

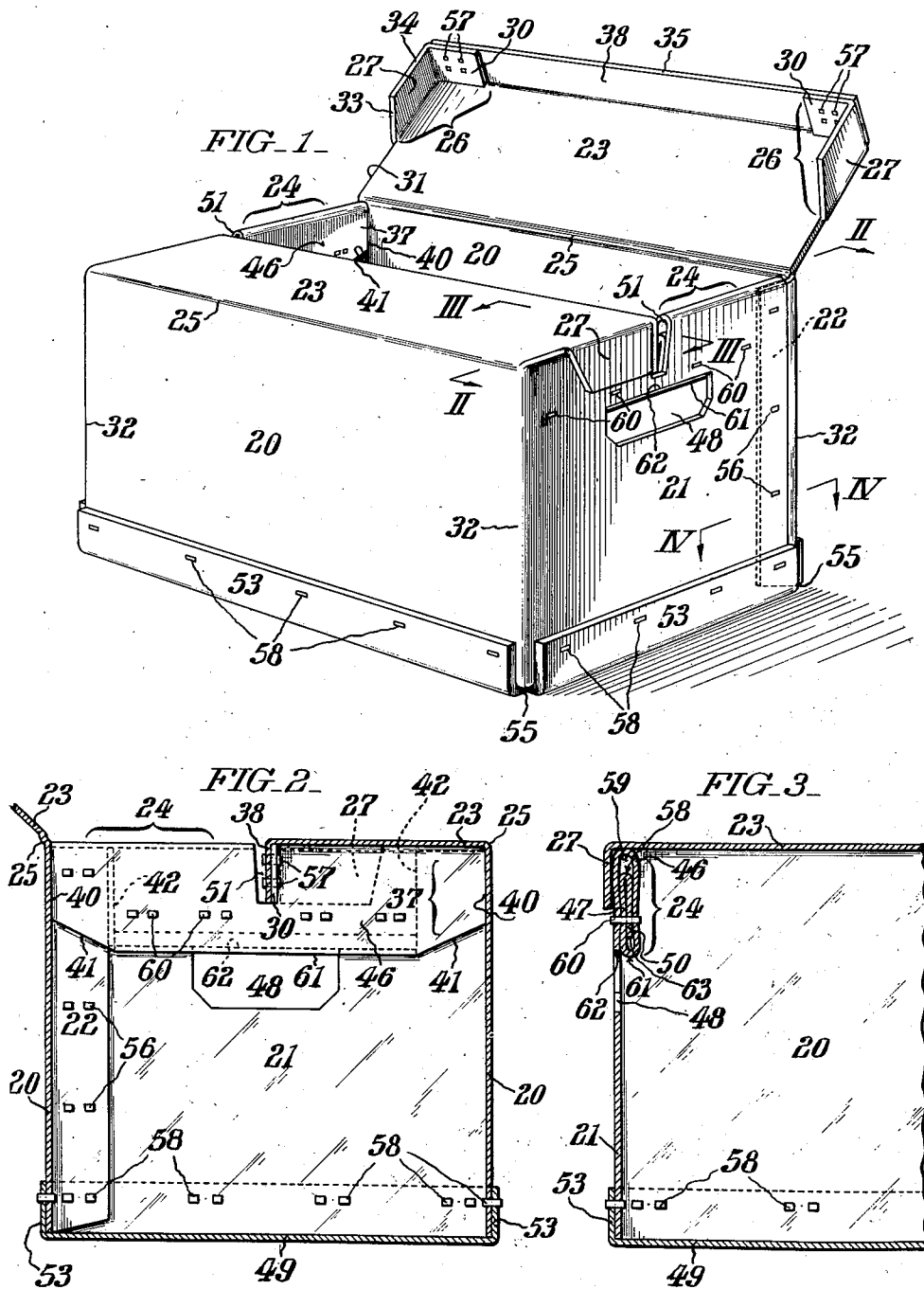
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S. VADNER
CONTAINER

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2 SHEETS—SHEET 1



INVENTOR:
Samuel Vadner,
BY Paul & Paul
ATTORNEYS.

Filed Aug. 1, 1950

CONTAINER

2 SHEETS--SHEET 2

INVENTOR:
Samuel Vadner,
BY *Paul & Paul*
ATTORNEYS.

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CONTAINER

Samuel Vadner, Cynwyd, Pa.

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This invention relates to a container, and more specifically concerns a shipping or carrying case composed essentially of relatively rigid sheet material and adapted to carry a plurality of individual articles such as bottles, cans or the like.

