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SEALING CAP

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This invention relates to a sealing cap and has special reference to a means for sealing a closure employed in a bushing structure for metallic barrels and other containers, which latter are usually used in storing or shipping oils or other liquids or semi-liquids.

More particularly, this invention relates to a means comprising a cap or hood-like member for disposition over the closure means for an opening in a container to prevent an undetectable access to the tool engaging formations on the closure means, the cap being provided with means which automatically lock the same on the closure means in a manner to prevent removal therefrom unless forced whereupon the access which has been had to the formations is detectable.

The instant application contemplates the provision of a cap having an annular channel for receiving a spring member, the latter member snapping over a peripheral shoulder on a plug or other closure member to lock the cap thereto whereby the usual tool engaging formations are enclosed. The above construction permits the cap to rotate readily about the closure member thereby preventing the removal of the plug by frictional means applied to the outer side of the cap.

In prior constructions it has been noted that the sealing members are secured to the plugs by the action of the plugs in the complementary body portions secured to and reinforcing that part of the container wall surrounding the opening in the barrel or container. The above locked relation between the sealing cap and the screw permits the unscrewing of the plug by means of rotating the cap by frictional means applied to the outer side of the cap.

In order to prevent an undesirable looseness of the cap on the closure member, the spring employed to lock automatically the cap and the closure member is also adapted to take up any play therebetween. The peculiar shape of the spring accommodates this dual function, the spring extending in a series of continuous alternate ridges and depressions in a radial formation while likewise extending in the same manner in an axial direction of the spring. In other words, the

continuously extending alternate ridges and depressions of the ring-shaped spring member are formed in both a vertical and horizontal direction relatively to the closure means with which latter it coacts. In this connection it will be noted that the cap is held securely against rattling or other such displacement while the securing relation also permits of the easy rotation of the cap on the closure member.

With further reference to prior art constructions it is pointed out that those sealing caps which now enjoy commercial success comprise, in the main, a pair of complementary stampings which must be separately assembled at the time the closure member or plug is engaged in the container. Special tools and skilled labor are required for this assembly work by the ultimate consumer. In the present invention, a sealing cap is contemplated which need only be snapped on over the plug after the latter is in place on the barrel or container, this action requiring no special tools nor skilled labor but merely the lowest type of unskilled help. The locking of the cap on the plug is automatic, the spring returning to its normal position beneath a shoulder on the plug after being distended to pass thereover.

One of the objects of this invention is to provide a sealing cap of the character indicated above which is automatic in that the mere positioning of the cap on the plug carrying the tool engaging formations locks the cap thereon for the purpose of preventing undetectable access to those formations.

Another object of this invention is to provide a sealing cap as referred to hereinbefore in which the same is adapted to rotate readily on the plug to prevent displacement of the plug by frictional means on the sealing cap.

A further object of this invention is to provide a locking member for a sealing cap of the type above noted which has the dual function of tensionally holding the sealing cap against the plug as well as its normal function of locking the sealing member in place.

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 top plan view of the sealing cap of the present invention;

Fig. 1^a is a fragmental top plan view of the modified form of sealing cap;

Fig. 2 is a central sectional view taken on the line 2—2 of Figure 1;

Fig. 3 is a side elevational view partially in section of a closure member engaging a body portion which reenforces and is secured to a socket portion bounding a hole in a container;

Fig. 4 is a sectional view taken on the line 4—4 of Figure 1;

Fig. 5 is a sectional view of the members shown in Figs. 2 and 3 when in an assembled relation; and

Fig. 6 is a detail view of a fragmentary portion of the cap and closure members showing the locked relation therebetween.

Referring now more particularly to the drawings, a supporting wall of a container or a barrel head 10 is shown and is preferably formed of sheet material such as steel. A flanged portion 11 is preferably integrally formed with the head 10 and projects outwardly from the barrel or container to form a socket.

