June 4, 1968 G. H. YOUNG 3,386,642

SHIPPING CONTAINER FOR BOOKS OR THE LIKE

Filed Jan. 26, 1967 2 Sheets-Sheet 1

Fig. 1

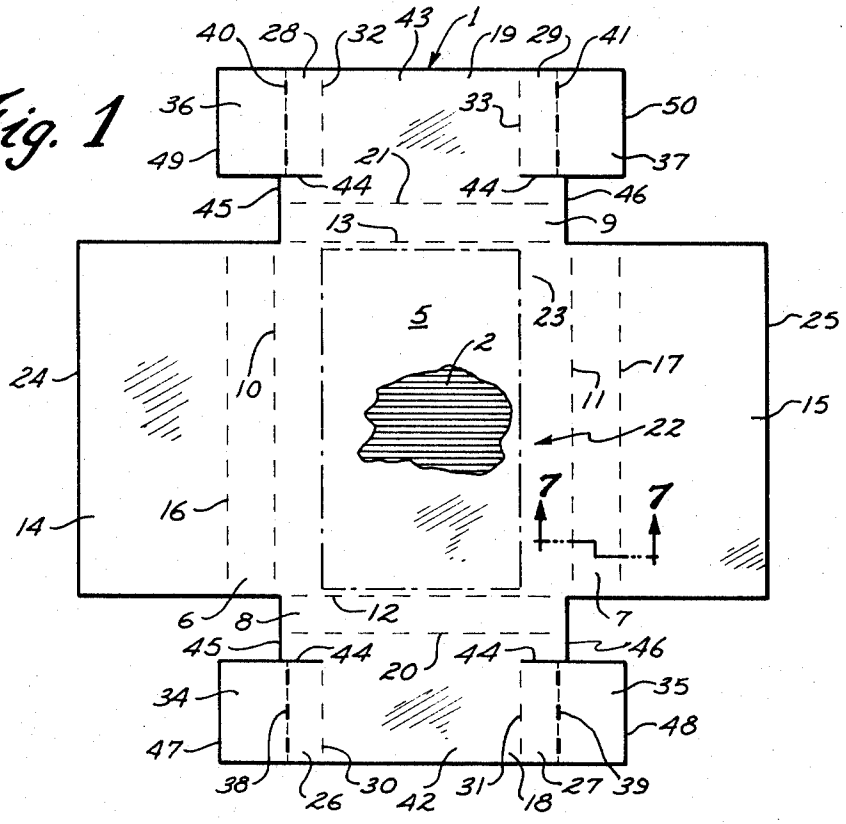


Fig. 4

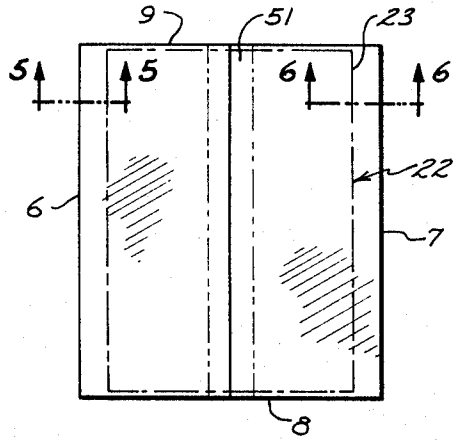
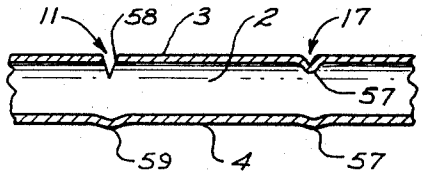


