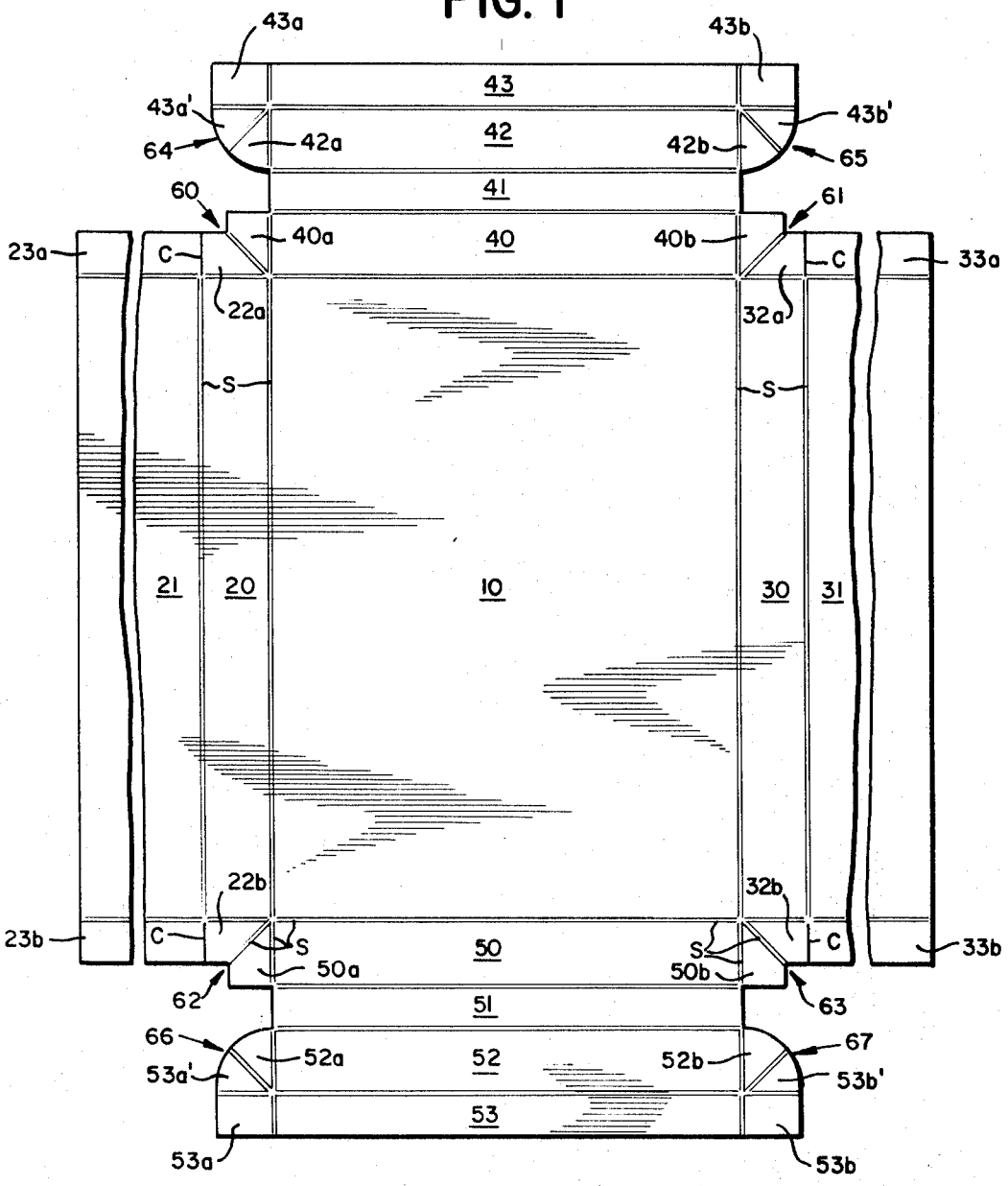
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BOOK CARTON

