July 11, 1950 P. B. MILLER 2,515,092

LIGHTER

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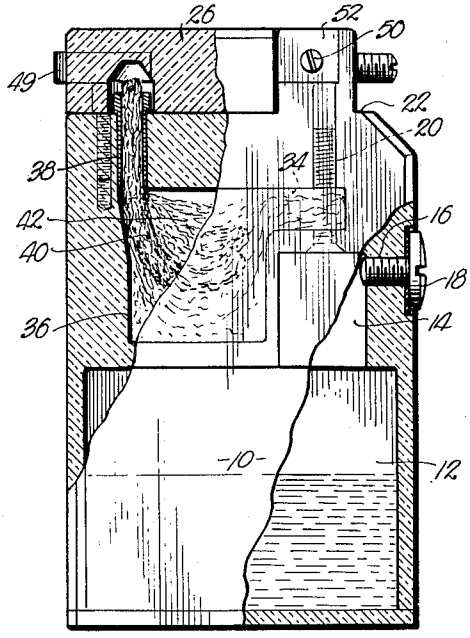


Fig. 1.

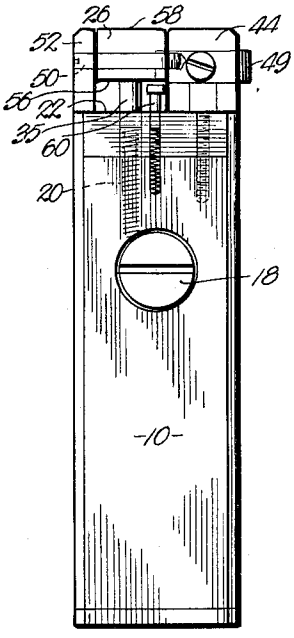


Fig. 2.

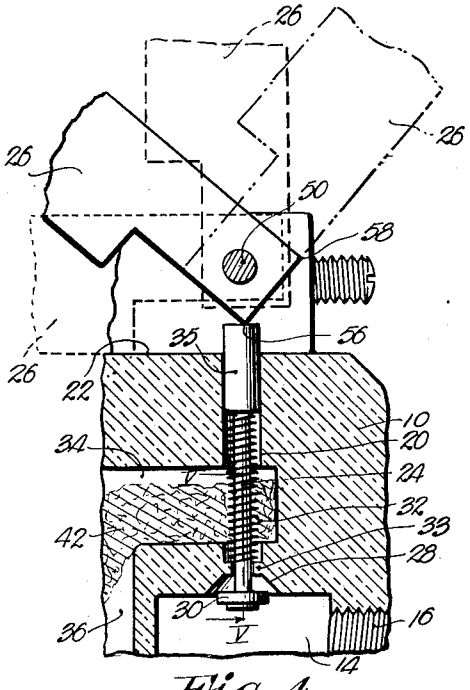


Fig. 4.

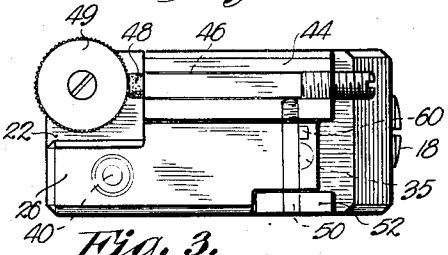


Fig. 3.

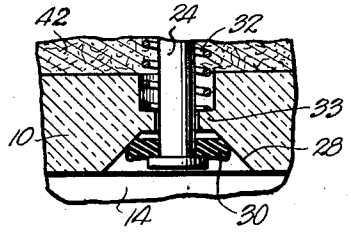


Fig. 5.

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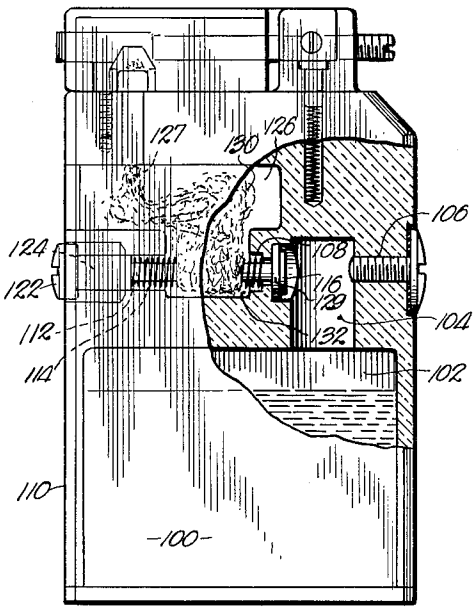


Fig. 6.