Fig. 7



INVENTOR

GERALD H. YOUNG

BY Larry C. Hall

ATTORNEY

June 4, 1968 G. H. YOUNG 3,386,642

SHIPPING CONTAINER FOR BOOKS OR THE LIKE

Filed Jan. 26, 1967 2 Sheets-Sheet 2

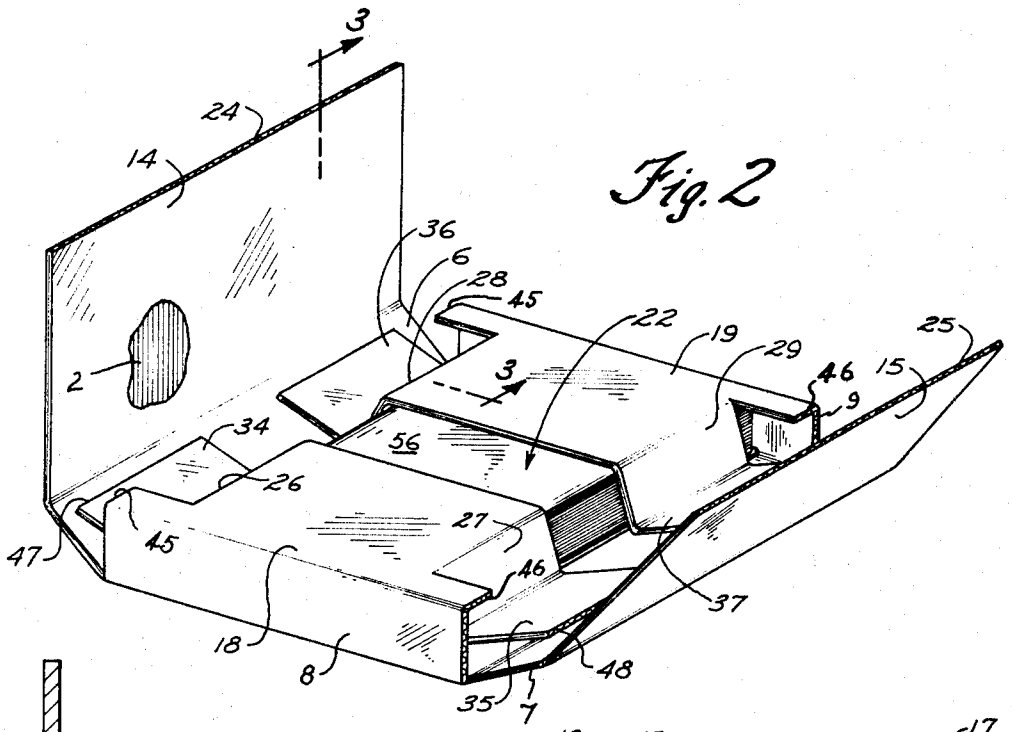


Fig. 2

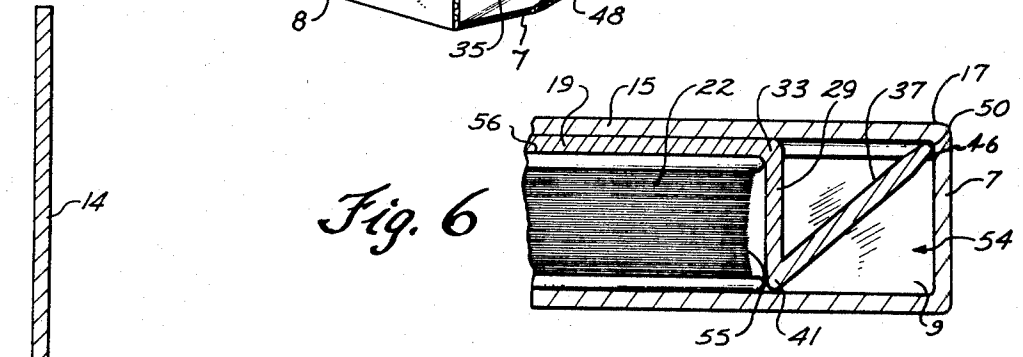


Fig. 6

Fig. 3

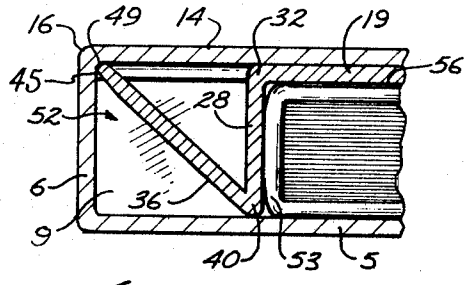


Fig. 5

INVENTOR

GERALD H. YOUNG

BY Larry C. Hall

ATTORNEY

United States Patent Office 3,386,642 Patented June 4, 1968

3,386,642

SHIPPING CONTAINER FOR BOOKS OR THE LIKE

Gerald H. Young, Closter, N.J., assignor to West Virginia Pulp and Paper Company, New York, N.Y., a corporation of Delaware

Filed Jan. 26, 1967, Ser. No. 611,905
7 Claims. (Cl. 229—40)

ABSTRACT OF THE DISCLOSURE

A shipping container is provided formed from a single blank of paperboard wherein the arrangement of folding panels and flaps prevents the packaged object from being damaged during shipment. A cover flap is arranged to be folded over and secured to a retaining panel having different portions for restraining and bracing the packaged object within the container.

