

June 20, 1967

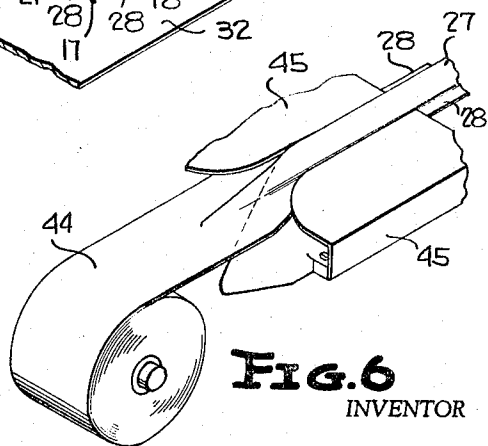
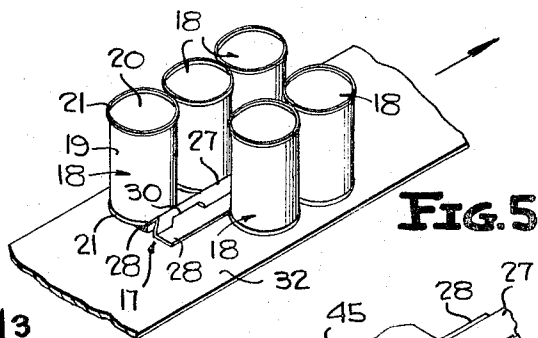
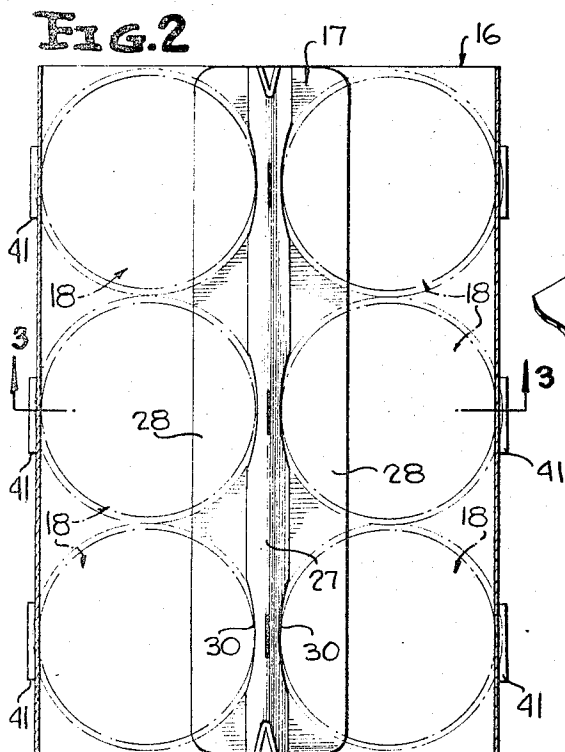
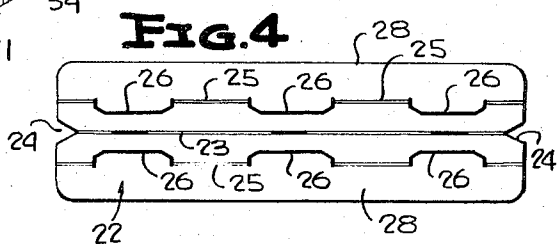
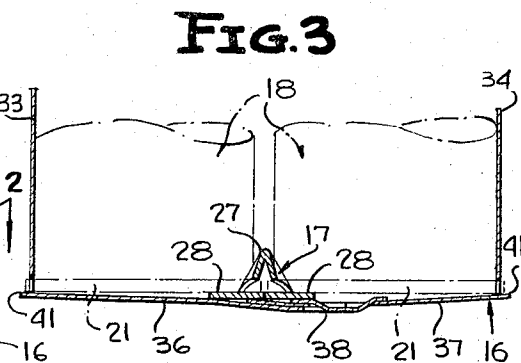
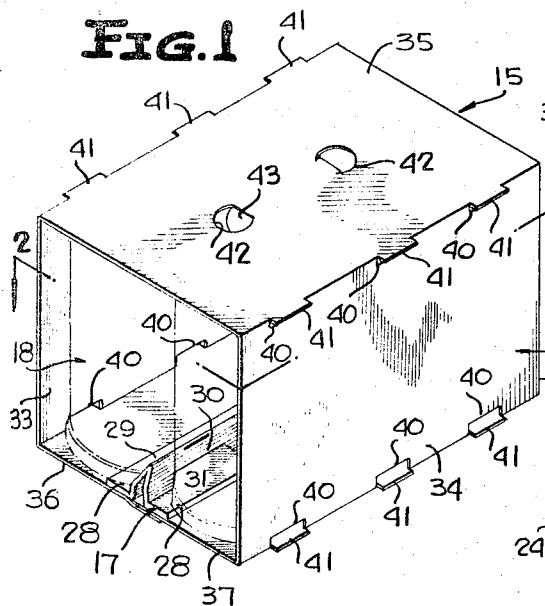
A. J. WEISS

