May 27, 1941. S. SCHWARTZ 2,243,290

CLOSURE PLUG AND SEALING MEANS THEREFOR

Filed Aug. 20, 1938

Fig. 1.

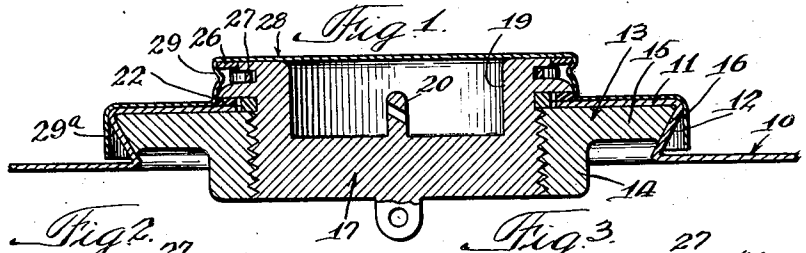


Fig. 2.

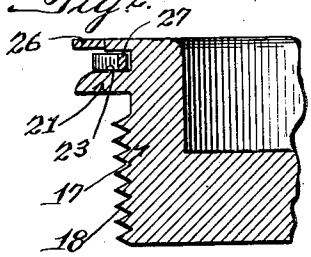


Fig. 3.

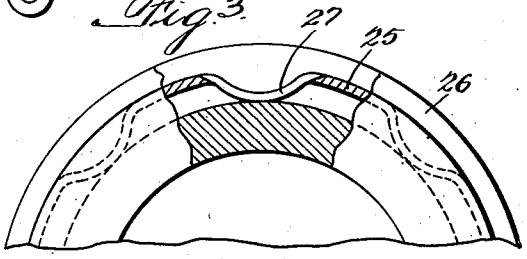


Fig. 4.

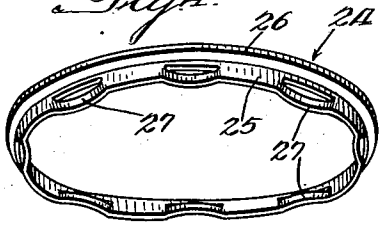


Fig. 5.

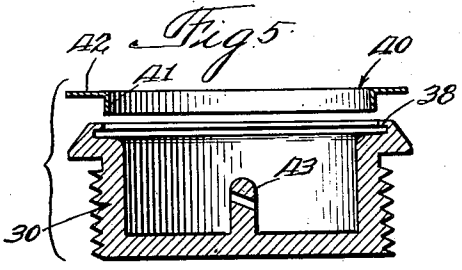


Fig. 6.

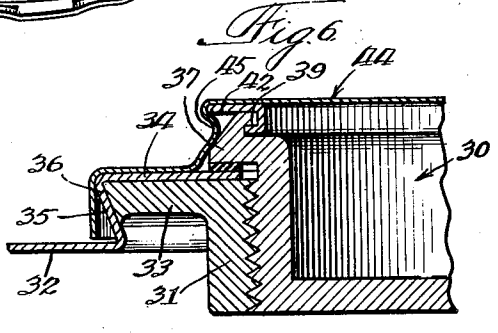


Fig. 7.

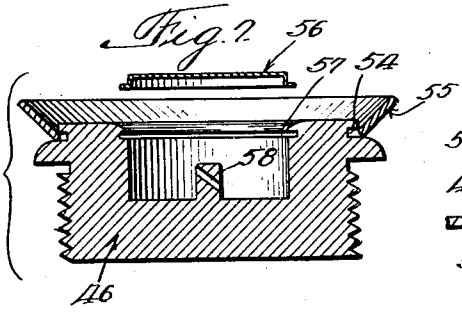
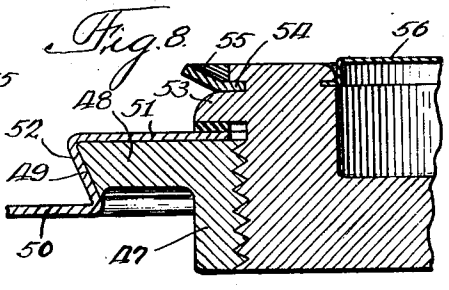


Fig. 8.



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UNITED STATES PATENT OFFICE

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CLOSURE PLUG AND SEALING MEANS THEREFOR

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Application August 20, 1938, Serial No. 225,847

5 Claims. (Cl. 220—39)

This invention relates to a closure plug and a sealing means therefor and has special reference to a closure plug for sealing a hole through the wall of a metallic barrel or other containers which are usually used in storing and shipping oils or other liquids or semi-liquids and to a means for preventing undetectable access to the plug.

