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R. S. KNAPP

POCKET LIGHTER

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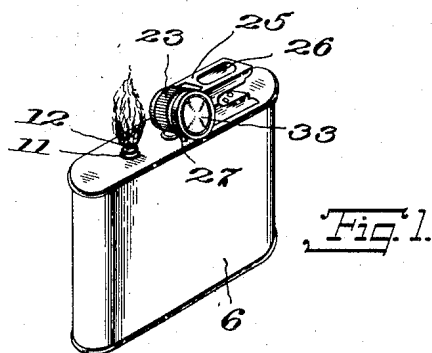


Fig. 1.

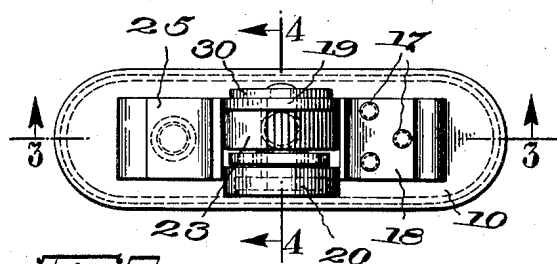


Fig. 2.

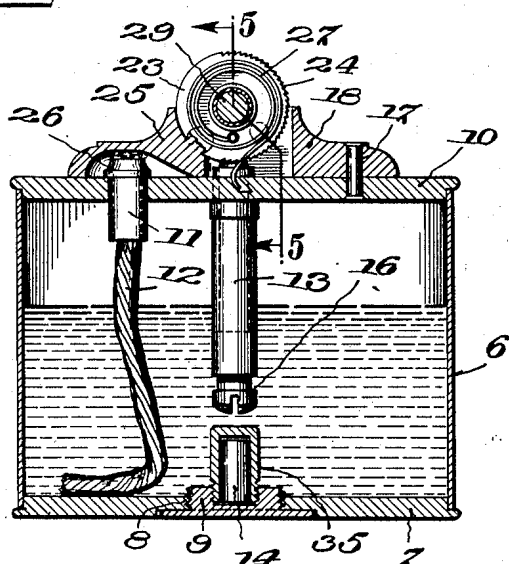


Fig. 3.

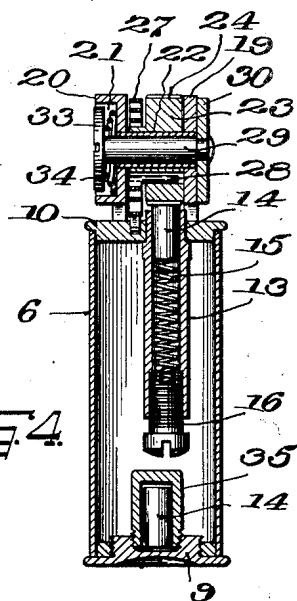


Fig. 4.

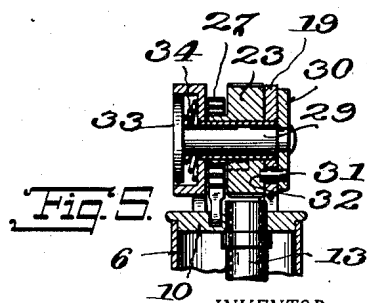


Fig. 5.

INVENTOR.
Raymond S. Knapp
BY *Richard H. Feier*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

RAYMOND S. KNAPP, OF NEW YORK, N. Y.

POCKET LIGHTER.

Application filed March 19, 1927. Serial No. 176,746.

This invention relates to improvements in cigar and cigarette lighters, and has particular reference to a lighter of the pocket type.

An object of the invention is to provide an improved lighter of simple and practical construction wherein the elements constituting the ignition mechanism are compactly arranged and conveniently disposed, so that the operator may readily manipulate the device with one hand to cause the ignition of the ignitable element and to extinguish the same.

Another object is to arrange the friction wheel of the ignition mechanism and the normally closed swinging cover for the ignitable element so as to rotate about a common axis, and to mount a releasing member for said wheel and cover concentric to said axis.

A further object resides in providing a releasing member which extends coincident to the axis of rotation of the friction wheel, and which is movable longitudinally of said axis to release said wheel so that it can rotate under the influence of a spring connected thereto.

The above and other objects will appear more clearly from the following description when taken in connection with the accompanying drawing, which illustrates a preferred embodiment of the inventive idea.

In the drawing—

Fig. 1 is a perspective view of the lighter constructed in accordance with the invention and shown in its operated position.

