United States Patent

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[54] BOX STRUCTURE CONVERTIBLE INTO AN EASEL

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[52] U.S. Cl. ..... 206/45.21, 229/33, 229/52 B

[51] Int. Cl. B65d 5/52

[58] Field of Search ..... 206/45.21, 45.24–45.27; 229/33, 36, 52 B, 16 D

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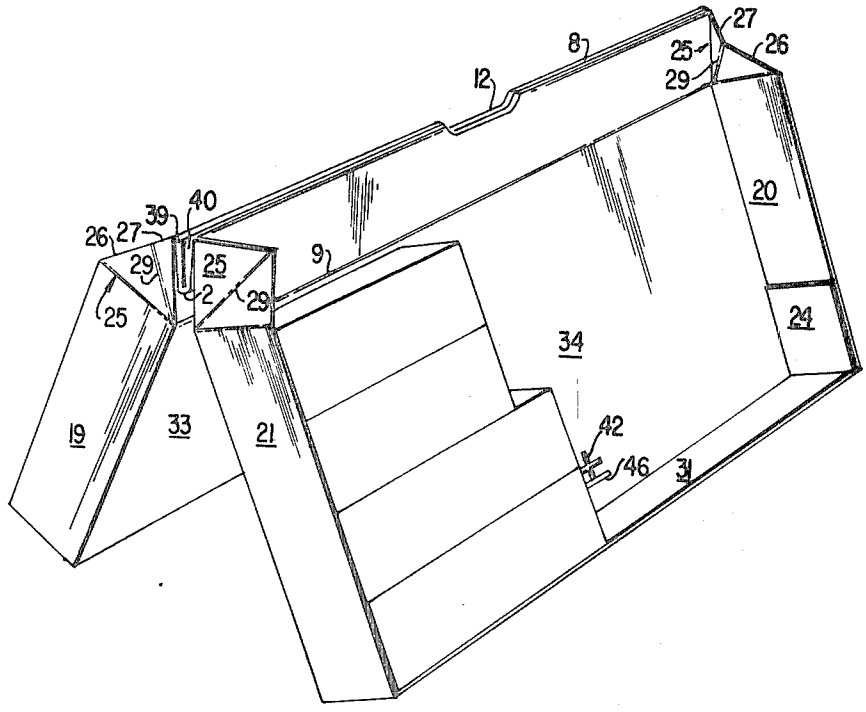
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[57] ABSTRACT

The invention comprises a box in which educational blocks, puzzles, artist material or the like, may be packaged. The box is formed of two nearly symmetrical open halves folded along a center score line in the flat blank from which the box halves are formed. Additional score lines parallel to the fold score line provide hinge lines whereby the two open halves may telescope, to thereby utilize one half as a cover for the other half, or both halves may abut at their open faces to provide a box of maximum volume. The halves may be folded back to a position, wherein an easel or display structure is formed. Securing means are provided to secure the two halves in the easel-forming position. A preferred form of securing means comprises slots in the easel surfaces of the box and a plastic flexible member having rigid transverse rod members at the ends, the rods being dimensioned to fit through the slots, and upon a 90° rotation to engage the easel surfaces and prevent collapse of the same.

