

PATENT SPECIFICATION

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(54) OPEN-TOPPED CONTAINER AND LID THEREFOR

(71) We, KONINKLIJKE EMBALLAGE INDUSTRIE VAN LEER B.V., formerly known as Koninklijke Emballage Industrie Van Leer N.V., a Dutch Corporate body, of Amsterdamseweg 206, Amstelveen, Holland, 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 invention relates to an open-topped container and lid therefor, constructed of synthetic thermoplastics material, wherein the lid has an inverted channel-shaped peripheral portion in which the upper rim of the container is received. Containers of this type are known in the art and they generally take the shape of a bucket, so that they can be readily stacked together when empty. The lids have been fastened in several different ways, for instance by means of a clamping strip, which can be tightened, or by means of a metal ring which engages the upper edge of the lid, and which is provided with lips at its lower edge which can be deflected inwardly beneath an annular flange on the container. Clamping strips are easily lost and do not prevent unauthorized use of the contents, and special tools are required for opening and closing containers equipped with the metal rings.

The containers are not rigid in construction and when they are deformed, for example as the result of a fall or bump, containers of this type rely entirely upon the sealing ring or packing between lid and upper edge of the container to maintain complete sealing of the container.

Experience has shown that the continued sealing of these prior containers cannot be guaranteed under all normal conditions and circumstances of transportation and storage.

The present invention aims at overcoming the above disadvantages and accordingly provides an open-topped container and lid

therefor of synthetic thermoplastics material, the container having adjacent its upper rim a plurality of circumferentially spaced, radially outwardly extending projections with enlarged free end portions, the lid having an inverted channel-shaped peripheral portion receiving the upper rim of the container therein, the outer wall of the channel-shaped portion having radial apertures corresponding in number and spacing to the projections, each projection extending through a respective aperture with its enlarged end portion outwardly of the lid outer wall, thereby to retain the lid wall on the projection and the lid on the container.

In this manner an excellent sealing may be achieved.

The closure is liquid-tight because it is necessary to press the lid in axial direction upon the container before the openings in the lid fit over the corresponding projections. Due to this, a seal located between lid and the upper rim of the container is compressed and this guarantees a leakfree closure. A metal ring is no longer needed, while various tools may be used to open the container. It might be possible, for instance, to cut off the enlarged head portions of the projections with a hot knife, but it is preferred to provide a tear-off thread in the lid above the openings. It is possible also to cut free the lid with a cutting tool. With this tear-off type of lid connection the lid can be entirely or partly detached from the container, and if only part of the contents are used the lid can be used again to close the container. Furthermore, the body of the container remains reinforced by the portion of the lid which remains connected to it. If the free ends of the tear-off thread are passed downwardly between two adjacent projections of the container, and are made to extend from underneath the lower edge, on ripping off the lower edge portion of the lid with the aid of the tear-off thread, part of the edge

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portion of the lid will still be attached to the container, thus forming a hinged connection.

5 The projections with their enlarged end portions can be manufactured prior to being fixed to the container, in which case the outer wall of the lid channel-shaped portion with the openings present in the same is pushed over the enlarged end portions, 10 the dimensions of the openings being such that the lid wall will resiliently snap over the end portions and be retained on the one hand by the wall of the container and on the other hand by the enlarged end portions 15 of the projections. This press-stud type fastening, when effected, between lid and container of thermoplastics material is achieved when the thermoplastics material is cold and provides a most reliable confinement. 20

The enlarged portion at the end of each projection may take the form of a peripheral flange extending around the upper edge and side edges of the projection. This form for 25 the projections suits the press-stud fastening and is self-releasing in the mould by means of which the container is manufactured.

30 It is possible to obtain the thickened portion by heating the ends of the projections after the outer wall of the lid has been arranged over them and the projections are projecting through the openings. By applying heat and pressure the end portions of the projections are flattened like rivet heads and the lid is confined. 35

Some embodiments of the invention will now be described in more detail, by way of example only, with reference to the drawings, in which:—

40 Figure 1 shows in side view, partly in section, the upper part of a container according to the invention;

Figure 2 is a top view of the container of Figure 1;

45 Figure 3 is a cross-sectional view through the upper edge of the container on an enlarged scale;

Figure 4 is a top view of a projection;

Figure 5 is an end view of a projection;

50 Figure 6 is a side view of an alternative embodiment of a container according to the invention without lid;

Figure 7 is a top view of the edge of the container of Figure 6;

55 Figure 8 shows a sectional view through the upper edge of the container with the lid in the unfastened position;

Figure 9 shows the edge of the lid in the closing position in a similar manner as Figure 8;

60 Figure 10 shows the final confinement of the edge of the lid;

Figure 11 shows a sectional view taken along the line XI—XI of Figure 12; and

65 Figure 12 is a side view showing the

arrangement of the ends of the tear-off thread.

The container 1 shown in the Figures 1 and 2 has a multiplicity of circumferentially spaced projections 2 adjacent the upper rim of the container. The lid 3 has an inverted channel-shaped peripheral portion which fits over the upper rim of the container and the outer wall 4 of the channel-shaped portion has openings, the number and spacing of which correspond with the number and spacing of projections 2, and the dimensions of which are such that they fit over the projections. In the embodiment of the Figures 1 to 5 inclusive, the projections and the openings in the outer wall of the lid are such that a snap action takes place when the edge of the lid with the openings is pushed radially inwardly over the projections. 75 80 85

From Figure 3 and the Figures 4 and 5 it can be seen that the projections have a flange extending around the upper edge and the side edges at the free ends of the projections to form enlarged heads or end portions 5. The openings in the edge of the lid are shaped to fit about the neck 6 of the projections and have identical sectional shapes. The projections are bevelled at the lower edge, at 7. The thickness of the outer wall of the lid corresponds with the length of the neck 6 such that the lid outer wall fits between the side wall of the container and the flange 5. 90 95

In addition, the end of every projection has tapering edges 8 in order that the projections and apertures be self-aligning. 100

It will be apparent that with the large number of projections, as shown in Figure 2, an extremely secure connection between lid and container can be obtained. The sealing of the container is achieved by fitting a sealing means 9 between the upper edge of the container and the bottom of the inverted channel-shaped portion of the lid. 105 110

The thermoplastics container 10 shown in the Figures 6 and 7 has the shape of a bucket and has a large number of projections adjacent the upper rim, mutually spaced below the edge, the projections 12 being uniformly spaced around the circumference of the container. 115

Figure 8 shows the upper rim 13 of the container 10 with a projection 12 on an enlarged scale, and also the periphery 14 of the lid 15 also of thermoplastics material. The lid has an outer depending wall 16 which is provided with openings 17, the number and spacing of which corresponds with the projections 12. The outer wall 16, in the non-attached position, has such a spread that it can easily be placed on the upper rim of the container together with a sealing means 18 without being interfered with by the projections. 120 125 130

The closure is obtained by pressing the outer wall 16 inwardly to the position shown in Figure 9 and by subsequently providing the projection 12 with an enlarged head-like end portion 19 by subjecting the projection to a heating process, so that it takes the form shown in Figure 10. The outer wall, above the projections 12, is provided with a tear-off thread 20 which is embedded in the thermoplastics material of the lid by melting. The thread 20 extends around the container and Figures 11 and 12 show that at the ends the tear-off thread extends vertically downwardly between two adjacent projections and projects from underneath the outer wall 16 of the edge of the lid.

If the tear-off thread is utilized, the lid is cut through above the projections with the exception of the area between two adjacent projections shown in Figure 12.

WHAT WE CLAIM IS:—

1. An open-topped container and lid therefor of synthetic thermoplastics material, the container having adjacent its upper rim a plurality of circumferentially spaced, radially outwardly extending projections with enlarged free end portions, the lid having an inverted channel-shaped peripheral portion receiving the upper rim of the container therein, the outer wall of the channel-shaped portion having radial apertures corresponding in number and spacing to the projections, each

projection extending through a respective aperture with its enlarged end portion outwardly of the lid outer wall, thereby to retain the lid wall on the projection and the lid on the container.

2. A container according to claim 1, wherein the enlarged portion of each projection is formed by a peripheral flange on the upper and side edges of the projection.

3. A container according to claim 1, wherein the enlarged portion of each projection is provided by heating the end of the projection after the outer wall of the lid has been placed over the projection and the projection extends through one of the apertures in the outer wall.

4. A container according to any of claims 1 to 3, wherein the lid is provided with a tear-off thread arranged above the openings.

5. A container according to claim 4, wherein the free ends of the tear-off thread extend downwardly between two adjacent projections and project beyond the lower edge of the lid outer wall.

6. A container with lid attached thereto, substantially as herein described with reference to Figures 1 to 5 or Figures 6 to 12 of the accompanying drawings.

A. A. THORNTON & CO.,
Chartered Patent Agents,
Northumberland House,
303—306 High Holborn,
London, W.C.1.



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WHAT WE CLAIM IS:—

25 1. An open-topped container and lid
therefor of synthetic thermoplastics
material, the container having adjacent its
upper rim a plurality of circumferentially
spaced, radially outwardly extending
projections with enlarged free end
portions, the lid having an inverted channel-
shaped peripheral portion receiving the
30 upper rim of the container therein, the outer
wall of the channel-shaped portion having
radial apertures corresponding in number
and spacing to the projections, each

35 projection extending through a respective
aperture with its enlarged end portion
outwardly of the lid outer wall, thereby to
retain the lid wall on the projection and the
lid on the container.

40 2. A container according to claim 1,
wherein the enlarged portion of each
projection is formed by a peripheral flange
on the upper and side edges of the
projection.

45 3. A container according to claim 1,
wherein the enlarged portion of each
projection is provided by heating the end of
the projection after the outer wall of the lid
has been placed over the projection and the
50 projection extends through one of the
apertures in the outer wall.

4. A container according to any of claims
1 to 3, wherein the lid is provided with a
tear-off thread arranged above the openings.

55 5. A container according to claim 4,
wherein the free ends of the tear-off thread
extend downwardly between two adjacent
projections and project beyond the lower
edge of the lid outer wall.

60 6. A container with lid attached thereto,
substantially as herein described with
reference to Figures 1 to 5 or Figures 6 to 12
of the accompanying drawings.

A. A. THORNTON & CO.,
Chartered Patent Agents,
Northumberland House,
303—306 High Holborn,
London, W.C.1.