

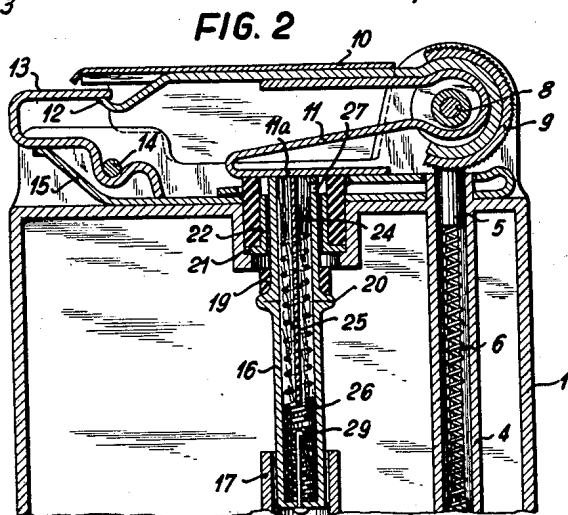
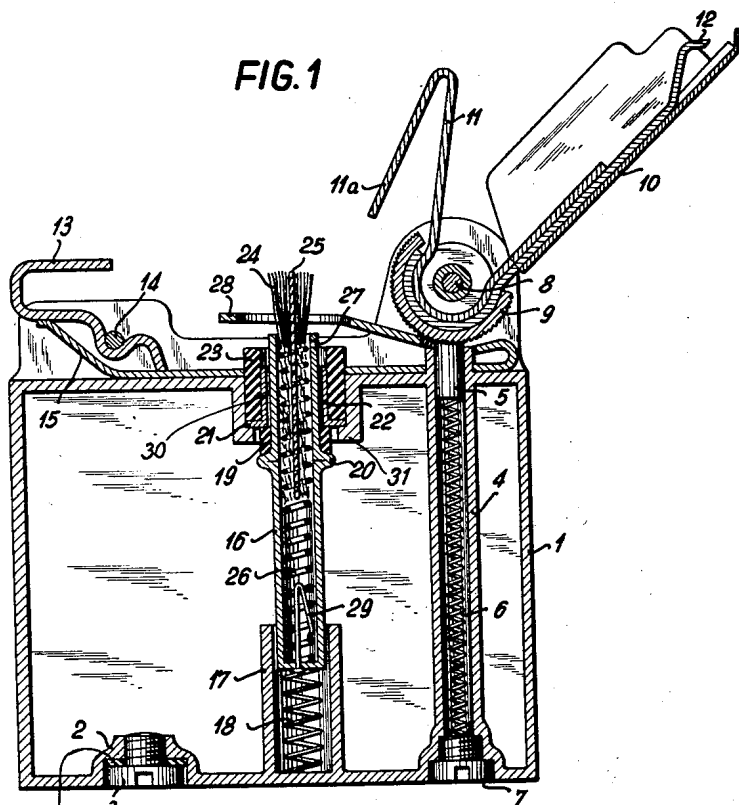
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SMOKER'S LIGHTER

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1

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**SMOKER'S LIGHTER**

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The present invention relates to lighters such as cigarette lighters and, more specifically, to lighters for liquid fuels, which are provided with a flint, a friction wheel and a wick adapted to be lowered into a wick tube. This known type of lighters as heretofore customary has the drawback that the sealing stopper arranged adjacent the closure spring is subjected to the heat of the flame tip when the lighter is lit. As a result thereof said sealing stopper becomes brittle and gets cracks after a relatively short usage so that it will not properly seal any longer. This is the reason why the above identified known type of lighters operating with liquid fuel cannot be marketed without the insertion of absorbing material.

It is, therefore, an object of the present invention to provide a lighter which will overcome the above mentioned drawbacks.

It is another object of this invention to provide a lighter adapted to be operated with liquid fuel such as lighter fluid, and provided with a flint, friction wheel and a wick adapted to be lowered into a wick tube, in which the sealing plug or stopper will have a long effective life and will not be subjected to a harmful effect of the flame.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawing, in which:

Fig. 1 diagrammatically illustrates a section through a lighter according to the invention, but on an enlarged scale, said lighter being in open position.

Fig. 2 is a section similar to that of Fig. 1 but showing the lighter closed.

*General arrangement*

The lighter according to the present invention which is provided with a flint and a friction wheel is characterized primarily in that the wick receiving tube is longitudinally displaceable and is provided with a sealing ring or washer which, when the lighter is open, shuts off the supply of lighter fluid. A further feature of the lighter according to the invention consists in that the upper end of the displaceable wick tube is surrounded by a sealing stopper adapted to be engaged in a sealing manner by a closure spring.

