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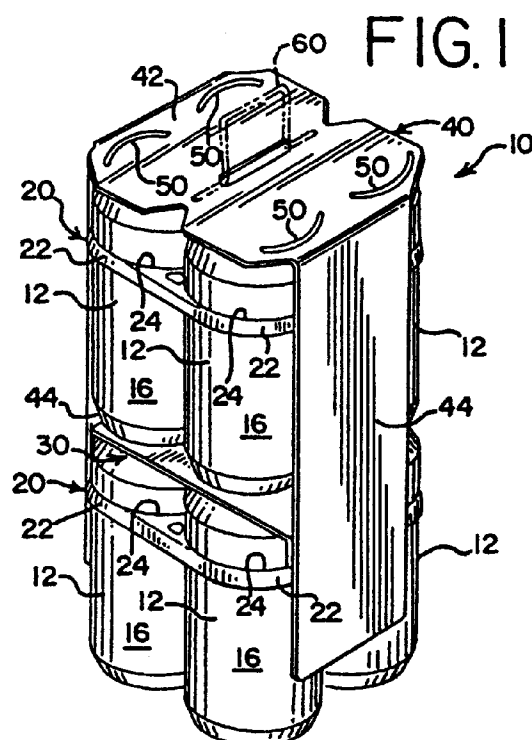
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(54) **Package comprising containers in upper and lower tiers.**

(57) A unitized package has an upper tier and a lower tier. Each tier comprises substantially identical containers (12), in a substantially rectangular array and a carrier (20) made from a single sheet of resilient polymeric material. A covering sheet (40) is folded so as to form a cover panel (42), which covers the upper ends of the containers (12) of the upper tier, and two lateral panels (44), which extend downwardly from the cover panel (42), along and below the containers (12) of the upper tier, and along the containers (12) of the lower tier. A dividing sheet (30) can be provided and is folded so as to form a divider panel (32), which covers the upper ends of the containers (12) of the lower tier, and two lateral flaps (34), which extend downwardly between the lateral panels (44) of the covering sheet (40) and the containers (12) of the lower tier. The lateral panels (44) of the covering sheet are affixed adhesively to the carriers (20) of the respective tiers and to the lateral flap (32)s of the dividing sheet (30). Alternatively the divider panel (50a) may be formed integrally with one of the lateral panels (36a) (Figure 7).



This invention pertains to a package comprising substantially identical containers, such as beverage cans of a type having a chime at an upper end, in unitized upper and lower tiers.

Commonly, beverage cans of the type noted above are marketed in packages comprising four, six, eight, or twelve cans arranged in substantially rectangular arrays and retained in machine-applied carriers made from single sheets of resilient polymeric material, such as low density polyethylene. The carriers are made, as by diecutting, so as to have band segments defining container-receiving apertures.

As exemplified in Klygis et al U.S. Patent No. 4,974,726, it is known to cover such cans with a separate sheet, which is clipped onto the cans to enhance such a package. A package of related interest is disclosed in Suffern U.S. Patent No. 4,191,290.

Since shelf space in a modern supermarket must be strictly allocated among a great diversity of different products, it has been proposed to stack one such package comprising four or six cans on a like package and to sell the stacked packages as a unitized package.

When beverage cans are stacked on one another, one concern that must be addressed is that the lower ends of the upper cans tend to interlock with the upper ends of the lower cans, particularly if pull tabs are provided on the upper ends of the respective cans.

A need has arisen, to which this invention is addressed, for an effective way to unitize such stacked packages.

According to this invention, unitized package comprises substantially identical containers having upper and lower ends and side walls, in an upper tier and in a lower tier, each tier comprising a plurality of such containers in a substantially rectangular array and a carrier made from a single sheet of resilient polymeric material so as to have band segments defining container-receiving apertures with the carrier being applied to the containers of said tier so that the containers are received by the container-receiving apertures and so that the band segments embrace the side walls of the containers of said tier, and a covering sheet folded so as to form a cover panel and two lateral panels, the cover panel covering at least a substantial part of the upper ends of at least some of the containers of the upper tier, each lateral panel extending downwardly from the cover panel, along and below adjacent ones of the containers of the upper tier, and along adjacent ones of the containers of the lower tier at least as far down as the carrier of the lower tier, each lateral panel being affixed to at least one of the band segments of the carrier of the lower tier so as to unitize the upper and lower tiers.

Preferably, each tier comprises containers in a substantially rectangular array, such as a substantially square array of four containers.

