

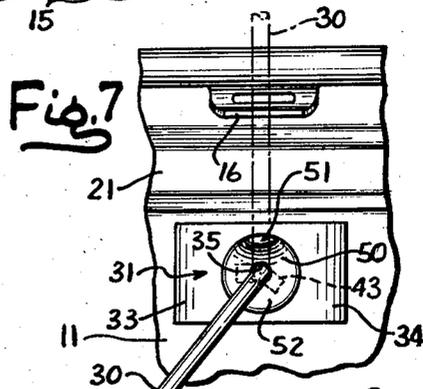
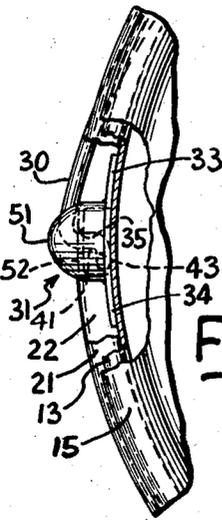
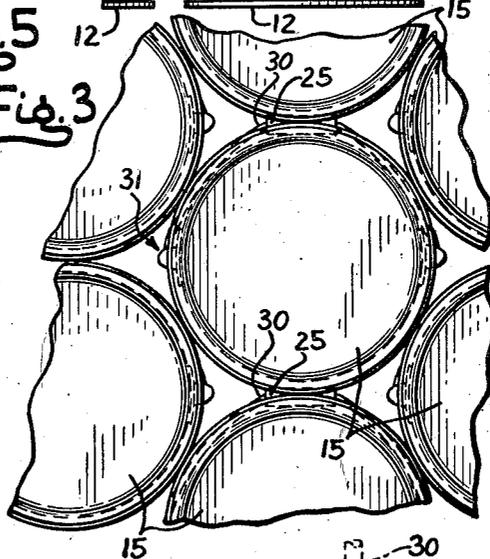
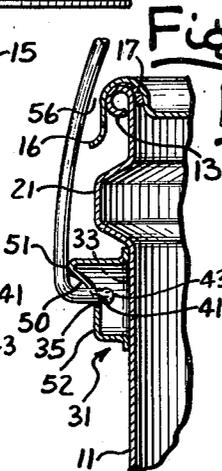
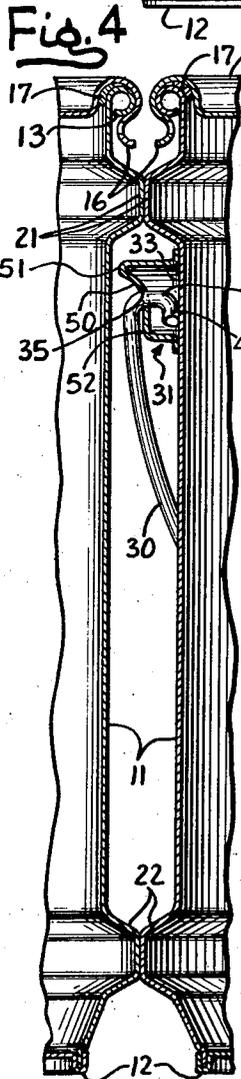
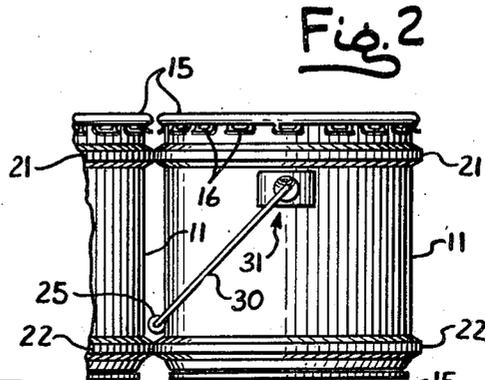
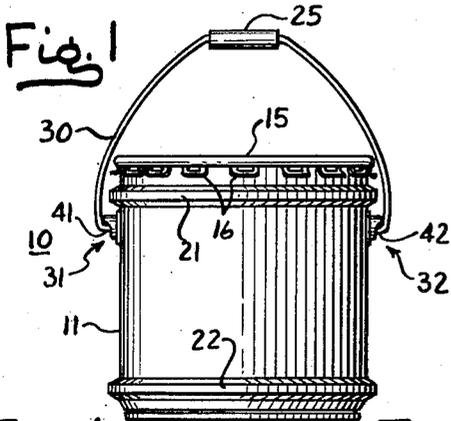
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3,170,592