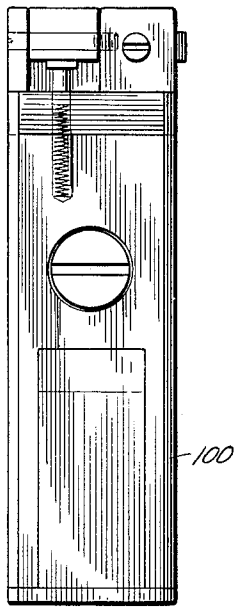


Fig. 7.

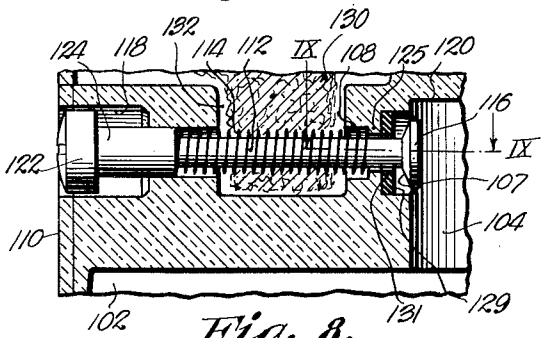


Fig. 8.

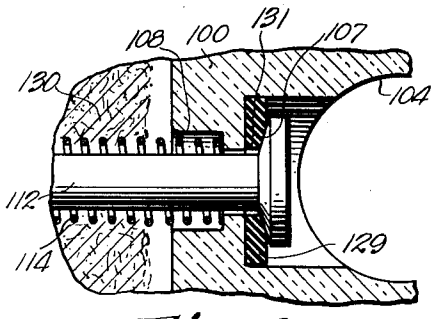


Fig. 9.

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UNITED STATES PATENT OFFICE

2,515,092

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Application September 30, 1946, Serial No. 700,310

1 Claim. (Cl. 67—7.1)

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This invention relates to igniting devices of the kind having pyrophoric lighting mechanism operable in combination with a capillary fed wick, and more specifically to cigar and cigarette lighters wherein is provided unique and novel mechanism for supplying fuel from a hollow tank formed in the casing thereof to the wick compartment.

The primary aim of this invention is to provide a lighter having a casing formed entirely from transparent material and having spaced compartments for fuel and a wick, and having a valved interconnecting conduit for permitting flow of fuel to the wick when the valve is open, all of which parts are readily seen by the operator to the end that the operator may know when the supply of fuel becomes low, and to make it possible for him to control the flow of fuel to the wick by watching such flow.

One of the most important aims of this invention is the provision of a lighter having spaced compartments for housing the wick and a supply of fuel respectively, joined by a cylinder and conduit assembly and having a manually actuated valve for opening and closing the cylinder to restrict the flow of fuel from the supply compartment to the wick compartment except when the operator desires to saturate the wick.

An important aim of this invention is to provide in a lighter having the aforesaid separate compartments, a cylinder formed in the casing and communicating with the fuel supply, wherein is reciprocably mounted a spring-loaded plunger provided with a valve on one end thereof to close the cylinder when the plunger is held at one end of its path of travel by the spring and open the same when the plunger is manually shifted inwardly into the cylinder.

Another aim of this invention is to provide a lighter having a specially formed snuffer arm, disposed to reciprocate the plunger as the same is swung to and from a closed position, and to hold the plunger with the valve open when in a partially open position whereby the fluid may flow from the supply tank to the wick saturation chamber as the operator tilts the lighter toward an inverted position.

Further objects, and particularly such as relate to the more purely structural details, will be made clear or become apparent as this specification progresses.

In the accompanying drawing, I have shown my invention in two forms which at present are preferred by me. Referring to the drawing:

Fig. 1 is a side elevational view of a lighter

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made in accordance with one form of my invention, parts being broken away for clearness.

Fig. 2 is an end elevational view thereof.

Fig. 3 is a top plan view thereof.

Fig. 4 is a fragmentary, detailed cross-sectional view showing the various positions of the snuffer arm, and the valve in an open position.

