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POCKET LIGHTER CONSTRUCTION

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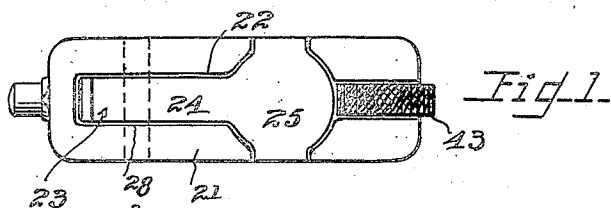


Fig. 1

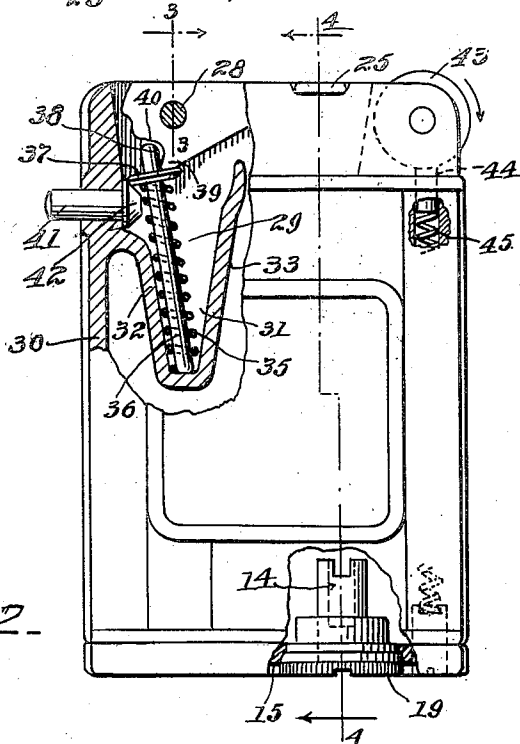


Fig. 2

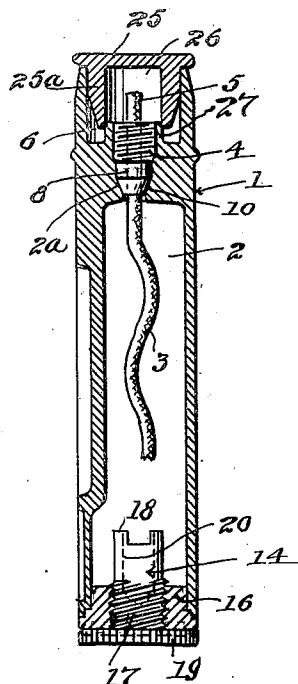


Fig. 3

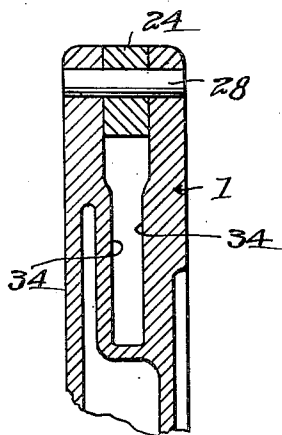


Fig. 4

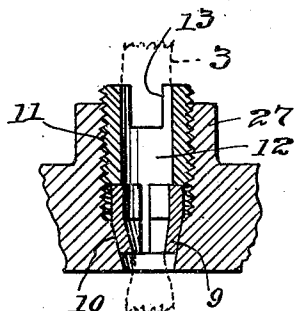


Fig. 5



Fig. 6

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POCKET LIGHTER CONSTRUCTION

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4 Claims. (Cl. 67-7.1)

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This invention relates to devices employing a wick for carrying a liquid, and while the invention is applicable in any situation where liquid moves along a wick or similar member by capillary attraction, the invention is particularly useful when applied to a cigarette lighter; and in the present specification and drawing, the invention is described and illustrated as applied to an ordinary pocket lighter.