Preferably, each lateral panel is affixed adhesively to at least one of the band segments of the carrier of the lower tier so as to unitize the upper and lower tiers. Each lateral panel may be similarly affixed to at least one of the band segments of the carrier of the upper tier as well as to at least one of the band segments of the carrier of the lower tier.

Preferably, the package further comprises a dividing sheet, which is folded to form a divider panel and two lateral flaps. The divider panel is interposed between the containers of the upper tier and the containers of the lower tier and covers at least a substantial part of at least some of the containers of the lower tier.

The lateral flaps extend vertically from the cover panel, between the lateral panels of the covering sheet and adjacent ones of the containers of the upper or lower tiers. Preferably, the lateral flaps extend downwardly between the lateral panels of the covering sheet and adjacent ones of the containers of the lower tier. The lateral panels of the covering sheet are affixed adhesively to the lateral flaps of the dividing sheet.

Alternatively, the cover panel includes a divider integral with it and folded from one of said panels, so as to extend between the lower ends of the containers of the upper tier and the upper ends of the containers of the lower tier.

In this case, preferably the divider has a cross portion and two edge portions, through which the divider is joined to the first lateral panel. Each edge portion is joined to the first lateral panel at an integral ear extending from a respective one of two opposite edges of the first lateral panel. Each edge portion is folded over the first lateral panel and over the cross portion, along a folding line aligned with the same one of the opposite edges, so as to form double thicknesses of the cover sheet where folded thereover before the divider is folded from the first lateral panel toward the second lateral panel. The divider is folded from the first lateral portion, toward the second lateral portion, along folding lines aligned with each other where the edge portions are joined to the integral ears. The divider has a distal portion folded so as to form a flap extending vertically from the cross and edge portions, after the edge portions have been folded thereover, so as to extend vertically from the cross and edge portions, along the second lateral panel. Further, as noted above, the lateral panel is affixed to the distal portion.

If each container has a chime at its upper end the cover panel of the covering sheet may have slits receiving portions of the chimes at the upper ends of at least some of the containers of the upper tier. Moreover, the divider panel may have slits receiving portions of the chimes at the upper ends of at least some of the containers of the lower tier.

Preferably, the covering and dividing sheets are made from a paperboard material. As an additional

feature of the unitary package, a handle may be attached to the cover panel of the covering sheet.

Two embodiments of a package in accordance with this invention will now be described with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of a first embodiment of a unitized package comprising four containers in an upper tier and four containers in a lower tier and embodying this invention;

Figures 2 and 3 are elevational views of one end of the first embodiment package with Figure 3 showing two lateral panels of a covering sheet being folded downwardly, as the unitized package is being assembled;

Figure 4 is a perspective view of a second embodiment of this invention and comprising four containers in each of two tiers, a carrier applied to the containers in each tier, and a cover or unitizing sheet;

Figure 5 is an end view of the second embodiment of unitized package, as shown in Figure 4; Figure 6 is an end view of the upper tier and the unitizing sheet of the second embodiment, in a partly assembled condition; and,

Figure 7, on a smaller scale, is a plan view of the unitizing sheet, as unfolded and flattened.

As shown, a first embodiment of a unitized package 10 comprising four containers 12 in a substantially square array, in an upper tier, and four containers 12 in a substantially square array, in a lower tier, constitutes a preferred embodiment of this invention. The containers 12 are substantially identical beverage cans of the aforementioned type, each having a chime 14 at an upper end and each having a side wall 16, which is substantially cylindrical.

Each tier comprises a carrier 20 made, as by die cutting, from a single sheet of resilient polymeric material, such as low density polyethylene, so as to have band segments 22 defining container-receiving apertures 24. Any of various known carriers made from carrier stock available commercially from ITW Hi-Cone (a division of Illinois Tool Works Inc.) of Itasca, Illinois, may be suitably used as the carrier 20 of each tier.

Each carrier 20 is applied to the containers 12 of the tier comprising such carrier 20, as by known machinery, so that the container-receiving apertures 24 of such carrier 20 receive the respective containers 12 and so that the band segments 22 embrace the side walls 16 of the respective containers 12. Suitable carrier-applying machinery is available commercially from ITW HiCone, supra.

The unitized package 10 comprises a dividing sheet 30, which is folded to form a divider panel 32 and two lateral flaps 34, and a covering sheet 40, which is folded to form a cover panel 42 and two lateral panels 44. The dividing sheet 30 and the covering sheet 40 are made, as by die-cutting, from a paper-

board material.