3,326,367

CARTON WITH SEPARATE KEEL

Filed Nov. 19, 1963

2 Sheets-Sheet 1



ARTHUR J. WEISS

BY
Maem, Porter, Miller & Stewart
ATTORNEYS

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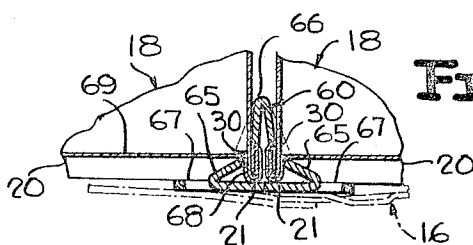
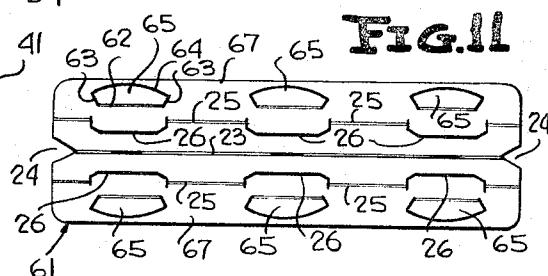
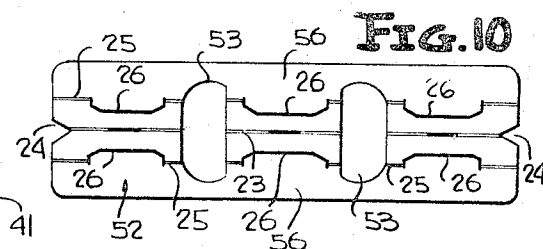
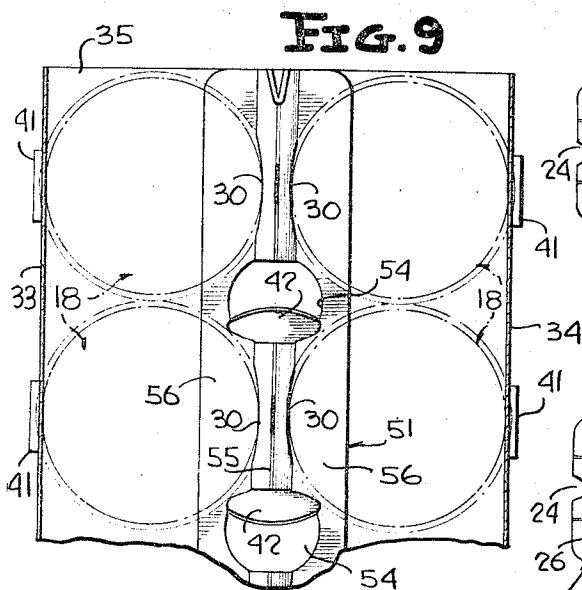
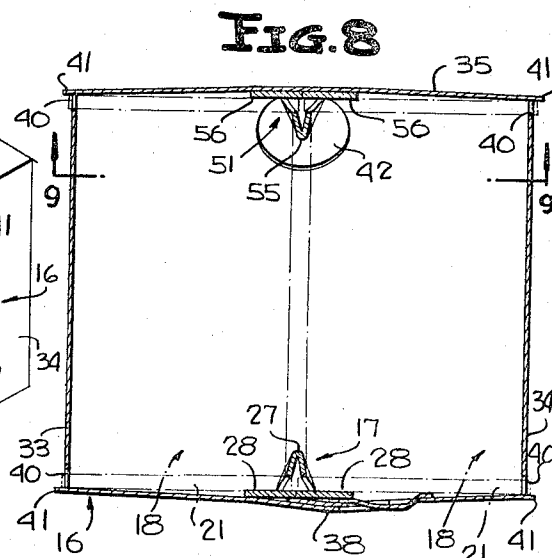
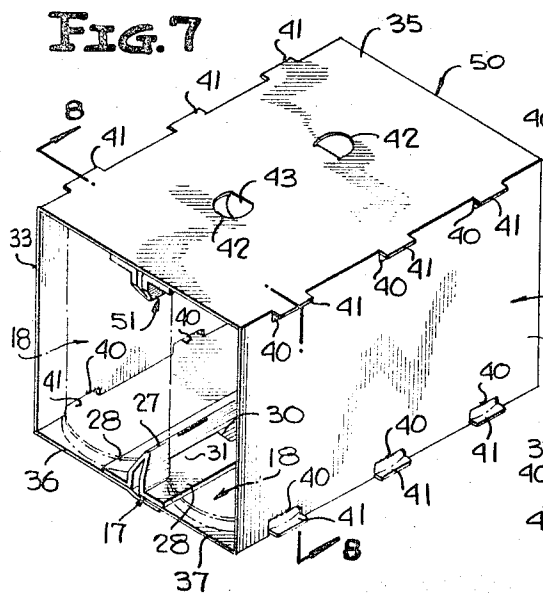