Pocket lighters such as referred to, are used extensively for lighting cigarettes and cigars. Such a lighter usually includes a wick, one end of which is immersed in a lighting fluid, and the other end of which is exposed to the atmosphere when the snuffer is raised to remove its snuffing head from the wick; this opening movement of the snuffer being usually accomplished by a manually operated button or stem on the casing of the lighter. One of the objections to lighters of this type, is that, on account of the fact that the lighting fluid must be highly volatile, a considerable quantity of the fluid is constantly evaporating from the outer end of the wick, and as a matter of fact, probably more of the lighting fluid is wasted in this way, than is actually employed in the lighting of the cigarettes or cigars.

One of the objects of this invention is to provide means for mounting a wick in a device of any kind that employs a wick along which a liquid passes, in such a way that fibers of the wick can be clamped with a controlled pressure so as to effect a reduction in the capillary movement to the outer end of the wick, but at the same time allowing a sufficient amount of the liquid to pass to the outer end of the wick to insure that it will light dependably in the usual way when the sparking device of the lighter is operated.

Another object of the invention is to provide simple means carried on the lighter itself, for enabling adjustments to be made at the wick mounting for regulating the degree of pressure that is exerted upon the wick to control the amount of liquid that can pass to its outer end.

Another object of the invention is to provide manually controlled means of simple construction, and including a spring capable of holding the snuffer in its closed position, or in its open position, and particularly to construct the parts cooperating to this end in such a way as to facilitate their assembly in the lighter.

Another object of the invention is to produce a construction that will simplify the machining operations that are necessary in the manufacture of the device.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combination of parts to be described hereinafter, all of which contribute to produce an efficient pocket lighter construction.

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A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawing:

Fig. 1 is a plan of a pocket lighter embodying my invention.

Fig. 2 is a side elevation with portions of the casing wall broken away so as to illustrate the details of the construction.

Fig. 3 is a vertical section taken about on the line 3-3 of Fig. 2, passing through the pivoted end of the snuffer, but omitting the parts that cooperate with the snuffer to operate it.

Fig. 4 is a vertical section taken about on the line 4-4 of Fig. 2, passing through the casing and the snuffer head, and showing the same in section, but illustrating the wick and its mounting in side elevation; this view also shows the means for adjusting the pressure on the wick to regulate the supply of lighter fluid that can pass to the outer end of the wick.

Fig. 5 is a section upon an enlarged scale through the wick mounting and through the contiguous portion of the casing that supports the same. This view illustrates the wick in dotted outline to show the details of the preferred means that I may employ for enabling the pressure on the wick to be regulated, including a split collet.

Fig. 6 is a plan of the split collet illustrated in Fig. 5.

Before proceeding to a more detailed description of the invention, it should be stated that in applying my improvement to a wick that is carrying liquid by capillary attraction, I provide a mounting for the wick that includes a member that is capable of changing its width, and this member is mounted or constructed so as to exert pressure upon the fibers of the wick in order to compress them and reduce the quantity of liquid that can pass the point where the pressure is exerted; and I also provide means for regulating the degree of pressure upon the wick.

As applied to the pocket lighter such as illustrated in the drawing, the casing 1 of this lighter is constructed with a reservoir 2 for the lighting fluid, into which a wick 3 depends, the upper portion of the wick being supported in a mounting 4 supported in the casing, which will be described more in detail presently. The upper end portion 5 of the wick projects beyond the mounting 4 and is disposed in a "well" or pocket 6 formed in the upper end of the casing.

The mounting 4 for the wick preferably includes a thread connection and means mounted in the thread connection in such a way that by rotating this means, the fibers of the wick can be compressed. In the present instance, I prefer to accomplish this by providing a collapsible collet 7, which collet is in the form of a split sleeve,

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that is to say, it has a longitudinally disposed slot 8 extending through it.

This collet has a tapered lower portion or tip 9 which is substantially conical and received on a substantially conical seat 10 that is formed in a relatively thick horizontal web or wall 2a that forms the upper end of the reservoir 2.

Coaxially with the conical seat 10, I provide a threaded counterbore 11 (see Fig. 5) in which I mount a follower 12 which is in the form of a sleeve, the lower end of which is in contact with the upper end of the collet.

