Sept. 15, 1953 E. P. GAILMARD, SR., ET AL 2,651,931

CIGARETTE LIGHTER

Filed July 3, 1950 2 Sheets-Sheet 1

Fig. 1.

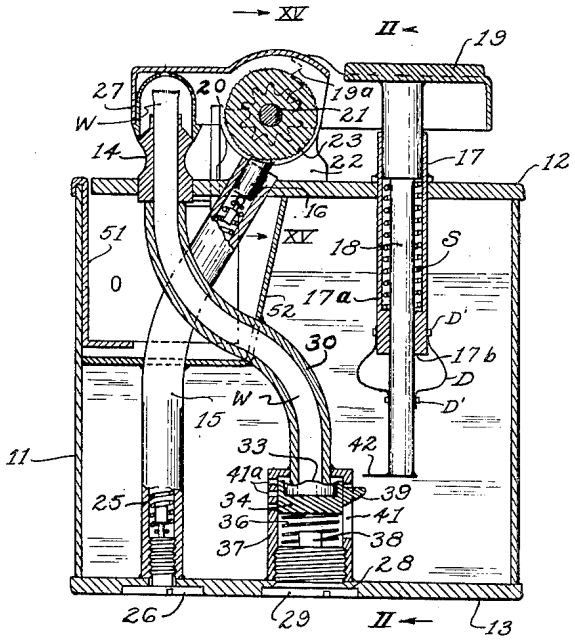


Fig. 2.

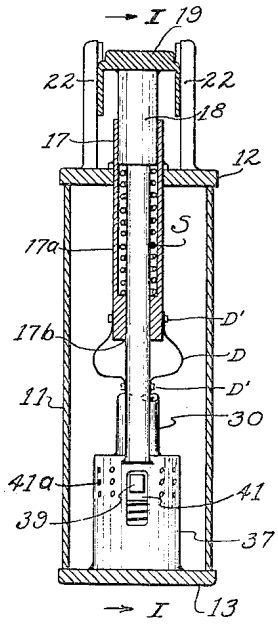


Fig. 3.

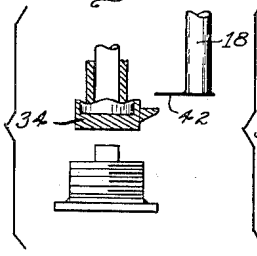


Fig. 4.

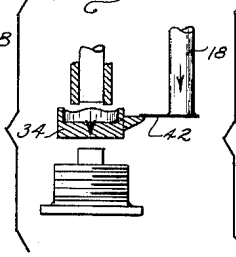


Fig. 5.

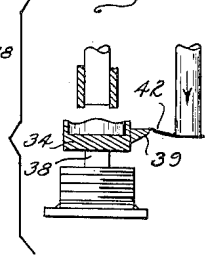


Fig. 6.

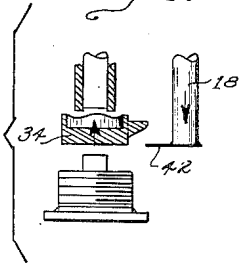


Fig. 7.

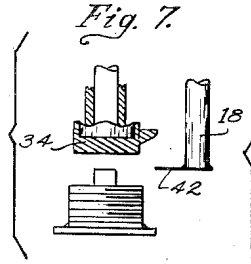


Fig. 8.

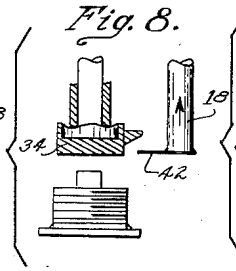


Fig. 9.

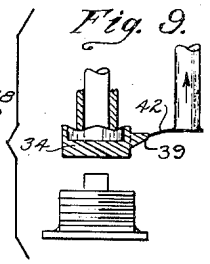
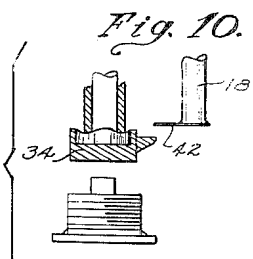


Fig. 10.



Inventors:
Eugene P. Gailmard, Sr.
Eugene P. Gailmard, Jr.

Sept. 15, 1953 E. P. GAILMARD, SR., ET AL 2,651,931

CIGARETTE LIGHTER

Filed July 3, 1950 2 Sheets-Sheet 2

Fig. 11.

