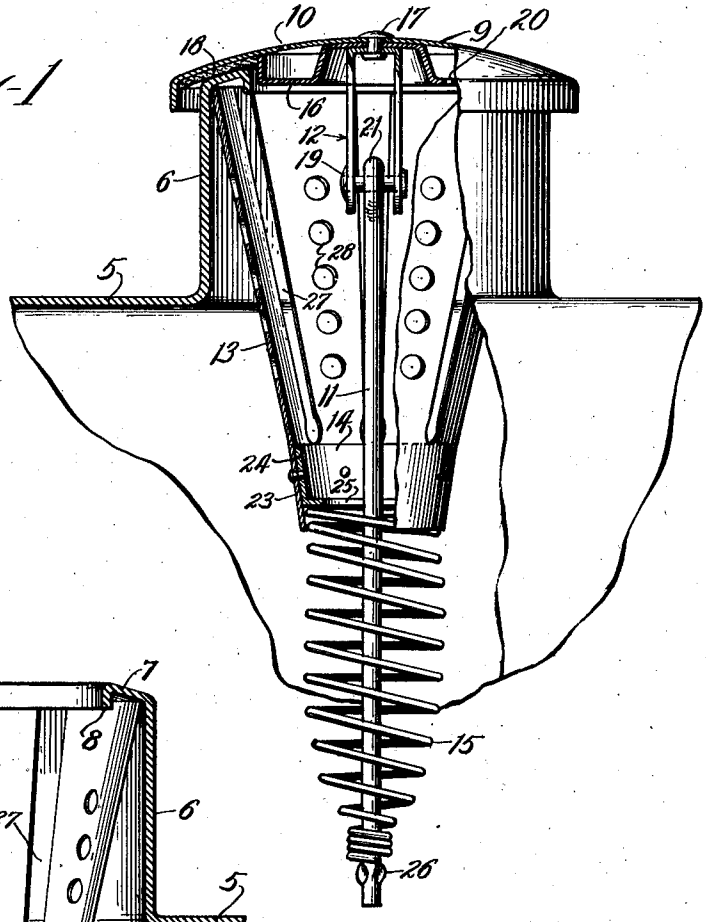
Nov. 16, 1937. H. G. DIBELKA ET AL 2,099,558

DEVICE FOR CLOSING FILLING OPENINGS OF LIQUID CONTAINERS

Filed April 25, 1932

Fig-1



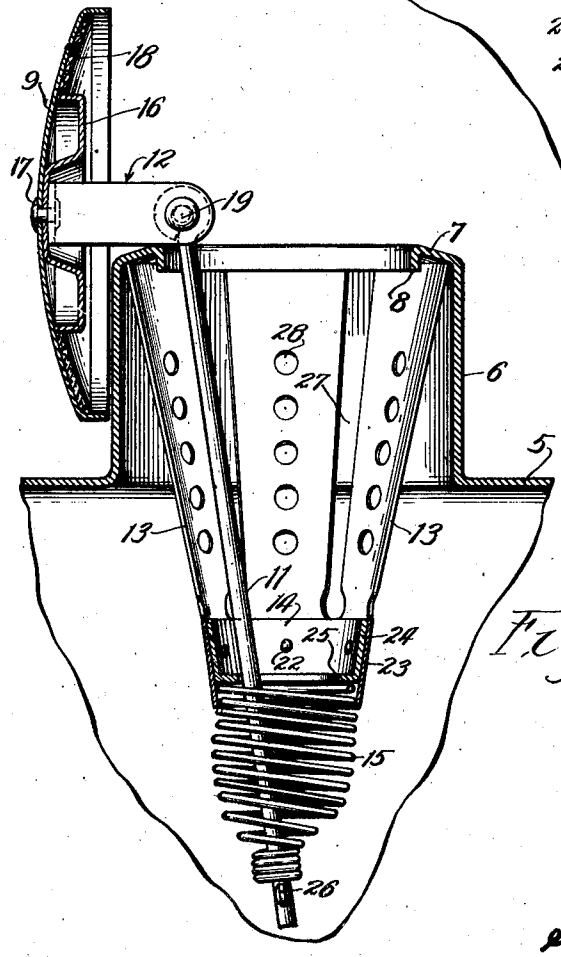


Fig-2

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DEVICE FOR CLOSING FILLING OPENINGS OF LIQUID CONTAINERS

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8 Claims. (Cl. 220—86)

This invention relates to a device for closing the filling openings of liquid storage vessels such as automobile gasoline tanks and the like.

An important object of the invention is to provide a device of this class which will close the filling opening in such a way as to effectively prevent fraudulent removal of the contents of the vessel.

A further object of the invention is to provide a device for closing liquid containers comprising a cover cap having a supporting member adapted to depend therefrom through the filling opening into the container, and in combination therewith a cap-anchoring mechanism disposed within the container limiting the upward movement of the cap, said mechanism including a plurality of resilient strip members so positioned relative to the supporting member as to effectively prevent attempted removal of liquid by the insertion of a tube or pipe through the filling opening.

Other objects and advantages of the invention will be apparent from the following detailed description, which, taken in connection with the accompanying drawing, discloses a preferred embodiment thereof.

Referring to the drawing:

Fig. 1 is a broken elevational view of the device positioned in the filling opening of a liquid container, the cover cap being shown in closed position on the end of the filling tube; and

Fig. 2 is a vertical section of the device taken at right angles to the section of Fig. 1, the view showing the cover cap moved to open position on the filling tube.

In the drawing, the numeral 5 designates the body portion of a liquid-containing vessel such as an automobile gasoline tank, or the like, and the numeral 6 designates the filling tube of the tank through which liquid may be introduced. The upper end of filling tube 6 is turned inwardly to provide a rim 7, the inner edge of the latter in turn being bent downwardly to provide a retaining flange 8 which extends completely around the filling opening.

The novel means provided in accordance with our invention for closing the filling opening in tube 6 comprises: a cover cap 9 which is shaped to be received on the upper end of tube 6; a rod 11 adapted to be positioned in the filling opening; a channel bracket 12 providing pivotal connection between cap 9 and the upper end of rod 11; and anchoring means for limiting the upward movement of rod 11 and cap 9, said means including a plurality of resilient strip members 13 supported at their inner ends on a collar 14, and a coiled spring 15 interposed between collar 14 and the lower end of rod 11.

The cover cap 9, in the embodiment shown, is provided on its under face with a channel-shaped flange 16 which engages within flange 8 of the filling tube when the cap is in closed position, thereby serving to center the cap on the filling opening. Flange 16 and bracket 12 are secured in place by a rivet 17 which rigidly connects these parts to the under face of the cap. A leather gasket 18, disposed about flange 16 on the under face of cap 9, engages against the rim 7 of tube 6 to provide an air-tight seal for the filling opening. An air hole 10 is provided in cap 9, and a second air hole 20 is provided in flange 16, these holes being positioned out of alignment with one another, as shown in Fig. 1, to prevent possible loss of liquid by splashing. A pin 19 extending between the arms of bracket 12 engages in a loop or eye 21 formed on the upper end of rod 11 to provide pivotal connection between the latter and bracket 12.

The strip members 13 are formed of resilient sheet metal and are secured at their lower ends to collar 14. These strip members 13 may be stamped from a single piece of sheet steel, the lower edge portion of the piece from which the strips are stamped being left intact to provide a continuous rim or strip portion 23 which is wrapped around collar 14 and secured in place by rivets 22. Collar 14 comprises an inwardly converging side wall 24, and an in-turned flange 25 which may be formed integrally with side wall 24. Strip members 13, being rigidly secured to the inwardly converging side wall 24, tend to diverge outwardly to bring the upper ends thereof against the under face of rim 7. Since these strips are formed of resilient material, they have a natural tendency to spread laterally, so that after they have been compressed sufficiently to pass through the opening in the upper end of filling tube 6, they will immediately spread outwardly to engage the under face of rim 7.

Coil spring 15 is shaped in the form of a tapered helix, the upper convolution of the coil being held in place in the annular pocket formed by flange 25 and the lower edge portion of strip 23. The lower end of spring 15 is wound around rod 11 and is held thereon by lips 26 formed on the lower end of said rod. The upward pressure exerted by spring 15 on flange 25 holds the upper ends of strip members 13 firmly against the under

face of rim 7. Without the use of a special tool for engaging flange 25, there is no way in which strip members 13 can be pushed downwardly against the tension of spring 15 far enough to clear flange 8. Furthermore, by reason of the resiliency of these members it would be very difficult to pull them inwardly sufficiently to clear flange 8 even when pushed downwardly far enough to clear the lower edge of the latter.

When it is desired to introduce liquid into the vessel, it is merely necessary to pull upwardly on cap 9 until bracket 12 clears the upper edge of the filling tube 6, in which position rod 11 may be swung to one side to allow the cover cap to be pivoted to vertical open position, as shown in Fig. 2. Cap 9 and rod 11 thus serve as a means for preventing removal of spring 15 and strip members 13 from the container, and at the same time said spring and strip members limit the upward movement of rod 11 to prevent complete removal of the cap from the container. If desired, a chain may be used in place of rod 11 for interconnecting spring 15 and cover cap 9.

In the embodiment shown, it will be noted that strip members 13 are spaced quite closely to one another on collar 14, the intervening spaces 27 being relatively narrow. The purpose of this is to make it impossible for one to fraudulently remove the contents of the container by inserting a tube between an adjacent pair of the members 13. Also, it will be noted that the coils of spring 15, in the position of the cap shown in Fig. 2, completely close off the space intervening between the edge of flange 25 and the lower end of rod 11. It therefore would be impossible for one to draw liquid from the container by attempting to insert a tube either through the slot-like openings 27 or through the opening in collar 14. The device thus provides means for effectively preventing theft of liquid from the container. However, it does not materially interfere with the filling of the container since liquid readily flows between the openings 27 and also between the coils of spring 15. To further avoid obstruction of the in-coming liquid, strip members 13 are provided with openings 28 through which liquid may freely flow to the interior of the container.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

What we regard as new and desire to secure by Letters Patent is:

1. A device for closing the filling opening of a liquid container comprising a cover cap, a supporting member connected to the under face of said cap and adapted to depend therefrom through the filling opening into the container, and an anchor assembly adapted to be positioned on the interior of the container for limiting the upward movement of said cap on the container, said assembly including a base having an opening therein for receiving said supporting member, a plurality of outwardly biased resilient strip members supported at their lower ends on said base, said members being arranged to permit free passage of liquid into the container while affording obstruction of a siphoning means therein, and means carried by said supporting member for yieldingly pressing said strip members upwardly against the walls of the filling opening.

2. A device for closing the filling opening of a liquid container comprising a cover cap, a supporting member connected to the under face of said cap and adapted to depend therefrom through the filling opening into the container, and an anchor assembly adapted to be positioned on the interior of the container for limiting the upward movement of said cap on the container, said assembly including a base having an opening therein for receiving said supporting member, a plurality of resilient strip members supported at their lower ends on said base, said members being biased outwardly on the base to position the upper ends thereof beyond the walls of the filling opening, and means carried by said supporting member for yieldingly pressing said strip members upwardly against the walls of the filling opening, said strip members being spaced relatively close to one another around said supporting member to substantially close the space between the latter and the walls of the filling opening.

3. A device for closing the filling opening of a liquid container comprising a cover cap, a supporting member connected to the under face of said cap and adapted to depend therefrom through the filling opening into the container, and an anchor assembly adapted to be positioned on the interior of the container for limiting the upward movement of said cap on the container, said assembly including a base having an opening therein for receiving said supporting member, a plurality of resilient strip members supported at their lower ends on said base, said members being biased outwardly on the base to position the upper ends thereof beyond the walls of the filling opening, and means carried by said supporting member for yieldingly pressing said strip members upwardly against the walls of the filling opening, said strip members being spaced relatively close to one another around said supporting member and having perforations formed therein, whereby to allow free flow of liquid into the container while substantially closing the space between said supporting member and the walls of the filling opening.

4. A device for closing the filling opening of a liquid container having a flange projecting downwardly from the walls of the opening comprising, in combination, a cover cap, a supporting member adapted to depend from the under face of said cap through the filling opening into the container, and means adapted to be positioned on the interior of the container for limiting the upward movement of said cap on the container, said means including a frame piece having an opening therein for receiving said supporting member, a plurality of outwardly biased resilient strip members supported on said frame piece, said frame piece being smaller in dimension than the filling opening and said strip members being arranged thereon in position to permit free passage of liquid into the container while affording obstruction to introduction of a siphoning means therein, and yielding means interposed between the supporting member and said frame piece for pressing said strip members upwardly against the walls of the container adjoining said flange.

5. A device for closing the filling opening of a liquid container having a flange projecting downwardly from the walls of the opening comprising, in combination, a cover cap, a supporting member adapted to depend from the under face of said cap through the filling opening into the container, and means adapted to be positioned on the interior of the container for limit-

ing the upward movement of said cap on the container, said means including a frame piece having an opening therein for receiving said supporting member, a plurality of outwardly biased resilient strip members supported on said frame piece, said frame piece being smaller in dimension than the filling opening and said strip members being arranged thereon in position to permit free passage of liquid into the container while affording obstruction to introduction of a siphoning means therein, and yielding means comprising a coiled spring interposed between the supporting member and said frame piece for pressing said strip members upwardly against the walls of the container adjoining said flange.

6. A device for closing the filling opening of a liquid container having a flange projecting downwardly from the walls of the opening comprising, in combination, a cover cap, a supporting member adapted to depend from the under face of said cap through the filling opening into the container, and means adapted to be positioned on the interior of the container for limiting the upward movement of said cap on the container, said means including a frame piece having an opening therein for receiving said supporting member, a plurality of resilient strip members supported on said frame piece, said frame piece being smaller in dimension than the filling opening and said strip members being biased outwardly thereon, whereby to position the upper ends thereof beyond said flange after the frame piece and strip member assembly has been inserted through the filling opening, and yielding means interposed between the supporting member and said frame piece for pressing said strip members upwardly against the walls of the container adjoining said flange, said strip members being spaced relatively close to one another around said supporting member to substantially close the space between the latter and the walls of the filling opening.

7. A device for closing the filling opening of a liquid container having a flange projecting downwardly from the walls of the opening comprising, in combination, a cover cap, a supporting member adapted to depend from the under face of said cap through the filling opening into the container, and means adapted to be positioned on the interior of the container for limiting the upward movement of said cap on the container, said means including a frame piece having an opening therein for receiving said supporting member, a plurality of resilient strip members supported on said frame piece, said frame piece being smaller in dimension than the filling opening and said strip members being biased outwardly thereon, whereby to position the upper ends thereof beyond said flange after the frame piece and strip member assembly has been inserted through the filling opening, and yielding means comprising a coiled spring interposed between the supporting member and said frame piece for pressing said strip members upwardly against the walls of the container adjoining said flange, said strip members being spaced relatively close to one another around said supporting member to substantially close the space between the walls of the filling opening and said frame piece and the coils of said spring being adapted to substantially close the space between said supporting member and the frame piece when the cap is moved to open position on the container.

8. A device for closing the filling opening of a liquid container comprising, in combination, an anchor assembly adapted to be positioned on the interior of the container, said assembly including a plurality of resilient strip members arranged around the filling opening in position to permit free passage of liquid into the container while affording obstruction to introduction of a siphoning means therein, a cover cap provided on its under face with a centering flange for engaging in the filling opening, a supporting member adapted to depend from the under face of said cap through the filling opening into the container, and means interposed between said anchor assembly and said supporting member for yieldingly pressing said strip members upwardly against the walls of the filling opening.

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