In order to enable the follower 12 to be tightened up so as to force the collet 7 downwardly on its conical seat 10, I prefer to provide the upper end of the follower 12 with two diametrically opposite notches 13. These notches are of square form to enable the follower to be rotated by means of a driver 14 which is removably mounted in the bottom wall 15 of the lighter. For this purpose the bottom of the lighter is provided with a fitting or boss 16 that is secured tightly in an opening formed in the bottom. This boss 16 has a threaded opening in which the threaded shank 17 of the driver 14 is received. The body of the driver 14, which is the upper end of it as viewed in Figs. 2 and 4, is notched as indicated, so as to form two projecting forks 18 that are diametrically opposite to each other.

The lower end of the driver 14 has a large screwdriver head 19 which can be rotated by the back edge of a knife blade or similar means, to unscrew the driver 14. This can be done readily because the thread on the threaded shank 17 of this driver is upset. The upper portion of the driver 14 is formed with a bore 20 indicated in dotted lines in Fig. 4, which is sufficiently large to receive the projecting end portion 5 of the wick.

Before the lighter reservoir 2 is filled with a lighting fluid, the driver 20 should be applied to the upper end of the sleeve 12 to tighten it up, and cause the collet 7 to clamp the wick and constrict it at the lower end of the collet as indicated in dotted lines in Fig. 5. Before doing this, of course the wick should be adjusted so as to have the projecting end portion 5 of the desired length.

The upper portion of the wick, of course passes freely through the bore of the sleeve 12. After adjusting the pressure on the wick as suggested, the lighter can then be inverted and filled with a lighter fluid through the threaded opening in the boss 16. Then the driver 14 is replaced in the boss 16 and screwed up tight to make a fluid-tight connection. If desired, a gasket can be employed under the head 19, although none is illustrated in the drawing.

The upper wall 21 of the lighter is formed with a large slot 22 that fits to the outline of a snuffer 23, which snuffer is in the form of a lever, the body portion 24 of which may have parallel side faces as shown in Fig. 1, the other end of the snuffer being enlarged in size to form a snuffer head 25. This snuffer head is shown in cross-section in Fig. 4. It presents a downwardly projecting wall that surrounds a pocket 26. When the snuffer is in its closed position as indicated in Fig. 4, the lower end of the circumferential wall 25a seats on the upper end of a boss 27 that projects up from the upper wall 2a of the reservoir 2. This substantially closes off air in the pocket 26 so that the flame on the wick will become extinguished.

In order to enable this snuffer to hold itself

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in its closed position as illustrated, or in an open position swung up on its pivot pin 28, I provide a compression spring that is mounted in the casing in such a way that it can exert thrust upon the snuffer on two lines, one of which lies on one side of the axis of the pivot 28, and the other of which will lie on the other side of the pivot. In order to accomplish this, I provide a "well" or socket 29 that extends down into the interior of the casing and on the vertical side 30 of the same that is remote from the location of the reservoir 2. The lower portion 31 of this pocket 29 is cuneiform with upwardly diverging side walls 32 and 33, but as indicated in Fig. 3, the side faces 34 of the cuneiform extension 31 are parallel with each other. These two faces 34 are far enough apart to permit free movement of a coil spring 35 which is disposed around a wobble pin 36, the lower end of which rests upon the bottom of the cuneiform socket 31. This pin carries a rigid head 37 near its upper end, but above which the pin 36 terminates in a projecting pintle 38. As illustrated in Fig. 2, in the closed position of the snuffer, the upper face of the head 37 is pressed against the under side of a small dog 39 that projects downwardly and toward the left side as viewed in Fig. 2, from the lower edge of the snuffer body 24, being forced against this lug by reason of the fact that the spring 35 is in a state of compression. In this position, the line of thrust upon the lug 39 is along a thrust line that will pass to the left of the pivot pin 28, and this of course will operate to hold the snuffer closed.

Adjacent to the lug 39 and on its left side as viewed in Fig. 2, a recess or a socket 40 is formed in the adjacent edge of the lever or body 24 of the snuffer. When the wobble pin 36 is in the position illustrated in Fig. 2, the left side of the head 37 rests against a manually operated part which, in the present instance, is in the form of a push button or stem 41, the inner end of which is formed into a beveled head 42, the beveled face whereof engages the side face or edge of the head 37.