When the lighter according to the invention is open, i. e. when the lighter is lit, the wick tube cannot receive any lighter fluid from the fluid container so that after a certain time the flame will die. On the other hand, when the lighter is closed, the wick tube is lowered so that the previous seal effective between the fluid container and the interior of the wick tube, while the lighter was open, is not effective any longer so that new fluid will have access to the wick. When the lighter is closed, the closure spring rests in a sealing manner against the sealing stopper surrounding the wick tube so that in this condition the tip of the wick is properly closed off toward the outside.

*Structural arrangement*

Referring now to the drawing in detail, the lighter shown therein is in customary manner provided with a fluid-receiving container 1 having an opening 2 through which the lighter container 1 can be filled. The opening 2 is adapted to be closed by a threaded stopper 3 and a sealing washer 3a. In the interior of the container 1 there is provided a tubular member 4 the upper end of

2

which carries a flint 5 which latter is loaded by a spring 6 within said tubular member 4. The tubular member 4 has its lower end closed by a screw 7.

A friction wheel 9 is rotatably mounted on a shaft or pin 8 above the flint 5, said friction wheel 9 being connected to the lid 10. The lighter furthermore comprises a leaf spring 11 adapted to cause the lid 10 to spring open and thereby to turn the friction wheel 9.

The lid 10 is provided with a protruding tongue or nose 12 adapted to catch below a displaceable tongue or handle 13 which latter normally abuts a pin 14. A spring 15 continuously urges the handle 13 against said pin 14. When the lighter is in the position shown in Fig. 2, i. e. when the lid is closed, it will be evident from the drawing that as soon as the handle has been depressed to such an extent that the nose 12 is released, the spring 11 will cause the lid 10 to spring open.

According to the present invention, the wick tube 16 is longitudinally displaceable. To this end, the lower portion of the wick tube 16 telescopically engages a sleeve 17 connected to the container 1. A pressure spring 18 is interposed between the bottom of the sleeve 17 and the bottom of the wick tube 16 so as continuously to urge the wick tube to move upwardly. The upper portion of the wick tube 16 is provided with a sealing washer or ring 19 supported on the wick tube in any convenient manner for instance by a bead or flange 20. When the lighter lid 10 is open, i. e. occupies its Fig. 1 position, the sealing ring 19 rests against a flange 21 of a sleeve 22 which in its turn supports a sealing stopper 23.

The upper portion of the interior of the wick tube 16 houses the wick 24 which preferably consists of non-burnable material as for instance glass fibers. This wick is by means of a thin metal sheet 25 or the like pressed into a spring 26 arranged in the interior of the wick tube 16.

When the lid 10 is closed, the respective parts of the lighter occupy the position shown in Fig. 2. As will be seen from Fig. 2, in closed position of the lighter the flange 11a of the spring 11 has pressed the wick into the wick tube 16. In order to prevent the wick itself from being compressed, the pressure is conveyed to the wick by means of the inserted metal sheet 25. It will also be seen from the drawing that, when the lid is closed completely, the flange 11a of the spring 11 rests upon the upper edge of the wick tube and presses the latter likewise downwardly. Thus, in fully closed position of lid 10, the flange 11a engages the sealing stopper 23, thereby completely sealing the fluid container toward the outside. In this position the fluid in the fluid container 1 will have access to the wick. This is due to the fact that in fully closed position of the lighter, the sealing ring 19 has been lifted off from the flange 21 due to the displacement of the wick tube 16. The fluid can now pass upwardly between said flange 21 and the sealing ring 19 as well as between the sleeve or bushing 22 and the wick tube so that the fluid can flow to the wick through one or more apertures 27.

If now the lighter is opened, the spring 18 pushes the wick tube 16 upwardly while simultaneously the wick 24 is moved upwardly by means of spring 26. When the lid 10 springs open, the friction wheel rotatably engages the flint 5 thereby striking a spark which will ignite the fluid in the wick. When the wick tube 16 moves upwardly, the sealing ring 19 again engages the flange 21 so that the passage of fluid from the container 1 into the annular passage 30 between the sleeve 22 and the wick tube 16 is effectively prevented. Consequently no fresh fluid can at this time pass through the apertures 27 to the wick so that after the fluid in the wick has been used up, the flame will automatically die. It is, of course, understood that the flange 21 of the sleeve 22 is fixedly con-

3

nected in any convenient manner for instance by soldering to the eye 31 of the container 1 so that the sealing ring 19 during the upward movement of the wick tube 16 will hit a fixed abutment thereby arresting the upward movement of the wick tube 16.

