

May 30, 1950

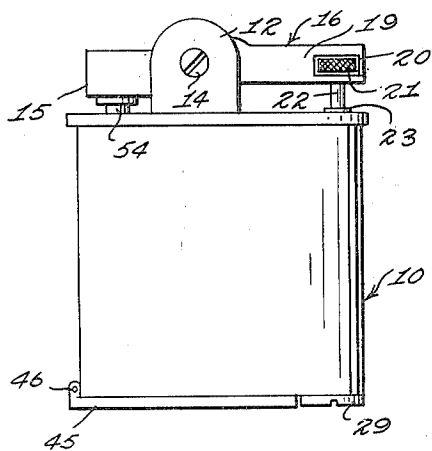
E. D. ROGERS

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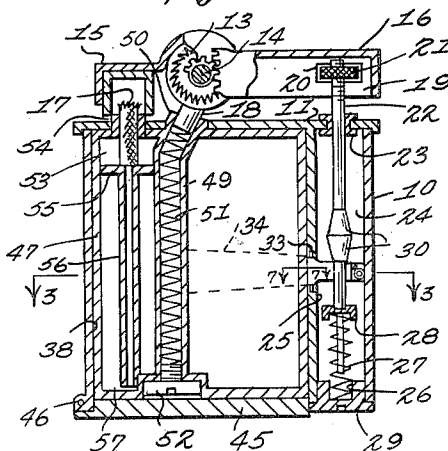
CIGARETTE LIGHTER

Filed Aug. 20, 1948

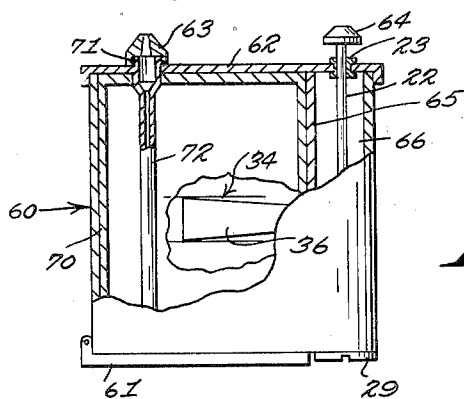
*Fig. 1.*



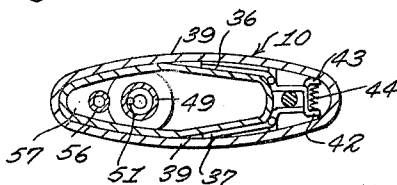
*Fig. 2.*



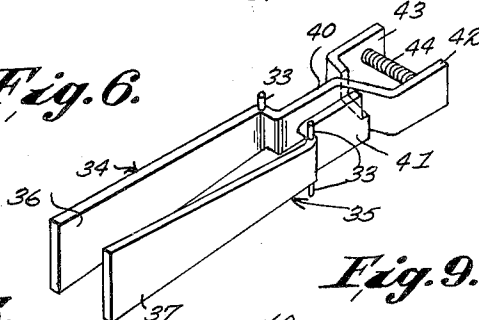
*Fig. 8.*



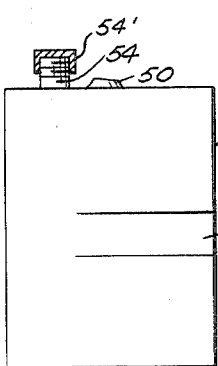
*Fig. 3.*



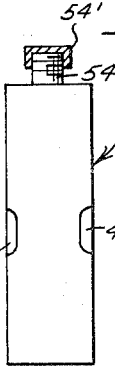
*Fig. 6.*



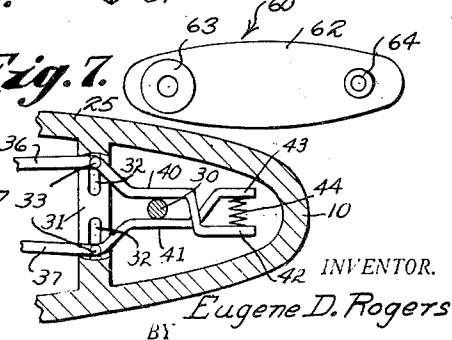
*Fig. 4.*



*Fig. 5.*



*Fig. 7.*



McMorrow, Rierman + Davidson  
ATTORNEYS

## UNITED STATES PATENT OFFICE

2,509,251

## CIGARETTE LIGHTER

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4 Claims. (Cl. 67-7.1)