When the lighter is to be operated, pressure upon the push button or pin 41 will swing the wobble pin 36 toward the right and over toward the wall 33. When this occurs, the pintle 38 will engage the left side of the lug 39 and swing this lug 39 toward the right. This will of course swing the snuffer 23 upwardly on its pivot pin 28. This opening movement of the wobble pin 36 will of course be arrested by the edge of the head 37 impinging upon the upper end of the wall 33, and at this time the upper end of the pintle 38 will be lodged in the apex of the recess or notch 40. In that position of the head 37 and pintle 38, the line of thrust of the head 37 against the end of the lug 39 will of course pass on the right-hand side of the pivot pin 28, and this will hold the snuffer in its open position.

By pressing down on the free end of the snuffer or at any point between the pivot pin 28 and the snuffer head 25, the snuffer can be pushed back into its pocket or recess 22 in the upper end of the casing.

It will be evident that the push pin 41 and the wobble pin 36 can be very inexpensively constructed. Furthermore, no skill whatever, is required to assemble them in the casing. After they have been put in place, of course the pivot pin 28 is inserted through the aligning openings for it in the snuffer arm and the side walls of the slot 28.

The lighter shown in the drawing, is illustrated

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as provided with the usual lighter wheel or roller 43 that is pivotally mounted in a socket at the upper corner of the lighter casing and adjacent to the upper portion 5 of the wick. This wheel of course strikes a spark from a cooperating piece or "flint" 44 when the wheel is rotated forcibly in a clockwise direction as indicated by the arrow in Fig. 2. This "flint" 44 is of course guided in the usual manner in the casing, and pressed forcibly against the face of the wheel by a coil spring 45 indicated in dotted lines.

One of the advantages of this invention is that the threaded counterbore 11 is of uniform diameter. This greatly simplifies the operation of threading this bore. Another advantage is that the collet 9 has a plain conical tip, and does not engage the threads of the bore. This leaves this split collet free to become restricted by the plain conical bore 10 in which it is seated.

The use of a plain conical tip in an unthreaded socket is also most advantageous compared with a tapered threaded tip in a threaded tapered socket such as disclosed in the German patent to Kunstmann, Number 357,395, for the reason that the pressure exerted on the collapsible split collet is the same at all points around its circumference. Hence a given amount of orientation of the driver 14 can be depended upon to give a certain definite amount of constriction to the wick, and the force resisting the rotation of the follower is substantially confined to the frictional resistance due to forcing the tapered surface on the tip straight in on the tapered surface of the socket. In a device constructed like the Kunstmann device, the principal resistance will be offered by the side edges of the slots as the collet rotates, and the pressure at the slot edges will of course be greatest at the tips of the tongues between the slots. These edges of the slots will act like cutting teeth tending to abrade the surface of the socket. This will materially reduce the useful life of the lighter. Furthermore, the machining operations necessary to be performed in the Kunstmann lighter are more numerous and difficult than those necessary to produce the lighter disclosed in my application.

Many other embodiments of the invention may be resorted to without departing from the spirit of the invention.

I claim as my invention:

1. In a device employing a wick adapted to

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raise a liquid by capillary attraction, a collapsible member of rigid material surrounding the wick, having a substantially conical tip, a tapered seat for said conical tip, and means distinct from said collapsible member for forcing the said conical tip against said tapered seat to press said member against the periphery of the wick to reduce the quantity of liquid passing the constricted point.

2. In a device employing a wick to carry a liquid by capillary attraction, the combination of a member with a substantially conical seat, a split collet of rigid material surrounding the wick, having a plain unthreaded tip to engage the tapered seat to compress the collet upon the wick, socket means including a thread connection of uniform diameter throughout its entire length; and threaded means removably carried by said device at said thread connection capable of effecting movement of the collet against said tapered seat.

3. In a lighter of the kind described, the combination of a casing having a plain conical seat, a collet of rigid material devoid of thread having a plain conical tip received on said seat to surround the lighter wick, and means mounted in the casing above the collet for adjusting the collet downwardly onto the seat to regulate the degree of compression which it exerts upon the wick.

4. A lighter according to claim 3 in which the collet is provided with a single slit extending through its entire length.

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