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PATENT SPECIFICATION



Application Date: Aug. 3, 1926. No. 19,220/26.

268,620

Complete Accepted: April 7, 1927.

COMPLETE SPECIFICATION.

Improvements in and relating to Pyrophoric Lighters.

I, LEON FORREST DOUGLASS, a citizen of the United States of America, of Menlo Park, San Mateo County, California, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to pyrophoric lighters of the type in which a serrated member is adapted to be rotated against a pyrophoric element in order to produce a spark and ignite a wick located adjacent said element.

The object of the invention is to provide an improved lighter of the above type which is efficient in operation, simple in construction and may be manufactured at a comparatively small cost.

A lighter of the above type has been proposed comprising a casing, a cap member hinged thereto, a serrated wheel attached to said cap, a spring normally tending to open said cap, a spring-pressed pyrophoric element, a catch for holding said cap in a closed position in a manner such that upon the release of the catch the cap was sprung open rotating the serrated wheel against the pyrophoric element, thereby producing a spark which ignited a wick positioned adjacent the element.

A lighter of the above type has also been proposed comprising a casing and a cap hinged thereto provided with a toothed sector adapted to engage a toothed wheel attached to a serrated member, a catch for holding the cap in a closed position and a spring-pressed plunger attached to the sector so that upon the release of the catch the plunger was moved upwardly under the action of the spring rotating the cap and the sector, so that the latter rotated the serrated member in order to produce a spark.

In each of these heretofore proposed lighters the cap, whether in a closed or open position, was always under the influence of a spring.

The present invention consists in a pyrophoric lighter of the type described comprising a casing, a pyrophoric element, an arm and a serrated member adapted to be rotated by the movement of the arm, and a spring-pressed plunger normally engaging said arm and adapted to rotate the arm in order to produce a spark.

The invention also consists in a pyrophoric lighter of the kind described comprising a casing, a pyrophoric element, a pivoted arm having at one end a serrated portion in contact with said element, and spring means normally engaging said arm and adapted to rotate same in order to produce a spark.

In the accompanying drawings:—

Figure 1 is a sectional view of the pyrophoric lighter comprising my invention;

Figure 2 is a sectional view of a part of the pyrophoric lighter showing the means used in causing the pyrophoric element to contact with the friction wheel to produce a spark; and

Figure 3 is a top view of the pyrophoric lighter.

Referring to the drawings, the numeral 1 represents a casing, having a bottom 2 and a top 3. Extending from the bottom 2 through the top 3 is a tubular member 4 provided on its inside surface with suitable threads within which a flat disc 5 having its edges threaded may be screwed. The tubular member 4 projects through the top of the casing 1 and is provided at its end with upwardly extending side lugs 6 between which is pivoted a friction wheel 7 on a pivot 8. It will be noted that the friction wheel 7 has part of its circumferential edge roughened, and is mounted for pivotal

[Price 1/-]

movement in a plane passing longitudinally through the central part of the casing 1. Located inside the tubular member 4 adjacent the disc 5 is a spiral wire spring 9, the lower end of which rests against disc 5 and the upper end of which presses against a bar 10, of flint or other suitable pyrophoric material, one end of which bar projects through the end of tubular member 4 and contacts with the roughened segment of the friction wheel 7. Removably located within the tubular member 4 and extending upwardly therein through the bottom 2, is a manipulating rod 11, provided with pronged parts 12 and a flat circular finger piece 13 the rod 11 being normally held in position in the tube 4 by the resiliency of the parts 12 which engage the inner surface of said tube. The pronged parts 12 are adapted to embrace the disc 5, and when the finger piece 13 is turned, the disc may be screwed upwardly or downwardly inside the tubular member in such a manner as to cause the spring 9 to press more or less firmly against the bar 10. The finger piece 13 fits within a suitable recess in the bottom 2 of the casing 1, and by its withdrawal, together with the other parts within the tubular member, permits the bar 10 to be removed or replaced when a new one is needed.