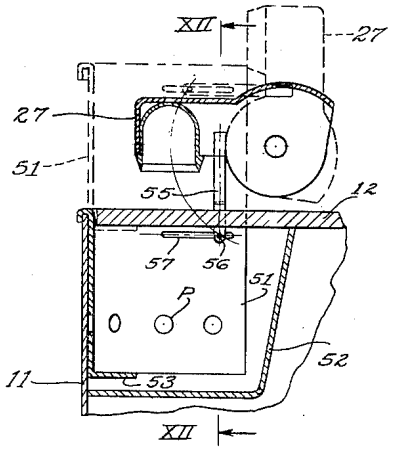


Fig. 12.

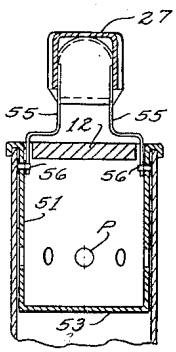


Fig. 13.

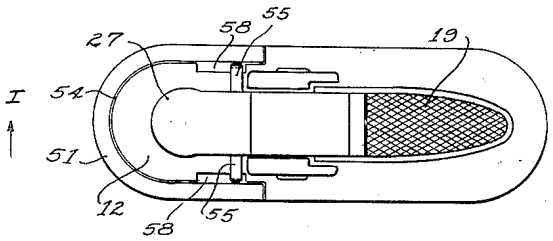


Fig. 15.

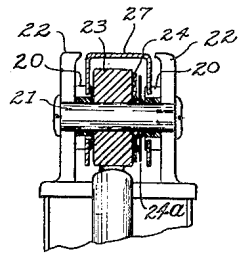


Fig. 14.

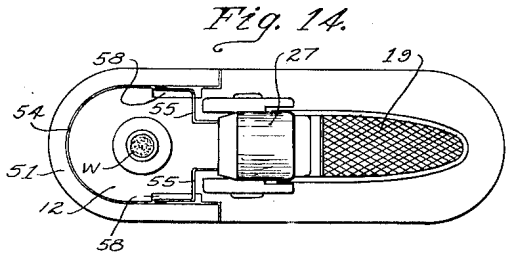
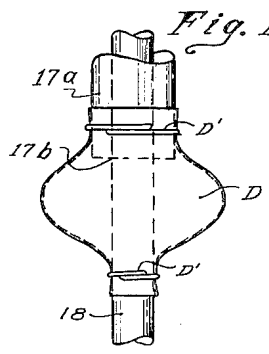


Fig. 16.



Inventors:

Eugene P. Gailmard, Sr.

Eugene P. Gailmard, Jr.

Patented Sept. 15, 1953

2,651,931

UNITED STATES PATENT OFFICE

2,651,931

CIGARETTE LIGHTER

Eugene P. Gailmard, Sr., Chicago, Ill., and Eugene P. Gailmard, Jr., Munster, Ind.; said Gailmard, Jr., assignor to said Gailmard, Sr.

Application July 3, 1950, Serial No. 171,898

5 Claims. (Cl. 67—7.1)

1

The present invention is directed to improvements in devices used for lighting cigars and cigarettes and more particularly to so-called pocket lighters adapted to be carried in a pocket or purse, although its more salient features may be very advantageously incorporated in so-called table or desk lighters customarily used in the home or office.

Devices of this general character are now widely known and used and are available in great variety on the open market. Even the best known and most used types, however, are partially or wholly incapable of uniformly satisfactory performance and service except under optimum conditions, which conditions cannot be consistently maintained with presently known devices and which include, among other considerations—

(1) A clean, dry flint or other pyrophoric element;

(2) A dry spark wheel or other abradant for striking sparks from the flint;

(3) A moist, but not wet, wick having the proper charge or "prime" of fuel to cause it to ignite readily and to burn freely with a clear, steady flame.

Presently known devices of this character are more or less seriously defective with regard to the foregoing essentials. Probably the most common defect is over-saturation and "flooding" of the wick and surrounding parts when filling the fuel chamber. Another similar fault common to such lighters is forced leakage through the wick, caused by vaporization and expansion pressures. At such times the lighter functions imperfectly, if at all, until dried out either by burning off the excess fuel from the wick and other parts, or by evaporation. The first is dangerous; the second keeps the lighter out of service for an indefinite length of time, depending upon the degree of flooding.