The side walls of the flanged portion or socket are preferably polygonal and receive therein a main body portion 12 of a similar peripheral contour. It is, of course, to be understood that any non-circular shape may be given to the socket and the main body portion whereby relative rotation therebetween is obviated. The main body portion 12 is preferably formed of an internally threaded casting or stamping. The edges 13 of the main body portion are tapered rearwardly or inwardly from the outer surface thereof toward the bottom of the container to be engaged snugly by the side walls of the socket thereby to form a securing relation therebetween.

A plug or bung 14 is provided with threads to engage the internally threaded body portion 12, the outer end of the bung 14 being provided with tool engaging formations 15 and 16 of desirable peripheral contours. The tool engaging formations extend from a head portion 16^a from which latter the threaded portion 14 extends, the threaded portion, of course, being on the side opposite to that of the tool engaging formations. The head 16^a being of an enlarged diameter provides a seat for resting against a washer 17 disposed around the threaded portion and bearing against in an assembled relation, the upper face of the socket. The gasket 17 is, of course, for the purpose of preventing a leakage of oil between the plug or bung and the bushing into which it is threaded.

The sealing cap 18 of this invention is preferably comprised of a relatively thin sheet of material which is cup-shaped and has a channel-shaped outer perimeter 19. A spring 20 is disposed in the channel 19, the spring being of substantially ring-shape and having varying radii with the greatest radius substantially the diameter of the channel. In order to provide for a dual function which will hereinafter be more fully pointed out, the substantially ring-shaped spring extends in a series of continuous alternate ridges and depressions in a radial formation, the spring likewise extending in a series of alternate ridges and depressions in a direction axially thereof, thus providing alternate depressions and ridges both in a vertical and horizontal direction relatively to the channel in which the same is disposed.

In assembling the sealing cap in its position to enclose the tool engaging formations of the closure member 14, the ridges 21 prevent a displacement of the spring out of the channel 19 while the depressions 22 engage a shoulder 23 formed on the head 16^a of the bung. The diameter of the body portion of the cap 18 just clears the head portion 16^a of the bung, the spring 20 being forced over the head 16^a to snap under the shoulder as the cap is urged into its assembled relation. By reason of the vertically extending ridges and depressions of the spring the top inner surface of the cap engages the top outer surface of the tool engaging formations and is held thereagainst under tension so that rattling of the cap on the closure member or bung is obviated.

In one form of the present construction the spring 20 will be entirely contained within the channel 19 of the cap 18. However, by referring to Fig. 1^a, it will be noted that one end of the spring shown therein extends out of the side wall of the channel through an aperture which is of a size to just permit of this action. In the first instance where the spring is entirely concealed the cap may be provided with a weakened portion forming a line of demarcation 24 in a manner similar to that in which knurling is accomplished. A small tab 25 is left to protrude from the regular peripheral edge of the channel which may be gripped with the fingers or pliers and pulled, whereafter the cap is severed into two parts and may be removed. Of course the cap cannot be replaced thereafter. If the weakened portion is not provided, the comparative thinness of the material permits of the same being mutilated as by tearing the same in exerting force in any convenient manner.

However, in the embodiment shown in Fig. 1^a, by reason of one end of the spring extending out of the opening the consumer might get a purchase or grip on the end which so protrudes with pliers or some such tool and

pull the same in a manner to tear the material of the cap, whereafter the tool engaging formations are exposed.

It is also contemplated by applicant to omit, when desirable, the continuous alternate ridges and depressions in a vertical direction when it is desirable to form the upper end of the cap portion downwardly to engage the tool engaging formation. In this latter instance the tensioning means which is one of the dual functions of the spring when given vertical and horizontal ridges and depressions is obtained by the material of the cap of itself thereby relieving the spring of such function. The spring need only be given the alternate ridges and depressions in a radial formation in such a case and, in any event, the cross-section of the spring may be of any desired shape although, for purposes of illustration it has been shown as round.

As a result of this invention applicant has provided a sealing cap which need only be snapped over the head of a bung or closure member in a simple operation with the lowest type of unskilled help, there being no special tools nor skilled labor required. The action of the cap is automatic in character since but a pressure on the outside of the cap is necessary to urge the spring over the head portion whereafter the normal return of the spring to its initial position beneath the shoulder of the bung locks the cap to the bung. Thereafter an undetectable access to the tool engaging formations on the bung or closure means is prevented.