Brief summary of invention

This invention relates generally to a container for packaging a flat object.

More specifically, the invention relates to a paperboard container for packaging a flat rectangular object, and has particular utility as a shipping or mailing container for a book or several books.

Since the package or container in which the book or books are packed is frequently subjected to rough handling during shipping, a strong, lightweight, durable container is necessary to prevent damage to the bindings and covers of the books. Because of the large numbers of separate mailings of the books the container must also be inexpensive, and relatively easy to close. By using a container which is relatively easy to close, the need for complicated packing machinery or high labor costs is avoided. In addition, the container must be capable of being shipped in a flattened or collapsed state to minimize costs of handling and shipping a supply of containers to the book packager.

Applicant, with the container of this invention satisfies the above stated requirements for a container for mailing one or several books. Applicant's container takes the form of a flat, cut and scored, integral wrapper of corrugated paperboard which is readily foldable around one or several books to provide the required lightweight, durable mailing container.

It is well known that the binding and cover of a book are easily damaged by forces or impact to the cover in a direction perpendicular to the binding side of the book. With applicant's container, damage to the binding or the cover of the book as a result of forces or impact in such perpendicular directions is substantially prevented by the unique construction of applicant's container which maintains both the binding side of the book and the side of the book opposite the binding in spaced relation to the adjacent sides of the container. Thus, damage to the book along the binding side and opposite thereof is avoided even though the adjacent sides of the container are deformed or damaged by heavy loads or impact during mailing.

A unique panel and flap arrangement provides for maintaining the book with its binding side and opposite sides spaced from the adjacent side of the container. The panel and flap also maintain the book against scuffing movement relative to the wrapper when subjected to vibrations or light loads, thus avoiding damage to the book cover from abrasion, while permitting slight movement of the book when subjected to heavy impact to prevent damage to the book. The slight movement of the book results from deformation of the container with corresponding avoidance of damage to the book.

The cost of the container of this invention is quite competitive with presently available mailing containers for books, can be readily closed and sealed with gummed or adhesive tape without the need for staples or other fasteners, and can be easily opened by the customer to remove the book. Of course, if desired, the outside flaps could be glued, or, alternatively, these flaps could be changed to an over-lap design which could then be glued without affecting the basic design principle. In addition to the advantages and features discussed above, numerous other advantages and features will be apparent with reference to the drawings which form a part of this specification, and in which:

Brief description of drawing

FIGURE 1 is a plan view of a flat paperboard blank from which the container of this invention is folded;

FIGURE 2 is a pictorial view of the container blank of FIGURE 1 partially folded around a rectangular object;

FIGURE 3 is an enlarged partial view in section taken along lines 3—3 of FIGURE 2;

FIGURE 4 is a plan view of the folded container;

FIGURE 5 is an enlarged partial view in section taken along lines 5—5 of FIGURE 4;

FIGURE 6 is an enlarged partial view in section taken along lines 6—6 of FIGURE 4; and

FIGURE 7 is an enlarged partial view in section taken along lines 7—7 of FIGURE 1.

Detailed description

Referring now to the drawings in detail and particularly to FIGURE 1, there is shown a flat blank 1 of multilayer paperboard from which the container of this invention is folded. The corrugated paperboard is of the conventional type wherein a corrugated layer 2 is sandwiched between facing sheets 3 and 4 (FIGURE 7). As shown at FIGURE 1, blank 1 includes a rectangular main panel 5 separated from rectangular side walls 6–9 by fold lines 10–13. Side walls 8 and 9, which provide a first pair of side walls are separated from retaining panels 18 and 19 by fold lines 20 and 21. Side walls 6 and 7, which provide a second pair of side walls, are separated from rectangular cover panels 14 and 15 along fold lines 16 and 17.