11 Claims, 7 Drawing Figures



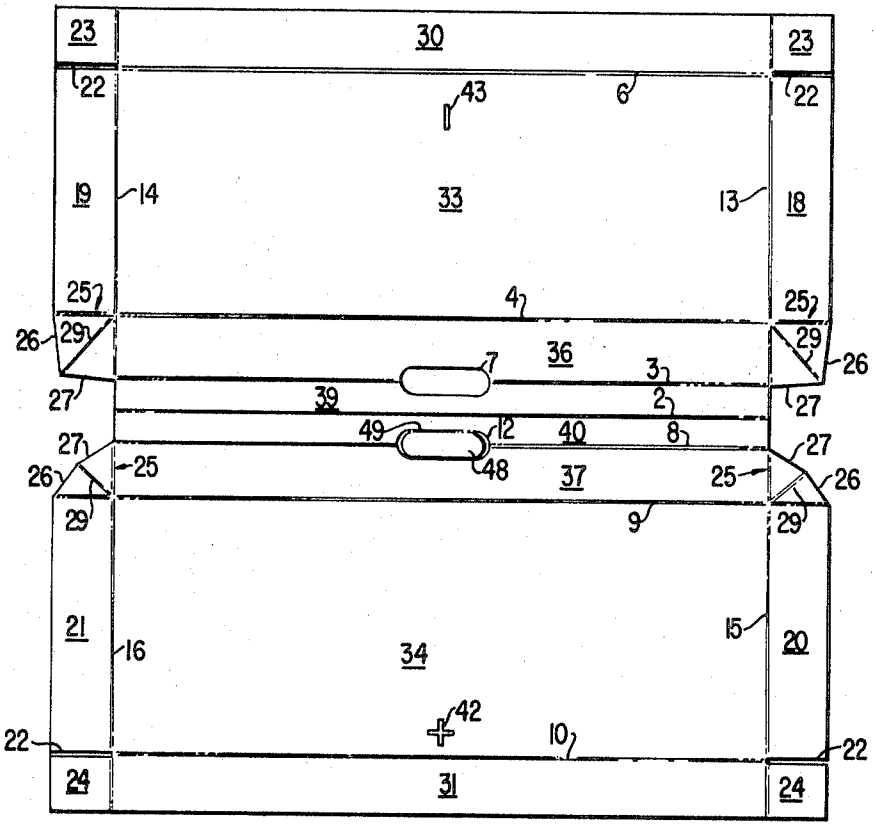


FIG. 1

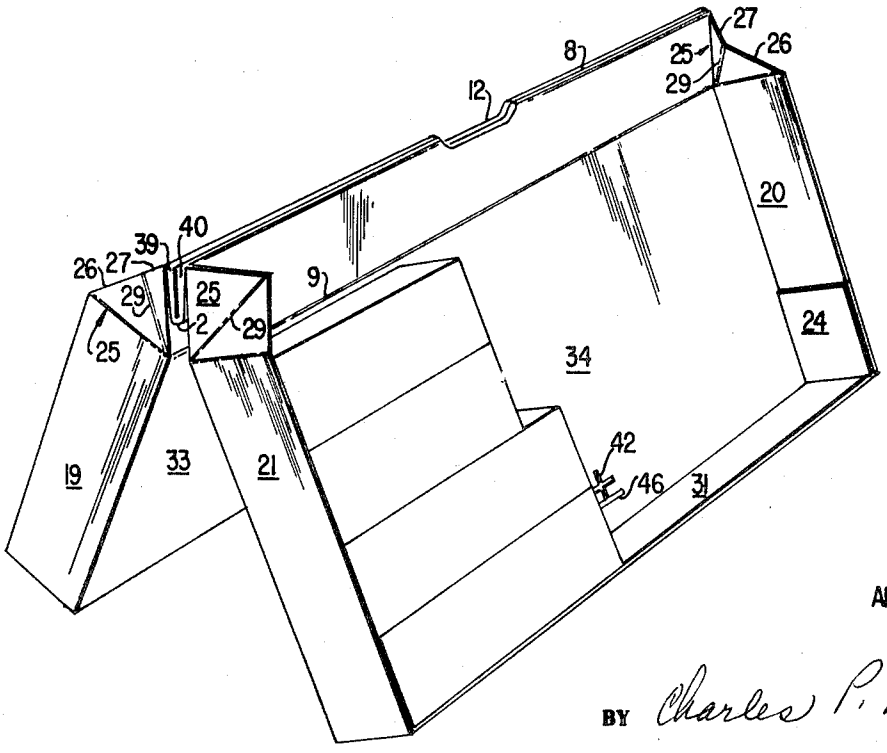


FIG. 4

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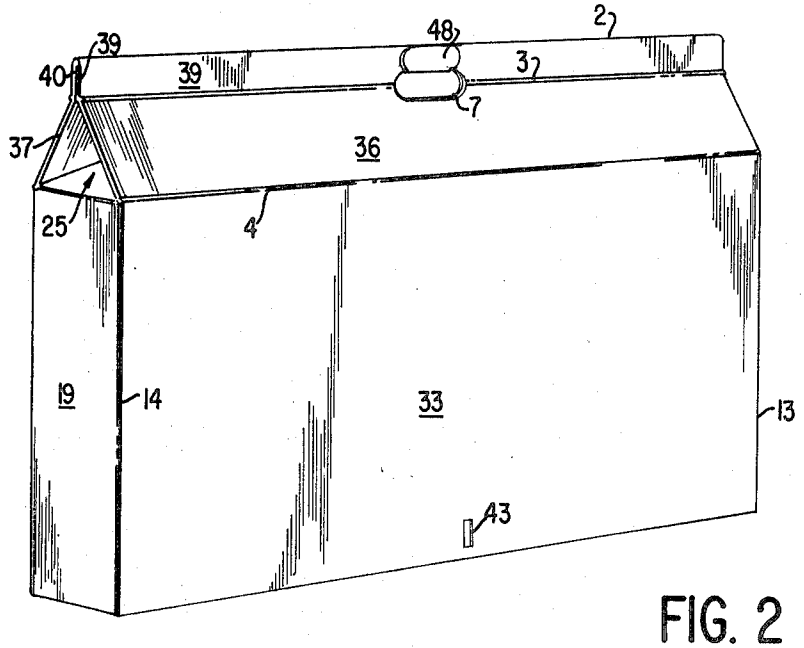


FIG. 2

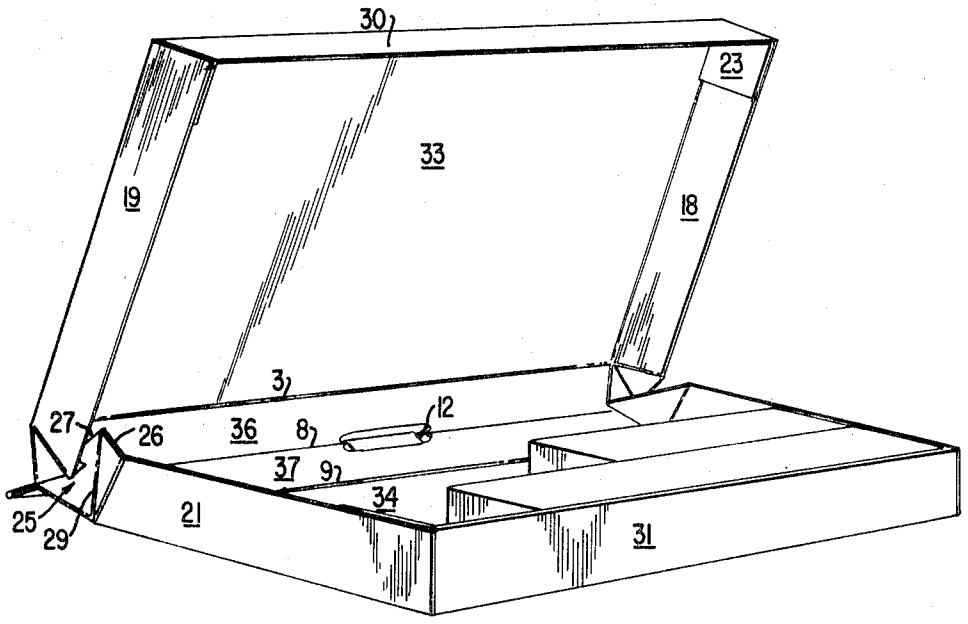


FIG. 3

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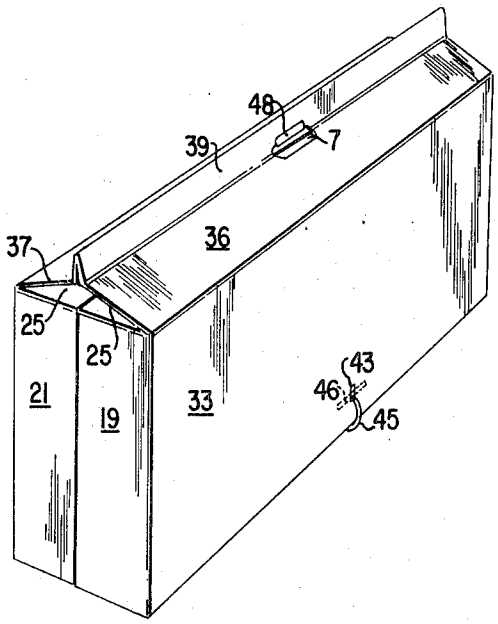


FIG. 5

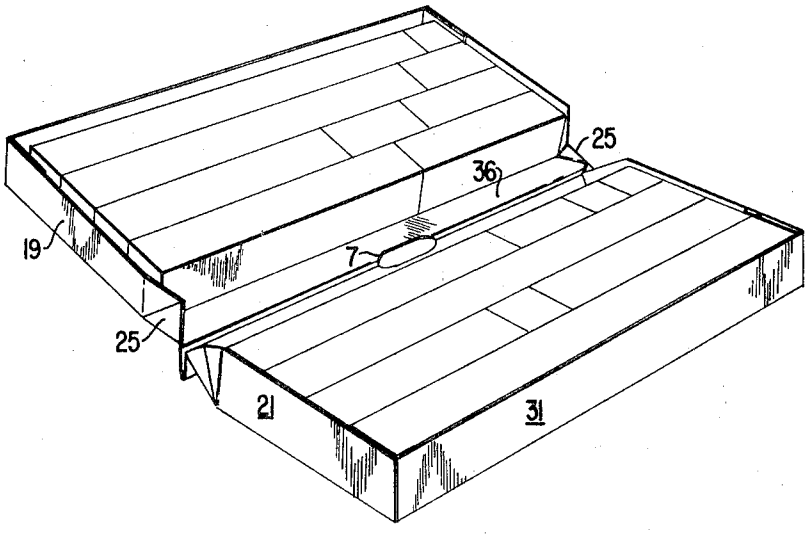


FIG. 6

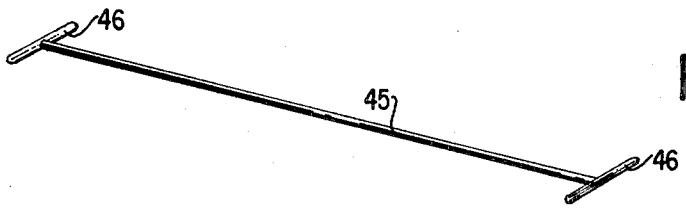


FIG. 7

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BOX STRUCTURE CONVERTIBLE INTO AN EASEL

This invention relates to boxes for packaging and storing merchandise and which may be converted to an easel of similar structure.

An object of this invention is to provide a box comprising two open box formations made from a single blank and folded along a score line in the blank whereby the two box formations may be brought face to form a completely closed box variable volume. The blank is provided with handhold openings cut symmetrically adjacent the fold line, whereby a handle formation is formed when the box formations are folded toward each other to form a closed box.

Another object is to provide a box arrangement as set forth above, but convertible to an easel structure when the box formations are folded backwardly along certain score lines to form an easel.

A further object is to provide easily applied securing means to the box formations to maintain the box formations in their easel-forming position. Further, the same securing arrangement may be applied to the box formations to maintain them in the position wherein they form the closed box.

Further objects and advantages will be apparent from the following description and accompanying drawings, wherein:

FIG. 1 is a top view of the flat blank,

FIG. 2 is a perspective front view of the erected box with the box halves illustrated in the telescopic position;

FIG. 3 is a perspective top view of the erected box in an open position, with the upper half serving as a cover;

FIG. 4 is a perspective view of the erected box illustrated in the position wherein it is converted to an easel;

FIG. 5 is a perspective front view of the erected box wherein it is in the position of maximum volume;

FIG. 6 is a perspective view of the box wherein both halves are filled and the box is fully open; and

FIG. 7 is a perspective view of the securing means for holding the box in its easel formation and for holding the box in its easel formation and for holding the box closed when it is fully expanded.

Referring to FIG. 1, blank 1 comprises a flat sheet of paper broad of suitable weight and finish. The blank is provided with a score line 2 which acts as a fold line for the two halves of the box. Score line 2 divides the blank into two almost symmetrical halves. One half may be somewhat larger so that it acts as the cover into which the smaller half telescopes when such closure is desired.

Parallel to score line 2, other score lines 3, 4 and 6 are provided in the upper part o the blank. Midway of score line 3, a handhold opening 7 is formed. Similar score lines 8, 9 and 10 are provided for the bottom part of the blank, with handhold opening 12 provided in score line 8. Vertical score lines 13, 14, 15 and 16 extend from the score lines 3 and 8 outwardly to the edges of the blank, and defined sides 18, 19, 20 and 21, respectively, with the corresponding outer vertical edges of the blank.

Slots 22 are formed in the sides in alignment with score lines 6 and 10, the slots defining end flaps 23 for sides 18 and 19 an end flaps 24 for sides 20 and 21.

Portions of the blank are cut to provide a space between the inner ends of sides 18 and 20 and of sides 19 and 21, at the spaced being bounded by the extensions of score lines 3, 8, 13, and 15, and 3, 8, 14 and 16. As illustrated in FIG. 1, score lines 4 and 9 extend across the sides to define with the inner end of vertical score lines 13, 14, 15 and 16 folding portions 25. The vertical edges 26 and the horizontal edges 27 of portions 25 are inwardly angularly inclined whereby a portion 25 assumes a trapezoidal shaped. A score line 29 runs through each portion 25, the score line extending from the intersection of the score lines defining the portions to the apex formed by edges 26 and 27.

The configuration of the space in the blank between t he adjacent folding portions 25 and along edges 26 may be die cut with a single die or formed in any conventional manner well known in the art.

Score lines 6 and 10 define with the horizontal outre edges of the blank edges 30 and 31, respectively. Score lines 4, 6, 13 and 14 define a box and easel panel 33 and score lines 9, 10, 15 and 16 define a second box an easel panel 34.

To erect the box, the blank is folded in selected directions along horizontal score lines 2, 3, 4, 6, 8, 9 and 10 and along vertical score lines 13, 14, 15 and 16. Then the sides and ends are brought to the position wherein they are perpendicular to panels 33 and 4 and form open box formations. Flaps 23 and 24 are folded at right angles to their respective ends and secured to their adjacent sides by any conventional manner, such as by adhesive bonding to stapling. Preferably the flaps are located within the box formations as illustrated in FIGS. 3 and 4.

Thereafter blank 1 is folded along score line 2 and along hinge lines 2 and 8. This action brings cutouts 7 and 12 into alignment to form a handhold; portions 39 and 40 being brought together and secured by gluing, stapling or of the means to form a double thickness for the handle means, as illustrated in FIGS. 2 and 5.

After the sides are erected or after the handle means are folded, portions 25 may be folded inwardly along score lines 29. This action brings portions 36 and 37 of he blank to an angular position with respect to panels 33 ad 34 and with respect to handle portions 39 and 40, as illustrated in FIGS. 2 and 5. Portions 36 and 37 act as hinged connecting means to join panels 33 and 34 to handle portions 39 and 40.

The box is primarily used to package such items as educational blocks, puzzles, art supplies and similar type merchandise which require working and storage space and an easel-type working surface. In view of fold line 2 and hinge lines 3 and 8, the box may be converted to an easel, as illustrated in FIG. 4. The box when functioning as a container or package means contains the merchandise, which is illustrated as blocks of varying unit lengths of to represent numbers, a illustrated in GIGS. 3 and 6. One half of the box ma serve as a cover. The cover may comprise panel 33 and its sides 18 and 19 and end 30, which are so dimensioned that they form an open box formation which telescopes over and covers the other half or box formation, comprising pane 34 and its sides an cover. The closed condition to the box is shown in FIG. 3.

To convert the box into an easel, the halves of the box are folded back along hinge lines 3 and 8 into the easel configuration illustrated fIG. 4. To retain and secure the parts in the easel position, the following securing means is utilized. A cruciform slot 42 is provided in panel 34 and a straight slot 43 is provided in panel 33. Although slot 43 is shown as a straight slot, it may have the cruciform shape of slot 42. A flexible securing means comprising a flexible cordlike member 45 and two end rods 46 is utilized to retain the box in its easel configuration. Means 45 and 46 may be made of suitable plastic. The rods 46 are dimensioned to enter and pass through slots 42 and 43. The securing means 45–46 may be placed in their easel maintaining position by rotating it so that one rod is at right angles to slot 43 and then positioning the part of cord 45 adjacent the other rod within end of an arm of the cruciform slot, as illustrated in FIG. 4. If desired, both slots may be straight slots and both rods would be passed therethrough and then turned 90° to hold the rods in easel-securing positions.

After the easel is erected, one part, represented by panel 34, may be the working surface on which the blocks are organized and manipulated to carry out the educational procedure, such as, to add numbers or spell words. End 31 serves as a support for the blocks. It will be understood that the box when the so erected may serve as a display surface. The other or back portion of the easel may be used for the same purposes or as a storage place for the blocks or other material to be used.

At times, ti may be desirable to use the full or maximum capacity of the box. This condition is illustrated in FIGS. 5 and 6. FIG. 6 shows the box open and both halves or box formations filled with educational blocks. FIG. 5 illustrates the box closed with the double layer of blocks therein. It should be noted that in FIG. 5, the box halves or box formations do not

telescope, as in FIG. 2, but their open faces are in abutting relationship along the edges. Folding portions 25 are more fully folded inwardly in FIG. 5, it is preferably to secure the flexible core 45 to slots 42 a 43 and run it outside and along the bottom of the box. The core will hold the box halves closed and may also serve as an optional handle means.

If desired, handhold 12 may be formed with a flap 48 supported along a double score line 49. Thus, flap 48 may be folded along score line 49, inserted through handhold openings 12 and 7, an then folded against the surface of portion 39 above opening 7 to provide a smooth handle surface covering the rough edges of the openings 12 and 7 in portions 39 and 40, when the box is closed, as illustrated in FIGS. 2 and 5.

While a preferred embodiment of the invention has been disclosed for purposes of illustration, it will be evident that various changes and modifications may be made therein without departing from the scope and spirit of the invention.

What is claimed is:

1. A convertible box comprising two open box formations secured to each other along a fold line, each box formation comprising a panel and two sides and an end secured thereto, said end being remote from the fold line, each panel having score lines parallel to said fold line, said score lines defining a connecting portion opposite the end and a handle portion between said fold line and said connecting portion, a handhold opening formed in each handle portion, said handhold openings being aligned for coincidence when the handle portions are folded along said fold line and secured to form a common handhold, said box formations being foldable along the score lines between the connecting and handle portions in a first direction to positions wherein one box formation variably telescopes within the other box formation, and foldable in an opposite direction wherein the panels are brought back-to-back to form an easel structure in which a panel forms a work surface and the end forms the support surface.

2. A convertible box as claimed in claim 1, wherein the box formations are formed from a single flat sheet with the fold line being in the center of the sheet and the box formations being substantially identical.

3. A convertible box as claimed in claim 2, wherein the sheet is formed with score lines to provide folding portions, each portion connecting the inner edge of a side to the adjacent edge of a connecting portion in all positions of the connecting means relative to the sides.

4. A convertible box as claimed in claim 3, wherein each folding portion is formed by a score line transverse a side and a score line extending across the connecting portion adjacent said side, each folding portion having a diagonal score line to permit the infolding of the folding portion to thereby form a movable closure means between an end of a side and the end of its adjacent connecting means.

5. A convertible box as claimed in claim 1, wherein securing means are provided to maintain the box formations in their easel position.

6. A convertible box as claimed in claim 5, wherein said securing means comprise a slot formation in each panel and a flexible member having rigid elements at each end, each element dimensioned to pass through its slot formation in one position and be held in the slot by rotation to another position.

7. A convertible box as claimed in claim 5, wherein one slot formation is of cruciform shape.

8. A flat blank to be erected into a box which can be converted into an easel comprising a flat sheet having: a first horizontal score line intermediate the horizontal edges of said blank to act as a fold line; spaced second, third and fourth horizontal score lines above and parallel to said first score line; spaced fifth, sixth and seventh horizontal score lines below and parallel to said first score line; and vertical score lines extending from said second and fifth score lines to the horizontal edges of the sheet, said sheet having cutouts extending from the vertical score lines between the second and fifth horizontal score lines to the corresponding vertical edges of the sheet; said sheet being further provided with slots in alignment with the ends of the fourth and seventh score lines and extending from the vertical score lines to the vertical edges, and with diagonal score lines extending from the intersections of the vertical score lines with the third and sixth horizontal score lines toward the cutouts; said sheet further having aligned handhold openings intersecting the second and fifth horizontal score lines substantially at their center portions.

9. A flat blank as claimed in claim 8, wherein said first score line is substantially at the center of the sheet and the score lines are substantially symmetrically located relatively thereto.

10. A flat blank as claimed in claim 8, wherein a slot is formed in the sheet between the third and the fourth and between the sixth and seventh horizontal score lines and within the vertical score lines.

11. A flat blank as claimed in claim 8, wherein a flap supported by a double score line is formed in the sheet within a handhold opening.

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