Nov. 27, 1951 C. A. FORTIN 2,576,453

LIGHTER

Filed May 20, 1950

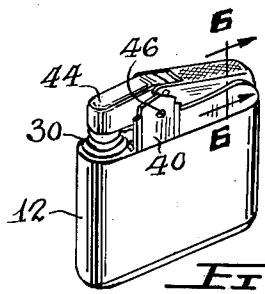


Fig. 1

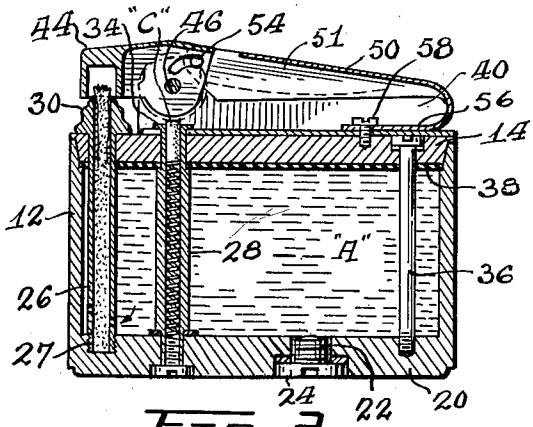


Fig. 2

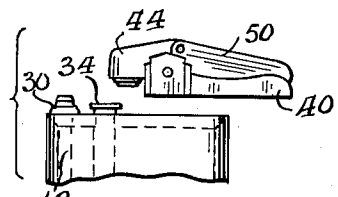


Fig. 4

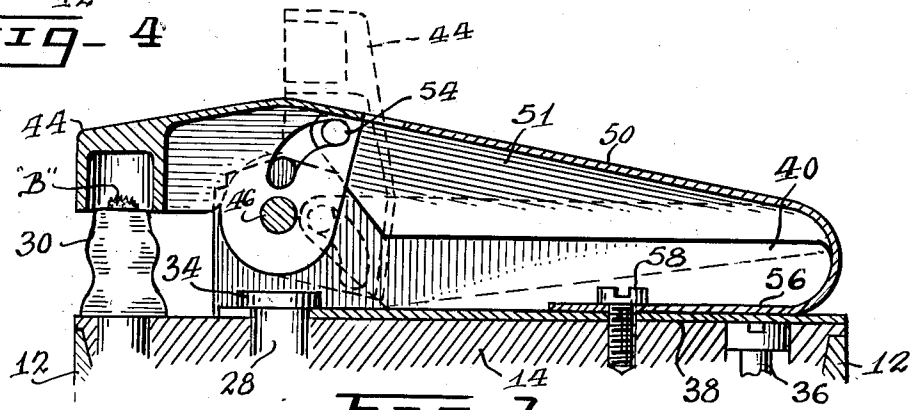


Fig. 7

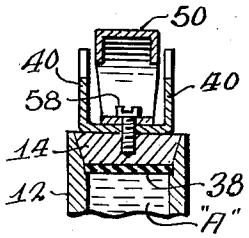


Fig. 6

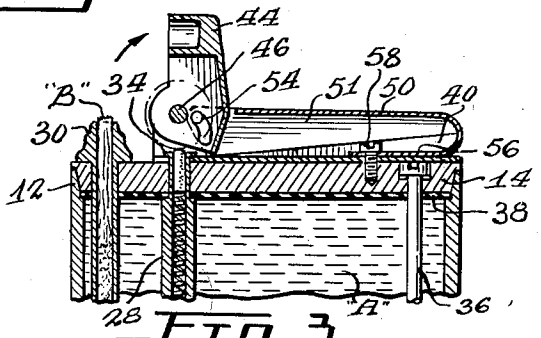


Fig. 3

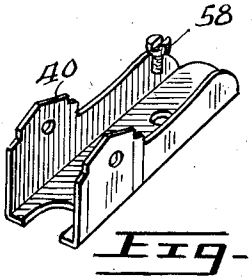


Fig. 5

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LIGHTER

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4 Claims. (Cl. 67—7.1)

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Introduction

The present invention relates to automatic pyrophoric lighters for cigarettes or cigars.

While there are many and varied designs of pyrophoric lighters at present available, most of these possess certain disadvantages in their actuating mechanisms, both from the viewpoint of the manufacturer and of the potential user. For example, the most common actuating mechanism employed in lighters of this nature comprises a pivotally mounted actuating lever that is depressed by the thumb of the operator so as to cause rotation of a spark wheel against a pyrophoric member. Usually these actuating levers are constructed so as to require straight downward pressure of the thumb against the resistance of a compression spring. The more the lever is depressed the greater the resistance of the spring and so the movement of the actuating lever and consequently the rotation of the spark wheel is slower at the end of the stroke rather than being accelerated as is required to obtain the maximum efficiency from the spark producing arrangement.