As shown at FIGURE 2, blank 1 is folded around a flat rectangular object of uniform thickness which is advantageously a book 22. The outline of book 22 is shown at FIGURE 1 in phantom lines 23. The dimensions of the book hereinafter referred to are as follows: the length of book is that dimension measured from the top of the cover to the bottom of the cover; the width of the book is that dimension measured from one side of the cover to the other; and, the height of the book is its thickness measured from the front to the back cover.

With reference to FIGURE 1, fold lines 12 and 13 form a first pair of parallel side walls 8, 9 of main panel 5, and each of the walls has a length greater than the width of book 22. Fold lines 10 and 11 define a second pair of parallel side walls 6, 7 of main panel 5, and each of these walls has a length substantially equal to the length of book 22. Each of side walls 6–9 has a length equal to the length of the side of main panel 5 to which it is attached along the several respective fold lines 10–13.

It will also be observed with reference to FIGURES 1, 2 and 4, that cover panels 14 and 15 each have a length substantially equal to the length of book 22 and have a width as measured from the respective fold lines 16 and 17 to side edges 24 and 25 of the cover panels which is substantially equal to one-half the width of main panel 5, as measured between fold lines 10 and 11. In the alternative arrangement where the flaps are to be over-lapped and glued, the respective width of cover panels 14 and 15

would be greater than one-half the width of the main panel.

Retaining flaps 26 and 27 are connected to retaining panel 18 and retaining flaps 28 and 29 are connected to retaining panel 19. The respective retaining flaps 26–29 are hingedly connected to the retaining panels along fold lines 30–33. A plurality of rectangular brace flaps 34–37 are hingedly connected, one to each of retaining flaps 26–29, along fold lines 38–41. Fold lines 38–41 are parallel with and spaced from fold lines 30–33. With reference to FIGURE 1, it will be seen that fold line 30 is aligned with fold line 32 and fold line 31 is aligned with fold line 33. Similarly fold lines 38, 40 are aligned, and fold lines 39, 41 are aligned. The distance between fold line 30 and fold line 31 is equal to at least the width of book 22, to define therebetween a body portion 42 of retaining panel 18. Fold lines 32 and 33 are also spaced apart a distance equal to at least the width of book 22 to define therebetween a body portion 43 of retaining panel 19.

Blank 1 is cut completely through along cut lines 44 which separate the several retaining flaps 26–29 and brace flaps 34–37 from the respective retaining panels 18 and 19. Cut lines 44 extend perpendicularly from side edges 45 and 46 of each of retaining panels 18 and 19 to the respective ones of fold lines 30–33, the several cut lines 44 being parallel with and spaced from the fold lines 20 and 21, respectively. Thus, with reference to FIGURES 1 and 2, it is apparent that retaining panels 18 and 19 are each generally T-shaped as viewed in plan, having a top portion, extending outwardly to side edges 45 and 46, which is wider than body portion 42 or 43 of either retaining panel since the body portions of the retaining panels terminate respectively at the parallel fold lines 30, 31 and 32, 33.

As can be seen with reference to FIGURE 1, side edges 45 and 46 of each of retaining panels 18 and 19 are spaced apart a distance equal to the length of side walls 8 and 9 so that the portion of each retaining panel, inwardly of cut lines 44, forms a continuation of the respective side walls 8 and 9.

The width of retaining flap 26, as measured between fold lines 30 and 38, is equal to or greater than the thickness of book 22. Retaining flaps 27–29 each have the same width as retaining flap 26, and, hence, each retaining flap has a width substantially equal to the height, or, thickness of book 22.

With container blank 1 in its flattened condition, as shown in FIGURE 1, the brace flaps 34–37 each extend outwardly a substantial distance beyond side edges 45 and 46 of retaining panels 18 and 19. Brace flaps 34–37 are each rectangular and have end edges 47–50 which are parallel with the fold lines 38–41 along which the brace flaps are connected to the respective retaining flaps 26–29. Adjacent end edges 47–50, each of brace flaps 34–37 is crushed as at 50', as shown at FIGURE 3 for brace flap 36, to provide a generally tapered end adjacent the end edge of each brace flap.