FIG. 12

INVENTOR
ARTHUR J. WEISS

BY
Thom, Porter, Miller & Stewart
ATTORNEYS

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CARTON WITH SEPARATE KEEL

Arthur J. Weiss, Bergenfield, N.J., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York

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12 Claims. (Cl. 206—65)

This invention relates in general to new and useful improvements in cartons particularly adapted for use in packaging a plurality of cylindrical containers, preferably cans, in two rows to form a readily handleable and dispensable package, and more particularly relates to a novel carton of the wrap-around carrier type.

In the packaging of certain products, particularly beer, it has proved feasible to form a readily handleable package by means of a carton of the wrap-around type which is used both for the purpose of retaining the cans or like containers in two parallel rows and at the same time to function as a carrier for the cans, the carton having finger receiving openings in a top panel thereof to effect the lifting of the resultant package and the carrying of the same. Such a carton has a further function in that it is necessary that the chimes or seams of the cans be held in alignment with one another so that accidental engagement of the can bodies by seams of adjacent cans is prevented in that such engagement, coupled with rough handling, often times results in the fracturing of the can body immediately adjacent the seam. Since the carton functions solely as a support for the relatively heavy cans, it will be readily apparent that with a plain wrap-around type carton, it is necessary that relatively high strength materials be utilized. Since the cartons are economically formed of paperboard as the customary material, it will be seen that relatively heavy gauge paperboard is required.

Recently, an attempt has been made to reduce the weight of the paperboard by incorporating in the cartons an integral keel which extends longitudinally of and between the two rows of cans and which materially stiffens the entire package.

It would appear that the most economical useage of material in the forming of a carton of the type disclosed above would be in a carton structure wherein the keel is an integral part of the carton. However, in accordance with this invention, it has been found that by making the keel separate from the remainder of the carton and by forming the keel of relatively high strength material as compared to that normally utilized in the forming of cartons of this type and at the same time permitting the keel to function as a retainer, the strength of the material utilized in forming the wrap-around carton can be greatly reduced to the extent wherein when both the keel and the carton are formed of paperboard, the total weight of the paperboard required for such a carton construction, including the separate keel, will be greatly reduced as compared to a like carton having an integral keel.

Another object of this invention is to provide a novel carton for both forming a readily handleable package of a plurality of containers and a carrier for the containers wherein a pair of keels are utilized and the keels are so interlocked with the containers that a rigid unit is formed, and the wrap-around portion of the carton may be merely in the form of an encircling sleeve of little strength, and therefore, of extremely light-weight material.

Still another object of this invention is to provide a novel wrap-around carton particularly adapted for supporting a plurality of cans arranged in two rows, the carton including a pair of keel-like retainers and a sleeve-like member, the keel-like retainers extending along the rows of cans at the opposite ends thereof and being firmly in-

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terlocked therewith to define a rigid unit, and the sleeve-like member merely encircling the cans and serving to hold the same in interlocked relation with the retainers, an uppermost one of the retainers being provided with finger receiving openings whereby the entire package may be lifted by a force directly applied to the uppermost retainer.

