March 15, 1938. L. V. ARONSON 2,111,523

PYROPHORIC LIGHTER ARRANGEMENT

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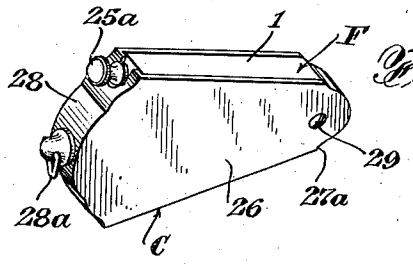


Fig. 1.

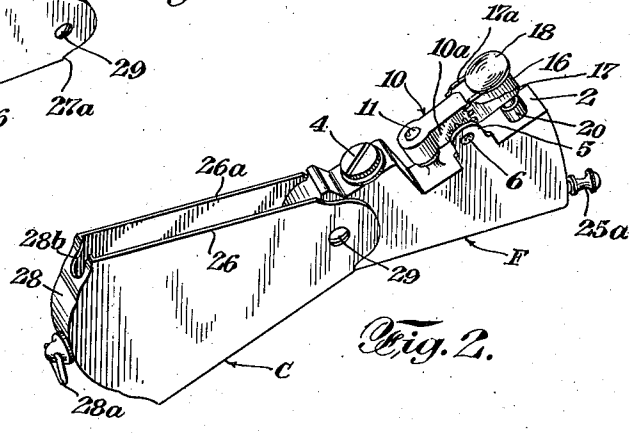


Fig. 2.

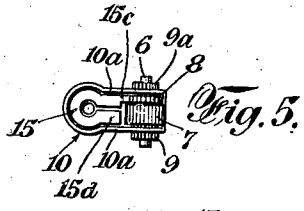


Fig. 5.

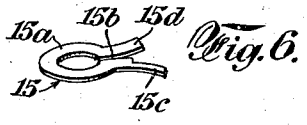
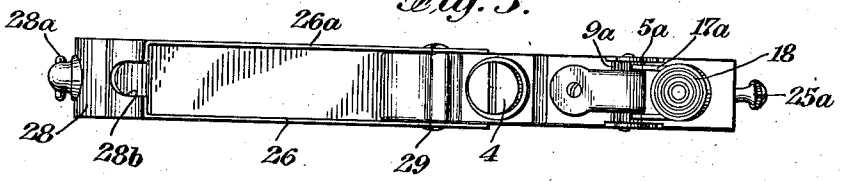


Fig. 6.

Fig. 3.



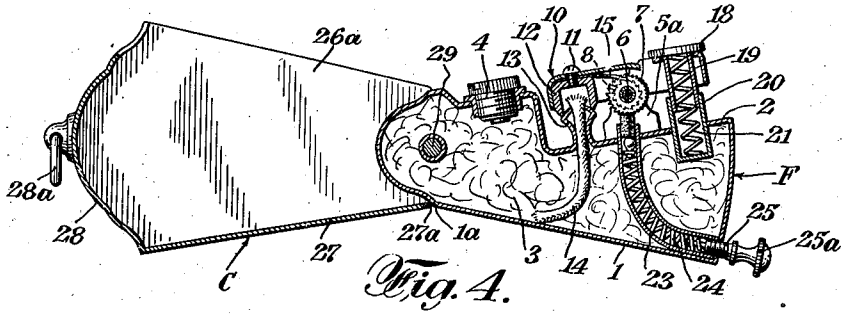


Fig. 4.

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PYROPHORIC LIGHTER ARRANGEMENT

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4 Claims. (Cl. 67—7.1)

My invention relates to a pyrophoric lighter arrangement comprising a pair of casings pivoted together in end-to-end relation.

My invention has further reference to an actuating pawl for a pyrophoric lighter, such pawl being of novel construction and serving as a lock washer for maintaining parts of a snuffer cap in assembled relation.

In a more specific sense, my invention relates to a pyrophoric lighter arrangement comprising a pair of casings pivotally connected together so that said casings may be extended in end-to-end relation or, when the lighter arrangement is not to be used, telescoped one within the other so as to form a compact device of small dimensions.

Various other objects, advantages and characteristics of my invention will become apparent from the following detailed description.

My invention resides in the pyrophoric lighter arrangement, pivoted casing construction, combinations and features of the character hereinafter described and claimed.

For an understanding of my invention and for an illustration of one of the many forms thereof, reference is to be had to the accompanying drawing, in which:

Figure 1 is a perspective view showing the pyrophoric lighter arrangement of my invention with the casings in closed position;

Fig. 2 is a perspective view illustrating the pyrophoric lighter with the casings in open position;

Fig. 3 is a plan view of the arrangement shown in Fig. 2;

Fig. 4 is a vertical sectional view, partly in elevation, of the pyrophoric lighter arrangement of Figs. 2 and 3;

Fig. 5 is an enlarged view illustrating the construction interiorly of the snuffer lever; and

Fig. 6 is a perspective view showing my novel actuating pawl.

Referring to the drawing, F represents a fuel casing having a bottom wall 1 and a top wall 2, this fuel casing containing a mass 3 of cotton or other suitable absorbent material for fuel which may be introduced into said fuel casing in suitable manner, as through a filling opening normally closed by a closure cap 4.

The top wall 2 of said casing F is adapted to support pyrophoric lighting mechanism of any suitable character. As herein shown, this mechanism comprises a pair of standards 5, 5a upstanding from the top casing wall 2, these standards supporting a horizontal axle member 6 which, by peening, may be anchored in fixed horizontal position in the standards 5, 5a.

Freely rotatable on the axle member 6 are a pair of side-by-side wheels 7 and 8, the wheel 7 being serrated on its outer peripheral surface and the wheel 8 being a ratchet wheel, these two wheels being secured together for rotatable movement as a unit. Disposed on the respective outer sides of the wheels 7, 8 are the pinions 9, 9a, these being secured, respectively, to the depending wall surfaces 10a of a snuffer lever 10 pivotally mounted on said axle member 6. Suitably secured to the outer end of the snuffer lever 10, as by a screw 11, is a snuffer cap 12 coactable, in a sealing manner, with the upper end of a wick tube 13 which is brazed or otherwise suitably secured to said top wall 2, this wick tube supporting the outer end of a wick 14 extending interiorly of the fuel casing F and absorbing fuel from the mass of cotton 3. In a preferred manner, as hereinafter described, the snuffer lever 10 has secured thereto a pawl 15 which coacts with the aforesaid ratchet wheel 7.

As shown, an operating member 16 is provided, this operating member comprising racks 17, 17a which mesh with the respective pinions 9, 9a and said operating member comprising a finger piece 18 from which a tubular member 19 depends, Fig. 4. Carried by and fixed to the casing wall 2 is a second tubular member 20 which telescopically receives said tubular member 19, a suitable helical spring 21 being provided interiorly of said tubular members for the purpose of biasing the finger piece 18 upwardly, Fig. 4.

Coactable with the serrated wheel 7 is a pyrophoric element 22 which projects from the upper end of a tube 23 extending through and anchored in the fuel casing F, said pyrophoric element 22 being biased into engagement with the serrated wheel 7 by a helical spring 24 disposed within said tube 23, the spring 24 being maintained under compression by a nut 25 threaded into the end of the tube 23, said nut 25 preferably having a head 25a utilizable as hereinafter described.

It will be noted that the bottom wall 1 of the fuel casing F and the top surfaces of the finger piece 18, snuffer lever 10 and closure cap 4 are related to each other so as to form a structure which is approximately of V-configuration. That is, said structure has the thickness of the fuel casing F, Fig. 3, and the upper and lower "lines" thereof diverge in a direction from left to right, Figs. 2 and 4. As will hereinafter more fully

appear, the shape of the lighter arrangement just described constitutes an important feature of the invention.

