

A BUNG BARREL

The present invention relates to a bung barrel.

It is known for barrels composed of thermoplastics material to have at least one peripheral ring or chime for lifting and transporting purposes which is shaped integrally with the barrel body and is arranged substantially adjacent a barrel end portions. The ring has substantially axially-extending and substantially radially-outwardly-extending annular contact surfaces which may be gripped by the jaws of lifting apparatus.

Barrels formed in this way may be gripped, raised and transported without manual intervention using conventional barrel grippers of a stacker truck.

Lifting and transporting rings of this type normally have a cross section with an annular, substantially radially-outwardly-extending web and an annular, substantially axially-extending (upright) web. The upright web is oriented, such that the free end thereof projects toward the adjacent end portion of the barrel and the outwardly-extending web projects radially outwards from the barrel body.

The gripping device for lifting and transporting the barrel grips the ring with a first jaw beneath the outwardly-extending web and a second jaw inwardly of the upright web. The total load of the barrel is carried by the first jaw beneath the outwardly-extending web, and the second jaw engaging the inwardly-facing surface of the upright web prevents the barrel from slipping.

When the barrel is formed by blow moulding, welded joints are formed adjacent the rings during barrel production. A tube which is extruded into an open mould is squeezed and welded by approaching lateral halves of main mould. Vertically-movable slide members having the ring profiles machined in the internal contour thereof are located at the ring-forming portions of the main mould halves.

During blow moulding, the extruded tube is forced into recesses between the main mould halves and the slide members. The slide members are then moved into a closed position and the tube material in the recesses is pressed into the ring shape. Wall folds formed in the recesses are welded together by the inherent heat in the tube. These welded zones are subjected to high tensile and bending stresses during barrel transportation or when a filled barrel is dropped.

An object of the invention is to provide a barrel with a peripheral ring in which the welded zones adjacent the ring are substantially free from bending stresses, the ring being deformable in the circumferential direction (and therefore with respect to the barrel body during impact), and the connection between the ring and the barrel body being deformable.

The invention provides a barrel as claimed in claim 1.

As a result of the acute angle between the connecting web and the barrel axis resulting in an oblique adjoining between the web and the wall of the barrel body, the connecting web carries only harmless tensile stresses which are transferred to the barrel body when the barrel is lifted and transported by means of a gripping device. The thickness of the connecting web may be small compared with that of the barrel body, resulting in high resilience of the web due to improved controllability of the welded zone during production.

The resilience of the connecting web is enhanced in that the base of the groove between the upright contact surface and the surface of the respective end portion is level with the outwardly-extending surface. When a filled barrel is dropped, the lifting and transporting ring meets the ground before the side wall of the

barrel. The ring tips inwards, as a result of the resilient connecting web, until the upright contact surface strikes the barrel wall. The bending stresses are thus transmitted into homogeneous body portion, and
5 stressing of the welded zone is therefore avoided.

According to a preferred embodiment of the invention, an outwardly-facing surface of the lifting and transporting ring has an annular indent inclined obliquely to the connecting web.

10 During formation of the barrel, each slide member displaces the material in the annular recess between the mould and the slide member towards the connecting web such that material is displaced downwards into the barrel body. A thickened region of material is thus
15 formed in the most highly stressed portion of the wall and the welded zone is also displaced downwards away from the critical ring region.

In order to create non-slip contact surfaces for the jaws of a barrel gripper, the upright contact face is
20 preferably inclined outwards at an acute angle to the longitudinal axis of the barrel, and the outwardly-extending contact surface is preferably inclined at an acute angle to the transverse centre plane of the barrel. Any deflections of the lifting and

transporting ring are thus compensated preventing the lifting and transporting ring from slipping away from the horizontal gripper jaw when the barrel is full.

Alternatively, the top and bottom end portions may be
5 formed separately, e.g. by die casting. Each end portion may have the lifting and transporting ring described above. The barrel body which is positioned between the end surfaces may be formed separately, e.g. by blow moulding. The three portions may then be welded
10 together to form a complete barrel.