Filed March 13, 1967 2 Sheets-Sheet 1

FIG. 1



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FIG. 2

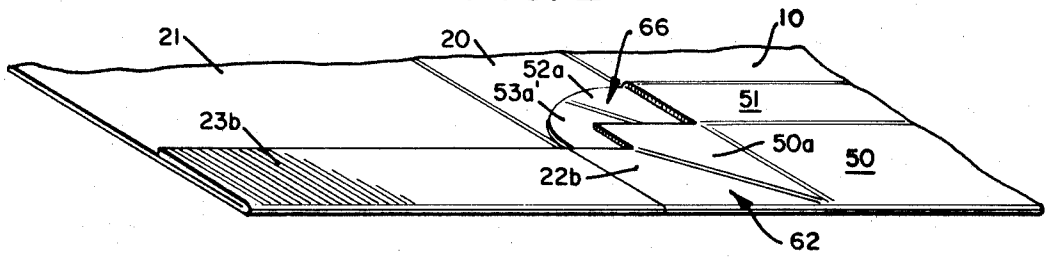


FIG. 3

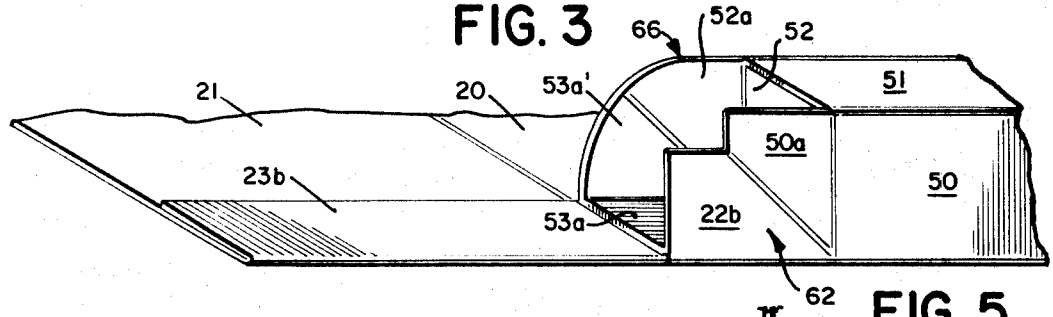


FIG. 4

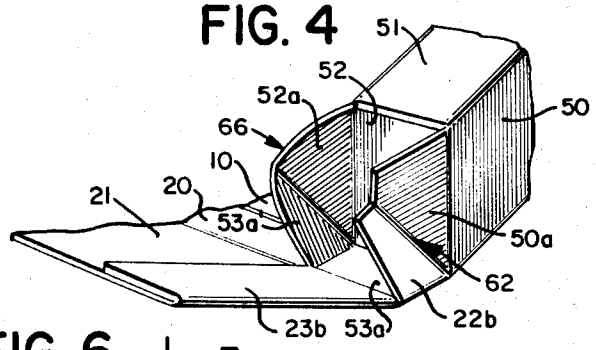


FIG. 5

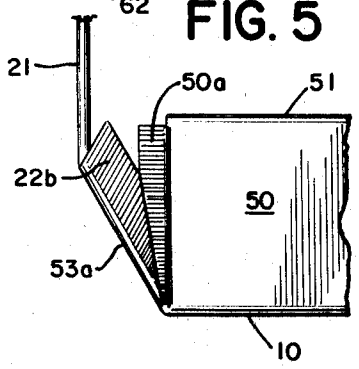


FIG. 6

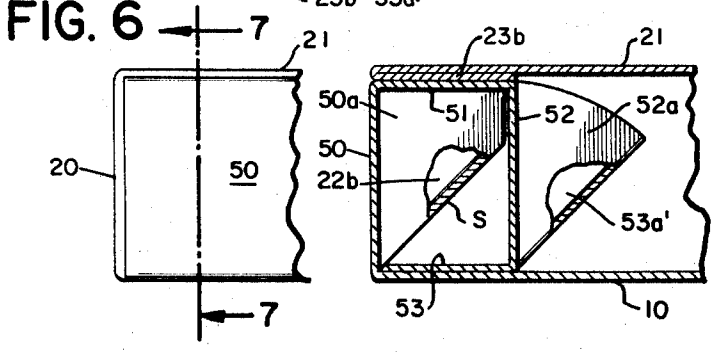


FIG. 7

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3,386,641

BOOK CARTON

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Filed Mar. 13, 1967, Ser. No. 622,607
8 Claims. (Cl. 229—34)

ABSTRACT OF THE DISCLOSURE

The present application discloses a carton made from a blank of fiberboard and constructed with corner reinforcement so as to substantially increase the resistance to crushing and destruction under impact and thus protect items such as books during shipment thereof.

