April 21, 1936. A. KILSTROM 2,038,048

LIGHTER

Filed July 9, 1932

Fig. 1.

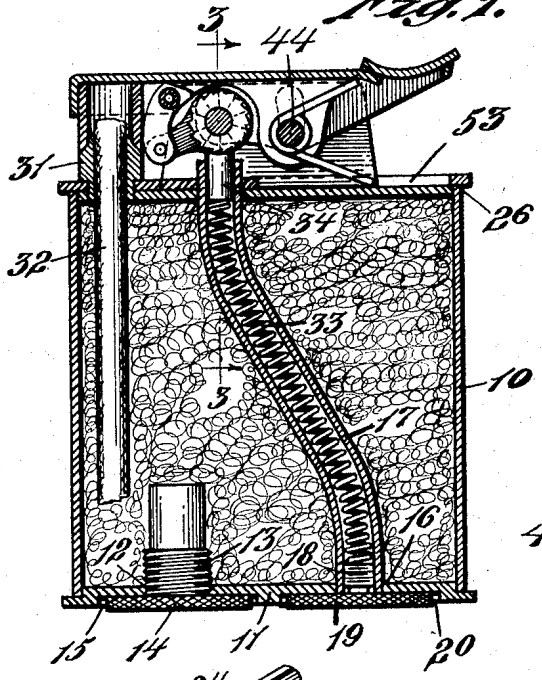


Fig. 2.

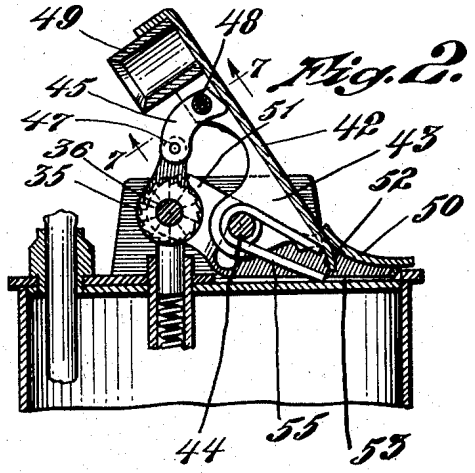


Fig. 3.

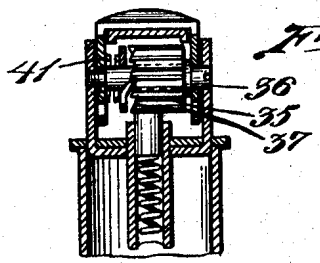


Fig. 4.

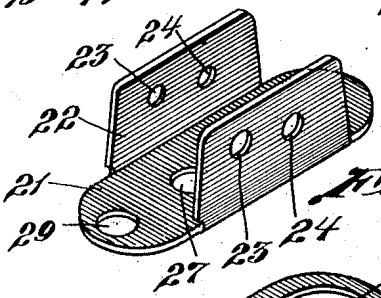


Fig. 6.

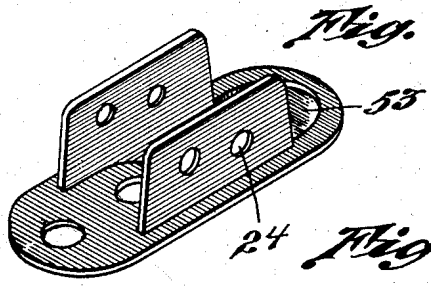


Fig. 5.

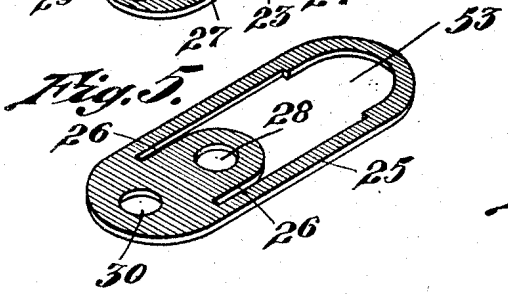


Fig. 8.

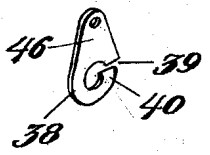


Fig. 9.

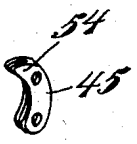


Fig. 7.