A further object of this invention is to provide a novel carton of the type particularly adapted for packaging a plurality of cans disposed in two side-by-side rows, the carton incorporating a pair of retainers which are disposed between the rows of cans at opposite ends thereof and which are interlocked with the cans to form a rigid unit of the type wherein longitudinal shifting of the cans is prevented, the carton also including a wrap-around member which serves to retain the cans in their interlocked relation with respect to the retainers, the wrap-around member further having side walls with openings formed therein for receiving projecting portions of the seams of the cans wherein interlocking of the wrap-around member with the cans is also effected.

Another object of this invention is to provide for use in a carton of the wrap-around type a separate keel or retainer which includes an upstanding rib and a pair of side flanges, the rib being adapted to be received between two rows of cans and the side flanges being adapted to be disposed in engagement with the ends of the cans, the rib having cutouts in the opposite sides thereof for receiving chimes or seams of the cans wherein the rib may be interlocked with a plurality of cans to form a rigid unit therewith.

Another object of the invention is to provide a novel keel or retainer of the foregoing type wherein the keel is additionally provided with finger receiving openings whereby when the keel is incorporated in a package, a person may insert his or her fingers through the openings and direct a lifting force on the package directly against the keel.

A still further object of this invention is to provide a novel keel for use in a package of the type which includes a sleeve-like member for holding together the cans of the package, the keel including an upstanding rib and a pair of side flanges, the rib being provided with cutouts in the opposite sides thereof for receiving projecting seams of cans, and the side flanges being provided with locking flaps which are engageable within the recessed ends of the cans and lockable behind the chuck walls of the cans to provide a positive interlock between the keel and a plurality of cans disposed in two side-by-side rows.

Yet another object of this invention is to provide a novel keel construction for use in a package utilizing a carton of the wrap-around type, the keel being formed of relatively heavy material as compared to normal carton forming material so as to have sufficient strength to support a plurality of cans independently of a wrapper for the plurality of cans, and the keel being so constructed wherein it is positively interlocked against the plurality of cans whereby accidental disengagement of the cans from the keel is prevented, the keel construction being such that the weight of the material required for the wrap-around member is reduced to a bare minimum and the total material required for forming the carton is greatly reduced beyond that heretofore required whereby the cost of such a carton is likewise reduced.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawings.

In the drawings:

FIGURE 1 is a perspective view of a carton formed

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in accordance with this invention, the cans within the carton being shown by phantom lines.

FIGURE 2 is an enlarged horizontal sectional view taken along the line 2—2 of FIGURE 1 and shows specifically the details of the carton and the relationship of the cans positioned therein.

FIGURE 3 is an enlarged fragmentary vertical sectional view taken along the line 3—3 of FIGURE 2 and shows the specific relationship between the cans and the keel or retainer of the carton.

FIGURE 4 is a plan view of a blank from which the retainer shown in FIGURES 1, 2 and 3 is formed.

FIGURE 5 is a schematic perspective view showing the manner in which a plurality of cans are first interlocked with the retainer prior to the movement thereof to a position wherein the wrap-around carton member is applied thereto.

FIGURE 6 is a schematic perspective view showing the manner in which the retainer could be feasibly formed from a continuous web, cut and score lines being omitted from the web and the resultant retainer for purposes of clarity.

FIGURE 7 is a perspective view of another form of carton in accordance with this invention wherein the carton includes two keels or retainers.

FIGURE 8 is an enlarged vertical sectional view taken along the line 8—8 of FIGURE 7 and shows more specifically the details of the carton construction and the relationship of cans with respect to the keels.

FIGURE 9 is a fragmentary horizontal sectional view on an enlarged scale taken along the line 9—9 of FIGURE 8 and shows further the details of the carton of FIGURE 7.

FIGURE 10 is a plan view of a blank from which at least the uppermost keel or retainer of the carton of FIGURE 7 is formed.

FIGURE 11 is a plan view of still another form of keel blank.