More particularly, this invention relates to a closure plug for sealing a hole through a wall of a container, comprising a main body portion having detachable engagement with the material bounding the hole and an extending portion having an internal tool-engaging formation, there being a ring carried by the plug having a portion thereof disposed in a groove thereon and freely rotatable axially thereof and extending radially beyond the outer confines of the plug to prevent tool-engaging access thereto with means for enclosing the internal tool-engaging formation.

The present invention contemplates the provision of a closure plug having an annular groove into which is disposed a portion of a ring, the ring being freely rotatable in the groove and extending radially beyond the outer confines of the plug so that when it is attempted to remove the plug by the application of external pressure to the outer confines thereof, the tool employed will grip the extending ring portion which is freely rotatable on the plug and thereby prevent rotation of the plug. In order to obtain access to the internal tool-engaging formation it is necessary to destroy the means for enclosing this formation. Therefore, the present invention prevents the removal of the plug as a whole and also prevents undetectable access to the tool-engaging formation of the plug.

One of the objects of this invention is to provide a closure plug and a sealing means therefor of the character indicated above, which is simple in construction, is efficient in use, and is comparatively inexpensive to manufacture and assemble.

Another object of this invention is to provide a closure plug and sealing means therefor as referred to hereinabove in which the ring thereof extends beyond the confines of the plug and is freely rotatable thereon.

A further object of this invention is to provide a closure plug and sealing means therefor of the type above noted in which the sealing means for enclosing the internal tool-engaging formation is carried by the rotatable ring.

Other objects and advantages will hereinafter be more particularly pointed out and for a more complete understanding of the characteristic features of this invention, reference may now be had to the following description when taken together with the accompanying drawing in which latter—

Figure 1 is a central sectional view of a closure plug and sealing means therefor embodying the features of the present invention, the closure plug and sealing means being shown in an assembled relation with a connecting member secured in a socket formed outwardly in the wall of a container, which latter is shown fragmentarily;

Fig. 2 is an enlarged fragmentary sectional view of the closure plug illustrated in Fig. 1 with the rotatable ring shown in position in the groove of the plug;

Fig. 3 is a top plan view, partially in section, of Fig. 2;

Fig. 4 is a perspective view of the rotatable ring shown in the preceding figures;

Fig. 5 is a central sectional view of a modified form of closure plug and ring member therefor embodying the features of this invention, the plug and ring member being shown in a disassembled condition;

Fig. 6 is an enlarged fragmentary view of the closure plug and rotatable ring of Fig. 5, shown as being assembled in a connecting member secured in a socket formed outwardly in a wall of a container with a sealing means in position thereon enclosing the internal tool-engaging formation of the closure plug;

Fig. 7 is a view similar to Fig. 5 showing a further modified form of plug and ring member embodying the features of this invention; and

Fig. 8 is a view similar to Fig. 6 showing an assembled condition of the closure plug and ring members of Fig. 7.

Referring now to the drawing, and more particularly to Figs. 1–4, inclusive thereof, the present invention is shown as being associated in the supporting wall 10 of a container or barrel head, the latter being preferably formed of sheet material such as steel. The material bounding a hole in the supporting wall 10 is formed outwardly to provide a socket having a face 11 and side walls 12.

The outwardly formed socket is for the purpose of receiving a connecting member 13, the connecting member comprising an internally threaded cylindrical collar 14 having a radially extending flange 15, the edges 16 of the flange preferably converging when viewed in cross section and being of non-circular or polygonal formation. The connecting member 13 is held from axial displacement from the socket by reason of

the side walls 12 of the socket being forced against the inwardly converging edges 16 of the flange 15 and the connecting member is held against rotation by reason of the engagement of the non-circular or polygonal edges of the respective side walls 12 and peripheral edges 16.

A closure plug 17 is preferably provided with external threads 18 for engaging the internally threaded cylindrical collar 14 of the connecting member 13. The plug is provided with an internal recess 19 in which an internal tool-engaging formation 20 is formed. The main body portion of the plug is therefore screw-threaded for detachable engagement with the threads of the connecting member, an extending portion of the closure plug forming an enlarged head portion 21 for seating on top of the face 11 of the outwardly formed socket. A gasket 22 is preferably interposed between the opposed faces of the enlarged head and the face 11. The extending portion or head 21 of the closure plug is provided with a peripheral groove 23 preferably of annular configuration to receive therein a portion of a ring 24.

The ring 24 comprises an upstanding collar 25 having a flange 26 extending radially outwardly therefrom. The internal diameter of the collar 25 is just sufficient to pass freely over the upper end of the closure plug, the collar being slit at spaced intervals intermediate the ends thereof with that portion of the collar subtending the slits on one side being deformed to provide spaced deformations 27 for extending into the groove 23 of the closure plug. The deformations 27 fit freely within the groove 23 and prevent axial displacement of the ring 24 from the plug although permitting free rotatable movement about the axis thereof. The height of the collar 25 is preferably such that the top of the flange 26 is coextensive with the top of the plug.

