

Feb. 20, 1945.

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2,369,895

CLOSURE CONSTRUCTION FOR METALLIC CONTAINERS

Filed July 20, 1943

3 Sheets-Sheet 1

Fig. 1

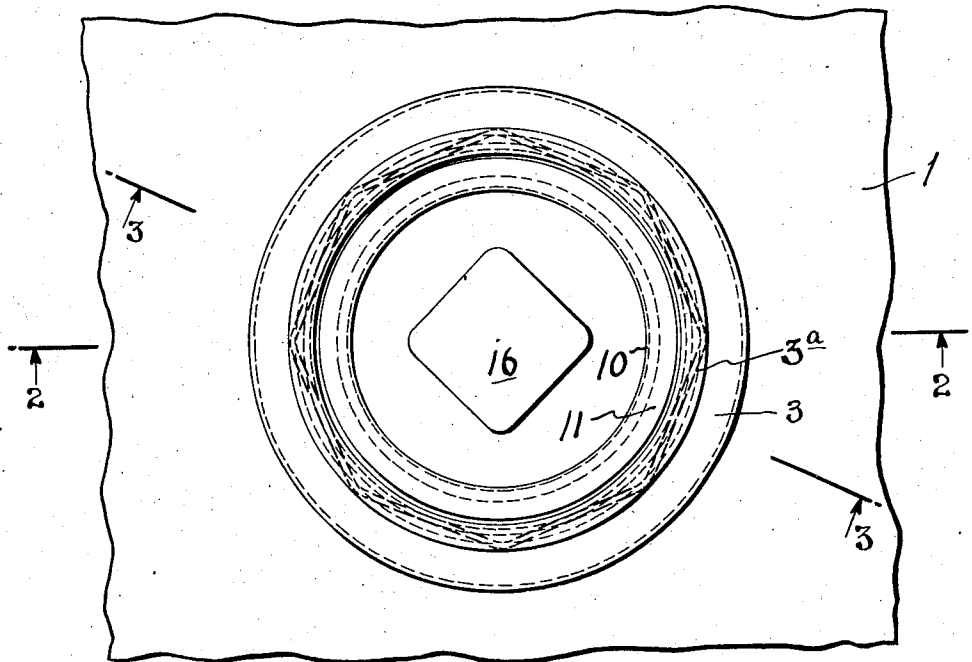


Fig. 2

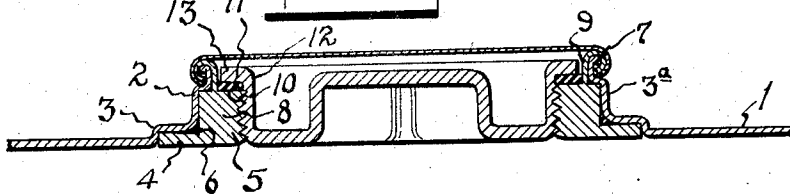
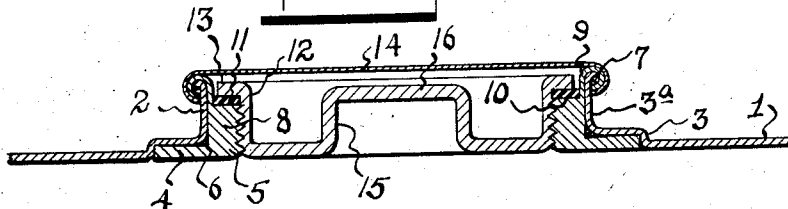