The divider panel 32 of the dividing sheet 30 is interposed between the lower ends of the containers 12 of the upper tier and the upper ends of the containers 12 of the lower tier and covers substantially all of the upper ends of the containers 12 of the lower tier. The lateral flaps 34 of the dividing sheet 30 extend downwardly from the divider panel 32 thereof, along adjacent ones of the containers 12 of the lower tier, and terminate above the carrier 20 of the lower tier.

The cover panel 42 of the covering sheet 40 is disposed so as to cover substantially all of the upper ends of the containers 12 of the upper tier. The lateral panels 44 of the covering sheet 40 extend downwardly from the cover panel 42 thereof, along and below the lateral flaps 34 of the dividing sheet 30 and adjacent ones of the containers 12 of the lower tier, and along and below the carrier 20 of the lower tier. The lateral flaps 34 of the dividing sheet 30 are interposed between the lateral panels 44 of the covering sheet 40 and adjacent ones of the containers 12 of the lower tier.

The lateral panels 44 of the covering sheet 40 are affixed adhesively to the carrier 20 of the upper tier, to the lateral flaps 34 of the dividing sheet 30, and to the carrier 20 of the lower tier, so as to unitize the upper and lower tiers. The lateral panels 44 are affixed adhesively to the respective carriers 20 at the band segments 22 embracing outer portions of the side walls 16 of the respective containers 12.

As shown, the cover panel 42 of the covering sheet 40 has arcuate slits 50, which receive outer portions of the chimes 14 at the upper ends of the containers 12 of the upper tier. The divider panel 32 of the dividing sheet 30 may have similar slits (not shown) receiving outer portions of the chimes 14 at the upper ends of the containers 12 of the lower tier.

Alternatively, except as illustrated and described herein, the divider panel 32 of the dividing sheet 30 and the cover panel 42 of the covering sheet 40 may be substantially similar to the clip-on sheet illustrated and described in Klygis et al. U.S. Patent No. 4,974,726, the disclosure of which is incorporated by reference. As compared to the longitudinal edge portions of the clip-on sheet illustrated and described therein, the lateral flaps 34 of the dividing sheet 30 extend downwardly at generally right angles, for a slightly greater distance, so as to permit the lateral panels 44 of the covering sheet 40 to be adhesively affixed to the lateral flaps 34. As compared thereto, the lateral panels 44 of the covering sheet 40 extend downwardly at generally right angles, for a substantially greater distance, so as to permit the lateral panels 44 to be adhesively affixed to the carrier 20 of the lower tier.

As shown in dashed lines in Figure 1, a plastic or wire handle 60 may be attached to the cover panel 42 of the covering sheet 40, at an elongate slot 62 pro-

vided in the cover panel 42.

Advantageously, the dividing sheet 30 not only helps to unitize the upper and lower tiers but also divides the containers 12 of the respective tiers, so as to offset any tendencies of the lower ends of the containers 12 of the upper tier to interlock with the upper ends of the containers 12 of the lower tier, even if pull tabs (not shown) are provided at the upper ends of the respective containers 12.

Advantageously, the covering sheet 40 not only helps to unitize the upper and lower tiers but also provides expansive surfaces on the cover panel 42 and the lateral panels 44 for pricing, bar-coding, and other labelling of the unitized package 10.

Although each tier has four containers 12 in the preferred embodiment described above, each tier may have a different number of such containers 12, e.g. six containers 12.

Although it is preferred for the covering sheet 40 to be adhesively affixed as and where noted above, the covering sheet 40 may be heat-sealed if suitable coatings or suitable materials are employed.

As shown, a second embodiment of unitized package 10a comprising four containers 12a in a substantially square array, in an upper tier, and four containers 12a in a substantially square array, in a lower tier, constitutes another embodiment of this invention. The containers 12a are substantially identical beverage cans of the aforementioned type, each having a chime 14a at an upper end and each having a side wall 16a, which is substantially cylindrical.

Each tier comprises a carrier 20a made, as by die cutting, from a single sheet of resilient polymeric material, such as low density polyethylene, so as to have band segments 22a defining container-receiving apertures 24a. Any of various known carriers made from carrier stock available commercially from ITW Hi-Cone (a division of Illinois Tools Works Inc.) of Itasca, Illinois, may be suitably used as the carrier 20a of each tier.