Cardboard cartons and like containers for relatively light weight objects have found extensive use for delivery purposes. However these have not been entirely satisfactory for carrying relatively heavy objects such as beverage bottles and the like, in view of the tendency of the load to impose undue strain on the material of which the container is made. Particular difficulty is encountered by reason of the tendency of side walls of the container to be displaced in relation to the end walls, thereby gradually forming tears at the upper corners of the container. Difficulty has also been experienced in producing a container of the foregoing character having such strength in the vicinity of the handholes that it may readily be carried by one hand.

While considerable effort has been expended in order to overcome these difficulties, no entirely satisfactory container has been produced for accomplishing the desired result. By use of heavy materials and complicated construction, certain containers having improved strength have been produced but these have been unduly expensive to manufacture in that a substantial proportion of the starting material is wasted and the complicated structure requires the use of excessive numbers of fastening devices. Other proposed containers capable of being produced at lower cost have been found to be ineffective in resisting the strains imposed during the course of extended service.

It is accordingly an object of the invention to provide a relatively simple, inexpensive container having high resistance to the stresses and strains imposed by relatively heavy supported loads. A more specific object is to provide an inexpensive rectangular container having resistance to tear in the vicinity of the upper corners. It is another object of the invention to provide a container which may be manufactured from a relatively light weight rectangular piece of sheet material with minimum wastage. Still another object is to provide a container made of sheet material adapted for convenient and rapid construction with the use of a minimum quantity of fastening devices and minimum material area per box. Other objects and advantages of the invention, including the simplicity and economy of the same and its adaptability to a wide variety of uses will further become apparent hereinafter.

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In summary, the invention concerns a container having pairs of side and end walls, opposed cover pieces attached to one pair of said walls, one of said cover pieces having a side flange extending from its free end to a point intermediate the free end and the line of junction between the cover piece and the container wall to which the cover piece is attached, and cross brace flaps attached to the other pair of said side walls, said cross brace flaps having contours corresponding to the contours of the adjacent side flanges and edges abutting the adjacent walls of the container.

Of the drawings:

Fig. 1 represents a view in perspective of a container constituting one embodiment of the invention;

Fig. 2 represents a sectional view taken as indicated by the lines and arrows II—II which appear in Fig. 1;

Figs. 3 and 4 represent fragmentary sectional views taken as indicated by the lines and arrows III—III and IV—IV respectively, which appear in Fig. 1;

Fig. 5 represents a plan view of the body blank for the container represented in Fig. 1; and

Fig. 6 represents a plan view of the bottom blank for the same.

While there is represented in the drawings one embodiment of the invention which is described in specific terms for the sake of clarity, it is to be expressly understood that the invention is not limited by such terms, which are merely illustrative of the single embodiment of the invention which appears in the drawings.

Having reference particularly to Fig. 5 of the drawings, the body blank there represented is cut from a single piece of relatively rigid sheet material and is creased and cut to shape so as to form a pair of side walls 20, a pair of end walls 21, a single attaching flap 22, cover pieces 23, and reinforcing flaps 24.

Cover pieces 23 are hingedly attached to side walls 20 and are free to swing about fold lines 25. Formed integrally with the cover pieces 23 are strips 26 which consist of side flange members 27 and flange attaching flaps 30. It will be observed that the strips 26 are hingedly attached to the cover pieces 23 and extend toward the adjacent reinforcing flaps 24 when the material is in the form of a flat blank. The side edges of the cover pieces are accordingly defined by the edges 31 which constitute extensions of the fold lines 32 along which the side and end walls 20, 21 are joined, the diagonally disposed edge 33, and par-

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allel edge 34 which subtends the diagonal edge 33 and extends to the end edge 35 of the blank. Cover pieces 23 also carry end strips 38 which form end flanges for the cover pieces and may be of single thickness as illustrated or may be folded over to provide an end flange of double thickness.

The reinforcing flaps 24 are hingedly attached along fold lines 36 to end walls 21 and are immediately adjacent the cover pieces 23. It will be observed that the edge contours of the reinforcing flaps 24 correspond to those of the cover piece 23. Accordingly the reinforcing flaps 24 have shoulders 37 received in indentations in cover pieces 23. Shoulders 37 have side edges 40 which correspond to the edges 31 of cover piece 23, and are spaced apart at a distance substantially equal to the distance between fold lines 32, or to the width of end wall 21. Similarly the reinforcing flaps 24 may be regarded as having indentations accommodating the strips 26, said indentations being bounded by edges 41 and 42.

