

PATENT SPECIFICATION

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(54) CARRIERS FOR CONTAINERS

(71) We, ILLINOIS TOOL WORKS INC., a corporation organised under the laws of the State of Delaware, United States of America, of 8501 West Higgins Road, Chicago, Illinois 60631, United States of America, 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 packages comprising a number of bottles or other containers and a carrier, and to carriers for use in such packages. The bottles or containers are of the type including a reduced neck portion above the body portion. The neck portion may be closed with various forms of caps, such as screw caps or pressed-on crown caps, and in these forms, the lower edge of the cap constitutes a downwardly facing shoulder. In other forms of bottles and other containers, there is often provided an outward annular bead below the capped end of the neck portion, and in this type of container, this bead constitutes a downwardly facing annular shoulder. Various forms of carriers exist for these types of bottles or other containers, such as those made from sheet plastics material and cardboard, which may be in flat sheet form or folded to tubular and other shapes with upper openings to support the bottles or other containers beneath the shoulders constituted either by the edges of the container caps or by the neck beads. The bottles or other containers have been variously arranged in prior art packages, for example in two parallel rows of three, as in a sixpack, or even a circular configuration.

According to the present invention, a package of a row of closely spaced bottles or other containers, each container having a closure cap received on a reduced neck

portion thereof, and each presenting an annular downwardly directed shoulder below the upper extremity of the neck portion, includes a sheet plastics carrier having a pair of side walls diverging downwardly from a longitudinal apical fold line interrupted by spaced openings, the neck of each container being located in a respective one of the openings with at least part of the edge of the opening engaging the shoulder of the container, and strap elements connecting the bottom edges of the side walls at spaced locations, the edges of the strap elements being contoured to engage the surfaces of adjacent containers below their shoulders for co-operation with the edges of the spaced openings in orienting the containers in the package.

According to a further aspect of the present invention a carrier of sheet material for a row of containers each having a closure cap received on a reduced neck portion thereof and each presenting an annular downwardly directed shoulder below the upper extremity of the neck portion is formed from a blank having a central substantially rectangular body portion, with a longitudinal central fold line, and spaced strap segments projecting laterally in opposed pairs from the edges of the central body portion which are parallel to the fold line, the blank being folded along the central fold line to provide side walls diverging downwardly from the central, apical, fold line and the pairs of strap segments being joined to form complete strap elements connecting the lower edges of the side walls, the blank being formed with a plurality of openings spaced along the central fold line. The blank is formed with a plurality of openings spaced along the central fold line, and hand grip apertures may be formed in the side walls. The material removed may be re-

cycled.

The number of containers in a package may vary, the only limit being that the length of the package should not be so great as to make the package unwieldy. Packages of 2, 3, 4 or 5 containers seem preferable.

According to a further aspect of the invention, a blank for a carrier has a substantially rectangular body portion with a single longitudinal central fold line, a series of openings formed along the fold line, and a number of strap segments extending from the edges of the body portion parallel to the fold line in directions away from the fold line and defining gaps between adjacent strap segments, the gaps being transversely aligned with the openings in the blank.

A package and carrier embodying the invention will now be described in detail, with reference to the accompanying drawings, in which:—

Figure 1 is a plan view of the blank from which the carrier is formed.

Figure 2 is a side elevation of a package comprising a carrier and three containers;

Figure 3 is an end view of the package shown in Figure 2;

Figure 4 is a top plan view of the package shown in Figure 2; and

Figure 5 is a fragmentary top plan view of a package, showing a modified form of opening.

Referring to Figure 1 of the accompanying drawings, the carrier blank, which is formed of resilient sheet plastics material, is shown prior to formation into a carrier. In this condition, the blanks may be packaged for shipment and storage. The central body portion is substantially rectangular and comprises two side walls 10, 10a on opposite sides of a central fold line 12, on which line are situated elongate end openings 14, 16 and an elongate intermediate opening 15. The inner ends of the openings 14 and 16 are rounded as at 14a and 16a respectively, as are the ends 15a and 15b of the opening 15. The outer ends 14b and 16b of the openings 14 and 16, respectively, are substantially straight and cross the fold line 12 at right angles. The edges of the side walls 10 and 10a remote from the central fold line 12 are defined in part by interrupted fold lines 19 and 19a from sections of which extend end strap segments in the form of strip-like arms 18, 18a and 20, 20a. Pairs of strap segments in the form of tapered arms 22, 22a and 24, 24a extend from intermediate sections of the interrupted fold lines 19, 19a. The adjacent edges of the intermediate arms, as well as those edges thereof adjacent the