Each carrier 20a is applied to the containers 12a of the tier comprising such carrier 20a, as by known machinery, so that the container-receiving apertures 24a of such carrier 20a receive the respective containers 12a and so that the band segments 22a embrace the side walls 16a of the respective containers 12a. Suitable carrier-applying machinery is available commercially from ITW HiCone, supra.

The unitized package 10a comprises a cover or unitizing sheet 30a made, as by die cutting, from a blank of a paperboard material and folded so as to form a cover panel 32a having four curved slits 34a, a first lateral panel 36a joined to the cover panel 32a along a folding line 38a, a second lateral panel 40a joined to the cover panel 32a along a folding line 42a, which is parallel to the folding line 38a, and a divider 50a joined to the first lateral panel 36a in a manner to be later described. The unitizing sheet 30a is shown,

as unfolded and flattened, in Figure 7.

The cover panel 32a is configured so as to cover substantially all of the upper ends of the containers 12a of the upper tier, as shown in Figure 4, when the package 10a is assembled. Each of the curved slits 34a is configured to receive a portion of the chime 14a of one of the containers 12a of the upper tier.

Each of the lateral panels 36a, 40a, extends downwardly from the cover panel 32a, along and below two adjacent containers 12a of the upper tier, and along two adjacent containers 12a of the lower tier, at least as far as the carrier 20a of the lower tier. Preferably, as shown, the lateral panels 36a, 40a, extend downwardly for a substantial distance beyond the carrier 20a of the lower tier.

The divider 50a has a cross portion 52a, which is disposed beyond the first lateral panel 36a in the unfolded, flattened sheet 30a, two edge portions 54a, each of which extends from an integral ear 56a extending from one of two opposite edges 58a of the first lateral panel 36a, and a distal portion 60a, which extends from the cross portion 52a and from the edge portions.

As suggested by curved arrows in Figure 7, each edge portion 54a and the integral ear 56a from which such edge portion 54a extends are folded over the first lateral panel 36a, along a folding line 62a aligned with the same one of the opposite edges 58a, so as to form a double thickness 30a' of the unitizing sheet 30a where such edge portion 54a is folded over the first lateral panel 36a, and over the cross portion 52a, so as to form a double thickness 30a'' of the unitizing sheet 30a where such edge portion 54a is folded over the cross portion 52a.

After each edge portion 54a and the integral ear 56a from which such edge portion 54a extends have been folded over the first lateral panel 36a and the cross portion 52a, the divider 50a is folded from the first lateral panel 36a, along folding lines 62a where the edge portions 54a are joined to the integral ears 56a, so as to extend below the lower ends of the containers 12a of the upper tier.

The distal portion 60a is folded from the cross portion 52a and from the edge portions 54a, along a folding line 68a at the double thicknesses of the unitizing sheet 30a where the edge portions 54a are folded over the cross portion 52a and at a single thickness of the unitizing sheet 30a between the edges portion 54a where folded thereover, so as to form a flap 80a extending vertically from the cross portion 52a and from the edge portions 54a, along the second lateral panel 40a, when the divider 50a is folded between the containers 12a of the upper tier and the containers 12a of the lower tier. Preferably, as shown in Figure 6, the distal portion 60a is folded along the folding line 68a before the divider 50a is folded under the lower ends of the containers 12a of the upper tier.

Preferably, as shown in Figures 4, 5 and 6, the

distal portion 60a is folded so as to cause the flap 80a to extend upwardly from the cross portion 52a and from the edge portions 54a, between the second lateral panel 40a and two adjacent containers 12a of the upper tier. However, the distal portion 60a may be alternatively folded so as to cause the flap 80a to extend downwardly therefrom, between the second lateral panel 40a and two adjacent containers 12a of the lower tier.

The unitizing sheet 30a is applied to the containers 12a of the upper tier so that the cover panel 32a covers substantially all of the upper ends of the containers 12a of the upper tier, and so that each of the curved slits 34a receives a portion of the chime 14a of one of the containers 12a of the upper tier.

The unitizing sheet 30a is folded so that the lateral panels 36a, 40a, extend downwardly, so that the divider 50a extends between the containers 12a of the upper tier and the containers 12a of the lower tier, and so that the flap 80a extends vertically between the second lateral panel 40a and two adjacent containers 12a of one of the upper and lower tiers. Preferably, as described above, the unitizing sheet 30a is folded so that the flap 80a extends upwardly between the second lateral panel 40a and two adjacent containers 12a of the upper tier.