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My invention relates generally to cigarette lighters, wherein a striking wheel or the like engages the flint or the like to discharge sparks onto a wick impregnated with gaseous liquid fuel. Such lighters are well known, and generally utilize a relatively long wick which extends into a fuel compartment whereby the wick is constantly supplied with liquid fuel by capillary action. Such lighters usually include a cover for the upper end of the lighter or a cap member enclosing the wick to limit the evaporation of fuel when the lighter is not being used. However, such covers and/or caps are seldom, if ever, completely effective in preventing evaporation of the fluid in the wick, whereby evaporation takes place constantly and imparts an objectionable odor to articles carried in the user's purse or pocket, along with the lighter. For this reason, many people who would otherwise use such lighters object to them and refrain from using them.

A further objection to present-day lighters of this type is that when the fuel supply becomes exhausted, the fuel container must be refilled from a bottle or can of fuel. Inasmuch as most lighters give no indication of when the fuel supply is low, a user is required to keep several cans or bottles of fuel at different locations so that the fuel supply can be replenished at almost any time. Thus, a user has to have a supply of fuel at his home, at his office, and in his car, if he is to refill the lighter as soon as it becomes exhausted. Likewise, the user must carry a supply of fuel with him on extended trips, and thereby risk the danger of the same spilling and contaminating his luggage with the fumes. Also, the filling of a lighter of this type is generally an untidy job and frequently results in too much fuel being supplied to the reservoir for the same, whereby the flint becomes saturated and will not operate properly. Obviously, the manual refilling of the reservoir in this manner amounts to a fire hazard, as does the storage of reserve supplies of fuel about the home or office.

With the foregoing in view, it is an object of my invention to provide an improved pocket lighter of the class described.

A further object is to provide an improved pocket lighter of the class described wherein the fuel compartment of the lighter is adapted to contain a replaceable cartridge of fuel.

A further object is to provide an improved lighter which comprises a main fuel compartment of relatively large size, an auxiliary fuel compartment of relatively small size, and in communication with the main compartment, and wherein the

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wick is carried solely in the auxiliary compartment.

A further object is to provide an improved cigarette lighter such as that last described and wherein fuel is pumped from the main compartment into the auxiliary or wick compartment as needed, and thereafter returned to the main compartment until such time as the lighter is again used.

A further object is to provide an improved lighter such as that last described wherein fuel is supplied to the main compartment by means of a replaceable fuel cartridge.

A further object is to provide an improved cigarette lighter comprising a casing mounting a striking wheel or the like, means for actuating the striking wheel, and a replaceable cartridge insertable in said casing and mounting a wick, a flint, said cartridge including a main fuel compartment and an auxiliary or wick compartment in communication with the main fuel compartment, and said casing including means operated by the striking wheel operating means for compressing the walls of the main compartment, whereby to inject a measured amount of fuel into the auxiliary or wick compartment simultaneously with the actuation of the striking wheel.

Other objects and advantages reside in the particular structure of the invention, combination and arrangement of the several parts thereof, the method or mode of operating the same, and will be readily understood by those skilled in the art upon reference to the attached drawing in connection with the following specification, wherein the invention is shown, described and claimed.

In the drawing:

Figure 1 is a side view in elevation of a preferred form of the lighter according to the invention;

Figure 2 is a longitudinal vertical sectional view of the lighter;

Figure 3 is a horizontal sectional view taken substantially on line 3-3 of Figure 2;

Figure 4 is an elevational view of the fuel cartridge;

Figure 5 is an end view of the cartridge looking from the left of Figure 4;

Figure 6 is a perspective view of the fuel-expelling means, apart from the related structure;

Figure 7 is an enlarged fragmentary horizontal sectional view taken substantially on the plane of the line 7-7 of Figure 2, parts being omitted;

Figure 8 is an elevational view partly in longitudinal vertical section of a modification of the lighter;

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Figure 9 is a top plan view of the structure shown in Figure 8.