Another problem presented by such devices is that of shielding the flame against extinguishment as in out-of-doors use. Known devices employ either a fixed type or a movable type of windshield. The fixed type comprises a permament part of the casing structure extending above the exposed wick. This necessarily increases the overall height and bulk of the assembly and its cover member and compels use of the shield whether needed or not. The movable type shield is adapted to be raised and lowered manually and has never proven satisfactory because of difficulty of manipulation, resulting in broken fingernails and soiled, or even burned, fingers.

2

The most important problem confronting this art and industry, however, and never before satisfactorily solved in such devices, is that of maintaining in the wick at all times a constant, well balanced prime of its fuel so that it will provide a strong, steady flame each time it is ignited.

Presently known lighters reach maximum efficiency for only a very few days of the interim between servicings, due to lack of fuel balance or priming control. There is no presently known lighter capable of maintaining a uniform moisture prime or balance in the wick from the time of its first fueling until refueling again becomes necessary.

It is therefore a primary object of the present invention to maintain the essential working parts of a lighter of the class described in optimum operating condition.

Another important object of the invention is to prevent excess fuel from reaching and escaping through the wick, thereby eliminating possibility of leaking or flooding and necessity of frequent refueling and drying out of the working parts.

Still another important object of the invention is the adjustably controlled metering or admission of fuel to the wick in predetermined fixed quantity and only as needed by the wick to sustain combustion.

Another important object of the invention is to maintain the wick at all times completely out of uncontrolled contact with the main fuel supply and to so control the admission of fuel to the wick that fuel consumed by burning at the top of the wick at each lighting thereof is simultaneously replaced by a compensating amount admitted to the bottom of the wick, thus preserving a balanced prime of moisture in the wick.

It is a further important object of this invention to maintain the wick normally isolated from its fuel source and to mechanically regulate and control all fuel-wick contact in such manner that the wick is caused to acquire its fuel supply incrementally, in successive operations of the lighter, in accordance with the ability of the wick to absorb and retain fuel by capillary attraction.

A still further object of the invention is to provide an automatically movable windshield which may readily be rendered operative or inoperative at the option of the user.

Still another object of the invention is the provision of means whereby the outer tip of the wick may be exposed and ignited, the flame shielded, and a fixed amount of replenishing fuel made available to the lower end of the wick simultaneously, all by a simple one-finger pressure operation.

The invention further contemplates, in connection with the advantages and improvements above enumerated, simplicity of working parts, ease and economy of manufacture and assembly, long usage without servicing or replacement of parts or materials, extreme economy of fuel, and complete convenience and facility of servicing and operation.

Other and further advantages will become apparent to those skilled in the art upon consideration of the following description, taken in conjunction with the accompanying drawings illustrating a preferred embodiment of this invention.

On the drawings:

Figure 1 is an enlarged central vertical sectional view of a lighter constructed in accordance with the present invention, taken along the line I—I of Figures 2 and 13;

Figure 2 is a transverse sectional view of the impeller and showing the valve mechanism, taken along the line II—II of Figure 1;

Figures 3 through 10 represent a series of somewhat schematic views showing the sequence of relative movements of the valve anvil or striker plate and the impeller spring arm for triggering the anvil to trip the valve, through a complete cycle of operation, the valve closure return spring being omitted for clarity of illustration;

Figure 11 is an enlarged central vertical sectional view of the windshield and snuffer cap portion of the lighter as shown in Figure 1, with unrelated parts omitted for clarity of illustration;

Figure 12 is a transverse sectional view of the snuffer cap and windshield portion of the lighter taken along line XII—XII of Figure 11, with unrelated parts omitted;

Figure 13 is a top plan view of the lighter in closed position;

Figure 14 is a top plan view of the lighter in opened position;

Figure 15 is a transverse sectional view showing the various operating mechanisms for raising the snuffer cap and rotating the spark wheel, taken along the line XV—XV of Figure 1; and

Figure 16 is an enlarged fragmentary elevational view showing the diaphragm sealing arrangement for the impeller shaft.

As shown on the drawings:

In Figure 1 is shown a doubly enlarged view of a preferred embodiment of the present invention adapted to a pocket lighter of modern type, embodying the single action principle of operation for igniting and extinguishing the same.

The structure of Figure 1 has a casing 11 of generally flattened ovate configuration and having a top plate 12 and a bottom plate 13, soldered, brazed or otherwise suitably affixed thereon. The top plate 12 has a first opening in which is seated an upstanding neck or collar portion 14 for receiving a wick W; a second opening through which the end of a tube 15 projects, this tube holding a flint or other pyrophoric element 16 projected through its open end; and a third opening through which the open neck portion 17 of a tube 17*a* extends. In this tube an elongated impeller or power shaft 18 is mounted for vertical reciprocation.

