July 20, 1948. A. CAMPOS 2,445,513

LIGHTER CONSTRUCTION

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Fig. 1.

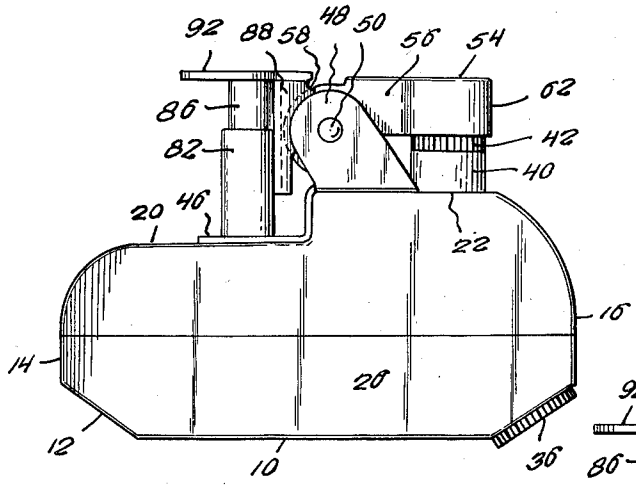


Fig. 2.

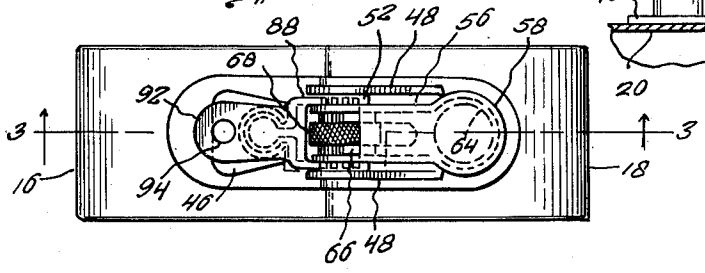


Fig. 3.

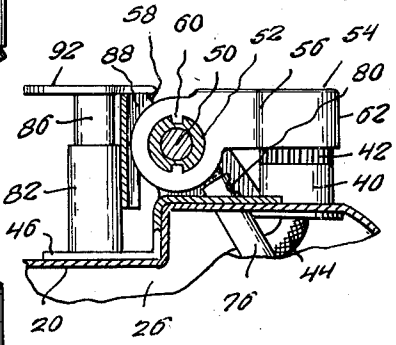
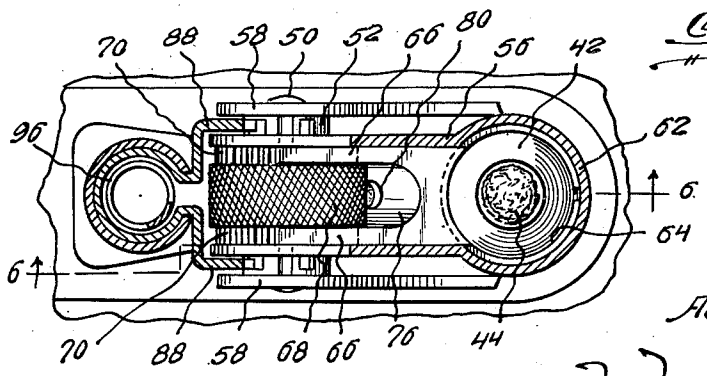


Fig. 5.



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LIGHTER CONSTRUCTION

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Fig. 3.

