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F. H. BOWERS

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DISPOSABLE FUEL CONTAINER FOR LIGHTERS

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Fig. 1.

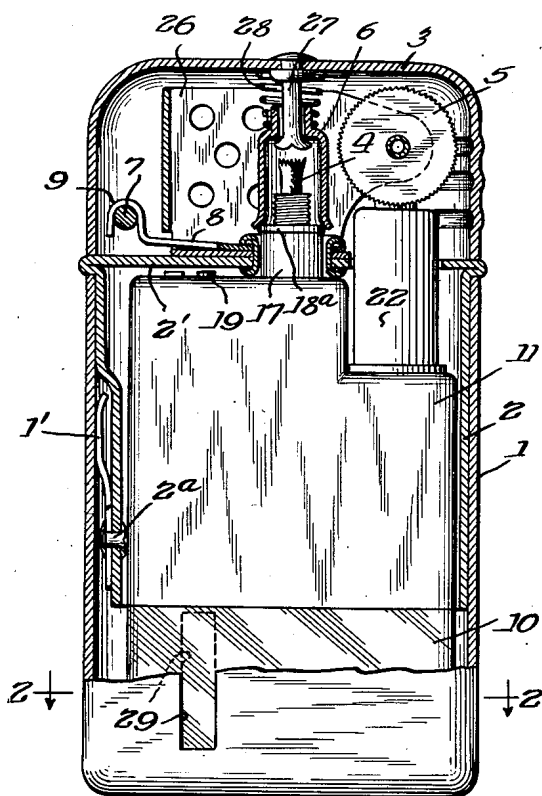


Fig. 3.

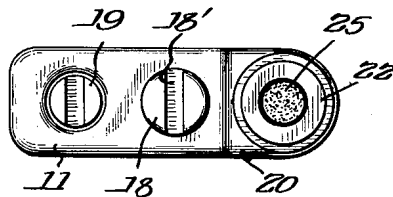


Fig. 4.

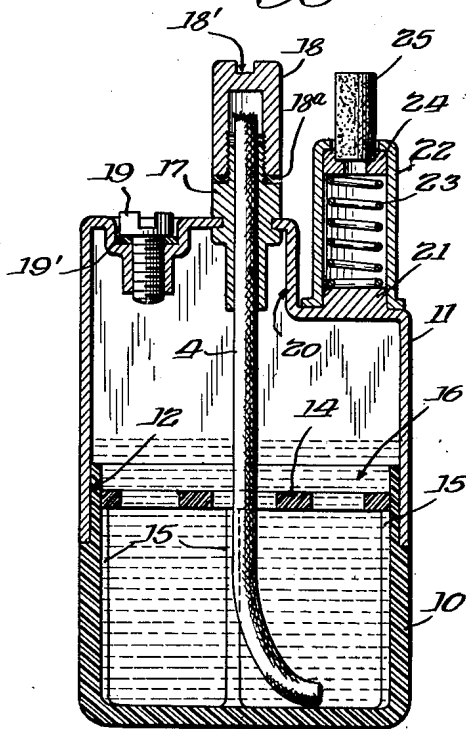
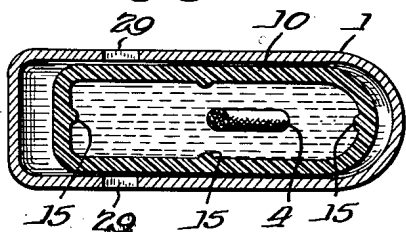


Fig. 2.



Inventor:
Fredrick H. Bowers.
By *FR. News* Atty.

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DISPOSABLE FUEL CONTAINER FOR LIGHTERS

Fredrick H. Bowers, Kalamazoo, Mich.

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4 Claims. (Cl. 67-7.1)

This invention relates to improvements in pyrophoric lighters of the class or classes employing liquid fuel, having for an object to provide a disposable or expendable type of fuel container or refill and flint therefor.