inner edges of the end arms, are curved or otherwise configured to engage adjacent surfaces of containers in the package, as will be hereinafter pointed out. The ends of the strap segments 18, 18a and 20, 20a terminate in parallelogram-shaped tabs 21, 21a, 23, 23a, respectively, to be folded along crease lines as will be hereinafter described. Similarly, the strap segments 22, 22a and 24, 24a are provided with trapezoidal end tabs 25, 25a and 27, 27a, respectively, to be similarly folded along crease lines as will be hereinafter described. The inner edges 26 and 28 of the end tabs 21, 21a and 23, 23a, respectively, are inclined outwardly. The opposite edges 29 and 30 of the intermediate tabs converge in the direction of the free ends of the tabs. The side walls 10, 10a are provided with finger openings 32, 32a and foldable grip flaps 33, 33a for transport of the carrier and containers when in package form.

The carrier is designed for packaging a linear array of containers, and three such containers are shown in Figures 2, 3 and 4. In this case the containers are bottles having body portions 34 tapering inwardly at 36 to reduced neck portions 38 which are externally threaded to receive screw caps 40. Other forms of caps may be used as closures, but either the lower edge of the cap must form a downwardly directed annular shoulder, or such a shoulder must be formed by an annular head or ridge surrounding the container neck. In forming the carrier from the blank in Figure 1, the blank is folded along the fold line 12 so that side walls 10 and 10a diverge downwards therefrom. The strap segments 18, 18a, 20, 20a, 22, 22a, 24 24a are folded inwardly along the fold lines 19, 19a to position tabs at the ends of the various strap segments in position for securing together by riveting, stapling, stitching or heat sealing in lapped positions, or in vertically oriented face-to-face engagement as illustrated, to connect the lower edges of the side walls. Thus, as particularly shown in Figure 2, the tabs 21, 21a, are brought together in face-to-face contact vertically beneath the fold line 12, as are the tabs 25, 25a, 27, 27a, 23, 23a and secured as by heat sealing at the spot welds 50.

With the carrier so assembled, it is positioned over the linear array of bottles and pressed downwardly to telescope over the neck portions 38 of the bottles until the longitudinal edges of the openings 14, 15 and 16 snap beneath the shoulder provided by the lower edges of the caps 40 of the bottles. The edges 14b and 16b of the openings 14, 16, respectively, will similarly snap beneath adjacent edges of the caps as shown in Figures 2, 3 and 4.

The resiliency of the carrier material permits this application of the carrier to the bottle array, and assists in maintaining a stable package by engagement of the edges of the joined strap segments, as complete strap elements, with the adjacent surfaces 36 of the bottles below the neck portions. In this resilient engagement, the side walls will be resiliently bowed outwardly, as shown in Figure 3, for stability by the engagement of the edges of the openings with the lower edges of the caps and the engagement of the strap element edges with the surfaces of the bottles. For additional stability and resistance to canting of the packaged bottles, it should be noted that the inclined edges 26, 29, 30 and 28 of the tabs abut the adjacent surfaces 36 of the bottles above their body portions.

A modified form of opening is shown fragmentarily in Figure 5, it being understood that the cusped configuration of the inner end of the opening will be repeated, in mirror image at the inner end of the opposite end opening, and at both ends of the intermediate opening. In this form of opening, the rounded end previously described is replaced by cusped edge 42 separated from a slit 44 by a frangible web 46. In removing bottles from the form of opening first described, the end bottles are pulled outwardly and upwardly, as shown by the arrows R in Figure 2, to cause the cap edges to pass through the portions 14a, 16a of the openings 14, 16, respectively, and the centre bottle may be similarly moved in either direction for the cap to be urged through either end portion 15a or 15b of the opening 15. Similar movement of the bottles from the modified form of opening shown in Figure 5 will result in the cap skirt rupturing the frangible web 46, thus connecting the opening with slit 44 to facilitate removal of the bottles. The resiliency of the strap elements facilitates removal of the bottles as they may be deformed out of normal packaged position for this purpose.

WHAT WE CLAIM IS:—

1. A package of a row of closely spaced bottles or other containers, each container having a closure cap received on a reduced neck portion thereof, and each presenting an annular downwardly directed shoulder below the upper extremity of the neck portion; the package including a sheet plastics carrier having a pair of side walls diverging downwardly from a longitudinal apical fold line interrupted by spaced openings, the neck of each container being located in a respective one of the openings with at least part of the edge of the opening engaging the shoulder of the container, and strap elements connecting the bottom edges of the side walls at spaced locations, the

edges of the strap elements being contoured to engage the surfaces of adjacent containers below their shoulders for co-operation with the edges of the spaced openings in orienting the containers in the package.

2. A package as claimed in claim 1 in which the strap elements comprise paired strap segments with free ends joined, the joints situated midway between the bottom edges of the side walls.

3. A package as claimed in claim 2 in which the free ends of the strap segments comprise tabs positioned in face-to-face joined engagement, the tabs situated on the side of the strap elements remote from the apical fold line with their end edges abutting the surfaces of adjacent containers.

4. A package as claimed in any of claims 1 to 3 in which the openings are elongate along the apical line with adjacent ends rounded to facilitate removal of containers by upward swinging movement thereof.

5. A package as claimed in any of claims 1 to 4 wherein the side walls are provided with finger grip apertures intermediate the length of the carrier.

6. A carrier of sheet material for a row of containers each having a closure cap received on a reduced neck portion thereof and each presenting an annular downwardly directed shoulder below the upper extremity of the neck portion; the carrier being formed from a blank having a central substantially rectangular body portion, with a longitudinal central fold line, and spaced strap segments projecting laterally in opposed pairs from the edges of the central body portion which are parallel to the fold line, the blank being folded along the central fold line to provide side walls diverging downwardly from the central, apical, fold line and the pairs of strap segments being joined to form complete strap elements connecting the lower edges of the side walls, the blank being formed with a plurality of openings spaced along the central fold line.

7. A carrier as claimed in claim 6, in which tabs are formed at the free ends of the strap segments and are joined in face-to-face engagement at locations midway between the lower edges of the side walls, at least one of the edges of each of the tabs constituting, in use, an abutment surface for engagement with one of the containers to be associated with the carrier.

8. A carrier according to claim 6, in which the openings are elongate along the apical fold line with adjacent ends rounded to facilitate removal of containers by upward swinging movement thereof.

9. A carrier as claimed in claim 8 in which the openings adjacent the ends of



The resiliency of the carrier material permits this application of the carrier to the bottle array, and assists in maintaining a stable package by engagement of the edges of the joined strap segments, as complete strap elements, with the adjacent surfaces 36 of the bottles below the neck portions. In this resilient engagement, the side walls will be resiliently bowed outwardly, as shown in Figure 3, for stability by the engagement of the edges of the openings with the lower edges of the caps and the engagement of the strap element edges with the surfaces of the bottles. For additional stability and resistance to canting of the packaged bottles, it should be noted that the inclined edges 26, 29, 30 and 28 of the tabs about the adjacent surfaces 36 of the bottles above their body portions.

A modified form of opening is shown fragmentarily in Figure 5, it being understood that the cusped configuration of the inner end of the opening will be repeated, in mirror image at the inner end of the opposite end opening, and at both ends of the intermediate opening. In this form of opening, the rounded end previously described is replaced by cusped edge 42 separated from a slit 44 by a frangible web 46. In removing bottles from the form of opening first described, the end bottles are pulled outwardly and upwardly, as shown by the arrows R in Figure 2, to cause the cap edges to pass through the portions 14a, 16a of the openings 14 16, respectively, and the centre bottle may be similarly moved in either direction for the cap to be urged through either end portion 15a or 15b of the opening 15. Similar movement of the bottles from the modified form of opening shown in Figure 5 will result in the cap skirt rupturing the frangible web 46, thus connecting the opening with slit 44 to facilitate removal of the bottles. The resiliency of the strap elements facilitates removal of the bottles as they may be deformed out of normal packaged position for this purpose.

WHAT WE CLAIM IS:—

1. A package of a row of closely spaced bottles or other containers, each container having a closure cap received on a reduced neck portion thereof, and each presenting an annular downwardly directed shoulder below the upper extremity of the neck portion; the package including a sheet plastics carrier having a pair of side walls diverging downwardly from a longitudinal apical fold line interrupted by spaced openings, the neck of each container being located in a respective one of the openings with at least part of the edge of the opening engaging the shoulder of the container, and strap elements connecting the bottom edges of the side walls at spaced locations, the

edges of the strap elements being contoured to engage the surfaces of adjacent containers below their shoulders for co-operation with the edges of the spaced openings in orienting the containers in the package.

2. A package as claimed in claim 1 in which the strap elements comprise paired strap segments with free ends joined, the joints situated midway between the bottom edges of the side walls.

3. A package as claimed in claim 2 in which the free ends of the strap segments comprise tabs positioned in face-to-face joined engagement, the tabs situated on the side of the strap elements remote from the apical fold line with their end edges abutting the surfaces of adjacent containers.

4. A package as claimed in any of claims 1 to 3 in which the openings are elongate along the apical line with adjacent ends rounded to facilitate removal of containers by upward swinging movement thereof.

5. A package as claimed in any of claims 1 to 4 wherein the side walls are provided with finger grip apertures intermediate the length of the carrier.

6. A carrier of sheet material for a row of containers each having a closure cap received on a reduced neck portion thereof and each presenting an annular downwardly directed shoulder below the upper extremity of the neck portion; the carrier being formed from a blank having a central substantially rectangular body portion, with a longitudinal central fold line, and spaced strap segments projecting laterally in opposed pairs from the edges of the central body portion which are parallel to the fold line, the blank being folded along the central fold line to provide side walls diverging downwardly from the central, apical, fold line and the pairs of strap segments being joined to form complete strap elements connecting the lower edges of the side walls, the blank being formed with a plurality of openings spaced along the central fold line.

7. A carrier as claimed in claim 6, in which tabs are formed at the free ends of the strap segments and are joined in face-to-face engagement at locations midway between the lower edges of the side walls, at least one of the edges of each of the tabs constituting, in use, an abutment surface for engagement with one of the containers to be associated with the carrier.

8. A carrier according to claim 6, in which the openings are elongate along the apical fold line with adjacent ends rounded to facilitate removal of containers by upward swinging movement thereof.

9. A carrier as claimed in claim 8 in which the openings adjacent the ends of

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the carrier have rectilinear outer edges arranged perpendicularly to the apical line for additional engagement with the shoulders of containers to be associated with the carrier.

10. A carrier as claimed in claim 6, in which longitudinal slits are formed between each adjacent pair of openings, the slits being separated from the openings by frangible web sections.

11. A carrier according to claim 6, in which the strap elements comprise paired strap segments with the free ends thereof joined together, and wherein there is at least one pair of these strap segments, intermediate the length of the carrier, which taper to narrow free end portions and a pair of these strap segments of strip like form adjacent each end of the carrier.

12. A carrier according to claim 11, in which the strap segments are each formed at their free ends with tabs, the tabs being joined in face-to-face engagement midway between the lower edges of the side walls of the carrier.

13. A carrier as claimed in claim 12, formed of sheet plastics material, with the tabs heat sealed together.

14. A package as claimed in claim 1 wherein the carrier is formed of resilient plastics material, and the edges of the openings engage the shoulders of the containers and the edges of the strap elements engage the adjacent container surfaces in relative positions such as to bow the side walls outwardly under stress to maintain stability of the package.

15. A blank for a carrier according to claim 6, the blank having a substantially rectangular body portion with a single longitudinal central fold line, a series of openings formed along the fold line, and a number of strap segments extending from the edges of the body portion parallel to the fold line in directions away from the fold line and defining gaps between adjacent strap segments, the gaps being

transversely aligned with the openings in the blank.

16. A blank according to claim 15 in which the strap segments have tabs formed at their free ends.

17. A blank according to claim 16 in which strap segments at the ends of the blank are formed with tabs of substantially parallelogram shape, and strap segments intermediate the length of the blank are formed with tab portions of trapezoidal shape.

18. A blank according to any of claims 15, 16 or 17 in which finger grip apertures are formed in the body portion intermediate the length of the blank.

19. A blank according to any of claims 15 to 18 in which the openings are elongate in the direction of the central fold line, adjacent ends of the openings being rounded.

20. A blank according to claim 19 in which the openings adjacent the ends of the blank have their edges adjacent the ends of the blank disposed perpendicularly to the fold line.

21. A blank according to any of claims 15 to 18 in which longitudinal slits are formed between each adjacent pair of openings, the openings being separated from the slits by frangible web sections.

22. A blank substantially as herein described with reference to Figure 1 or Figure 5 of the accompanying drawings.

23. A package of containers substantially as herein described with reference to Figures 2, 3 and 4, or Figure 5 of the accompanying drawings.

24. A carrier for a row of containers substantially as herein described with reference to Figures 2, 3 and 4, or Figure 5 of the accompanying drawings.

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