June 3, 1930. V. KASSAPIAN 1,762,061

PYROPHORIC LIGHTER

Filed Sept. 28, 1927 2 Sheets-Sheet 1

Fig. 1.

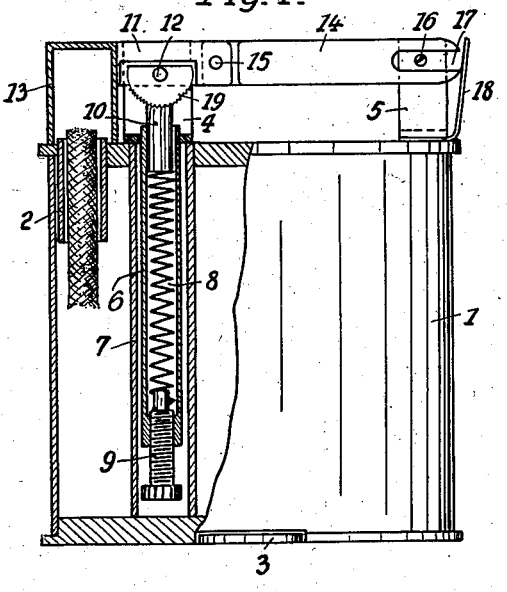

Fig. 2.

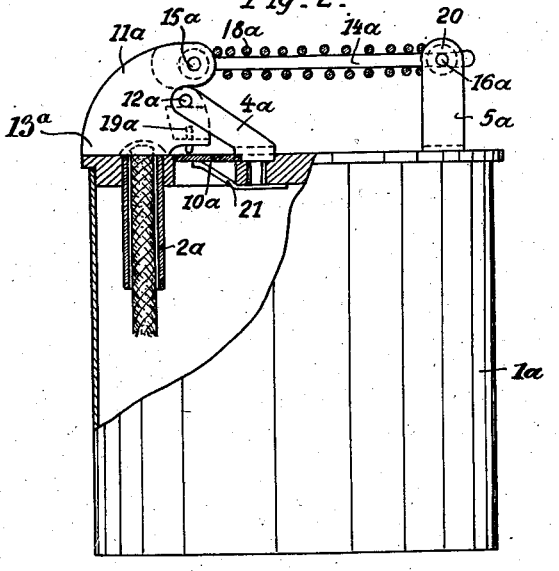

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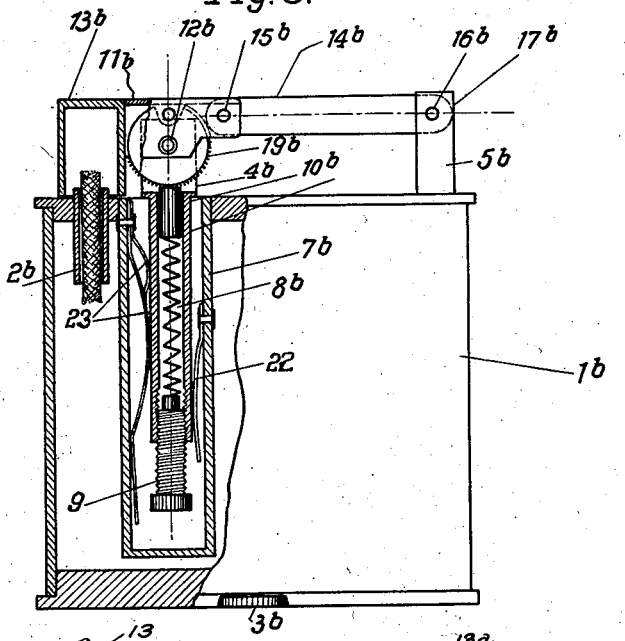
Fig. 3.



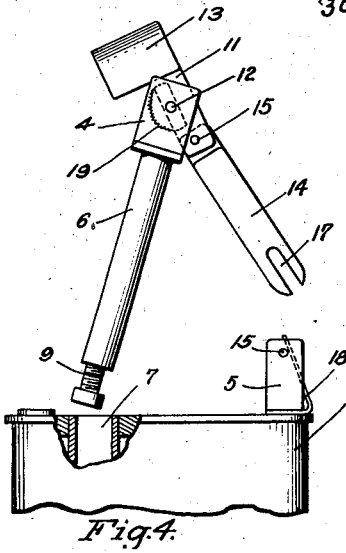


Fig. 4.