The impeller shaft 18 is moved downwardly by thumb or finger pressure and upwardly by a coil spring S surrounding that portion of the shaft positioned immediately below the top plate 12 of casing 11. Return spring S is seated in the metal tube 17*a*, depending freely for a short distance into the interior of casing 11.

Impeller shaft 18 is of slightly enlarged section at its upper end to retain spring S seated in its proper position in tube 17*a*. This enlarged upper section of shaft 18 may be centrally bored and threaded, if desired, for ease and facility of assembly with its reduced lower end section, which projects through a central aperture 17*b* in the bottom of tube 17*a*.

Impeller shaft 18 is adapted to be depressed by a thumb plate 19 welded or otherwise suitably affixed over the top of shaft 18. Plate 19 is provided with racks 19*a* engaging pinion gears 20 journaled on an axle 21 carried between upstanding lugs 22—22 extending upwardly from opposite sides of the top plate 12 of casing 11. Axle 21 also carries a so-called spark wheel or abrading element 23, the abrading surface of which rests against the top of the flint 16. Flint 16 is constantly urged upwardly into yielding contact with said spark wheel 23 by a coil spring 25 passing upwardly through tube 15, which extends from the bottom plate 13 through the interior of casing 11 and terminates slightly above the top of plate 12. The bottom of tube 15 is screw-threaded to receive a closure member 26 on which spring 25 is seated.

As best shown in Figures 1 and 15, spark wheel 23 is provided on a side face thereof with ratchet teeth 24 for cooperation with a pawl 24*a* also mounted on axle 21. A snuffer 27, carrying the pinion gears 20 in its rear side jaws and rotatably mounted on axle 21, has its outer or cap end positioned over the wick W in wick collar 14. Upon downward pressure being exerted against thumb plate 19, the rack and pinion gears 19*a* and 20 lift the snuffer 27 from the top of wick W and the spark wheel 23 is rotated by pawl 24*a* and the ratchet teeth 24 (see Fig. 15) to strike sparks from the flint 16 to ignite wick W. Upon release of pressure, thumb plate 19 is urged upwardly by impeller shaft 18 under the bias of its return spring S, thereby causing snuffer 27 to descend over the top of wick W to extinguish the flame.

The structure and operation of the lighter thus far described are conventional and known to the prior art, with the exception that the power or impeller shaft of the prior art terminates at the bottom of tube 17*a*, which is closed at that point to prevent ingress of fuel.

In the present invention, as above stated, the tube 17*a* has a central opening 17*b* to allow the elongated end section of impeller shaft 18 to project therethrough. To prevent leakage through opening 17*b* along impeller shaft 18 it is, of course, necessary to seal off the opening 17*b*, which may be accomplished by various known expedients.

By way of illustration only we have shown in Figures 1 and 16 how the opening 17*b* may be positively sealed off by means of a sealing diaphragm D of neoprene, plastic, or other liquid-proof collapsible material clamped as by snap rings D'—D' around the lower end of tube 17*a* above opening 17*b* and around impeller shaft 18 below the opening 17*b*. As is well understood in sealing closures of this type it is only necessary that diaphragm D be sufficiently extensible to accommodate the downward motion of impeller 18, since it resumes its own normally collapsed condition upon retraction of impeller 18 to its original position.

Prior art lighters of the class described usually

employ a woven cotton or other fabric wick six inches or more in length, freely disposed in a packing of cotton or other absorbent material closely packed inside the casing 11, the packing and wick being saturated with a volatile fluid. So long as this packing is moist the wick draws therefrom by capillary action such moisture as it can, varying, of course, according to the amount of moisture in the packing material, which becomes less and less each day following refueling. Repacking and refueling is accomplished through an enlarged opening 28 in the bottom plate 13, which is closed by a screw-threaded closure member 29.

For the illustrated embodiment of the present invention it is preferred to use a wick of spun glass fibers and of relatively short length, say of about 1½ to 2 inches, although a wick of asbestos or other suitable material may be used if desired. Glass fiber is preferred because it does not burn or char, therefore lasts indefinitely and constitutes, in effect, a part of the permanent assembly. No cotton or other packing material is used in the casing 11 which, in the present invention, normally constitutes a reservoir or chamber for a body of free fuel in liquid form. Filling of the reservoir is easily and conveniently accomplished through opening 28 in the bottom plate 13 upon removal of the closure member 29.