FIGURE 12 is a fragmentary vertical sectional view through the lower portion of a package incorporating the keel formed from the blank of FIGURE 11 and shows the specific manner in which the keel is interlocked with a pair of cans, the wrap-around member of the carton being shown in phantom lines for purposes of clarity.

Referring now to the drawings in detail, reference is first made to the carton construction illustrated in FIGURE 1 which is generally referred to by the numeral 15. The carton construction 15 is formed of two separate members which include a wrap-around member, generally referred to by the numeral 16, and a keel or retainer, generally referred to by the numeral 17. The illustrated carton construction 15 is particularly adapted to receive six cans of the type having ends double seamed to the can body thereof. Each can is generally referred to by the numeral 18 and includes a can body 19 to which two ends 20 are secured in a conventional manner with the resultant formation of double seams 21. The double seam 21 is also referred to generally in the art as a chime.

Reference is now made to FIGURE 4 wherein there is illustrated a blank 22 from which the keel or retainer 17 is formed. The blank 22 is in the form of an elongated rectangular strip which has a central longitudinal fold line 23 that terminates at the opposite ends of the blank 22 in generally triangular notches 24. The blank 22 also includes a pair of outer longitudinally extending fold lines 25. The fold lines 25 are interrupted by generally C-shaped cuts 26 which are arranged in pairs on opposite sides of the fold line 23 in back-to-back relation.

When the blank 22 is folded to define the keel 17, it will be seen that the resultant keel includes an upstanding rib 27 and a pair of side flanges 28. The rib 27 will have an opening therein for each of the C-shaped cut lines 26, the opening being referred to by the numeral 30. Also, at each opening 30, each side flange 28 will have an extension 31 as a result of the material cut from the rib 27 in the forming of the associated opening 30.

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When the retainer 17 is initially formed, the rib 27 is relatively opened, and the side flanges 28 are spaced apart, as is shown in FIGURE 5. The retainer 17 is positioned on a conventional type of conveyor for moving the cans 18 into a carton applying machine (not shown). A conveyor belt 32 has been schematically illustrated as the can conveying means. After the retainer 17 has been positioned upon the conveyor belt 32, the appropriate number of cans 18 are associated therewith and are seated on the side flanges 28. At this time the cans 18 and the retainer 17 are only loosely assembled.

After the retainer 17 and the cans 18 have been loosely assembled, as is generally shown in FIGURE 5, the wrap-around member 16 is applied to the cans and the retainer. The wrap-around member 16, as is best shown in FIGURE 1, includes a pair of side walls 33 and 34 which are connected together along their upper edges by a top wall 35. The side wall 33 has connected to the lower edge thereof a bottom wall forming panel 36 and the side wall 34 has connected thereto along the lower edge thereof a bottom wall forming panel 37. As far as this invention is concerned, the panels 36 and 37 may be connected together in any desired manner including the illustrated tab type interlock 38 shown in FIGURE 3, by adhesive, or any other desired type of fastening means.

In order that the wrap-around member 16 may be interlocked with the cans 18, the side walls 33 and 34 are provided adjacent their upper and lower edges with cut-outs 40 for receiving the seams or chimes 21 of the cans. The material cut from the side walls 33 and 34 in the forming of the openings 40 remains as parts of the associated wall panels 35, 36 and 37, and defines extensions 41 which either underlie or overlie the ends of the cans 18.

It is also pointed out that the top wall panel 35 of the wrap-around member 16 is provided with a pair of rounded openings 42 from which flaps 43 are struck. The openings 42 are finger receiving openings and each opening 42 is disposed at the center of the space defined by four of the cans 18 to provide the necessary space for one's fingers to pass in between the cans.

It is to be understood that when the wrap-around member 16 is applied to the cans 18 that have been assembled with the keel or retainer 17, the cans 18 are brought tightly together so as to force the seams 21 into the openings 40 and to clamp the rib 27 to a substantially upstanding position as is clearly shown in FIGURE 3. The cans 18 are now tightly interlocked with the keel 17 and movement of the cans 18 relative to the keel 17 is prevented. This eliminates any possibility of a seam or chime 21 of one can sharply engaging the can body 19 of an adjacent can should the package be dropped, etc.

With the carton construction 15, it will be seen that the carrying force is generally applied to the top wall panel 35. The interlock between the upper seams of the cans 18 and the side walls 33 and 34 apply a certain lifting force to the cans and at the same time prevent relative shifting of the upper ends of the cans. The remainder of the lifting force is applied to the bottoms of the cans through the keel 17.

Although it would at first glance appear that it would be undesirable to form the keel 17 separate and apart from the wrap-around member 16, it has been found through experimentations that the carton construction 15 is, in fact, stronger than carton constructions employing integral keels even though more material has been utilized in such cartons. It has been found that by making the keel or retainer 17 of relatively heavy material as compared to the material of the wrap-around member 16, the keel 17 greatly adds to the rigidity of the package and the wrap-around member 16 can be formed of lighter weight material than normal. It is preferred that both the wrap-around member 16 and the keel 17 be formed of paper-board, as is customary in the carton field. When paper-board is utilized, the combined weights of the material

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required for forming the wrap-around member 16 and the keel 17 are materially less than that required for forming a similar carton wherein the wrap-around member and keel are integrally formed. Thus, by making the keel 17 of relatively heavy material and effecting a greater saving in material in the forming of the wrap-around member 16, the cost of carton construction is greatly reduced. At this time, it is pointed out that while paperboard is the presently preferred material for forming cartons of the disclosed type, other materials are not to be excluded.

The keel or retainer 17 will normally be provided in the form of an individual strip, as is shown in FIGURE 5. However, it is feasible to form the keel 17 from a continuous web 44, as is shown in FIGURE 6. The web 44 will be provided with a series of fold lines and cut lines, as is the blank 22. The flat web 44 will then be passed through a suitable folding mechanism 45 wherein the web is shaped to define the upstanding rib 27 and the side flanges 28. It is to be understood that the web 44 would be fed at the demand rate of the packaging machine and the individual keels 17 will be severed from the web 44. If desired, the web 44 may be transversely weakened in a manner not shown so that when a slight tension is applied to the material of the web, it will sever to separate a newly formed keel from the remainder of the web.

Referring now to FIGURES 7, 8 and 9, it will be seen that there is illustrated another form of carton construction which is generally referred to by the numeral 50. The carton construction 50 differs from the carton construction 15 only in that in addition to the keel 17, there is provided an upper keel or retainer, generally referred to by the numeral 51. The carton construction 50 includes the wrap-around member 16 and the keel or retainer 17 and the illustrated carton construction 50 is for the reception of six cans.

The keel 51 differs very slightly from the keel 17 and is formed from a blank, generally referred to by the numeral 52, which blank is illustrated in FIGURE 10. The blank 52 is of the same size and has the same general over-all outline as the blank 22. The blank 52 differs from the blank 22 only in that intermediate the C-shaped cuts 26, the blank 52 is provided with a pair of generally oval cutouts 53. When the blank 52 is folded to define the retainer or keel 51, the cutouts 53 define finger receiving openings 54 which are aligned with the finger receiving openings 42 of the wrap-around member 16 and through which the tabs 42 are free to pass. The resultant keel 52 includes a depending central rib 55 and a pair of side flanges 56 which are substantially identical to the corresponding portions of the keel 17.

In the assembled packages shown in FIGURES 7 and 8, it will be seen that while the side flanges 28 underlie the bottom ends of the cans 18 and the rib 27 projects upwardly therebetween, the side flanges 56 overlie the upper ends of the cans 18 and the rib 55 projects downwardly therebetween. The interlock between the cans and the keel 51 is the same as that between the cans and the keel 17. However, because two keels have been provided, it will be seen that even a greater rigid unit is formed. In addition to these factors, it will be readily apparent that when one places his or her fingers through the openings 42, their fingers will automatically go through the openings 54 in the keel 51 and thus a lifting force is directly imparted to the keel 51 so that the keel 51 absorbs a greater portion of the weights of the cans 18. These factors permit a very light-weight wrap-around member 16 to be utilized, the reduction in the weight of the material for the wrap-around member 16 being such that the added weights of the keels 17 and 51 are more than overcome. Thus, in effect, the weight of the materials required for the carton construction 50 is the same or less than that required for the carton construction 15.

