Nov. 11, 1930. H. M. DILLHOEFER 1,781,166

BUNG RING

Filed May 16, 1927

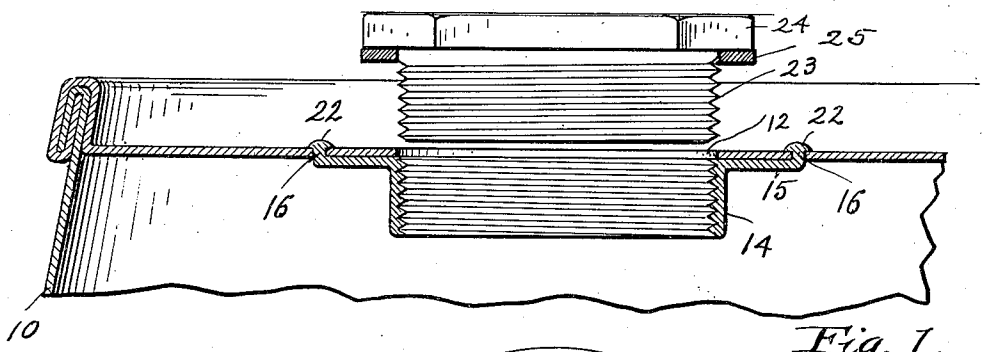


Fig. 1.

Fig. 2.

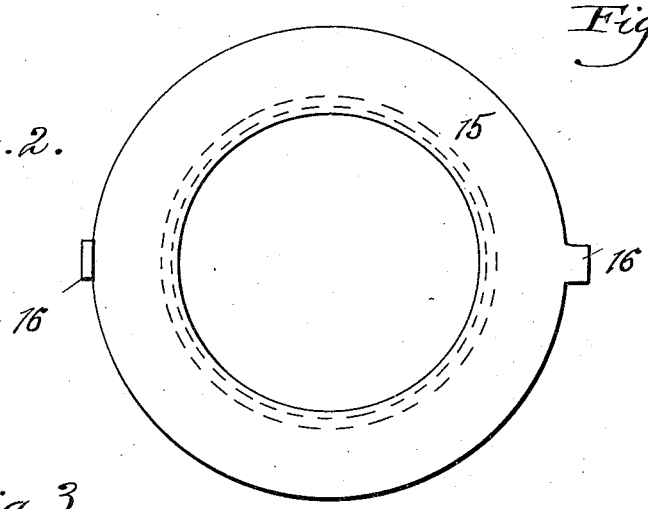


Fig. 3.

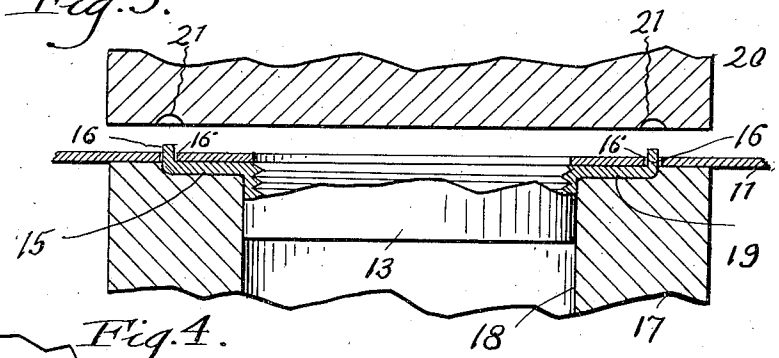


Fig. 4.

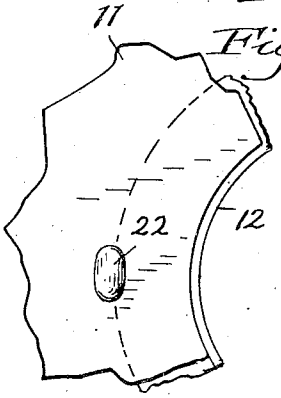
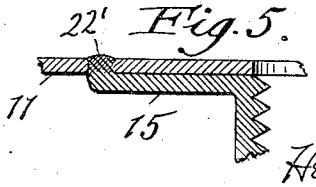


Fig. 5.



Inventor

Henry M. Dillhoefer.

By Howe Hudson & Kent

Attorneys

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UNITED STATES PATENT OFFICE

HENRY M. DILLHOEFER, OF CLEVELAND HEIGHTS, OHIO, ASSIGNOR TO THE BYRNE MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

BUNG RING

Application filed May 16, 1927. Serial No. 191,672.