Located adjacent the tubular member 4 is a wick tube 14 which extends through the top 3 and is provided therein with a wick 15, one end of which projects from the top of the tube and the other end of which extends into the casing 1.

In the top 3, and extending into the inside of casing 1 with its upper part projecting above the said top, is tube 16, which is provided at its bottom end with a screw 17 and at its upper end with a pair of separated projecting lugs 18. The tube 16 is provided near its upper part with an interior shoulder 19, and above the shoulder with a central bore of somewhat reduced diameter in which is slidably mounted a pin 20, the upper end of the latter being adapted to be moved beyond the upper end of the tube 16. The lower end of the pin is provided with a head 21 which may strike against the shoulder 19 and prevent the pin 20 from moving upwardly too far, as will be explained hereinafter. Located inside the tube 16 below the head 21 is a spiral wire spring 22, one end of which presses against the screw 17 and the other end of which presses against the head 21, thereby tending to force the pin 20 in an upward direction.

Rigidly attached to the friction wheel

7 or formed integrally therewith, is an arm 23 provided with a cap portion 24 which constitutes a closing cap for the end of the wick tube 14. The arm 23 moves on the pivot 8 and is adapted to lie between lugs 18 of the tube 16, thereby coming into contact with the projecting end of pin 20. The end of the arm 23 is provided with a latch portion constituted by a hollow ball 25 which has an opening 26 located on its lower side.

Located on the top 3 between the tube 16 and an end of the casing, is projection 27 to which is pivoted, as by means of a pin 28, a latch lever 29 having an upwardly projecting catch portion 30 which extends through opening 26 into engagement with the inner surface of ball 25, and a laterally projecting portion which extends substantially parallel to the top of the casing and is provided at its extremity with a press member or finger piece 31. Preferably a suitable spring 32 is interposed between the portion 31 of the lever 29 and the casing in order to normally maintain latch portion 30 in latching engagement with ball 25, whereby arm 23 is held against movement about pivot 8. The opening 26 is of such size that latch portion 30 of lever 29 may pass freely therethrough.

The bottom 2 of the casing 1 is provided with a cap 33 which is adapted to screw into the said bottom and close an opening provided therein for the insertion of gasoline or other fuel used to make the flame at the end of the wick 15.

In operation, the inside of the casing 1 may be filled with any absorbent material such as cotton, and gasoline or other suitable fuel is placed inside the casing through the bottom, by the removal of cap 33. By manipulating the finger piece 13, the rod 11 through its pronged parts 12, is made to screw the disc 5 upwardly until the bar 10 presses against the friction wheel 7 so that when the lever 29 is depressed to allow the arm to rotate a spark is caused to be made by the friction of the said wheel rubbing against the said bar. As shown in Fig. 1, arm 23 is normally maintained by the latch means in a horizontal position substantially parallel to the top 3 of casing 1, with the closing cap 24 closing the end of wick tube 14, the said arm pressing against pin 20 and lying between the lugs 18. To light the wick 15, the press member 31 is pressed downwardly by the finger, thereby causing the projecting end 30 of the lever 29 to become disengaged from the hollow ball 25. The spring 22 pressing against the head 21 of the pin 20 causes the said pin to move

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upwardly and throw the said arm 23 in an upward direction, thereby turning the friction wheel 7 and causing it to produce a spark through its rubbing action against the bar 10. The spark thus caused, ignites the fuel at the end of the wick 15, and the same burns until the arm 23 is placed back in its former position with the closing cap 24 over the end of the wick tube 14.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A pyrophoric lighter of the kind described comprising a casing, a pyrophoric element, an arm, a serrated member adapted to be rotated by the movement of the arm, and a spring pressed plunger normally engaging said arm and adapted to rotate the arm in order to produce a spark.

2. A pyrophoric lighter of the kind described comprising a casing, a pyrophoric element, a pivoted arm having at one end a serrated portion in contact with said element and spring means normally engaging said arm and adapted to rotate same in order to produce a spark.