Fig. 5 is an enlarged, detailed, cross-sectional view taken on line V—V of Fig. 4, showing the valve in a closed condition.

Fig. 6 is a side elevational view of a lighter made in accordance with a modified form of my invention, parts being broken away for clearness.

Fig. 7 is an end elevational view thereof.

Fig. 8 is a cross-sectional fragmentary view showing details of construction and taken on an enlarged scale; and

Fig. 9 is an enlarged, detailed, cross-sectional view taken on line IX—IX of Fig. 8, showing the valve in a closed condition.

One of the most aggravating problems inherent in conventional cigar and cigarette lighters is the inability of the users thereof to determine when the supply of fuel is becoming low. Consequently, the lighter becomes "dry" most frequently when the user is unable to refill the same until he reaches his home or office where a new supply of fuel is maintained. This problem has been obviated in my invention by forming the lighter from transparent and translucent material, preferably plastic, whereby the fuel in the lighter is easily seen at all times, and the user may refill the same as the supply becomes low, thereby never having an inoperable lighter at inopportune times. Inasmuch as the provision of a conventional lighter with a casing made from such translucent material would serve no useful purpose in that the operator would be unable to determine whether the wick and packing assembly was dry or saturated, my invention also includes a separate fuel supply chamber and saturation compartment, joined by the valve assembly about to be described.

In the form of my invention illustrated in Figs. 1 to 5 inclusive, the numeral 10 broadly designates a casing, molded or otherwise formed entirely from plastic or other translucent material, within which is created a hollow fuel tank 12 near the bottom wall thereof. This fuel tank 12 extends upwardly within the casing 10 as at 14 and communicates with the exterior of casing 10 through a short conduit 16, internally threaded to receive a cap screw 18, the removal of which affords a means for filling the tank 12 with the

inflammable fluid commonly used in lighters of this nature.

A cylinder 20 extends upwardly from this portion 14 of tank 12 and opens to the exterior of casing 10 through the normally uppermost wall 22 thereof, and a piston or plunger 24 reciprocably mounted in cylinder 20, extends upwardly beyond wall 22 for engagement with a snuffer arm 26 as hereinafter more fully described. The cylinder 20 is flared downwardly and outwardly as at 28 to present a seat for a valve 30 fixed to the lowermost end of the plunger 24. This valve 30 comprises a circular disk formed from rubber or other resilient material to conform to the contour of the seat 28 as a spring 32 coiled about the plunger 24 yieldably maintains the same at the uppermost end of its path of travel, whereby valve 30 closes the lowermost end of the cylinder 20. This formation of valve 30 when closed, is clearly shown in Fig. 5. A shoulder 33 extends inwardly from the walls forming cylinder 20 for receiving the lowermost end of spring 32, and plunger 24 is enlarged at the uppermost end thereof as at 35 to present a bearing surface for the upper end of spring 32. Spring 32 therefore, tends to maintain plunger 24 at the uppermost end of its path of travel.

A transverse conduit 34 interconnects the cylinder 20 and a hollow wick compartment 36, which compartment 36 is in turn in communication with the wall 22 of the casing 10 through a passage 38. A wick 40 in the compartment 36 is surrounded with the usual filling or wadding 42, and projects through the passage 38 to extend a short distance beyond the wall 22, in the well known manner. This filling 42 extends into the conduit 34 as shown to surround the plunger 24, thereby preventing the flow of fluid toward the uppermost end of the cylinder 20.

The wall 22 of casing 10 has extension 44 projecting upwardly therefrom, provided with a tube 46 which holds the pyrophoric element 48, disposed in such a manner that it readily cooperates with a friction wheel 49 to produce a spark for igniting the wick 40. The snuffer arm 26 is pivotally mounted on a shaft 50 interconnecting a flange 52 and the extension 44.

Snuffer arm 26 extends beyond the shaft 50 to present a pair of edges 56 and 58 which contact the uppermost end of the plunger 35 to open the valve 30 as the arm 26 is moved to and from a fully closed position as shown in Fig. 1. It is readily seen that when snuffer arm 26 in the two horizontal positions where the same is either fully closed or entirely open respectively, and when the arm 26 is in the vertical position, the edges 56 and 58 will not be in contact with the plunger 24 and therefore, valve 30 will remain closed. However, when arm 26 is in the two positions midway between fully closed and the vertical and fully open and the vertical positions, edges 56 and 58 respectively, will push plunger 24 downwardly to open valve 30. With the exception of the full open position, all of the above described positions are clearly shown by full and dotted lines in Fig. 4. A spring-loaded pin 60 bears against arm 26 to yieldably hold the latter in any of the positions described. Pin 60 reciprocates in an opening formed in case 10 extending inwardly from wall 22 adjacent cylinder 20 and below that end of the arm 26 having edges 56 and 58 thereon. The spring for pin 60 is within such opening below pin 60.

When the lighter just described is not in use, valve 30 will remain closed since snuffer arm 26 is usually kept in a position covering the upper end of the wick 40. Thus, the tendency common in most lighters of the fluid leaking out into the pocket is eliminated. A small amount of fuel will collect on the valve 30 and each time the lighter is used, this collection will pass by capillary action into the chamber 20 and thence to the filling 42, which action will normally maintain a sufficient supply of fuel in compartment 36. However, it may become necessary to occasionally replenish the chamber 36 with fuel to saturate the filling 42 and the wick 40, which is accomplished by moving arm 26 to one of the positions where valve 30 is open and then tipping the lighter toward an inverted position where the fuel will flow freely into cylinder 20 and thence into conduit 34 for passage into chamber 36.

In the form of my invention illustrated in Figs. 6 to 9 inclusive, a casing 100 has a fuel tank 102, extending upwardly as at 104, and is provided with a supply opening 106 in virtually the same manner as just described with respect to the form shown in Figs. 1 to 5 inclusive. In this form however, a cylinder 108 lies horizontally within the casing 100 and opens on one wall 110 thereof rather than the top wall of the lighter. A plunger 112 within the cylinder 108 has a spring 114 coiled thereabout in such manner as to tend to hold plunger 112 outwardly and at one end of its path of travel where valve 116 closes cylinder 108.

In this instance, the cylinder 108 has enlarged bores 118 and 120 for receiving a head 122 and the valve 116 at opposite ends of the plunger 112 respectively, each of which forms an integral part of the plunger 112. A portion 124 of the plunger 112 is enlarged to present a stop for one end of spring 114 while the opposite end thereof bears against a shoulder 125 in cylinder 108. The valve 116 in this instance is also disk-shaped, however, one face thereof is beveled as at 107 for seating against a resilient washer 129 in the bore 120 to close opening 131 therethrough when in the position illustrated in Fig. 9.

A compartment 126 for the wick 127 and filling 130 communicates with the cylinder 108 through a conduit 132. This filling 130 likewise extends into the conduit 132 and surrounds plunger 112 to prevent leakage of fluid outwardly from casing 100 through bore 118. The snuffer arm and ignition assembly at the top of the lighter takes the same form as above described except that snuffer arm does not actuate the valve assembly and need not be repeated. It is readily seen that in this form, compartment 126 may be easily replenished for saturating the filling 130 and wick 127 by pressing upon head 122 of plunger 112 whereby valve 116 will be opened and tilting of the lighter will allow passage of fuel through cylinder 108 and conduit 132 into the compartment 126.

While only two embodiments of my lighter have been illustrated and described, it is understood that various changes may be made in the form and the arrangement of the parts without departing from the spirit of the invention or scope of the appended claim.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

In a lighter of the kind described, in combination, a hollow body having a normally uppermost wall; a partition in the body defining a fuel tank at the bottom of the body and a wick compartment near the top of the body, there being a

passage in said partition interconnecting said tank and said compartment and an opening aligned with said passage and formed through said wall in register with the compartment; a valve in the tank having a stem reciprocably mounted in the passage and the opening and extending outwardly beyond said wall; means for yieldably holding said valve biased toward a position closing the passage; and an elongated snuffer arm pivotally mounted on said wall for swinging movement on an axis spaced directly above the uppermost end of said stem, said arm having a bottom wall and an end wall, defining a corner on one side of said pivotal mounting, movable as the arm is swung, into and out of engagement with said stem for shifting the latter and the valve therein to a position opening and closing said passage respectively, said end wall of the arm being spaced from said top wall of the body when the arm is in a position vertical to said top

wall of the body, permitting movement of the valve to a closed position when the arm is in said position.

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