This invention relates to improvements in bung rings for metal containers, such as barrels and drums, and has reference especially to a construction involving the method of attaching the same to the container.

One of the objects of the invention is to reduce the time and labor involved in attaching a bung ring to a container and at the same time to provide a construction and method of attachment by which the ring is securely fastened in place and without liability of leakage.

Other objects, and objects relating to details of construction and economies of manufacture, will appear as I proceed with the description of that embodiment of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmental sectional view of a portion of a barrel to the head of which is secured the bung ring embodying my invention, the bung or plug being illustrated in a position which it must assume while being inserted in or withdrawn from the bung hole.

Fig. 2 is a plan view of the bung ring before being attached to the container and showing one riveting projection or tab before it is bent up and another after it is bent up.

Fig. 3 is a vertical sectional view showing riveting dies which may be employed in connection with the invention, and showing a portion of a container with the bung ring in position for riveting.

Fig. 4 is a plan view of a fragment of the structure shown in Fig. 1 and illustrating the appearance of the finished rivet.

Fig. 5 is a fragmental sectional view showing a bung ring with tabs welded in place.

In the drawing, 10 illustrates a body portion of a metal container such as a barrel, flanged at one end to interlock with a flanged head 11, or united with a head 11 in any other suitable manner.

The head 11 of the barrel has therein a circular bung hole 12 and in alignment with this bung hole, and preferably on the inner side of the head, I secure my improved bung ring, designated, as a whole, by the reference character 13.

Heretofore, the application of a bung ring to the body or head of a container has involved a good deal of labor and expense, especially as the ring must be secured in place so securely that it will not turn or twist loose when subjected to severe stresses when the bung is being tightened or loosened, and, furthermore, it must be of such a construction and must be applied in a manner such that a tight and leak-proof joint is provided and so as to permit the firm seating of the bung or gasket. These requirements have necessitated bung ring constructions difficult to make and apply and have been a material factor in the cost of the finished container.

By my improvement, a simple form of bung ring is employed, and it can be applied very inexpensively and in a manner such as to secure a positive interlock with the head by an operation wherein integral portions of one part, preferably the ring, are extended through openings in the other part, in this instance the head, and are secured therein as by welding or upsetting preferably on the outer side of the head, as will be more fully explained below.

The ring is preferably stamped from sheet metal and is formed with a tubular threaded portion or sleeve 14 which, when the ring is applied, is coaxial with the bung hole 12 in the head, and with an annular outstanding flange 15 which is at right angles to the tubular portion 14, and lies flat against the inner or under side of that portion of the head immediately surrounding the bung hole 12. When the ring is stamped out, the flange 14 is provided at its margin or periphery with a plurality of tongues 16 which are subsequently bent up at right angles to the flange, as indicated in Fig. 3 and at the left-hand side of Fig. 2. I find that two of these tongues are sufficient to secure the ring in place effectively and to resist the twisting stresses in applying or removing the bung, in which event the tongues are diametrically opposite each other, as illustrated in the drawing. If necessary, more than two tongues may be employed.

In the head 11 I form slots 16′, equal in number to the number of tongues 16 and so spaced as to receive the tongues. The size of the openings is such that the tongues are received quite snugly therein, and the length of the tongues is such that they project through and beyond the head far enough for riveting purposes.

From this point in the operation of attaching the ring to the barrel head, several methods may be followed, that is to say, the securing of the tongues 16 to the head may be accomplished by a riveting operation, by a gas welding operation, or by an electric welding operation either with or without mechanical pressure; and where welding is employed, with a consequent union between the metal of the tongue and the metal of the head, it is not essential that there be an upsetting of the metal of the tongue over the surface of the barrel head. In other words, the tongues may be made of a length such that there will be no projection above the surface of the head. However, in Fig. 5, I have shown a tab with a rounded upper end 22′ extending somewhat above the level of the head 11.

