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2,532,650

POCKET LIGHTER

Filed June 12, 1948

Fig. 1

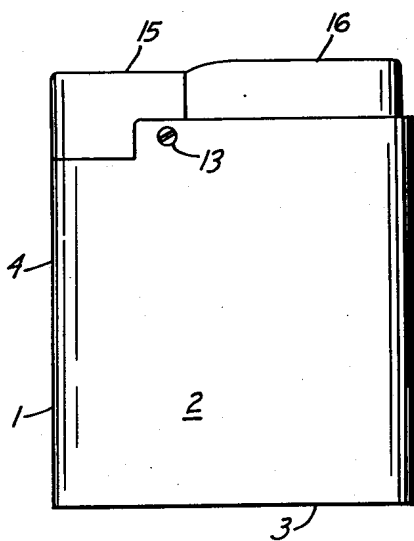


Fig. 2

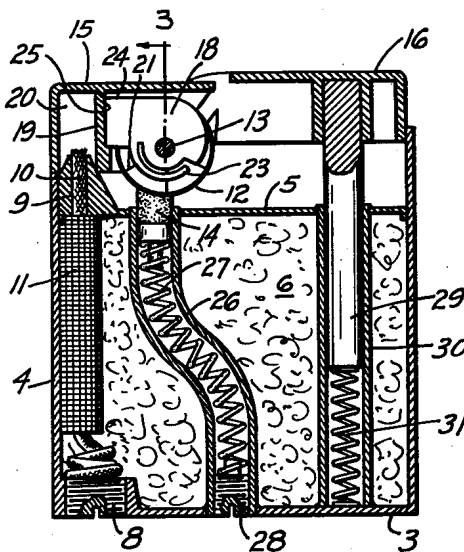


Fig. 3

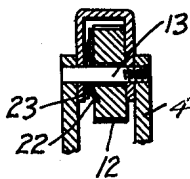


Fig. 4

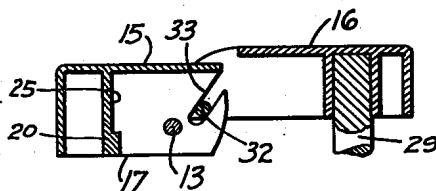


Fig. 5

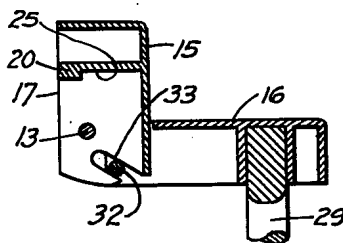
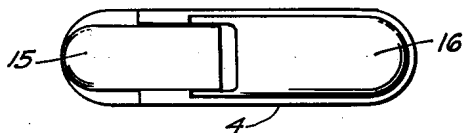


Fig. 6



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POCKET LIGHTER

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1 Claim. (Cl. 67-7.1)

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The present invention relates to improvements in pocket lighters and has particular reference to a lighter of the character described in which a revoluble wheel of abrading material co-operates with a flint in producing a spark for lighting a wick, which latter receives fuel from a compartment forming part of the lighter.

In lighters of this character a snuffer is usually provided for extinguishing the wick after use, and the snuffer is operated by means of a thumb-piece to clear the wick and at the same time is associated with the wheel to rotate the same for producing the spark.

I have noticed in devices of this type that the wheel turns rather slowly and sluggishly and that as a result the spark produced is not always sufficient to light the wick.

It is one of the main objects of the present invention to provide a simple means for accelerating the rotation of the wheel and to produce a certain snap action which results in a more lively spark than has been heretofore obtained and which makes the device more effective insofar as a satisfactory spark is produced in practically each operation of the lighter.

In lighters now in general use it is a rather difficult and time-consuming task to insert a new wick, since the fuel containing compartment is usually filled with absorbent material which feeds the fluid to the wick but which offers a certain resistance to the introduction of the wick. In the present invention it is proposed to provide a simple means for facilitating the placing of the wick without interfering with the fluid transfer from the absorbent material to the wick.

The wheel in devices of this character is usually operated by the snuffer through a pawl and ratchet mechanism and I have observed that in many cases the pawl, on the return movement of the snuffer, does not ride freely against the ratchet of the wheel and as a consequence fails to secure a new bite. It is one of the objects of the present invention to provide a free floating movement between the pawl and the ratchet to insure a new grip after each operation.

It is further proposed to simplify the mechanical structure of the operating mechanism in such a manner that the snuffer assembly and the thumb-piece are held in place by a single bolt or shaft and may be readily removed upon removal of the bolt and may be reinserted as a unit for securing by the bolt.