The present invention recognizes this problem and aims to provide a satisfactory solution by furnishing a novel lighter structure embodying an actuating lever and spark wheel actuating arrangement which eliminates the usual lag in the actual igniting movement. Further, the construction of the lighter body itself is designed so as to facilitate manufacture, assembly and subsequent servicing.

Applicant's development

Accordingly, the invention is a pyrophoric lighter consisting essentially of a casing constituting a fuel reservoir, and mounted on the casing together with the usual wick and pyrophoric member an improved construction of actuating lever and spark wheel actuating mechanism that is arranged so that the rotative movement of the spark wheel is accelerated at the end of the actuating stroke.

More specifically, in a preferred construction according to the invention a spark wheel and a snuffer cap are mounted for rotation about a common axle supported on the top of the casing. An actuating lever is pivotally connected to the snuffer cap by the engagement of a screw journalled in the end of the actuating lever with a pair of hemispherically shaped slots provided at each side of the snuffer cap. With this arrangement, as the lever moves downwardly, the screw forming the pivotal connection between the

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snuffer cap and lever moves inwards along the hemispherical slots towards the pivotal axis so as to shorten the radial arc and so accelerate the rotation of the spark wheel.

In the preferred construction, the actuating lever is resiliently biased for return movement by an elongated extension of the lever body itself which is bent under and secured to the casing body. As the entire lever is made of substantially thin resilient metal, the elongated extension serves as a flat leaf spring which is doubled on itself by the depression of the lever. It is also contemplated in this respect that a separate resilient strip of material might be secured to the actuating lever body and arranged in a similar manner.

A further feature of the present invention is in the construction of the lighter casing. This is constructed so as to consist of a combined base and side walls, preferably die cast, with a top on which the operative mechanism is mounted secured in position to the upper margin of the side walls. This is accomplished by means of an elongated wick tube having a threaded end and an elongated bolt which also extends from the top position through the interior of the casing to a threaded engagement with the base.

Detailed description

Having thus generally described the nature of the invention, particular reference will be made to the accompanying drawings, and in which:

Figure 1 is a diagrammatic view in perspective elevation of a preferred construction of a lighter in accordance with the invention.

Figure 2 is a horizontal cross section of the lighter construction shown in Figure 1.

Figure 3 is a fragmentary cross section of Figure 1 corresponding to Figure 2 and illustrating the actuating lever and snuffer cap in partially compressed position.

Figure 4 is a diagrammatic view of the upper portion of the lighter with the actuating mechanism removed from the casing.

Figure 5 is an enlarged detail view in perspective elevation of the actuating mechanism supporting bridge.

Figure 6 is a sectional view of Figure 1 along the line 6—6.

Figure 7 is an enlarged diagrammatic view corresponding to Figure 6 illustrating in more detail the relative positions of the actuating lever and snuffer cap at rest (in full lines) and at the end of the actuating stroke (dotted lines).

With reference to the drawings illustrating a preferred form of a pyrophoric lighter embody-

ing an actuating lever and spark wheel rotating means constructed in accordance with the invention, the main body of the lighter is made up of a casing having a combined base 20 and side walls 12, and a top portion 14 which is adapted to fit within the upper margins of the side walls 12 to provide a reservoir "A" adapted to contain lighter fluid. The base 20 is provided with an opening 22 sealed with a threaded closure screw 24 so as to provide a means for filling the reservoir "A" and a wick tube 26 and a flint tube 28 are provided that respectively extend into and through the reservoir "A." The wick tube 26 is constructed so as to have a threaded end 27 which is engaged with the base 20 so as to retain the casing top 14 in position.

The upper end of the tube extends beyond the casing top portion 14 and is provided with an outstanding flanged head 30 which bears against the casing top 14 and through which a wick "B" protrudes when the lighter is in operative condition. The main body of the wick tube 26 extending between the top 14 and base 20 of the casing includes openings to allow the lighter fluid to come into contact with the wick.

The flint tube 28 also passes through the casing top portion 14 so as to extend slightly beyond the surface and is provided with an outstanding flange 34 through which a flint "C" protrudes.

An elongated bolt 36 passes through the casing top 14 to extend to the casing base 20 with which it is threadably engaged to also retain the casing top 14 in position. A gasket 38 is preferably placed between the mating edges of the casing top 14 and the casing side walls 12 before the wick tube 26 and bolt 36 are screwed into the base 20 so as to seal the top of the reservoir "A."

The operative portion of the lighter is mounted on a substantially U-shaped bridge portion 40 that includes a base and upstanding flanges at each side of the base portion. The flanges of the bridge portion are formed so as to accommodate the usual arrangement of an abrasive spark wheel 42 and snuffer cap 44 which are mounted for rotary and pivotal movement respectively on a common axle or screw 46. Means are provided between the snuffer cap 44 and the spark wheel 42 so that pivotal movement of the snuffer cap rotates the spark wheel against the flint "C." This portion of the lighter is common and is well known in the art.