As shown in Figure 1, the wick W is enclosed in a metal tube 30 bent into a curved or serpentine configuration and extending downwardly into the interior of the casing to a short distance above the bottom thereof. The upper end of tube 30 terminates in wick stem or collar 14 in top plate 12 of casing 11 and the wick W extends the full length of this tube, plus about ⅛" to ¼" projecting above the top of collar 14, where it is maintained closed to atmosphere by the snuffer cap 27. It will also be noted that the lowermost end of the tube 30 terminates at a point subjacent the downwardly extended impeller shaft 18 when the latter is in its uppermost retracted or "at rest" position.

The open lower end of wick tube 30 seats tightly on the central crowned or domed portion 33 of a valve closure member 34 which is made of metal, bonded or otherwise suitably affixed as by short studs to the upper crowned portion 33, which is preferably composed of a very hard rubber, plastic, or other suitable material which, in case of eventual wear, will simply form a tighter seal with the open end of tube 30.

The valve closure member 34 seats in a short barrel or cylinder 37 formed by a walled enclosure extended upwardly from around the inner periphery of the enlarged opening 28 in the bottom plate 13 of casing 11. Threaded closure member 29 for this opening carries an integral stop pin 38 extending upwardly through the center of a short but relatively powerful spring 36 to a point below the top of said spring which, in turn, terminates against the base portion of closure member 34 and urges the same upwardly into tight sealing engagement with the open end of wick tube 30. The height of stop pin 38 may be made adjustable, if desired, as by screw-threading it through the center of closure member 29 in known manner, and for a purpose which will hereinafter appear.

The metal lower portion of the valve closure member 34 has an extended nose or anvil portion 39, preferably of hardened steel to resist wear, projected through a vertical slot 41 in cylinder 37 and adapted to move up and down in

said slot while the body portion of closure member 34 moves in similar manner within the confines of cylinder 37.

It will here be noted that cylinder 37 is filled with liquid so long as there is any appreciable quantity of liquid fuel in the reservoir or casing 11, this fuel entering cylinder 37 through the slot 41 and also through one or more perforations in the cylinder wall as indicated generally at 41a.

The lowermost end of impeller shaft 18 is positioned above the protruding nose or anvil portion 39 of valve member 34 and has permanently affixed thereto, as by welding, a short flexible trigger or spring 42 of beryllium copper or other fatigue-resistant material which projects laterally to strike the upper surface of anvil 39 upon depression of the impeller shaft 18. Upon such contact the valve closure member 34 is forced downwardly in cylinder 37, breaking the seal between the lower end of wick tube 30 and the domed upper sealing portion 33 of valve member 34, and allowing fuel to contact the lowermost end of wick W.

Downward motion of valve member 34 is stopped immediately because of contact with stop pin 38 of closure member 29 (see Figure 5), but as impeller shaft 18 continues its downward movement under pressure of thumb plate 19, the trigger spring 42 is flexed upwardly (Fig. 5) until it snaps past anvil 39, when it again straightens out (see Fig. 6). The instant the trigger 42 clears anvil 39 in its downward motion, the spring 36 snaps the valve closure member 34 upwardly to reengage the domed portion 33 thereof against the bottom of tube 30, thereby again sealing the tube against ingress of fuel, while impeller 18 continues its downward travel to the full length of its stroke (see Fig. 7).

Upon release of pressure on thumb plate 19 the impeller shaft 18 is immediately spring-urged upwardly (Fig. 8) toward its initial position by the action of its spring S in housing 17a. In this movement the trigger spring 42, in its upward travel, engages the under side of anvil 39 (Fig. 9) but in this instance is flexed downwardly until it snaps past the anvil 39 and proceeds upwardly to its normal "at rest" position. Such contact of the trigger 42 with anvil 39 has no effect on the valve seal other than to tend, if possible, to tighten it.

As will be noted from the immediately preceding description, the valve can be opened only momentarily and is then instantaneously reclosed, even though the thumb plate 19 be held fully depressed for an indefinite length of time, as, for instance, while lighting several cigarettes. As will also be observed, there is no reopening of the valve upon release of the thumb plate 19.

It should here be particularly noted that the timing of the interaction between the valving or metering elements, namely, wick tube 30, valve member 34, stop pin 38, impeller 18, trigger 42 and anvil 39 is susceptible of such delicate adjustment as to make it easily possible to predetermine the exact amount of fuel to be permitted to contact the wick at each opening of the valve.