Fig. 2 is an enlarged top plan view thereof.

Fig. 3 is a vertical longitudinal section taken on the line 3—3 of Fig. 2.

Fig. 4 is a vertical transverse section taken on the line 4—4 of Fig. 2.

Fig. 5 is a section taken on the line 5—5 of Fig. 3.

In its preferred form, the invention is shown as comprising a relatively flat casing 6 of convenient size so that it may be carried in the pocket and which constitutes a fuel containing reservoir. The bottom 7 of the casing is provided with a screw-threaded opening 8 in which plug 9 is removably mounted so that fuel may be poured into the casing when necessary.

It will be understood, of course, that instead of simply having the liquid fuel in the casing, as indicated in Fig. 3, said casing may contain absorbent cotton or the like, which becomes saturated with the fuel when the latter is poured through the opening 8.

The casing is further provided with a top

closure 10, in which is removably mounted, adjacent one end thereof, a holder 11 for retaining the upper end of an ignitable element 12, such as a wick usually employed for this purpose. The holder 11 projects exteriorly out of closure 10, so that the outer end of the wick 12 may be disposed and be ignited by the ignition mechanism presently to be described.

Medially of the end of the closure 10, the same also has mounted therein a tube 13, which projects downwardly into the casing with the outer or upper end of the tube extending slightly beyond the closure. The tube is open at both ends, and its outer end is adapted to receive a pyrophoric element 14 such as a flint or other suitable material capable of producing a spark. A constant outer pressure is maintained upon the element 14 by means of the coil spring 15 within the tube 13, the tension of said spring being regulated by screw 16 threaded into the inner end of the tube. The screw 16 is accessible for purposes of adjustment through the opening 8 in the bottom of the casing.

The top closure 10 also has secured thereto, by means of rivets 17, a supporting structure 18, the inner end of which, adjacent the center of the cover, terminates in two spaced disklike plates 19 and 20, the latter plate having a recess 21 in its outer face for a purpose which will presently appear. The centers of the two plates 19 and 20 are connected by a bushing 22, upon which is mounted, for rotation in both directions, a friction wheel 23. This wheel is of substantially the same diameter as the plates 19 and 20, and is provided on a portion of its periphery with serrations 24 to form a roughened surface adapted to contact with the outer end of the pyrophoric element 14, the serrations of the wheel being so disposed that when the latter is rotated in a clockwise direction as viewed in Fig. 3, the rubbing of the wheel against the element 14 will produce a spark which will be deflected in the direction of the outer end of the wick 12 and thus ignite the same.

At a point on the wheel 23, when the same is in its normal position shown in Fig. 3, between the wickholder 11 and the tube 13, said wheel has secured thereto a swinging cover 25 in the form of an arm which is substantially a counterpart of the stationary support 18, and which is provided upon its inner surface with a recess 26 adapted to receive the outer end of the holder 11 and

wick 12 when the cover is in closed or normal position, said cover acting to extinguish the flame when the cover is returned to normal position after an operation of the ignition mechanism.

By thus securing the cover 25 to the friction wheel, it will be obvious that said parts will move as a unitary structure about a common axis, and that, therefore, the release of the wheel for the purpose of producing a spark and uncovering the wick 12 so that it will be ignited may be produced in a single operation.

The means for rotating the friction wheel and cover 25 preferably comprises a convoluted spring 27 interposed between the wheel 24 and plate 20, the outer end of the spring 27 being fixed to the closure 10 while the inner end of said spring is provided with an extension 28 projecting into an opening formed in the friction wheel adjacent the center. When the friction wheel is in its normal position, the spring 27 is under tension, and upon release of the wheel, in the manner to be presently described, said spring expands and rapidly rotates the wheel to produce a rubbing contact with the element 14.

The means for retaining the friction wheel and cover 25 in normal position and for releasing said parts so as to permit of rotation thereof consists of a releasing member in the form of a pin 29 extending through the bushing 22 concentric to the axis of rotation of the friction wheel. At the end of the pin 29, adjacent the plate 19, said pin has secured thereto a disk 30 which carries a locking pin 31 (Fig. 5) projecting inwardly through the plate 19, and having its inner end engageable with a recess 32 formed in the adjacent face of the friction wheel.