As is well recognized and appreciated by users of the above noted group of lighters, considerable annoyance, frustration and inconvenience is created and encountered due to ignition or lighting failures thereof, particularly those which are occasioned or caused by the lack or exhaustion of fuel supply to the lighter wicks; moreover, that other irksome conditions are experienced by such users in or during the times of replenishment of liquid fuel supply thereto, as by the mess, tedium and even danger associate with the filling of the lighter fuel reservoir with combustible liquid fuel. It is with a view toward and for precluding the above that I provide the hereinafter described and claimed device of my invention.

Said invention affords and assures the user of a lighter of the above indicated class, a convenient, economical, safe and operationally positive device whereby the lighter fuel supply may be replenished in a minimum of time and with like effort; additionally, it will eliminate fuel spillage and/or waste, obviate the danger of accidental ignition or explosion of fuel, and provide a fuel supply of materially longer duration as compared with that of the presently used types of lighters.

A further and important desideratum of the invention resides in providing to a lighter of the stated character a single insert device which may be easily and quickly inserted into the case of such lighter and which, when received therein, will furnish to it and/or its wick a comparatively long lasting supply of liquid fuel and a replacement of the lighter flint, hence, assuring continued efficient usage of said lighter.

Yet another object of the invention is to provide a combined disposable refill and replacement device for pyrophoric lighters which is of simple and economical construction and cost—one wherein the contents thereof will be securely and satisfactorily packaged and preserved, and one which may be conveniently and quickly made ready for effective use in a lighter prior to and when inserted into its case.

The foregoing, as well as other objects, advantages and meritorious teachings of my invention, will be in part obvious and in part pointed out in the following detailed disclosure thereof, when taken in conjunction with the accompanying drawings, it being understood that the form of the invention presented herein is precise and what is now considered to be the best mode of embodying its principles, but that other modifications and changes may be made in specific embodiments without departing from its essential features.

In the drawings:

Figure 1 is a vertical longitudinal section through a lighter of well known type provided with the device of my invention, a portion of the lighter outer case being shown in elevation.

Figure 2 is a horizontal section taken on the line 2-2

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of Figure 1, looking in the direction in which the arrows point.

Figure 3 is a top end elevation of the invention, and Figure 4 is a vertical longitudinal section through the invention.

Referring in detail to the drawings, I have shown therein for purposes of illustration the invention installed in or provided to a lighter of the well known telescopically assembled type basically constituted by outer and inner cases 1 and 2, respectively, and a closure cap 3 swingably mounted on the latter. The length of the cases is such that the inner one is telescopically received in the outer one, as shown in Figure 1, while the cross-sectional shape and size of each and the closure cap 3 substantially correspond (see Figures 2 and 3). The depth of the cap is sufficient to house or cover the lighter wick 4 and the flint wheel 5, hereinafter more fully described, also, it carries within the same a flame snuffer and wick sealing cap generally indicated at 6.

Preferably, a frictional staying contact is effected between the cases 1 and 2 by means of a spring shoe 1' riveted or otherwise permanently connected at one end to a portion of one end wall of the inner case 2, as at 2^a, with its free and remaining end bearing on a portion of the inner face of the adjacent end wall of the outer case 1. Hence, the cases 1 and 2 will be securely though movably retained in the assembled relation shown in Figure 1.

Various mechanical means may be used to swingably support the cap, though in the drawing shown embodiment, a pin 7 is fixedly mounted transversely of and within one end portion thereof. A flat or leaf spring 8 is secured at its inner end to a portion of the case top wall 2', preferably, adjacent the extended end portion of the wick 4, while its outer end portion has an inwardly opening cross-sectionally U-shaped flange 9 thereon astraddle said pin. Thus, as and when the far end of the cap 3 is engaged and moved away from the inner case top wall 2' its pivoting with relation thereto will be effected by the connection between the cap pin 7 and the flange 9 of the spring 8. The cap is swingable to a position at substantially right angles to the inner case top wall 2' where it will be movably held by the now tensioned leaf spring 8. However, when the free end of the cap is thrust inwardly, the tensioned spring will direct a closing impulse to the cap causing it to engage over and with the inner case top wall and remain, under spring urge, thereon and therewith, yet swingable again to its aforesaid open position.

