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CIGARETTE LIGHTER FILLING PLUG

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FIG. 1.

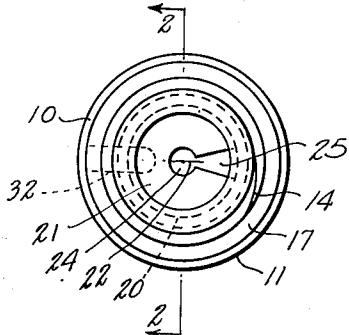


FIG. 2.

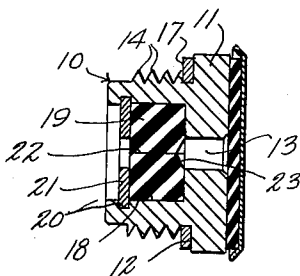


FIG. 5.

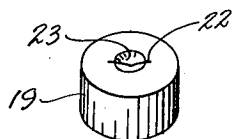


FIG. 6.

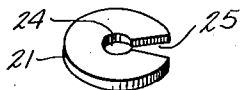


FIG. 3.

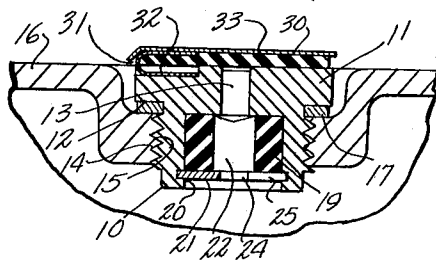


FIG. 7.

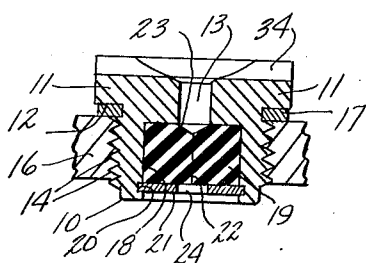
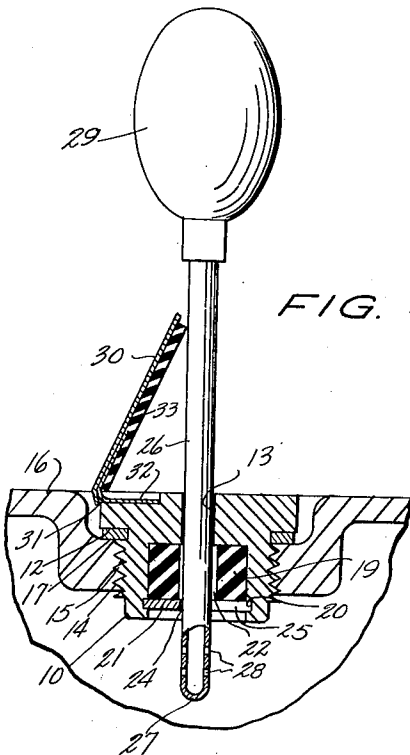


FIG. 4.



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CIGARETTE LIGHTER FILLING PLUG

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3 Claims. (Cl. 220-86)

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This invention relates to filling plugs for liquid containers, such as cigarette lighters, and more particularly to a self sealing plug through which a syringe can be inserted to fill the lighter.

It is among the objects of the invention to provide a self sealing filling plug which can be used in an existing lighter in substitution of the filling opening closure plug originally provided, which will receive a syringe stem or needle therethrough so that the lighter can be filled without spilling any of the lighter fluid and without the necessity of removing the plug from the filling opening, which is leakproof in association with the lighter, and which does not require any modification of the lighter construction or change the appearance of the lighter and is easy to install and use.

Other objects and advantages will become apparent from a consideration of the following description and the appended claims in conjunction with the accompanying drawing wherein:

Figure 1 is a bottom plan view of a lighter plug illustrative of the invention;

Figure 2 is a cross sectional view on the line 2-2 of Figure 1;

Fig. 3 is a cross sectional view of the plug similar to Figure 2 but on a section plane displaced 90 degrees from the section plane of Figure 2 and shown in operative association with a fragmentary portion of a lighter;

Figure 4 is a view similar to Figure 3 but showing the filler plug receiving a syringe stem therethrough;

Figure 5 is a perspective view of a body of resilient material constituting a component of the filler plug;

Figure 6 is a perspective view of a retaining washer which secures the body of resilient material in the plug; and

Figure 7 is a cross sectional view similar to Figure 2 of a somewhat modified form of filling plug.

With continued reference to the drawing, the self sealing filler plug comprises a hollow cylindrical body 10 of suitable material, such as metal, having at one end an end wall 11 which projects marginally beyond the outer surface of the body to provide an annular sealing flange 12 surrounding the cylindrical body. The end wall 11 is provided with a central aperture 13 and the body is provided externally thereof with a screw threaded formation 14 which is threadable into the screw threaded filler opening 15 of a fluid container, such as the cigarette lighter

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body 16. An annular gasket 17 surrounds the body 10 adjacent the flange or shoulder 12 and is compressed between this shoulder and the adjacent surface of the container surrounding the filler opening 15 to provide a fluid tight seal between the hollow body and the container.

The hollow body 10 has a cylindrical cavity 18 therein and a cylindrical body 19 of resilient material is disposed in the cavity 18. Near its end remote from the end wall 11 the body 10 is provided with an internal annular groove 20 and a retaining disc 21 is marginally engaged in the groove 20 to retain the body 19 of resilient material in the cavity 18 of the hollow body 10.

The body 19 is formed of a resilient material, such as synthetic rubber, which is resistant to deterioration by lighter fluid and has a slit 22 extending therethrough from one end to the other. The body 19 is slightly compressed in the hollow body 10 so that the slit 22 is normally securely closed to prevent leakage of lighter fluid therethrough. The body 19 is also provided with a rounded depression 23 in its end adjacent the end wall 11, the depression 23 being in registry with the aperture 13 in the end wall to facilitate inserting a syringe stem or needle through the slit 22 in the body 19.

The retaining disc 21 is provided with a central aperture 24 which is aligned with the aperture 13 in the end wall 11 and with the slit 22 in the body 19 and the disc 21 also has a sector shaped cut out 25 to render the disc flexible and facilitate its insertion into the groove 20.

With the body 19 secured in the hollow body 10 by the disc 21, the plug may be threaded into the filler opening 15 in the bottom wall of the cigarette lighter 16 with the gasket 17 compressed between the flange shoulder 12 and the wall of the lighter surrounding the opening 15. A tubular syringe stem 26 of the proper size and having a rounded end 27 may then be inserted through the aperture 13 in the end wall, the slit 22 in the body of resilient material and the disc aperture 24 into the interior of the fluid containing portion or receptacle of the lighter. The stem 26 is provided near its rounded end 27 with small apertures 28 and a bulb 29 of flexible and resilient material, such as rubber, is secured on the other end of the stem, so that lighter fluid can be drawn into the syringe comprising the stem 26 and bulb 29 and forced from the syringe through the apertures 28 into the interior of the lighter re-

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ceptacle by compressing the bulb 29. When the syringe stem is withdrawn from the filler plug after the lighter has been filled with lighter fluid the resilient material of the body 19 firmly closes the slit 22 so that the fluid cannot leak through the filler plug.

In the arrangement particularly illustrated in Figures 2, 3 and 4, a cover is provided for the outer side of the end wall 11 of the plug. This cover comprises a flat metal disc 30 secured to the end wall 11 by a U-shaped spring 31, one leg of which is secured to the disc 30 and the other leg of which is received in a radially disposed recess 32 in the outer side of the end wall 11 and secured to the end wall, and a disc shaped gasket 33 of suitable sealing material secured to the side of the disc 30 adjacent the end wall 11 of the plug.

When the syringe stem 26 is inserted through the plug to fill the lighter the cover is raised, as illustrated in Figure 4, to expose the aperture 13 in the end wall of the plug.

In the somewhat modified form of the invention illustrated in Figure 7 the cover is omitted and the outer side of the end wall 11 is provided with a transverse slot 34 to receive a tool, such as a screwdriver, by means of which the plug is firmly tightened in the filler opening 15 to compress the gasket 17.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are, therefore, intended to be embraced therein.

What is claimed is:

1. In combination with a cigarette lighter case having an internally screw-threaded filler opening therein, a filler plug comprising a hollow plug body having an externally screw-threaded portion of cylindrical shape threaded into the filler opening in said case and an end wall portion on one end of said cylindrical portion extending marginally beyond said cylindrical portion to provide an annular flange and having a centrally disposed aperture therein, a gasket interposed between said flange and the adjacent surface of said case, said portion of cylindrical shape having an internal annular groove therein spaced from said end wall, a body of elastic material of cylindrical shape filling said plug body between said end wall and said internal groove and having a slit extending longitudinally therethrough in registry with the aperture in said end wall, and a centrally apertured disc marginally engaged in said internal groove and compressing said body of resilient material between itself and said end wall, said plug being adapted to receive a syringe stem through the aperture in said end wall, the slit in said body of elastic material and the aperture in said disc and said body of

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elastic material being effective to resiliently close the stem receiving passage through said plug upon the removal of a syringe stem from the passage.

2. In combination with a cigarette lighter case having an internally screw-threaded filler opening therein, a filler plug comprising a hollow plug body having an externally screw-threaded portion of cylindrical shape threaded into the filler opening in said case and an end wall portion on one end of said cylindrical portion having a centrally disposed aperture therein, said portion of cylindrical shape having an internal annular groove therein spaced from said end wall, a body of elastic material of cylindrical shape filling said plug body between said end wall and said internal groove and having a slit extending longitudinally therethrough in registry with the aperture in said end wall, and a centrally apertured disc marginally engaged in said internal groove and compressing said body of resilient material between itself and said end wall, said plug being adapted to receive a syringe stem through the aperture in said end wall, the slit in said body of elastic material and the aperture in said disc and said body of elastic material being effective to resiliently close the stem receiving passage through said plug when a syringe stem is removed from the passage.

3. In combination with a cigarette lighter case having an internally screw-threaded filler opening therein, a filler plug comprising a hollow plug body having an externally screw-threaded portion of cylindrical shape threaded into the filler opening in said case and an end wall portion on one end thereof provided with a central aperture, a body of elastic material of cylindrical shape disposed in said plug body with one end against said end wall and having a slit extending longitudinally therethrough in registry with the aperture in said end wall, and means secured in said cylindrical portion and bearing against the other end of said body of resilient material compressing said body of resilient material between itself and said end wall, said plug being adapted to receive a syringe stem through the aperture in said end wall and the slit in said body of elastic material and said body of elastic material being effective to resiliently close the stem receiving passage through said plug when a syringe stem is removed therefrom.

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