When thus engaged with said wheel, the pin 31 acts to prevent rotation of the wheel and cover. The opposite end of the pin 29 is formed with a head 33 preferably counter-sunk within the recess 21 in the plate 20 and having interposed therebetween and the bottom of said recess a coil spring 34 which normally exerts an outward pressure on the head 33 to retain the locking pin 32 in operative position. However, when the head 33 is depressed by the thumb to move the pin 29 and disk 30 laterally with respect to the friction wheel, or longitudinally of its axis of rotation, it will be apparent that the pin 31 will be withdrawn from the recess 32, thus releasing the wheel so that the spring 27, which is under tension, will expand and cause the wheel and cover to rotate.

After the wick 12 has been ignited, the operator may again engage the thumb with the free end of the cover 25, when the latter is in the position shown in Fig. 1, and by a movement of the thumb, said cover and friction wheel may be restored to normal position, the cover then acting to extinguish the flame.

As the friction wheel reaches its normal position, the recess 32 in said wheel will begin to come into alignment with the locking pin 31, whereupon the spring 34, which is then under tension, forces the pin 29 and disk 30 in the opposite direction from the movement previously described with the result that the locking pin 31 again enters the recess 32. It will, of course, be understood that the restoration of the friction wheel to normal position again places the spring 27 under tension.

If desired, an additional or reserve pyrophoric element 14 may be carried with the device by placing the same in a sleeve 35, one end of which is screw-threaded into the inner surface of the plug 9.

What I claim is:

1. In a cigar and cigarette lighter, a casing forming a fuel containing reservoir, an ignitable element carried by said casing, a pyrophoric member also carried by said casing, a friction wheel rotatable relative to said casing and contacting said pyrophoric member, means to rotate said wheel to produce a spark from said pyrophoric member to thereby ignite said ignitable element, and a releasing member extending through said wheel and having means engageable therewith to normally prevent rotation thereof, said releasing member being operable to release said means from said wheel, whereby the same will be actuated by said rotating means.

2. In a cigar and cigarette lighter, a casing forming a fuel containing reservoir, an ignitable element carried by said casing, a pyrophoric member also carried by said casing, a friction wheel rotatable relative to said casing and contacting said pyrophoric member, means to rotate said wheel to produce a spark from said pyrophoric member to thereby ignite said ignitable element, a releasing member extending through said wheel and normally preventing rotation thereof, said releasing member being operable to release said wheel, whereby the same will be actuated by said rotating means, and a cover for said ignitable element carried by said friction wheel and covering said element when said wheel is in normal position.

3. In a cigar and cigarette lighter, a casing forming a fuel containing reservoir, an ignitable element carried by said casing, a pyrophoric member also carried by the casing, a friction wheel rotatable relative to said casing and contacting said pyrophoric member, means to rotate said wheel to produce a spark from said pyrophoric member to thereby ignite said ignitable element, and a releasing member projecting through said wheel concentric to its axis of rotation and carrying a locking pin engageable with said wheel to retain the same in normal position, said releasing member being movable from a normal

position longitudinally of said axis to disengage said pin from said wheel and thereby allow the latter to be rotated by said rotating means.

5 4. In a cigar and cigarette lighter, a casing forming a fuel containing reservoir, an ignitable element carried by said casing, a pyrophoric member also carried by the casing, a friction wheel rotatable relative to said casing and contacting said pyrophoric member, means to rotate said wheel to produce a spark from said pyrophoric member to thereby ignite said ignitable element, a releasing member projecting through said wheel concentric to its axis of rotation and carrying a locking pin engageable with said wheel to retain the same in normal position, said releasing member being movable from a normal position longitudinally of said axis to disengage said pin from said wheel and thereby allow the latter to be rotated by said rotating means, and a spring engaging said releasing member to restore the same and its locking pin to normal position when said wheel is returned to normal.

5 5. In a cigar and cigarette lighter, a casing forming a fuel containing reservoir, an ignitable element carried by said casing, a pyrophoric member also carried by the casing, a friction wheel rotatable relative to said casing and contacting said pyrophoric member, means to rotate said wheel to produce a spark from said pyrophoric member to thereby ignite said ignitable element, a releasing member projecting through said wheel concentric to its axis of rotation and carrying a locking pin engageable with said wheel to retain the same in normal position, said releasing member being movable from a normal position longitudinally of said axis to disengage said pin from said wheel and thereby allow the latter to be rotated by said rotating means.

6. In a cigar and cigarette lighter, a casing forming a fuel containing reservoir, an ignitable element mounted in said casing, a pyrophoric member adjacent said ignitable element, a supporting structure on said casing, a friction wheel mounted for rotation in said structure and engageable with said pyrophoric member, a spring interposed between said wheel and a portion of said structure and connected to said wheel and casing to rotate the former, and a releasing member extending through said supporting structure and wheel and having means to normally lock said wheel against rotation.

