

April 1, 1952

N. NORDENSTAM

2,591,189

LIGHTER

Filed Aug. 18, 1949

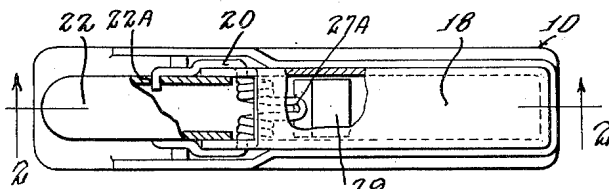
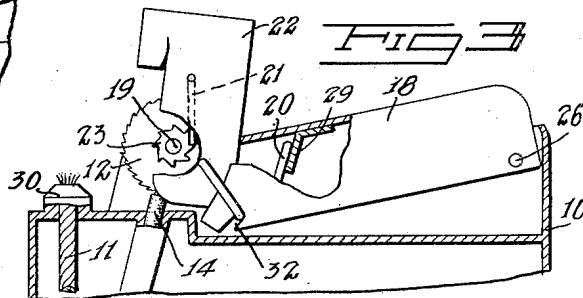
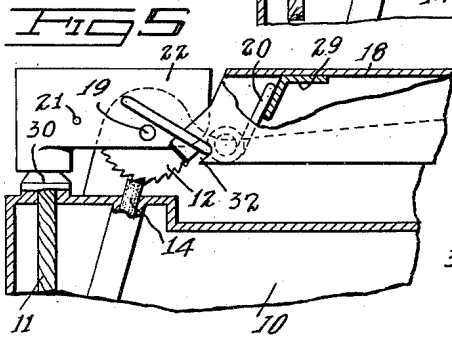
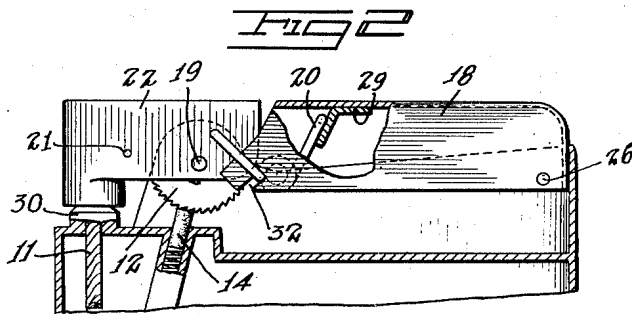
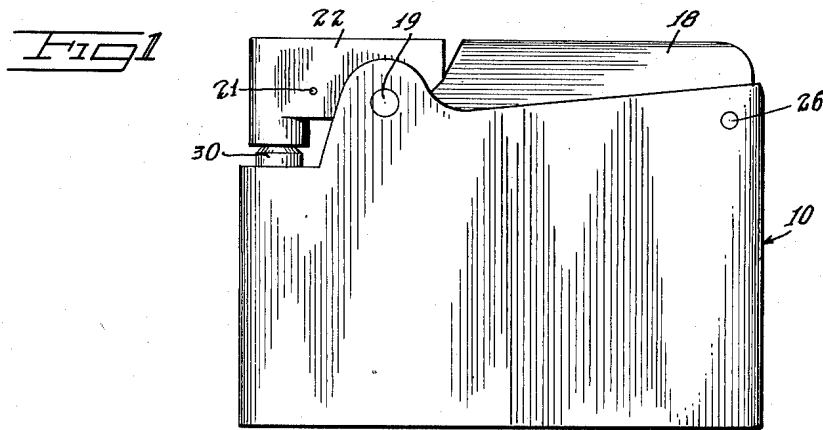


FIG 4

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2,591,189

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Application August 18, 1949, Serial No. 111,010

3 Claims. (Cl. 67-7.1)

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The present invention relates to an improved lighter construction of a type in which a cap, in opening, causes a friction wheel to generate a spark for igniting the lighter, and is a continuation in part of my prior patent application filed January 3, 1949, Serial No. 68,902, now abandoned.

An object of the present invention is to provide an improved lighter construction including a novel actuating member to facilitate operation of the friction wheel.

Another object of the present invention is to provide an improved lighter construction characterized by its simplicity and relatively small number of parts which may be made and assembled with relatively unskilled personnel using present day mass production methods.

Another object of the present invention is to provide an improved depresser or treadle bar connected in a novel manner to toggle linkage for moving a friction wheel.

Another object of the present invention is to provide an improved lighter construction in which there is a novel cooperation between a treadle bar and a friction wheel, the spring being connected between such two elements either to normally maintain the lighter cap in a protective position over the lighter wick or in a stable retracted position away from such lighter wick.

Another object of the present invention is to provide an improved lighter construction of the character described in which a spring is associated with the lighter cap and an actuating treadle bar in such a manner that the cap in its retracted position causes the spring to assume an overcenter position to hold the cap in a retracted position.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. This invention itself, both as to its organization and manner of operation, together with further objects and advantages thereof, may be best understood by reference to the following description taken in connection with the accompanying drawings in which:

Figure 1 is a view in side elevation of a cigarette lighter embodying the present invention with the cap in closed position,

Figure 2 is a sectional view taken substantially on the line 2-2 of Figure 4,

Figure 3 is a view similar to the sectional view shown in Figure 2, but with the cap maintained in a position of stable equilibrium in its retracted position,

Figure 4 is a top plan view of the lighter shown in Figure 1 with portions thereof fragmented to show internal structure, and

Figure 5 is a view similar to the view of Figure 2 and shows a modified arrangement in which a modified spring is connected between the treadle bar and cap so that in all positions of the treadle bar the spring is effective and operative to return the cap to its normal closed position over the wick.