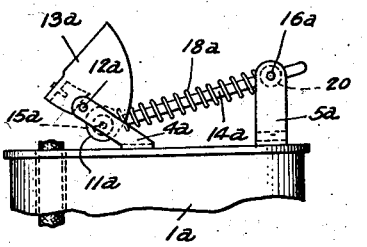


Fig. 5.

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UNITED STATES PATENT OFFICE

VINCENT KASSAPIAN, OF BERLIN, GERMANY, ASSIGNOR TO THE FIRM MÜLLER & GRÜNSTEIN, ELGERSBURGER FEUERZEUGFABRIK, OF ELGERSBURG, GERMANY

PYROPHORIC LIGHTER

Application filed September 28, 1927, Serial No. 222,604, and in Germany August 2, 1927.

My invention relates to a pyrophoric lighter of that kind wherein by rubbing on the surface of a pyrophoric body such as an alloy of iron and cerium sparks are produced which light vapors of a liquid fuel such as gasoline, emanating from the end of a wick which passes through the wall of a fuel receptacle.

My invention has for its purpose to produce a lighter which can be easily and efficiently manipulated with one hand only and which can very cheaply be manufactured. In order to secure these results I provide the lighter with a pivoted member mounted on the fuel receptacle, said member forming a closing cap for the opening of the wick tube and carrying a friction body adapted to rub on the surface of the pyrophoric body of the lighter and in order to actuate this member I bring it in hinged connection with an actuating lever which is pivoted at the end opposite to that connected to the cap member to a bearing block mounted on the fuel receptacle. In order to secure reliable operation, I provide a sliding connection between the actuating lever and its pivot and spring means for positive closure of the wick tube cap.

In the accompanying drawings, Figs. 1, 2 and 3 are side elevations, with parts shown in section, of three different embodiments of the invention.

Fig. 4 is a fragmentary side elevation of the device shown in Fig. 1, the parts being shown in the relative positions which they occupy prior to mounting in or on the receptacle, and

Fig. 5 is a fragmentary side elevation of the device of Fig. 2, the closing cap being shown in open position.

The preferred embodiment is that of Figures 1 and 4 wherein 1 designates the fuel receptacle, 2 the wick tube and 3 the usual filling screw. 4 and 5 are bearing blocks mounted on the fuel receptacle, the latter fixedly and the former removably. Bearing block 4 is provided with a tubular extension 6 removably inserted into a tube 7 which is firmly and tightly connected with the bottom and cover of the receptacle 1. Within the tubular extension 6 there is inserted a spring 8 seated on a set screw 9 and carrying a pyrophoric body 10.

Pivotally mounted on bearing block 4 is a member 11 having its pivot at 12 and forming a closing cap 13 for the free upper end of wick tube 2. 14 is an actuating lever for the pivoted member 11, said lever being jointed by a connecting pin 15 to said member 11 and pivotal about pin 16 carried by block 5. The end of said actuating lever 14 is provided with a slot 17 wherein pin 16 is adapted to slide; a blade spring 18 being provided tending to press the lever 14 towards member 11. 19 is a friction wheel firmly or substantially firmly mounted on member 11.

The operation is as follows: On pressing the actuating lever 14, member 11 is turned about pivot 12 opening cap 13 and rotating with it friction wheel 19 so that the wheel rubs on pyrophoric body 10 and produces sparks for lighting the wick in wick tube 2 at its upper end which now is free from cap 13. On restoring lever 14 to the position illustrated in Figure 1 of the drawing, cap 13 is automatically pressed on the cover of receptacle 1 by the action of spring 18 owing to pivot 15 being positioned above the straight line connecting pivots 12 and 16.

It will be noted that the axis of the pivotal connecting pin 15 moves through the plane defined by the axes of pivot pins 12 and 16 when the toggle linkage is operated to lift the extinguishing or closing cap. The pressure of spring 18 therefore yieldingly retains the toggle linkage at both limits of its range of movement. The toggle is broken to lift the cap 13 and oscillate the abrader by pressing the thumb down upon the lever 14, and the cap is restored to position over the wick by sliding the thumb along the member 11 to rotate the same about the axis of the abrader.

In order to replace pyrophoric body 10, the bearing block 4 together with member 11 and lever 14 may be removed, whereupon set screw 9 and spring 8 can be removed from tubular extension 6, so that a fresh pyrophoric body can be inserted.

The construction is particularly advan-

tageous since the device may be operated by slightly oscillating the actuating lever 14.

