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CLOSURE FOR SHEET METAL CONTAINERS

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CLOSURE FOR SHEET-METAL CONTAINERS.

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My invention relates to improvements in closures for sheet metal containers, and more particularly to the means for rendering the mouth of an opening in a sheet metal container relatively rigid through suitable reinforcement of the light gauge sheet metal from which the container is constructed. The object of my invention is to provide an opening that will retain its initial shape and accurately seat the inserted closure member for the purpose of effecting the necessary seal.

Frequently it is found that the closure members of the larger sizes of sheet metal containers, such as barrels and drums, will not effect sealing relation with their respective openings for the reason that the sheet metal adjacent to or forming the seats for such closure members have been distorted or bent in the use or frequent opening of the container. This results from the fact that relatively light gauge metal must be employed in the construction of such containers in order to attain the necessary economy. The attachment or welding of a rigid seat to the body of the sheet metal for accommodating a suitable closure member involves expense and, oftentimes, the weakening of the sheet metal adjacent to the welded collar.

Accordingly, I have sought to improve the closure means, here illustrated as of the friction type of closure, by suitably reinforcing the friction seat, as by a band or ring positioned interiorly of the container and surrounding the inwardly extending tubular seat in a manner to render it relatively rigid and suitably reinforced against bending or distortion from any normal cause. The features of my preferred construction may best be explained in connection with the accompanying drawings illustrating the same in slightly variant forms, wherein:

Figure 1 is a view in side elevation, partially broken away in its upper portion, which illustrates a sheet metal drum to which the improvements of the instant application are applied,

Fig. 2 is a view in fragmentary transverse section and upon an enlarged scale which shows closure means of preferred type embodying my invention; the section being indicated on line II—II, Fig. 3,

Fig. 3 is a fragmentary plan view of the same,

Fig. 4 is a transverse section on line 55 IV—IV, Fig. 2,

Fig. 5 is a transverse section similar to Fig. 2 in which a heavier annular reinforcement is provided,

Fig. 6 is another transverse section similar to Fig. 2 in which a different type of reinforcement is employed and held in place by annular locking means; and

Fig. 7 is the sectional showing of closure means including suitable reinforcement of the simplest type.

Throughout the several figures of the drawings I have employed the same character of reference to indicate similar parts.

Referring initially to Figure 1, a sheet metal drum or barrel *a* is shown with its head *a'* equipped with an opening *b* closed by the friction cap *c*, the opening being reinforced by an annulus *b'*. Hitherto barrels or drums provided with friction closures have been found unreliable through leakage developed in use or during the drop-test of the barrel; principally by reason of distortions of the walls of the friction-closed opening.

Figures 2, 5, 6 and 7 illustrate in enlarged cross section somewhat analogous but variant types of friction-sealed openings for sheet metal containers of relatively large capacity and light gauge. These structures, in common, possess a friction-sealed opening adapted to be securely closed by a suitable friction cap; the walls of said opening being annularly reinforced by a band of heavier gauge metal that may or may not be of specialized form, and locking flanges preferably are provided for retaining the reinforcing band in position.

Thus Figure 2 illustrates the head *a'* integrally formed with a circular rib *a''*, while the opening *b* is surrounded by an elevated rim *b''*; the cylindrical walls *b³* terminating in a locking rim *b⁴* flanged to retain the reinforcing annulus *b'* in position. The friction cap *c* fits above the annular gasket *d* and engages the edges of the locking rim *b⁴* peripherally by means of the shoulders *c'*.

In this particular type it will be seen that the reinforcing annulus *b'* is of specialized form and affords unusual strength to resist distortion and strain while insuring an effective seal for the opening. The annulus approximates a C-shaped cross section

curved at b^a in its upper portion fully to reinforce the elevated rim b'' , and provided with a flange b^e in its lower portion to insure greater strength and rigidity.

5 The friction closure of Fig. 5 is reinforced by a simple annulus e of heavier gauge metal and rounded contour at top and bottom; this reinforcement admirably serving the purpose of very rigidly supporting the seat and
10 walls of the friction seal.

Another and simpler type of reinforcement appears in the structure of Fig. 7, wherein a plain metal band f is retained in position beneath the seat and surrounding
15 the side walls of the friction sealed opening b by means of the flange f' . The structure of Fig. 6 is closely analogous to the embodiment of my improvement just described except for the fact that the annulus g therein
20 is not as wide and it is held in position by conforming grooves g' , g'' concurrently rolled in said annulus and the friction wall of the opening b . Details of the co-acting friction caps do not require further explanation since these inherently are shaped
25 to withstand strain, conform to the friction walls of the opening and normally retain their position of closure.

30 From the foregoing it will be understood that the several embodiments of my instant improvement are suitably reinforced about their sealed openings in a manner to prevent

distortion either by accident, test or use, while maintaining the seal during frequent removals and insertions of the friction cap. 35 Even the minor disarrangement of contact surfaces, which otherwise would permit leakage of many liquids, cannot occur to impair the efficiency of the seal. Nevertheless, the improvement is extremely cheap to apply and dependable throughout the life of the container. 40

Having now described approved embodiments of my instant improvement, I claim as new and desire to secure by Letters Patent, 45 together with such further modifications as may be made by the exercise of ordinary or expected skill in the art, the following:

In combination with a sheet metal container having a circular inwardly flanged opening, of an annulus engaging said flange 50 interiorly of said container throughout the upper portion of the flange adapted to reinforce it against the expanding action of a closure, said flange being provided with retaining means for holding the annulus in position and with a lower locking rim, and a friction closure member interiorly fitting into and sealing said flanged opening and provided with means coacting with said 60 locking rim, substantially as set forth.

In testimony whereof I do now affix my signature.

CHARLES T. DRAPER.