The flange 26 of the ring 24 extends radially to or beyond the outer confines of the plug so as to prevent tool-engaging access to the extending portion of the plug. Were a wrench or like tool to be applied to the extending portion of the plug, it would first engage the ring 24 and a clamping engagement therewith would not turn the plug since the ring rotates freely about the axis thereof.

In order to prevent undetactable access to the tool-engaging formation 20, a cap 28 of relatively thin sheet metal is disposed in position on the plug for enclosing this tool-engaging formation. In the instance shown in the present figures, the cap is of inverted cup shape and of a stepped cross section. That portion of the cap of smaller diameter is substantially the same diameter as the outside diameter of the flange 26 so that the flange 26 may be received therewithin. The skirt 29 of the cap is crimped below the flange 26 of the ring 24 and depends sufficiently to envelop completely the extending portion of the plug 17. As shown in the drawing, an extension of the cup and skirt 29*a* thereof envelops the outwardly formed socket of the wall 10 although this extension is optional and may be omitted as desired. The cap is therefore carried by the rotatable ring 24 although, as will hereafter be more particularly pointed out, the cap or the means for enclosing the tool-engaging formation may be carried by the plug. In either instance, when a tool is applied to the extending portion of the plug, either the sealing cap 28 or the rotatable ring 24 is engaged and since they are both mounted to rotate on the plug, the plug will not turn with the turning movement of the cap or ring.

Referring now more particularly to Figs. 5 and 6 of the drawing, the plug and sealing means therefor are shown in a modified form and comprise a main body portion 30 having external threads for engaging the internally threaded collar 31 of a connecting member. The connecting member is, in turn, secured to the wall 32 of a container by means of a flange 33 received in an outwardly formed socket having a face 34 and side walls 35. The edges 36 of the flange are tapered or, as shown in cross section, the edges converge and are engaged by the walls 35 in such converging relation to prevent axial displacement of the connecting member from the socket.

The extending portion of the plug 30 is in the form of an enlarged head 37, the under surface of which seats on the face 34 of the socket, there being preferably a gasket between the engaged surfaces. An internal groove 38 is provided in a recess in the head 37 and extends thereabout in the form of a circular channel to receive a radially extending lip 39 of a ring 40.

The ring 40 preferably comprises an upstanding collar 41 having a radially extending flange 42 formed integrally therewith at one end thereof, the lip 39 being formed integrally with the collar at the other end thereof in the assembly of the ring to the connecting member 30. Referring to Fig. 5, the ring 40 is in an initial condition preparatory to assembly and by reference to Fig. 6, the ring is shown in an assembled condition. The lip 39 is freely rotatable in the groove 38 about the axis of the closure plug.

The flange 42 of the ring 40 extends radially outwardly to or beyond the outer confines of the extending portion of the plug to prevent tool-engaging access to the plug. Upon the application of the tool to the outside of the plug, the tool will engage the rotatable ring at the flange 42 thereof and rotate the ring without causing rotation of the plug.

In order to prevent undetectable access to the internal tool-engaging formation 43 of the plug, a cap 44 is provided, the cap being preferably of inverted cup shape and overlying the flange 42, the skirt 45 of the cap being crimped below the flange 42 and extending to envelop completely the entire extending portion of the plug. It may be desirable to enclose the entire outwardly formed socket with the cap 44 and for this reason an extension of the cap is shown which overlies the face 34 of the socket and depends to envelop the side walls 35.

The construction of this invention shown in Figs. 7 and 8 comprises a closure plug 46 having a main body portion thereof externally threaded to engage internal threads of a collar 47 of a connecting member, the connecting member having an outwardly extending flange 48 integrally formed therewith. The edges 49 of the flange 48 are preferably polygonal or non-circular and converge inwardly when viewed in cross section. A socket is formed outwardly about a hole in a wall 50 of a metallic receptacle, the socket having a face 51 and side walls 52 which are bent to engage the converging edges 49 of the flange 48 to prevent axial displacement of the connecting member from the socket.

The extending portion of the closure plug is in the form of an enlarged head 53, the under surface of which seats against the upper surface of the face 51 of the socket with a gasket interposed therebetween. A peripheral groove 54 is

provided externally of the head 53 to receive a portion of a ring 55. The ring initially, as disclosed in Fig. 7, is in the form of a truncated cone with the smaller diameter of the ring approximately the same as the external diameter of the upper portion of the head. The ring 55 is disposed over the upper reduced portion of the head to rest on the enlarged lower portion of the head in an initial position and, thereafter, pressure is applied to the portion of the ring over its larger diameter to force the ring into position such as is shown in Fig. 8, a portion of the ring engaging the groove and freely rotating therein.

The outer diameter of the ring is at least as great as, or greater than, the largest diameter of the extending portion of the closure plug so that tool-engaging access is prevented on the outside of the plug. The ring is preferably inclined in such a manner that the upper edge thereof lies in a plane with the upper end of the plug as shown in Fig. 8.

While a cap of the type hereinabove described with reference to the preceding figures may likewise overlie the ring and be crimped thereunder, the present sealing means for enclosing the tool-engaging formation comprises a flanged dish-shaped disc 56, the flange extending into a groove 57 in the plug to enclose the tool-engaging formation 53. Tool-engaging access is prevented to the outside of the extending portion of the closure plug by means of the rotatable ring 55 and undetectable access is prevented to the tool-engaging formation 53 by the sealing cap 56.

While several embodiments of this invention are herein shown and described, it is to be understood that various modifications thereof may be apparent to those skilled in the art without departing from the spirit and scope of this invention and, therefore, the same is only to be limited by the scope of the prior art and the appended claims.

I claim:

1. A closure plug for sealing a hole through the wall of a container, comprising a main body portion having detachable engagement with the material bounding said hole and an extending portion having a tool-engaging formation, a ring comprising a collar having an extension disposed in a groove on said plug and carried thereby to prevent axial displacement therefrom in either direction and being freely rotatable about the axis thereof, said collar having a flange extending radially outwardly from said plug to at least the outer confines of the extending portion of said plug to prevent undetectable tool-engaging access thereto, and an inverted cup-shaped cap enclosing said tool-engaging formation and overlying said flange, the skirt of said cap being crimped below said flange to be carried by said ring and depending to envelop completely the extending portion of said plug.

2. A closure plug for sealing a hole through the wall of a container, comprising a main body portion having detachable engagement with the material bounding said hole and an extending portion having a tool-engaging formation, a ring comprising a collar having spaced deformations disposed in a groove on said plug and carried thereby to prevent axial displacement therefrom in either direction and being freely rotatable about the axis thereof, said collar having a flange extending radially outwardly from said plug to at least the outer confines of the extending portion of said plug to prevent undetectable tool-engaging access thereto, and an inverted cup-shaped cap for enclosing said tool-engaging formation and overlying said flange, the skirt of said cap being crimped below said flange to be carried by said ring and depending sufficiently to envelop completely the extending portion of said plug.

3. A closure plug for sealing a hole through the wall of a container, comprising a main body portion having detachable engagement with the material bounding said hole and an extending portion having an internal tool-engaging formation, a ring comprising a collar having an extension disposed in a groove on said plug and carried thereby to prevent axial displacement therefrom in either direction and being freely rotatable about the axis thereof, said collar having a flange co-extensive with the top of said plug and extending radially outwardly from said plug to at least the outer confines of the extending portion of said plug to prevent undetectable tool-engaging access thereto, and a cap for enclosing said internal tool-engaging formation and overlying said flange, the skirt of said cap being crimped below said flange to be carried by said ring and depending to envelop completely the extending portion of said plug.

4. A closure plug for sealing a hole through a connecting member secured in a socket formed outwardly in the wall of a container, comprising a main body portion having detachable engagement with the connecting member and an extending portion having a tool-engaging formation, a ring disposed in a groove on said plug and carried thereby to prevent axial displacement therefrom in either direction and being freely rotatable about the axis thereof, said ring extending radially outwardly from said plug to at least the outer confines of the extending portion of said plug to prevent undetectable tool-engaging access thereto, and a cap for enclosing said tool-engaging formation and for overlying said ring and said outwardly formed socket, said cap having a depending skirt clinched under said ring to be carried thereby.

5. A closure plug for sealing a hole through a connecting member secured in a socket formed outwardly in the wall of a container, comprising a main body portion having detachable engagement with the connecting member and an extending portion having a tool-engaging formation, a ring comprising a cylindrical collar having extending means disposed in a groove on said plug and carried thereby to prevent axial displacement therefrom in either direction and being freely rotatable about the axis thereof, said collar having a flange extending radially outwardly from said plug beyond the outer confines of the extending portion of said plug to prevent detectable tool-engaging access thereto, and a cap for enclosing said tool-engaging formation and for overlying said flange and said outwardly formed socket, said cap being of stepped cross section with one depending wall crimped under said flange to be carried by said ring and another depending wall completely enveloping said outwardly formed socket.

SOL SCHWARTZ.

CERTIFICATE OF CORRECTION.

Patent No. 2,243,290. May 27, 1941.

SOL SCHWARTZ.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, line 64, claim 5, for the word "detectable" read --undetectable--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 1st day of July, A. D. 1941.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)