July 8, 1947. A. CAMPOS 2,423,481

LIGHTER CONSTRUCTION

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Fig. 1.

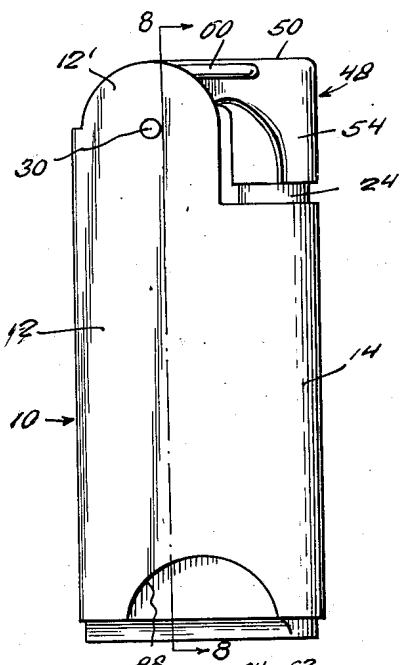


Fig. 4.

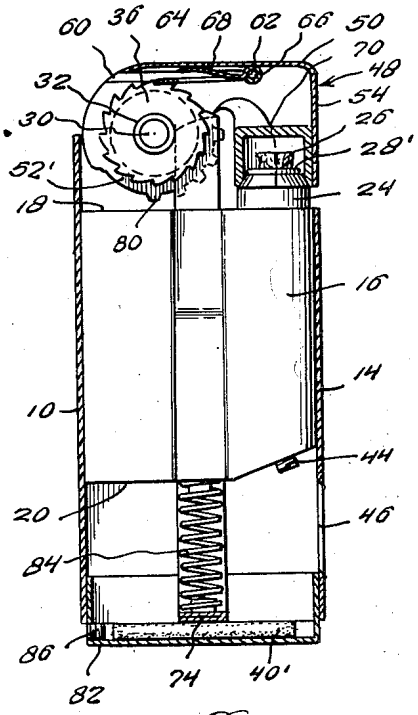


Fig. 8.

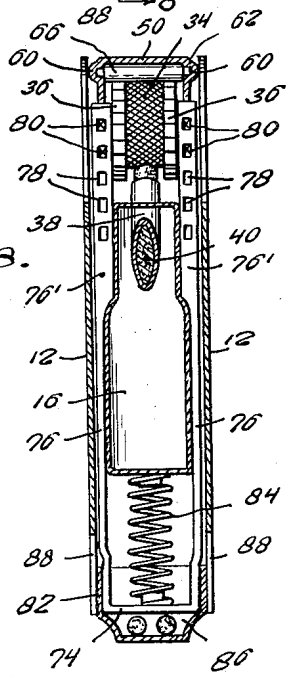
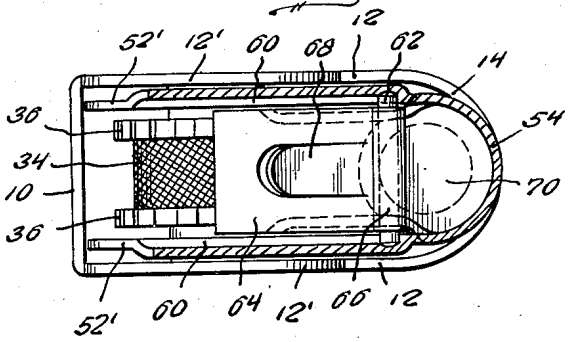


Fig. 6.



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LIGHTER CONSTRUCTION

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Fig. 2.

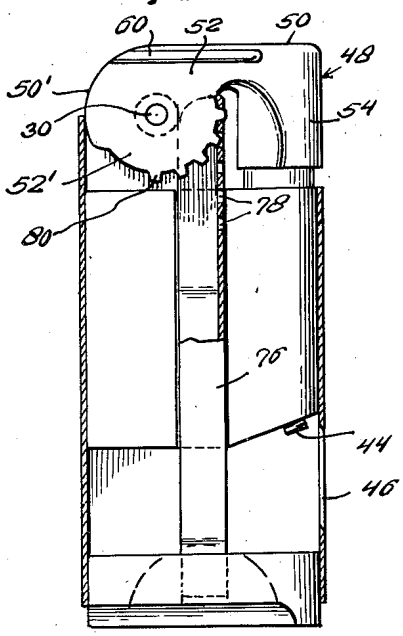

Fig. 5.

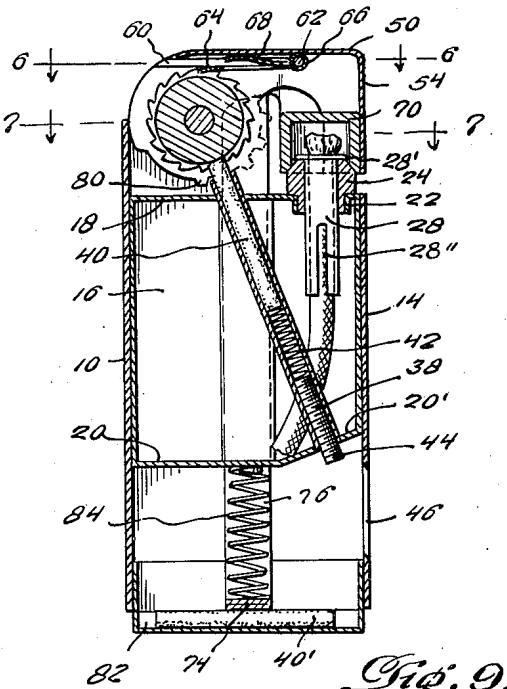

Fig. 3.

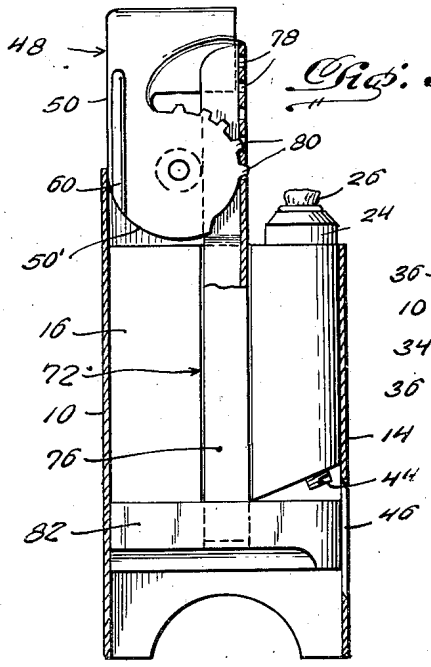

Fig. 9.

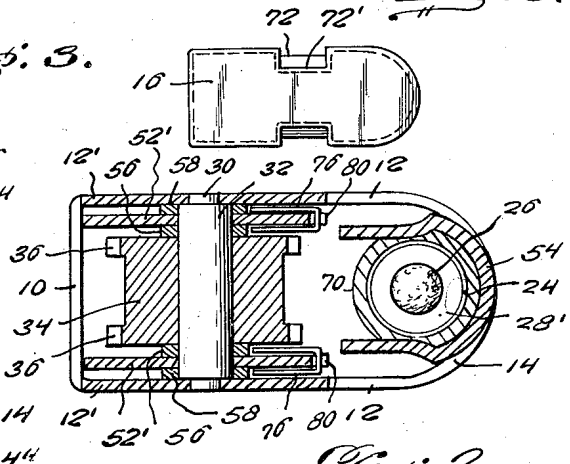

Fig. 7.

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2,423,481

LIGHTER CONSTRUCTION

Adolph Campos, Clifton, N. J.

Application November 17, 1944, Serial No. 563,883

6 Claims. (Cl. 67—7.1)

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This invention appertains to a lighter construction for pocket and personal use, and has for its primary object to provide a wick and liquid fuel type thereof, which embodies certain mechanical refinements that makes for greater simplicity and efficiency in maintenance and operation; the ignition and extinguishing functions being automatically accomplished by manipulation of a combined spark producing and flame snuffer mechanism.

Another object of the invention has to do with the provision of a lighter construction of this kind, wherein the spark producing and flame snuffer mechanisms are interconnected for simultaneous operation, motion being imparted to the flame snuffer mechanism by a manually actuated member and transmitted by an element of the latter mechanism to the spark producing mechanism, the flame snuffer mechanism being automatically returned to its normal flame extinguishing condition upon the release of the manually actuated member.

With these and other objects and advantages of equal importance in view, the invention resides in the certain new and useful combination, construction, and arrangement of parts, as will be hereinafter more fully described, set forth in the appended claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of the improved lighter construction, in accordance with the invention;

Figure 2 is a vertical section through the main casing and showing the fuel tank, the cover, and the manually actuated member, in side elevation, with a portion of the latter broken away to show its cooperative relation with the cover for operating the latter from and to its normal position of rest;

Figure 3 is a view similar to that of Figure 2, but showing the relative positions of the cover and the manually actuated member at the end of the working stroke of the latter, during which stroke, motion of the cover is transmitted to the spark producing mechanism to ignite the wick;

Figure 4 is a side view, partly in elevation and partly in vertical section, showing the ignition and flame snuffing mechanisms, together with the actuating means therefor, in detail;

Figure 5 is a vertical sectional view similar to that of Figure 4, but showing the interior of the fuel tank and the manner of mounting the wick holder and the flint feed tube therein;

Figure 6 is an enlarged horizontal section, taken through the line 6—6 of Figure 5, looking in the direction of the arrows;

Figure 7 is a view similar to that of Figure 6, but taken through the line 7—7 on Figure 5, looking in the direction of the arrows;

Figure 8 is a vertical transverse section, taken

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through the line 8—8 on Figure 1, looking in the direction of the arrows; and

Figure 9 is a top plan view of the fuel tank per se.

Referring to the drawings, wherein like characters of reference denote corresponding parts in the several views, the lighter construction, as it is exemplified therein, is comprised in a vertically elongated casing, open at its upper and lower ends, having a rear wall 10, side walls 12, and a rounded front wall 14, the rear wall 10 and adjacent portions of the side walls 12 being extended above the top edges of the other portions of the latter and the like edge of the front wall 14, which edges lie in a common plane; the extended portions of the side walls 12 being increased in height, above the top edge of the rear wall 10, by semi-circular portions 12'.

Mounted within the casing is a fuel tank 16 which has a flat top wall 18 disposed flush in the plane of the top edges of the lower top edges of the side walls 12 and the like edge of the front wall 14 and its bottom wall 20 spaced inwardly from the lower end of the casing. Formed in the top wall 18, of the tank 16, adjacent the front end thereof, is an inwardly flanged filling opening 22 in which a holder 24 for a wick 26 is removably seated. Depending into the tank 16, from the seated end of the holder 24, is a guide tube 28 to direct the feed of the wick to and through the holder in a manner to prevent binding or kinking. The guide tube 28 extends downwardly through the wick aperture of the holder 24 and is removably supported from the top end by an annular flange 28', resting on the holder. The lower end of the guide tube 28 is split, as at 28'', as an added means to facilitate greater freedom of movement of the wick 26, in its feed.

The upwardly extended portions 12', of the side walls 12 of the casing, are centrally apertured, in the plane of the top edge of the rear wall 10, to receive a cross pin or bolt 30 on which a cylindrical member 32 is supported between the side wall portions 12', the member 32 constituting a bearing for a file-wheel 34 and a pair of oppositely disposed pinions 36, the latter being of a greater diameter than the file-wheel and made integral therewith. Extending angularly downward through the top and bottom walls 18 and 20, of the tank 16, is a flint feed tube 38, in which the flint 40 is urged upwardly against the under side of the file-wheel 34 by a coiled spring 42, the lower end of the spring resting on a screw plug 44, closing the lower end of the tube. The bottom wall of the tank 16 is formed with an upwardly angled portion 20' at its forwardly directed end to receive the lower end of the tube 38 and to support it in position to permit of ready access to the screw plug 44 for its removal and replacement by a suitable tool, e. g., a screw

driver (not shown), inserted into the main casing through an opening 46 formed in the front wall 14.

Also supported on the bearing member 32, is a flame snuffer device in the form of a cover 48, having a top wall 50, side walls 52, and a front end wall 54; the top wall 50 having its rear end portion curved downwardly about the rear ends of the side walls 52 in a manner to form a rear end wall 50' and the front end wall 54 rounded to conform to the front wall 14 of the main casing. Each of the sidewalls 52 is provided with an arcuate-shaped recess as shown in Figures 1, 2, and 3, the portion of the sidewall 52 intermediate the front edge of the recess and the front-end-wall 54 being depressed laterally from its point of mergence with the front wall 54—as shown in Figure 7. Rear end portions of the side walls 52 are made substantially semi-circular, as at 52', and these portions are centrally apertured for engagement on the bearing member 30, one at each side of the file and pinion assembly and between pairs of spacer collars 56 and 58. The side walls 52 are provided with outwardly pressed beads 60 extending rearwardly in closely spaced and parallel relation to the top wall 50 from points spaced inwardly from the front end wall 54, to permit of the insertion of a cross pin 62 inwardly of their rear open ends to the forward closed ends thereof. Engaged on this cross pin 62, is the barrel 66 of a pinion actuator 64, which is constituted in a spring metal stamping having the barrel 66 formed on its forwardly directed end and a rearwardly directed spring tongue 68 struck upwardly from its center to bear against the under side of the top wall 50, of the cover 48, to position the actuator 64 for the effective engagement of its rearwardly directed end edge with the teeth of the pinions 36, at all times. Mounted in the forward end of the cover 48, is an inverted snuffer cup 70, which engages over the end of the wick 26 and rests on the holder 24, when the cover is normally disposed, in which position, the igniter mechanism is completely enclosed for its protection against injury, during non-use of the lighter.

The igniter and snuffer mechanism just described is to be operated by means of a substantially U-shaped actuator member that is engaged about the fuel tank 16, with its connected end 74 extending transversely of and below the lower end of the tank and its side portions 76 extending upwardly between the opposed side walls of the main casing and the tank and in channels 72, formed in the latter. The channels 72, toward the upper end of the fuel tank 16, are deepened, as at 72', to house the upper end portions 76' of the actuator member, which portions are preferably made U-shape in cross section to provide channels engaged about the edges of semi-circular portions 52', of the side walls 52 of the cover 48. The connecting walls of these channels are provided with a series of vertically aligned apertures 78 to be engaged with lugs or teeth 80, formed in the edges of the semi-circular portions 52', of the side walls 52 of the cover 48. By this arrangement, the portions 76', when moved vertically in reversed directions relatively to the toothed portions 52', function in the manner of racks to cause the cover 48 to turn on the bearing member 32 from and to normal position. To impart upward movement to the actuator member, a push button 82, preferably of inverted dished form, is positioned in the lower open end of the main casing and engaged over the lower connected end of the actuator member, with a friction fit thereon. The actuator member and the push button 82 are sustained in their normal positions of rest by a compression spring 84, which is interposed between the bottom wall 20, of the tank 16, and the connected portion 74 of the actuator member. By the frictional fit of the push button 82 on the lower end of the actuator member, it may be readily removed and replaced to give access to its interior, in which at least two extra flints 40' may be housed, a sufficient space, constituting a storage chamber 86, being provided between the connecting portion 74 and the bottom wall of the push button. To facilitate the manipulation of the push button 82, semi-circular cutouts 88 are removed from the lower edges of the side walls 12 of the main casing.

In operation, the fuel tank 16 having been provided with a supply of liquid fuel introduced to it through the filling opening 22, from which the wick holder 24, together with the guide tube 28 and the wick 26, are removed for the purpose and afterwards replaced, pressure of a finger or thumb on the push button 82 forces the actuator member upwardly through the main casing and causes the apertures 78, in its upper end portions 76', to engage the lugs or teeth 80 on the side portions 52' of the cover 48, when the latter is swung upwardly and rearwardly on the bearing member 32 to a substantially vertical position at the rear side of the main casing. This movement of the cover 48 lifts the snuffer cup 70 from the wick end and, at the same time, its motion is transmitted through the pusher element or tongue 64 to the pinions 36 and the file wheel 34, in the resulting rotation of which, in an anticlockwise direction, the file wheel 34 abrades the flint 40, causing sparks which, by the angular position of the flint in relation to the periphery of the file wheel, pass to the wick end for its igniting. Upon releasing the pressure of the finger or thumb from the push button 82, the coiled spring 84, previously placed under compression by the operative movement of the push button, expands and urges the latter and the actuator member back to their normal position. In the return movement of the actuator member, the cover 48 is swung back to its normal position, when the snuffer cup 70 will cover the wick end and extinguish the flame.

The subject-matter of this application is related to the subject-matter of my co-pending application entitled Lighter construction, filed November 17, 1944, and serially numbered 563,882.

Without further description, it is believed that the novel features incorporated in this lighter construction will be readily comprehended by those skilled in the manufacture of devices of like character, and that its ease of operation and the refinements in its design will be readily apparent to such persons. Also, it is to be understood that changes in design and minor details of construction may be resorted to, provided such changes fall within the scope of the appended claims.

I claim:

1. A lighter construction comprising an open-ended casing, a fuel tank mounted within said casing and inwardly from the ends thereof, an igniter mechanism including a file wheel mounted at the upper end of an extended part of said casing and partially within the same, a flint-feed tube disposed at an angle with respect to the vertical and extending through said tank from a point below said igniter mechanism and opening

through the bottom wall of the tank, a spring-fed flint mounted in the upper end of said tube, a screw plug closing the lower end of said tube, said casing having an opening in a sidewall thereof below the tank for access to said screw plug, said tank having a filling opening in its top wall at one side of said igniter mechanism, a removable holder seated in said filling opening, a guide tube depending from said holder, a wick threaded through said holder and said guide tube, said extended part of said casing substantially enclosing the lower half of said file wheel to prevent wind dispersal of the sparks emitted from said flint, a cover mounted for rocking movements on the extended part of said casing, a snuffer cup carried by said cover, said cover being adapted to substantially enclose said igniter mechanism when normally positioned to engage the snuffer cup with the wick end, an actuator extending through said casing and in operative connection with said cover, a push-button mounted in the lower end of said casing and connected to said actuator, said cover being swingable upwardly to lift said snuffer clear of the wick end for its igniting by sparks from said igniter mechanism, upon manipulation of said actuator from said push-button, and spring means cooperative with said actuator and said push-button to effect the automatic return of the parts to normal positions.

2. The lighter construction as in claim 1, with oppositely disposed pinions in operative assembly with said file wheel, and a pusher element mounted in grooves formed in the sidewalls of said cover for imparting motion to said pinions and the file wheel when the cover is actuated to lift said snuffer cup from the wick end.

3. The lighter construction as in claim 1, with said tank having channels formed vertically in opposite sidewalls thereof, and said actuator being substantially U-shaped and having its connected end disposed beneath said tank and engaged by said push-button, the opposite side portions of the actuator extending upwardly through said channels for operative connection with said cover.

4. The lighter construction as in claim 1, with said actuator having its lower end detachably engaged by said push button, and said push button having an inwardly opening chamber for the storage of extra flints therein below the point of its engagement with said actuator.

5. The lighter construction as in claim 1, with oppositely disposed pinions in unitary assembly with said file wheel, and a resilient pusher element removably mounted in parallel grooves formed horizontally in the opposite sidewalls of said cover for imparting motion to said pinions and the file wheel when the cover is actuated to lift said snuffer cup from the wick end.

6. The lighter construction as in claim 1, with said tank having channels formed vertically of opposite side walls thereof, said actuator being substantially U-shape and having its opposite side portions extending upwardly through said channels and its lower connected end frictionally engaged within a chamber formed in the inner side of said push button, upper portions of the opposite side portions of the actuator being made U-shape in cross section to provide vertical channels therein, the connecting walls of said channels having sets of vertically spaced apertures, said cover having oppositely disposed semi-circular portions engaged in the last named channels, and teeth formed in the edges of said semi-circular portions and adapted to be engaged by said apertures during the operative movements of said actuator.

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