To pack a book 22 in the container, the book is first placed on blank 1 in the position shown at FIGURE 1, in phantom lines 23. Then, side walls 8 and 9 are each folded upwardly at right angles to main panel 5 along fold lines 12 and 13, respectively. Next, retaining panels 42 and 43 are folded along fold lines 20 and 21, respectively, to a position inwardly across book 22, so the retaining panels are parallel with and spaced from main panel 5. Then, retaining flaps 26–29 are each folded downwardly to a position parallel with and adjacent the opposite sides of the book to the position shown generally at FIGURE 2. Such downward folding of retaining flaps 26–29 causes each of brace flaps 34–37 to be folded relative to the retaining flaps along fold lines 38–41. Brace flaps 34–37 are then further folded along fold lines 38–41, respectively, so that each of the brace flaps extends upwardly at an acute angle to the plane of main panel 5, as shown at FIGURES 2 and 3. Next, side walls 6 and 7 are each folded upwardly slightly along fold lines 10 and 11, respectively. Then, cover flaps 14 and 15 are folded slightly upwardly along fold lines 16 and 17, respectively, to the positions shown at FIGURES 2 and 3.

To close the container after the several panels and flaps have been folded to the position of FIGURE 2, it is merely necessary to move cover panels 14 and 15 inwardly across retaining panels 18 and 19 until the end edges 24 and 25 of the respective cover panels abut each other, as shown at FIGURE 4. With end edges 24 and 25 of the cover panels in abutting engagement, the cover panels lie flat against the retaining panels 18 and 19. During the closing of the container, brace flaps 34 and 36, at one side of the container, are guided by the inner surfaces of side wall 6 and cover panel 14 so that end edges 47 and 49 of brace flaps 34 and 36, respectively, seat along fold line 16. Similarly, end edges 48 and 50 of brace flaps 35 and 37 are guided by the inner surfaces of side wall 7 and cover panel 15 so that end edges 48 and 50 seat along fold line 17. To seal the container, it is merely necessary to apply a strip of adhesive or gummed tape 51 across abutting edges 24 and 25 of the cover panels, as shown at FIGURE 4. Preferably, tape 51 extends completely around the container. Alternatively, as set forth hereinbefore, the cover panels 14 and 15 could advantageously be glued in position to enclose the container.

As shown at FIGURE 4, the folded and closed container is generally rectangular, and the first pair of side walls 8 and 9 are spaced apart and parallel, and the second pair of side walls 6 and 7 are also spaced apart and parallel.

It will be observed with reference to FIGURES 5 and 6 that side walls 6 and 7 span the distance between cover panels 14, 15 and main panel 5. However, side walls 8 and 9 merely span the distance between retaining panels 18, 19 and main panel 5. Hence, side walls 6 and 7 are slightly wider than side walls 8 and 9 by a distance equal to the thickness of the material from which the container is formed. It will also be seen with reference to FIGURE 1 that fold lines 10 and 11 are located slightly outwardly of side edges 45 and 46 of each of retaining panels 18 and 19. Such arrangement of the fold lines 10 and 11 provides for locating side walls 6 and 7 with their inner faces in abutting engagement with sides 45 and 46 of each retaining panel when the container is folded to the erected position of FIGURES 5 and 6. In addition, the inner faces of side walls 6 and 7 adjacent the end edges of the panels abut the end edges of side walls 8 and 9. With reference to FIGURE 5, it will be noted that there is an elongated space 52, generally rectangular as viewed in transverse section, between side wall 6 and binding side 53 of the book. Similarly, as shown at FIGURE 6, there is a substantially identical elongated space 54, also rectangular as viewed in transverse section, between open side 55 of the book and side wall 7.

Brace flaps 34 and 36 each extend diagonally across rectangular space 52, as shown at FIGURE 5 for brace flap 36. End edge 49 of brace flap 36 seats at fold line 16 at the right angle corner between cover panel 14 and side wall 6, and the end edge 49 engages both the cover panel and the side wall at fold line 16. The crushed portions 50' better the seating of end 49 at fold line 16. The fold line 32, along which retaining flap 28 is hingedly connected to retaining panel 19, provides a pivotal connection about which retaining flap 28 can swing in a direction toward and away from binding side 53 of the book. The brace flap 36 has a width, as measured between end edge 49 and fold line 40, which is slightly greater than the distance diagonally across space 52. Hence, brace flap 36 urges retaining flap 28 against binding side 53 of the book. The relative dimensions of retaining flap 26 and brace flap 34 are precisely the same as those just described for brace flap 36 and retaining flap 28, and

end edge 47 of brace flap 34 seats at fold line 16 in engagement with both cover panel 14 and side wall 6.