Each of the lateral panels 36a, 40a, is affixed to the carrier 20a of the upper tier, at the band segments 22a embracing outer portions of the side walls 16a of two adjacent containers 12a of the upper tier, and to the carrier 20a of the lower tier, at the band segments 22a embracing outer portions of the side walls 16a of two adjacent containers 12a of the lower tier. Moreover, where the flap 80a extends vertically between the second lateral panel 40a and two adjacent containers 12a, the second lateral portion 40a is affixed to the flap 80a.

As shown in Figures 4 and 7, the cover panel 32a of the unitizing sheet 30a has a slit 90a defining a tab 92a, which can be downwardly bent into a space among the containers 12a of the upper tier so as to accommodate one or more fingers of a user carrying the package 10a.

Advantageously, the divider 50a not only helps to unitize the upper and lower tiers but also divides the containers 12a of the respective tiers, so as to offset any tendencies of the lower ends of the containers 12a of the upper tier to interlock with the upper ends of the containers 12a of the lower tier, even if pull tabs (not shown) are provided at the upper ends of the respective containers 12a.

Advantageously, the unitizing sheet 30a also provides expansive surfaces on the cover panel 32a and the lateral panels 36a, 40a, for pricing, bar-coding, and other labelling of the unitized package 10a.

Although each tier has four containers 12a in the second embodiment described above, each tier may have a different number of such containers 12a, e.g.

six containers 12a.

Although it is preferred for the unitizing sheet 30a to be adhesively affixed as and where noted above, the unitizing sheet 30a may be heat-sealed if suitable coatings or suitable materials are employed.

Claims

1. A unitized package (10, 10a) comprising substantially identical containers (12, 12a) having upper and lower ends and side walls (16, 16a), in an upper tier and in a lower tier, each tier comprising a plurality of such containers (12, 12a) in a substantially rectangular array and a carrier (20, 20a) made from a single sheet of resilient polymeric material so as to have band segments (22, 22a) defining container-receiving apertures (24, 24a) with the carrier (20, 20a) being applied to the containers (12, 12a) of said tier so that the containers (12, 12a) are received by the container-receiving apertures (24, 24a) and so that the band segments (22, 22a) embrace the side walls (16, 16a) of the containers of said tier, and a covering sheet (40, 30a) folded so as to form a cover panel (42, 32a) and two lateral panels (44, 36a, 40a), the cover panel (42, 32a) covering at least a substantial part of the upper ends of at least some of the containers (12, 12a) of the upper tier, each lateral panel extending downwardly from the cover panel (42, 32a), along and below adjacent ones of the containers (12, 12a) of the upper tier, and along adjacent ones of the containers (12, 12a) of the lower tier at least as far down as the carrier (20, 20a) of the lower tier, each lateral panel (44, 36a, 40a) being affixed to at least one of the band segments (22, 22a) of the carrier (20, 20a) of the lower tier so as to unitize the upper and lower tiers.
2. A package according to claim 1, wherein each lateral panel (44, 36a, 40a) is affixed adhesively to at least one of the band segments (22, 22a) of the carrier (20, 20a) of the upper tier as well as to at least one of the band segments (22, 22a) of the carrier (20, 20a) of the lower tier.
3. A package according to claim 1 or 2, wherein each container (12, 12a) has a chime (14, 14a) at an upper end and wherein the cover panel (42, 32a) of the covering sheet has slots (50, 34a) receiving portions of the chimes (14, 14a) at the upper ends of at least some of the containers (12, 12a) of the upper tier.
4. A package according to any one of the preceding claims, further comprising a dividing sheet (30) folded to form a divider panel (32) and two lateral flaps (34), the divider panel (32) being interposed

between the lower ends of the containers (12) of the upper tier and the upper ends of the containers (12) of the lower tier and covering at least a substantial part of the upper ends of at least some of the containers (12) of the lower tier, the lateral flaps (34) extending vertically from the divider panel (32), between the lateral panels (44) and adjacent ones of the containers (12) of the upper or lower tiers, the lateral panels (44) being affixed adhesively to the lateral flaps (34).

5. A package according to claim 4, wherein the lateral flaps (34) extend downwardly from the divider panel (32), between the lateral panels (44) and adjacent ones of the containers (12) of the lower tier.

6. A package according to claim 4 or 5, wherein the divider panel (32) of the dividing sheet (32) has slots (34a) receiving portions of the chimes (14) at the upper ends of at least some of the containers (12) of the lower tier.

7. A unitized package according to any one of claims 1 to 3, wherein the cover panel (30a) includes a divider (50a) integral with it and folded from one of said panels (36a), so as to extend between the lower ends of the containers (12a) of the upper tier and the upper ends of the containers (12a) of the lower tier.

8. A package according to claim 7, wherein the divider (50a) is folded from the first lateral panel (36a) toward the second lateral panel (40a).

9. A package according to claim 7 or 8, wherein the divider (50a) has a distal portion (80a) folded so as to extend vertically along the second lateral panel (40a) which is attached to the distal portion (80a).

10. A package according to claim 7, 8 or 9, wherein the divider (50a) has a cross portion (52a) and two edge portions (54a), the divider (60a) being joined to the first lateral portion (36a) through the edge portions (54a).

11. A package according to claim 10 when dependent upon claim 9, wherein a distal portion (80a) is folded from the cross (52a) and edge portions (54a).

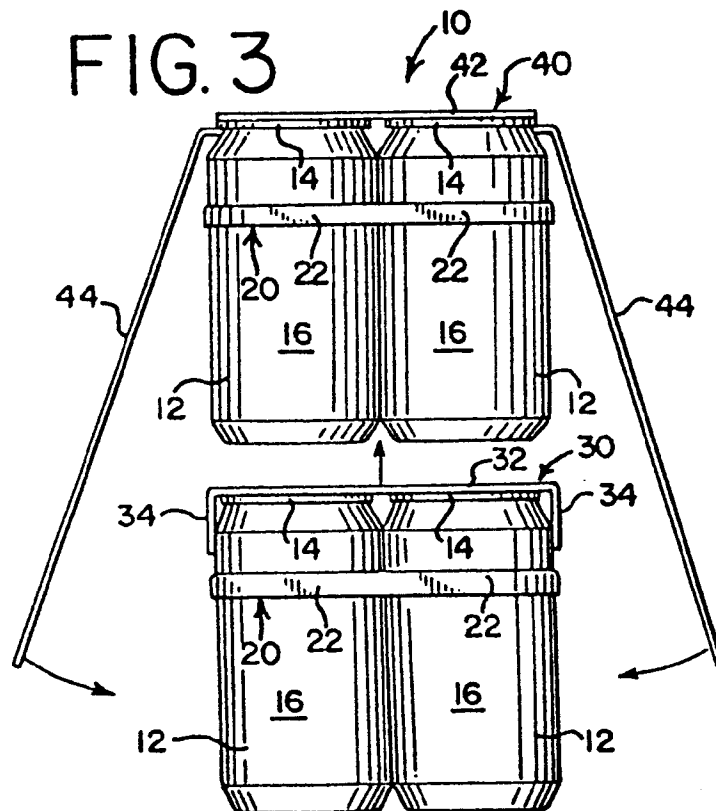
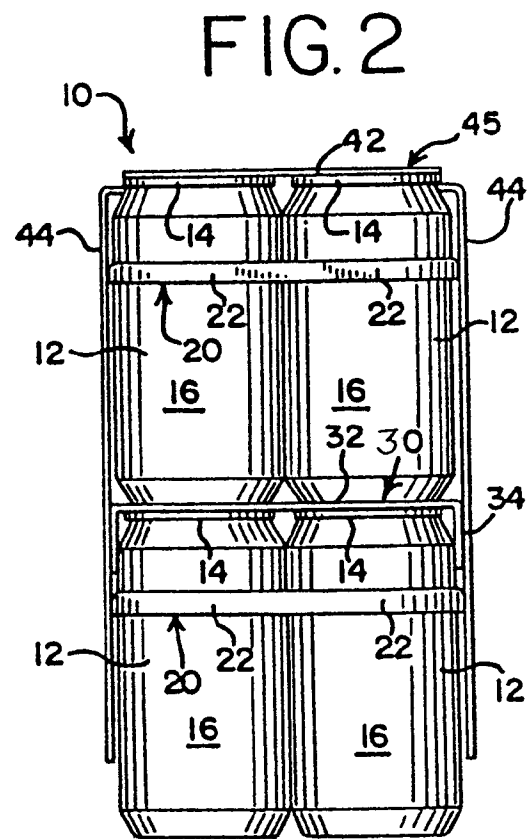
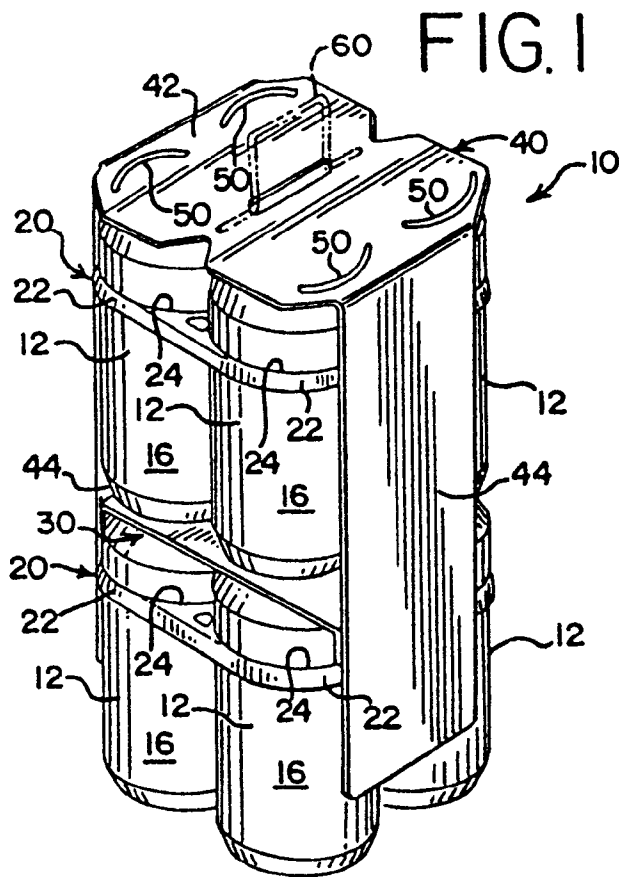
12. A package according to claim 10 or 11, wherein each edge portion (54a) of the divider (50a) is joined to the first lateral panel (36a) at an integral ear (56a) extending from a respective one of two opposite edges of the first lateral panel (36a) and being folded over the first lateral panel (36a) with

said edge portion (54a), along a folding line (62a) aligned with the same one of the opposite edges, so as to form a double thickness of the sheet where the integral ear (56a) is folded there-over before the divider (60a) is folded from the first lateral panel (36a) toward the second lateral panel (40a), the divider (60a) being folded from the first lateral panel (36a) toward the second lateral panel (40a) along folding lines aligned with each other where the edge portions (57a) are joined to the integral ears (56a).

13. A package according to any one of claims 8 to 12, wherein the second lateral panel is attached adhesively to at least one of the band segments (22a) of the carrier (20a) of the upper tier, to the distal portion (86a) of the divider (50a), and to at least one of the band segments (22a) of the carrier of the lower tier.

14. A package according to any one of the preceding claims, wherein the covering (40, 30a) and, where provided the dividing sheets (30, 50), are made from a paperboard material.

15. A package according to any one of the preceding claims, further comprising a handle (60) affixed to the cover panel (42, 32a) of the covering sheet (40, 30a).



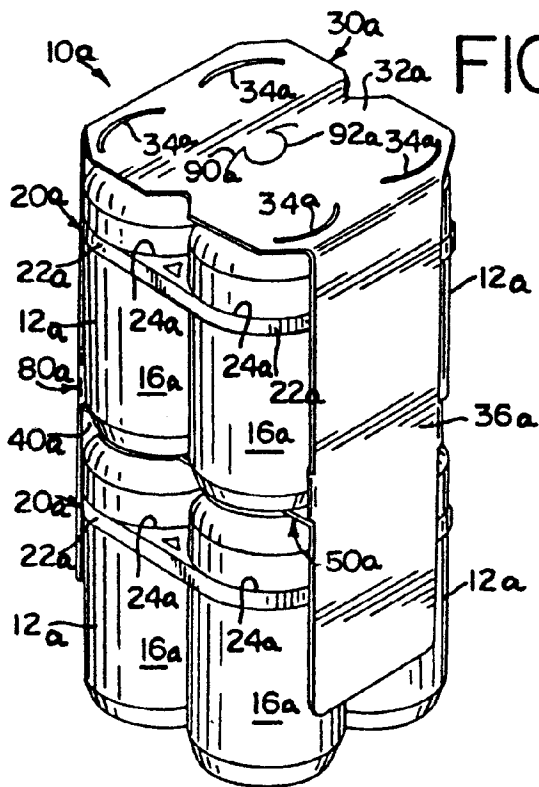


FIG. 4

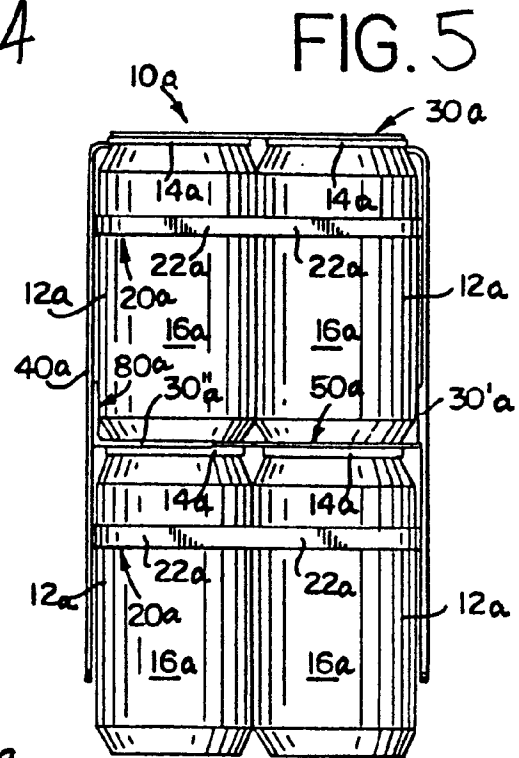


FIG. 5

FIG. 6

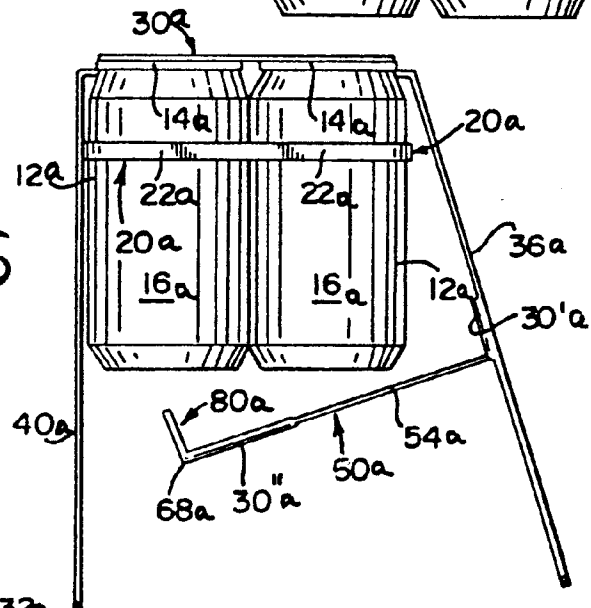
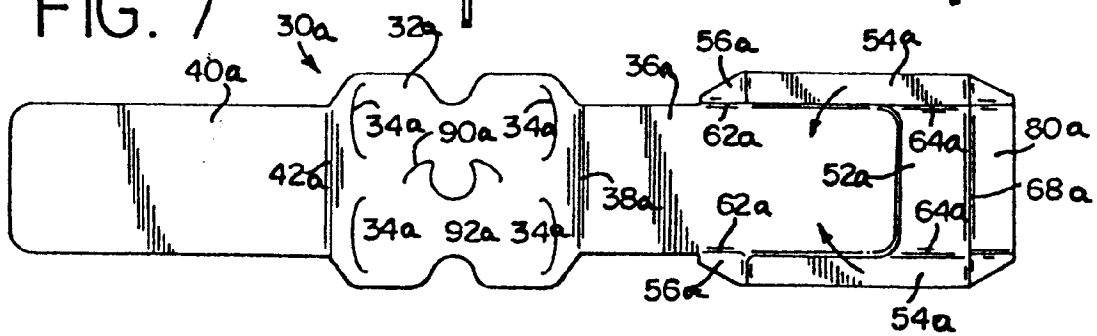


FIG. 7





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 95 30 2999

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	FR-A-2 193 385 (ILLINOIS TOOL WORKS) * the whole document *	1	B65D71/50 B65D71/00
A	US-A-3 339 725 (HAMILTON) * column 2, line 39 - column 5, line 59; figures 1-6 *	1,3,14	
A	US-A-3 700 275 (DEASY) * the whole document *	1,2	
P,A	EP-A-0 639 511 (ILLINOIS TOOL WORKS)		
A	WO-A-90 15000 (BENNO)		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 August 1995	Examiner Martens, L
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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