LUG FOR LIQUID CONTAINER

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UNITED STATES PATENTS


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ABSTRACT

An improved container-carrying lug in which corner ribs are provided concave to the lug interior and vertically extending tongues project into the rib concavity in a manner to engage and support a stacked corresponding lug.

9 Claims, 6 Drawing Figures
LUG FOR LIQUID CONTAINER

BACKGROUND OF THE INVENTION

This invention has to do with container-carrying lugs such as are useful for transportation and storage of pool bleach bottles.

Prior Art

In U.S. Pat. No. 3,303,965, a lug for carrying or storing plural bottles, e.g., of pool bleach is disclosed. Numerous other patents have issued on various lug structures some of which may be useful in the handling of pool bleach bottles.

While stacking features are found in many of these prior lugs, load transmission to the ground, so important in multi-lug stacking of heavy loads like bleach for pools cannot be left merely to the lug sidewalls or even the lug corners, absent an uneconomical thickening of these members. The provision of ribs along the sidewall or at the outer curvature of the lug corner may be used but such ribs are often unsightly and prone to damage in use, with even further deterioration of the lug appearance in the course of time.

SUMMARY OF THE INVENTION

Accordingly, it is a major objective of the present invention to provide a container-carrying lug in which in the stacked load transmission to the ground is through the corner, aided by concave rib means having a vertically extended tongue projecting toward the lug interior, i.e., from within the rib concavity and without sacrifice of load space.

In particular, the invention provides, in a container-carrying plastic lug having a generally polygonal horizontal cross-section, vertically extending sidewalls below an outwardly extending flange means at the top of the lug, and at each lug corner a vertically disposed corner rib extending from the flange means to the lug bottom at the intersection of the sidewalls, the corner ribs being concave to the lug interior throughout their length, an improvement comprising a vertically extending tongue projecting into the rib concavity in a manner to engage and support a stacked corresponding lug, the flange means being recessed above the corner ribs to permit stacked lug engagement with the projecting tongues. The lug, which may be formed of high density polyethylene, may include a plurality of vertical ribs at each corner, at least one of which and suitably each of which is provided with the indicated projecting tongue.

The tongue is preferably formed integrally with its associated rib and may project a distance less than the radius of the rib concavity and preferably a uniform distance throughout its vertical extent. The rib typically terminates upwardly in a shoulder level with the top of the tongue for simultaneous engagement of a stacked lug with the rib shoulder and the tongue.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be further described as to an illustrative embodiment thereof in conjunction with the attached drawing wherein:

FIG. 1 is a perspective view of a container-carrying lug according to the invention;
FIG. 2 is a horizontal sectional view thereof taken along line 2-2 in FIG. 1;
FIG. 3 is a vertical sectional view of the lug corner taken along line 3-3 in FIG. 2;
FIG. 4 is a fragmentary vertical section view of the lug sidewall and integral handle taken along line 4-4 in FIG. 2;
FIG. 5 is a fragmentary view in vertical section showing the corner engagement of stacked lugs with the rib shoulder and tongue; and
FIG. 6 is a horizontal sectional view of the engaged lugs taken on line 6-6 in FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, lug 1 according to the invention is shown to be generally polygonal, in this case substantially square, in cross-section and to comprise vertical sidewalls 2 joined at rounded corners 3, an elevated bottom wall 4 upwardly supported by ribbing, 4a and a top outwardly projecting flange 5 extending continuously about the top of the lug. The flange 5 includes a downwardly turned U-shaped member 6 and is recessed outwardly at locations 7 intermediate the lug corners 3 to provide finger holes 8 and at the lug corners to provide rib receiving areas 9, 10 for stacking of lugs, as will be described. The flange member 6 forms a handle 11 outwardly opposite finger hole recess 7, the handle being reinforced against crushing by transverse spacers 12, best shown in FIG. 2. The end walls 13 of the handles 11 continue downward past the flange 5 to form generally triangular reinforcements 14 formed integrally with the walls and the flange.

Load transmitting ribs 15 and 16 are formed at the lug corners 3. Each of the ribs 15, 16 is essentially semi-cylindrical and concave to the lug interior 17. The ribs 15 and 16 are formed as an integral part of the lug walls 2 with a radially enlarged upper end portion 18, 19 and a closed lower end or foot portion 20, 21. Each center rib 15 is located at the true corner of the lug 1, with ribs 16 symmetrically spaced at each side of the center rib at distances substantially as illustrated, assuring such rib distribution as will enable the lug corner 3, as distinguished from the sidewalls 2, to assume at least the bulk of the load imposed by one or more superimposed, stacked lugs.