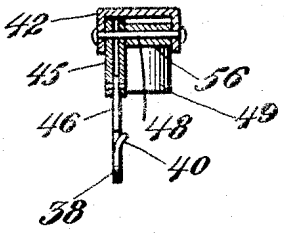
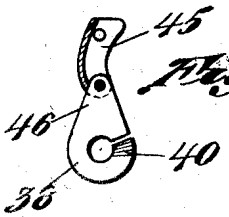


Fig. 10.



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ATTORNEYS.

Patented Apr. 21, 1936 2,038,048

UNITED STATES PATENT OFFICE

2,038,048

LIGHTER

Axel Kilstrom, Cranston, R. I., assignor to Henry Lederer & Bro., Inc., a corporation of Rhode Island

Application July 9, 1932, Serial No. 621,633

4 Claims. (Cl. 67—7.1)

This invention relates to a pyrophoric lighter, and has for one of its objects to provide a simple, manually operated construction for ignition of the wick of the lighter.

Another object of the invention is the provision of a supported and guided pawl for engaging a ratchet and connected to an actuating member for rotating the pyrophoric wheel upon movement of the actuating member by manual pressure, the parts being so arranged as to avoid dead center or alignment of the pivotal connections of the swinging parts.

A further object of the invention is the provision of a top wall construction which may be easily assembled and positioned on the tank without the use of expensive jigs.

A still further object of the invention is the provision of a top wall construction and operating mechanism thereon which will afford a maximum liquid retaining compartment for the fuel.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawing:—

Fig. 1 is a central sectional view through the lighter showing its operating parts.

Fig. 2 is a fragmental view of the lighter showing the operating mechanism on the top thereof in section and in open position.

Fig. 3 is a section on line 3—3 of Fig. 1.

Fig. 4 is a perspective view of the inner member of the top wall construction.

Fig. 5 is a perspective view of the outer member of the top wall construction.

Fig. 6 is a perspective view of the two parts or members of the top wall assembled.

Fig. 7 is a section on line 7—7 of Fig. 2.

Fig. 8 is a perspective view of the pawl.

Fig. 9 is a perspective view of the link.

Fig. 10 is a view of the assembly of the pawl and link shown in Figs. 8 and 9.

In the construction of pyrophoric lighters it is desirable to provide a maximum storage compartment for fuel within the general volume occupied by a small pocket device which may be easily carried about by the user, and to provide a construction whereby the operating mechanism will not take the fuel space for its proper operation; and in order to accomplish this result I have provided a ratchet mechanism having ratchet teeth formed on the side of the pyrophoric friction wheel and have mounted the pawl for operating the wheel on the same axis as the wheel, which pawl has a lever arm extending therefrom and is connected to the actuating member by means of a link so constructed as to fold with the pawl arm and occupy a minimum space when the actuating member is in closed inoperative position, and thus a construction which does not occupy any of the space of the fuel compartment. Also in order that the fuel compartment may be of maximum size, I have provided a finger piece for operating the actuating member which is positioned at all times above the top wall of the casing; and the following is a detailed description of the present embodiment of this invention illustrating the preferred means by which these advantageous results may be accomplished.

With reference to the drawing, 10 designates the tubular portion of the fuel casing provided with a bottom wall 11 having a filling opening 12 closed by a threaded plug 13 having a head 14 to fit within the recess 15 in the bottom wall. There is also provided an opening 16 in this bottom wall through which the pyrophoric tube 17 projects and which is closed by a threaded plug 18 having a head 19 fitting within the recess 20 of this bottom wall.

The top wall of the casing consists of two parts. The inner centering member 21 has a periphery of a size and shape to fit within the tube 10, and folded up from this member 21 there are webs 22 provided with pairs of openings 23 and 24 to provide bearings for supporting the pivot shafts of the operating mechanism.

The upper member 25 of the top wall consists of a plate suitably slotted as at 26 to receive the webs 22 and is of a size to extend over the top edge of the tubular casing 10 and project therebeyond to provide a finishing flange and a guide for lacquer or other coating material which may be applied to the casing.

The top wall is provided with registering openings 27 and 28 respectively in the inner and outer members through which the pyrophoric tube 17 extends, the same being bent out of a straight line in order that the liquid absorbent packing in the fuel tank may be advantageously disposed about the wick when packed in through the filling opening. The top wall is also provided with registering openings 29 and 30 respectively in the inner and outer members thereof through which there extends the reduced portion of the boss 31 which receives and guides the wick 32 which is adjacent the pyrophoric tube. A spring 33 forces the pyrophoric material 34 outwardly against the friction wheel which is rotated as will now be described.

