Feb. 18, 1936. L. W. EVANS 2,031,350

STEEL CONTAINER FITTING

Filed Aug. 7, 1934

FIG_1

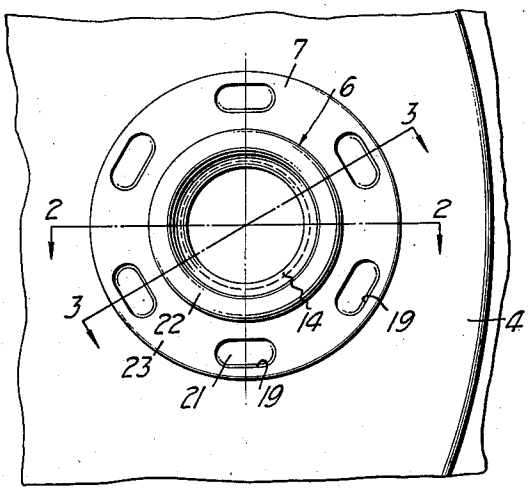


FIG_2

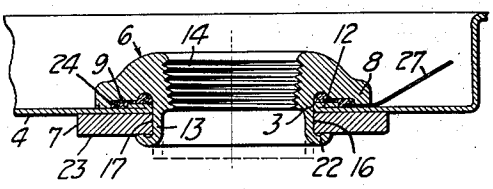


FIG_3

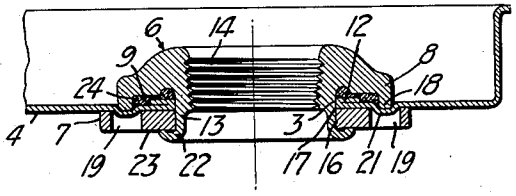


FIG_4

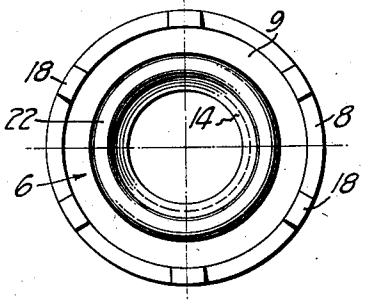


FIG_5

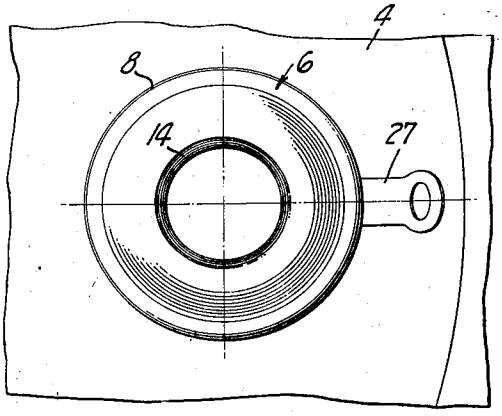
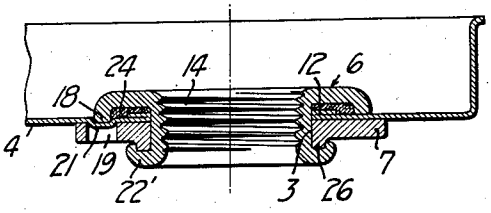


FIG_6



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STEEL CONTAINER FITTING

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8 Claims. (Cl. 285—49)

The invention relates to fittings which are provided about bung holes and the like of steel containers in order to permit the use of screw-threaded bungs or plugs for closing the holes.

An object of the invention is to provide a fitting of the character described which will not, even when exposed to abnormal rough usage, become loosened in the hole and permit of either axial or rotative displacement of the fitting therein.

Another object of the invention is to provide a fitting of the character described which will afford a continuous and uninterrupted surface from the inside of the container to and over the normal surface of the container at the exposed side thereof.

A further object of the invention is to provide a fitting of the character described which will not require the formation in the container of any rib or angular rim either at the edge of the hole or other portion of the container.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

Referring to the drawing:

Figure 1 is a bottom plan of the fitting as operatively positioned in the container wall.

Figure 2 is a longitudinal section view of the fitting taken on the line 2—2 of Figure 1.

Figure 3 is a view similar to Figure 2, but with the plane of the section taken on the line 3—3 of Figure 1.

Figure 4 is a bottom view of the fitting bushing.

Figure 5 is a top view of the fitting as positioned on the container.

Figure 6 is a sectional view similar to the Figure 3, but showing a modified construction.

The fitting of my invention has its principal use in connection with large metal containers such as steel drums, and is arranged to be applied to a hole in the side or end walls of the container so that as aforesaid the hole may be closed and sealed with a bung or plug by screw-threaded connection with the fitting. As illustrated in the drawing, the fitting of my invention is applied to a hole 3 formed in the end wall 4 of a steel drum. In the present embodiment the fitting is formed essentially of two cooperating parts, to wit, a bushing member 6 and a backing plate 7, the former being arranged to extend through the hole and overlie the exposed side of the container wall, while the latter is designed for positioning on the wall on the inside of the container.

The bushing member 6 may be formed of relatively heavy sheet metal of uniform thickness, such as in the design illustrated in Figure 6, or it may, as illustrated in Figures 2 and 3, be made of other stock and wrought into form with the various portions thereof of different thicknesses. As here shown the greater portion of the bushing member is arranged to be disposed at the outer side of the container and is in the form of a flange 8 designed to overlie a substantial portion of the container adjacent the hole. Preferably the underside of the flange is formed with an annular recess 9 so as to accommodate the edge portion 12 of the container wall which is folded backward against the adjacent portion of the wall so as to provide a substantial reenforcement all around the edge of the hole.

The body of the bushing member which includes the portion 13 designed to extend through the hole is provided with internal threads 14 with which the complementary threads on the bung or plug (not shown) for closing the hole are arranged to engage.

The backing plate 7 is annular in form corresponding to the bushing member and, as will be clear from the sectional views of the drawing, the inner face 16 defines an opening preferably of the same diameter as and arranged to register with the hole 3. Likewise preferably corresponding with the diameter of the hole 3, is the outer side 17 of the bushing portion 13, and by reason thereof when the latter is disposed in the hole 3 and in the opening of the plate the various parts will be firmly held against relative transverse displacement on the container wall.

Co-acting means are provided on the flange and plate for interlocking the bushing member and plate against rotation one with respect to the other and both with respect to the container wall. In the present embodiment such means are provided on the faces of the flange and plate lying in opposed relation when operatively assembled, and comprise complementary male and female portions respectively provided on the parts in the order mentioned. The male portions are preferably in the form of one or more rounded protuberances 18 desirably formed integral with the flange and arranged in circumferentially spaced relation while the female portions are in the form of apertures 19 provided in the plate and arranged

in the same relation as and for cooperation with the protuberances 18. It will be understood that owing to the solid interposition of the container wall between the male and female parts, interlocking of the one in the other may be effected with the present design only in connection with such wall. Accordingly in assembling the parts in operative position, the flange and plate are caused to be forced toward one another whereby the protuberances will be pressed against the container wall to form therein depressions 21 which will engage and seat in the apertures 19 and thereby lock all of the parts against rotational displacement. Desirably the flange is forced inwardly sufficient to bring all portions along the peripheral edge thereof in contact with the container wall so as to avoid any open cracks between the flange and wall. It may also be here noted that since the outer surface of the bushing member extends smoothly and uninterruptedly from the inside of the container and at its periphery contacts with outer side of the container at a point where no ridges or other projections or depressions separate the flange and the normal planar surface of the wall, no obstructions or spaces will be afforded for the collection of foreign matter or for interfering with the smooth flow of the contents from the container.

As part of the means of forcing and holding together the flange and plate there is provided on the bushing member a secondary flange 22 which is located at the lower extremity of the member and is arranged to be forced over and upon the exposed side 23 of the plate so as to forcibly lock the bushing and plate to the container wall and against axial displacement relative thereto and to one another. Preferably the operation of forcing the projections 18 into the container wall and the forcing of the secondary flange 22 around the plate is effected simultaneously. If desired a gasket 24 may be placed in the flange recess 9 so as to insure a sealed joint between bushing member and the container wall, the gasket being normally of such size that it will be greatly compressed when the members are forced together.

It is of importance to note that since the retention of the bushing member in position on the container is effected by direct attachment of the member to the backing plate rather than to the wall, the strains caused by rough usage of the container and fitting tending to effect disjoinder of the bushing member thereon, will be primarily absorbed not by the relatively thin wall of the container but by the heavy backing plate, and, owing to the large area of engagement between the member and plate, when the strains are imparted to the wall, they will be distributed over a large portion of the container instead of a few localized points adjacent the hole.

In the modified construction illustrated in Figure 6, the backing plate 7 is provided on its under side with an annular shoulder 26 around which the secondary flange 22′ of the bushing member is drawn so as to insure a locked joint between the plate and member.

If desired, a sealing strip 27 for connection to the bung or plug, may be inserted between the container wall and flange and on or between adjacent protuberances, when the parts are clamped together.

I claim:

1. In a device of the character described, the combination with a wall having an opening, of a threaded bushing member extending through said opening and having a portion surrounding said opening on one side of said wall, a backing member surrounding said opening on the other side of said wall, coacting offset and recessed means on said members for locking same to the wall against rotational displacement about said opening, and means to hold the members together against displacement axially of the opening.

2. In a device of the character described, the combination with a wall having an opening, of a bushing member extending through said opening and having a portion surrounding said opening on one side of said wall, a backing member surrounding said opening on the other side of said wall, coacting interlocking means on the said members and wall for holding said members against rotational displacement on the wall, and means to lock said members together against displacement axially of said opening.

3. In a device of the character described, the combination with a wall having an opening of a unit extending through said opening and having portions surrounding the same on opposite sides of said wall, said wall being provided with offset portions and each of said portions of said unit being provided with parts interlocked with each other through the medium of said offset wall portions to prevent rotative displacement of said unit in the opening.

4. In a device of the character described, the combination with a wall of a metal container or the like having an opening, a threaded bushing member extending through said opening and having a flange on the outer side of said wall surrounding said opening, a backing member surrounding said opening at the inner side of said wall, complementary male and female portions on said flange and backing member arranged for locking said members against rotative displacement on said wall, the portion of the wall between said flange and backing member being formed with a seat for reception of said male portion and for extending into said female portion.

5. In a device of the character described, the combination with a wall having an opening, a bushing unit extending through said opening and having a flange surrounding said opening at one side of said wall, a backing member surrounding said opening at the other side of said wall, interlocking portions on said flange and wall and backing member extending one within the other for preventing rotative displacement of the backing member relative to the wall, and means holding the backing member and bushing unit against relative axial displacement.

6. In a device of the character described, the combination with a wall having an opening, a bushing member extending through said opening and having a flange at one side of said wall surrounding said opening, a backing member surrounding said opening at the other side of said wall, interengaging male and female portions on said wall and backing member arranged to prevent rotative displacement of the member on the wall, and means to secure said bushing member and backing member against relative axial displacement.

7. In a device of the character described, the combination with a wall having an opening and depressed to provide male and female portions on reverse sides thereof, a bushing member extending through said opening and having a flange surrounding same at one side of said wall and provided with male portions engaging said female

portions, a backing member surrounding said opening at the other side of said wall and provided with female portions engaged by the male portions of said wall, and means to hold the bushing member and backing members against axial displacement on the wall.

8. In a device of the character described, the combination with a wall having an opening, a bushing member extending through said opening and having a portion surrounding said opening at one side of said wall, a backing member surrounding said opening at the other side of said wall and having an annular axially extending shoulder adjacent the inner edge thereof, cooperating parts on said members for holding same against rotative displacement on the wall, means to prevent relative axial displacement of said members comprising a flange on said bushing member extending over and around said shoulder, and a sealing gasket between said bushing portion and said wall.

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