The present application discloses a structure which is an improvement on that of my prior application, Ser. No. 458,119, now Patent Number 3,331,548 issued July 18, 1967, assigned to the assignee of this application.

As indicated above, the present invention is directed to the provision of a carton especially for shipping of books and the like, which carton is formed of fibrous material such as fiberboard from a single blank and which carton is adapted to be folded into an intermediate form for shipping of the carton to its point of use, adapted to be readily erected by high-speed machinery, and adapted to be readily filled and closed likewise by high-speed machinery.

The prior art has evolved a considerable number of constructions of cartons intended for the purpose mentioned above, but none of these cartons has been both sufficiently strong to completely solve the problem while at the same time being capable of being formed and folded as well as erected and filled on high-speed mechanisms.

The invention consists particularly in the combination of parts which form a carton, which when erected has tubular side walls, which tubular side walls are joined to the end walls in such a manner that the rectangular tubular side walls are held rigidly in position at right angles to the base and have extensions at the ends thereof which overlie the corners of the book or other contents to thereby form rigid walls which withstand impact and prevent injury of the corners of the contained article.

It is therefore an object of the invention to provide a carton specifically adapted to the shipment of books and like articles which is formed of a single blank of fiberboard adapted to be readily erected and when erected to have corner reinforcements as well as rectangular tubular side walls held rigidly in place to thereby insure that impact will be resisted and the contents protected during shipment.

It is another object of the invention to provide such a fiberboard carton which is readily folded into an intermediate form on high-speed machinery, erected by high-speed machinery and filled and closed also by such high-speed machinery.

It is another object of the invention to provide such a fiberboard carton in which rigidity is imparted to the side wall structures by virtue of gusseted reinforcements which join the end walls to portions of the tubular side walls.

Other objects and features of the invention will become

apparent when the following description is considered in connection with the annexed drawings in which:

FIG. 1 is a top plan view of a blank for the box of my invention, showing particularly the shape of the blank as well as the location of score lines thereon.

FIG. 2 is a fragmentary perspective view showing the mode of folding one quarter of the symmetrical blank into condition for shipment of the blank to the point of use.

FIG. 3 is a view similar to FIG. 2, but showing the blank in the process of erection.

FIG. 4 is a perspective view of the structure of FIG. 3 showing it in a slightly advanced stage of the erection procedure.

FIG. 5 is a side elevational view of the portion of the box shown in FIGS. 2, 3, and 4, the erection procedure having proceeded to a somewhat more advanced stage.

FIG. 6 is a side elevational view of the box portion of FIG. 5, when the closing thereof has been completed, and;

FIG. 7 is a vertical cross-sectional view taken on the plane of line 7—7 of FIG. 6 illustrating the position of the parts when the box is fully erected and closed. For the sake of clarity, no contents have been shown although of course such contents would have been inserted before closure of the box.

Referring now to FIG. 1, the box blank consists of a base **10** which has panels joined thereto at all four sides thereof, these panels being separated from one another by means of score lines designated as S, the score lines generally appearing in pairs.

At the left-hand side, base **10** has adjacent thereto the panel **20** which when the box is finally folded will form one of the side walls thereof. Adjacent panel **20** and separated therefrom by the score lines S is a panel **21** which when the box is fully folded will form part of the cover of the box. In like manner, at the right-hand side of base **10** are the side panel **30** and cover panel **31**, which are also integral with the blank, the panels being defined by score lines S.

At the top of base panel **10** as seen in FIG. 1, are four panels **40**, **41**, **42** and **43**, which panels, when the carton is erected, form the four sides of a rectangular tubular end wall. Similarly, at the bottom of the base panel **10** are the four panels **50**, **51**, **52** and **53** which form the opposite tubular end wall.

The cover panels **21** and **31** have extensions **23***a*, **23***b*, **33***a*, and **33***b*, respectively, which extensions are folded back over and glued to the respective panels **21** and **31** to form reinforcements for these panels.

Side panels **20** and **30** and end wall panels **40** and **50** have respective unitary extensions **60**, **61**, **62** and **63**. These unitary extensions are formed of side panel extensions designated **22***a*, **22***b* and **32***a*, **32***b*, which are separated from the extensions **23** and **33** by cuts along the lines designated C and end wall panel extensions **40***a*, **40***b* and **50***a*, **50***b*, respectively.

In like manner, end wall panels **42**, **43** and **52**, **53** are provided with unitary extensions **64**, **65**, **66** and **67**. These unitary extensions are divided by score lines into portions **42***a*, **43***a*, **43***a'*; **42***b*, **43***b*, **43***b'*; **52***a*, **53***a*, **53***a'* and **52***b*, **53***b*, **53***b'*, respectively.

As seen in FIG. 2, the box blank of FIG. 1 is folded into an intermediate form for shipment to the point of use. During the folding of the blank of FIG. 1 to the

form of FIG. 2, the face surface of extensions 23*a* and 23*b* of panel 21 and the face of extensions 33*a* and 33*b* of panel 31 are coated with glue. Also, the undersurface of panels 43 and 53 are coated with glue, as is the undersurface of each of the portions 43*a*, 43*b*, 53*a* and 53*b* of unitary extensions 64, 65, 66 and 67. Folding is then effected so that the outer edges of panels 43 and 53 lie along the iner edges of panes 40 and 50, respectively. Also, the outer edges of portions 43*a*, 43*b*, 53*a* and 53*b* lie along the upper and lower edges of panels 21 and 31, respectively.

In FIG. 2, only the elements appearing in the lower left-hand corner of FIG. 1 are illustrated since the box blank and box are symmetrical and therefore this showing fully discloses the construction.

Referring now to FIG. 3, it will be observed that this figure shows a portion of the box of FIG. 2 when that box has been partially erected. More particularly, it shows the condition when the end wall portions have been moved into a position in which they are in a rectangular tubular formation with the panels 50 and 52 extending at right angles to the base 10.

As the tubular end walls are erected to the condition shown in FIG. 3, the unitary extensions 62 and 66 (comprising respectively portions 50*a*, 22*b*, and 53*a*, 53*a'*, 52*a*) are also erected so they extend at right angles to the panel, it being observed that extension 53*a* is fixed to panel 20.

As the erection proceeds further as illustrated in FIG. 4 and particularly as side panel 20 becomes slightly inclined, the extension 62 and 66 break along the score lines S, the portions 50*a* and 52*a* pivoting about their points of connection with panels 50 and 52 while at the same time the portions 22*b* and 53*a'* pivot about their connection with panel 20 and portion 53*a*.

As the side wall is further raised, this pivoting action continues as does the folding along the score lines joining the respective portions of the extensions 64 and 65, until the box is fully erected and the portions 50*a*, 22*b* and 52*a*, 53*a'* lie adjacent each other and the fold therebetween is at substantially a 180° angle.

Either at this time or prior thereto, a book or like object may be placed within the box with the spine preferably lying along one of the side wall panels 20, 30. The cover extensions 21 and 31 are then folded over to lie flat against the upper panel 41, 51 of the tubular end walls. The cover extensions may be glued in place or may be caused to lie in their flat position by virtue of a tape extending from one to the other along the mating edges.

As will be realized when the drawings are considered, particularly FIGS. 4 through 7, any inward pressure against the vertical members such as 50 and 52 of the tubular end walls will be resisted not only by the inherent strength of the tubular structure, but in addition and more importantly, by the folded unitary extensions or tabs 62 and 66 which, since they are fastened to the panel 20, resist any inward pressure brought upon the side walls 50 and 52 and cause those walls to remain in their intended vertical position.

In some instances it may be desirable to simplify the structure by omitting the outer unitary extensions or tabs such as 62 and replacing them with simpler rectangular members or extensions which are joined to side panel 20 and free of panel 50 and overlie the extension such as 53*a*. Although this slightly diminishes the strength of the box in that the means for resisting inward pressure on the side wall 50 is no longer provided, this diminution is not as great as might be expected, since when the wall 52 is held in its erect vertical position, it inherently holds the wall 51 in a like position, that is, since two sides of the rectangle are maintained in a fixed position the other two sides have a greater tendency to likewise stay in fixed positions. As indicated however, in the preferred form, both the tabs 62 and 66 are provided and thus yield an extremely rigid structure which in addition to the rigidity mentioned, also provides by virtue of the tabs 62, protection for the corners of a book or other like object fitted within the box.

It is of course understood that the construction at the other three corners includes like unitary extensions 60, 64; 61, 65 and 63, 67, which serve to provide rigidity of structure at the remaining three corners of the box.

While I have described a preferred embodiment of my invention, it will be understood that modifications such as the one discussed above and others may be made without departing from the novel concept; I therefore wish to be limited not by the above specification, which was given solely for the purpose of description, but on the contrary, solely by the claims granted to me.

What is claimed is:

1. A container of the type described, comprising a rectangular enclosure of fibrous material having parallel top and bottom walls, rectangular tubular end walls placed at an opposite pair of edges of said bottom wall, a pair of planar side walls at the remaining pair of edges of said bottom wall overlapping the ends of said tubular walls, and a substantially unitary extension of each end of at least one side of each said rectangular tubular end walls, and a substantially unitary extension of said unitary extensions being folded to lie against said planar walls at the ends of said rectangular tubular walls to thereby support said sides of said tubular walls and resist impact and pressure thereupon.

2. In the combination of claim 1, a substantially unitary extension at each end of each of the sides of each said tubular end wall.

3. In the combination of claim 2, extensions at each end of each said planar side wall, said extensions being folded back against said planar walls and fixed thereto, said extensions overlying the ends of said tubular side walls.

4. In the combination of claim 1, said substantially unitary extensions comprising a first portion extending outwardly from the base of the corresponding tubular end wall and fixed to the adjacent planar wall, a second portion joined to said first portion along a fold line, said first and second portions lying along said planar wall, and a third portion joined to said first portion along a fold line and joined to the inner side of said rectangular tubular wall along the fold line, said third portion overlying said second portion, said second and third portions extending inwardly from said side of rectangular tubular wall.

5. In the combination of claim 1, said substantially unitary extensions comprising, a first portion fixed to the outer side of said rectangular tubular end wall along a fold line and lying adjacent said planar wall and a second portion joined to said first portion along a fold line and to the end of said planar side wall along a second fold line.

6. In the combination of claim 2, one of said substantially unitary extensions comprising, a first portion extending outwardly from the base of the corresponding tubular end wall and fixed to the adjacent planar wall, a second portion joined to said first portion along a fold line, said first and second portions lying along said planar wall, a third portion joined to said first portion along a fold line and joined to the inner side of said rectangular tubular wall along a fold line, said third portion overlying said second portion, said second and third portions extending inwardly from said side of said tubular wall, and the second of said substantially unitary extensions comprising a first portion fixed to the outer side of said rectangular tubular end wall along a fold line and lying against said planar wall, and a second portion joined to said first portion along a fold line and to the end of said planar side wall along a second fold line.

7. In the combination of claim 4, the fold line between said first and second extension portions extending perpendicular to the container bottom wall, the fold

line between said second and third portions extending at a 45° angle to the container bottom wall and the fold line between said third portion and said inner side of the rectangular end wall extending perpendicular to the container bottom wall adjacent said first fold line.

8. In the container of claim 5, the fold line between said first portion and said outer side of said tubular end wall, extending perpendicular to said container bottom wall, the fold line between first and second portions extending at a 45° angle to said container bottom and to top walls, and said fold line between said cover and said second portion extending perpendicular to said container bottom wall adjacent said first fold line.

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DAVIS T. MOORHEAD, *Primary Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,386,641 June 4, 1968

Benjamin Cassidy

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

Column 3, line 8, "iner" should read -- inner --. Column 4, line 24, "walls, and a substantially unitary extension of" should read -- wall, and of the adjacent planar side wall, --.

Signed and sealed this 16th day of December 1969.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents