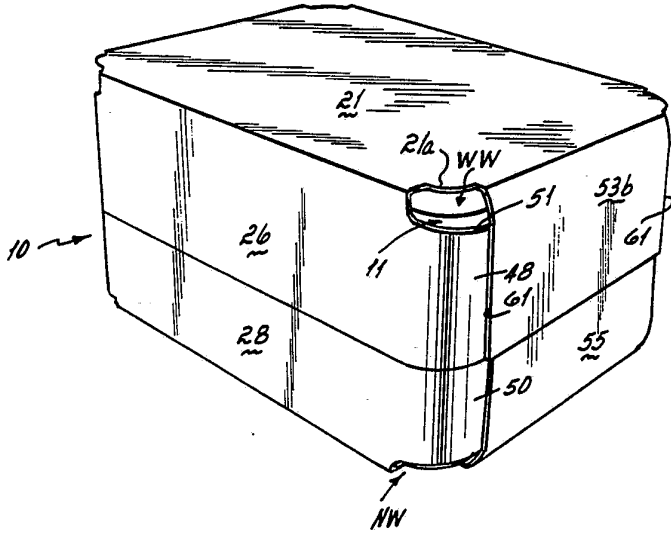




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(54) Title: SLEEVE STYLE CARTON 		
(57) Abstract A sleeve style closed end carton (10) for a can matrix (31) where the cans (11) preferably are the type having necked in head (15) and heel (16) rims. The carton includes corner flaps (45-50) that are wrapped around the corner cans (11e) of the matrix (31), the corner flaps, along with the top (21a) and bottom (24a) sidewall corners, preferably being structured to make the tapered portion (12a, 14a) of each corner can's head (12) and heel (13) partially visible when the carton (10) is viewed in top and bottom views, as well as side elevation view, thereby in effect eliminating the carton's corners.		

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SLEEVE STYLE CARTON

This invention relates to cartons. More particularly, this invention relates to sleeve style can cartons.

Cartons are widely used in the beverage industry in the marketing of its products, e.g., beer and soft drinks. Such products are commonly marketed in cans enclosed within a carton that is sealed with flaps at its ends, the cans being oriented within the carton in a can matrix configuration. The closed end cartons often used in the marketplace today have squared off ends.

There are two basic problems associated with these prior art closed end can cartons which applicant's invention is intended to overcome. First, applicant's carton eliminates the sharp squared off corners of the prior art can cartons. This minimizes distortion or disfigurement of the package during handling from the soft drink bottler through the distribution channels to the retail consumer in that no crumpling of the package at the corners can occur

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because the sharp package corners are eliminated. And further, elimination of the corners minimizes prospective hand injury to those handling the cartons through the distribution channels, as well as to the retail consumer, because there are no sharp box corners to the cartons. Second, the cans tend to jostle or move within the package after being placed in the carton and the carton ends sealed in the prior art can cartons with the box corner. This for the reason that sufficient clearance must be provided in the carton relative to the can matrix so that the cans can be easily loaded in the carton itself by the canner. And this clearance allows jostling or knocking of the cans against one another within the package as the package is handled through its distribution channels to the retail consumer.

Accordingly, it has been one objective of this invention to provide an improved sleeve style closed end carton for a can matrix where the carton has no sharp box corners, and which instead exposes the rounded head and heel portions of the package's corner cans to the eye and hand of the handler so as to eliminate package distortion or disfigurement at the corners, and so as to minimize hand injury to the package's handler.

It has been another objective of this invention to provide an improved sleeve style closed

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end carton for a can matrix where the can matrix is tightly wrapped about the circumference of that matrix so that jostling or movement of the cans within the package is minimized, if not indeed eliminated, as the package is handled throughout the distribution channel chain from the canner to the retail consumer.

In accord with these objectives, this invention contemplates a sleeve style closed end carton for a can matrix where the corner cans of the matrix are each of the type having a head, a body, and a heel, each corner can's head and heel having a rim of an outside diameter less than the outside diameter of the body, and each corner can's head and heel including a tapered portion by which the head and heel rims, respectively, are connected with the corner can's body. The sleeve style closed end carton includes top, bottom and opposed side walls foldably connected one to the other so as to form a sleeve open at both ends prior to loading of the carton with the can matrix. The carton includes curved corner structure defined by each of the top and bottom walls with those corners being configured proximately to overlies but not extend substantially beyond a corner can's head and heel rims, respectively. This allows the tapered portion of each corner can's head and heel to be partially visible when the carton is filled with the can matrix and is viewed in top plan view and

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bottom plan view, respectively. The sleeve style closed end carton also includes a corner flap formed integral with each side wall at each end thereof. Each corner flap is wrapped around a corner can after
5 the can matrix is loaded within the open ended sleeve carton. Each corner flap has a top edge spaced from the top wall so as to define an upper gap between the corner flap and the top wall, and also includes a bottom edge spaced from the bottom wall so as to
10 define a lower gap between the corner flap and the bottom wall. This allows the tapered portions of each corner can's heel and head to be partially visible when the carton is filled with the can matrix and is viewed in side or end elevation view. Top and bottom
15 end panels are foldably connected to opposed ends of the top and bottom walls, respectively. Preferably both the top and bottom end panels are connected, e.g., glued, to the corner flaps at each end of the carton, as well as are connected, e.g., glued with
20 each other, to effect closure of the carton. Preferably the length of the top wall is about equal to but no less than the length of the can line of the can matrix as measured from the outside edge to the outside edge of the can head rims of those cans at
25 opposite ends of the can line when all adjacent cans of the matrix are in body contact one with the other within the carton. Also preferably the length of the

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bottom wall is about equal to but no less than the length of the can line of the can matrix measured from outside edge to outside edge of the can heel rims of those cans at opposite ends of the can line when all
5 adjacent cans of the matrix are in body contact one with the other within the carton. This allows the carton's corner flaps to be tightly wrapped around the corner cans in the can matrix, and allows the carton's end flaps to be tightly drawn down over the end can
10 rows of the can matrix, thereby establishing a package can matrix where the cans are tightly held in packaged assembly one with the other.