Although the carton structure 50 has been specifically illustrated and described as including a keel 17 and a keel 51, it is to be understood that it is not necessary that the

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bottom keel, that is the keel which is illustrated as being the keel 17, be different from the upper keel. If desired for ease of handling or other economic reasons, the keels at the top and bottom of the carton construction 50 may be identical and of the construction of the keel 51. The fact that the lower keel has finger receiving openings 54 therein is in no way detrimental.

Referring now to FIGURE 12, it will be seen that there is illustrated a modified form of keel construction, which is generally referred to by the numeral 60, and which is formed from a blank, which is generally referred to by the numeral 61 and is illustrated in FIGURE 11.

The keel blank 61 is identical in outline to the blank 22 and is provided with the same fold lines and cut lines as the blank 22. However, the portions of the blank 61 outwardly of the fold lines 25 are not plain, as in the case of the blank 22, but are configured so that adjacent each of the cut lines 26, there is a longitudinal fold line 62. A pair of cut lines 63 diverge outwardly from the ends of the fold line 62, and the outer ends of the cut lines 63 are connected together by an arcuate cut line 64. The cut lines 63 and 64, together with the fold line 62, define a locking flap 65, the purpose of which will be described in detail hereinafter.

Referring once again to FIGURE 12, it will be seen that the retainer 60, in its operative position, includes an upstanding rib 66 and a pair of side flanges 67. The locking flaps 65 have been struck from the side flanges 67 and have been reversely folded so as to bear against the can ends 20. It will be noted that each can end 20 includes a chuck wall 68 and an end panel 69. Each locking flap 65 engages the can end 20 associated therewith generally at the intersection between the chuck wall 68 and the end panel 69 of that can end. The locking flaps 65 serve to retain the seams 21 of the cans 18 within the openings 30 defined by the cut lines 26.

It is to be understood that the keel 60 is to be utilized as part of a carton construction in the same manner as that described with respect to the keel 17. The cans 18, which have been tightly interlocked with the keel 60, will be wrapped within a wrap-around member 16 described hereinabove. However, it will be readily apparent that the keel 60 provides for a much firmer interlock with the cans than does the keel 17. Thus by utilizing the keel 60 as opposed to the keel 17, the wrap-around member 16 may be formed of even lighter gauge material. Furthermore, it is within the spirit of the invention that the locking flaps 65 be incorporated in a keel, such as the keel 51. It will be readily apparent that when two keels having the positive interlock with cans of the keel 60 are utilized, the resultant can and keel unit is a very rigid unit requiring little or no added support. Therefore, the wrap-around member 16, when utilized with such a dual keel construction may be of extremely thin material and substantially no more than a label.

Although it is proposed that the several carton constructions disclosed herein be formed of paper products, it is obvious that the invention is not so limited and that it is feasible to form the various components of plastic materials. For example, it is feasible to extrusion mold the several keels out of plastics. It is also feasible to utilize a plastic tube as the wrap-around member, with the tube being shrunk around the cans. Further, any desired combination of paper and plastic materials may be utilized within the spirit and scope of this invention.

It is immaterial as to the nature of the materials which are utilized in the several disclosed carton structures. However, it will be readily apparent that each of the carton structures embodies the same inventive spirit. Contrary to what appears to be feasible, it has been found that the keel or keels of carton structures may be made separately from the wrap-around member thereof and the weights of the keel and the wrap-around member so proportioned wherein a greater strength of package may be obtained with less materials than has been heretofore possible.

Although several preferred embodiments of the invention have been specifically illustrated and described herein, it is to be understood that other minor variations may be made in the disclosed carton structure within the spirit and scope of the invention, as defined by the appended claims.

I claim:

1. A package of containers such as cans, said package comprising two side-by-side rows of containers, a separate retainer including a central upstanding rib and a pair of side flanges, said rib being disposed between said rows of containers and said side flanges abutting ends of said containers, each of said side flanges having a width materially less than the width of one of said containers, said containers having portions interlocked with said retainer to form a rigid unit, and a sleeve-like wrapper encircling said containers, said retainer and said wrapper being formed of paperboard.

2. A package of containers such as cans, said package comprising two side-by-side rows of containers, a separate retainer including a central upstanding rib and a pair of side flanges, said rib being disposed between said rows of containers and said side flanges abutting ends of said containers, said containers having portions interlocked with said retainer to form a rigid unit, and a sleeve-like wrapper encircling said containers and having portions opposing the ends of said cans, and said retainer and said wrapper being formed of paperboard, and said retainer being formed of higher strength paperboard than that of the wrapper.