While but a single embodiment of this invention is herein shown and described, it is to be understood that various modifications 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. The combination with a metal barrel formed with a hole through a wall thereof and carrying screw threads surrounding said hole, of a closure plug screwed into said threads and having tool engaging formations and a flange on its outer portion, a cap rotatable relatively to said plug for enclosing said tool engaging formations, and means loosely concealed between said plug and said cap for automatically locking said cap on said plug as the cap is pressed thereupon whereby undetectable access to said barrel is prevented.

2. The combination with a metal barrel formed with a hole through a wall thereof and carrying screw threads surrounding said hole, of a closure plug screwed into said threads and having tool engaging formations and a flange on its outer portion, a cap rotatable relatively to said plug for enclosing said tool engaging formations, and having a

peripheral collar and a channel on said collar to fit over the peripheral edge of said plug, and means loosely concealed in said channel for automatically locking said cap on said plug as the cap is pressed thereupon to prevent displacement of said cap whereby undetectable access to said barrel is prevented.

3. The combination with a metal barrel formed with a hole through a wall thereof and carrying screw threads surrounding said hole, of a closure plug screwed into said threads and having tool engaging formations and a flange on its outer portion, a cap rotatable relatively to said plug for enclosing said tool engaging formations, and having a peripheral collar and a channel on said collar to fit over the peripheral edge of said plug, and said plug having a peripheral shoulder on the flange thereof, and resilient means loosely concealed in said channel for automatically locking said cap on said shoulder as the cap is pressed on said plug to prevent displacement of said cap whereby undetectable access to said barrel is prevented.

4. The combination with a metal barrel formed with a hole through a wall thereof and carrying screw threads surrounding said hole, of a closure plug screwed into said threads and having tool engaging formations and a flange on its outer portion, a cap rotatable relatively to said plug for enclosing said tool engaging formations, and having a peripheral collar and a channel on said collar to fit over the peripheral edge of said plug, and said plug having a peripheral shoulder on the flange thereof, and a spring member loosely concealed in said channel for automatically locking said cap on said shoulder as the cap is pressed on said plug to prevent displacement of said cap whereby undetectable access to said barrel is prevented, said spring extending in a series of continuous alternate ridges and depressions in a radial formation, said ridges engaging said channel and said depressions engaging said shoulder.

5. The combination with a metal barrel formed with a hole through a wall thereof and carrying screw threads surrounding said hole, of a closure plug screwed into said threads and having tool engaging formations and a flange on its outer portion, a cap rotatable relatively to said plug for enclosing said tool engaging formations, and having a peripheral collar and a channel on said collar to fit over the peripheral edge of said plug, and said plug having a peripheral shoulder on the flange thereof, and a spring member loosely concealed in said channel for automatically locking said cap on said shoulder as the cap is pressed on said plug to prevent displacement of said cap whereby undetectable access to said barrel is prevented, said spring extending in a series of continuous alternate ridges and depressions in both a vertical and horizontal direction relatively to said chan-

nel, the ridges extending in a horizontal direction engaging said channel and the depressions thereof engaging a shoulder while the ridges and depressions extending in a vertical direction engage opposite sides of said channel to prevent chattering of said cap.

6. The combination with a metal barrel formed with a hole through a wall thereof and carrying screw threads surrounding said hole, of a closure plug screwed into said threads and having tool engaging formations and a flange on its outer portion, a cap formed of a single sheet of material rotatable relatively to said plug for enclosing said tool engaging formations and having an integrally formed collar and a channel in said collar to fit over the peripheral edge of said plug, and means loosely concealed in said channel for automatically locking said cap on said plug as the cap is pressed thereupon to prevent displacement of said cap whereby undetectable access to said barrel is prevented.

In witness whereof, I have hereunto subscribed my name.

HENRY SCHWARTZ.