Referring specifically to the drawing, wherein like reference characters have been used throughout the several views to designate like parts, and referring at first to the form of invention disclosed in Figures 1 to 7, inclusive, 10 designates any suitable lighter casing having a top wall 11 mounting a pair of laterally-spaced ears or the like 12 between which is mounted any suitable or well known striking wheel 13 on a pintle 14. A wick cap 15 is fixed to pintle 14 for rotation therewith. The pintle 14 may have cogs fixed thereto which are in mesh with rack teeth formed on the front edges of the flanges 19 of the thumb lever 16. Thus, with the wick cap 15 fixed to pintle 14, the cap will be swung upwardly to uncover the wick 17, while the striking wheel 13 is simultaneously partially rotated to strike a spark from the flint 18. The structure just described is disclosed in Reissue Patent No. 19,023, dated December 12, 1933, and forms no part of the present invention. Obviously, other suitable or well known means for accomplishing the same purpose could be substituted.

The top wall 11 of the casing is apertured forwardly of the striking wheel 13 for the extension therethrough of a wick 17. Likewise, the top wall 11 is apertured below the striking wheel for the extension therethrough of a flint 18.

The thumb lever 16 is formed with a pair of depending and laterally-spaced flanges 19 which in turn are formed with laterally-aligned slots 20 through which protrude marginal portions of a nut 21. The nut 21 is preferably circular and is threaded upon the upper end of a piston 22. The lower portion of the piston 22 is smooth and unthreaded and slides through the top wall 11 for the casing. Any suitable means, such as the grommet 23, may line an opening in the top wall 11, whereby to provide a slide bearing for the piston 22. The lower portion of the piston 22 extends into a compartment 24 formed in the casing and defined by a vertical wall 25. An expansive coil spring is interposed between the cup-shaped lower end 28 of the piston 22, and a recess 26 formed on the inner surface of any suitable closure 29 for the bottom of the compartment 24. An intermediate portion of the piston 22 is formed with a boss 30 comprising a downwardly-directed frusto-conical cam. As best seen in Figure 7, the partition-providing wall 25 is formed with an opening 31 therethrough slightly below the boss 30. Edge portions of the opening 31 are formed with vertically-directed grooves 32 for a purpose to be apparent presently. The grooves or sockets 32 are formed in upper and lower marginal portions of the opening 31 and seat the upper and lower ends, respectively, of pivot-providing pins 33 of a pair of levers 34 and 35. The levers 34 and 35 extend forwardly and rearwardly through the opening 31 in the wall 25 and include forwardly-directed and relatively long lever arms 36 and 37 which extend forwardly into a cartridge chamber 38 of the casing 10. As best seen in Figure 3, the lever arms 36 and 37 are laterally spaced and aligned and are normally positioned closely adjacent the side walls 39 of the casing 10. The levers 34 and 35 include substantially straight portions 40 and 41 which extend rearwardly of the partition 25 into the compartment 24 in laterally-spaced and aligned relation. Rearwardly of the straight portions 40 and 41 the levers 36 and 37 are crossed and laterally outwardly offset to provide relatively widely-spaced free ends 42

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and 43, respectively, providing abutments for a horizontally-disposed expansive spring 44. As is readily apparent from Figures 3 and 6, the spring 44 loads the levers 34 and 35 for pivotal movement on their pins 33 so that the lever arms 36 and 37 are normally loaded in their laterally-outmost positions closely adjacent the side walls 39 for the casing 10. The straight portions 40 and 41 of the levers extend across the compartment 24 just below the cam 30 and on opposite sides of the piston 22. The nut 21 on the upper end of the piston 22 adjusts the height of the cam 30 above the straight portions 40 and 41 of the levers. Likewise, the nut 21 on account of its seating in the slots 20 provides a connection between the piston 22 and the thumb lever 16, whereby when the latter is depressed, the piston 22 is carried downwardly also. Such downward movement of the piston moves the cam 30 between the straight portions 40 and 41 of the levers whereby to spread such straight portions laterally outwardly and thereby move the lever arms 36 and 37 laterally inwardly toward each other. Upon release of thumb pressure upon the thumb lever 16, the spring 27 returns the piston 22 and thumb lever 16 to the operative position.