Other objectives of the invention will be more apparent from the following detailed description
15 taken in conjunction with the drawings in which:

Figure 1 is a perspective view of a sleeve style closed end can carton in accord with the principles of this invention, same being illustrated in final assembled or package form with a can matrix;

20 Figure 2 is a side view of a can used in the type of carton Figure 1;

Figures 3A and 3B are top and bottom view, respectively, of the carton of Figure 1;

Figures 4A and 4B are side and end views,
25 respectively, of the carton of Figure 1;

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Figure 5 is a top plan view of a carton blank for the sleeve style closed end can carton in accord with the principles of this invention;

5 Figure 6 is a perspective view of an assembled sleeve style closed end can carton with a can matrix installed therein prior to closure of the carton;

10 Figure 7 is a partial perspective view similar to Figure 6 but illustrating a first closure step of one end of the carton;

Figure 8 is a partial perspective view similar to Figure 7 but illustrating an intermediate closure step of one end of the carton; and

15 Figure 9 is a partial perspective similar to Figure 8 but illustrating final closure of that one end of the can carton.

20 The sleeve style closed can carton 10 of this invention is particularly structured for use with soft drink or beer cans 11 of the type illustrated in Figure 2. Note particularly this can 11 is of the type having a head portion 12, a body portion 13 and a heel portion 14. The can 11 has an outside body diameter D which is greater than the outside head rim diameter D' and also is greater than the outside heel rim diameter D''. Accordingly, the can's head 12
25 includes a tapered portion 12a by which head rim 15 is connected with the can's body 13, and the can's heel

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14 also includes a tapered portion 14a by which heel rim 16 is connected with the can's body 13. In the embodiment shown, the can's heel rim diameter D'' is slightly less than the can's head rim D' , but it is understood that diameter relationship could be reversed or could be the same depending on the can 11 structure used with the carton 10. Further, and in the can 11 embodiment shown, note that the height HD of the can head 12 is twice as great as the height HH of the can heel 14. Again, and in practice, the can head 12 and heel 14 heights HD and HH can be approximately the same and/or reversed relative to the can 11 height relationship shown in Figure 2.

A sleeve style closed end carton blank 20 in accord with the principles of this invention is illustrated in Figure 5. As shown there, the carton blank 20 is comprised of a top wall panel 21 having a full side wall panel 22 connected on fold line 23 to one side edge thereof. A bottom wall panel 24 is connected along one side edge by fold line 25 to the other edge of the full side wall panel 22. A first partial side wall panel 26 is connected on fold line 27 to the bottom wall panel 24, and a second partial side wall panel 28 is connected along fold line 29 to the other edge of the top wall panel 21. The full side wall panel 22 includes a handle system 30 which forms no part of this invention. A detailed

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disclosure of that handle system is to be found in U.S. patent No. 4,784,316, assigned to the assignee of this invention, the detailed description of same being incorporated herein by reference.

5 Note particularly the length LT and width WT dimensions of the top wall 21, and the length LB and width WB dimensions of the bottom wall 24, relative to the cans 11 of the can matrix 31 when that can matrix is assembled in packaged relation with the carton
10 blank 20 after it has been glued together into the sleeve style closed end carton package 10. Specifically, and as shown in Figure 3, note the top end panel's fold lines 32, 33 are proximately oriented to overlies top view tangent lines 34, 35, respectively,
15 drawn along the outer edges of all can's head rims 15 in end can rows 36, 37, respectively, of the can matrix 31. In this regard, the length LT of the top wall 21 is about equal to but no less than the length LC of a can line 38 of the can matrix 31 measured from
20 the outside edge to the outside edge of the can head rims 15 of those cans 11a, 11b at opposite ends of the can line 38 when all the adjacent cans 11 of the matrix are in body 13 contact one with the other. Further, the bottom wall's fold lines 39, 40 are
25 proximately oriented to overlies bottom view tangent lines 41, 42, respectively, drawn along the outer edges of all cans' heel rims 16 in end can rows 36,

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37, respectively, of the can matrix 31. More specifically, the length LB of the bottom wall 24 is about equal to but no less than the length LC' of a can line 38 of the can matrix 31 measured from the outside edge to the outside edge of the can heel rims 16 of those cans at opposite ends of the can line 38 when all adjacent cans 11 of the matrix are in body 13 contact one with the other. When the head rim 15 diameters D' of the cans 11 are greater than or less than the heel rim 16 diameters D'' of the cans, then the length LT, LB of the top 21 and bottom 24 walls may be set at an average of (1) the length LC of a can line 38 of the can matrix 31 measured from the outside edge to outside edge of the can head rims 15, and (b) the length LC' of a can line 38 of the can matrix measured from the outside edge to the outside edge of the can heel rims 16. This averaging technique, if used, means that only a single length LT, LB is used for both the top wall panel 21 and the bottom wall panel 24 of the carton blank. And indeed the averaging technique is used in the Figure 5 carton blank illustrated since the can head rim 15 is of an outside diameter D' slightly greater than the outside diameter D'' of the can heel rim 16. In any event, the length LT, LB of each of the top 21 and bottom 24 walls, respectively, is not as great as the length of a can line 38 of the can matrix 31 measured from outside

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face to outside face of the can bodies 13 of those cans 11a, 11b at opposite ends of the can line when all adjacent cans of that can line are in body contact one with the other. It is this length LT/LC and
5 LB/LC' relationship of the top wall panel 21 and the bottom wall panel 24 relative to the can matrix 31 when the can matrix is installed within a carton erected into the sleeve configuration (as illustrated in Figure 5) that aids in establishment of a tight can
10 package as described in further detail below.

The width WT and WB of each of the top 21 and bottom 24 wall panels, respectively, is no less than the length LR of a can row 37 of the can matrix 31 as measured from the outside face to the outside
15 face of the can bodies 13 of those cans 11c, 11d at opposite ends of the can row when all adjacent cans of the can row are in body contact one with the other. And indeed it is preferable that the width WT, WB of each of the top 21 and bottom 24 walls be slightly
20 greater than the length LR of a can row 37 of that can matrix 31 as measured from the outside face to the outside face of the can bodies 13 in that row simply to allow a slight tolerance for the cans 11 to be soldiered or guided into an erected sleeve style
25 carton as shown in Figure 6 prior to closure of that carton. Note each of the top 21 and bottom 24 all panels is provided with curved or rounded corner

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structure 21a, 24a, respectively. The top wall panel corners 21a are configured to overlies but not extend substantially beyond a corner can's head rim 15, and the bottom wall panel's curved corners 24a are configured to overlies but not extend substantially beyond a corner can's heel rim 16, when the can carton package 10 is viewed in top plan view. Accordingly, the tapered portions 12a, 14a of each corner can's head 12 and heel 14 is partially visible when the carton is filled with the can matrix and viewed in top plan view or bottom plan view, respectively, as illustrated in Figures 3A and 3B.

Corner flaps 45, 46 are provided integral with each end of full side wall panel 22, those corner flaps extending outwardly beyond the end edges 32, 39 and 33, 40 of the top 21 and bottom 24 wall panels, respectively. Also, corner flaps 47, 48 and 49, 50 are provided integral with each partial side wall panel 26, 28, respectively, those corner flaps 47-50 also extending outwardly beyond the end edges 32, 39 and 33, 40 of the top 21 and bottom 24 wall panels, respectively. Note particularly these corner flaps 45-50 are simply integral with the side wall panels 22, 26, 28, respectively, in that they are not separated from those side wall panels by any score line or slit line. Accordingly, and as described in greater detail below, the corner flaps 45-50 can be

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and are wrapped around the corner cans 11e of the can matrix 31 in the final assembled package 10 so as to fit snugly against those corner cans and thereby hold all the cans 11 in a tight matrix configuration. As illustrated by comparison of Figure 6 with Figure 7, the length LF of each corner flap 45-50 is such that it does not overlies any can in an end can row 36 or 37 except its own associated corner can 11e when the package can matrix is viewed in end view.

Each corner flap 45, 46, 49, 50 is provided with a top edge 51 that is separated from the top wall 21 by a wide gap WG, and each corner flap 45-48 is provided with a bottom edge 52 that is separated from the bottom wall 24 by a narrow gap NG. This wide gap WG/narrow gap NG structure in the carton blank 20 provides a wide window WW and a narrow window NW at each corner can's shoulder 12 and heel 14, respectively, in the erected corner configuration as illustrated in Figure 1. Preferably the wide gaps WG are each of a width about equal to the height HD of a can's head 12, and the narrow gaps NG are each of a width about equal to the height HH of a can's heel 14. This wide gap WG/narrow gap NG relationship thereby allows the tapered portions 12a, 14a of each corner cans' head 12 and heel 14 to be partially visible when the carton is filled with the can matrix 31 and is

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viewed in side or end elevation view as illustrated in Figures 4A and 4B.

The carton blank 20 also includes end flap panels 53a, 53b that extend outwardly from the scored end edges 32, 33, respectively, of the top wall panel 21, and end flap panels 54, 55 that extend outwardly from the scored end edges 39, 40 of the bottom wall panel 24. These end score lines 32, 33, 39, 40 preferably are enhanced for folding by the inclusion of spaced slits. Each top end flap panel 53a, 53b is subdivided into an outer fold up glue panel 56 at its outer edge, and an inner locator panel 57. The fold up glue panel 56 is to aid in gluing of the carton together in final closed package 10 form, as described in greater detail below. Each bottom end flap panel 54, 55 is provided with notched out corners 58, 59 at its opposed outer corners to allow the top end flap panels 53a, 53b to be glued to the corner flaps 45, 46, 49, 50, as well as to the bottom end flap panels 54, 55, as described in greater detail below. Note particularly the bottom end flap panels 54, 55 are tapered from the fold line 39, 40 connection with the bottom wall 24 to the outer edge 60 thereof, same being to ensure the bottom end flap panels are oriented or located within the side edges 61 of the top end flap panels 53a, 53b when the carton package 10 is glued together in final assembly form.

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Use of the sleeve style closed end carton blank 20 of this invention is illustrated in Figures 6-9. First, the partial side walls 26, 28 of the carton blank 20 are glued together along glue strip 62. This provides the carton 10 with its sleeve configuration as shown in Figure 6. And in this sleeve configuration, a series of cans 11 (twelve cans being shown) are inserted in matrix 31 configuration in the sleeved carton as an initial packaging step. Subsequently, the corner flaps 45-50 at each of the carton corners are wrapped around the corner cans 11e as shown in Figure 6. The corner flap pairs 45, 57, 49 and 46, 48, 50 at each end of the carton are pulled tightly toward one another as they are wrapped around the corner cans 11e, thereby ensuring that the bodies 13 of the cans 11 within the can matrix 31 are all abutted up against one another, i.e., thereby tightly wrapping the can matrix about the circumference of the matrix, so as to minimize or indeed if not eliminate jostling or movement of the cans within that can matrix in the horizontal plane of that matrix.

Glue dots 63, e.g., hot melt glue, is then applied to the end edges of the corner flaps 45-50 at each end of the partially closed package, the bottom end flaps 54, 55 thereafter being folded up tightly on fold lines 39, 40 into glued relation with the corner flaps. This holds the corner flaps 45-50 in the

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tightly wrapped relation relative to the can matrix 31. The tight fold up of the bottom end flaps 54, 55 on the bottom wall's end fold lines 39, 40 also holds the can's heels 14 in tight matrix configuration relative one to the other. This intermediate assembly step is illustrated in Figure 8.

Thereafter, and as also illustrated in Figure 8, a glue bead 64, e.g., hot melt glue, is laid down on the exposed end edge portion of each bottom end flaps 54, 55, and also in the area of the associated corner flaps defined by notches 58, 59 in those bottom end flaps 54, 55. The top end flaps 53a, 53b at each end of the carton are then folded down tightly so that those top end flaps are glued not only to the bottom end flaps 54, 55 but also to the corner flaps 45-50. With both the top 53a, 53b and bottom 54, 55 end flaps at each end of the carton 10 being tightly folded down relative to the can head rims 15 and can heel rims 16 in the end can rows 37 of the carton, same also contribute to wrap forces in the final can package 10 which holds the cans tightly in the can matrix 31 configuration within the package.

Having described in detail the preferred embodiment of our invention, what we desire to claim and protect by Letters Patent is:

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(1) A sleeve style closed end carton for a can matrix where at least the corner cans of said matrix are each of the type having a head, a body, and a heel, each corner can's head and heel having a rim of an outside diameter less than the outside diameter of said body, and each corner can's head and heel including a tapered portion by which said head and heel rims, respectively, are connected with said corner can's body, said carton comprising

top, bottom and opposed side walls, said walls being foldably connected one to the other curved corner structure defined by each of said top and bottom walls, each top and bottom wall corner being configured proximately to overlies but not extend substantially beyond a corner can's head and heel rims, respectively, so that said tapered portion of each corner can's head and heel is partially visible when said carton is filled with said can matrix and is viewed in top plan view and bottom plan view, respectively,

a corner flap formed integral with each side wall at each end thereof, each corner flap being wrapped around a corner can, each corner flap having a top edge spaced from said top wall so as to define an upper gap between said corner flap and said top wall, and also having a bottom edge spaced from said bottom wall so as to define a lower gap between said corner

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flap and said bottom wall, so that said tapered
portion of each corner can's head and heel is par-
tially visible when said carton is filled with said
can matrix and is viewed in side or end elevation
5 view, and

top and bottom end panels foldably connected
to opposed ends of said top and bottom walls, respec-
tively, at least one of said top and bottom end panels
being connected to said corner flaps at each end of
10 said carton, and said top and bottom end panels being
connected to each other at each end of said carton, to
effect closure of said carton.

(2) A carton as set forth in Claim 1, each top
end panel being foldably connected to said top wall
along a fold line that substantially overlies a top
view tangent line drawn along the outer edges of all
5 cans' head rims in an end can row of said can matrix.

(3) A carton as set forth in Claim 2, the length
of said top wall being about equal to but no less than
the length of a can line of said can matrix measured
from outside edge to outside edge of the can head rims
5 of those cans at opposite ends of said can line when
all adjacent cans of said matrix are in body contact
one with the other.

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(4) A carton as set forth in Claim 3, each bottom end panel being foldably connected to said bottom wall along a fold line that substantially overlies a bottom view tangent line drawn along the outer edges of all cans' heel rims in an end can row of said can matrix.

(5) A carton as set forth in Claim 4, the length of said bottom wall being about equal to but no less than the length of a can line of said can matrix measured from outside edge to outside edge of the can head rims of those cans at opposite ends of said can line when all adjacent cans of said matrix are in body contact one with the other.

(6) A carton as set forth in Claim 5, the width of each of said top and bottom walls being no less than the length of a can row of said can matrix measured from outside face to outside face of the can bodies of those cans at opposite ends of said can row when all adjacent cans of said can row are in body contact one with the other.

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(7) A carton as set forth in Claim 6, the length of each of said top and bottom walls being not as great as the length of a can line of said can matrix measured from outside face to outside face of the can bodies of those cans at opposite ends of said can line when all adjacent cans of said can line are in body contact one with the other.

5

(8) A carton as set forth in Claim 1, said upper gaps being wider than said lower gaps.

(9) A carton as set forth in Claim 8, said upper gaps being of a width about equal to the height of said cans' heads and said lower gaps being of a width about equal to the height of said cans' heels.

(10) A carton as set forth in Claim 1, the length of each corner flap being such that it does not overlies any can in an end can row except its associated corner can when said can matrix is viewed in end view.

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(11) A carton as set forth in Claim 1, at least one end panel at each end of said carton comprising

an outer glue panel foldably connected to an inner locator panel, said locator panel being foldably connected to one of said top and bottom walls, said locator panel being folded into closure relation with an associated end panel prior to said glue panel being glued to its associated end panel.

(12) A carton as set forth in Claim 1, at least one end panel at each end of said carton comprising

a notch at each corner thereof, an associated end panel being glued to both corner flaps at that end of said carton through said notches.

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(13) A carton blank for a sleeve style closed end carton, said carton being adapted to hold a can matrix where at least the corner cans of said matrix are each of the type having a head, a body, and a heel, each corner can's head and heel having a rim of an outside diameter less than the outside diameter of said body, and each corner can's head and heel including a tapered portion by which said head and heel rims, respectively, are connected with said corner can's body, said carton blank comprising

top, bottom and opposed side walls, said walls being foldably connected one to the other, curved corner structure defined by each of said top and bottom walls, each top and bottom wall corner being configured proximately to overlies but not extend substantially beyond a corner can's head and heel rims, respectively, so that said tapered portion of each corner can's head and heel is partially visible when a carton erected from said carton blank is filled with said can matrix and is viewed in top plan view and bottom plan view, respectively,

a corner flap formed integral with each side wall at each end thereof, each corner flap being wrapped around a corner can, each corner flap having a top edge spaced from said top wall so as to define an upper gap between said corner flap and said top wall, and also having a bottom edge spaced from said bottom

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wall so as to define a lower gap between said corner flap and said bottom wall, so that said tapered portion of each corner can's head and heel is partially visible when a carton erected from said carton blank is filled with said can matrix and is viewed in side or end elevation view, and

top and bottom end panels foldably connected to opposed ends of said top and bottom walls, respectively, at least one of said top and bottom end panels being connected to said corner flaps at each end of said carton, and said top and bottom end panels being connected to each other at each end of said carton, to effect closure of said carton.

(14) A carton blank as set forth in Claim 13, each top end panel being foldably connected to said top wall along a fold line that substantially overlies a top view tangent line drawn along the outer edges of all cans' head rims in an end can row of said can matrix when a carton is erected from said carton blank.

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(15) A carton blank as set forth in Claim 14, the length of said top wall being about equal to but no less than the length of a can line of said can matrix measured from outside edge to outside edge of the can head rims of those cans at opposite ends of said can line when all adjacent cans of said matrix are in body contact one with the other in a carton erected from said carton blank.

(16) A carton blank as set forth in Claim 15, each bottom end panel being foldably connected to said bottom wall along a fold line that substantially overlies a bottom view tangent line drawn along the outer edges of all cans' heel rims in an end can row of said can matrix in a carton erected from said carton blank.

(17) A carton blank as set forth in Claim 16, the length of said bottom wall being about equal to but no less than the length of a can line of said can matrix measured from outside edge to outside edge of the can head rims of those cans at opposite ends of said can line when all adjacent cans of said matrix are in body contact one with the other in a carton erected from said carton blank.

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(18) A carton blank as set forth in Claim 17, the width of each of said top and bottom walls being no less than the length of a can row of said can matrix measured from outside face to outside face of the can bodies of those cans at opposite ends of said can row when all adjacent cans of said can row are in body contact one with the other in a carton erected from said carton blank.

(19) A carton blank as set forth in Claim 18, the length of each of said top and bottom walls being not as great as the length of a can line of said can matrix measured from outside face to outside face of the can bodies of those cans at opposite ends of said can line when all adjacent cans of said can line are in body contact one with the other in a carton erected from said carton blank.

(20) A carton blank as set forth in Claim 13, said upper gaps being wider than said lower gaps.

(21) A carton blank as set forth in Claim 20, said upper gaps being of a width about equal to the height of said cans' heads and said lower gaps being of a width about equal to the height of said cans' heels.

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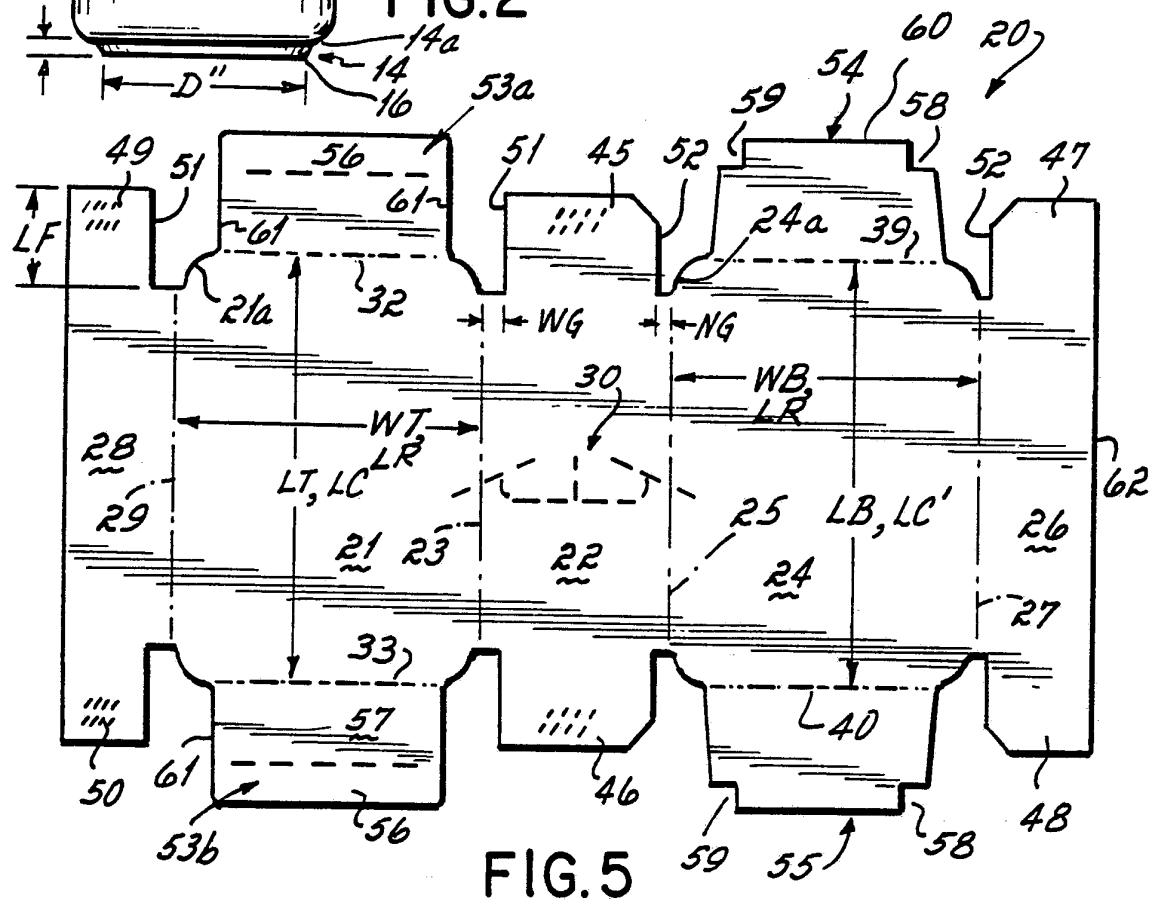
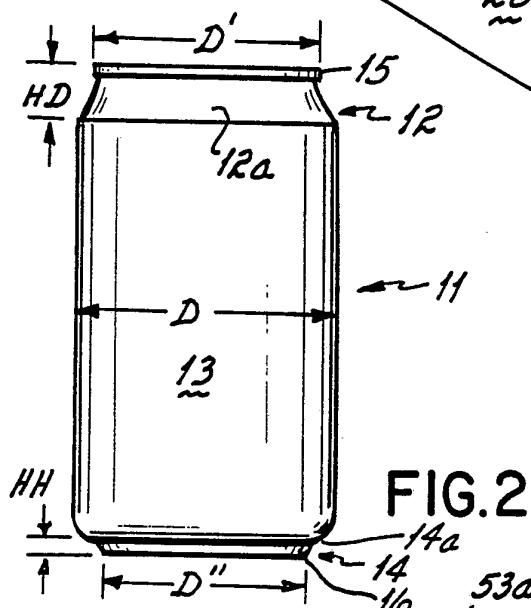
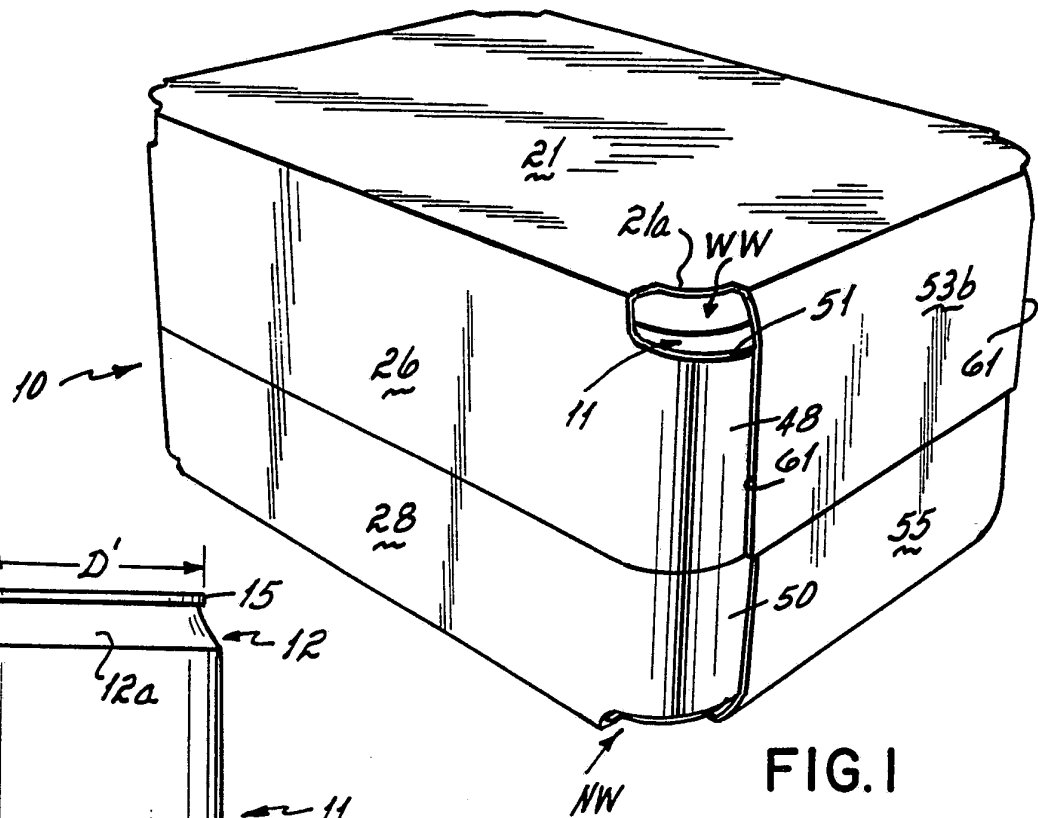
(22) A carton blank as set forth in Claim 13, the length of each corner flap being such that it does not overlies any can in an end can row except its associated corner can when said can matrix is viewed in end view of a carton erected from said carton blank.

(23) A carton blank as set forth in Claim 13, at least one end panel at each end of said carton blank comprising

an outer glue panel foldably connected to an inner locator panel, said locator panel being foldably connected to one of said top and bottom walls, said locator panel being folded into closure relation with an associated end panel prior to said glue panel being glued to its associated end panel during erection of a carton from said carton blank.

(24) A carton blank as set forth in Claim 13, at least one end panel at each end of said carton blank comprising

a notch at each corner thereof, an associated end panel being glued to both corner flaps at that end of said carton through said notches in a carton erected from said carton blank.



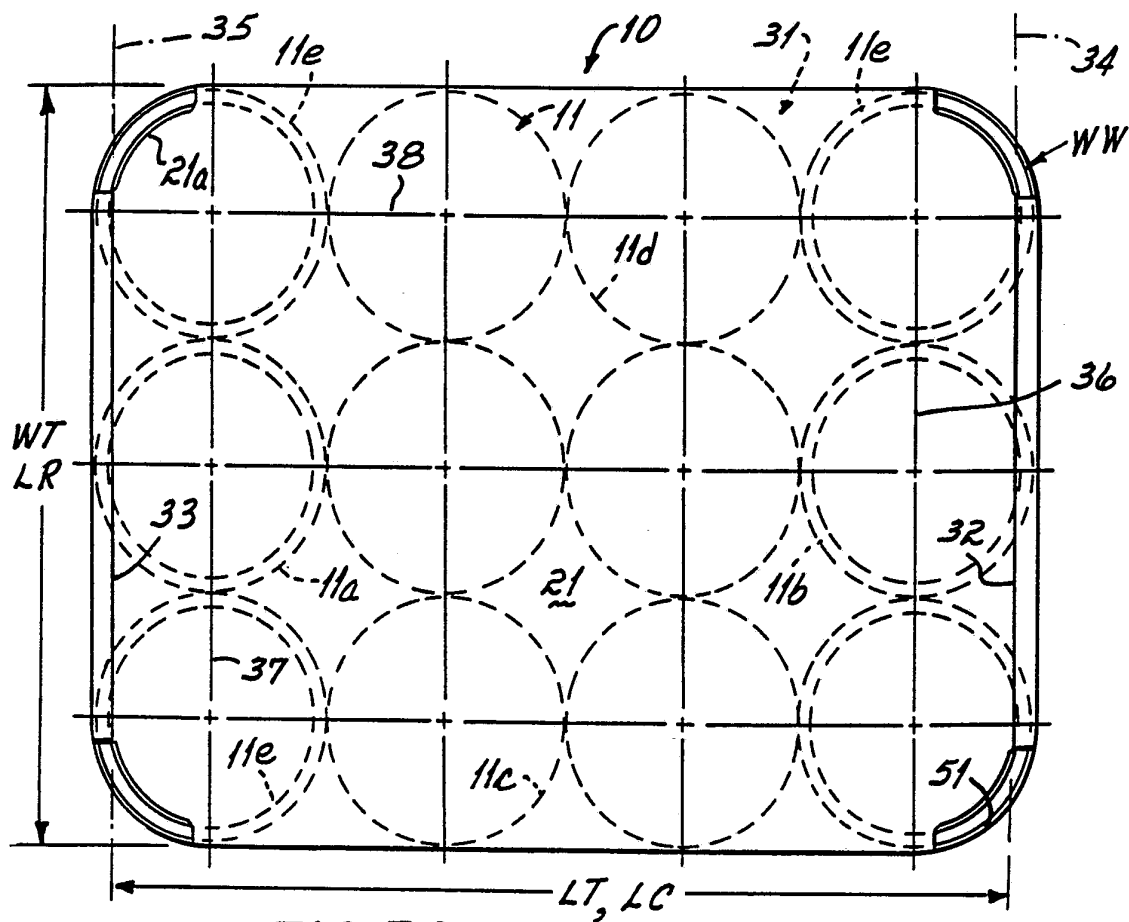


FIG. 3A

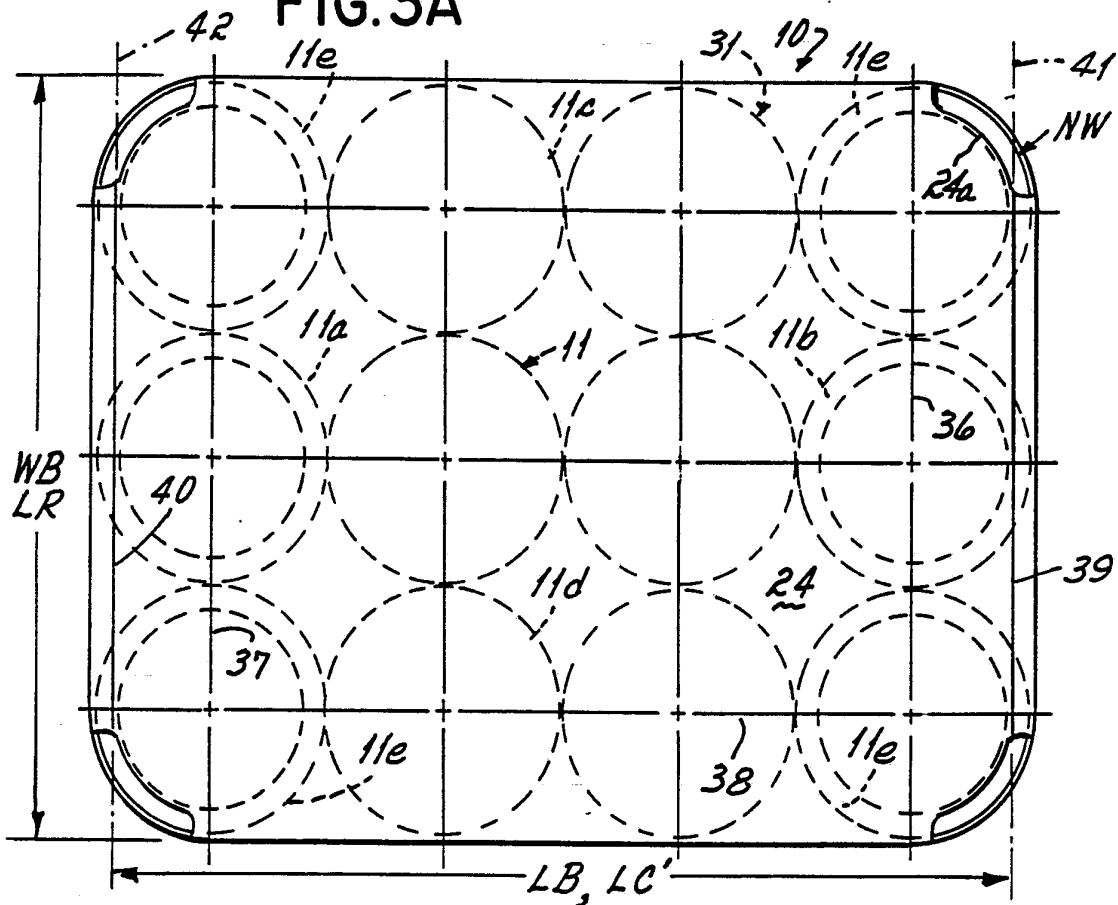
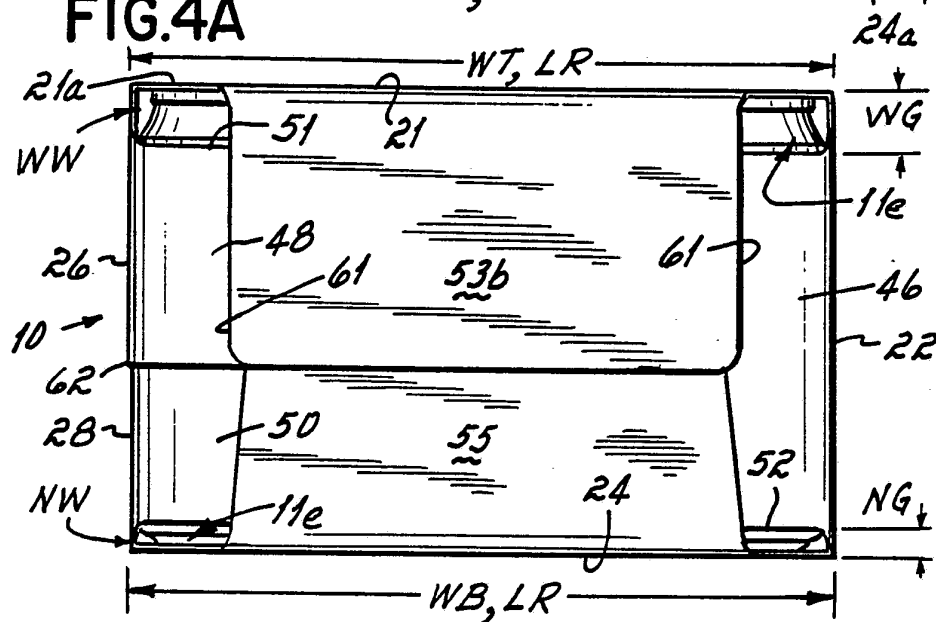
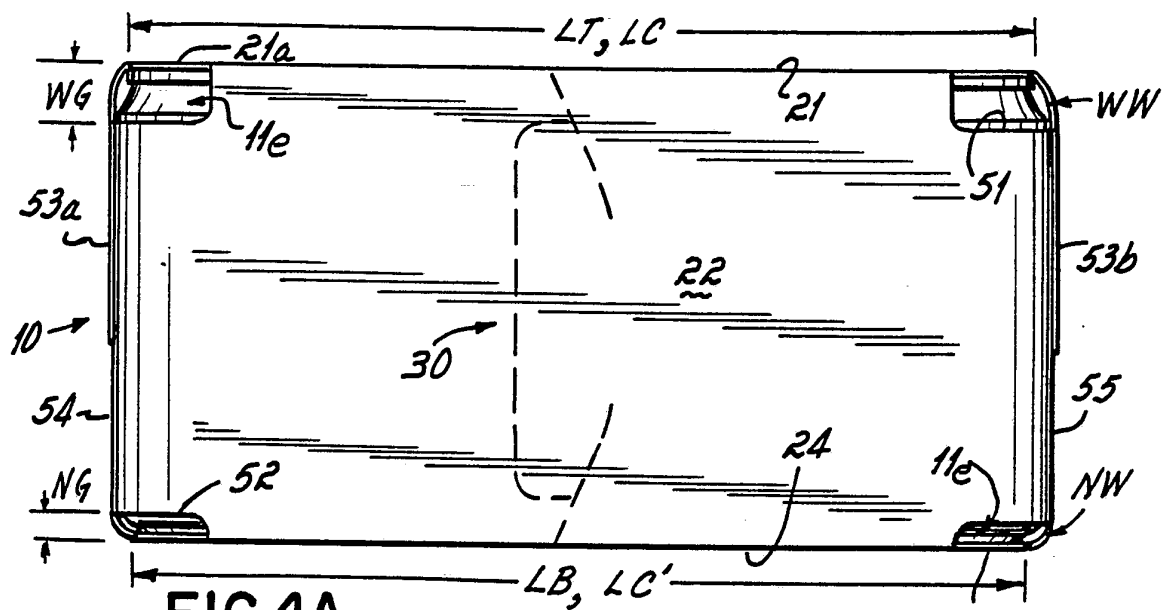


