

PATENT SPECIFICATION

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(54) CONTAINER OF PLASTICS MATERIAL

(71) We, METALLURGIE ET PLASTIC S.A., of 11 Route de la Condemine, 1680 Romont, Switzerland; a Swiss body corporate, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a container of plastics material, provided with a cover and having at least one handle.

Containers made of plastic material have a number of advantages, amongst which may be mentioned, economical manufacture and good resistance to corrosion.

However, the rigidity of such containers generally becomes insufficient when the capacity thereof increases, or, when the mass of the transported material is large; this fault appears, in particular, during transportation when such containers are subjected to lateral forces which tend to deform the body of the container and often cause opening of the cover.

A container is known which comprises a ribbed belt encircling the upper part of the truncated body of the container; moreover, the rigidity of the base is increased by utilising a plurality of suitably located ribs. For carrying or transporting purposes, such containers are placed side by side on standardized pallets; their ribbed belts are thus only on contact along a line, the length of which corresponds to the height of the belt; thus, if lateral forces do occur, the superficial pressure can be sufficiently large to deform the body of the container and provoke the opening of the cover.

According to the present invention there is provided a container of plastics material comprising a tubular body of circular cross-section, a removably attached cover therefor and at least one handle, in which the container also includes a flange which is polygonal in plan, said polygonal flange be-

ing disposed on and peripherally about the upper part of the body of the container and comprising a horizontal leg portion and a leg portion disposed at the edge of and perpendicular to said horizontal leg portion, said perpendicular leg portion having stop means interengageable with like stop means provided on the flanges of adjacent containers, thereby, in use, jointly substantially eliminating the relative displacement of juxtaposed containers in side-by-side relationship during transportation, said handle being attached to or forming part of said flange and said cover being fixed to the top of the wall of the tubular body by engaging a lip over an abutment of the wall.

The invention will be further illustrated by way of example, with reference to the accompanying drawings, in which Figs. 1, 2 and 3 are given by way of information and do not form part of the invention, and in which:

Fig. 1 is a perspective view of a container but without a cover;

Fig. 2 is a plan view of an assembly of containers disposed on a standardized pallet;

Fig. 3 illustrates the meshing of the stop means provided on adjacent containers operating in a manner to eliminate the relative displacement of the containers;

Fig. 4 is a plan view of an embodiment of a container in accordance with the invention;

Fig. 5 represents a detail of Fig. 6 (viewed from the left of Fig. 6);

Fig. 6 is a sectional view, along the line VI-VI of Fig. 4, of the container and of the cover which is associated therewith and of a handle;

Fig. 7 shows the detail of the stop means eliminating the relative displacement of the containers;

Fig. 8 is a sectional view of a further embodiment of a container in accordance

with the invention; and

Fig. 9 is a partial view, from below, of the container of Fig. 8;

Fig. 10 is a partial view, from below, of a still further embodiment of a container in accordance with the invention;

Fig. 11 shows a plurality of ribs provided on the body of the container which are useful for increasing the rigidity of the body;

Fig. 12 is a sectional view, along the line XII-XII of Fig. 11;

Fig. 13 is a sectional view, along the line XIII-XIII of Fig. 10; and

Figs. 14 and 15 show alternative embodiments of a cover for the container in accordance with the invention.

Figs. 1, 2 and 3 illustrate a plastics container comprising a tubular body 1 of circular cross-section having a polygonal flange 2; ribs 4 are provided on the sides of the flange 2; moreover, openings are made in the flange 2 so that handles 3 can pass therethrough. For transporting, the containers, which are provided with covers 5, are disposed on a pallet 6 (Fig. 2) in such a manner that the ribs 4 of the container mesh with the ribs 4a of an adjacent container (Fig. 3). The assembly of containers can then be tied up with a plastics material belt or a thermo-retractable sheet. The ribs eliminate the relative displacement of the containers in certain directions during transport; moreover, the flanges are sufficiently rigid to avoid the deformation of the body in the case of lateral forces.

Figs. 4, 5, 6 and 7 show an embodiment of a container in accordance with the invention. The flange 7, seen in plan, has a square shaped base with angles chamfered at 45°; the section of the flange (see Fig. 6) resembles an angle iron, the thickness of which is substantially equal to that of the body 10; and one of the edges of the angle iron, perpendicular to the axis of the container, constitutes the upper plane of the flange 7.

A plurality of ribs, not shown, connects the sides of the flange to the wall of the body. The flange 7 is disposed in the region of the upper part of the tubular body 10. Groups of ribs 8, 8a, 8b, 9, 9a (see Fig. 7) are disposed, alternatively in vertical and horizontal directions; thus these ribs can be meshed with those of an adjacent container; also after a rotation of 180° with respect to the axis A-A (Fig. 7), the ribs of groups 8b and 9 can be meshed with the ribs of the groups 8a and 9a. In this manner, when two or several containers are in contact, it is possible to substantially eliminate the relative displacement of the containers in two directions.

Openings 11 are provided on two opposed sides of the flange 7; they permit the pas-

sage therethrough of handles 13, provided at their ends with cylinders 14 are housed in a cavity 11a of the flange 7. Supplementary ribs 15 are provided for absorbing the bending stresses of the flange 7 due to the traction exerted on the handles when the container is lifted.

It is clear that the handles 13 can be replaced by a single handle; in this case, only a single opening 11 is provided on each of the opposite angles. A cover 12 (Fig. 6) is fixed to the top of the wall of the body 10.

Figs. 8 and 9 show another embodiment of container; the octagonal flange 20, presents on four of its sides, groups 8 and 9 of ribs similar to those described above; the partial view of Fig. 9 shows the arrangement of the ribs 24 which connect the sides of the flange 20 to the wall of the tubular body 10. On four of the sides of the flange, these ribs are constructed in a manner to be able to hold and easily manipulate the container; the parts 22 and 23 thus act as a handle; the ribs 21, delimiting the bevelled corner parts 22 and 23, are extended along the generatrix of the body for a certain distance.

The wall of the body 10 is extended above the plane of the flange 20, defining a lip 36 permitting fixing of the cover 12.

The cover 12 comprises a central portion 34, reinforced by ribs 37, connected to the portion of the cover effectuating closing by a flexible wall 31 in the form of a "U", the wall 31 permits absorption of forces when applying the portion of the cover effectuating closing of the cover to the wall of the body 10; this latter is formed of a folded over portion which grips the lip 36 and maintains the cover 12 by the intermediary of an abutment 32. A ribbon, of plastics material, can be placed in a notch 33 so that the cover can be firmly fixed. A suitable sealant can be lodged in annular space 38 in order to ensure the tightness of the cover.

The base 28 of the container is connected to the major portion of the body 10 by curve sections 29 and 30. A cylindrical part 25 surrounding the base 28 extends downwardly from the wall of the body; regularly spaced ribs 26 reinforce the cylindrical part 25. The cylindrical part 25 is capable of deformation when subjected to a force, thus protecting the base 28 of the container.

The body and the cover are formed from a plastics material e.g., high density polyethylene, by injection. In the case of the body, the plastics material is injected in the centre 39 of the base; the conditions of distribution of the material during injection are improved by a series of ribs 27 extending between the injection point and the base of the body; the curves 29 and 30 likewise

improve the injection.

Similar considerations apply to the ribs 35 of the cover 12.

Fig. 10 shows, from below, another embodiment of a container in accordance with the invention. A polygonal flange 50 comprises twelve sides, one side out of two being provided with means operating in such a way that the relative displacement in certain directions of juxtaposed containers is substantially eliminated.

Two opposite sides of the flange 50 are provided with a pin 52, so as to provide suitable attachment points for the ends of a flexible handle; the axis of the pin 52 coincides with the ribs 53 (ribs having the same function as ribs 21 in Figs. 8 and 9).

The base 55 of the container also comprises (as previously shown in Fig. 8) a cylindrical part 54 functioning as shock absorber; to improve this absorption, some flexible ribs 65 connect the base 55 to the cylindrical part 54, each rib 65 forming a determined angle α with respect to a radius of said body; during a shock these ribs are bending easier than the radial ones.

The central part of the base 55 is provided with a sleeve 64 (see Fig. 13) which, in use and when the container is full, rests against the surface of the pallet.

In order to improve the rigidity of the container, it is possible to provide a plurality of ribs 56 (see Figs. 11 and 12) on the inner surface of the wall 57; these ribs have a small height (for instance 0.5 mm) so as to avoid difficulties with the mould.

In certain cases, cover 66 must be very stiff. The flexible part 31 of the cover 12 as shown in Fig. 8 is replaced by a wall 60 (see Fig. 14) stiffened by a series of ribs 58 and 59. The triangular shaped ribs 58 let a part 60a of the wall 60 free in order to centre another container for stacking. The lower part of the ribs 59 is in the same plane surface of the cover; the part 59a extends the wall of the lip permitting the adjustment of the cover. This arrangement facilitates the pile-up of covers.

Another method of reinforcing the cover is shown in Fig. 15; the central wall of the cover 67 comprises a groove 62 stiffened by a set of ribs 61. Each rib 61 includes a part 61a which extends the central wall and a triangular part 61b useful for the stacking of another container 63.

WHAT WE CLAIM IS:—

1. A container of plastics material comprising a tubular body of circular cross-section, a removably attached cover therefor and at least one handle, in which the container also includes a flange which is polygonal in plan, said polygonal flange being disposed on and peripherally about the upper part of the body of the container and

comprising a horizontal leg portion and a leg portion disposed at the edge of and perpendicular to said horizontal leg portion, said perpendicular leg portion having stop means interengageable with like stop means provided on the flanges of adjacent containers, thereby, in use, jointly substantially eliminating the relative displacement of juxtaposed containers in side-by-side relationship during transportation, said handle being attached to or forming part of said flange and said cover being fixed to the top of the wall of the tubular body by engaging a lip over an abutment of the wall.

2. A container as claimed in claim 1, wherein said stop means each comprise groups of ribs alternately disposed in perpendicular directions and which interfit with corresponding groups of ribs of an adjacent container.

3. A container as claimed in claim 1 or 2 wherein said polygonal flange is of square form, with the angles chamfered at 45°.

4. A container as claimed in claim 1, 2 or 3 wherein said polygonal flange is reinforced by ribs, extending to the wall of said tubular body.

5. A container as claimed in any preceding claim, wherein said polygonal flange has apertures on two opposite sides thereof for passing one or more handles there-through.

6. A container as claimed in any preceding claim, wherein said tubular body comprises a flexible deformable skirt which encircles the base of the body in order to protect said base against shocks, said deformable skirt being connected to said base by ribs which form a determined angle with respect to a radius of said body.

7. A container as claimed in any preceding claim, in which the cover comprises a central portion connected to a portion of the cover effectuating closing by a flexible wall in the form of a "U".

8. A container as claimed in claim 7, in which the central portion of the cover is reinforced by a series of ribs, and the portion of the cover effectuating closing of the cover to the wall of the body is formed of a folded-over portion.

9. A container, substantially as hereinbefore described with reference to and as illustrated in Figs. 4 to 15 of the accompanying drawings.

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