The cartridge chamber 38 is closed at the top by the top wall 11 aforesaid, and laterally by the side walls 39 and the partition-providing wall 25. The bottom of the cartridge chamber is closed by any suitable closure 45 which may be pivotally secured to the casing by any suitable pivot-providing hinge means 46. As best seen in Figures 2 to 5, inclusive, the cartridge chamber 38 is normally filled by a fuel cartridge 47. The fuel cartridge 47 has an external shape substantially complementary to the shape of the cartridge chamber 38 and includes side walls formed with grooves 48 receiving the lever arms 36 and 37 therein. Likewise, it should be understood that the side walls of the fuel cartridge 47 are relatively thin, whereby upon inward movement of the lever arms 36 and 37, the side walls of the cartridge are moved toward each other, whereby to compress the interior space of the cartridge in a well known manner. As best seen in Figures 2 and 3, the cartridge 47 is formed with a generally vertically-directed tube 49, the upper end of which opens through an upwardly-directed annular boss 50 formed in the top wall of the cartridge and adapted to extend through a complementary opening formed in the top wall 11 of the casing below the striking wheel 13. The flint 18 is slidable in the tube 49 and is normally urged into operative engagement with the striking wheel 13 by means of an expansive coil spring 51 in a well known manner. The lower end of the tube 49 may be closed in any suitable manner, as by the cap screw 52, which is preferably counter-sunk in the bottom wall of the cartridge whereby to clear the inner surface of the closure 45 for the casing. The upper forward corner of the cartridge 47 is formed to provide a relatively small wick compartment 53, the top of which is provided with a vertically-directed collar 54 receiving the wick 17 therein, and which collar is slidable through the opening aforesaid in the top wall 11 of the casing. Such collar is positioned just below the closure cap 15 for the wick. The bottom wall 55 for the wick compartment 53 opens into a tubular conduit 56 which depends therefrom and which opens into the main fuel compartment 56 adjacent the floor of the cartridge 47. As is readily apparent from Figure 2, the wick 17 is relatively short and nor-

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mally is seated across the opening connecting the wick chamber 53 with the conduit 56. Thus, any fluid arising upwardly in the conduit 56 must of necessity contact the lower end of the wick 17 and be drawn upwardly therethrough by capillary action. Likewise, any excess fluid in the wick 17 will tend to drain therefrom downwardly through the conduit 56 into the fluid chamber 57.

In operation of the device, when the thumb lever 15 is depressed, the piston 22 moves downwardly and the cam 30 actuates the lever arms 36 and 37 laterally inwardly toward each other. At the same time, the striking wheel 13 is rotated to strike sparks from the flint 18, while the wick cap 15 is elevated to permit the sparks to encounter the wick 17 and light the same, all in a well known manner. The inward movement of the lever arms 36 and 37 compresses the sides of the cartridge 47 and forces fluid in the fuel chamber 51 of the cartridge upwardly through the conduit 56 and into the wick chamber 53. Such fluid moves upwardly through the wick 17, whereby to form a gaseous mixture, ignited by the spark from the flint 18. Upon release of pressure on the thumb lever 15, the reverse movement will occur which will create a lowered air pressure in the wick chamber 53 tending to suck any excess fluid in the same and in the wick 17 downwardly through the conduit 56 into the main fuel compartment 57. Thus, no liquid is retained in the wick chamber 53 save a superficial amount not withdrawn from the wick 17. Thus, evaporation of such fluid in the wick will be negligible and will not create an offensive odor in the user's clothes or luggage. It should be noted, moreover, that the conduit 56 is of relatively small size, whereby evaporation upwardly therethrough is likewise negligible. At the same time, the conduit 56 is not so small as to permit a constant capillary action and flow of fluid upwardly therethrough and into the wick 17.

In the arrangement just described, the wick 17 will normally be supplied with the cartridge 47 and, if necessary, the flint 18, spring 51 and cap screw 52 may likewise be formed as part of the cartridge. However, these last-mentioned parts could obviously be separate as the tube 49 mounting the flint and spring is sealed from the interior of the fluid compartment 57.

Figures 8 and 9 illustrate a modified form of the device which is primarily adapted to be used as a perfume dispenser. In this form of the device, a casing 60, generally similar to the casing 10, includes a hinged bottom 61 corresponding to the closure 45 and closing the bottom of a compartment for a perfume-containing cartridge 70. The top wall 62 for the casing 60 includes a nozzle 63 threadedly engaging a vertical collar 71 extending upwardly through an opening formed in the top wall 62 from the cartridge 70. The collar 71 merges into a downwardly-directed dispensing conduit 72 opening into the perfume cartridge 70 adjacent the bottom thereof. Likewise, the side walls of the cartridge 70 are recessed to receive the lever arms 36 and 37, only one of which is shown. The interior of the casing 60 is provided with a partition 65 which extends vertically and corresponds to the partition 25 of the first-described form. Likewise, a piston 22 is slidable through the top wall 62 of the casing in any suitable bearing 23. The upper end of the piston 22 is provided with a thumb piece 64. The piston 22 extends into a compartment 66 defined by the partition 65 and actuates the levers 36 and

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37 in the manner previously described. It is obvious that in this form of the invention, depression of the piston 22 will result in compression of the side walls of the cartridge 70, whereby a measured amount of perfume is dispensed outwardly of the nozzle 63 through the conduit 72 and collar 71. If desired, the enlarged upper portion of the conduit 72 may contain a wick or the like, not shown, to prevent perfume from being squirted through the nozzle 63 violently.