Reinforcing flaps 24 are scored for folding along the lines 36, 44 and are also scored along lines 45, thereby defining the cross brace panel 46, spacer panel 47, and end panel 50. The panels 47 and 50 are indented spacer panels serving to space the cross brace panels 46 from end walls 21, for purposes more fully to be explained hereinafter.

Grooves 51 are formed by cutting symmetrical pieces of sheet material from cross braces 46 and end walls 21. Corresponding grooves 52 are formed in the elements 47 and 50. Handholes 48 are formed by cutting out portions of the end walls 21.

Referring now to Fig. 6 of the drawings, there is shown the bottom piece 49 which preferably consists of sheet or plate material of relatively great resistance to wear, and may consist of chemically impregnated material such as resin or sulphur-impregnated fibre board or the like, for example, or may consist of the same material as the balance of the box but of a heavier caliber to resist the greater wear that takes place on the bottom of boxes when used and reused. Bottom piece 49 carries attaching flaps 53 which, together with the usual fasteners, serve as overlapping means for removably securing the bottom piece 49 to the body blank of the container. It will be observed that the bottom piece 49 has corner notches 55 penetrating inwardly of the crease lines 54. Drain holes are thereby provided at the bottom corners of the container, as indicated particularly in Fig. 4. If this bottom piece 49 becomes worn it can readily be replaced or re-covered with another similar bottom piece.

Having reference now to Figs. 1-3, the assembly of the container from the blanks will be readily apparent. The free side wall and end wall of the container are secured together at the container manufacturing plant by means of stitches 56 which join together the attaching flap 22 and the free edge of end wall 21 thereby forming the manufacturer's joint. The thus partially assembled container may then be shipped to the bottling plant for completion. At this point the tabs 30 and flanges 38 are affixed together by fasteners 57, and the bottom piece 49 is attached to the body blank by means of stitches 58, which fasten the flaps 53 to the side and end walls 20 and 21. The cross brace panels 46, spacer panels 47, and end panels 50 are secured in place by means of fasteners 60, thereby holding the spacer panel 50 in the desired position, as indicated more particularly in Fig. 3. The end panel 50 is dis-

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posed between cross brace panel 46 and spacer panel 47 while spacer panel 47 is between end panel 50 and container end wall 21. This is of particular importance in that the members 47 and 50 space the cross brace panel 46 from the end wall 21 thereby placing the bracing edges 40 against side walls 20 in positions removed from the immediate vicinity of the corners of the container, and providing leverage whereby the tendency of the side walls 20 to move toward each other under the influence of laterally-directed forces is effectively resisted, particularly in the vicinity of the upper corners of the container.

As illustrated in particular detail in Fig. 3 of the drawings, the cross brace panel 46 depends from the top of the end wall 21, forming an inverted U-shaped channel extending along the top edge of the container end wall. Similarly the hinged connection between cross brace panel 46 and spacer panel 47 is a U-shaped channel, the elements 46 and 47 being spaced apart by the intervening end panel 50. End panel 50 depends from the top of the spacer panel 47 to form a hinged connection having a top edge 58 which is spaced below the bottom edge 59 of the inverted U-shaped channel composed of end wall 21 and cross brace panel 46. End panel 50 also has a bottom edge 63 terminating at a point spaced above the U-shaped channel composed of cross brace panel 46 and spacer panel 47. This construction is advantageous and important in that the U-shaped channels, together with the triple-bar strut pieces consisting of the elements 46, 47, 50, provide effective bracing against longitudinally directed strains imposed upon the end walls 21. Such strains are frequently encountered in actual service, particularly in the vicinity of the handholes, as for example when the heavily-loaded container is picked up and carried by one hand.

As will be apparent from Figs. 2 and 3, the lower edge 61 of the U-shaped channel formed by members 46 and 47 is slightly below the upper edge 62 of handholes 48 thereby providing a relatively thick rounded edge for convenience in manual handling. The end flanges 38 together with tabs 30 fit jointly and tightly into slots 51 when the covers for the container are closed.

It is to be particularly observed that the container consists of two pieces, a body blank and a bottom blank, and that this construction including the specific conformation of the cover side flanges and end wall reinforcing flaps results in a great saving of material cost, of handling cost, and of cost involved in stitching the individual pieces together to form a finished container. It also results in a box having minimum weight, and in savings in freight and handling costs attributable thereto.

The provision of the novel cover piece side flanges as shown and described possesses the additional advantage that since these flanges terminate quite some distance from the upper corners of the container they are not easily damaged and are free of any tendency to catch on adjacent objects or to become torn. They also make for general efficiency in handling loaded or unloaded containers.