The base portion of the bridge 40 illustrated is provided with a centrally disposed U-shaped slot which when the bridge is mounted on the top portion 14 slidably fits under the flange 34 of the flint tube 28. An actuating lever 50, made of thin metal having resilient qualities, is formed so as to have the flange portions 51 extending downwardly at each side from the main body of the lever 50. The forward ends of the flange portions 51 are adapted to overlap, and are hingedly connected to, the snuffer cap 44 by means of a bolt, screw or rivet 54. The screw 54 is journalled in the flange portion ends so as to extend across and slidably ride in a pair of arcuate slots provided in the snuffer cap 44.

With this arrangement, depressions of the actuating lever 50 causes pivotal motion of the snuffer cap 44 which in turn is transmitted to rotary movement of the spark wheel 42. As the actuating lever descends the screw 54 travels inwardly along the arcuate slots towards the axle 46 thus reducing the radius of the pivoting

leverage and increasing the velocity of the rotating movement transmitted to the spark wheel 44. The main body of the actuating lever 50 includes an elongated end extension 56 which is bent under and secured to the casing top 14 by a screw 58 which also passes through the bridge portion 40 and retains it in position. The resilient qualities of the material from which the actuating lever is made allows the extension 56 to serve as a flat leaf spring which is doubled on itself by the depression of the lever and is thus adapted to resiliently return the lever on release.

For purposes of servicing or repairs, the screw 54 is withdrawn allowing the actuating lever 50 to move upwards under the resilient pressure of the extension 56. This exposes the screw 58 and by removal of this screw the entire bridge 40 and the actuating mechanism supported thereby can be removed from the casing (see Figure 4). If it is necessary to remove the casing top 14, this is easily accomplished by unscrewing the threaded wick holder 26 and the threaded bolt 36 from engagement with the base 20. This form of construction offers a distinct advantage over most prior art lighters of this nature both from the viewpoint of the manufacturer and the potential user.

I claim:

1. In a pyrophoric lighter, a casing constituting a fuel reservoir, said casing having a top adapted to support the lighter operating mechanism, an actuating lever mounted on said casing, said actuating lever being resiliently biased to assume a normal position diagonal to said casing top, a spark wheel mounted on said casing for rotation about an axle mounted parallel with and transverse to said casing top, a snuffer cap mounted on said casing so as to surround a major portion of said spark wheel and being mounted for pivotal movement about said spark wheel axle, actuating means between said spark wheel and snuffer cap whereby pivotal movement of said cap rotates said spark wheel in one direction, said snuffer cap including at each side an elongated slot of arcuate outline disposed adjacent to and extending radially of said spark wheel axle, said actuating lever having extended end portions at each side adapted to overlap at least a minor portion of said snuffer cap and being pivotally connected thereto by a shaft journalled between said lever end portions and passing through each of said snuffer cap arcuate slots, said actuating lever including a resilient connecting piece connected to the casing top and normally supporting the actuating lever in a position diagonal to said casing top adapting said connecting shaft supported by said actuating lever end portion to travel inwards and downwards in an arcuate path relative to said pivotal axis upon depression of said actuating lever whereby depression of said actuating lever is adapted to cause pivotal movement of said cap, said pivotal movement being accelerated as the actuating lever descends by reason of the connecting shaft moving inwards along said arcuate slots towards said common pivotal axis.

2. A lighter as claimed in claim 1, wherein the actuating lever is made of substantially thin metal having resilient qualities and said resilient part comprises an elongated end portion adapted to be bent under and connected to said casing, whereby pressure on said actuating lever is adapted to fold said extended end portion in an arcuate path towards the main body of said

actuating lever and release of said pressure allows said extended end portion to flex and return said actuating lever to its inoperative position.

3. A lighter as claimed in claim 1, wherein said lighter casing comprises a main body portion having integral side walls and a base portion, the upper peripheral margin of said side walls being chamfered outwardly, and a top portion having an outer peripheral edge formed to correspond with said side wall marginal chamfer, whereby the major portion of said top portion is adapted to fit within said side wall margin, and means to secure said casing top portion in position.

4. A lighter as claimed in claim 3, wherein there are spaced apart openings provided in said casing top portion and the means for securing said top portion in position comprises an elongated wick tube having an outstanding flange at one end with the other end threaded and being adapted to pass through one of said casing top openings and extend across the interior of said casing to threaded engagement with said

casing base portion, said wick tube including openings adapted to allow for the entry of fuel from said casing and an elongated bolt having an outstanding head at one end with the other end threaded and being adapted to pass through another of said casing top openings and extend across the interior of said casing to threaded engagement with said casing base portion.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,733,748	Ogden	Oct. 29, 1929
1,889,342	Aronson	Nov. 29, 1932

FOREIGN PATENTS

Number	Country	Date
574,896	Germany	Apr. 21, 1933
685,317	France	July 9, 1930
586,982	Great Britain	Apr. 9, 1947