

UNITED STATES PATENT OFFICE

GEORGE KOLLSTEDE, OF PROVIDENCE, RHODE ISLAND

LIGHTER

Application filed January 25, 1928. Serial No. 249,428.

My invention relates to lighters and includes certain novel features that are particularly adapted for use in a so called pocket cigar or cigarette lighter.

5 An object of my invention relates to the novel means I employ for securing the parts of my invention together. In my preferred embodiment I provide an oblong casing for the lighter having a non-rotatably mounted, 10 vertically extending flint advancing tube within one end thereof. I provide a suitable base plate for said casing provided with an inset oblong casing aligning elevation to accurately align the casing on said elevation. 15 One end of said elevation is shaped to additionally form an aligning elevation for a fuel reservoir thereon, and a fuel reservoir is adapted to be permanently secured to said base plate, said fuel reservoir normally having an open lower end attached around and 20 permanently soldered to the reservoir aligning elevation on the base plate. The opposite end of the base plate is provided with a flint tube opening therethrough terminating at its lower end in a flint tube stopper seat of larger diameter. The lower end of the flint tube thus projects substantially to the bottom of the casing near one end thereof and is internally threaded. Thus when the 30 base plate and attached fuel reservoir is aligned within the casing, both the base plate and attached reservoir may be attached to the casing by merely threading in the usual flint tube stopper through the flint tube opening in the base plate and into the threaded lower end of the adjacent flint tube which provides a novel and facile means of assembly for the lighter.

A further object of my invention relates 40 to the provision of a novel type of base plate preferably one adapted to have a fuel reservoir soldered thereto.

These, and such other objects of my invention as hereinafter may appear will be best understood from a description of the accompanying drawings which illustrate my preferred form of automatic lighter constructed in accordance with the principles of my invention.

50 In the drawings, Fig. 1 is a side elevation

of the improved embodiment of my invention showing the cover in the act of being pivoted to open position to cause simultaneous rotation of the friction wheel against the flint to light the wick. 55

Fig. 2 is a longitudinal sectional view of my improved lighter.

Fig. 3 is a cross sectional view of my improved lighter taken along line 3—3 of Fig. 1.

Fig. 4 is a vertical sectional view taken 60 along line 4—4 of Fig. 1.

Fig. 5 is a plan view of the base-plate I preferably employ.

Fig. 6 is a sectional view taken along line 65 6—6 of Fig. 2.

In the drawings, wherein like characters of reference indicate like parts throughout, 10 generally indicates an automatic lighter constructed according to the principles of my invention. Said lighter preferably includes 70 the oblong casing 12 having an open upper end 14 and an open lower end 16. In my preferred embodiment I preferably provide a plurality of draft openings 18 on each side wall 20 of the casing near the upper end 75 thereof, cover pivot shaft openings 22 near one end of each side wall near the top thereof and latch depressions 24 on the inside of each side wall 20 thereof near the top thereof on the opposite end of said side walls 20 80 from the cover pivot shaft openings 22.

I preferably provide my improved lighter with a flint advancing tube 26 suitably mounted therein to locate the flint or other pyrophoric element 28 employed in contact- 85 ing relationship with the teeth 29 of the friction element 30 employed adapted on the manipulation thereof to throw a spark towards the ignitable element 32, which in my preferred embodiment comprises a wick projecting upwards from a fuel reservoir 34. In my preferred embodiment I preferably vertically mount the flint advancing tube within one end 36 of the casing 12 and for this purpose I preferably provide a U-shaped 95 flint tube aligning bracket 38 having a rear end wall 40 adapted to be soldered or otherwise attached to the inside of the end wall 42 of the casing 12. The upper end of the end wall 42 of the casing is preferably cut 100

away as at 44 for a purpose to be described. The flint tube aligning bracket 38 has U-shaped supporting arms 45 projecting at right angles from each end thereof. I preferably employ a cylindrical flint tube 26 having diametrically opposite parallel slots 46 therein adapted to be contained within the U-shaped parallel arms 45 in said bracket 38 (see Fig. 6) and non-rotatably secured thereto by having the ends 48 of said arms upset or otherwise bent to partially surround the adjacent side of the flint tube 26. When thus mounted it is apparent that the flint tube 26 will extend vertically in the end 36 of the casing 12 with the lower end 50 thereof substantially flush with the lower end 16 of the casing. The lower end 50 of the flint tube 26 is preferably internally threaded as at 51 for a purpose to be described. It is obvious however that in so far as certain features of my invention are concerned, the flint tube 26 may be mounted in any other portion of the lighter in any suitable manner.

