Nov. 8, 1966 H. V. BOLDING 3,283,950

PARTITIONED PAPERBOARD BOX MEANS

Filed March 30, 1965

2 Sheets-Sheet 1

FIG. 1

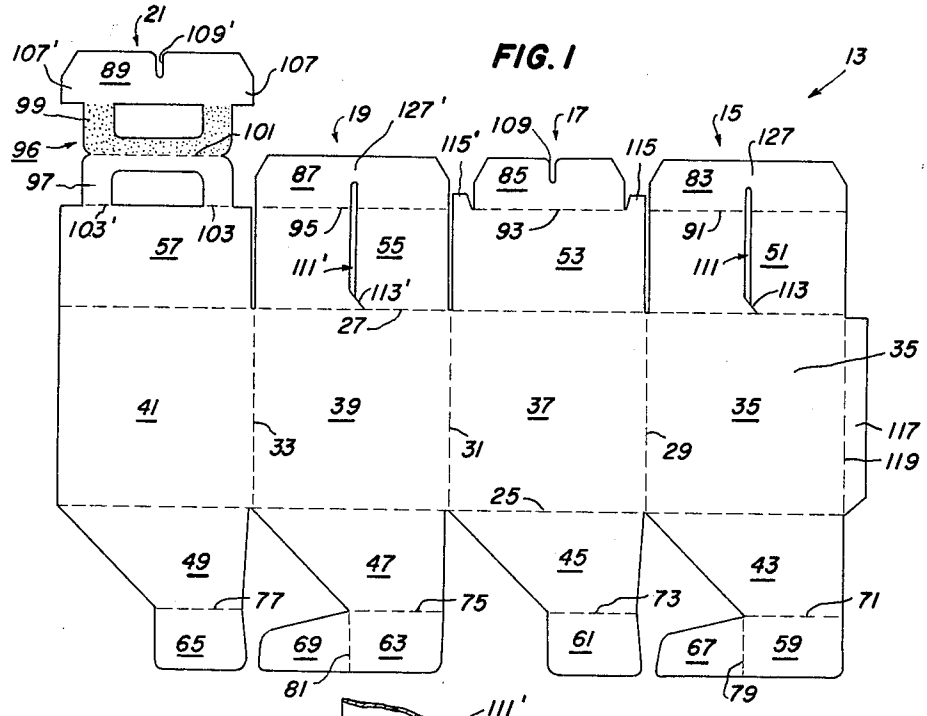


FIG. 2

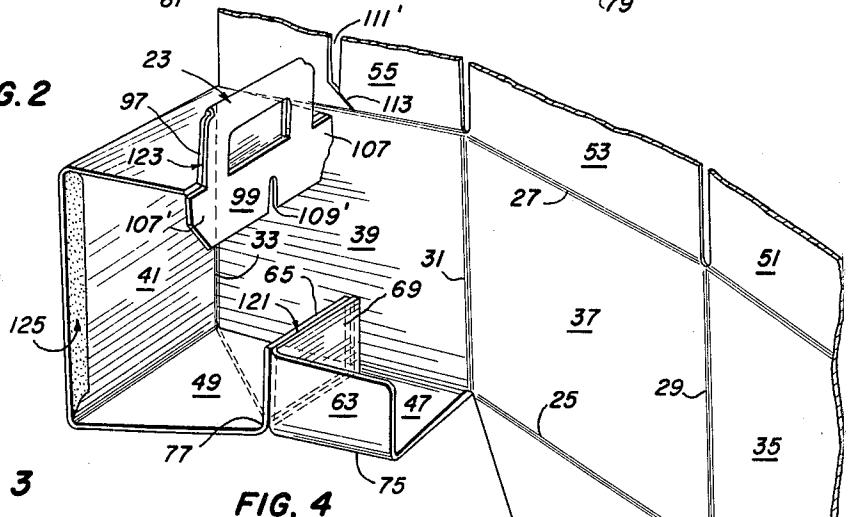


FIG. 3

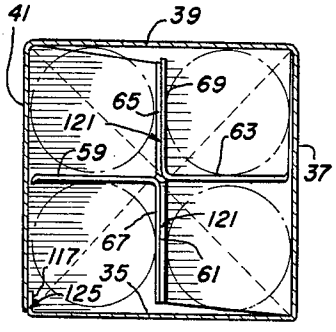
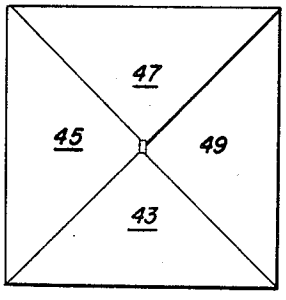