My design has the further advantage that the metal stitches 56 forming the manufacturer's joint may be stitched at the manufacturing plant to partially assemble the container, at a point where efficient high-speed stitching machines are generally available. Also the stitches 60 may be put in at the manufacturer's plant. The partially assembled container is then shipped in flat form to the user's place of business where the re-

maining stitches may be formed to complete the assembly of the container.

The end wall construction wherein the flaps are on the inside of the container provides a large area of smooth uninterrupted outside surface on which labels, trade-marks, or other printed matter may readily be applied. It is advantageous to mark the end walls rather than the side walls since they are more frequently exposed to view when the containers are stacked in the usual way.

My construction as previously described herein provides structural rigidity which eliminates the need for metal reinforcing pieces. In addition to the obvious advantages of economy and light weight, this has further merit in the case of containers made of fibrous materials in that these containers when finally worn out are readily reclaimed by repulping in conventional paper mill equipment. The fasteners, which constitute the only metal parts of the containers, drop out of their own accord and do not impede or modify the necessary reclamation operations.

Although I have described my invention by reference to one embodiment thereof, it will be apparent to those skilled in the art that changes may be made in the particular form of the container and its cover pieces and in the form and arrangement of the bracing and reinforcing elements specifically described and illustrated herein, including reversals of parts and substitutions of equivalent structures, and that certain features of the invention may be used to advantage without the use of other features, all within the spirit of the invention as defined in the appended claims.

Having thus described my invention, I claim:

1. A container comprising adjacent side and end walls substantially at right angles to one another, a cover panel hingedly attached to the top of a first one of said walls and having a free end spaced therefrom, side flanges on said cover panel having a portion cut away adjacent the cover-carrying wall to form edge portions of said flanges, said edge portions being spaced between the cover-carrying wall and the free end of the cover panel, a reinforcing flap hingedly attached to the top of a second one of said walls immediately adjacent said first wall, said reinforcing flap including a cross-brace flap into which the cut away portion from said cover side flange is incorporated to provide a side edge constructed and arranged to abut against the inner surface of said first wall, a spacer panel hingedly attached to the end of said cross brace panel and disposed against the inner surface of said second wall, and an end panel hingedly attached to said spacer panel and disposed between the spacer panel and the cross brace panel, the hinged connection between the end panel and spacer panel being spaced below the hinged connection between the cross brace panel and said second container wall.

2. The invention defined in claim 1, wherein the width of the cross brace panel exceeds the width of the spacer panel by an amount substantially equal to the depth of said side flange.

3. A container comprising adjacent side and end walls substantially at right angles to one another, a cover panel hingedly attached to the

top of a first one of said walls and having a free end spaced therefrom, side flanges on said cover panel having a portion cut away adjacent the cover-carrying wall to form edge portions of said flanges, said edge portions being spaced between the cover-carrying wall and the free end of the cover panel, a reinforcing flap hingedly attached to the top of a second one of said walls immediately adjacent said first wall, said reinforcing flap including a cross-brace panel into which the cut away portion from said cover side flange is incorporated to provide a side edge constructed and arranged to abut against the inner surface of said first wall, a spacer panel comprising an extension of said cross brace panel, said spacer panel being folded along a score line with respect to said cross brace panel and disposed between the cross brace panel and the second of said walls serving to space the cross brace panel apart from said second wall to provide bracing leverage for the side edge of the cross brace panel against said first wall.

4. The container defined in claim 3, wherein the spacer panel has an integral end panel folded along a score line with respect to said spacer panel, and both the spacer panel and the end panel are disposed between the cross brace panel and said second wall.

5. The container defined in claim 3, wherein the score line between the cross brace panel and the spacer panel extends from that end of said cut away portion which is farthest removed from said second wall, and runs substantially parallel to the top of said second wall.

6. A blank for a container comprising a piece of sheet material having four adjacent hingedly connected wall sections, means for connecting the ends of the blank together, four adjacent panels hingedly connected to said wall sections along one edge of the blank, said panels including two alternately arranged cover panels and two alternately arranged reinforcing panels; the adjacent cover panels and reinforcing panels being separated from one another along cut lines; each of said cut lines comprising a first portion that is an extension of the crease line between said adjacent wall sections, a second portion that extends diagonally outwardly away from the cover flap, and a third portion that extends outwardly to the free end of said adjacent panels; said reinforcing flaps each carrying at least two transverse score lines defining three panels, namely, a cross brace panel, a spacer panel, and an end panel, all three of which panels are foldable upon one another.

SAMUEL VADNER.

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