PAIL TYPE SHIPPING CONTAINER

Filed Aug. 10, 1962



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3,170,592

PAIL TYPE SHIPPING CONTAINER

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2 Claims. (Cl. 220-91)

The present invention relates to a container and more particularly to an improved hollow ear and bail construction therefor.

In the steel shipping container industry a common type of shipping container is known as an "open head" container or pail and is conventionally provided with a bail diametrically pivoted on ears welded or otherwise affixed to the sides of the container. Such containers, in two to seven gallon sizes, are conventionally reinforced by deforming the wall into one or more ridges or beads and are provided with covers which are crimped to a curl formed along the upper edge.

It is desirable, in order to avoid waste space, and to prevent damage during transit, for the containers to be placed bead-to-bead. However, this condition is difficult to achieve since, in the conventional ear and bail design, the bails, when in lowered position, extend substantially beyond the profile of the container and interfere with adjacent containers.

Accordingly, it is an object of the present invention to provide a container having an improved hollow ear and bail construction in which the bail may be swung to its upraised position without interference with the bead, curl, uncrimped or crimped-on cover, but which nevertheless permits the bail to be swung downwardly into a closely nested position about the container without projecting substantially beyond the container profile, thereby permitting similar containers to be nested compactly together bead-to-bead. It is a related object to provide a container having an improved ear and bail construction which avoids any possibility of the bail of one container rubbing against the side wall of an adjacent container during shipment or handling thereby to deface the paint, decoration or labelling on the outside of the adjacent container. It is still another object of the present invention to provide a container having an improved ear and bail construction in which little or no care need be exercised during handling or packing and in which it is not necessary to orient one container carefully with respect to the adjacent ones.

Finally, it is an object of the invention to provide a novel ear and bail construction which is inexpensive, but in which the ears may be easily attached by spot welding or the like while providing high inherent strength so that materials of high density may be safely transported.

Other objects and advantages of the invention will become apparent upon reading the attached detailed description and upon reference to the drawings in which:

FIGURE 1 is a side view of a container having ears and a bail constructed in accordance with the present invention and with the bail shown in upraised position.

FIG. 2 is a side view taken at right angles to FIG. 1 and showing the bail in lowered position.

FIG. 3 is a top view showing a plurality of containers packed side by side.

FIG. 4 is a fragmentary section showing the contact between adjacent containers with the bail in its lowered position.

FIG. 5 is a fragmentary section showing the "clearing" of the cover as the bail is upraised.

FIGS. 6 and 7 are fragmentary top and side views showing the ear and bail.

While the invention has been described in connection with a certain preferred embodiment, it will be understood that we do not intend to be limited to the illustrated embodiments, but intend to cover the various alternative and equivalent constructions included within the spirit and scope of the appended claims.

Turning now to the drawings, a typical shipping container or pail 10 of the type under discussion has a cylindrical side wall 11 and bottom wall 12. At the upper edge or lip of the container is an outwardly projecting curl 13 which serves as a seat for a crimp type cover 15. The latter is formed with a plurality of lugs 16 which are seated around the curl by a suitable crimping machine well known to those skilled in the art. Where hermetic sealing is required, a ribbon of sealing compound 17 or a suitable gasket may be provided inside the edge of the cover. To open the cover the lugs 16 are simply pried outwardly by a suitable prying tool inserted into the slots which are formed in the lugs.

