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J. KOHN

2,478,584

LIGHTER

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FIG. 1.

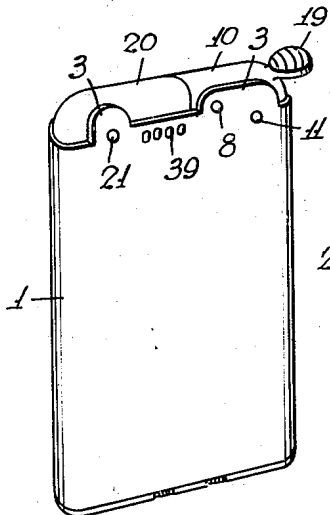


FIG. 2.

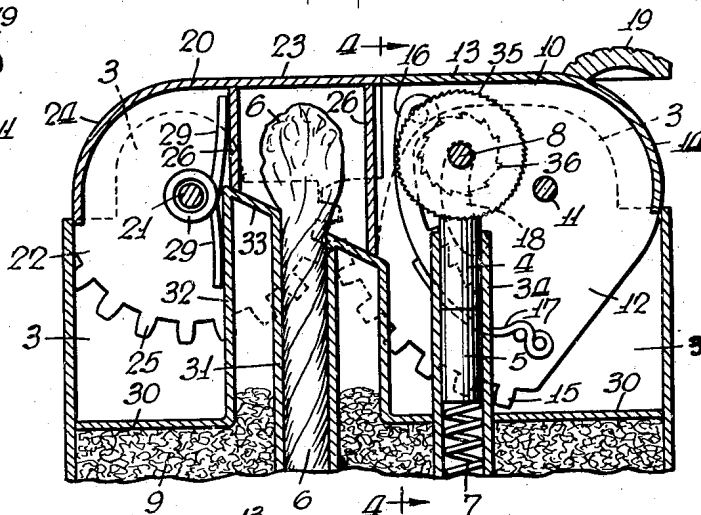


FIG. 5.

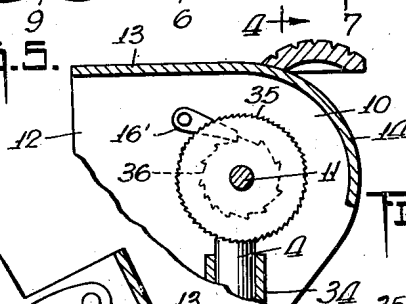


FIG. 3.

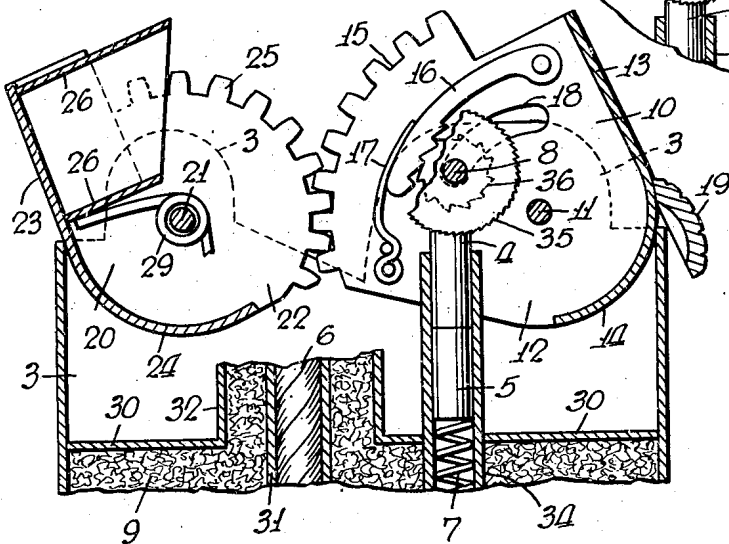
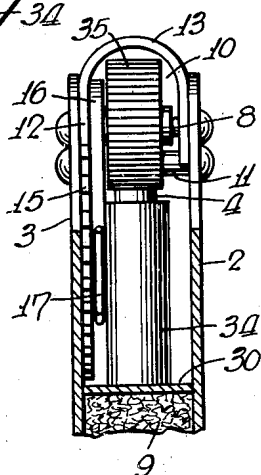


FIG. 4.