And finally, it is proposed to provide a lighter of the character described that is attractive and streamlined in appearance and in which there is

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a certain continuity in outline, without any projecting or receding parts.

Further objects and advantages of my invention will appear as the specification proceeds, and the novel features of my invention will be fully defined in the claim attached hereto.

The preferred form of my invention is illustrated in the accompanying drawing, in which Figure 1 shows a side view of my pocket lighter, Figure 2, a vertical section through the same, Figure 3, a detail section taken along line 3-3 of Figure 2,

Figure 4, a sectional detail view showing the snuffer, the thumb-piece and a driving connection between the same, in normal position,

Figure 5, a sectional detail view of the same parts as in Figure 4, showing the position of the parts at the end of a lighting operation, and

Figure 6, a top plan view of the lighter.

While I have shown only the preferred form of my invention, I wish to have it understood that various changes and modifications may be made within the scope of the claim attached hereto without departing from the spirit of the invention.

Referring to the drawing in detail, the housing 1 of my pocket lighter is relatively thin and flat for convenient carrying in a small pocket. It is rectangular in shape, has two flat sides 2, a flat bottom 3, and end walls 4 which may be suitably contoured into the side walls.

In the upper portion the housing carries a partition 5 running parallel to the bottom 3 and providing a fuel chamber 6 underneath the same. This chamber usually is filled with cotton or other absorbent material to hold the lighting fluid, and is accessible for filling through a hole 7 adapted to be closed by a plug 8.

The partition is formed, near one end thereof, with a hole 9 adapted to receive the wick 10, the material of the partition being thickened about the hole as indicated. The wick has a relatively long portion extending into the compartment 6 for fluid exchange with the cotton and also to extend the life of the wick which is advanced from time to time through the hole 9 to compensate for portions consumed in the burning process.

To facilitate insertion of the wick I provide a tubular screen 11 which is secured upon the bottom face of the partition 5 and extends downwardly preferably through the major portion of the depth of the compartment as shown, this screen being arranged in concentric relation to the wick hole and serving to provide a guide or

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clear passage for the insertion of the wick. The screen mesh is sufficiently open to allow of free fluid exchange between the cotton and the wick. Since the wick hole 9 is approximately alined with the feed hole 7, it is perfectly feasible to thread a relatively long piece of wick through the wick hole, the tube and the feed hole, possibly by use of a needle, cut it off above the wick hole and a certain distance below the feed hole, and work the lower projecting end back into the compartment as shown.

The mechanism for producing a spark comprises in its principal features, a wheel 12 of abrading material, revolvably mounted on a bolt or shaft 13, a flint 14 bearing on the surface of the wheel, a snuffer 15 mounted on the same shaft, means for transmitting motion from the snuffer to the wheel, and a thumb-piece 16 for actuating the snuffer.

The snuffer is made in the form of an inverted channel, and its two sides 17 are made to straddle the wheel and a driving disc 18 interposed between the wheel and one of the sides of the channel. A partition 19 separates the wheel assembly from a forward chamber 20 used as a snuffing cap for the wick.

The wheel is formed with radial ratchet teeth 21 in the side facing the disc, and the latter has one relatively stiff and short tooth 22 projecting toward the wheel for engagement with the ratchet teeth. The disc has a light spring finger 23 projecting from the other side of the disc for contact with the channel wall and for urging the tooth 22 into engagement with the ratchet teeth of the wheel. The disc is anchored to the snuffer by means of an extension 24 fitting in a recess 25 in the partition 19, and is mounted on the shaft 13 coaxially with the wheel and the snuffer.

The snuffer is free to tilt on the shaft 13 between a normal horizontal position shown in Figure 3 and a vertical position shown in Figure 4. When thus tilted, it will clear the wick and drive the wheel through a portion of a revolution, preferably one-fifth, by means of the disc 18. When the snuffer returns, the disc returns with the same for a new bite on the next ratchet tooth, the light spring finger 23 allowing the tooth 22 to freely slide backward over the inclined face of the wheel between the ratchet teeth.

The flint 14 is mounted in the upper end of a tube 26 extending vertically through the compartment 6 and is urged upon the wheel surface by a spring 27 bearing upon a cap 28 threaded into the tube from the bottom. The tube is preferably bent as shown to allow more space around the screen and to make the cap more easily accessible for removal of the flint.

For operating the snuffer I use the thumb-piece 16 which is also made in the form of an inverted channel and which has a plunger 29, the latter being slidable in a tube 30 extending vertically through the fuel chamber 5, and being urged upward by a spring 31. The thumb-piece is slidable in the upper portion of the housing 1 and has a sliding fit with the walls of the latter. The two sides of the thumb-piece project forward to straddle the sides of the snuffer, and they have inwardly projecting prongs 32 riding in slots 33 formed in the side walls of the snuffer.