In my preferred embodiment I preferably provide a base plate 54 having an inset upwardly projecting casing elevation 56. In my preferred embodiment said casing elevation is provided with the transverse depression 58 therein to form an oblong fuel reservoir aligning elevation 60 in one end thereof having a fuel stopper seat 62 adapted to receive a fuel stopper 63 therein. At the opposite end of said base plate 54 from the fuel reservoir aligning elevation 60, I provide the flint tube opening 64 terminating in the flint tube stopper seat 66 of larger diameter in the lower end thereof. The fuel reservoir 34 is provided with the open lower end 35 adapted to be attached around and to the reservoir aligning elevation 60 on the base plate by solder or any other suitable means. I provide a suitable wick opening in the upper end of the reservoir preferably having a hollow wick projection 70 thereon. In my preferred embodiment I preferably provide a threaded hole 72 in the upper end of the fuel reservoir and I construct the wick projection 70 as a screw machine product comprising an externally threaded hollow wick opening member 70 having the central wick opening 74 therein for the wick 32 to extend therethrough terminating in the ignitable end 31.

The flint 28 or other pyrophoric element employed is suitably mounted in the upper end of the flint aligning tube 26, and I provide means to continuously advance the flint into contacting engagement with the friction element 30. In my preferred embodiment said means preferably comprises the helical flint advancing spring 76 contained within the tube 26 having the upper end thereof adapted to abut the flint and the lower end thereof adapted to abut the flint tube stopper 80. The flint tube stopper 80 is preferably provided with the nub 82 projecting upward-

ly therefrom of substantially the same outer diameter as the internal diameter of the helical spring 76 to form a tight fit therein to remove the helical spring 76 from the flint tube on removal of the flint tube stopper 80. The flint tube stopper 80 is preferably externally threaded as at 82' on the outer periphery of the lower end thereof. The flint tube stopper 80 is preferably provided with the head 84 of larger diameter adapted to seat on the flint tube stopper seat 66 in the lower end of the base plate 54. It is thus obvious that I have provided a novel method of attaching a fuel reservoir to the casing of a lighter which includes permanently mounting the reservoir on the base plate thereof and permanently aligning the base plate in the open lower end 16 of the casing causing the attached reservoir 34 to be contained within the casing and permanently securing a flint tube stopper 80 through a suitable hole 64 therefor in the base plate within the flint tube and causing the head 84 thereof to seat within a co-operating seat 66 in the base plate thereby permitting attaching the base plate and fuel reservoir within the casing by means of securing the flint tube stopper within the flint tube.

As stated hitherto I provide a lighter of a novel automatic type adapted on a single motion in place of two necessary in most types of lighters to simultaneously open the cover and rotate the friction element 30 against the flint 28 to ignite the ignitable element. To this end I suitably mount a cover 86 on the lighter preferably on an upper end of the side walls 20 of the casing and immediately above the flint 28. I provide means whereby opening of the cover will cause a simultaneous movement of the friction element 30 against the flint 28. To this end in my preferred embodiment I provide the cover 86 with the inset downwardly projecting side walls 88 each having a pivot shaft opening 90 in one end thereof. Thus to mount the cover 86 on the casing 12 I insert the cover pivot shaft 92 through the co-operating openings 22 and 90 respectively in the cover and side walls 20 of the casing transversely of said casing above the flint 28. As stated hitherto I preferably provide the cover 86 with the opening lever 94 projecting from the end thereof adjacent its pivot point to the casing 12 which opening lever preferably extends a substantial distance beyond the adjacent end wall 42 of the cover. While any suitable type of means operated by the opening of the cover to cause movement of the friction element 30 against the flint 28 may be employed, I preferably mount the friction element 30 on the cover pivot shaft 92 so as to rotate with the cover 86 on normal rotation thereof. While this result may be accomplished in any suitable manner I preferably employ a friction wheel 30 having a flattened chord surface 98 formed by removal of a sector therefrom adapted to

about the under surface of the top wall 96 of the cover to cause the wheel 30 to rotate on the pivot shaft 92 simultaneously with the cover 86. As shown in Fig. 1, my improved lighter is adapted to be opened with the wheel 30 simultaneously striking against the flint 28 by means of a sharp snap downward pressure exerted by the thumb 100 or otherwise on the laterally projecting opening lever 94 of the cover 86. To normally latch the cover to the casing 12 I provide suitable latch means preferably on the opposite end of said cover 86 from the pivot point 90 thereof and the adjacent portion of said lighter, said means being resiliently releasable on a downward pressure exerted on the opening lever. While any suitable type of resilient latch means may be employed I preferably strike up the latch projections 102 on the side walls 88 of the cover 86 adapted to register within the latch depressions 24 heretofore described in the inner sides of the side walls 20 of the casing. As the side walls 88 of the cover and the side walls 20 of the casing are constructed of resilient material, it is obvious that on pressure exerted on the opening lever of the cover, the co-operating latch means 24 and 102 will resiliently release to permit opening of the cover.

As stated hitherto I believe I am the first to specifically provide any type of draft for drawing the spark from the contacting friction and pyrophoric elements 28 and 30 respectively towards the ignitable end 31 of the wick 32. For this purpose I provide the draft opening 44 in the upper end of the end wall 42 of the casing in rear of said friction and pyrophoric elements 30 and 28 to draw a spark forward towards the ignitable end 31 of the wick 32. I also provide suitable means to create an artificial draft on opening of the cover to throw sparks forward or in any desired direction from the contacting wheel and flint toward the wick end 31. To this end I provide the cover 86 with a downwardly arcuately projecting wall 104 in rear of the point of contacting engagement of the friction wheel 30 with the flint 28 adapted on revolution of the cover 86 to revolve forwards to form an artificial draft to throw the sparks forward to the wick end 31. In my preferred embodiment the arcuately downwardly and forwardly projecting end wall 104 is preferably split as at 106 to form the central slot 106 to contain the friction wheel 30 therein. As stated hitherto, the cover 86 is preferably made of a single piece of metal stamped into the flat top 96 having the integral opening lever or extension 94 projecting from one end thereof and having the centrally split end wall 104 integrally arcuately downwardly and forwardly bent from said rear opening end 94 and the side walls 88 inset and downwardly bent extending integrally from the top 96.

As also stated I preferably provide a snuffer 110 vertically yieldingly mounted on the cover 86 adapted to register against its co-operating preferably bevelled seat 112 on the wick projection 70 surrounding the ignitable end 31 of the wick. I preferably vertically yieldingly mount said snuffer 110 on the cover 86. It is obvious that it will at all times tend to accurately align itself on its co-operating seat 112 on the projection 70 to form a suitable snuffer and in addition a complete vapor seal when the lighter is not in use. While I may vertically yieldingly mount said snuffer on said cover in any suitable fashion, I preferably provide for this purpose the pin 114 projecting downwardly from said cover having the upper end 116 rigidly secured to the cover and the enlarged head 118 offset from said cover. I also provide the cylindrical snuffer 110 having the open lower end 122 of larger diameter than the wick 32 adapted to seat on the seat 112 of the wick projection 70 and having a perforation 124 in the upper end thereof slidably mounted on said pin 114 between the head 118 thereof and the lower surface of the cover 86 and I provide a spring 126 having the upper end thereof abutting the lower surface of the cover and the lower end thereof abutting the upper surface of the upper end of the snuffer to resiliently seat the snuffer 110 on the wick projection 70. To assemble, it is obvious that the snuffer 110 is first mounted on the pin 114 and the upper end 116 of the pin suitably secured to the cover 86. The interior of the fuel reservoir 34 may be filled if desired with cotton 134.

The automatic operation of my invention is obvious from the above description. When it is desired to light the lighter, the thumb or other finger 100 is pressed sharply downwardly on the opening lever 94 of the cover, thereby causing the resilient co-operating latch members 24 and 102 to release the cover and simultaneously with the opening of the cover cause the teeth 29 of the wheel 30 to strike against the upper end of the flint 28 to throw a spark towards the ignitable end 31 of the wick. The spark is aided in its travel towards the wick by the natural draft through the opening 44 in the end wall 42 of the casing and the artificial draft simultaneously created by the rotation and forward movement of the deflecting lip 104 projecting downwardly from the rear end of the cover on opening of the cover 86. To close the cover it is obvious that a mere manual pressure downwards on said cover 86 will cause the resilient latch means 24 and 102 to engage to normally hold the cover 86 to the casing 12 when not in use.

It is obvious that I have provided a novel type of automatic lighter operable with a single motion simultaneously to open the

cover and to ignite a spark, that I am the first to employ a draft both natural and artificial to aid in throwing the spark towards the ignitable element, that I have provided a novel means of securing the reservoir within the casing by the securement of the flint tube stopper within the flint tube alone and that I have provided a lighter constructed of a minimum number of easily fabricated and assembled parts.

It is understood that my invention is not limited to the specific embodiment shown and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What I claim is:

1. In a lighter, a casing having an open bottom, a flint tube supporting bracket attached to the inside of an end wall of said casing, a flint advancing tube non-rotatably mounted within said bracket, said stopper having a threaded lower end, a base plate having a flint tube opening and flint tube stopper seat in one end thereof, a fuel reservoir secured to the opposite end of said base plate, and a flint tube stopper threaded within the lower end of said flint tube, said stopper having a head of larger diameter seating on the flint tube stopper seat of the base plate whereby on attachment of the flint tube stopper within the flint tube said base plate and attached reservoir may be detachably secured to said casing.

2. In a lighter, a casing, a flint tube non-rotatably mounted within said casing, a base plate having a fuel reservoir mounted thereon and a flint stopper opening and seat therein, and a flint tube stopper projecting through said opening secured within the flint tube to detachably secure said base plate and reservoir to the flint tube within the casing.

3. A base plate for use in lighters having a casing aligning elevation, a flint tube opening and a co-operating flint tube stopper seat in one end thereof and a fuel reservoir aligning elevation at the opposite end thereof.

4. In a lighter, a casing, a flint tube non-rotatably mounted within said casing, a base plate having a fuel reservoir mounted thereon and a flint tube stopper opening and seat therein, and a flint tube stopper projecting through said opening secured within the flint tube and having the head thereof resting within said base plate seat to detachably secure said base plate and reservoir to the flint tube within the casing.

5. In a lighter, a casing, a flint tube non-rotatably mounted within said casing, a base plate having a flint tube stopper opening and seat therein, and a flint tube stopper projecting through said opening secured within the flint tube and having the head thereof resting within said base plate seat to detachably secure said base plate to the flint tube within the casing.

6. In a lighter, an oblong casing having an open bottom, a U-shaped flint tube aligning bracket attached to the inner side of one end wall of said casing, said bracket having U-shaped arms projecting from each end thereof, a cylindrical flint tube having a threaded lower end and diametrically opposite parallel slots in its side walls, said slot receiving the closed ends of said U-shaped arms to non-rotatably mount said flint tube on a base plate having an oblong fuel reservoir aligning elevation at one end thereof having a fuel stopper seat therein and a casing aligning elevation at the opposite end thereof, said opposite end having a flint tube opening terminating in a flint tube stopper seat of large diameter at its lower end, a fuel reservoir having a wick opening in the upper end thereof and an open lower end attached around and to the reservoir aligning elevation on the base plate, a fuel reservoir stopper in the stopper seat in the base plate, and a flint tube stopper having a threaded lower end threaded into the lower end of the flint tube and a head of larger diameter seating on the flint tube stopper seat of the base plate whereby on attachment of the flint tube stopper within the flint tube said base plate and attached reservoir may be accurately aligned in and be detachably secured to said casing.

In testimony whereof I affix my signature
 GEORGE KOLLSTEDE.