In accordance with another important characteristic of the invention, the fuel casing and associated lighter mechanism as just described are adapted to be enclosed by a casing C which, as shown, is approximately of V-configuration substantially in accordance with the configuration of the fuel casing F and associated parts. This casing C comprises front and rear walls 26, 26a, the lower surfaces of which are joined by a bottom wall 27 from which rises a wall 28 closing the casing C at one end thereof, said wall 28 being of suitable ornate configuration and carrying, if desired, a ring 28a through which a suitable suspending cord, not shown, may be looped or passed. The casing C is open at the top thereof, Figs. 2 and 4, and the configuration of this opening is such that the fuel casing F and associated lighter parts may be disposed therewithin in the manner hereinafter described.

In accordance with the invention, the end of the casing C opposite the end wall 28 is open for the reception of the smaller end of the fuel casing F and, in such end-to-end relation, the two casings are pivoted by a member 29 which extends through a sleeve-like passage formed transversely through but sealed from the interior of the fuel casing F, Fig. 4. The two casings C and F are shown in normal open relation in Fig. 4. When thus positioned, the end surface 27a of the bottom wall 27 of casing C is in engagement with a shouldered surface 1a of the bottom fuel casing wall 1. These two surfaces form stop means preventing further movement of the casing C in a counter-clockwise direction with respect to the casing F, or clockwise movement of said casing F with respect to the casing C, Fig. 4. However, as clearly appears from a consideration of the drawing, the casing C may be held more or less stationary in one hand while, with the other hand, the fuel casing F is swung in a counter-clockwise direction, Fig. 4, so that it enters and passes into the casing C to thereby form the compact folded device shown in Fig. 1 wherein the fuel casing bottom wall 1 is flush with the edges of the walls 26, 26a of the casing C.

As illustrated in Fig. 4, the head 25a of the nut 25 is adapted to enter a slot 28b formed in the upper section of the end wall 28 of the casing C. Accordingly, when the device is folded as shown in Fig. 1, said casing C may be held in the left hand and the head 25a of the nut 25 engaged by one finger or the thumb of the other hand so as to readily swing the fuel casing F to the position illustrated in Figs. 2, 3 and 4 wherein the stop surfaces 1a, 27a are in engagement so as to define an approximate straight-line relation of said casings C and F.

When thus positioned, the finger piece 18 may be depressed against the resistance offered by the spring 21 whereby the snuffer lever 10 is swung in a clockwise direction, Fig. 4. In so doing, the pawl 15 engages the ratchet wheel 8 and imparts a step or clockwise movement, Fig. 4, to said ratchet wheel and to the serrated wheel 7 whereby a shower of sparks are produced, these sparks being projected toward the now exposed end of the wick 14 and igniting the charge of fuel carried thereby so as to produce a freely burning flame which may be utilized for the lighting of cigars, cigarettes, or other ignition purposes as desired. When the flame thus produced has served its intended purpose, the finger piece 18 may be released whereupon the previously compressed spring 21 returns the parts to their respective positions as illustrated. At this time the device may be returned to its folded condition as shown in Fig. 1.

Although, in a preferred form of the invention as shown, the head 25a of the member 25 holding the spring 24 under compression is used as a manipulating knob, it shall be understood that other forms of the invention need not be thus limited. As well, if desired, this actuating head or knob, when utilized, may be otherwise formed.

As clearly appears from a consideration of Figs. 1–4 inclusive, a device of the character described is simple from a mechanical viewpoint, efficient in operation, and clean-cut in an ornamental sense. The folded device as shown in Fig. 1 is of small dimensions well adapted to be carried about in a garment pocket or, preferably, in a hand bag. When the two casings are in their respective non-folded positions as shown in Figs. 2, 3 and 4, the length of the device is sufficient to insure efficient operation of the lighter mechanism. Further, the unfolding and folding operations may readily be performed and they require but the work of a moment. All of the foregoing advantages and others will be obvious and apparent to those skilled in the part.