Fig. 3



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3 Sheets-Sheet 2

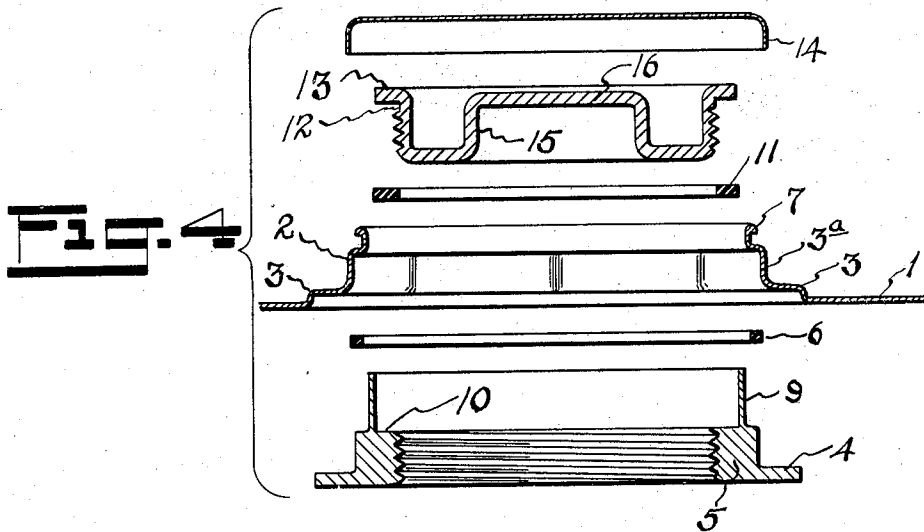


Fig. 5

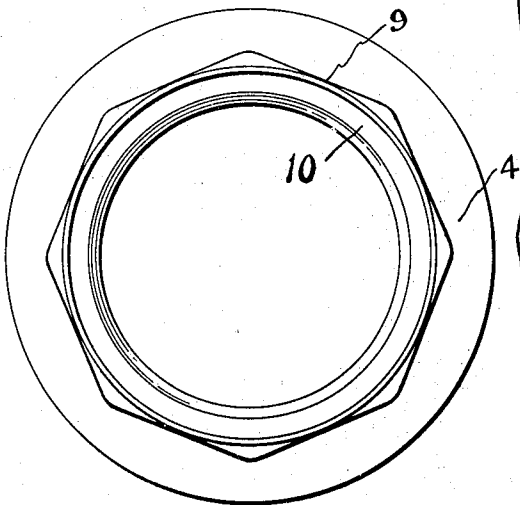
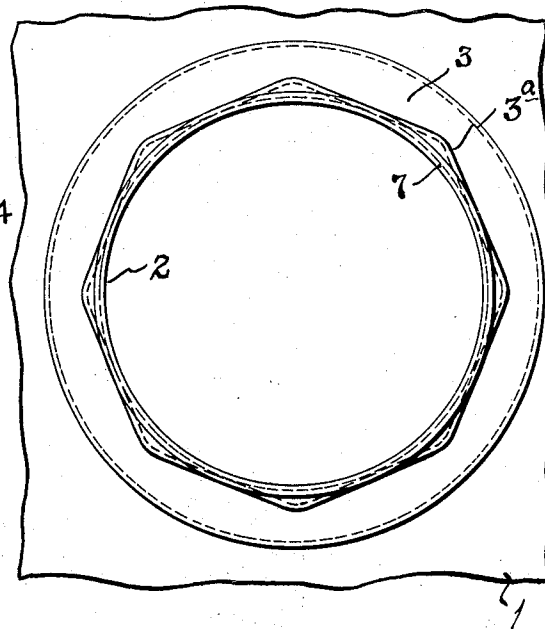


Fig. 6



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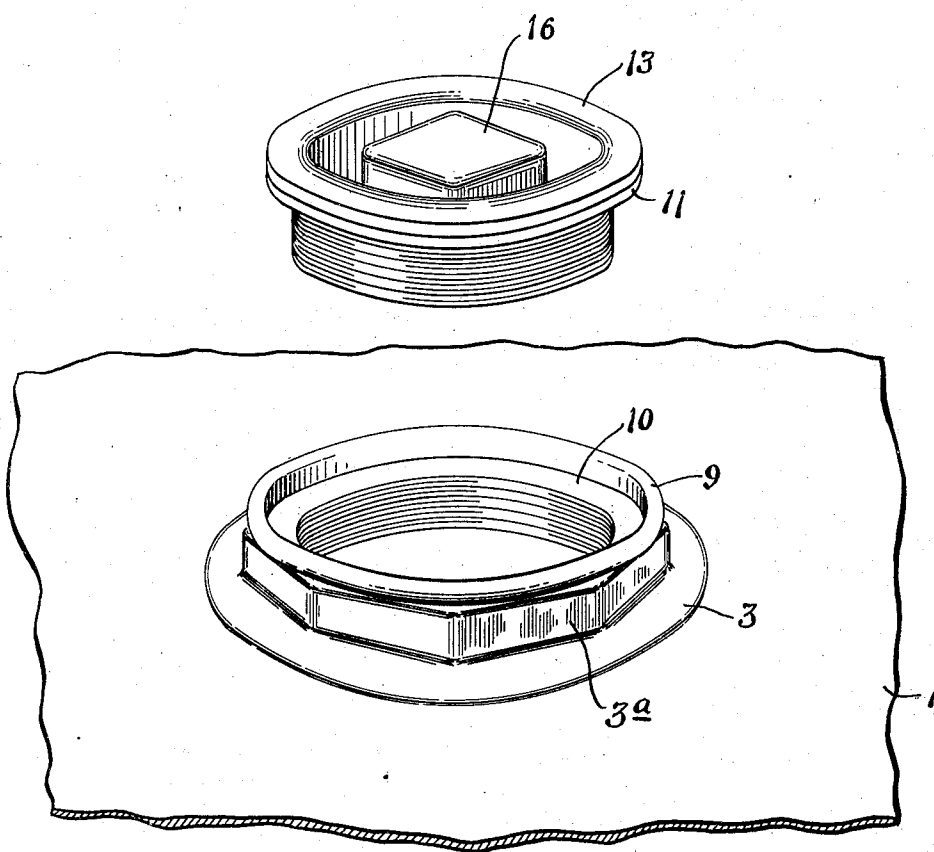
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3 Sheets-Sheet 3

Fig. 7



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CLOSURE CONSTRUCTION FOR METALLIC CONTAINERS

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by mesne assignments, to United States Steel
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Application July 20, 1943, Serial No. 495,477

2 Claims. (Cl. 220—39)

The invention relates to metallic containers such as metallic barrels or drums used for the transportation or storage of liquids and semi-liquids, the invention however being more particularly related to a closure construction for the filling and discharge opening of such containers.

The main object of the invention is to provide a closure construction for metallic containers wherein the parts thereof are so related in their assembly as to insure positive sealing of the filling and discharge opening of the container.

A further object of the invention is to provide a closure construction for metallic containers wherein it is possible to use in connection therewith any standard form of closure plug.

Another object is to provide a closure construction which includes a threaded bushing made in a novel shape and which is pressed into the metal surrounding the opening formed in the wall of a container and secured thereto by curling an extended end of the bushing over the upper end of the metal material surrounding the opening.

A still further object is to secure an internally threaded bushing in an opening formed in a metallic container wall by curling an extended end of the bushing over the upper edge of the metallic material of the container surrounding the opening and then mounting a closure plug in the threads of the bushing with a packing or a gasket engaging a flanged portion of the bushing and lying between the head of the closure plug and the said flanged portion and then securing a sealing cap over the bushing and plug.

A further object is to secure a threaded bushing in an opening formed in a metallic container wall by curling an upper reduced end thereof over the upstanding metallic material surrounding the opening and in such manner that the curled over portion of the bushing will provide a reinforcement to the metallic material surrounding the opening.

Other and more detailed objects will appear in the specifications and will be specifically pointed out in the appended claims, reference being had to the accompanying drawings, wherein

Figure 1 is a plan view of the closure construction of my invention with the sealing cap removed;

Figure 2 is a vertical section of the construction taken on the line 2—2, Figure 1, looking in the direction of the arrows, and also showing the sealing cap in position with respect to the closure construction;

Figure 3 is a vertical section similar to that shown in Figure 2 but taken on the line 3—3 of

Figure 1, looking in the direction of the arrows; Figure 4 shows vertical sectional views of the several ports of the closure construction made in accordance with my invention;

Figure 5 is a plan view of a closure plug used in connection with the closure construction;

Figure 6 is a plan view of the metal flanged portion of the container head surrounding the opening formed in the head; and

Figure 7 is a perspective view of the closure construction and showing the closure plug above the opening of the closure and before it is screwed into place with respect thereto.

Referring more particularly to the several views contained in the drawings, the metal of the container head is designated by the numeral 1. The container head is provided with an opening therein which is defined by an upwardly projecting flanged portion which is struck out from the metal of the head and which is designated generally in the several views of the drawing by the numeral 2. The metal at the base of the flanged portion 2 is bent to form the boss 3. The bossed portion 3 is adapted to receive the flanged portion 4 of a bushing member 5. The upper wall of the boss 3 extends laterally inward and at a slight upward angle so that a space is provided between the upper surface of the flanged portion 4 of the bushing and the boss. In this space a suitable thin packing ring or gasket 6 is adapted to be confined. The metal of the container head which forms the flanged portion 2 is bent upwardly from the bossed portion 3 to provide an intermediate polygonally shaped neck portion 3^a for the opening formed in the container head. The upper end of the flanged neck portion 2 above the polygonally shaped intermediate portion 3^a is circular in contour and has its upper edge bent over upon itself to form a rounded head 7. While I have shown and described the intermediate neck portion 3^a as polygonal in shape, it is to be understood that it may be made of any other multi-sided shape if desired.

The bushing member 5 utilized in my closure construction is formed with an internally threaded body portion 8 which is shaped on its outer periphery so as to fit snugly within the intermediate neck portion 3^a and as above referred to is provided at its base with the flanged portion 4. The upper portion of the bushing member is formed as a relatively thin wall 9 which is adapted to fit within the upper circular contoured portion of the flanged portion 2. The upper edge portion of the thin wall 9 of the bushing is caused to be rolled over the rounded top edge 7 of the

container flange neck so as to form a reinforced beaded top for the closure opening. The curling of the upper edge portion of the thin wall 9 over the top edge 7 of the container flange neck also tightly draws the bushing member into the neck and so that the flange 4 of the bushing will securely underengage and clamp the gasket or packing ring 6 interposed between the flange 4 and the wall of the pocket formed by the boss 3. Above the threaded portion of the bushing member the said bushing is formed with a wide laterally extending shoulder 10 which provides a seat for a packing ring 11.

The central opening through the bushing member is adapted to be closed by a screw plug 12. The plug 12 may be of any standard well known construction as long as it is formed with an upper head portion 13 above the screw threads thereof and which head is of a larger diameter than the threaded portion of the plug. In the drawings the plug is shown as constructed in the manner indicated clearly in Figures 2 and 3 of the drawings, that is, it is formed with a cup shaped body having a central part 15 in the form of an upstanding square shaped member 16 which is adapted to be engaged by a suitable tool to screw and unscrew the plug into and out of the bushing. The head portion 13 of the plug, when said plug is screwed into the bushing, extends parallel to the shoulder 10 of the bushing and so that it will confine the packing or gasket 11 between the said head and the shoulder 10 of the bushing and so that said packing or gasket will provide a liquid tight seal when the plug is screwed into place. The top surface of the screw plug when it is positioned with respect to the bushing will lie below the top edge of the rounded bead formed by upper edge of the bushing which is turned over the top edge of the flange neck of the container wall.

After the plug 12 has been mounted in a seal tight closing position in the threaded opening of the bushing 5, a cap 14 made of thin metal and which has a depending skirt portion 15 is mounted over the beaded portion of the closure in the manner indicated in Figures 2 and 3. The depending skirt portion of the cap is caused to be contracted around the beaded portion and so that it will tightly engage said bead and thus provide a liquid tight seal for the closure construction which cannot be removed without completely destroying the same.

From the foregoing description of my invention it is evident that the closure structure which I have provided has many advantageous features and is simple in design and construction and inexpensive in manufacturing cost. It provides a closure wherein effective means are utilized for preventing leaking through the bushing opening. It also permits the use of any standard construction of plug to close the opening through the bushing. The closure construction can be applied to metal containers without resorting to welding to secure the parts to the container wall. Also the particular polygonal or other multi-sided shape given to the bushing and to the flange struck out from the container wall prevents the bushing from turning after it has been seated with respect to the container flange. Fur-

thermore, the bushing construction provides a suitable wide seat for the plug gasket and there is thus insured an efficient liquid seal between the closure plug and bushing. Also the particular construction and arrangement of the upper edge of the flange struck out from the container wall provides the opening in the container with a reinforced rim portion due to the rolled over upper edge of the bushing.

Having thus described my invention, what I claim is:

1. A closure for metallic containers comprising an internally threaded bushing member seated in the wall of the container and a plug member having screw threaded engagement therewith, said bushing member being provided with a horizontally extending flanged base portion seated in a boss formed in the container wall, an intermediate octagonal shaped exterior wall portion seated in a similarly shaped portion of the container wall, and a cylindrically shaped upwardly extending thin wall portion surrounded by a similarly shaped portion of the container wall and having its upper edge rolled over the top edge of the container wall to form a bead and to hold said bushing member in tight engagement with said container wall, said bushing member also being formed with a wide flat gasket seat which extends outwardly from the upper edge of the interiorly threaded portion and terminated adjacent to the base of the upwardly extending thin portion, and said plug member having a head portion which overlaps the gasket seat formed on the bushing and which is adapted to compress an interposed gasket between it and the bushing gasket seat when the plug is screwed into place with respect to the bushing.

2. A closure for metallic containers comprising an internally threaded bushing member seated in the wall of the container and a plug member having screw threaded engagement therewith, said bushing member being provided with a horizontally extending flanged base portion seated in a boss formed in the container wall, an intermediate octagonal shaped exterior wall portion seated in a similarly shaped portion of the container wall, and a cylindrically shaped upwardly extending thin wall portion surrounded by a similarly shaped portion of the container wall and having its upper edge rolled over the top edge of the container wall to form a bead and to hold said bushing member in tight engagement with said container wall, said bushing member also being formed with a wide flat gasket seat which extends outwardly from the upper edge of the interiorly threaded portion and terminated adjacent to the base of the upwardly extending thin portion, said plug member having an enlarged head portion which overlaps the gasket seat formed on the bushing and which is adapted to compress an interposed gasket between it and the gasket seat when the plug is screwed into place with respect to the bushing, and a metallic cap mounted over said bushing and plug and having its side wall contracted around the bead formed by the turned over top edge of the upper thin wall of the bushing and the upper edge of the container wall.

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