While I have shown and described what are now thought to be the preferred forms of the invention, it is obvious that the same is susceptible of other forms and expressions. Consequently, I do not limit myself to the precise structures shown and described hereinabove except as hereinafter claimed.

I claim:

1. A fluid-dispensing device, comprising a hollow outer casing, a flexible walled hollow cartridge receivable in said casing and adapted to contain a fluid, a plunger extending inwardly of said outer casing adjacent said cartridge, a pair of interlinked lever arms in said outer casing, said arms being operatively associated with said plunger, said lever arms spanning opposite sides of said cartridge, said lever arms being adapted to be actuated by movement of said plunger in one direction to squeeze opposite walls of said cartridge together, said cartridge being formed with a dispensing orifice, a wick operatively associated with said orifice, and means for dispensing a measured amount of fluid from said cartridge to said wick upon each actuation of said plunger.

2. In a cigarette lighter, the combination with a hollow outer casing mounting a wick, a flint, a striking wheel and a thumb lever adapted upon depression thereof to actuate said wheel and flint to light said wick, of a hollow flexible walled fluid fuel cartridge receivable in said casing, a plunger slidable in said casing adjacent said cartridge, a pair of lever arms pivoted in said casing and straddling said cartridge, said plunger being operatively connected to said thumb lever for actuation thereby, said plunger being operatively associated with said lever arms whereby to compress the same and said cartridge upon each actuation of said plunger in one direction, and said cartridge including means for delivering a measured amount of fuel to said wick upon each compression of said cartridge.

3. In a cigarette lighter, the combination with a hollow outer casing mounting a wick, a flint, a striking wheel and a thumb lever adapted upon depression thereof to actuate said wheel and flint to light said wick, of a hollow flexible walled fluid fuel cartridge receivable in said casing, said cartridge including a relatively large main fuel compartment and a relatively small auxiliary fuel compartment, said auxiliary fuel compartment receiving said wick therein, a relatively small orifice providing communication between said compartments, a plunger slidable in said casing adjacent said cartridge, a pair of lever arms pivoted in said casing and straddling said main fuel compartment of said cartridge, said plunger being operatively connected to said thumb lever for actuation thereby, said plunger being operatively associated with said lever arms whereby to compress the same and said main fuel compartment of said cartridge upon each actuation of said plunger in one direction, and said main fuel compartment of said cartridge being adapted to deliver a measured amount of fuel to said auxiliary compartment in said wick upon each compression thereof.

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4. A liquid dispensing device, comprising an outer casing provided with an internal wall forming first and second chambers, a resilient walled receptacle mounted within the first chamber of the outer casing and adapted to contain a liquid, the sides of the resilient walled receptacle being spaced from the sides of the first chamber, liquid discharge means connected with the resilient walled receptacle and extending to the exterior of the outer casing, a reciprocatory plunger mounted upon the outer casing and extending into the second chamber and having a part disposed exteriorly of the outer casing operable to move the plunger into the second chamber, a resilient element mounted within the second chamber to oppose inward movement of the plunger, said internal wall having an opening connecting the first and second chambers, a pair of opposed levers mounted within the opening of the internal wall and pivotally connected with the internal wall, the levers extending into the first chamber between the sides of such chamber and the sides of the resilient walled receptacle, the levers having parts extending into the second chamber and receiving the reciprocatory plunger

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between them, resilient means connected with the parts of the levers in the second chamber for drawing them together and serving to separate the levers adjacent to the sides of the resilient walled receptacle, and an enlarged cam mounted upon the plunger to enter between the parts of the levers in the second chamber to spread them, the spreading of the parts causing the levers to squeeze the sides of the resilient walled receptacle inwardly for discharging liquid therefrom through the liquid discharge means.

EUGENE D. ROGERS.

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