7. In a cigar and cigarette lighter, a casing forming a fuel containing reservoir, an ignitable element mounted in said casing, a pyrophoric member also carried by said casing adjacent said ignitable element, a supporting structure on said casing, a friction wheel mounted for rotation in said structure and engageable with said pyrophoric member, a spring interposed between said wheel and a

portion of said structure and connected to said wheel and casing to rotate the former, a releasing member extending through said supporting structure and wheel and having means to normally lock said wheel against rotation, said releasing member also having a depressible head countersunk in said portion of said supporting structure, and a spring engageable with said head to retain the means of said releasing member in locking position.

8. In a cigar and cigarette lighter, a casing forming a fuel containing reservoir, an ignitable element mounted in said casing, a pyrophoric member also carried by said casing adjacent said ignitable element, a supporting structure on said casing, a friction wheel mounted for rotation in said structure and engageable with said pyrophoric member, a spring interposed between said wheel and a portion of said structure and connected to said wheel and casing to rotate the former, a releasing member extending through said supporting structure and wheel and having means to normally lock said wheel against rotation, and a cover for said ignitable element movable with said friction wheel and covering said ignitable element when said wheel is in normal position.

9. In a cigar and cigarette lighter, a casing forming a fuel containing reservoir, an ignitable element carried by said casing, a pyrophoric member also carried by the casing, a friction wheel rotatable relative to said casing and contacting said pyrophoric member, means to rotate said wheel to produce a spark from said pyrophoric member to thereby ignite said ignitable element, a releasing member projecting through said wheel concentric to its axis of rotation and having locking means engageable with said wheel to retain the same in normal position, said releasing member being movable from a normal position to disengage said means from said wheel and thereby allow the latter to be rotated by said rotating means, and a spring engaging said releasing member to restore the same and its locking means to normal position when said wheel is returned to normal.

10. In a cigar and cigarette lighter, a casing forming a fuel containing reservoir, an ignitable element carried by said casing, a pyrophoric member also carried by said casing, a friction wheel rotatable relative to said casing and contacting said pyrophoric member, means to rotate said wheel to produce a spark from said pyrophoric member to thereby ignite said ignitable element, and a releasing pin co-extensive with the axis of said wheel and having means engageable therewith to prevent rotation thereof, said pin being movable laterally of the wheel to disengage said means therefrom whereby said rotating means is permitted to function.

11. In a cigar and cigarette lighter, a cas-

ing, an ignitable element projecting from said casing, a friction wheel supported by said casing for rotation relative thereto, a pyrophoric element also carried by the casing and engageable with the wheel for producing a spark to ignite said ignitable element when said wheel is rotated, means attached to said wheel and casing for rotating the former, and releasing means for the wheel including a movable member extending through the wheel concentric to the axis of rotation thereof and further including a locking pin engageable with said wheel to prevent its rotation, said movable member being actuated to disengage said locking pin from said wheel whereby to render active the rotating means.

12. In a cigar and cigarette lighter, an ignitable element, a pyrophoric member, a rotatable friction wheel engaging said pyrophoric member, a releasing member about which said wheel rotates as an axis and which has means to prevent rotation of said wheel, said releasing member having a longitudinal sliding movement to release said wheel, means to rotate said wheel upon release thereof, and a cover for said ignitable element carried by said wheel.

13. In a cigar and cigarette lighter, an ignitable element, a pyrophoric member, a ro-

tatable friction wheel engaging said pyrophoric member and having a normal position, a releasing member about which said wheel rotates as an axis and having means engaging said wheel to lock it in normal position, said means being operated by said releasing member to release the wheel for rotation, and means operable only when said wheel has been restored to normal to move said locking means into its locking position.

14. In a cigar and cigarette lighter, an ignitable element, a pyrophoric member, a rotatable friction wheel engaging said pyrophoric member and having a normal position, a releasing member about which said wheel rotates as an axis and having means engaging a portion of said wheel to lock it in normal position, said means being operated by said releasing member to release the wheel for rotation and being prevented, by engagement with another portion of the wheel, from moving to its locking position until the wheel is again restored to normal, and means operable upon restoration of said wheel to move said locking means to its locking position.

In testimony whereof I have affixed my signature.

RAYMOND S. KNAPP.