

PATENT SPECIFICATION

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(54) CARRIER DEVICES FOR MULTIPLE CONTAINER PACKAGES

(71) We, ILLINOIS TOOL WORKS INC., a corporation organised and existing 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:—

This invention relates primarily to carrier devices for use with multiple container carriers such as shown in our British Patent No. 914 202. This invention concerns an improvement over the devices described and claimed in our co-pending application No. 8411/72 (Serial No. 1 338 871).

Container carriers as shown in Patent No. 914 202 are extensively used for the multiple packaging of containers, usually metal beverage containers, which are generally commercially sold in multiples of six. Carrier devices cooperate with a number of such multiple container carriers to form a single package of the number of containers carried in the multiple container carriers.

According to application No. 8411/72 (Serial No. 1 338 871), a carrier device for use in forming a package by cooperation with elastic multiple container carriers having central holes and outer edge portions defining horizontally extending edges comprises a central member and integral side members depending from the central member; and tabs integrally formed on the lower portions of the side members, these tabs being formed and positioned to engage and interlock with the horizontally extending edges of the central holes and of the outer edge portions of a plurality of the container carriers of appropriate size, when the carriers are positioned in a substantially side-by-side relationship and when the device is moved downwards into engagement with the container carriers.

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According to the present invention, in such a carrier device the tabs include integral ear members extending outwardly from each side thereof and converging downwards, these tabs including linear formations which favour resilient folding of the ear members about the longitudinal axes of the formations to enable the ear members to fold and recover upon insertion of the tabs through the holes in the carriers and between the carriers, whereby the carrier device is substantially interlocked with the pair of carriers.

When, for example, two multiple container carriers with the containers therein are arranged in a longitudinal side-by-side relationship, a carrier device according to the present invention can be positioned over and transversely of the multiple container carriers. The carrier device is then moved downwards to snap the tabs on the carrier device into locking engagement with the pair of multiple container carriers.

The individual containers are easily removed from the multiple container carriers by pulling and deflecting the individual containers downwards and outwards relatively to the multiple container carriers.

The carrier device itself can not be pulled or separated from the multiple container carriers without substantially tearing or destroying the multiple container carriers.

The accompanying drawings show one particular example of a carrier device embodying the present invention. In these drawings:—

Figure 1 is a plan view of the carrier device, applied to a pair of multiple container carriers;

Figure 2 is an enlarged cross-section taken substantially along the line 2-2 in Figure 1; and

Figure 3 is an enlarged end elevation of the assembly shown in Figure 1.

The carrier device is intended to be as

sociated with two multiple container carriers of a type shown in British Patent No. 914 202, to form a unitary package. The two multiple container carriers are shown at 10, and each carrier comprises a flat unsupported sheet of a plastics material in which are six spaced-apart apertures. The apertures are somewhat smaller than the diameter of the containers with which the carrier is to be assembled, and the plastics material is a resiliently deformable material, such for example as polyethylene. The carriers 10 are applied over the tops of a group of containers such as cans 11 so that the carriers 10 are positioned immediately below the top bead of the cans 11. When applied to the cans 11, the material of the carriers 10 about the apertures assumes a substantially flat band-like configuration as may be seen in Figures 2 and 3. Finger holes 12 are provided in the carriers 10 longitudinally centrally thereof and between each group of four apertures. The edge portions of the carriers 10 about the finger holes 12 and at the interconnecting web portions form relatively stable horizontally extending edges. These edges may clearly be seen as the cross-sectional areas shown in Figure 2, wherein the finger holes 12 are identified and the edge portions of the opposed interconnecting web portions are identified at 13.

The carrier device 14 is formed from a sheet of a semi-rigid plastics material of substantially uniform thickness. The plastics material may be one which is capable of sustaining molecular orientation. Examples of such material are polymers, such as polyethylene, and other plastics materials such as polypropylene and polyvinyl chloride. When such a material is sufficiently indented, at normal ambient temperatures, with a tool having edges rounded sufficiently to avoid cutting the material, the molecules of the material in and adjacent to the indentation are substantially oriented to increase the strength of the material in and adjacent to the indentation and to permit relatively easy folding of the material on the longitudinal axis of the indentation. Alternatively, plastics materials not capable of sustaining molecular orientation may be used.

The carrier device 14 is formed to have an elongated central member 15 and two integral side members 16. The central member 15 and the side members 16 have a length sufficient to span the finger holes 12 of a pair of multiple container carriers 10 when the carriers 10 are placed in a longitudinal side-by-side position such as shown in Figure 1. The side members 16 generally depend from the central member 15 as may be seen in the drawing. If the carrier device 14 is formed from a material

that is not capable of sustaining molecular orientation, the integral connection between the side members 16 and the central member 15 may be formed by scoring or otherwise forming the corners. If the material of the carrier device 14 is one which is capable of sustaining molecular orientation, the integral connection between the side members 16 and the central member 15 is preferably formed by line indentations, with the indentations being formed at normal ambient temperatures to an extent providing substantial orientation of the molecules of the material in and adjacent to the indentations.

The central member 15 is provided with two longitudinally extending slits having generally semi-circular end portions to define an integral handle 17. The slits are so formed that the longitudinal central portion of the handle 17 is substantially wider than the integral end portions of the handle 17 to define a convenient hand-gripping portion. The semi-circular end portions of the slits in the central member 15 are curved outwards from the longitudinal central axis of the central member 15 towards the longitudinal side marginal edges, and terminate short of the integral interconnection between the central member 15 and the side members 16 as may be seen in Figure 1. The material of the central member 15 remaining on each side of the handle 17 serves to add to the rigidity and stability of the central member 15.

If the material of the carrier device 14 is one which will not sustain molecular orientation, a plurality of lines 18 are formed in the handle 17 by scoring or otherwise forming to produce an upwardly bowed configuration of the hand-gripping portion of the handle 17. This configuration of the central portion of the handle 17 may clearly be seen in the end view shown in Figure 3 and permits easy encircling of the hand-gripping portion of the handle 17 by a person's fingers. If the material of the carrier device 14 is one which will sustain molecular orientation, the lines 18 are preferably formed as longitudinally extending transversely spaced-apart line indentations with the line indentations being formed to an extent sufficient to substantially orient the molecules of the material in and adjacent to the line indentations 18. The line indentations 18 are made with an indenting tool applied on the upper surface of the handle 17 with the underside of the handle 17 against a suitable platen, to provide the bowed shape seen in Figures 2 and 3. The central member 15 further is slightly bowed with the side portions directed downwards as may be seen in Figures 2 and 3. The resulting raised position of the longitudinal central portion of the central member 15

further enhances the raised position of the handle 17 to further provide for easy encircling of the hand-gripping portion of the handle 17 by a person's fingers when the carrier device 14 is applied to the multiple container carriers 10 carrying the cans 11.

By virtue of the resiliency of the material of the carrier device 14 and the resiliency of the multiple container carriers 10, any substantial loading placed on the top of the unitary package of the carrier device 14 and the multiple container carriers 10 will permit the central member 15 and the handle 17 to substantially flatten against the upper surface of the cans 11. This arrangement permits convenient stacking of several such unitary packages.

The lower edge portions of each of the side members 16 have a number of integral tabs 19. In the example shown, there are three tabs 19 depending from the lower edge of each side member 16 in a longitudinally spaced-apart relationship as can be seen in Figure 2. The shank portions of the two end tabs 19 on each side member 16 have a width substantially equal to the diameter of the finger holes 12. The shank portion of the centre tab 19 on each side member 16 has a width substantially equal to the spacing between the edge portions 13 of the adjacent multiple container carriers 10. Each tab 19 below the shank portion thereof has a pair of outwardly extending ears 20. The side marginal edges of the ears 20 on the tabs 19 are formed to generally converge in a downward direction. At the integral connection between the ears 20 and the remaining portions of the tabs 19 there are linear formations 21.

If the material of the carrier device 14 is one which is not capable of sustaining molecular orientation, the formations 21 are slits which terminate short of the upper and lower edges of the ears 20. If the material of the carrier device 14 is one which will sustain molecular orientation, the formations 21 are line indentations, with the indentations being formed to an extent providing substantial orientation of the molecules of the material in and adjacent to the line indentations 21. In either embodiment, the slits or line indentations 21 provide for a substantial flexibility of the ears 20 so that the ears 20 may be folded about the axes of the lines 21 when the carrier device 14 is moved downwards over a pair of multiple container carriers 10 aligned as shown in the drawing. When the ears 20 are moved below the plane of the multiple container carriers 10, the resiliency of the material of the carrier device 14 will permit the ears 20 to at least partially recover towards the plane of the tabs 19, to lock the carrier device 14 to the multiple

container carriers 10, and thus interlock the two multiple container carriers 10 and the carrier device 14 together as a unitary package.

The tabs 19 also have vertical centrally disposed linear formations 22 which may be seen in Figure 2. The formations 22 serve to permit the tabs 19 to partially fold centrally when the carrier device 14 is moved downwards over the pair of multiple container carriers 10. If the material of the carrier device 14 is one which will not sustain molecular orientation, the formations 22 are slits, and if the material is one which will sustain molecular orientation, the formations 22 are preferably indentations to an extent sufficient to provide substantial orientation of the molecules of the material in and adjacent to the lines 22.

When the carrier device 14 is mounted on a pair of multiple container carriers 10 including the cans 11, the resulting unitary package is a simple and convenient arrangement for retaining and transporting the cans 11. The described arrangement effectively locks the carrier device 14 to the multiple container carriers 10 against removal of the carrier device 14 from the multiple container carriers 10 when the multiple container carriers 10 are mounted on the cans 11. Separation of the carrier device 14 from the multiple container carriers 10 when the carriers 10 are mounted on the cans 11 can be accomplished only by substantially tearing or otherwise destroying the portions of the multiple container carriers 10 cooperating with the carrier device 14.

WHAT WE CLAIM IS:—

1. A carrier device for use in forming a package by cooperation with elastic multiple container carriers having central holes and outer edge portions defining horizontally extending edges, the device comprising a central member and integral side members depending from the central member, and tabs integrally formed on the lower portions of the side members, these tabs being formed and positioned to engage and interlock with the horizontally extending edges of the central holes and of the outer edge portions of a plurality of the container carriers of appropriate size, when the carriers are positioned in a substantially side-by-side relationship and when the device is moved downwards into engagement with the container carriers, the tabs including integral ear members extending outwardly from each side thereof and converging downwards, these tabs including linear formations which favour resilient folding of the ear members about the longitudinal axes of the formations to enable the ear members to fold and recover upon

further enhances the raised position of the handle 17 to further provide for easy encircling of the hand-gripping portion of the handle 17 by a person's fingers when the carrier device 14 is applied to the multiple container carriers 10 carrying the cans 11.

By virtue of the resiliency of the material of the carrier device 14 and the resiliency of the multiple container carriers 10, any substantial loading placed on the top of the unitary package of the carrier device 14 and the multiple container carriers 10 will permit the central member 15 and the handle 17 to substantially flatten against the upper surface of the cans 11. This arrangement permits convenient stacking of several such unitary packages.

The lower edge portions of each of the side members 16 have a number of integral tabs 19. In the example shown, there are three tabs 19 depending from the lower edge of each side member 16 in a longitudinally spaced-apart relationship as can be seen in Figure 2. The shank portions of the two end tabs 19 on each side member 16 have a width substantially equal to the diameter of the finger holes 12. The shank portion of the centre tab 19 on each side member 16 has a width substantially equal to the spacing between the edge portions 13 of the adjacent multiple container carriers 10. Each tab 19 below the shank portion thereof has a pair of outwardly extending ears 20. The side marginal edges of the ears 20 on the tabs 19 are formed to generally converge in a downward direction. At the integral connection between the ears 20 and the remaining portions of the tabs 19 there are linear formations 21.

If the material of the carrier device 14 is one which is not capable of sustaining molecular orientation, the formations 21 are slits which terminate short of the upper and lower edges of the ears 20. If the material of the carrier device 14 is one which will sustain molecular orientation, the formations 21 are line indentations, with the indentations being formed to an extent providing substantial orientation of the molecules of the material in and adjacent to the line indentations 21. In either embodiment, the slits or line indentations 21 provide for a substantial flexibility of the ears 20 so that the ears 20 may be folded about the axes of the lines 21 when the carrier device 14 is moved downwards over a pair of multiple container carriers 10 aligned as shown in the drawing. When the ears 20 are moved below the plane of the multiple container carriers 10, the resiliency of the material of the carrier device 14 will permit the ears 20 to at least partially recover towards the plane of the tabs 19, to lock the carrier device 14 to the multiple

container carriers 10, and thus interlock the two multiple container carriers 10 and the carrier device 14 together as a unitary package.

The tabs 19 also have vertical centrally disposed linear formations 22 which may be seen in Figure 2. The formations 22 serve to permit the tabs 19 to partially fold centrally when the carrier device 14 is moved downwards over the pair of multiple container carriers 10. If the material of the carrier device 14 is one which will not sustain molecular orientation, the formations 22 are slits, and if the material is one which will sustain molecular orientation, the formations 22 are preferably indentations to an extent sufficient to provide substantial orientation of the molecules of the material in and adjacent to the lines 22.

When the carrier device 14 is mounted on a pair of multiple container carriers 10 including the cans 11, the resulting unitary package is a simple and convenient arrangement for retaining and transporting the cans 11. The described arrangement effectively locks the carrier device 14 to the multiple container carriers 10 against removal of the carrier device 14 from the multiple container carriers 10 when the multiple container carriers 10 are mounted on the cans 11. Separation of the carrier device 14 from the multiple container carriers 10 when the carriers 10 are mounted on the cans 11 can be accomplished only by substantially tearing or otherwise destroying the portions of the multiple container carriers 10 cooperating with the carrier device 14.

WHAT WE CLAIM IS:—

1. A carrier device for use in forming a package by cooperation with elastic multiple container carriers having central holes and outer edge portions defining horizontally extending edges, the device comprising a central member and integral side members depending from the central member, and tabs integrally formed on the lower portions of the side members, these tabs being formed and positioned to engage and interlock with the horizontally extending edges of the central holes and of the outer edge portions of a plurality of the container carriers of appropriate size, when the carriers are positioned in a substantially side-by-side relationship and when the device is moved downwards into engagement with the container carriers, the tabs including integral ear members extending outwardly from each side thereof and converging downwards, these tabs including linear formations which favour resilient folding of the ear members about the longitudinal axes of the formations to enable the ear members to fold and recover upon



insertion of the tabs through the holes in the carriers and between the carriers, whereby the carrier device is substantially interlocked with the pair of carriers.

- 5 2. A carrier device for use with a pair of resiliently deformable container carriers wherein each of the container carriers includes a pair of holes spaced longitudinally centrally thereof and wherein the edge portions of each carrier at these openings and at the side marginal portions transversely of the openings define substantially horizontally extending edges, the carrier device comprising a central member, integral side members depending from the central member, a plurality of tabs integrally formed on the side members to depend therefrom, the tabs being relatively positioned to be capable of insertion through the openings in the carriers and between the carriers when the pair of carriers are positioned in a substantially side-by-side relationship, the tabs including integral ear members extending outwardly from each side thereof and converging downwards, these tabs including linear formations which favour resilient folding of the ear members about the longitudinal axes of the formations to enable the ear members to fold and recover upon insertion of the tabs through the holes in the carriers and between the carriers, whereby the carrier device is substantially interlocked with the pair of carriers.

3. A carrier device as defined in claim 1 or claim 2, wherein the longitudinal axes of the linear formations on each of the tabs are positioned to converge downwards.

4. A carrier device as defined in claim 3, and comprising a handle integrally formed in the central member to extend longitudinally centrally thereof, this handle being formed to have a central hand-gripping portion of substantially greater width than the integral end portions thereof.

5. A carrier device as defined in claim 3, wherein the linear formations comprise slits formed through the tabs and terminating a spaced distance from the upper and lower marginal edges of the ear members.

6. A carrier device as defined in claim 3, formed from a sheet of a plastics material capable of sustaining molecular orientation.

7. A carrier device as defined in claim 6, wherein the linear formations comprise line indentations in the tabs to a extent providing substantial orientation of the molecules of the material in and adjacent to those indentations.

8. A carrier device as defined in claim 6, wherein the integral connections of the side members to the central member comprise line indentations in the material to an extent providing substantial orientation of the molecules of the material in and adjacent to those indentations.

9. A carrier device as defined in claim 6, wherein the central member is formed to be bowed with the side portions directed downwards about the longitudinal axis of the central member, when the carrier device is mounted on a pair of the container carriers including containers.

10. A carrier device as defined in claim 9, and a handle integrally formed in the central member to extend longitudinally centrally thereof, this handle being formed to have a central hand-gripping portion of substantially greater width than the integral end portions thereof.

11. A carrier device as defined in claim 10, wherein the central hand-gripping portion includes a plurality of longitudinally extending and transversely spaced-apart indentations, these indentations being formed to an extent to provide substantial orientation of the molecules of the material in and adjacent to these indentations.

12. A carrier device as defined in claim 2, substantially as described with reference to the accompanying drawings.

13. A carrier device as defined in any of claims 1 to 12, in assembled condition with resiliently deformable container carriers.

14. A package comprising a carrier device and container carriers according to claim 13, the carriers each being in assembled condition with containers.

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