In the embodiment of Figures 2 and 5, the fuel receptacle is designated 1^a, the wick tube 2^a, the pivotal member constituting cap 13^a, the bearing block for same 4^a, its pivot 12^a, the actuating lever 14^a, the lever being jointed to the cap by connecting pin 15^a and adapted to slide within a transverse opening in the guide 20, wherein a lever 14^a is slidingly guided, said guide being mounted, by pivot pins 16^a, for rocking movement upon the bearing block 5^a. 18^a is a coiled spring mounted on actuating lever 14^a tending to press cap member 11^a down on the cover of the fuel receptacle 1^a. 10^a is pyrophoric body which in this case is in the form of a disc and yieldingly supported on a spring member 21; 19^a is a friction pin adapted to rub on the pyrophoric body on rotating of cap member 11^a about pivot 12^a.

The operation of the device is substantially the same as that of Figures 1 and 4, so that no description thereof is needed; parts having the same function as parts appearing in the embodiment of Figures 1 and 4, being designated with the same numerals with the addition of the letter "a".

The embodiment illustrated in Figure 3 is very similar to that of Figures 1 and 4 except that the yielding connection between lever 14 and its pivot 16 is replaced by a yielding connection between bearing block 4^b for the cap carrying member 11^b and fixed tube 7^b for which end springs 22 and 23 are provided. Thereby the necessary displacement of the parts of the device on actuating lever 14^b is made possible.

I claim:

1. In a pyrophoric lighter, the combination with a fuel receptacle and wick, a member carrying an abrader and a closing cap, and means on said receptacle providing a pivotal support for said member, of a second member disposed on the top side of said receptacle, a direct pivotal connection between said members, and means on said receptacle providing a pivotal support for said second member, the axes of the three pivotal connections being disposed above the top of said fuel receptacle and so related that the said members form a toggle linkage operable, upon application of pressure transversely of said second member, to rotate said first member.

2. A pyrophoric lighter as set forth in claim 1, wherein one of said pivotal supporting means permits the member carried thereby to move axially with respect to said receptacle when said second member is tilted about its pivotal supporting means to actuate said first member.

3. A pyrophoric lighter as set forth in claim 1, wherein said second pivotal supporting means includes a pin and slot connection permitting said second member to move longitudinally as it turns about its pivotal support.

4. In a pyrophoric lighter, the combination with a fuel receptacle having a wick guide, a bearing block and rotatable friction element carried by said bearing block, of means carried by said bearing block for supporting a pyrophoric body, a closing cap mounted in said bearing block for pivotal movement about the axis of said friction member, said cap being operatively connected to said friction member, an arm pivotally connected to said cap for rocking said cap and friction device about their common axis, and a second bearing block providing a pin and slot connection between the free end of said arm and said receptacle.

5. In a pyrophoric lighter, the combination of a fuel receptacle having a top plate provided with a wick guide, a tubular extension providing a container and support for a pyrophoric body, said casing being adapted to be inserted in said receptacle, a bearing block at the outer end of said extension, a closing cap and a friction member, means associated with said cap and member to support the same for coaxial rotary movement on said bearing block, an actuating arm, means pivotally connecting said arm to said cap, a second bearing block mounted on said plate, and means providing a pin and slot connection between the free end of said arm and said second bearing block.

6. In a pyrophoric lighter, the combination with a fuel receptacle, a pyrophoric body, a wick, and an abrader pivotally supported on said receptacle adjacent said wick, of means for oscillating said abrader, said means comprising a toggle linkage consisting of two pivotally connected members, means securing one of said members to said abrader, and means on said receptacle for pivotally and slidably connecting said second member thereto.

7. The invention as set forth in claim 6, wherein the pivotal connection between said members is so located with respect to the pivotal axes individual to said members that said pivotal connection lies upon opposite sides of the plane through said axes at the two ends of its range of movement, in combination with spring means exerting pressure longitudinally of said second member, whereby said toggle linkage is yieldingly retained at the two limits of its range of movement.

8. The invention as set forth in claim 6, wherein the said member secured to said abrader carries a closing cap.

9. In a pyrophoric lighter, the combination with a fuel receptacle, a pyrophoric body, a wick and an abrader pivotally supported on said receptacle adjacent said wick, of means for oscillating said abrader, said means comprising a thrust member pivotally

connected at one end to said abrader at a point more remote from said receptacle than the axis of said pivotally supported abrader whereby movement of the pivotally connected end of said member towards said receptacle rotates said abrader, and means supporting said thrust member for combined longitudinal movement of said thrust member and movement of the pivotally connected end thereof towards said receptacle.

In witness whereof I affix my signature.

VINCENT KASSAPIAN.