The slots 33 are identical in form and each rises from a point rearwardly of and close to the shaft 13 on a rearward incline to the upper rear corner of its respective side, as illustrated in Figure 4. As the thumb-piece is pressed downward, the prongs, travelling in a straight down-

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ward path, are urged toward the shaft 13 by the bottom edge of the slots, which produces a certain binding action, and considerable thumb pressure is necessary to force the prongs past the horizontal center plane of the shaft. After the central plane is passed, the binding action suddenly ceases and the built-up thumb pressure spends itself in a sudden acceleration of the tilting movement, until the snuffer reaches the vertical position shown in Figure 5 when it strikes the upper channel wall of the thumb-piece and is stopped thereby.

This sudden acceleration of the tilting movement of the snuffer is transmitted to the wheel 12 through the disc 18 and the ratchet arrangement previously described, with the result that a much more lively spark is produced at the flint, the spark being directed toward the wick for lighting the same.

When the thumb pressure is released, the spring 31 urges the thumb-piece upward, and the prongs bearing against the upper edges of the slots return the snuffer to horizontal position when the latter is stopped by the upper wall of the housing. When the snuffer is stopped the upper walls of the slots hold the prongs 32 and the thumb-piece against further upward travel.

The shaft or bolt 13 is supported in the walls of the housing above the partition 5 and is threaded into one of the walls as shown, for easy removal and replacement.

The operation of the invention will be readily understood from the foregoing description. As the thumb-piece 16 is depressed, it tilts the snuffer 15 with the accelerated movement inherent in the prong and slot drive 32-33. The tilting movement is transmitted to the wheel by the disc 18 and its tooth 22 to turn the wheel with the same accelerated motion through one-fifth of a turn. When the thumb-piece is released, the spring 31 urges it upward and the prong and slot arrangement 32-33 returns the snuffer to an initial position, the disc riding lightly over the ratchet face of the wheel for a new bite. When the snuffer has reached its end position, the prong and slot arrangement locks the thumb-piece.

It will be noted that both the snuffer and the thumb-piece are held in position by the single shaft 13. When the latter is withdrawn, both may be drawn out of the casing, and the thumb-piece may be separated from the snuffer by withdrawing the prongs 32 from the slots 33. The wheel and the disc 18 may then be withdrawn endwise from the snuffer.

For assembling, the operator will place the disc adjacent the wheel, introduce both disc and wheel endwise into the snuffer, introduce the prongs of the thumb-piece into the slots 33 and then lower the assembly into the housing, taking care that the holes in the wheel, the disc 18 and the snuffer line up with the corresponding holes in the housing. Introduction of the shaft or bolt 13 will complete the operation.

The flint 14 may be easily withdrawn upon removal of the cap 28 and should be withdrawn before removal of the snuffer assembly and re-inserted after positioning the snuffer assembly.

The provision of the screen 11 greatly facilitates the introduction of a new wick in the manner described.

It should be particularly noted that the snuffer and the thumb-piece are streamlined into the contour of the housing and form a substantially unbroken and continuous surface therewith.

I claim:

A lighter consisting of a housing with a wick and flint positioned therein and both exposed at the upper portion thereof, a friction wheel engageable with the said flint, the said friction wheel being mounted on a shaft at the upper portion of the housing, a snuffer pivotally mounted on said shaft and of substantially U-shape in cross section and closed at its forward end, top and sides and open at its other end and bottom, a vertically movable thumb piece also being of substantially U-shape in cross section and having a depending plunger attached thereto, a recess in the housing within which the plunger is positioned, spring means to normally maintain the plunger and thumb piece in an upward position, the said thumb piece having a closed end, top and sides and an open end and bottom, the said open ends of the snuffer and thumb piece being in slightly overlapped relationship, a pin extending laterally inwardly from the said open end of the thumb piece, the open end of the snuffer having an inclined straight slot in one of its sides that extends toward the open end thereof and includes a closed inner end, and the inner closed end of the slot terminates closely adjacent the pivotal connection of the snuffer with the housing in spaced relation thereto and rearwardly thereof with the pin normally disposed at the

closed end of the slot, whereby upon depression of the thumb piece, the thrust of the pin in the slot due to the position of the same therein and with respect to the pivotal mounting of the snuffer initially resists downward movement but, upon further downward movement, the snuffer is moved on its pivot and has a snap action from a closed or horizontal position to a substantially vertical position, and when in such position, the pin is moved away from the closed end of the slot toward the open end thereof.

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