The refill device of the invention consists of a disposable body of composite construction, to-wit, a shell 10 molded of suitable transparent plastic, open at its top, and a companionate shell 11 of a suitable stiff material, such for example, as aluminum or the like, having an open bottom.

The shells 10 and 11 are of substantially corresponding cross-sectional shape and size with the open upper end portion of the plastic shell 10 being exteriorly rabbetted at 12 whereby a flush overlapping permanent jointure may be effected between the two shells in the manner shown in Figure 4 of the drawings. The overall depth or height of the shell constituted body substantially approximates the depth of the telescopically engaged inner and outer cases, as will be seen by referring to Figure 1. Its transverse sectional shape corresponds to that of the case interior though its size is slightly less in order to permit of free yet snug reception of the same in said case.

To brace or support the composite shell of the refill device against collapsing of its walls, I may and preferably do mount within and transversely of the plastic shell 10 a stiff and perforate wall 14, contacting or seating on

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shoulders 15 formed interiorly of said shell. Thus, it will be seen that all walls of the composite shell 10—11 will be held against inward or collapsing movement and that in consequence, the liquid fuel capacity of the body will remain constant; moreover, since said wall is perforate, the liquid fuel, now indicated by the numeral 16, will be permitted to flow therethrough.

As hereinbefore indicated, the wick 4 is received within the refill device body. One of its ends is passed snugly through and slightly beyond a tube or fitting 17 preferably mounted on a medial portion of the closed end of the shell 11 and communicating with its interior. This tube is formed on its outer end with a coaxially disposed screw-threaded nipple which has a wick cap 18 turned thereunto enclosing the wick extended end and seating on a washer 18^a. Turning of the cap onto or from the threaded nipple is facilitated by forming a kerf 18' in its outer end.

To permit filling of the refill body with liquid fuel, an internally screw-threaded opening is formed in the closed end of the shell 11 is proximity to one side thereof and is normally closed by a screw 19 having a kerfed head seating on a washer 19' about and adjacent said opening.

The opposite side of the refill body upper end, i. e., the shell 11, is inwardly offset or stepped, as at 20. The step has a locator boss 21 thereon, with and over which the open lower end of a housing 22 is snugly and fixedly engaged. The upper or outer end of this housing is open, while within the housing a flint thrusting expansible coiled spring 23 is arranged. One end of said spring has bearing on an adjacent portion of the locator boss 21. Its remaining end bears on a flint holder 24 also received within the housing 22 carrying a coaxially disposed pyrophoric body or flint 25. Under urge of the expansible coiled spring 23 the flint 25 is moved toward and through the opening in the upper or free end of the housing 22 in the manner shown in Figure 4 of the drawings, for a purpose which will be hereinafter described.

As is usual, a wind shield 26 is fixedly mounted on the top wall 2' of the inner case 2 about the extended end of the wick 4 and the tube 17. The flint wheel 5 is rotatably supported by and between the opposite sides of the shield and, of course, engages with the flint 25 at a point in proximity to the wick 4 for an obvious purpose.

The flame snuffer and wick sealing cap 6 may be and preferably is supported from a cap attached pin 27 which slideably receives said snuffer and sealing cap thereon and carries, between the latter and the closure cap 3, a coiled spring 28 which is in bearing contact with each. Thereby, the snuffer and sealing cap will be spring pressed so that with closing of the closure cap it will have positive yet yieldable sealing engagement with the tube carried washer 18^a. Hence, a sealed air excluding enclosure will be provided the extended end of the wick 4 whereby to effectually protect it and also prevent liquid fuel waste as by evaporation and/or leakage.

In usage of the refill device and assuming that the same is filled with fuel 16, the user first removes the wick cap 18 from the threaded nipple of the tube 17 leaving the washer 18^a exposed. Thereby, the extended end of the wick 4 is exposed.

The telescopically engaged cases 1 and 2 of the lighter are now disengaged and the readied refill device is inserted fully into the inner case 2 via its open bottom. By so doing, the top end thereof is brought into apposed relation to the top wall 2' of said case with the wick tube 17 and the spring housing 22 extended through the openings therein. In such positions the outer end portion of the wick 4 will be housed within the snuffer cap 6 carried by the case cap or cover 3 and the flint 25 spring urge engaged with the rasping periphery of the flint wheel 5. Thereupon, the outer case is telescopically reengaged with and over the inner case 2 in the manner shown in Figure 1 of the drawings. When so contained by the lighter case, the transparent shell 10 of the refill device will be

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exposed to the windows 29 formed in the opposite side walls of the case 1 in proximity to its lower end, permitting its liquid fuel content to be observed and its amount determined.

The lighter is now ready for use in the usual manner. As and when the fuel supply within the refill device is depleted, the lighter cases are disengaged and the disposable device is removed. A fresh refill device is readied and inserted into the case 2 and the cases are reassembled, as above described.

The lighter is thus activated for continued satisfactory use, having a replenished fuel supply, a new or fresh wick and a new flint.

In the event that the original fuel content of the refill device should be exhausted and a fresh refill is not then had, it will be understood that a temporary supply of liquid fuel may be flowed into the same by removing the screw 19 from the filling opening in its shell 11; then replacing said screw.

I claim:

1. A fuel refill device for lighters, comprised of a container one portion of which is made of form sustaining and heat resistant first material and the remaining portion thereof made of transparent form sustaining second material joined to adjacent portions of said first material, the degree of heat resistance of the first material being greater than that of the second material and the area of the first material being sufficient to dissipate and reduce the degree of heat transmitted thereto prior to its transmission to the second material, a wick within the container extended through and from an opening in the upper end of the first material, and a flint retaining and ejecting means on said upper end of the first material.

2. A fuel refill device for lighters, comprised of a container one portion of which is made of form sustaining and heat resistant first material and the remaining portion thereof made of transparent form sustaining second material joined to adjacent portions of said first material, the degree of heat resistance of the first material being greater than that of the second material and the area of the first material being sufficient to dissipate and reduce the degree of heat transmitted thereto prior to its transmission to the second material, a wick within the container extended through and from an opening in the upper end of the first material, a tubular housing secured to and extended from said upper end of the first material, and a spring pressed flint holder within the tubular housing.

3. A fuel refill device for lighters, comprised of a container one portion of which is made of form sustaining and heat resistant first material and the remaining portion thereof made of transparent substantially form sustaining second material joined to adjacent portions of said first material, a fixedly mounted perforate stiff wall received snugly within and disposed transversely of the container having its marginal portions in bearing engagement with and upon those portions of the second material adjacent its jointure with the first material, the degree of heat resistance of the first material being greater than that of the second material and the area of the first material being sufficient to dissipate and reduce the degree of heat transmitted thereto prior to its transmission to the second material, a wick within the container extended through and from an opening in the upper end of the first material, and a flint retaining and ejecting means on said upper end of the first material.

4. A fuel refill device for lighters, comprised of a container one portion of which is made of form sustaining and heat resistant first material and the remaining portion thereof made of transparent form sustaining second material joined to adjacent portions of said first material, the degree of heat resistance of the first material being greater than that of the second material and the area of the first material being sufficient to dissipate and reduce the degree of heat transmitted thereto prior to its transmission to the second material, a wick within the container extended

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through and from an opening in the upper end of the first material, said upper end of the first material having a boss thereon, a tubular housing having an open lower end engaged over and in driving fit with said boss, and a spring pressed flint holder within the housing.

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