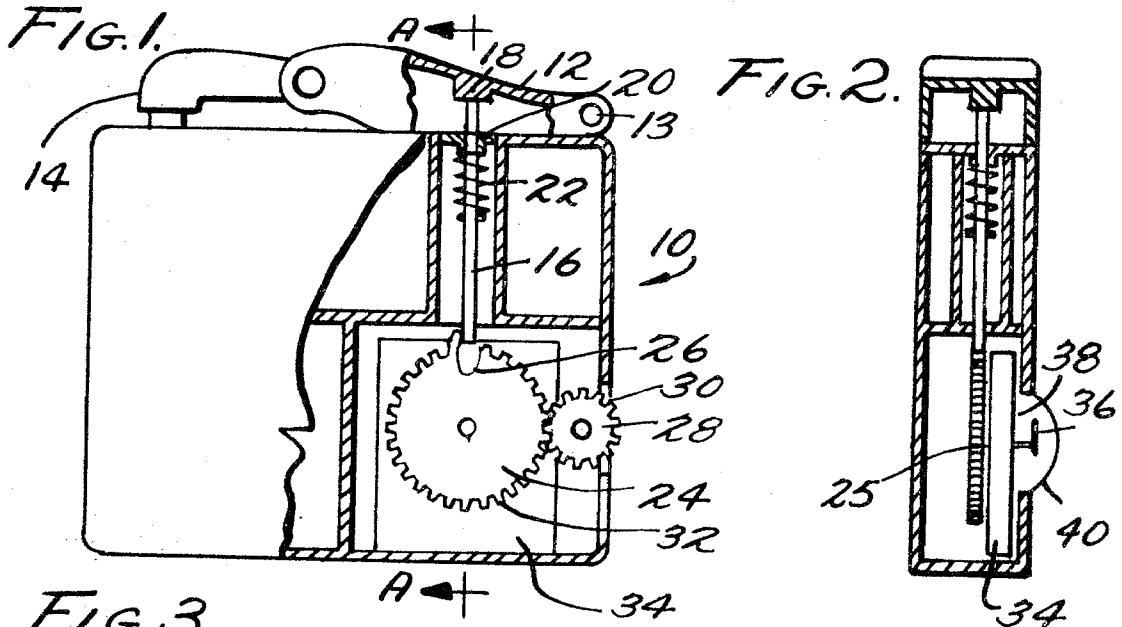
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[57] **ABSTRACT**

A time lock associated with a cigarette lighter can be set to deactivate the lighter for the set time. The time lock may be mechanically or electrically powered or powered by a combination of those forces. The time lock may operate to lock the cover of a first type lighter to the body thereof, it may prevent the depression of the flint striker lever in a second type lighter or it may, in either type of lighter, remove the compression force between the flint and the striker wheel. A counter may be associated with the time of the time lock to register the number of times the time lock is set and thus, indirectly the number of times the lighter was used.

7 Claims, 10 Drawing Figures





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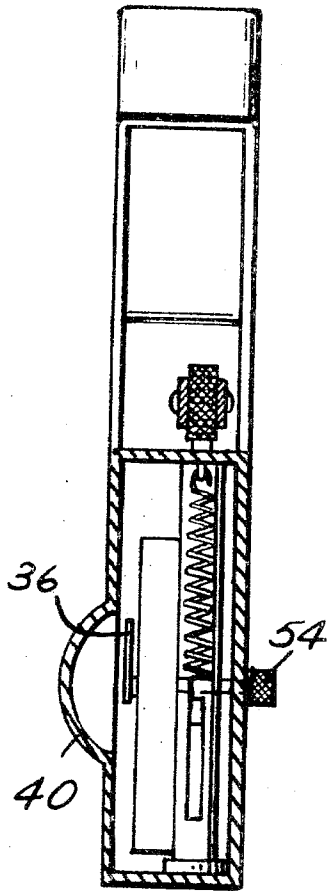


FIG. 8.

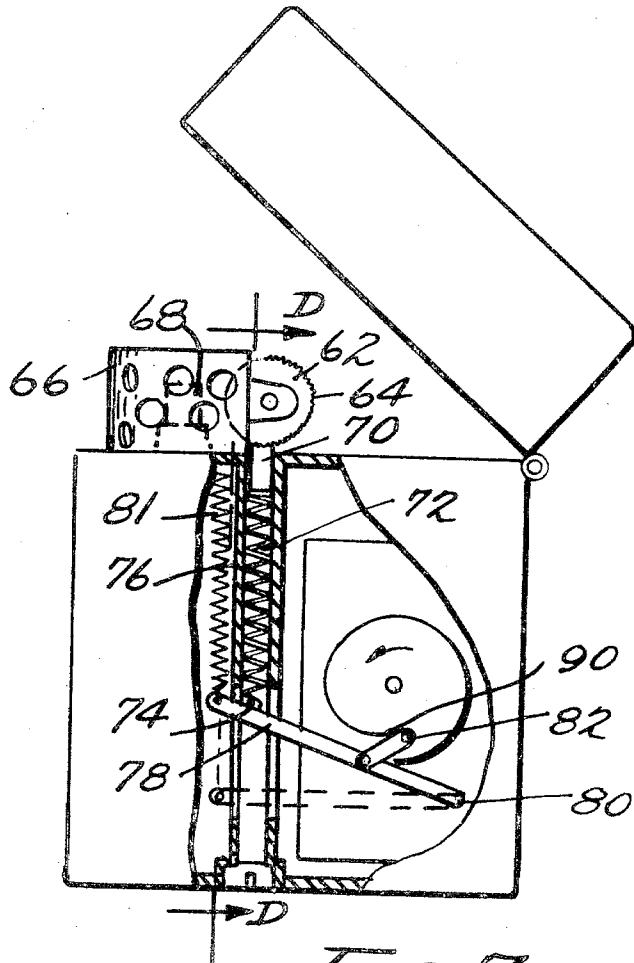


FIG. 7.

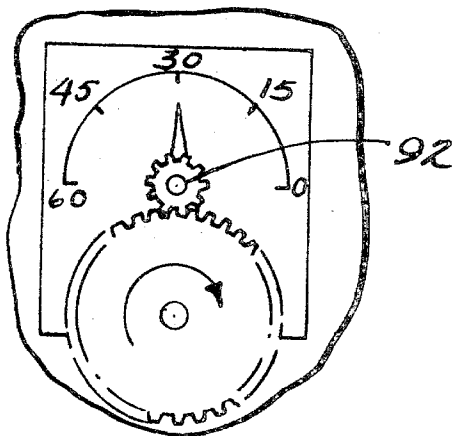


FIG. 9.

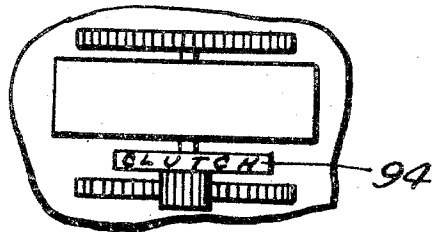


FIG. 10.

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CIGARETTE LIGHTER WITH TIME LOCK**BACKGROUND OF THE INVENTION**

This invention relates to cigarette lighters and also to devices for discouraging smoking.

DESCRIPTION OF THE PRIOR ART

As the health hazards attendant upon cigarette smoking have been publicized with great energy of late by a number of concerned individuals and groups, the numbers of substances, processes and devices for helping individuals to quit smoking have greatly multiplied.

Many of these substances, processes and devices attempt to transform a heavy smoker almost instantaneously into a non-smoker and this abrupt change in life-style often proves so unsettling to the smoker that he quickly returns to a full habit. It is obviously, desirable therefore to provide an efficient means for weaning smokers away from their habit, i.e., for gradually reducing the smoker's consumption of cigarettes per unit of time. In this manner the chances of partial, if not complete, rehabilitation should be greatly enhanced.

SUMMARY OF THE INVENTION

The applicant's invention concerns a device which enables a smoker to gradually lengthen the time between his smokes and thereby reduce his habit. Furthermore, within the psychological limits of the smoker's desire, the applicant's device acts to ensure that the smoker cannot cheat himself by smoking within the intervals he has set for himself.

The applicant's device comprises, essentially, a time lock which is operably connected to and incorporated within an otherwise conventional cigarette lighter for rendering the lighter inoperable for the time set on the time lock and means which is adjustable by the operator of the cigarette lighter for setting the timing of the time lock. The applicant's invention also includes a counter with a visual indicator which is connected to the time lock for displaying the number of times the time lock has been set and thus, indirectly, the number of times the cigarette lighter has been used (providing, of course, that the time lock has been energized prior to each use of the cigarette lighter).

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view, partially in section, of a first embodiment of the invention.

FIG. 2 is a sectional end view taken along line A—A in FIG. 1.

FIG. 3 is a side view, partially in section, of the side opposite to the side shown in FIG. 1 of the first embodiment of the invention.

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

FIG. 5 is an end sectional view taken along line B—B in FIG. 4.

FIG. 6 is a top sectional view taken along line C—C in FIG. 5.

FIG. 7 is a side sectional view of a third embodiment of the invention.

FIG. 8 is an end sectional view along line D—D in FIG. 7.

FIG. 9 is a partial side view of a counter adapted for use with any of the preferred embodiments of the invention.

FIG. 10 is a partial top view of the counter shown in FIG. 9.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiments of the invention will now be described with reference to the drawings in which the same elements are identified by the same reference numerals.

In FIG. 1, reference numeral 10 refers to a conventional cigarette lighter of the type in which a digital depression of the flint striker lever 12 about pivot 13 causes the cover 14 to be removed from the wick (not shown) and, simultaneously, causes a flint disposed adjacent to the wick to be struck thus igniting the fuel absorbed within the wick. Thus, it is possible to deactivate the lighter 10 by restraining the depression of lever 12 which may be restrained by the following mechanism: Depending from the lever 12 is a locking rod 16 one end of which abuts a shoulder 18 on the underside of lever 12. The rod 16 is guided by bushing 20 and urged upwardly to the position shown in FIG. 1 by spring 22. When the timer locking gear 24 is in the position shown in FIG. 1 the lower end of rod 16 registers with the locking gear slot 26 which is formed in the periphery of gear 24 and adapted to receive the lower end of rod 16. Thus, in this position, the lever 12 may be depressed since slot 26 is deep enough that lower end of rod 16 will not abut against any surface during the travel of lever 12.

When a smoker desires to inactivate the lighter 10 he merely manipulates the thumbwheel 28 which has a toothed circumference 30 which meshes at a point of contact with the teeth 32 on the circumference of the time locking gear 24. This, of course, causes gear 24 to rotate so that the lower end of rod 16 now faces a section of teeth 32 rather than slot 26, and attempts to depress the lever 12 are restrained by contact between rod 16 and teeth 32.

The rotation of gear 24 also energizes a standard time mechanism 34 which may be conventionally powered by a battery or a spring. If the power source is a spring, it may be rewound by the rotation of gear 24 through thumbwheel gear 28 and if the power source is a battery, the rotation of gear 24 may close a switch to connect a motor (not shown) to the battery (not shown).

The timer mechanism 34 which is a best seen in FIG. 2, connected to gear 24 at its axle 25 then causes the gear 24 to rotate until the slot 26 is again in registry with rod 16 and the lighter 10 is thus again capable of operation.

The amount of time during which the lighter is deactivated is indicated by a timer scale and pointer 36 and 38, respectively, shown in FIG. 3, said pointer 38 being mechanically connected to timer mechanism 34. The scale and pointer can be seen from without the casing 11 of the lighter 10 through crystal 40. In the embodiment described above, timer mechanism 34 is adjustable to settings between 1 and 60 minutes and thus the scale 36 indicates this range of settings.

Turning now to the second embodiment with special reference to FIG. 4 through 6, it is seen that the lighter 10' shown therein is of the type construction in which a lid 42 is pivotally connected to the body 44 of the lighter at pivot point 43. The lid 42 must be pivoted away from the position shown in FIG. 4 in order to expose the wick and flint assembly and thus it is possible

to deactivate lighter 10' by locking lid 42 to body 44.

As can best be seen in FIGS. 5 and 6 the lid 42 has a tab 46 which projects in a substantially perpendicular manner from one interior wall.

When the lid locking gear 48 is in the position shown in the FIGS. 4 through 6, the tab 46 can pass through the slot 50 formed in the flange 52 which is annularly disposed about the periphery of the lid locking gear 48. When the locking gear 48 is rotated from the position shown, the flange 52 is interposed above the tab 46 and thus the lid 42 cannot be removed from the body 44.

The locking gear 48 can be rotated by manipulation of the reset knob 54 since this knob is connected to the free end of axle 56 about which the locking gear 48 rotates. The axle 56 is mounted for rotational movement in a bushing 55 which forms a portion of a side wall of the cigarette lighter body 44.

Rotation of the locking gear 48 also causes rotation of the timer output gear 58 since the gear 48 has a toothed periphery which intermeshes with the toothed periphery of the timer output gear 58. The rotation of gear 58 is transmitted to the timer mechanism 34 by means of shaft 60 about which the gear 58 is mounted for rotation. The timer mechanism 34 is identical to the timer mechanism discussed with respect to the first embodiment in construction and operation and thus, it is energized by the input from axle 60 in the manner discussed above.

When energized the timer mechanism 34 causes the gear 58 to drive the gear 48 until the slot 50 is again aligned with the tab 46 and thus the lid 42 may be tilted back from the body 44 of the cigarette lighter 10. The amount of time during which the lid 42 will be locked to the body 44 is indicated by the time scale 36 and pointer 38 through the crystal 40, all of which are identical to elements with the same reference numerals discussed above.

Turning now to FIGS. 7 and 8 a third preferred embodiment will be described which can be utilized with any conventional type of lighter but which is shown for convenience in the type lighter having a hinged lid.

In the third embodiment a flint striker wheel 62 having peripherally disposed serrated edge 64 is rotatably mounted upon the windguard 66 of a lighter adjacent to the wick 68 thereof.

A flint 70 is urged into contact with the serrated edge 64 by a spring 72 which bears against a plate 74 and is restrained and guided within the tubing 76 such that rotation of the wheel 62 strikes a spark against the flint 70 in a conventional manner.

Since the plate 74 bears against the lever 78 which is pivoted for rotational movement about point 80, the compression upon spring 74 and thus the force with which flint 70 contacts edge 64 may be varied by rotating lever 78.

The lever 78 is urged in clockwise direction (as viewed in FIG. 7) by tension spring 81 which is fixed to the lever at one end and to the casing of the cigarette lighter at its other end. Simultaneously, however, the lever 68 can be urged in the counterclockwise direction by the cam follower 82 which is urged against the periphery of the timer cam wheel 86.

In the position shown in FIG. 7 the cam follower 82 is received within the slot 90 within the timer cam wheel 86 and thus the force of spring 81 is essentially unopposed so that the lever 78 is rotated to the position shown. In this position a maximum compression is ex-

erted upon spring 72 and thus flint 70 is strongly forced against serrated edge 64.

When the timer cam wheel 86 is rotated in a counterclockwise direction the cam follower 82 engages the circular portion of cam wheel 86 which engages cam follower 82 and thus causes lever 78 to pivot about point 80, and thus the force of spring 81 is overcome and the lever 78 is urged to the position shown in dotted lines. In this latter position the compression upon spring 72 is relieved and thus the flint 70 is not pressed against the serrated edge 64, i.e., the lighter is deactivated.