FIG. 4



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PARTITIONED PAPERBOARD BOX MEANS

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FIG. 5

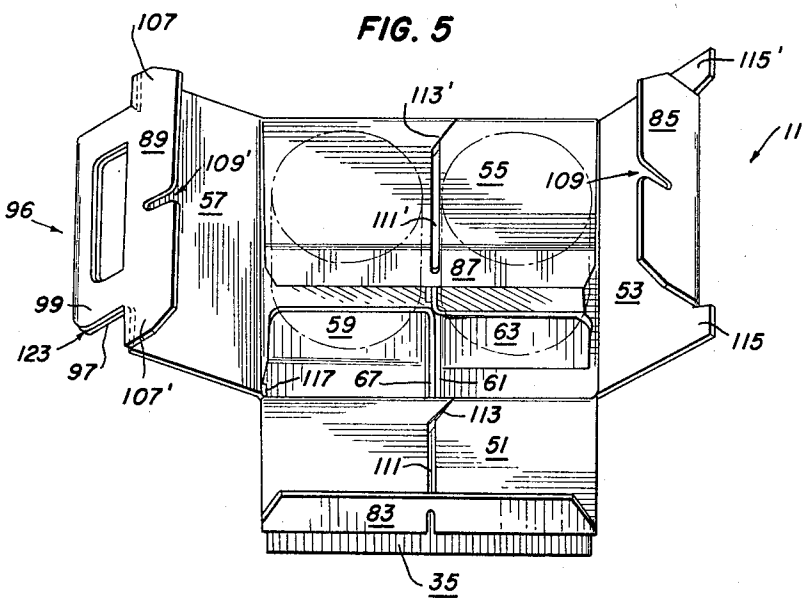


FIG. 6

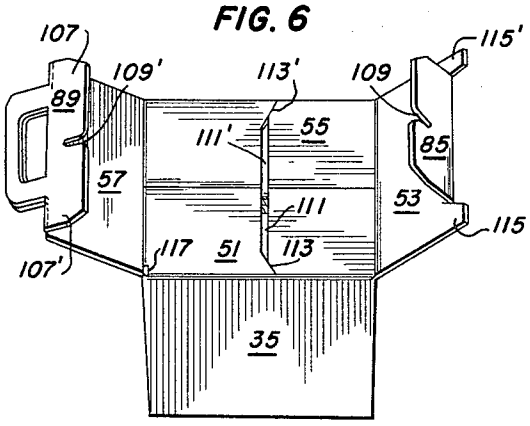
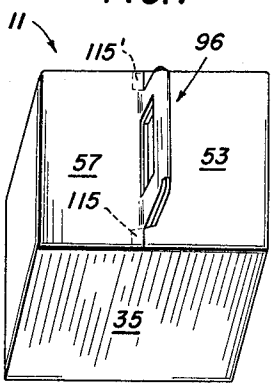


FIG. 7



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PARTITIONED PAPERBOARD BOX MEANS

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Filed Mar. 30, 1965, Ser. No. 443,967
13 Claims. (Cl. 220—115)

This invention relates to a partitioned box formed from a single piece of paperboard or from a flat paperboard blank.

It is an object of the present invention to provide box means particularly suited for storing or carrying cylindrical containers or items.

A further object is to provide box means particularly suited for carrying four upstanding cylindrical items arranged in a square configuration in the box.

A further object is to provide a flat paperboard blank which is quickly and easily erectable into the box having lockable top closure panels.

A further object is to provide a box means having a carrying handle.

A further object is to provide box means having separate upper and lower partitioning panel means formed respectively from the top and bottom portions of the box.

A further object is to provide a box means having a pair of inner top closure panels and a pair of outer top closure panels.

A further object is generally to improve the design and construction of a paperboard box means.

The means by which the foregoing and other objects of the present invention are accomplished and the manner of their accomplishment will readily be understood from the following specification upon reference to the accompanying drawings, in which:

FIG. 1 is a view of the preferred configuration of the paperboard blank of the present invention.

FIG. 2 is a perspective view of a portion of the box blank shown partially erected.

FIG. 3 is a horizontal sectional view of the bottom interior of the box.