The arrangement of retaining panels 27 and 29 and brace flaps 35 and 37 adjacent open side 55 of book 22 is substantially the same as the arrangement of the corresponding flaps at binding side 53 of the book. In this regard, it will be noted with reference to FIGURE 6 which shows retaining flap 29 and brace flap 37, that retaining flap 29 has a width, as measured between fold lines 33 and 41, which is substantially equal to the thickness of book 22. Brace flap 37 has a length slightly greater than the diagonal distance across side space 54. End edge 50 of brace flap 37 seats at fold line 17, at the right angle corner between cover panel 15 and side wall 7, and the end edge 50 engages both the cover panel and the side wall at the fold line. Since the width of brace flap 37, as measured from end edge 50 to fold line 41, is slightly greater than the diagonal distance across side space 54, retaining flap 29 is urged against open side 54 of the book. The arrangement for retaining flap 27 and brace flap 35 is identical to that described for retaining flap 29 and brace flap 37.

By virtue of the hinged connection between each of the retaining flaps and the respective retaining panels 18 and 19, the brace flaps 34 and 36 urge retaining flaps 26 and 28, respectively, into firm engagement with binding side 53 of the book and brace flaps 35 and 37 urge retaining panels 27 and 29, respectively, in an opposite direction against open side 55 of the book. However, when cover panels 14 and 15 are closed and the container is sealed, each of the brace flaps engages a rigid side of the book. With reference to FIGURE 5 which shows retaining flap 28 and brace flap 36, it will be observed that counterclockwise pivotal movement of retaining flap 28 is resisted by engagement of the retaining flap with the binding side 53 of the book. Hence, since brace flap 36 is longer than the diagonal distance across space 52, the brace flap is slightly compressed when the container is closed. Retaining flap 28, to which brace flap 36 is hingedly connected, is placed under slight tension by the compressed brace flap. The tension in retaining flap 28 acts to pull one side of retaining panel 19 firmly against the upper major face 56 of the book. The other side of retaining panel 19 is likewise pulled into firm engagement against major face 56 of the book by the action of retaining flap 29 and brace flap 37. Since retaining flaps 26, 27 and brace flaps 34, 35 are identical to retaining flaps 28, 29 and brace flaps 36, 37, retaining panel 18 is similarly pulled firmly against the upper major face 56 of the book by virtue of the compression in the several brace flaps and tension in the several retaining flaps.

As shown at FIGURE 7, fold lines 11 and 17 are each cut-score lines. The scored portions 57 of these lines are merely deformations of the several layers 2–4 of the paperboard from which the container is formed. However, there are also aligned, spaced apart narrow cuts 58 formed along each fold line, the cuts extending through face sheet 3 and into corrugated layer 2, but terminating short of face sheet 4. Immediately beneath each of cuts 58 is a deformed portion 59 similar to that of scored portion 57. The cut-score lines are provided to facilitate folding of the container blank since fold lines of the cut-score type require less effort to fold. Each of the fold lines of blank 1 is advantageously of the cut-score type.

As shown at FIGURE 1, the corrugations of corrugated layer 2 extend in a direction parallel with fold lines 12 and 13 of blank 1. Hence, when blank 1 is folded to form a container and the container is closed as shown at FIGURES 3–6, the corrugations extend transversely of binding side 53 and open side 55 of the book. Such orientation of the corrugations provides excellent strength and correspondingly the container resists damage to the fragile binding and open sides 53 and 55, respectively, of the book. It is to be appreciated that since the paperboard from which the container is formed is flexible and somewhat resilient, forces acting on the container as a result of rough handling will merely cause deformation of the container without damage to the book. Of course, a blow or force sufficient to badly damage the container will damage the book, but any competitively practical container would likewise allow damage to the book. It is further to be appreciated that brace flaps 34–37 and retaining flaps 26–29 hold book 22 against scuffing movement relative to the container when the container is subjected to slight movement and vibration such as occurs when the container is transported by truck. Thus, scuffing of the book is avoided. However, in the event of sharp impact or forces the container deforms to absorb the shock and the book may move slightly. Such movement, as a result of sharp forces or impact, does not normally cause scuffing damage of the book cover since such forces sufficient to cause movement of the book occur infrequently during shipping.