FIG. 3B



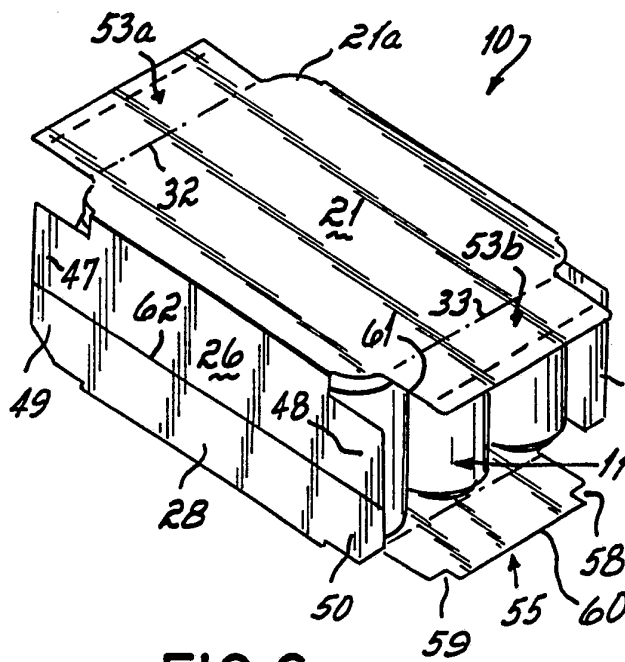


FIG. 6

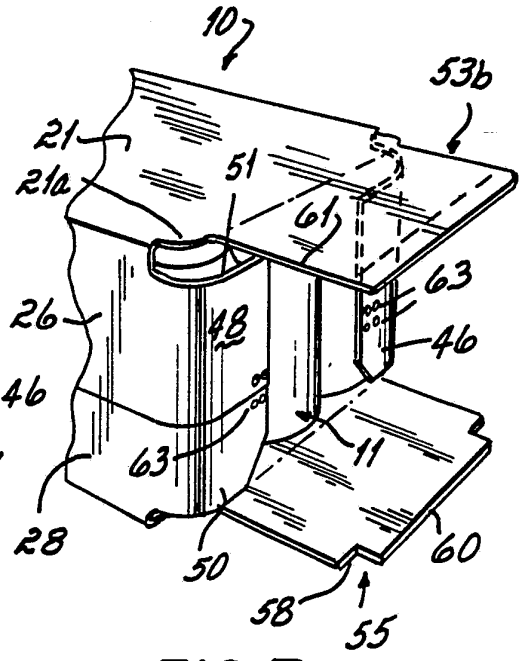


FIG. 7

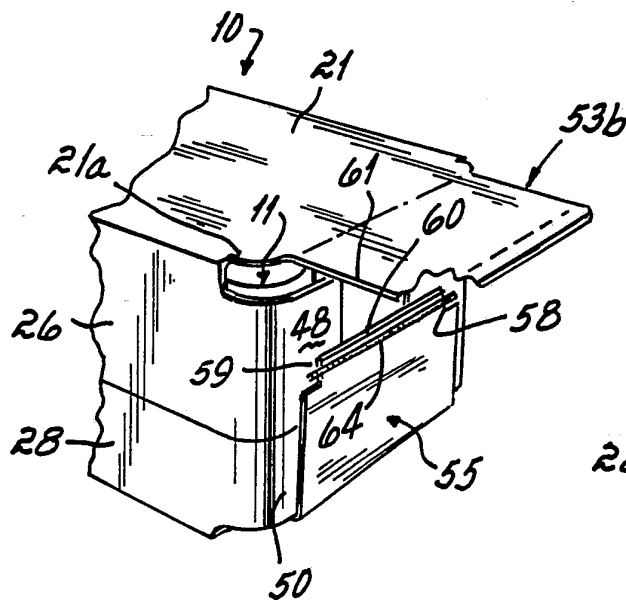


FIG. 8

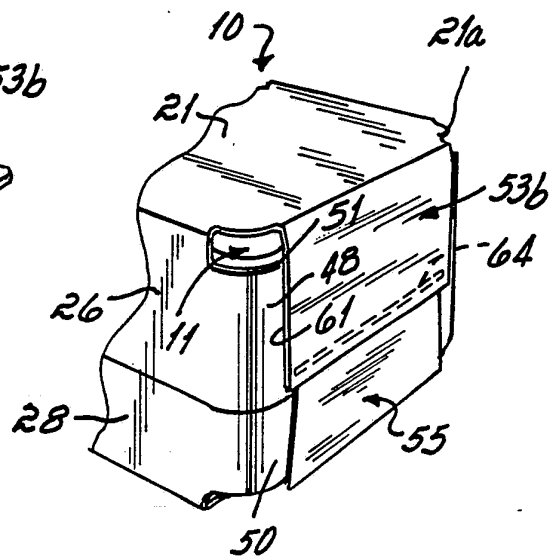


FIG. 9

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 91/07282

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)⁶

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 B65D71/36

II. FIELDS SEARCHED

Minimum Documentation Searched⁷

Classification System

Classification Symbols

Int.Cl. 5

B65D

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched⁸III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹

Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
E,X	EP,A,0 475 147 (PACKMASTER) 18 March 1992 see column 8, line 30 - column 9, line 49; figures 1-5 ---	1-5,8,9, 13-17, 20,21
X	FR,A,2 196 630 (MEAD CORP.) 15 March 1974 see page 3, line 6 - page 5, line 9; figures ---	1,10,11, 13,22,23 12,24
A		

¹⁰ Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

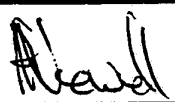
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
09 APRIL 1992	21.04.92
International Searching Authority EUROPEAN PATENT OFFICE	Signature of Authorized Officer NEWELL P.G. 

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. US 9107282
SA 53892**

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information. 09/04/92

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		AU-A- 5468773	24-10-74
		BE-A- 798606	16-08-73
		CA-A- 1007202	22-03-77
		DE-A- 2339302	28-02-74
		GB-A- 1397208	11-06-75
		NL-A- 7304959	18-02-74