FIG. 4 is a view of the bottom exterior thereof.

FIG. 5 is a top perspective view of a fully erected box with one panel of the inner pair of top closure panels being shown closed over two items contained in the box, with the items being shown in broken lines.

FIG. 6 is a view similar to FIG. 5 with both panels of the inner pair of top panels being in a closed disposition.

FIG. 7 is a view with the outer pair of top panels locked over the inner pair of panels and the box in a closed or packaged form.

Referring now to the drawings in which the various parts are indicated by numerals, box **11**, as shown in FIGS. 5, 6 and 7, is formed from a somewhat rectangular flat blank **13** of paperboard or similar sheet material. Blank **13** includes basically four sections **15**, **17**, **19** and **21**, as best seen in FIG. 1. Longitudinally and transversely extending fold lines demarcate various portions of blank **13**. A first substantially continuous fold line **25** and a second fold line **27** extend respectively substantially the length of blank **13**. Transversely extending fold lines **29**, **31** and **33** extend respectively between fold lines **25**, **27** and define sections **15**, **17**, **19** and **21** of the blank. Each of the four sections includes side, bottom, and top portions which form, respectively, the side, bottom and top panel elements of the box. Side portions **35**, **37**, **39** and **41** of the respective blank sections are demarcated by fold lines **25**, **27** and by transversely extending fold lines **29**, **31** and **33**. Bottom portions **43**, **45**, **47** and **49** extend outwardly from first fold line **25** and

respectively from side portions **35**, **37**, **39** and **41**. Top portions **51**, **53**, **55** and **57** extend outwardly from second fold line **27** and respectively from side portions **35**, **37**, **39** and **41**. Box **11** is shown as being cube-shaped with a square base and a height equal to the base length of a side; however, the design of the box is such that the height may be varied to correspond to the height of the item to be packaged.

Included respectively in bottom portions **43**, **45**, **47** and **49** are bottom partition portions **59**, **61**, **63** and **65**, and bottom portions **43**, **47** include respectively bottom partition extension portions **67**, **69**. Fold lines **71**, **73**, **75** and **77** and fold lines **79** and **81** demarcate the various portions of bottom portions **43**, **45**, **47** and **49**. It will be noted that the distances respectively between fold lines **71**, **73**, **75** and **77** and first fold line **25** are equal and that this distance is one-half the distance of the base length of a side of the box, that is, one-half the width of a side of the box.

The top partition portions respectively of sections **15**, **17**, **19** and **21** respectively include top partition portions **83**, **85**, **87** and **89**. Fold lines **91**, **93** and **95** integrally secure respectively top partition portions **83**, **85** and **87** to the main body of top portions **51**, **53**, **55**. Top partition portion **89** is secured to handle portion **96** which, in turn, is secured to top portion **57**. Fold lines **91**, **93** and **95** are disposed respectively a distance from fold line **27** which is substantially equal to one-half the base length of a side of the box.

Handle portion **96** includes alike and U-shaped half portions including an inner half portion **97** and an outer half portion **99**. Half portions **97**, **99** are secured along a medianly disposed fold line **101** with the respective leg portions extending oppositely. Inner half portion **97** is integrally secured along respective fold lines **103** and **103'** at the respective base of each leg to top portion **57**. Top partition portion **89** is joined at the respective base of each leg of outer half portion **99** of handle portion **96**. Oppositely extending ear portions **107**, **107'** are included in top partition portion **89**.

Recesses **109**, **109'** are disposed respectively in top partition portions **85**, **89**. Recesses **109**, **109'** are medianly disposed and extend transversely inward from the marginal edges respectively of top partition portions **85**, **89**. Slots **111**, **111'** extend transversely and substantially bisect respectively top partition portions **51**, **55**. Slots **111**, **111'** respectively intersect fold lines **91**, **95** and extend substantially half the width of respective top partition portions **83**, **87**. Slots **111**, **111'** preferably terminate respectively at the inward ends thereof a short distance from second fold line **27**. Obliquely extending slits **113**, **113'** extend respectively between the inward ends of slots **111**, **111'** and second fold line **27**. Two outwardly extending tab portions **115**, **115'** are integrally secured to top portion **53** of section **17** of the blank. A flap **117** is secured to side portion **35** along a fold line **119** extending substantially between first fold line **25** and second fold line **27**.

Four adhesive bindings preferably secure the erected box; two bindings **121** respectively are in the lower area of the box for securing the bottom partition portions of the blank; a binding **123** is provided for laminatingly securing the handle; and a binding **125** is provided for joining the opposite ends of blank **13** and for joining flap **117** of section **15** to the edge of side portion **41** of section **21**.

In erecting the box, the necessary folds are made along the respective fold lines. The various panels joined by a respective fold line are all subsequently in right-angular relationship in the erected box except for handle half portions **97**, **99** which are in parallel abutting relationship.

The folds are all made along the respective fold lines of the blank toward the subsequent inside of the box.

Handle **96** is formed by double-folding handle half portions **97**, **99** and securing these portions with glue or other such adhesive material. The two bindings **121** in the lower portion of the folded box blank are formed respectively by laminatingly securing bottom partition extension **67** of section **15** with bottom partition **61** of section **17**, as by glue or the like, and by laminatingly securing partition extension **69** of section **19** with partition portion **65** of section **21**, as by glue or the like.

In erecting the box, side portions **35**, **37** are right-angularly folded along fold line **29**, and side portions **39**, **41** are right-angularly folded along fold line **33**. The box in this stage of erection is substantially in two parts, joined along fold line **31** and including a first part of sections **15** and **17** and a second part of sections **19** and **21**. To complete the erection of the box, the two parts are interlocked at the bottom portions thereof, and side portions **35**, **41** are right-angularly joined by binding **125**. Binding flap **117** is right-angularly formed along fold line **119** and is laminatingly secured along the inside surface of said portion **41**.

In the erected box, four upstanding partitioning panels are formed in the lower area of the box, as best seen in FIG. 3. The four partitioning panels include respectively a pair of oppositely disposed single-thickness partitioning panels and a pair of oppositely disposed double-thickness partitioning panels. The pair of single-thickness panels are formed respectively from bottom partition portions **59** and **63**. The double-thickness partitioning panels are formed respectively by laminatingly joining bottom partition extension portion **67** to bottom partition portion **61** and by joining bottom partition extension **69** and bottom partition portion **65**.

It may be desirable in certain applications to delete the bottom extension portions **67**, **69** from the box blank, or to eliminate bindings **125**. It may also be desirable to employ contact or pressure type adhesive means to the respective surfaces to be joined, so that the box may be readily erected at the place of use. It may also be desirable in certain applications to fasten the respective parts at bindings **121**, **123** and **125** with wire staples or the like. It may further be desirable to eliminate binding flap **117** and substitute therefor binding tape for joining side portions **35** and **41**.

In packing or closing the erected box, the four cylindrical items are placed in the four square partitioned-off areas (FIG. 3). The top portions **51**, **55** of sections **15**, **19** are folded over the items, forming an inner pair of top closure panels (FIG. 6). The top portions **53**, **57** of sections **17**, **21** are then folded over the inner pair of closure panels, forming an outer pair of closure panels (FIG. 7) and completing the closure of the box.

Referring to FIG. 6, it will be noted that slots **111**, **111'** respectively of the inner pair of top closure panels align to form a continuous slot. It will further be noted that the top partition portions respectively of the pair of top portions are abuttingly parallel and depend downwardly between the items contained in the box. The top partition portions **85**, **89** of the outer pair of closure panels are in parallel abutting relationship and extending through the continuous slot formed by slots **111**, **111'**. Recesses **109**, **109'** of the top partition portions **85**, **89** straddle respectively portions **127**, **127'** of extension portions **83**, **87** of the inner pair of top portions. The partition portions **83**, **87** and **85**, **89** of the closed box form double-thickness right-angular X-shaped partitioning means for separating the items contained. In closing the box, the oppositely disposed ear portions **107**, **107'** are urged respectively through the obliquely extending slits **113**, **113'**. Urging ear portions **107**, **107'** past slots **111**, **111'** securely closes or locks the box. As the outer pair of closure panels are folded inwardly together, tab portions **115**, **115'** are inserted underneath the respective oppositely disposed corner edge portions of top portion **57**, and as the box is locked by ear portions **107**, **107'**, the tab portions **115**, **115'** provide additional means for securely closing the box.

Although the present invention has been described and illustrated with reference to a preferred embodiment, it is to be understood that it is not to be so limited since changes and modifications may be made therein which are within the full intended scope of this invention as hereinafter claimed.

I claim:

1. Box means for forming an erected paperboard box comprising a somewhat rectangular flat blank of paperboard or similar material; said blank being in four sections including a first, second, third and fourth section, and with each section including a side portion, a bottom portion and a top portion; fold lines extending transversely and demarcating said blank into said four sections, a first substantially continuous fold line extending longitudinally the length of said blank, a second substantially continuous fold line parallel with and spaced from said first fold line and extending longitudinally the length of said blank, said first and said second fold lines substantially intersecting said transversely extending fold lines of said blank at right angles and demarcating side portions for each of said four sections, marginal edges respectively of said bottom portion of each of said sections extending respectively from said first fold line and defining substantially opposing edges of said bottom portion of each of said sections, each said bottom portion being independently foldable along said first fold line of said blank, marginal edges respectively of said top portion of each of said sections extending from said second fold line and defining substantially opposing edges of said top portion of each of said sections, each said top portion being independently foldable along said second fold line of said blank, a bottom partition portion included in said bottom portion being joined to a respective bottom portion along a fold line extending parallel to said first fold line of said blank; first, second and third top partition portions included in and joined respectively to said top portions of said first, second and third sections along respective fold lines extending parallel to said second fold line of said blank; a handle portion of two alike and joined U-shaped half portions including an inner half portion and an outer half portion, said half portions being integrally joined along a medianly disposed fold line with the leg portions of the respective half portions extending oppositely, said inner half portion being integrally joined along a fold line at the respective base of each leg of said inner half portion to said top portion of said fourth section, a fourth top partition portion joined at the respective base of each leg of said outer half portion of said handle portion, said fourth top partition portion having oppositely extending ear portions aligned respectively longitudinally with said blank; each of said first, second, third and fourth top partition portions having a marginal edge extending substantially parallel to said second fold line; two recesses extending transversely of said blank and respectively from said marginal edges of said second and said fourth top partition portions, two slots extending transversely of said blank and substantially bisecting respectively said first and said third top partitions portions with each of said slots having a terminus spaced a short distance from said second fold line of said blank, two narrow slits extending obliquely of said blank and intersecting respectively the terminus of each slot of said first and said third top partition portions, and means for binding said first and said fourth side portions together in right-angular relationship in forming the erected box.

2. The box means of claim **1** which additionally includes means for binding said first and said second bottom partition portions together in right-angular relationship, and means for binding said third and said fourth bottom partition portions together in right-angular relationship in forming the erected box.

3. The box means of claim 1 which additionally includes adhesive means for binding said handle half portions of said blank together in forming the erected box.

4. The box means of claim 1 which additionally includes in said blank two lock tab portions extending outwardly, joined to said second top portion, and disposed respectively adjacent opposite portions of said second top partition portion.

5. The box means of claim 1 in which said means for binding said first and said fourth side portions together in right-angular relationship in the erection of the box includes a binding flap integrally secured to said first side portion along a fold line extending substantially between said first and said second fold lines and adhesive means for laminatingly joining said flap to said fourth side portion.

6. The box means for forming an erected paperboard box comprising a somewhat rectangular flat blank of paperboard or similar sheet material; said blank being in four sections and including a first, second, third and fourth section, and with each section including a side portion, a bottom portion, and a top portion; fold lines extending transversely and demarcating said blank into said fourth section, a first substantially continuous fold line extending longitudinally the length of said blank, a second substantially continuous fold line parallel with and spaced from said first fold line and extending longitudinally the length of said blank, said first and second fold lines substantially intersecting said transversely extending fold lines of said blank at right angles and demarcating side portions for each of said four sections, marginal edges respectively of said bottom portion of each said section extending respectively from said first fold line and defining substantially opposing edges of said bottom portion of each said section, each said bottom portion being independently foldable along said first fold line of said blank, marginal edges respectively of said top portion of each said section extending from said second fold line and defining substantially opposing edges of said top portion of each said section, each said top portion being independently foldable along said second fold line of said blank, a bottom partition portion included in said bottom portion of each of said four sections, each said bottom partition portion being joined to a respective bottom portion along a fold line extending parallel to said first fold line of said blank, a bottom partition extension portion joined respectively to said bottom partition portion of said first and said third sections and along respective fold lines extending transversely of said blank; first, second and third partition portions included in and joined respectively to said top portions of said first, second and third sections along respective fold lines extending parallel to said second fold line of said blank, a handle portion of two alike and joined U-shaped half portions including an inner half portion and an outer half portion, said half portions being integrally joined along a medianly disposed fold line with the leg portions of the respective half portions extending oppositely, said inner half portion being integrally joined along a fold line at the respective base of each leg of said inner half portion to said top portion of said fourth section, a fourth top partition portion joined at the respective base of each leg of said outer half portion of said handle portion, said fourth top partition portion having opposite extending ear portions aligned respectively longitudinally with said blank; each of said first, second, third and fourth top partition portions having a marginal edge extending substantially parallel to said second fold line, two recesses extending transversely of said blank and respectively from said marginal edges of said second and said fourth top partition portions, two slots extending transversely of said blank and substantially bisecting respectively said first and said third top portions, each of said slots having a terminus spaced a short distance from said second fold line of said blank, and means for binding said first and said fourth side portions together in right-angular relationship in forming the erected box.

7. The box means of claim 6 which additionally includes adhesive means for laminatingly joining said bottom partition extension portion of said third section to said bottom partition portion of said fourth section and for joining said bottom partition extension portion of said first section to said bottom partition portion of said second portion, and which also includes adhesive means for laminatingly binding said handle half portions together.

8. The box means of claim 7 in which said means for binding said first and said fourth side portions together in right-angular relationship includes a binding flap integrally secured to said first side portion along a fold line extending substantially between said first and said second fold lines, and adhesive means for laminatingly joining said flap to said fourth side portion.

9. The box means of claim 6 which additionally includes in said blank two lock tab portions extending outwardly and joined to said second top portion and disposed respectively adjacent opposite portions of said second top partition portion.

10. A paperboard box erected from a single blank of paperboard material comprising four vertically disposed side panel portions arranged in a substantially square configuration, four bottom panel portions disposed respectively horizontally and integrally secured respectively to said four side panel portions, four upstanding partitioning panel means integrally secured respectively to said bottom panel portions, said four partitioning panel means being arranged radially and respectively in right-angular X-shaped configuration, said four partitioning panel means partitioning the lower area of said box into four substantially equal areas, four top panel portions of said box integrally secured respectively to said four side panel portions, said four top panel portions each including a top partition portion and one of said top panel portions including a handle portion, said four top panel portions of said box being arranged in opposing pairs of top portions including a first pair of top portions having respectively a slot formed in each portion and a second pair of top portions having respectively a recess formed in each said top portion, each of said first pair of top portions having a lock slit intersecting respectively said recess of each of said second pair of top portions, said top partition portion of said top panel portion including said handle portion also including a pair of oppositely disposed lock ear portions; the erected paperboard box being adapted to be closed by infolding said first pair of top portions together to form a continuous slot of the two slotted top portions, then infolding said second pair of top portions over the top of said first pair of top portions, and then completing the closure of the erected box by engaging respectively the pair of lock ear portions with said first pair of top portions.

11. The erected box of claim 10 in which said four partitioning panel means in the lower area of the box include respectively a pair of oppositely disposed single-thickness partitioning panels and a pair of oppositely disposed double-thickness partitioning panels.

12. The erected box of claim 11 which includes respectively a pair of oppositely disposed lock tab portions formed on one portion of said second pair of top portions, said pair of lock tab portions being adapted to underlie oppositely disposed portions of said top portion including said handle portion.

13. A packaged combination of a box and four cylindrical items, said four items being disposed upstandingly and substantially in square configuration; said box being formed from a single paperboard blank and including four vertically disposed side panel portions arranged in substantially square configuration and enclosing horizontally said four cylindrical items, four bottom panel portions of said blank integrally secured respectively to said four side panel portions and supporting said four

items, four upstanding partitioning panel means integrally secured respectively to said four bottom panel portions, said four partitioning panel means being arranged radially and in right-angular X-shaped configuration and disposed respectively between adjacent items of said four items, four top panel portions of said box integrally secured respectively to said four side panel portions and covering said four cylindrical items, said four top panel portions each including a top partition portion and one said top panel portion including a handle portion, said four top panel portions being arranged in two opposing pairs of top portions with a first pair of portions overlying and engaging the respective top ends of said four items and a second pair of top portions overlying said first pair of top portions, said top partition portions of said first pair of top portions being in parallel abutting engagement, said top partition portions of said second pair of top portions being in parallel abutting engagement, said first and second pairs of top partition portions being arranged in X-shape configuration and depending respectively from said four top panel portions and forming double-thickness partitioning means respectively between adjacent items of said four items.

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