Referring to Figs. 5 and 6, the hereinbefore described pawl 15 is illustrated as comprising a ring-section 15a which is split as indicated at 15b so as to define the pawl section 15c and an adjacent section 15d, the end of the pawl section 15c engaging the ratchet wheel 8. The pawl 15 is formed from spring steel and, as shown in Fig. 6, the sections 15c, 15d are angularly related to the plane of the ring section 15a. The latter, as shown in Fig. 4, is disposed between the top of the snuffer lever 10 and the adjacent surface of the wick cap 12, and the screw 11 is passed through the opening defined by the ring-section 15a when said screw is threaded into the wick cap 12. Therefore, the pawl ring section 15a and the spaced projecting sections 15c, 15d thereof function as a lock washer when the screw 11 is tightened in its final position, and said projecting sections serve to prevent undesired loosening of said screw 11.

It shall be understood that the pawl arrangement just described is advantageous and of general application. Such pawl arrangement is utilizable with pyrophoric lighters generally and is not to be limited to use with a pyrophoric lighter arrangement of the particular form herein described. Moreover, it is to be understood that the pawl arrangements other than of the character just described may be utilized with the pivoted casing type of lighter herein illustrated and described.

While the invention has been described with respect to a certain particular preferred example which gives satisfactory results, it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended therefore in the appended claims to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a pyrophoric lighter, sparking means comprising a rotatable wheel, a snuffer lever having oppositely disposed side walls depending therefrom, a snuffer cap, a screw for securing

said snuffer cap to said snuffer lever, and a lock washer between said snuffer cap and said snuffer lever, said lock washer comprising an integral spring steel member, split to form two sections resiliently diverging, respectively, in opposite directions from the plane of said washer proper, one of said sections forming a pawl for actuating said sparking means and the other of said sections coacting directly with the interior surface of said snuffer lever, edges of said sections respectively extending along and closely adjacent said depending side walls whereby said lock washer and said pawl formed thereon are retained against turning in respect to said screw.

2. In combination, a fuel casing, pyrophoric lighting mechanism mounted thereon, said mechanism including an abradant wheel, a pyrophoric member, a tube for receiving said member, said tube extending from a point adjacent said wheel through said casing, spring means in said tube for urging said pyrophoric member into contact with said wheel, and screw means protruding from said tube at its end opposite from said wheel and serving to retain said spring in said tube, and a second casing pivotally connected to said fuel casing, said second casing comprising an enclosure for said fuel casing and for said mechanism when not in use, said screw means being extended so as to protrude from said second casing at a point spaced from the pivotal connection whereby said screw means serves as a handle facilitating pivotal movement of the fuel casing and mechanism thereon, in respect to the closure.

3. In combination, a pair of casings pivoted together and adapted to be moved into end to end relation, one of said casings comprising a fuel casing, pyrophoric lighting mechanism mounted on said fuel casing, manually depressible means for operating said mechanism, said operating means being mounted on said fuel casing at its end opposite from the pivot, said mechanism, operating means and fuel casing together being of a substantially V-shaped configuration, having its apex adjacent the pivot, and the other of said casings comprising a closure of substantially V-shaped configuration, also having its apex adjacent the pivot and adapted to be rotated about the pivot to enclose said mechanism, operating means and fuel casing.

4. In combination, a pair of casings having approximately the same length and being formed from sheet material, one of said casings being a fuel casing, and pyrophoric lighting mechanism associated with said fuel casing, said lighting mechanism comprising a wick and a sparking wheel, one end of the other casing being pivoted to one end of said fuel casing so that it may serve as an enclosing housing for said lighting mechanism and for said fuel casing, said casings being movable throughout an angle of approximately 180° with respect to each other, said pyrophoric lighting mechanism being disposed along one long side of said fuel casing.

LOUIS V. ARONSON.