In the present lug, in contrast to previous lugs, e.g., that in U.S. Pat. No. 3,303,965 in addition to plural concave corner ribs 15, 16 for stacking support, there is provided within the concavity 22, 23 of each of ribs 15 and 16 a tongue 24. Tongue 24 is a vertically extended member commencing at recess 9 or 10 in the flange 5, i.e., at the shoulder 25 formed by top radial enlargement 18, 19 of the ribs 15 and 16 terminating at the lug bottom 4 with which the tongue is integrally formed or joined in abutting relation. The tongue 24 is shown to be essentially rectangular in horizontal and vertical cross section, but may take other polygonal or rounded horizontal cross-sectional shapes, e.g., triangular, circular or oval. The tongue 24 projects along a radius of the rib 15 or 16 and preferably a distance less than the radius of curvature of the rib, e.g., 10 to 80 percent of the rib radius of curvature. In thickness, the tongue 24 may approximate the rib wall thickness, e.g., be from 50 to 150 percent of the rib wall thickness. The tongue 24 preferably projects normally to the lug wall portion from which it extends, i.e., it subtends an angle of 90 percent with the surface of the wall in which its associated rib is formed. See FIG. 2.
Referring particularly to FIGS. 1, 5 and 6, each corner of the continuous flange 5 has recesses 9 and 10 corresponding in spacing and arrangement to the lower portions 20 and 21 respectively of the ribs 15 and 16, so that in the FIG. 5 stacked alignment of the lugs 1 and 1a, the lower portions of the upper ribs 15a will be received respectively within recesses 9 in the corner of the flange below, resting upon shoulder 25 within the recesses and simultaneously upon tongue 24 which is level with the shoulder. It will be noted that more widely spaced contact is thus afforded to the stacked lug with consequent broader distribution of load to be transmitted for enhanced stack stability. In addition, the provision of tongue 24 aids in preventing upper lug 1a corners from slipping into the lower lug interior 17, if initial alinement of the lugs is not perfect for proper stacking. As stacked, the upper lug ribs 15a have their lower portions interfitted into flange recesses 9 and in contact with lower rib shoulders 25 and tongue 24.

Upper lug ribs corresponding to ribs 16 are not shown but interfit correspondingly into recesses 10 as will be evident. Thus, the upper lug ribs 15a are aligned with the lower lug ribs 15 and upper lug tongues 24a are aligned with corresponding lower lug tongues 24 and, as a consequence the vertical load transmission is from the upper to the lower aligned tongues and ribs, largely independent of the sidewalls 2 and 2a. Further, by reason of the interfitting relation of the ribs 15a, and the flange recesses 9, the stacked containers are interlocked against relative shifting, either linearly or rotationally.

The lugs may be injection molded of high density polyethylene or other tough and relatively rigid synthetic organic plastic.

In use, the described lugs are capable of repeated use as shipping and storage containers for bottled pool bleach or other product being capable of sustaining heavy stacked loads without deformation even at high ambient temperatures, and withal to present a clean uncluttered exterior appearance, free of easily damaged and unattractive rib fins along the exterior sidewalls or corners.

I claim:

1. In a container-carrying plastic lug having a generally polygonal horizontal cross-section, vertically extending sidewalls below an outwardly extending flange means at the top of the lug, and at each lug corner a vertically disposed corner rib extending from the flange means to the lug bottom at the intersections of the sidewalls, said corner ribs being concave to the lug interior throughout their length, the improvement comprising a vertically extended tongue projecting into the rib concavity in a manner to engage and support a stacked corresponding lug, said flange means being recessed above said ribs to permit stacked lug engagement with said tongue.

2. Lug according to claim 1 including also a plurality of vertical ribs at each lug corner, at least one of which is provided with said projecting tongue.

3. Lug according to claim 2 in which three vertical ribs are provided at each corner and each rib is provided with a projecting tongue.

4. Lug according to claim 1 in which said lug is formed of high density polyethylene.

5. Lug according to claim 1 in which each said rib is semi-cylindrical, said tongue is formed integrally with its rib and projects thereinto a distance less than the radius of the rib concavity and normal to the plane of the wall it subtends.

6. Lug according to claim 5 in which the tongue projection is uniform throughout its vertical extent.

7. Lug according to claim 6 in which said rib terminates upwardly in a shoulder level with the top of said tongue for simultaneous engagement of a stacked lug with said rib shoulder and said tongue.

8. Lug according to claim 7 in which three vertical ribs are provided at each corner, each having a projecting tongue.

9. Lug according to claim 8 in which said lug is formed of high density polyethylene.

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