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# UNITED STATES PATENT OFFICE

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## LIGHTER

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2 Claims. (Cl. 67—7.1)

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This invention relates to cigarette lighters and, more particularly, to a novel type of cigarette lighter, the general nature of which may be best defined by comparing the characteristics of the new lighter with the characteristics of two well-known and distinct types of prior art lighters.

One of these (and, incidentally, the older of the two) may be, for convenience, referred to as the "enclosed (single cap) snap-action" prior art lighter. This type of lighter is characterized by the provision of a cap pivotally mounted, close to one end of the cap, to the main casing; in its closed position, the cap completely encloses or encases the lighter mechanism. The cap is held in closed position, against the urgency of a spring, by a snap-catch or detent, the lighter being operated by pushing or pressing the catch to release the cap which is immediately turned by the spring 180° to open position, exposing the wick on a depressed platform of the lighter; on the depressed platform is also the flint wheel which is operated by a member carried by the cap, to generate sparks to ignite the wick. The cap also carries a snuffer which extinguishes the flame when the cap is closed.

The more recent of the two types of prior art lighters may be, for convenience, referred to as the "exposed mechanism, lever operated" prior art lighter. This type of lighter is characterized by the fact that the wick and flint wheel mechanism are mounted, in exposed position, on the top platform of the lighter, on which is also mounted an operating lever. The lighter is operated by depressing the lever which causes the snuffer arm to be turned in a direction away from the wick and at the same time, turning the flint wheel to generate sparks to ignite the wick. A spring urges the operating lever in the opposite direction, so that, upon releasing the lever, the snuffer arm is turned in the opposite direction towards the wick, to extinguish the flame.

The desirable feature of the first type of prior art lighter is the complete enclosing of the mechanism in the normal condition of the lighter. The disadvantages are the fact that the cap has a considerable angle of turning and the difficulty of properly operating the mechanism by the spring-impelled movement of the cap, which is too rapid. These disadvantages are eliminated in the second type of prior art lighter, in which the mechanism is not operated by a spring, but by an operating lever or finger-piece under hand control. But the disadvantage of this type of device is that the parts and mechanism are exposed.

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The principal object of this invention is to provide a novel type of cigarette lighter which will combine the desirable features of both types of prior art lighter without the disadvantages of either. An allied object is to provide a lighter characterized by the complete enclosing of the mechanism in its normal condition and by the provision of a hand-controlled member or finger-piece for operating the mechanism.

For the attainment of these and such other objects as may appear or be pointed out herein, I have shown one embodiment of the invention in the accompanying drawing, wherein:

Fig. 1 is a perspective view of the novel cigarette lighter, in closed condition;

Fig. 2 is a sectional elevation of the upper portion of the lighter, showing the mechanism in the normal, closed condition of the lighter;

Fig. 3 is a sectional elevation similar to Fig. 2, but showing the mechanism in the operated condition of the lighter;

Fig. 4 is a section taken on the line 4—4 of Fig. 2; and

Fig. 5 is a fragmentary sectional elevation similar to the upper right portion of Fig. 2, but showing the flint wheel and the split cap mounted on the same pivot pin.

The novel cigarette lighter attains the desirable characteristics of complete enclosure of the mechanism and a hand-controlled manner of operating the mechanism, by the provision of a split-cap closure, that is, a closure which consists of two individually pivoted caps, each constituting substantially one-half of the closure, and by the further provision that one of the two split-caps serves as the operating member or finger-piece. The finger-piece split-cap is thus the counterpart of the hand operated lever of the second type of prior art lighter ("exposed mechanism, lever operated") discussed above, while the other split-cap carries a snuffer and is thus the counterpart of the snuffer-arm. The finger-piece split-cap is provided with a member for operating the flint-wheel. The two split-caps have intermeshing gears, so that by turning the finger-piece split-cap outwardly (by hand), the snuffer split-cap is concurrently turned outwardly to withdraw its snuffer from the wick; at the same time, the flint wheel is actuated to generate sparks to ignite the exposed wick. One of the split-caps is implemented with a spring which turns the two caps in the opposite inward direction, upon withdrawing the finger from the finger-piece, to return the caps to closing position and to cause the snuffer to extinguish the flame.

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The finger-piece split-cap is designated 10 and is pivotally mounted at the upper open end of the main lighter casing 1, by a pin 11 extending transversely across the narrow width of the casing from front wall 2 to rear wall 3. The snuffer split-cap is designated 20 and is similarly pivotally mounted by a pin 21. Split-cap 10 is formed of a main side wall 12 having a straight channel flange 13 along the top of the cap which continues at one end of the cap as an arcuate channel flange 14. Split cap 20 is similarly formed of a main side wall 22 and straight and arcuate channel flanges, respectively, 23 and 24. In the closed position of split-caps 10 and 20, as shown in Fig. 2, their straight channel flanges, respectively, 13 and 23, are in abutting relation and constitute the main closure at the top of the lighter, the arcuate channel flanges 14 and 24 completing the closure at the opposite ends of the respective split-caps, as best seen in Fig. 2. The main side walls 12 and 22 are shaped like sectors of a circle, with their arcs in contiguous relation and formed as intermeshing gear teeth, respectively, 15 and 25. Split-cap 10 is provided with a small finger-piece 19. By pressing downwardly on finger-piece 19, split-cap 10 turns clockwise on its pivot 11 from its normal, closed position shown in Fig. 2 to its open position shown in Fig. 3; concurrently, the clockwise turning of its gear teeth 15 meshing with gear teeth 25 of the split-cap 20 causes the latter to turn counter-clockwise on its pivot 21 from its normal, closed position in Fig. 2 to the open position of Fig. 3. The main side walls 12 and 22 are adjacent to the rear wall 3 of the lighter casing, as seen in Fig. 4 with reference to side wall 12, so that a clear space is available at the upper part of the lighter casing, which becomes exposed when the split-caps are in their outward or open positions, as in Fig. 3.

The clear space at the top of the lighter casing is limited by a partition 30 extending transversely across the lighter casing and serving also as the upper confines of the fuel compartment 9. Transverse partition 30 is pierced by a wick tube 31 and a flint tube 34; transverse partition 30 is formed with a tubular extension 32 which surrounds wick tube 31 and connects therewith at the top in an inclined platform 33. Wick tube 31 contains a wick 6, the upper end of which is in underlying relation to snuffer cap 20, as shown in Fig. 2. Depending from the straight channel flange 23 of cap 20 is a short snuffer tube 26, the lower end of which is cut at a bevel to conform with the inclined platform 33, as best seen in Fig. 2, so that in the closed position of the split-caps, the lower edge of the snuffer 26 seats on the inclined platform 33 to completely encase the upper end of wick 6. The main object attained by inclining platform 33 as shown in Fig. 2 with its high point nearer pivot 21 is to shorten the proximal wall of snuffer tube 26 to conform to the shorter radial distance from pivot point 21, so that snuffer 26 may seat fully on the platform and completely encase the wick. Also, the inclination of platform 33 enables any excess fuel to drain away from the wick to a level below the flint wheel; further, the inclination faces the flint and flint wheel so that it serves to concentrate the sparks towards the wick.

Within flint tube 34 is a flint-piece 4 resting on a plug 5 slidable in tube 34 and urged upwardly by a spring 7 to maintain flint 4 in contact with flint wheel 35. Flint wheel 35 together with a smaller ratchet wheel 36 are rotatively mount-

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ed on a pin 8 extending transversely across the main casing from front to rear walls, 2, 3. In order that the main side wall 12 of split-cap 10 may be turned without obstruction from transverse pin 8, side wall 12 is provided with an arcuate slot 18 in which transverse pin 8 clears. Ratchet wheel 36 is turned by a pawl 16 which is pivotally mounted on main side wall 12 of split-cap 10 and pressed towards the ratchet wheel by a wire spring 17 also mounted on side wall 12. As finger-piece split-cap 10 is turned clockwise from closed position, Fig. 2, to open position, Fig. 3, the teeth at the distal end of pawl 16 engage ratchet wheel 36 to turn the latter together with flint wheel 35 in a clockwise direction, as best seen in Fig. 3, causing sparks to be thrown leftwardly towards the wick.

The flint wheel 35 and ratchet wheel 36 may be pivotally mounted on the same pin 11 on which the split cap 10 is mounted; this is illustrated in Fig. 5 where it will be observed that flint tube 34 is disposed directly under common pivot pin 11 with flint 4 engaging flint wheel 35. A pawl 16' mounted on main side wall 12 of the split cap engages ratchet wheel 36 to turn it and the flint wheel 35 in a clockwise direction when the split-cap is turned in that direction to open position, the pawl 16' clicking idly over the ratchet teeth in the counterclockwise closing movement of the split-cap.

It will be observed from Figs. 2 and 3 that gear 25 of the snuffer split-cap 20 is smaller than gear 15 of the finger-piece cap 10. Hence the snuffer split-cap has a somewhat larger angular extent of turning, the object of which is to get the snuffer 26 away from the wick as quickly as possible (in the early stage of outward turning) before the flint wheel is turned, so that the wick will be exposed to the sparks generated by the flint wheel.

The extent of turning of split-caps 10 and 20 is limited by the abutment of their straight channel flanges, respectively, 13 and 23, with the top edge of the lighter casing, as shown in Fig. 3. The split caps are returned inwardly to their normal, closed positions by a wire spring 29 conveniently coiled about pivot pin 21 and having its upper end abutting against the snuffer tube 26 and its lower end abutting against the tubular extension 32. Draft holes 39, Fig. 1, may be provided near the top edge of the lighter casing and disposed above inclined platform 33, to furnish air to the wick when ignited.

It will be observed from the showing of Fig. 3, that when the cap sections 10 and 20 are moved to their open positions, the curved end channels or wall sections 14 and 24 are received within the casing 3, that the angular movement of the cap section 20 is sufficient to bring the lower inclined edge of the snuffer cap 26 into approximately a vertical plane which is to one side of the wick so that the flame will clear the snuffer cap; and that due to the split cap arrangement, the operation of the lighter will extend the cap sections for a distance which approximates only half of the width of the casing.

What I claim as new and desire to secure by Letters Patent, is:

1. A lighter comprising a casing having front and rear walls and connecting side walls, the top edges of which define a top casing opening, wick and flint tubes, the upper ends of which extend into said top casing opening, means disposed above said flint tube for igniting said wick, closure means for said top casing opening comprising

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two channeled sections pivotally mounted to said side walls of the casing at points close to said front and rear walls thereof, said pair of channel sections being normally in end to end relation with said top casing edges extending beyond and overlapping the edges of the channel sections to completely seal said top casing opening at all points thereof, means carried by one of said sections for operating said igniting means, a snuffer cap carried by the other of said sections, the side walls of said pair of channel sections on one side having their perimetrical edges curved and formed with teeth which intermesh, whereby the closure sections will swing open in opposite directions, a manipulative member on one of the closure sections, the portion of said sections at said front and rear casing walls being curved to a radius about their said respective pivotal axes so that said complete seal is unbroken at the front and rear top opening of the casing during said swinging open of the closure sections.

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2. The lighter according to claim 1 wherein said toothed perimetrical edge of the closure section which carries said operating means has a larger radius of curvature than that of the corresponding portion of the closure section carrying the snuffer cap whereby the latter will move to open position at an angular speed accelerated relatively to that of the other closure section.

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