For the purpose of reinforcing the side wall, particularly against crushing or deformation during shipment, and to enable use of a thinner gauge metal than would otherwise be possible, an upper bead 21 is formed adjacent the upper end of the container and an optional second bead 22 is formed adjacent the base. These beads are preferably of the same radial height. Preferably, also, the height of the beads slightly exceeds that of the curl by an amount which is substantially equal to the thickness of the cover metal so that the containers may seat cover-to-cover as well as bead-to-bead for protection during shipment.

For convenient carrying and handling of the container a curved bail 30 is provided which engages ears 31, 32 secured to the side walls of the container and which has a handle 25 made of wood or plastic. The bail 30 is suitably curved throughout its entire length except for the central "flat" which mounts the handle 25 and is of such height that bending stresses resulting from carrying a loaded pail do not cause substantial inward deformation of the bail. The ears are in the form of metal cups having flanges 33, 34 which are welded or otherwise secured to the container wall in diametrically opposite positions below the upper bead, the cups having central openings 35.

Turning attention to the bail 30, it includes inwardly bent end portions 41, 42 which are alined with one another and which engage the openings 35 in the cups. The bail is inwardly sprung to maintain the ends 41, 42 in seated position and the ends 41, 42 may, if desired, be bent over at their tips (not shown) to prevent accidental removal from the openings 35 in the cups.

In accordance with the present invention, a cam surface is formed along the upper edges of the cups 31, 32 for engaging the lower ends of the bail and for camming such ends outwardly away from the container when the bail is swung towards its upraised position so that the bail clears the bead, curl, and cover and so that when the bail is swung downwardly into lowered position the bail is free to assume a closely nested relation with respect to the container wall, free of contact with adjacent containers. Taking the cup 31 by way of example, it has integrally formed therein a protuberance or embossment 50 having an upper region 51 of maximum projection and a lower region 52 of minimum projection. In the case of a container having a capacity of, say, to seven gallons with a bead height of, say, $\frac{3}{8}$ inch, the cup may have a maximum projection of $\frac{1}{16}$ inch tapering to a minimum of $\frac{1}{16}$ inch. The maximum projection may be made just sufficient, having in mind the curvature of the bail and the geometry of the cover, to produce a slight clearance 56 at the edge of the cover. The bail 30, as stated, is desirably curved through-

out its entire length except for the central "flat" which mounts the handle 25. If desired, clearance at 56 may be increased as necessary in order to clear the lugs 16 of the cover in their uncrimped or pried-out positions, thereby enabling the cover to be temporarily replaced while still permitting normal use of the bail. In conventional constructions where the bail has sufficient span to clear the lugs, interference of the bail with adjacent pails unavoidably occurs when the bail is in lowered position. If a conventional bail were made non-interfering in the down position, the uncrimped lugs would tend to block the swing of the bail to vertical position which would constitute a nuisance to the pail manufacturer or filler.

Prior to crimping, and when the pail is shipped from the manufacturer to the user or filler, the lugs occupy the straight position shown in FIG. 5. It will be apparent that the lugs are cleared by the bail, in the present construction, when they are either in the crimped or uncrimped state.

The practical advantage of the construction will be apparent upon considering a typical cycle of use. After the containers have been fabricated, painted, and labels have been applied in the form of a printed or silk-screened impression, decal, or the like, they must be stored as compactly as possible until use. In the present construction, since the bail 30 is uniformly curved and occupies a closely nested position against the cylindrical wall, the containers may be packed bead-to-bead with no contact between the bail of one of the containers and the side wall of another. Moreover, since the bail is in a completely out-of-the-way position, the containers may be nested together as in FIG. 3 with geometric precision. The ears and handle do not interfere with adjacent container walls since they have a radial projection which is less than the available clearance provided by the abutting beads. After the containers are filled and the lids 15 have been crimped in place, temporary storage or warehousing is again necessary prior to shipment.