The controlling factors in this sequence of operational movements are: the distance of travel of impeller shaft 18 between thumb plate 19 and the top plate 12 of casing 11; the distance of travel of valve element 34 when its seal with tube 30 is broken and before the bottom of the valve strikes the stop pin 38; the relative heights of stop pin 38 and trigger 42 above the bottom

plate 13 when the trigger 42 is in "at rest" position; and the relative strength of springs S and 36 and trigger spring 42. Obviously, the latter must be strong enough to overcome spring 36 to break the valve seal and force valve 34 down against stop pin 38 with a fast triggering action similar to that of a gun, or a camera shutter. When valve 34 is released by the trigger 42 snapping past the anvil 39, the return spring 36 must snap the member 34 back to its seat against tube 30 and hold it there. Spring S, in turn, must be strong enough to pull the trigger spring 42 upwardly past the anvil 39 in returning impeller shaft 18 to normal position.

To clarify the interaction of these elements there is shown in Figures 3–10, inclusive, a somewhat schematic chart or series of views of the sequential positions of the valve closure member 34 and the impeller-trigger spring 42, taken in various stages of their relative movements. These views show:

In Fig. 3—valve element 34 and impeller-trigger 18—42 at rest in their respective top positions;

In Fig. 4—elements 34 and 18—42 both in downward motion (seal broken);

In Fig. 5—34 seated upon and stopped by stop pin 38; 42 still in downward motion, bypassing 34 at 39;

In Fig. 6—34 released and in upward motion (urged by spring 36, not shown); 18—42 continuing in downward motion under pressure on thumb plate 19 (not shown);

In Fig. 7—34 in top rest position (sealing end of wick tube 30); 18—42 in extreme bottom depressed position;

In Fig. 8—34 in top rest (sealing) position; 18—42 in upward motion (thumb pressure released);

In Fig. 9—34 in top rest (sealing) position; 42 bypassing 34 at 39 in its upward movement;

In Fig. 10—34 and 18—42 both at top rest position, as originally shown in Fig. 3.

From the foregoing it is readily apparent that the cooperating elements provided for opening and closing of the valve are capable of adjustment to split-second timing and minute degree, also that the amount of fuel thus made available to the wick does not vary, since the impulse which opens the valve cannot hold it open. Fuel is allowed to contact only the lowermost end of the wick, to be drawn upwardly by capillary action, and only in a minute quantity at each operation. This valve opening and reclosing action is so fast that the wick receives no fluid by gravity, as by tilting or other motion in normal handling of the lighter, but must pick up its requirements entirely by capillary action. With a properly fitted closure cap or snuffer covering the top of the wick and wick collar there can be little or no evaporation. The entire wick is effectively sealed up, and whatever moisture is in the wick is retained there until the lighter is again used.

Under the circumstances above described it will also be obvious that when the fixed amount of fuel thus metered to the wick is properly correlated to average "burning time," i. e., as in lighting a cigar or cigarette, the fuel burned away is simultaneously replaced by fresh fuel, thereby keeping the wick at all times at its properly balanced loading, or prime, constituting the optimum condition of moisture for its best operation.

It will likewise be apparent that with the construction of this invention there can be no flooding or over-saturation of the wick in any normal use of the lighter, or even by repeated operation of the thumb plate 19. Starting with the very first fueling and a dry wick, such repeated operation can only cause the wick to pick up its needed prime or "balance" of fuel. Once it becomes sufficiently moistened to ignite and burn freely it will so ignite when the thumb plate is depressed, thus burning and adding fuel simultaneously. If for any reason the flint should occasionally fail to spark and ignite the wick, no undesirable result will follow because the wick, after filling to its prime or point of balance, can not overfill, since it then loses its capillary power and becomes inert. Furthermore, as is well known, the wick normally operates (flames) at something less than its full fuel capacity.

Stated another way, the wick of the lighter of the present invention is caused to determine its own fuel requirements. The mechanism of this invention delivers those requirements but cannot deliver an oversupply.

This automatic compensating and priming feature is believed to be broadly new in devices of this character and, as above stated, may readily be brought to whatever point of adjustment may be deemed necessary. As an example, with the known factors of capacity of the fuel reservoir and the amount metered into the wick at each lighting, the number of such lightings required to deplete the reservoir may be determined. Calculated on the average number of lightings per twenty-four hours, the number of days between refuelings can then be determined with reasonable accuracy.

The wear-life of the flint depends, of course, on its quality and length, but tests have indicated that it is quite possible to so correlate consumption of fuel and wear-down of flint that both will need renewing at approximately the same time. Also, with the present invention, such renewals will be necessary much less frequently than with prior art structures.

Proceeding now to the problem of shielding the flame, as for outdoor usage, there is shown in solid lines in Figure 11 a windshield 51 in its retracted position, and in dash lines in its raised position. In retracted position shield 51 seats in an open space formed by a wall 52 inside casing 11, into which space no fuel is admitted from the main fuel chamber, the points at which wick tube 30 and flint-spring tube 15 pass through the wall 52 (see Fig. 1) being suitably sealed as by soldering.

As shown in Figures 1, 11 and 13, the shield 51 comprises a thin metal wall of curvate outline conforming to the peripheral curve of the top plate 12 of casing 11, the end section of plate 12 being slotted therearound as at 54 (Fig. 13) to permit raising and lowering of windshield 51. The upper peripheral edge of windshield 51 is rounded or beaded to comprise, in effect, when in retracted position, a portion of the upper peripheral edge of top plate 12. A series of small apertures or perforations indicated generally at P extend around the windshield wall near the bottom thereof to admit sufficient air to propagate the flame when the shield is in raised position. The shield 51 is entirely open at the top but has a thin metal flange or plate 53 extending partially across the bottom thereof, this plate engaging under top plate 12 when the shield is raised, thereby to prevent the shield from passing entirely out of the casing 11.

According to the present invention the wind-

shield 51 may be raised and lowered by the same impulse which raises and lowers the snuffer cap 27 above the wick W. As shown in section in Figures 11 and 12, and as viewed in top plan in Figs. 13 and 14, the snuffer element 27 has a pair of arms 55 positioned rearwardly of the wick cap proper and extending both downwardly and outwardly from the inner side surfaces of the snuffer element 27 to pass through slightly enlarged portions 58 of slot 54 in top plate 12 of casing 11. The lower ends of arms 55 are apertured to detachably engage over the ends of a pair of pegs or pins 56 permanently engaged for rolling or sliding movement in horizontal slots 57 formed in the sides of windshield 51 adjacent the upper peripheral edge thereof. The pins 56 have suitably enlarged heads or flanges on each side of the windshield wall to prevent their disengagement from slots 57, with straight stubs or pegs projecting inwardly from the side walls of windshield 51 for reception in the apertured ends of arms 55 as above described.

Pressure on thumb plate 19 causes the snuffer element 27 to be raised, carrying with it the arms 55 which, in turn, cause the pins 56 to move upwardly in an arcuate motion. In this arcuate motion the pins are moved with a sliding-rolling motion in slots 57 and caused to exert pressure against the upper edges of said slots, thereby raising the windshield 51 to the position shown in dash lines in Figure 11. In this position, as clearly shown in Figure 14, the arms 55 are extended horizontally outwardly, having emerged from the underside of top plate 12 through the enlarged slots 58, carrying with them the pins 56.

Release of pressure on thumb plate 19 reverses the motion above described, returning the windshield 51, slots 57, pins 56 and arms 55 to lowermost or retracted position. It will of course be apparent that the lower ends of arms 55, the pins 56 and slots 57 are all concealed in the closed-off space formed by the wall 52 below the top plate 12 when the windshield is in retracted position, and are all visible above the top of plate 12 when in raised position.

A feature of the present invention is that the use of the windshield is optional, as it is a simple procedure to render the same operative or inoperative, at will.

Assuming that the shield is operatively connected and it is desired to disconnect the same, thumb plate 19 may be depressed to raise the shield above the top of plate 12 to a position where the arms 55 may be pinched or squeezed together slightly to disengage them from the pins 56, whereupon shield 51 will drop back inside casing 11 through slot 54 and the pins 56 through enlarged slot 58. Thereafter, arms 55 will be raised and lowered with snuffer 27 but will have no function. To again render the windshield operative the shield 51 may be manually lifted above the top plate 12 and the pins 56 reengaged with the arms 55.

From the foregoing disclosures it will be apparent that in the present invention provision is made for achieving and maintaining optimum operating conditions in lighters of the class described, including means for accurately metering fuel to the wick while preventing flooding or over-saturation; maintaining a constant balance or prime of moisture in the wick; lighting and extinguishing the wick and automatically raising and lowering the windshield; all operating in unison under actuation of a single element and impulse.

It will of course be understood that modifications and variations may be effected without departing from the scope of the novel concepts of this invention.

We claim as our invention:

1. In a cigarette lighter, a casing housing a fuel reservoir, a wick in said casing normally isolated from said reservoir and having an end projecting from said casing, igniting means adjacent the projecting end of said wick, self-closing metering means in said casing operable to admit fuel from said reservoir to said wick, a manually movable element for actuating said igniting means, means connected to said element to simultaneously trip said metering means open but inoperable to hold the same open, and an adjustable element positioned to limit the opening of said metering means whereby to predetermine the time interval the metering means remains open.

2. A device for lighting cigarettes and the like, including a casing, said casing having a fuel reservoir therein; an abrading element movably mounted on said casing; a pyrophoric element maintained in yielding contact with said abrading element; a wick having its main body portion inside said casing and its upper end exposed for ignition outside of said casing; a movable closure member comprising a snuffer for normally closing the upper end of said wick from atmosphere; a housing in said casing enclosing said wick and normally maintaining the same out of contact with the fuel supply; valve means associated with said housing and operable to admit a fixed amount of fuel into contact with the body of the wick each time the upper end of the wick is exposed to atmosphere; means operable to raise the closure member and to move the abrading element against the contacting surface of the pyrophoric element to cause sparks therefrom to ignite the exposed wick; a single impeller means operable by pressure to cause all of the operable elements to function contemporaneously; independent means for closing said valve means when said fixed amount of fuel has been admitted to said wick; and means operable upon release of pressure on said impeller to cause replacement of said closure member and extinguishment of the flame.

3. In a cigarette lighter, a body defining a reservoir to contain free liquid fuel; a wick having an end exposed for ignition and having its other end extending into said reservoir; a chamber closely surrounding said wick in said reservoir and having an opening therein adjacent said other end of said wick to permit direct contact between said wick and the fuel in said reservoir; valve means in said opening in control of contact between said wick and the fuel; resilient means urging said valve means into closed position; closure means for covering the exposed end of said wick, and manually actuated trigger means connected to said closure means for simultaneously uncovering said wick and engaging said valve means to momentarily trip said valve means open to admit a small quantity of liquid fuel to the wick but inoperable to hold said valve means open.

4. In a cigarette lighter, a casing forming a chamber for liquid fuel; a wick to be primed with fuel from said chamber and ignited, said wick having one end exposed for ignition outside of said casing and its other end disposed inside said chamber for priming with fuel; movable closure means for covering said exposed wick-end when in closed position; and means for control-

ling the fuel prime of said wick including a wick housing in said chamber, said other end of said wick being completely enclosed in said housing; a port in said wick housing below the liquid level in said chamber; means sealing said port against ingress of fuel; biasing means urging said sealing means to closed position; tripping means actuated by opening movement of said closure means and operable to overcome said bias to trip said sealing means open to cause momentary direct fuel-wick contact for at least part of each time said closure means is opened; and stop means for limiting the effective opening action of said tripping means so that the wick can obtain only an incremental portion of its fuel capacity at any one usage of the lighter.

5. In a cigarette lighter, a body defining a reservoir to contain free liquid fuel; a wick having an end exposed for ignition and having its other end extending into said reservoir; igniting means adjacent the end exposed for ignition, for igniting the same; said wick consisting of an elongated narrow body; a tube closely surrounding said wick body and extending into said reservoir surroundingly of said wick to said other wick end therein, said tube being open at said other wick end; plug means for closing the open tube end in said reservoir to prevent liquid fuel contact with said other wick end when in closed position; resilient means urging said plug into closed position; a plunger having a resilient finger thereon for momentarily tripping said plug open against the bias of said resilient means; adjustable stop means cooperating with said resilient means to limit the opening movement of said plug during tripping thereof by said finger; and manually actuatable means for simultaneously actuating said igniting means and moving said plunger to effect tripping of said plug.

EUGENE P. GAILMARD, SR.
EUGENE P. GAILMARD, JR.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,584,258	Thorens	May 11, 1926
1,998,339	Stansbury	Apr. 16, 1935
2,211,500	Gabritsch	Aug. 13, 1940
2,477,398	Shatkin	July 26, 1949
2,509,251	Rogers	May 30, 1950
2,531,554	Chen	Nov. 28, 1950
2,538,627	Pearl	Jan. 16, 1951

FOREIGN PATENTS

Number	Country	Date
144,209	Austria	Jan. 10, 1926
586,263	Great Britain	Mar. 19, 1947