The friction wheel **35** is journaled upon shaft **36** mounted in the bearing openings **23** of the webs **22** and is provided with ratchet teeth **37** upon one face thereof. A washer **38** slit as at **39** to provide a pivot pawl **40** is also mounted upon the shaft **36** with the pawl engaging the ratchet teeth for turning the wheel upon rotation of the pawl about the shaft **36**. The washer is of sufficiently resilient material so that the pawl will, when in a confined space, snap back over the teeth in one direction and be moved into engagement with the ratchet teeth when moved in the other direction, although to insure engagement I have provided a spring **41** encircling the shaft **36** to force the washer and its pawl laterally to engage the teeth **37**.

The actuating member **42** carries a snuffer **49** to engage the boss **31** and seal the wick and is provided with ears **43** having openings to pivotally mount the member upon a shaft **44** extending through the bearing openings **24** of the webs **22** of the top wall. A link **45** is pivotally connected to the arm **46** of the pawl by means of a pin **47** and pivotally connected at its other end by means of a pin **48** to the actuating member **42**. A finger piece **50** having arms **51** is pivoted on the shaft **36** and engages the end **52** of the actuating member so that upon manual pressure at this point the snuffer is lifted and the link **45** swings the pawl and ratchet wheel to friction against the pyrophoric member and ignite the wick. The end **52** of the snuffer and the finger piece **50** are allowed their maximum downward movement by the cut-out of the outer member of the top wall as at **53** allowing the additional space of the thickness of the stock for such depression.

The link **45** is generally channel shape in cross-section and the arm **46** of the pawl or actuating member folds thereinto upon closing movement of the actuating member to occupy a minimum amount of space and prevent contact with the top wall of the casing. This link is also provided with a square end and projection **54** at its end to form a stop and prevent the link from swinging to such position relative to the pivot **47** and shaft **36** as to cause these points to be aligned or on dead center and thus prevent the movement of the pawl in the wrong direction upon closing of the parts.

A spring **55** encircling the shaft **44** engages the actuating member and the top wall of the casing to close the actuating member and lift the finger piece to a position for another operation after being opened.

There is also provided a sleeve **56** on the pivot pin **48** to maintain proper alignment of the link in its desired relation to the arm **46** which is housed therein.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:—

1. In combination, a fuel casing, a wick, a tube extending through said casing and adjacent said wick, pyrophoric material within said tube, a shaft above the top wall of said casing, a friction wheel on said shaft and above said material, a snuffer member pivoted on an axis spaced from said shaft and on the opposite side of said shaft from said wick to close over the wick, a channel shaped link member pivoted to said snuffer, a pawl mounted on said shaft, an arm extending from said pawl pivotally secured between the walls of said channel-shaped link, a finger piece pivoted on said shaft to move said snuffer member to a position limited by said fuel casing, said link being of a length to prevent the link from acquiring a dead center position with reference to said shaft and adapted to be moved downward to wholly extend between the wick and the friction wheel when the snuffer member is in closed position over the wick.

2. In a lighter construction, a fuel tank provided with parallel side walls, a top wall comprising a sheet stock centering member shaped to conform to the cross section of the inside of said tank adjacent the upper edge thereof and in contact therewith, upwardly bent projecting parts on said centering member, and an outer member slotted to receive said projecting parts and extending beyond said tank, said top wall and member contacting and lying in parallel planes.

3. In a lighter construction, a fuel tank provided with parallel side walls, a top wall comprising a sheet stock centering member shaped to conform to the cross section of the inside of said tank adjacent the upper edge thereof and in contact therewith, upwardly extending parallel spaced webs bent from the stock of said top wall, and an outer wall slotted to receive said projecting webs and itself extending laterally beyond said tank.

4. In a lighter construction, a fuel tank provided with parallel side walls, a top wall comprising a centering member shaped to contact with the inside surface of said tank adjacent the upper edge thereof, upwardly bent projecting parts on said centering member, an outer member slotted to receive said projecting parts and extending beyond the side walls of said tank, said top wall and member contacting and lying in parallel planes.

AXEL KILSTROM.