3. A pyrophoric lighter as claimed in Claim 1 or 2, wherein said spring means adapted to rotate said arm is located within a tubular member arranged within the casing.

4. A pyrophoric lighter as claimed in Claim 1, 2 or 3, wherein means is provided for normally retaining said arm against movement.

5. A pyrophoric lighter as claimed in Claim 4, wherein said means comprises a latch member pivoted to the casing and co-acting with a hollow portion provided on said arm.

6. A pyrophoric lighter as claimed in Claim 1, 3, 4 or 5, wherein said arm normally is adapted to maintain the plunger in a retracted position and the spring under compression such that upon release of the latch said plunger will be propelled thereby rotating the arm about its pivot.

7. A pyrophoric lighter as claimed in Claim 6, wherein means is provided for limiting the movement of the plunger.

8. A pyrophoric lighter as claimed in any of the preceding claims wherein means are provided for moving the pyrophoric element into contact with the serrated member comprising a disc member in screw threaded engagement with a tubular member extending through the casing, and a spring engaging with said disc member and bearing upon the pyrophoric element, means being provided for rotating said threaded disc member whereby to adjust the pressure of the element against the serrated member.

9. A pyrophoric lighter as claimed in Claim 8, wherein the means for rotating said disc member comprises a bifurcated member in sliding engagement with said disc and provided at one end with a knurled portion whereby the same may be grasped in order to rotate such member.

10. A pyrophoric lighter as claimed in any of the preceding claims wherein a closure cap is provided formed integrally with said arm and adapted to cover said wick when said arm is in its normal position.

11. A pyrophoric lighter substantially as described and as illustrated in the accompanying drawings.

Dated this 3rd day of August, 1926.

MARKS & CLERK.

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

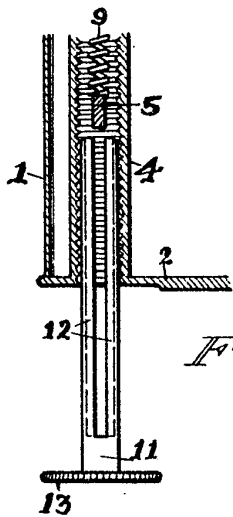
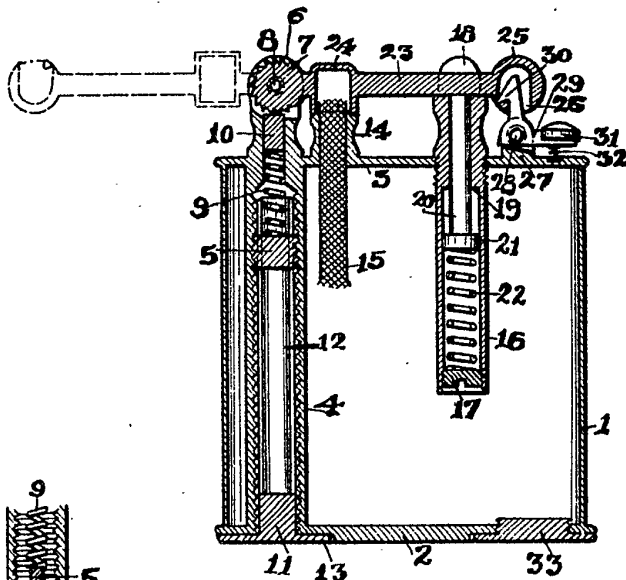


Fig. 2.

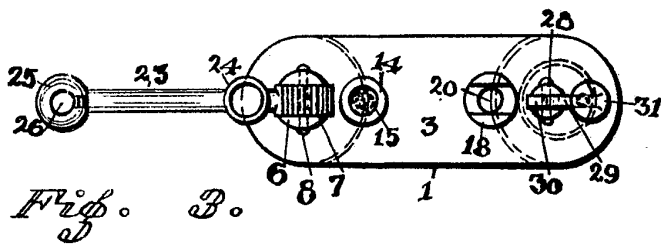


Fig. 3.