With reference to FIGURES 1, 2, and 4–6, it will be seen that, with the container closed the retaining panels 18 and 19 lie flat against major face 56 of the book and cover panels 14 and 15 extend across and lie flat against retaining panels 18 and 19 to form a multi-layer generally rectangular front wall for the container. With the container oriented as shown in the drawings, main panel 5 provides a generally rectangular back wall of substantially the same size as the front wall, and in opposed parallel relation to the front wall. Both the front wall and back wall each have a length substantially equal to the length of book 22 and a width substantially greater than the width of book 22, as measured between binding side 53 and open side 55. Side walls 6 and 7 are in parallel relation to each other and extend between the front wall and the back wall. In addition, side walls 8 and 9 are in parallel relation to each other and likewise extend between the front wall and the back wall, sides 8 and 9 lying in planes perpendicular to side walls 6 and 7. The several retaining flaps 26–29 extend perpendicularly between the front wall and the back wall and are in engagement with opposite sides of book 22.

Although a preferred embodiment of the container of this invention has been shown and described in detail, it is to be understood that numerous changes and variations can be made in the construction of the container without departing from the scope of this invention as defined in the appended claims.

I claim:

1. A shipping container for packaging a generally rectangular shaped object formed from a one piece paperboard blank comprising:
   - (a) a main panel of generally rectangular shape of a size substantially larger than the packaged object;
   - (b) a first pair of opposed side walls hingedly attached at fold lines along the sides of the main panel;
   - (c) a second pair of opposed side walls hingedly attached at fold lines along the ends of the main panel;
   - (d) a pair of retaining panels hingedly attached at fold lines to the said second pair of opposed side walls, said retaining panel means each having three distinct portions;
     - (1) a body portion having a width substantially equal to the width of the packaged object;
     - (2) retaining flap portions hingedly attached along fold lines to the side edges of the said main portion; and
     - (3) brace flap portions hingedly attached along fold lines to the said retaining flap portions; and
   - (e) cover panel means hingedly attached along fold lines to the said first pair of opposed side walls.

2. A shipping container as recited in claim 1, wherein the length of the said first and second pairs of opposed side walls is equal to the length and width respectively of the said main panel.

3. A shipping container as recited in claim 2, wherein

the width of the said first pair of opposed side walls is greater than the width of the said second pair of opposed side walls, the latter width being substantially equal to the height of the packaged object.

4. A shipping container as recited in claim 3, wherein the said retaining flap portions of the said retaining panels are of a width substantially equal to the height of the packaged object and are adapted to be folded over against the opposite sides of the packaged object to maintain the object in spaced relation from the said first pair of opposed side walls.

5. A shipping container as recited in claim 4, wherein the said brace flap portions of the said retaining panels extend diagonally across the space formed between the said retaining flap portions and the said first pair of opposed side walls in the folded condition.

6. A shipping container as recited in claim 5, wherein the said brace flap portions have a width slightly larger than the diagonal space provided between the respective retaining flap portions and first pair of opposed side walls, whereby said brace flaps are slightly compressed in the folded condition to urge the said retaining flap portions toward the respective opposite sides of the packaged object.

7. A shipping container as recited in claim 1, wherein the said generally rectangular object is a book, and the said paperboard blank has at least one corrugated layer, the corrugations extending perpendicular to the binding side of the book, with the said retaining flap portions engaging both the binding side of said book and the side of said book opposite the binding.

References Cited

UNITED STATES PATENTS

2,609,136	9/1952	Sider	229—14
2,847,152	8/1958	Van Antwerpen	229—14
2,877,942	3/1959	Van Antwerpen	229—14
3,064,875	11/1962	Mairs	206—46 XR
3,116,005	12/1963	Skaggs	229—40
3,211,359	10/1965	Fickes	229—40
3,219,256	11/1965	Zastrow	229—40
3,227,356	1/1966	Eifrid	229—40
3,263,897	8/1966	Giroux	229—40
3,302,851	2/1967	Johnson	229—40 XR

DAVIS T. MOORHEAD, *Primary Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,386,642 June 4, 1968

Gerald H. Young

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 6, line 66, "main" should read -- body --.

Signed and sealed this 14th day of October 1969.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents