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SINGLE WALLED METAL CONTAINERS

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The present invention relates to containers or barrels and is directed particularly to an improved single walled metal container for beer.

Previously, single walled metal containers generally have had chime structures or chimes formed integrally in at least one of the end shells and sometimes both end shells, which structures would form annular recesses on the interior surfaces of the end shells and make it difficult to obtain complete drainage or to clean the inside of the container.

The single walled metal containers which were fabricated with a chime skirt secured to one of the end shells were usually fusion welded at the same welded juncture as that of the end shell and the center band in order to further economy of time and money in the assembly. However, it subsequently proved to be not so economical when repeated droppings and other rough handling caused the chime skirt to pull away from the welded juncture causing an opening of the juncture into the interior of the container.

It is an object of the present invention to provide an improved design and fabrication for a container of this nature to obtain substantially complete drainage of beer from the container when it is being drawn through a dip or down tube, and as complete drainage of liquids as possible when the container is undergoing cleaning operations.

Another object of the present invention is to provide an improved metal container which has a continuous center band secured at each of its marginal edges to an end shell in an annular welded juncture, and a chime skirt which is secured to the exterior surface of each end shell at a point separate from the welded juncture.

The aforementioned objects, and other objects are attained by the improved container, preferred embodiments of which are shown in the accompanying drawings and described herein.

In the drawings:

FIG. 1 is an elevational view of the single walled container of the present invention, partly broken away and in cross section;

FIG. 2 is a top plan view of the container illustrating the positioning of the handholes in dotted lines;

FIG. 3 is a fractional view of the container taken along line 3-3 of FIG. 1;

FIG. 4 is a view in elevation of a modification of the container, partly broken away and in cross section;

FIG. 5 is a bottom plan view of FIG. 4 illustrating the star-shaped embossment about the adaptor fitting.

FIG. 6 is an enlarged fragmentary cross section taken along line 6-6 of FIG. 5; and

FIG. 7 is a fractional cross sectional view of an alternate modification of the container of FIG. 4.

Referring to FIG. 1, a single walled container 10, constructed preferably of stainless steel, because of its corrosion resistant qualities, is shown and comprises basically top and bottom end shells 12, a continuous center band 14 and a chime skirt 16 secured to each end shell.

The End Shells

Each end shell 12 has a smooth concaved interior surface 18, and a convex exterior surface 20. The surfaces terminate in a substantially axially directed tapered annular flange 22 of predetermined depth. In the center

of each end shell is a spherical embossment 24 which is formed to project axially outwardly of the exterior surface. The transition from the concaved interior surface to the interior of the embossment is made as smoothly as possible in order to carry out a part of the objects of invention.

Projecting axially outwardly from an aperture 26 in the spherical embossment 24 of one of the end shells is a fitting 28, the particular one illustrated being known as a "Barnes" adaptor and commonly employed in Great Britain. However, the invention is not limited to this particular fitting and it should be recognized that other types of fittings may also be accommodated in the embossment. Although FIG. 1 discloses a "Barnes" adaptor, it should be understood that the end shells are formed in such manner as to be universal in application so as to suit the differing needs of customers in various parts of the world. For example, in Australia at present, only one fitting through which the container is tapped, drained, cleaned and filled is required. In the United States the fitting through which a container is cleaned and filled may not be the same fitting through which the container is tapped, and often there may be more than two fittings. In Great Britain, it may or may not be desirable to have a "Barnes" adaptor, and if one is not required then fittings of the nature disclosed in FIG. 4 will be more suitable, as will be described later.

Center Band

The intermediate center portion or center band 14 is formed from a rectangular sheet of stock and is provided with annular flat configured surfaces 30 and 32 which permit the container to be trundled about. These configured surfaces are preferably formed after the center band has been formed and secured into a continuous band. The surfaces 30 and 32 are reinforced at one side by annular corrugations 34 and 36, respectively, and are spaced by an intermediate section 38 which occupies a depressed or radially inward position with respect to the annular flat surfaces.

In view of the fact that the end shells are designed for universal application, the marginal flanges 40 of center band 14 may be of predetermined axial length depending on the desired volumetric capacity of the container, as taught by my copending application No. 161,471 filed 12/22/61.

Single Walled Chime Skirt

Each single walled chime skirt 16 is also formed from a rectangular sheet of stock into a continuous band. It is provided at one end with a smooth re-entrant curved flange 42 which projects radially inwardly, and a plurality of oblong drain holes 46 which are spaced about the periphery of the chime skirt. At least one skirt has peripheral handholes 44 diametrically oppositely spaced. The drain holes are located approximately at the point of intersection of the convex exterior surface 20 of an end shell and the chime skirt so as to prevent a collection of liquid and dirt on the end shell exterior surface, and represent an improvement over past constructions of containers wherein only circular drain holes were employed because they permit more rapid and efficient drainage.

Each chime skirt 16 in FIG. 1 is shown provided with an annular shoulder 48, which is adapted to be seated and secured upon an end shell. However, the chime skirt may be tapered and be secured tangentially to the flange of an end shell, as illustrated in FIG. 4.

Assembly

The individual components described above are formed into the particular shapes illustrated in FIGS. 1-3 and then are assembled in a jig, preferably by a fusion welding method.

The aperture 26 may be made in the one spherical embossment 24 before or during assembly, or at a later date after complete assembly, depending upon the needs of a particular customer.

At whatever stage of assembly the aperture 26 is formed, the opening is punched out of the center of the spherical embossment 24 and a fitting 28, such as the "Barnes" adaptor illustrated, is secured to the edges of the aperture by fusion welding.

The edges of the marginal flanges 40 of the center band 14 are secured respectively to the inner edges of the flanges 22 of the end shells 12 in an annular welded juncture 50.

The annular shoulder 48 of chime skirt 16 is designed to be readily seated upon the outer edge portion of the end shell convexed exterior surface 20. The shoulder terminates in an annular flange 52, which in turn is secured to the end shell flange 22 at a predetermined desired point axially outwardly from the annular welded juncture 50 of the end shell and the center band.

The chime skirts of the assembled container 10 of FIG. 1 protect the spherical embossment 24 at the one end and the fitting 28 at the opposite end from abuse, while the configured surface of the intermediate portion or center band 14 rigidifies and strengthens the remainder of the container enabling it to withstand relatively rough usage.

The particular container illustrated is designed to be stood upright during usage and a dip or down tube (not shown) extends through the opening at the top end shell 12 to the bottom end shell. The result is that the container in the position illustrated in FIG. 1 permits the beer to drain down the sloping surfaces of the bottom end shell and into the spherical embossment, so that substantially complete drainage will occur.

By the same token, when the container is inverted from the position shown in FIG. 1 during cleaning operations the cleaning liquors will readily drain from the interior surfaces, down the sloping surfaces of the top end shell, into the spherical embossment and out the aperture 26 through the fitting 28.

Any accumulation of dirt on the end shell exterior surfaces may be flushed off by a hose and the water and dirt will drain readily through the oblong drain holes 46 provided.

Modification

In referring to container 10' of FIG. 4, it will be noted that the configuration of the chime skirt 16' is different from that of chime skirt 16 of FIG. 1. This difference being that in the latter container, sufficient rigidity and strength were imparted to the skirt partly by the annular shoulder 48, whereas in the modification similar rigidity and strength are provided by the utilization of annular corrugations 54. However, it makes no difference whether chime skirts 16 or 16' are employed in the modification of FIG. 4 because either type may be employed and the selection of one or the other is, again, entirely dependent upon the needs of a particular customer, and the type of barrel or container racking equipment used during cleaning and filling operations.

Bung Patch Plate Assembly

The intermediate portion or center band 14' is provided with a centrally disposed bung patch plate assembly 56 which surrounds and defines the bung opening 58. Briefly, the patch plate assembly, which is subject of pending application No. 84,568, filed January 24, 1961, comprises an inner patch plate 60, a flanged bung sleeve 62 which is connected to the inner patch plate, preferably by fusion welding; a bung support casting 64 which surrounds the bung sleeve 62 and is positioned over the inner patch plate 60, the casting being formed from aluminum or aluminum alloy; and an outer patch plate 66 which also surrounds the bung sleeve and fits over and above the bung support casting. The bung support casting spaces the outer patch plate from the inner patch plate except at the lower peripheral ends or lips 68 of the outer patch

plate, which ends or lips are secured to the inner patch plate, preferably by fusion welding. The outer patch plate has a center edged opening 70 which is secured to and beneath the flanged portion of the bung sleeve.

End Shells of Modification

The end shells 12' are the same size and configuration as end shells 12 of FIG. 1 except that in addition to the centrally disposed spherical embossments 24', a star-shaped embossment 72 is formed on the convexed exterior surface 20' of one end shell in radial alignment with the spherical embossment and serves to rigidify and strengthen that portion of the convexed exterior surface in which an aperture 74 is punched. It also serves to enhance drainage in that area. An adaptor fitting 76 is secured by fusion welding to the edges of the aperture and projects axially outwardly. The adaptor fitting illustrated in FIGS. 4-6 is known as a "Keystone" adaptor and is in common usage in Great Britain. However, it should be recognized that other types of fittings which are designed to project axially outwardly may also be employed within the scope of the invention.

An annular recess 78 is provided at the outermost end of the adaptor fitting 76. A sleeve 80 is secured about the annular recess. The sleeve has the general configuration of ungular, i.e., it is cylindrical with one surface oblique to the base, and accordingly may be said to be an ungulated sleeve. The sleeve serves as a pouring spout to convey liquid past the adaptor fitting beyond the chime skirt, and as a reinforcement to the fitting and the adjacent chime skirt wall. As to the latter aspect, a semi-circular notch 82 is provided in the re-entrant curved flange and the ungulated sleeve 80 is secured partially within the notch. In turn, the chime skirt also serves to reinforce the sleeve or pouring spout.

Assembly of Modification

The assembly of the container of FIG. 4 is fairly much the same as that of FIG. 1 except for the addition of the bung patch plate assembly 56, the adaptor fitting 76 and ungulated sleeve 80, the omission of the "Barnes" fitting 28, and the manner in which the chime skirts 16' are secured to the end shells.

With respect to the chime skirts 16', as previously pointed out, the skirt differs from that of FIG. 1 in that it has no annular shoulder and in assembled position has a taper and is secured tangentially to the flange 22' of each end shell 12' at a predetermined point spaced axially outwardly from the annular welded juncture 50' of the end shell and the center band 14'.

The assembly of the chime skirt 16' is different from chime skirt 16 of FIG. 1 because it is necessary to provide a stop on the jig (not shown) to limit how far axially inwardly the skirt will slip over the end shell 12' before it is secured to the end shell.

In the container of FIG. 4, the cleaning, draining and filling will generally be conducted through the bung opening 58, and the container will be tapped through the adaptor fitting 76. However, depending on customer needs, an additional fitting 28', illustrated in FIG. 7 may readily be provided and depending, also on the type of racking equipment, the container may either be cleaned through the bung opening or the fitting 28'.

Conclusion

It will be seen that the container which has been described and the exemplary preferred embodiments illustrated in the drawings is designed for universal usage, and adaptable to the different needs of different customers. The completed structure is capable of withstanding rough handling.

Various modifications and changes in details of the structure are contemplated within the scope of the invention defined in the claims.

What is claimed is:

1. In an improved single walled metal container, a body portion comprising:
 - end shells of predetermined tapered axial length with centrally disposed exterior spherical embossment, one of the end shells having an apertured star-shaped embossment on its exterior surface;
 - an intermediate continuous center portion having spaced annular configurated flat surfaces reinforced on at least one side of the flat surfaces by annular corrugations, the center portion spacing and joining the end shells in annular welded junctures;
 - a patch plate assembly surrounding and defining a bung opening in the intermediate continuous center portion;
 - a single walled, annular ribbed chime skirt secured to the exterior surface of each end shell at a point spaced axially outwardly from the welded juncture of the end shell and the intermediate continuous center portion;
 - each chime skirt having a radially inwardly projecting re-entrant curved flange, one of the chime skirts having a semi-circular notch formed at a predetermined point in the re-entrant curved flange;
 - an adaptor fitting projecting axially outwardly from the apertured star-shaped embossment on one of the end shells and having an annular recessed neck; and an unguled cylindrical sleeve secured at one end to the annular recessed neck of the adaptor fitting and secured to the opposite end at one side within the notch on the one chime skirt.
2. In an improved single walled metal container, a body portion comprising:
 - end shells of predetermined tapered axial length with centrally disposed exterior spherical embossment, one of the end shells having an apertured star-shaped embossment on its exterior surface;
 - an intermediate continuous center portion having annular configurated flat surfaces reinforced on at least one side of the flat surfaces by annular corrugations, the center portion spacing and joining the end shells in annular welded junctures;
 - a patch plate assembly surrounding and defining a bung opening in the intermediate continuous center portion;
 - a single walled, annular ribbed chime skirt secured to the exterior surface of each end shell at a point spaced axially outwardly from the welded juncture of the end shell and the intermediate continuous center portion;
 - each chime skirt having a radially inwardly projecting re-entrant curved flange, one of the chime skirts having a semi-circular notch formed at a predetermined point in the re-entrant curved flange;
 - an adaptor fitting projecting axially outwardly from the apertured star-shaped embossment on one of the end shells and having an annular recessed neck; an unguled cylindrical sleeve secured at one end to the annular recessed neck of the adaptor fitting and secured at the opposite end to one side within the notch on the one chime skirt; and one of the spherical embossments having an axially projecting fitting therein.
3. In an improved single walled metal container, a body portion comprising:
 - end shells having tapered annular flanges of predetermined depth and concaved interior surfaces with centrally disposed spherical embossments;
 - a continuous configurated center band spacing and joining the end shells in annular welded junctures at the ends of the tapered annular flanges;

- a patch plate assembly surrounding and defining a bung opening in the center band;
 - a single walled, annular ribbed chime skirt secured to the exterior surface of each end shell at a point spaced axially outwardly from the welded juncture of the end shell and the center band;
 - each chime skirt having a radially inwardly projecting re-entrant curved flange, one of the chime skirts having a semi-circular notch formed at a predetermined point in the re-entrant curved flange;
 - an adaptor fitting projecting axially from one of the end shells and having an annular recessed neck; and an unguled cylindrical sleeve secured at one end to the annular recessed neck of the adaptor fitting and secured at the opposite end at one side within the notch on the one chime skirt.
4. In an improved single walled metal container, a body portion comprising:
 - end shells having concaved interior surfaces with centrally disposed spherical embossments;
 - single walled chime skirts secured to the exterior surfaces of the end shells;
 - a continuous configurated center band joining and spacing the end shells;
 - a bung aperture assembly centrally disposed at a predetermined point in the center band;
 - a fitting projecting axially from one of the end shells and having an annular recessed neck;
 - and an unguled cylindrical sleeve secured at one end to the annular recessed neck of the fitting and secured at the opposite end to an adjacent chime skirt.
 5. In an improved single walled metal container, a body portion comprising:
 - end shells having tapered annular flanges and concaved interior surfaces with at least one centrally disposed spherical embossment;
 - a continuous configurated center band spacing and joining the end shells;
 - single walled chime skirts secured to the exterior surfaces of the end shells at a point axially displaced from the welded juncture of the end shell and the center band;
 - a patch plate assembly surrounding and defining a bung opening in the center band;
 - an adaptor fitting projecting axially from one of the end shells and having an annular recessed neck; and an unguled cylindrical sleeve secured at one end to the annular recessed neck of the fitting and secured at the opposite end to an adjacent chime skirt.

References Cited in the file of this patent

UNITED STATES PATENTS

| | | |
|-----------|---------------|---------------|
| 943,686 | Kruse | Dec. 21, 1909 |
| 1,413,907 | Gerstenberger | Apr. 25, 1922 |
| 1,853,949 | Wilhelmi | Apr. 12, 1932 |
| 1,909,028 | Waite | May 16, 1933 |
| 2,038,420 | Coakley | Apr. 21, 1936 |
| 2,057,347 | Reed | Oct. 13, 1936 |
| 2,069,354 | Chamberlain | Feb. 2, 1937 |
| 2,147,325 | Wackman | Feb. 14, 1939 |
| 2,354,425 | Kuhn | July 25, 1944 |
| 2,481,015 | Ingersoll | Sept. 6, 1949 |
| 2,624,486 | Lee | Jan. 6, 1953 |
| 2,792,965 | Schoessow | May 21, 1957 |

FOREIGN PATENTS

| | | |
|---------|---------------|--------------|
| 431,245 | Great Britain | July 3, 1935 |
|---------|---------------|--------------|