In lifting a container of the above type it is desirable to utilize the bail since a filled container has substantial weight, on the order of sixty-five pounds or more, depending upon the material which it contains. As the handle is swung upwardly, the camming surfaces of the ears cause the ends of the bail to ride outwardly upon the cam projections 51 so that when the handle is straight up the ends of the bail are held by the projections in spread apart position which insures clearing the bead and cover. Conversely, in depositing the container the handle is swung downwardly causing the ends of the bail to ride inwardly onto the low portions 52 of the cups and with the handle resting against the side of the container. Since the handle and the ears together occupy such a small portion of the total periphery, no difficulty will be found in stacking pails adjacent one another without handle-to-handle or ear-to-ear interference. Consequently, the containers may be stacked together without the necessity of taking particular caution to avoid bail-to-bail contact. The construction therefore brings about a degree of economy because of the reduction in handling labor and in the saving of handling time and also because of the reduction in volume of storage required. Moreover, since the bails are prevented from scratching or denting the painted or labeled surfaces of adjacent containers, each of the containers is more likely to remain in perfect condition until it reaches the hands of the customer. Rail shipping damage is minimized with bead-to-bead packing since each container presents its reinforced beads to the adjacent containers to take up impact.

To assist one in practicing the present invention and in making minor changes in the construction without, however, departing from the present invention, it will be helpful to keep in mind the following general principles. In the first place, the reinforcing bead, or beads, on the pail should extend beyond the body of the pail by a sufficient distance to provide clearance for the ear and bail between adjacent pails when the bail is in the down position.

Moreover, the ears should extend outwardly from the body a sufficient amount to force or permit the bail ends to be moved outwardly from the body a distance sufficient to provide the required clearance between the bail and the bead or curl (see clearance 56 in FIG. 5) when the bail is in its upward position. Finally it is necessary that the bent-over portions 41, 42 at the ends of the bail be sufficiently long and the cups sufficiently deep, as to permit a full range of axial movement which takes place as a result of the camming action as the bail is swung from its lowered to its fully upraised position.

We claim as our invention:

1. In a shipping container the combination comprising a cylindrical wall, the upper edge of the wall being formed into an outwardly extending curl, an upper bead formed in the wall near the upper edge of the container and a lower bead formed in the wall adjacent the lower end of the container, a pair of ears located in diametrically opposite positions on the wall of the container immediately below the upper bead, each of said ears being secured to the wall of the container by welding or the like, each of said ears having a central opening formed therein, a bail of generally semicircular shape having inwardly bent end portions for engaging the openings in said ears, each of said ears having an integral cam-like protuberance along the upper edge portion thereof so that when the bail is swung to its upraised position the bail rides radially outward on said protuberances to clear the bead and curl and so that when the bail is swung downwardly for shipment the loops on the bail ride inwardly on said protuberances for close nesting of the bail with respect to the container and so that the bail is held clear of the side walls of adjacent containers regardless of the relative orientation between them, the maximum radial extent of the protuberances on the ears being slightly less than twice the height of the beads so as to permit accommodation of the ears when similar containers are arranged bead-to-bead during shipment.

2. In a shipping container the combination comprising a side wall having an upper edge, a bead formed in said side wall adjacent said upper edge, a cover seated on said upper edge and projecting outwardly beyond said side wall, a pair of ears secured to said side wall below said bead and extending radially outward therefrom, said ears defining cups having openings centrally formed therein, a generally semicircular bail having inwardly bent end portions received within the openings in said cups, each of said cups having an integrally formed external cam-like protuberance along its upper edge and protruding radially therefrom to an extent slightly less than twice the radial height of said bead so as to permit bead-to-bead stacking of similar containers, said bail being inwardly sprung so that as said bail is raised from a lowermost limit position closely nested with said side wall toward an upraised vertical position the sides of said bail coact with each of said protuberances and are cammed radially outward thereby to clear both said cover and said bead, and so that when said inwardly sprung bail is swung downwardly the sides thereof coact with each of said protuberances so as to move radially inward by spring action for closely nested positioning of said bail adjacent the wall of the container.

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