In order to keep the heat of the flame away from the upper edge of the sealing stopper 23, it is advantageous to provide a flame shield 28 for instance in form of a flat spring with a corresponding circular opening. This shield may be made of one piece with the spring 15 as is shown in the drawing. When the lid 10 is opened, the spring or shield 28 moves upwardly from its position shown in Fig. 2 thereby shielding the sealing stopper 23. Due to the fact that the cool air passing to the flame flows below said shield to the flame, it will be obvious that at the same time the upper edge portion of the sealing stopper 23 is cooled.

A leaf spring 29 may be provided at the lower end of the wick tube 16 for engagement with the adjacent portion of the spring 26 for the wick, thereby anchoring the lower end of spring 26 in the wick tube 16. If it is desired to remove or replace the spring 26, it is merely necessary strongly to pull on the wick.

It is, of course, understood that the present invention is, by no means, limited to the particular construction shown in the drawing but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. In a lighter adapted to be opened and closed and having a casing adapted to receive and store lighter fluid and provided with an opening, the combination of: a tubular member reciprocable within said opening and provided with passage means adapted to communicate with said casing for receiving fluid therefrom, a wick arranged within said tubular member for receiving lighter fluid through said passage means, first spring means loading said tubular member and responsive to the opening of said lighter to move said tubular member from an inner to an outer position, second spring means independent of said first spring means and loading said wick, said second spring means being adapted in response to the opening of said lighter to move said wick from a first position in which said wick is within said tubular member into a second position for exposing said wick, and sealing means associated with said tubular member and arranged in response to the movement of said tubular member into said second position to interrupt fluid communication between the interior of said casing and said passage means and also being operable in response to said tubular member moving into its first position to restore said fluid communication.

2. In combination in a lighter: a container adapted to receive and store lighter fluid, said container being provided with passage means, annular sealing means inserted in said passage means, a tubular member reciprocably arranged in said container, a wick housed in said tubular member, said tubular member being movable from an inner position for covering up said wick into an outer position through said annular sealing means to expose said wick and vice versa, said tubular member being provided with aperture means for establishing fluid communication between the interior of said container and the interior of said tubular member in response to said tubular member moving into its inner position, additional sealing means supported by said tubular member and operable in response to said tubular member moving into its outer position to interrupt said fluid communication, lid means hinged to said container and movable selectively into a first position for covering up said wick and into a second position for exposing said wick, and yieldable means connected to said lid means and operable in response to said lid means moving into its first position to move said tubular member into its inner position and sealingly to engage said annular means.

3. In combination in a lighter: a container adapted to

4

receive and store lighter fluid, said container being provided with an opening, sleeve means substantially coaxially arranged with regard to said opening and connected to said container in spaced relationship to said opening, a tubular member reciprocably mounted in said sleeve means and movable through said opening, spring means within said sleeve means and continuously urging said tubular member outwardly of said sleeve means, a wick housed by said tubular member, said tubular member being provided with aperture means arranged to receive fluid from said container, lid means hinged to said container and movable selectively from an open position to a closed position and vice versa, yieldable means connected to said lid means and arranged to engage said tubular member in response to said lid means moving into said closed position to thereby move said tubular member inwardly against the thrust of said spring means, passage means arranged to establish communication between said aperture means and said container in response to said lid means occupying its closed position, first sealing means disposed on said tubular member for sealing said passage means in response to said lid means moving into its open position to seal said passage means thereby interrupting communication between said aperture means and said container, and additional sealing means surrounding the upper end of said tubular member for sealing engagement with said yieldable means when said lid means is in its closed position.

4. In combination in a lighter: a container adapted to receive and store lighter fluid, said container being provided with first passage means, annular means inserted in said passage means, a tubular member reciprocably arranged in said container, a wick housed in said tubular member and composed of a non-burnable fiber strand, said tubular member being movable from an inner position for covering up said wick into an outer position through said annular means to expose said wick and vice versa, said annular means confining with said tubular member an annular passage, spring means continuously urging said wick to protrude above the upper end of said tubular member, said tubular member being provided with aperture means for establishing fluid communication between the interior of said container and interior of said tubular member through said passage in response to said tubular member moving into its inner position, sealing means supported by said tubular member and operable in response to said tubular member moving into its outer position to block said passage thereby interrupting said fluid communication, lid means hinged to said container and movable selectively into a first position for covering up said wick and into a second position for exposing said wick, means resistant against bending and extending into said wick, and yieldable means connected to said lid means and operable in response to said lid means moving into its first position and by engagement with said means resistant against bending to move said wick into said tubular member while moving said tubular member into its inner position thereby causing said sealing means to release said passage for re-establishing fluid communication.

5. A lighter according to claim 4, which includes shielding means associated with said lid means so as to be movable therewith and arranged in response to said lid means occupying its second position to occupy a position intermediate said annular means and the tip of said wick to shield said annular means from the flame on said wick when the fuel in the latter has been ignited.

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