Embodiments of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 shows part of the top of a barrel with a bung opening according to the invention in longitudinal
15 section;

Figure 2 shows a view similar to Figure 1 but without a bung opening;

Figure 3 shows in longitudinal section part of a barrel with a bung opening manufactured in accordance with a
20 further embodiment of the invention from three separate portions.

As shown in Figures 1 and 2, a plastics barrel has a tubular body portion 1 connected to a top end portion 9 of a plastics barrel. A bung opening 11 is located in a bung well or depression in the top end portion 9. A lifting and transporting ring or chime 2 is formed integrally with the body portion 1 below the top end portion 9. A free end 7 of the ring 2, projects in the direction of the top end portion 9. The ring 2 extends via a connecting web 5 from the body portion 1. The ring 2 has a substantially radially-outwardly-extending,, annular contact surface 3 facing the lower end portion of the barrel, and an upright, substantially axially-extending, annular contact surface 4 facing the upper end portion 9 of the barrel. The contact surfaces 3 and 4 may be gripped by the jaws of a barrel gripper (not shown).

The top end portion 9 has a frusto-conical wall portion tapering outwardly to the tubular body portion 1. The frusto-conical shape of the wall portion 8 is provided to accommodate a jaw of the barrel gripper.

The connecting web 5 adjoins the tubular body portion 1 at an acute angle to the longitudinal barrel axis. A groove 6 arranged between the upright surface 4 and the frusto-conical wall portion 8 extends to a base of the groove level with the outwardly-extending contact

surface 3 of the ring 2.

The upright contact surface 4 is inclined outwards at an acute angle to the longitudinal axis of the barrel, and the outwardly-extending contact surface 3 is inclined downwards at an acute angle to the transverse centre plane of the barrel.

The lifting and transporting ring 2 has an outer surface with an annular indent 10 extending obliquely to the connecting web 5.

The lower end portion of the barrel may be formed as shown in Figure 2 when inverted. The radially-outermost surface of the rings 2 may be cylindrical, as shown in Figures 1 and 2, so that the rings act as rolling chimes.

Referring to Figure 3, the barrel may be formed of three separately-formed portions 1, 9 and 12. The top and bottom end portions 9, 12 have end tubular body portions may be formed by diecasting, and the main tubular body portion 1 may be formed by blow moulding. Any rough edges formed during manufacture of the main tubular body portion 1 are cut away leaving planar edges 13. The edges of the end tubular body portions of the top and bottom end portions must also be planar. All three portions may then be welded together along the edges 13.

Claims:

1. A plastics bung barrel comprising a tubular body portion, top and bottom end portions and at least one lifting and transporting ring formed integrally with the body portion and adjacent one of the end portions, wherein the ring has a substantially axially-extending, annular contact surface facing the respective end portion and a substantially radially-outwardly-extending annular contact surface facing the opposite end portion, and the ring is connected to the body portion via an annular connecting web inclined at an acute angle to the longitudinal axis of the barrel, an annular groove being formed between the substantially axially-extending, annular contact surface and the surface of the respective end portion, the groove having a base substantially level with the substantially radially-outwardly-extending surface, so that on resilient deformation of the web the substantially axially-extending contact surface contacts the said surface of the respective end portion.

2. A bung barrel as claimed in Claim 1, wherein the upright annular contact surface is inclined outwards at an angle to the longitudinal axis of the barrel and the outwardly-extending annular contact surface is inclined towards the transverse centre plane of the barrel.



3. A bung barrel as claimed in Claim 1 or 2, wherein the lifting and transporting ring has a substantially radially-outwardly-facing surface having an annular indent extending obliquely to the connecting web.

4. A bung barrel as claimed in any one of the preceding claims, wherein the ring or one of the rings is adjacent the top end portion of the barrel, at least one bung opening being arranged in the top end portion.

5. A bung barrel as claimed in any one of the preceding claims, comprising separately-formed end portions having end tubular body portions and a main tubular body portion connected together by welding.

6. A bung barrel substantially as herein described with reference to any one of the embodiments shown in the accompanying drawings.