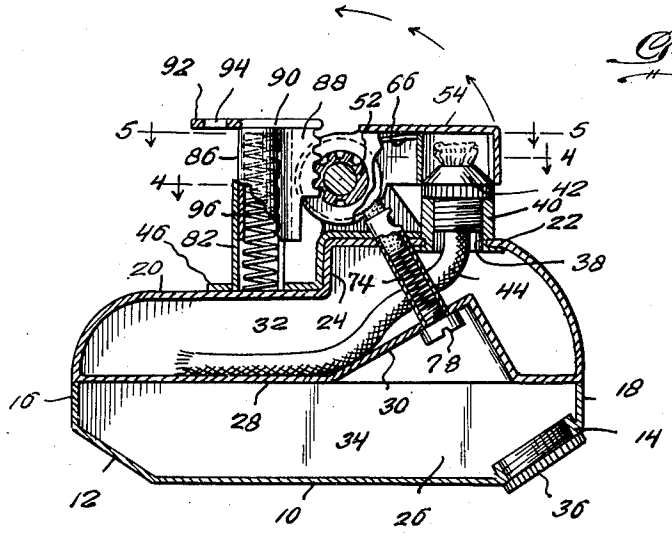


Fig. 4.

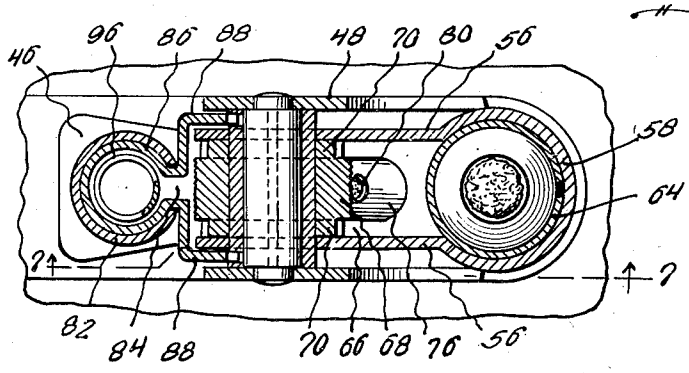
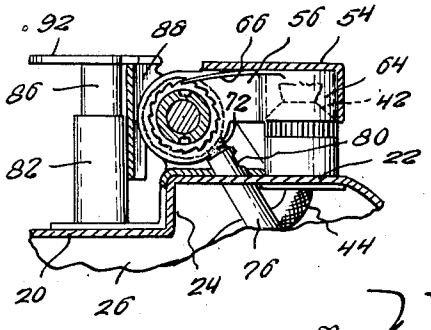


Fig. 6.



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UNITED STATES PATENT OFFICE

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LIGHTER CONSTRUCTION

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Application October 18, 1944, Serial No. 559,267

2 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 make for greater simplicity and efficiency in maintenance and operation; the ignition and extinguishing functions being automatically accomplished by a single hand manipulation of a combined spark producing and flame snuffer mechanism.

Another object of the invention has to do with the provision of a lighter of this kind, wherein the wick is carried in a holder that is removably seated in the filling opening of the body or reservoir and evaporation of the liquid fuel through the wick, during non-use of the lighter, is prevented by the engagement of the flame snuffer over the wick and holder.

A further object of the invention lies in the provision of a lighter as hereinbefore characterized, which embodies a flint and friction wheel sparker device and an actuator mechanism therefor, and a means is associated with the actuator mechanism for gauging a flint to size for proper sliding fit in a tubular holder, within which, the flint is spring tensioned against the periphery of the friction wheel.

Yet another object of the invention is to incorporate the tubular holder for the flint within the body of the lighter in a manner that the insertion of a flint therein is facilitated, the holder being provided with a side opening for the insertion therethrough of an implement to loosen a contained flint, in the event of its failure to properly contact the periphery of the friction wheel through canting or jamming within the holder.

With these and other objects and advantages 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, in accordance with my invention;

Figure 2 is a top plan view;

Figure 3 is a vertical longitudinal section, taken through the line 3—3 on Figure 2, looking in the direction of the arrows;

Figure 4 is a horizontal section, taken through the line 4—4 on Figure 3, looking in the direction of the arrows;

Figure 5 is a view similar to that of Figure 4,

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but is taken through the line 5—5 on Figure 3, looking in the direction of the arrows;

Figure 6 is a fragmentary, vertical, longitudinal section, taken through the line 6—6 on Figure 5, looking in the direction of the arrows; and

Figure 7 is a view similar to that of Figure 6, but is taken through the line 7—7 on Figure 4, looking in the direction of the arrows.

Referring to the drawings, wherein like characters of reference denote corresponding parts in the several views, the lighter, as it is exemplified therein, is comprised in an elongated metal body or casing, constituting a closed receptacle that is shaped to provide a flat bottom wall 10 and like vertical side walls 26. Like end portions of the bottom wall 10 are upwardly angled, as at 12 and 14, and merge into vertical end walls 16 and 18, respectively. The upper end of the angled portion 12 is inwardly curved to merge into a flat top wall portion 20, while the like end of the angled portion 14 is similarly curved to merge into a second flat top wall portion 22 which lies in a plane above the top wall portion 20, the inner ends of the top wall portions 20 and 22 being interconnected by a vertical stepped wall portion 24. The interior of the body or casing is divided by a horizontal partition wall 28 to provide upper and lower chambers 32 and 34, respectively; the upper chamber 32 constituting a reservoir for a liquid fuel and the lower chamber 34 for storage purposes, or the latter may be provided with a weight element (not shown) to prevent easy overturning of the lighter, when it is supported on a flat surface, such as a desk or the like. Access is had to the lower chamber 34 through an opening that is preferably formed in the angled wall portion 14 and normally closed by a removable screw cap or plug 36.

Opening through the top wall portion 22, adjacent its outer end, is an inlet 38, for the introduction of liquid fuel to the reservoir 32; the inlet being provided with an external neck portion or nipple 40, which is interiorly screw threaded for the removable seating therein of a holder or tip 42 for a wick 44, the latter being of a length to extend well into the reservoir and to have its free end rest upon the partition 28, forming the bottom wall of the reservoir.

Secured on the top wall portions 20 and 22 and shaped to conform to the stepped arrangement thereof, is a bracket formed to provide a bottom wall 46 and upstanding ears 48 rising from the opposite side edges of the portion of the bottom wall 46 that overlies the top wall portion 22, of

the body or casing. Stationarily supported at its opposite ends, in the ears 48, is a cylindrical bearing 50 upon which a sleeve 52 is freely rotatable. Extending from the sleeve 52 is an arm formed of sheet metal and shaped to provide a top wall portion 54 and side wall portions 56, the latter extending beyond the inner end of the top wall portion 54 and terminating in circular portions 58 which are apertured to fit over the opposite ends of the sleeve 52 and to which they are splined, as at 60. The outer ends of the side wall portions 56 are connected by a circular end wall 62 which closely encircles the outer side of the neck 40, of the inlet 38 to the fuel reservoir 32, when the arm is normally or inactively positioned. Fitted within the outer end of the arm, in the channel formed between the side wall portions 56, is a cylindrical element 64, which constitutes a snuffer for the wick 44 and is normally seated on the top end of the holder or tip 42, about the wick 44.

Mounted for free rotation on the sleeve 52, between the circular ends 58, of the side wall portions 56 of the snuffer carrying arm, is a friction wheel 68, that is formed in one piece with a pair of oppositely disposed ratchet wheels 70, which are engaged by complemental resilient fingers or pawls 66, projecting laterally from the top end of the snuffer element 64, for the rotation of the same, whenever the sleeve 52 is itself rotated to swing the arm upwardly to lift the snuffer element from about the wick 44. To ignite the wick end at the holder or tip 42, upon the lifting of the snuffer element therefrom, a flint 72 is tensioned in contact with the roughened or serrated periphery of the friction wheel 68 by a coiled spring 74, which, together with the flint, is housed within a tube 76, that extends downward through the reservoir 32, with its upper end opening through the top wall portion 22 and the bottom portion 46, of the body or casing and the angled bracket, respectively, and its lower end through an upwardly angled part 30, of the partition wall 28. By this angular disposition of the tube 76, it is supported in axial alignment with the center of the inlet opening in the angled portion 14, of the bottom wall 10 of the body or casing, so that, upon removal of the closure cap or plug 36, a tool, e. g., a screw driver (not shown), may be inserted inwardly of the chamber 34 to remove and replace a screw closure 78 employed to close the lower end of the tube 76, or to adjust the same to vary the tension of the coiled spring 74 acting on the flint 72. Upon removal of the screw closure 78, the coiled spring 68 may be withdrawn for the insertion of a new flint inwardly of the tube. The upper end of the tube 76, immediately above its point of emergence from the bracket wall 46, is provided with an opening 80 for the insertion of a pin or like implement (not shown) to jiggle the flint 72, in the event of its becoming canted or otherwise jammed within the tube, thus assuring that it will have proper and efficient contact with the periphery of the friction wheel 68.

For the actuation of the igniter and snuffer mechanism thus provided, an actuator device is mounted on the lower stepped portion of the bracket wall 46, and it is comprised in a tubular guide element 82, rising from the securement of its lower end with the bracket wall, and a movable rack member having a tubular part 86 telescopically engaged therewith, the latter having a pair of laterally offset toothed portions 88 engaged with recesses or sockets formed in the periphery of the opposite end portions of the sleeve 52, at the outer sides of the circular parts 58, of the side wall portions 56 of the snuffer carrying arm. The inner side of the tubular guide element 82 is split vertically, as at 84, for the projection outwardly therethrough of the toothed portions 88 of the actuator, i. e., the movable rack member, when the latter is depressed by pressure on a flat finger piece 90 mounted on the top end of the latter. A coiled spring 96 is housed within and between the tubular guide element 82 and the like part 86 of the actuator and normally tensions the latter upwardly of the guide element. The finger piece 90 is formed with a laterally offset part 92, which is provided with an aperture 94 that constitutes a gauge for the selection of flints of proper size to fit the tube 76, the diameter of the aperture being a shade less than that of the tube, to that end.

In the use of the lighter as thus constructed, the reservoir 32 is to be filled with a liquid fuel at the inlet 38, by the lifting of the snuffer 64 and removing the holder or tip 42, together with the wick 44, from the neck 40 of the inlet, while, as before stated, a flint 72 is to be put in place by first removing the closure cap or plug 36 from the inlet to the lower chamber 34 and thereafter removing the screw closure 78 and the spring 74 from the tube 76. After a flint 72 is placed in the tube 76 and in contact with the periphery of the friction wheel 68, the spring 74 and the screw closures 78 and 36 are replaced in the order named.

In the operation of the lighter, pressure on the finger piece 90 depresses the actuator 86 against the tension of the coiled spring 96. With the downward movement of the actuator, the teeth of the rack elements 88 act to rotate the sleeve 52 in a clockwise direction on the bearing 50, which rotative movement swings the snuffer carrying arm in an upward direction and lifts the snuffer 64 from about the wick 44, exposing the end of the latter to sparks generated by the action of the friction wheel 68 on the flint 72. With the upward movement of the arm and the snuffer, the fingers or pawls 66 engage with teeth of the ratchet wheels 70 and rotate them, together with the friction wheel 68, causing the periphery of the latter to abrade the contacted end of the flint 72, the angle of contact of the latter with the friction wheel being such that the sparks therefrom are directed against the end of the wick 44 protruding from the holder or tip 42. Upon release of the finger piece 90, the spring 96 expands and returns the actuator 86 to its initially elevated position. With the upward movement of the actuator, the rack elements 88 reverse the rotative movement of the sleeve, i. e., anti-clockwise, with the result that the snuffer 64 returns to its position of smothering the flame at the wick end, the snuffer coming to rest upon the holder or tip 42.

From the foregoing, it will be obvious that I have provided an improved lighter wherein the igniting of the wick and the extinguishing of the same is performed automatically upon the manipulation of the actuator, when the lighter is held in but one hand and the actuator depressed by a finger thereof. Also, the lighter structure is a compact one and is of a pleasing appearance, while its mechanical refinements are such that it is economical in fuel consumption, and easy to maintain in a highly efficient operative condition.

Having thus fully described a preferred embodiment of my lighter, it will be understood that

any and all changes in its design and construction of its parts that may fall within the scope of the appended claims, may be resorted to, without departing from the spirit of the invention.

I claim:

1. In a cigarette lighter having the usual fuel reservoir, wick, flint, abrading wheel, and snuffer cap, the combination, which comprises a comparatively low casing with a stepped upper surface rectangularly-shaped in plan and with the opposite lower corners of the ends diagonally shaped, said casing having an intermediate horizontally disposed partition with an upwardly extending recess therein in which a surface at one side of the recess extends diagonally in a plane parallel to one of the diagonally-shaped corners of the lower surface at one end of the casing, a diagonally disposed tubular flint-holding chamber with one end mounted in the diagonal surface at one end of the recess and perpendicular thereto and the other end mounted in the stepped upper surface of the casing, a cap threaded in an opening in the diagonal surface at the corner of the casing parallel to the surface of the recess in the partition aligned with the flint-holding chamber, a screw positioned in the recess threaded in the end of the flint-holding chamber, a spring in the flint-holding chamber, the outer end of said flint-holding chamber extending through the upper surface of the casing and having a flint-contacting opening in the side thereof, a threaded nipple extending upward from the upper surface of the casing positioned in close proximity to the end of the flint-holding chamber, a threaded wick-holding bushing in said nipple, an abrading wheel positioned at the end of said flint-holding chamber, a shaft pivotally mounting the abrading wheel on the upper stepped surface of the casing, a snuffer cap carried by said shaft extending over the end of the wick-holding bushing, a tube extending upward from and perpendicular to the upper surface of the casing, a tubular actuator vertically slidable in said tube having a finger piece at the upper end, a spring in said tube urging said actuator upward, and means actuating the abrading wheel and snuffer cap as the actuator is pressed downward.

2. In a cigarette lighter having the usual fuel reservoir, wick, flint, abrading wheel, and snuffer cap, the combination, which comprises a comparatively low casing with a stepped upper surface rectangularly shaped in plan and with the opposite lower corners of the ends diagonally shaped, said casing having an intermediate horizontally disposed partition with an upwardly extending recess therein in which a surface at one end of the recess extends diagonally in a plane parallel to one of the diagonally-shaped corners of the lower surface at one end of the casing, a diagonally disposed tubular flint-holding chamber with one end mounted in the diagonal surface at one end of the recess and perpendicular thereto and the other end mounted in the stepped upper surface of the casing, a cap threaded in an opening in the diagonal surface at the corner of the casing parallel to the surface at the end of the recess of the partition aligned with the flint-holding chamber, a screw in the recess threaded in the end of the flint-holding chamber, a spring in the flint-holding chamber, the outer end of said flint-holding chamber extending through the upper surface of the casing and having a flint-contacting opening in the side thereof, a threaded nipple extending upward from the upper surface of the casing positioned in close proximity to the end of the flint-holding chamber, a threaded wick-holding bushing in said nipple, an abrading wheel with ratchet teeth on opposite sides thereof positioned at the end of said flint-holding chamber, a shaft pivotally mounting the abrading wheel on the upper stepped surface of the casing, a snuffer cap pivotally mounted through said shaft extending over the end of the wick-holding bushing, a tube with a slot in one side extending upward from and perpendicular to the upper surface of the casing, a tubular actuator vertically slidable in said slotted tube having a finger piece at the upper end with gear racks extending therefrom through the slot in the tube and meshing with the ratchet teeth of the abrading wheel, and a spring in said actuator and tube.

ADOLPH CAMPOS.

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