3. The package as defined in claim 2 wherein each of said side flanges has a width materially less than the width of one of said containers.

4. A package of containers such as cans, said package comprising two side-by-side rows of containers, a separate retainer including a central upstanding rib and a pair of side flanges, said rib being disposed between said rows of containers and said side flanges abutting ends of said containers, said containers having portions interlocked with said retainer to form a rigid unit, and a sleeve-like paperboard wrapper encircling said containers, said containers having peripheral projections at the opposite ends thereof and said wrapper having openings receiving said projections to thereby interlock said wrapper and said containers.

5. A package of containers such as cans, said package comprising two side-by-side rows of containers, a pair of opposed retainers engaging ends of said containers, each of said retainers including a central projecting rib and a pair of side flanges, the ribs of said retainers being disposed between said rows of containers in opposed relation and being in interlocked engagement therewith while said side flanges engage said container ends to form a rigid unit, and a sleeve-like wrapper encircling said containers, said retainers being formed of a higher strength material than said wrapper.

6. A package of containers such as cans, said package comprising two side-by-side rows of containers, a pair of opposed paperboard retainers engaging ends of said containers, each of said retainers including a central projecting rib and a pair of side flanges, the ribs of said retainers being disposed between said rows of containers in opposed relation and being in interlocked engagement therewith while said side flanges engage said container ends to form a rigid unit, and a sleeve-like paperboard wrapper encircling said containers, said containers having peripheral projections at the opposite ends thereof and said wrapper having openings receiving said projections to thereby interlock said wrapper and said containers.

7. A package comprising cans disposed in two rows with the cans being of the type having peripherally projecting seams and recessed end panels, and a package stiffening folded sheet material keel including an upstanding rib disposed between said rows of cans and a pair of side

flanges opposing said can ends, said rib having openings therein receiving said projecting seams, and locking flaps struck from said side flanges and reversely folded into said recessed can ends and locking said projecting seam in said rib openings.

8. A package comprising cans disposed in two rows with the cans being of the type having peripherally projecting seams and recessed end panels, a package stiffening paperboard keel including an upstanding rib disposed between said rows of cans and a pair of side flanges opposing said can ends, said rib having openings therein receiving said projecting seams, and locking flaps struck from said side flanges and reversely folded into said recessed can ends and locking said projecting seam in said rib openings, and a paperboard sleeve-like carton member encircling said cans and said keel in opposed relation to ends of said cans.

9. A carton structure for forming a package from a plurality of cans disposed in two rows, said carton structure comprising a keel including an upstanding rib and side flanges for interlocking engagement with two rows of cans at one end thereof, said rib having seam receiving openings and said side flanges having locking flaps for retaining seams in said openings, said locking flaps being struck from said side flanges in spaced relation to said openings, and a sleeve-like carton member for encircling cans interlocked with said keel in opposed relation to ends of said cans.

10. A blank for a package forming keel comprising an elongated paperboard strip which is narrow compared to its length, a central longitudinal fold line and outer longitudinal fold lines for facilitating the longitudinal folding of said blank to define a central rib and side flanges, cut lines interrupting said outer fold lines and disposed primarily between said outer fold lines for defining openings in opposite sides of the keel, and side flanges having cut lines defining locking flaps generally aligned with said first mentioned cut lines and spaced transversely therefrom.

11. A keel for cooperation with cans in the forming of a package, said keel being in the form of a strip of paperboard longitudinally folded to define an upstanding resilient rib of V cross section and a pair of side flanges, pairs of seam receiving openings formed in opposite sides of said rib, and a locking flap associated with each rib opening struck from said side flanges remote from said rib.

12. A keel for cooperation with cans in the forming of a package, said keel being in the form of a strip of paperboard longitudinally folded to define an upstanding resilient rib of V cross section and a pair of side flanges, pairs of seams receiving openings formed in opposite sides of said rib, and a locking flap associated with each rib opening struck from said side flanges remote from said rib, each of said locking flaps being reversely folded relative to the associated one of said side flanges and projecting in the same general direction as said rib.

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70 THERON E. CONDON, *Primary Examiner.*

MARTHA L. RICE, *Examiner.*