The lighter comprises a casing 10 containing, in conventional manner, lighter fluid in contact with the wick 11, which is lit when the friction wheel 12 is rotated to frictionally engage the spring pressed flint rod 14 to generate sparks. The wick construction, as well as the means whereby the flint 14 is spring pressed, follows conventional construction.

The present invention relates to the improved means whereby the friction wheel 12 is rotated, including the specific constructional and mounting features of the depresser or treadle bar 18 and associated spring 20. The friction wheel 12 is rotatable about the axis of shaft 19 mounted for rotation on opposite sides of the casing 10. The friction wheel 12 carries a ratchet wheel 23 for cooperation with the pawl member 21 mounted on the cap 22. Also mounted on the shaft 19, which is affixed on opposite side walls of casing 10, is the cap member 22 which, in its position shown in Figure 1, prevents evaporation of the lighter fluid from the wick 11.

The depresser bar 18 is linked to the cap 22 by means of the coiled torque spring 20 which, besides serving as a link, produces a desirable mutual bias between such cap 22 and treadle bar 18 to achieve important features of the present invention. This bar 18 is adapted to pivot about the axis of pin 26, which is affixed to opposite side walls of the casing 10. The torque spring 20 has its free ends bent inwardly and laterally through apertured portions 22A in the cap, while an intermediate portion 27A of the coiled spring 20 is extended to abut the abutment 29 fastened, as for example, by welding to the underside of the hollow treadle bar 18, whereby the cap 22 tends to be rotated counterclockwise in Figure 1, and on the other hand, the treadle bar 18 tends to be rotated clockwise about its pivot pin 26. Such counterclockwise rotation of the cap 22 in Figure 1 is, of course, limited by its engagement with the upper end of the wick holder. Such engagement of the cap 22 with the upper end of the wick holder 30 results, of course, in limiting the otherwise clockwise rotation of the treadle

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bar 18. However, when and as the treadle bar 18 is depressed a slight amount to ignite the lighter, the spring 20 then acts in a direction to produce further downward pivoted movement of the treadle bar 18 about the pivot pin 26. Such downward movement of the treadle bar 18 and upward movement of the cap 22 continues until the parts assume the position shown in Figure 3, wherein they are in a position of stable equilibrium with the cap 22 in a raised position. The cap 22 is maintained in such position shown in Figure 3, since it is observed that the spring 20 assumes an overcentered position with respect to the rotational axis of the cap 22. In other words, in Figure 3 the spring 20 no longer tends to pivot the cap 22 in a counterclockwise direction about its pivot pin 19, but in a clockwise direction into abutting engagement with the treadle bar 18. In Figure 3 the spring 20 tends to continue to pivot the treadle bar 18 in a counterclockwise direction about its pivot pin 26, but its motion is limited, due to the engagement of the cap 22 with the treadle bar 18.

In order to maintain the spring 20 to produce the above mentioned desirable action, the legs of the spring 20 pass inwardly respectively through the oppositely disposed apertures in the cap 22, and also through a pair of oppositely slotted portions 32 in the opposite side walls of the hollowed treadle bar 18.

Figure 5 shows a modified arrangement in which the torque spring 20 serves again as a link between the cap 22 and treadle bar 18, but the point of attachment of the spring to the cap is different in this respect. The spring 20, in all positions of the treadle bar 18, is not moved to an overcentered position, so that the spring is effective and operative at all times to return the cap 22 to its normally closed position over the wick 11. In other words, when the lighter is operated upon the depressing of the treadle bar 18, the cap 22 will return to its normally closed position almost immediately upon release of the treadle bar 18 in Figure 5.

While the particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspects and, therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of this invention.

I claim:

1. A pocket lighter involving: a lighter casing, a friction wheel rotatably mounted on said casing in operative relationship to produce sparks when the friction wheel is rotated, a cap member, a one-way clutch connecting said cap member to said friction wheel, said cap member being pivotally mounted on said casing, a depresser bar mounted on said casing with one of its ends adjacent said cap and the other one of its ends

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remote from said cap, said depresser bar being pivotally mounted on said casing at said other end, and a link member comprising a torque spring abutting both said cap member and said depresser bar, said torque spring having both of its free ends attached to said cap member with an intermediate portion of said torque spring engaging said depresser bar.

2. A pocket lighter comprising: a casing, a depresser bar pivotally mounted at one of its ends to said casing, a cap member rotatably mounted on said casing about a first axis adjacent to the other end of said bar, a torque spring having both of its free ends connected to said cap with an intermediate portion of said torque spring engaging said other end of said bar to produce motion of said cap when said bar is depressed, to thereby move said cap from a closed position to an open position, said torque spring having a position with respect to the pivotal axes of said depresser bar and cap member and so biased as to urge said cap member toward its closed position and said depresser bar to its raised position.

3. A pocket lighter involving: a lighter casing, a friction wheel rotatably mounted on said casing in operative relationship to produce sparks when the friction wheel is rotated, a cap member, a one-way clutch connecting said cap member to said friction wheel, said cap member being pivotally mounted on said casing, a depresser bar mounted on said casing with one of its ends adjacent said cap and the other one of its ends remote from said cap, said depresser bar being pivotally mounted on the other of said casing ends, a link member comprising a torque spring abutting both said cap member and said depresser bar for both transmitting and effecting movement between said bar and said cap member, to thereby produce movement of said cap member to open and closed positions, upon movement of said depresser bar, torque spring being so disposed as to move over-center with respect to the pivotal axes of said cap member and depresser bar upon initial depression of said bar, thereby to effect automatic operation of said friction wheel.

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