The timer cam wheel 86 can be activated by a reset knob 54 identical in construction to the knob 54 used in the second embodiment and the timer cam wheel 86 can be driven by a timer mechanism 34 such as is described in either of the prior embodiments.

Similarly the amount of time during which the lighter is made inoperable can be indicated by a time scale 36, a pointer 38 and a crystal as described above.

A counter may be associated with the pointer 36 and time scale 38 of any of the preceding embodiments to provide an indication of the number of cigarettes smoked. Such a counter, as illustrated in FIGS. 9 and 10 may comprise a gear 92 which is mounted upon the shaft 37 which connects the pointer 38 to the time mechanism 34. The gear 92 is connected to shaft 37 by a one way drive clutch 94 so that when the pointer 38 is rotated counterclockwise, one increment for example, one minute, as shown in FIG. 8, the gear 92 is rotated clockwise one increment. A continued rotation of shaft 37 will not, however, be passed by spring clutch 94 to gear 92 and thus even if the pointer is moved from the zero to the 60 minute mark the gear 92 will be indexed only a single increment. The toothed periphery of the gear 92 is in contact with the toothed periphery of an indicator wheel 96 so that the indicator wheel is indexed in the opposite direction for any indexing of the gear 92. The indicator wheel 92 has the numbers of an arithmetic progression starting with the number one formed thereon in an annular region near the periphery of the wheel to indicate the number of times the timer has been set and thus, indirectly, the number of times the lighter has been used.

The numbers on the indicator wheel may be visible through the crystal 40 discussed above or through a separate window in the lighter's casing.

While the above description fully covers the preferred embodiment of the applicant's invention, many modifications to the invention are within the scope of the invention, thus for the full scope of the invention reference should be made to the following claims.

What is claimed is:

1. In a mechanical cigarette lighter of the type requiring the operation of a mechanism precedent to the ignition of a spark, the improvement comprising means contained within and cooperating with said lighter for restraining the operation of said mechanism, a timing mechanism connected to and controlling said restraining means and a setting means connected to and controlling and timing mechanism.

2. The cigarette lighter as recited in claim 1 wherein said mechanism comprises a flint striker lever and said restraining means comprises a rod means abutting said flint striker lever at one end and, at its other end, abutting the periphery of a wheel including a radially directed aperture on the periphery of a wheel being con-

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nected to said timing mechanism, for rotation about its axis in response thereto so that the movement of said flint striker lever is restrained when said rod means abuts the periphery of said wheel when said wheel is in a first position but is not restrained when the peripheral aperture of said wheel is rotated into register with said rod means.

3. The cigarette lighter as recited in claim 1 wherein said mechanism comprises a hinged lid covering the fire producing portion of said lighter and said restraining means comprises a tab projecting from an interior wall of said lid and a wheel disposed adjacent said tab and including a peripheral flange having a slot therein, said wheel being connected to said timing mechanism for rotation about its axis in response thereto so that said tab is locked within said flange and thus said lid is locked over said time producing portion when said wheel is in a first position wherein said flange overlaps said flange but said tab is unlocked when said slot is rotated into register with said tab.

4. The cigarette lighter as recited in claim 1 wherein

said mechanism comprises a spring for compressing a flint against a flint striker means, a plate against which said spring bears and said restraining means comprises a lever bearing against said plate and means for adjusting the position of said lever for thereby relieving the compression upon said spring.

5. The cigarette lighter as recited in claim 4 wherein said adjusting means comprises a wheel having a cam surface on its periphery which is mounted for rotation, a timer for rotating said wheel, a cam follower connected to said lever and means for urging said cam follower against said cam surface.

6. The cigarette lighter as recited in claim 1 further including means for indicating the setting applied to said timing mechanism by said setting means.

7. The cigarette lighter as recited in claim 6 further including means associated with said indicating means for counting the number of times said setting means are utilized and for displaying a cumulative count of said number.

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