In attaching the bung ring to the barrel head by a riveting operation, the barrel head, with the ring in position thereon, is placed upon a die or anvil 17 provided with a central opening 18 for the reception of the tubular portion 14 and with a recess 19 surrounding the opening 18 to receive the flange 15 of the ring, suitable notches being formed also to take the bent up tabs 16. After these parts are in the position stated, a die 20, with small cavities 21 therein, is caused to exert pressure against the anvil 17 and the parts supported thereupon so that the tabs or projections 16 are upset and the metal of the tabs crowded or flowed into the interstices of the joints between the tabs 16 and the head 11 and overturned upon the surface of the head around the joints, whereby these joints are made liquid-tight. The head of the rivet above the barrel end 11 has the appearance of a round cornered oblong 22.

In securing the tongues to the barrel head by a gas welding operation, the welding flame is played upon the protruding end of the tongue and the metal of the head directly adjacent thereto, so as to cause these metals to flow or fuse together. It may be desirable, as a further means of insuring a strong joint, to produce rivet heads upon such welded tongues, and if so, this result can readily be obtained by the proper manipulation of the welding torch to overturn the metal of the tongue, as will be well understood by those skilled in the welding art, producing a rivet head quite similar to that herein illustrated and obtained by the mechanical riveting or upsetting.

The securing of the tongues may also be accomplished by electric welding, as by the use of the electric arc in a manner that will be obvious, or electric welding may be performed with apparatus such as is commonly employed for spot-welding, and in this latter case, substantial mechanical pressure may or may not be exerted. I employ pressure when a rivet head is desired, the upper electrode being then formed with a cavity such as to produce the desired effect of a rivet head.

By any of these welding processes, the tongues of the ring become intimately or integrally united to the container member to which the ring is applied, and the opening formed in the container to receive the tongues, by the fusing and welding operation, becomes completely closed and sealed.

In any event, whether the tongues 16 be merely riveted or whether they be welded, the metal of the tongues is caused to completely fill the openings 16′, and thereby produces a liquid-tight joint.

In Fig. 1 I have illustrated a bung or plug 23, externally threaded to fit the threaded sleeve 13 and provided with a flange 24, preferably polygonal, against the lower surface of which bears a gasket or flexible washer 25 which assists in making the closure liquid-tight. The gasket is designed to be tightly compressed between the flange of the bung and the flat portion of the head, between the bung hole 12 and the rivet head 22, the latter being located a sufficient distance from the bung hole to be clear of the gasket and flange of the bung, so as not to interfere with the flat seating of the gasket.

Obviously numerous variations from the disclosed structure may be resorted to without departing from the spirit of my invention, and I, therefore, do not desire to be limited to any of the details herein illustrated and described except as they may be specifically stated in the appended claims.

Having thus described my invention, I claim:

1. A metal container having a bung hole, and a bung ring applied to the inner side of a portion of the container, one of said parts having openings spaced radially from the bung hole a distance sufficient to clear the bung and the other having integral projections extending into and filling the openings of the first part so as to form a liquid tight closure for said openings and secure the ring in place.

2. A metal container having a bung hole, and a bung ring applied to one side of a portion of the container, said container having openings therein spaced radially from the bung hole a distance sufficient to clear the bung and said ring having integral projections extending into and filling said openings and secured to the container so as to form a liquid tight closure for the openings and secure the ring in place.

3. A metal container having a bung hole, and a bung ring applied to the inner side of a portion of the container, one of the parts having openings spaced radially from the bung hole a distance sufficient to clear the bung and the other having integral projections extending into the openings and secured to the part having the openings so as to form a liquid tight closure for the openings and secure the ring in place.

4. In a metal container having a bung hole, a bung ring applied to the inner side of the container around said hole, said container having openings spaced radially from the bung hole a distance sufficient to clear the bung and said ring having integral projections extending outwardly through said openings and secured so as to form a liquid tight closure for the openings on the outside of the container and secure the ring in place.

5. In a metal container having a bung hole, a flat seat on the outer side of the container around said hole for engagement with the bung, a bung ring applied to the inner side of the container around said hole, said container having openings and said ring having integral projections extending through the said openings and secured on the outside of the container, the said openings and projections being located outside of the said flat seat.

6. A bung ring for a metal container, comprising a threaded sleeve and an annular flange at right angles to the sleeve, projections on said flange adapted, when the bung ring is applied to a container to be extended through openings in the container surrounding the bung hole therein but spaced radially from the bung hole and to be secured to the container, whereby said ring may be securely attached to the container around the bung hole therein, and the holes for the fastenings filled with metal.

In testimony whereof, I hereunto affix my signature.

HENRY M. DILLHOEFER.