United States Patent

Durham

[15] **3,640,445**

[45] **Feb. 8, 1972**

[54] PARTITION DIVIDER

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[73] Assignee: **Container Corporation of America**, Chicago, Ill.

[22] Filed: **Sept. 22, 1969**

[21] Appl. No.: **859,955**

[52] **U.S. Cl.** **229/15**, 217/30, 229/42

[51] **Int. Cl.** **B65d 25/04**, B65d 5/48

[58] **Field of Search** ..... 229/42, 15, 14, 14 C; 217/30, 217/31, 32

[56] **References Cited**

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2,830,749	4/1958	Lauritzen	229/42 X

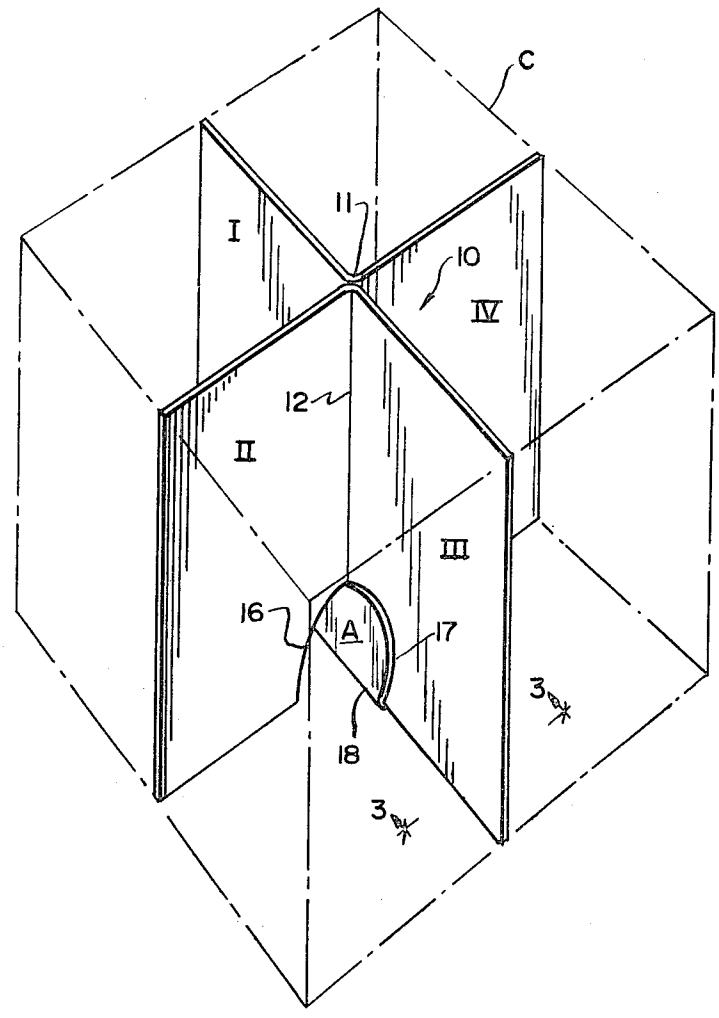
Primary Examiner—Leonard Summer

Attorney—Carpenter, Ostis and Lindberg

[57] **ABSTRACT**

A partition structure for dividing a receptacle into a plurality of separate compartments. The structure is formed from a cut and scored blank having a pair of interrupted foldlines extending along a common axis and a pair of interrupted slits extending laterally thereof to divide the blank into four quadrants defining partition members. A slit connects each of the aforementioned slits with a correlative one of the foldlines to define an area in the blank at the midportions thereof. Diagonally disposed quadrants are folded about the interrupted foldlines to a position normal to the plane of the remaining quadrants, and are rotatable into position about a foldline extending along an axis coextensive with an axis passing through the laterally extending interrupted slits in sliding contact with each other to define a cruciform. By reason of the configuration of the area at the midportion of the blank, the rotatable quadrants are locked into position so as to maintain the structural integrity of the cruciform.

2 Claims, 16 Drawing Figures



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SHEET 1 OF 4

FIG. 1

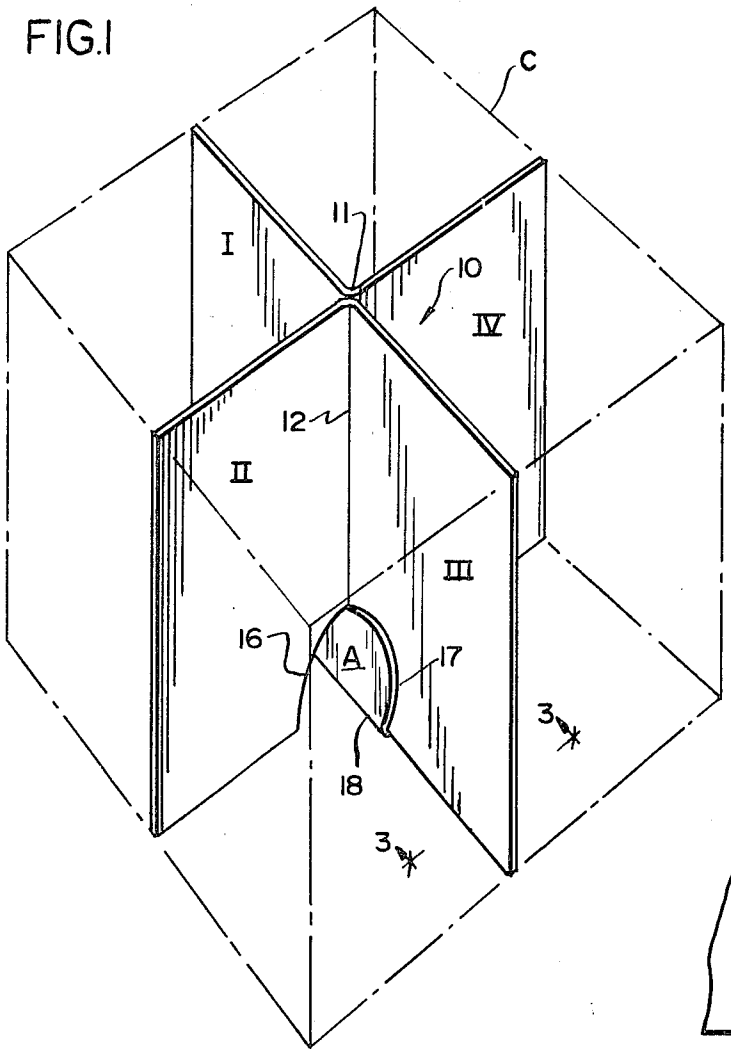


FIG. 4

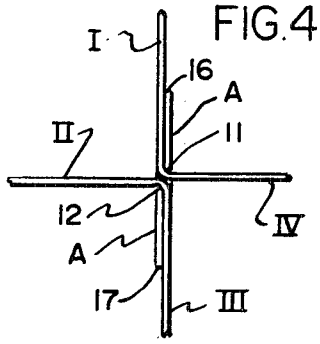


FIG. 3

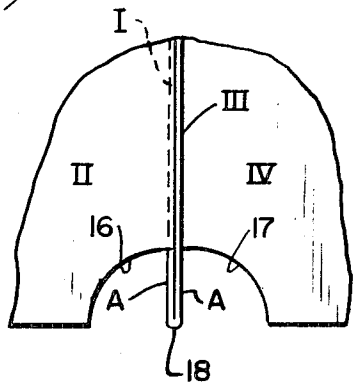
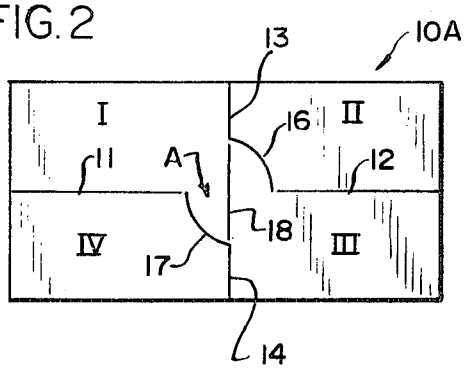


FIG. 2



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FIG. 5

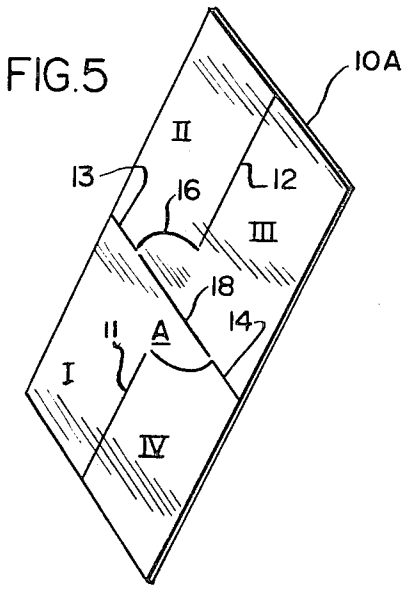


FIG. 8

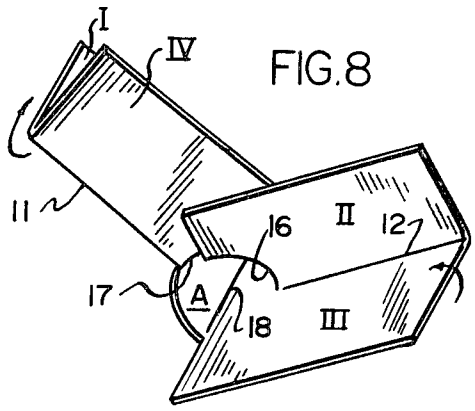


FIG. 6

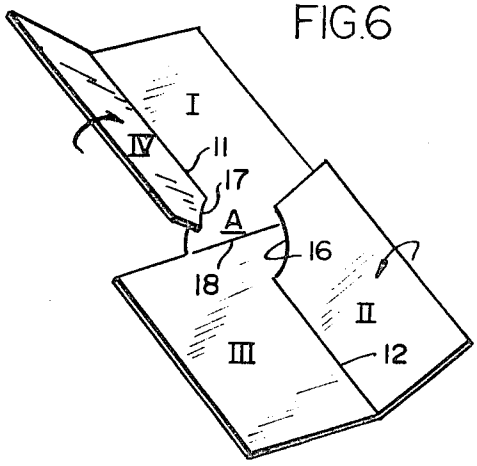


FIG. 9

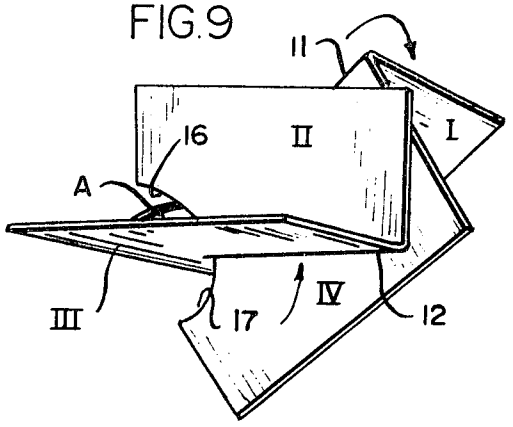


FIG. 10

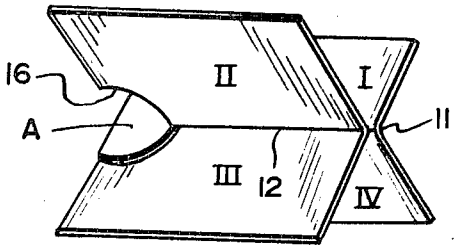
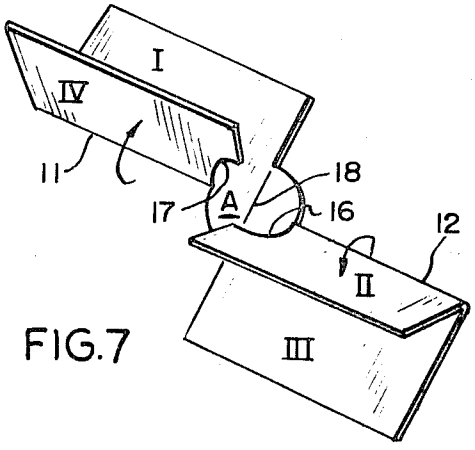


FIG. 7



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FIG. 11

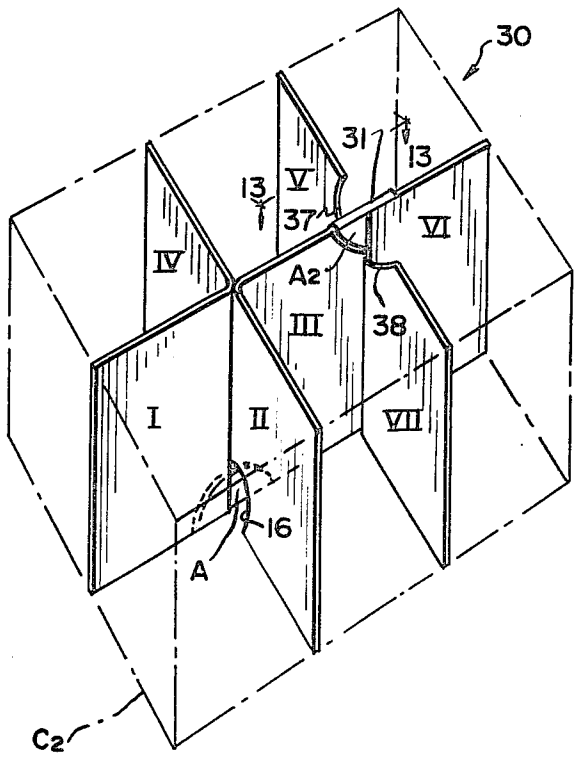


FIG. 13

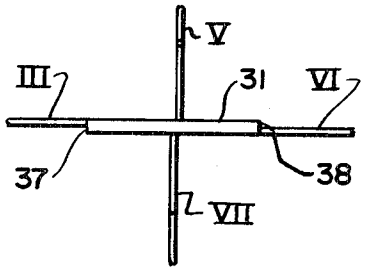
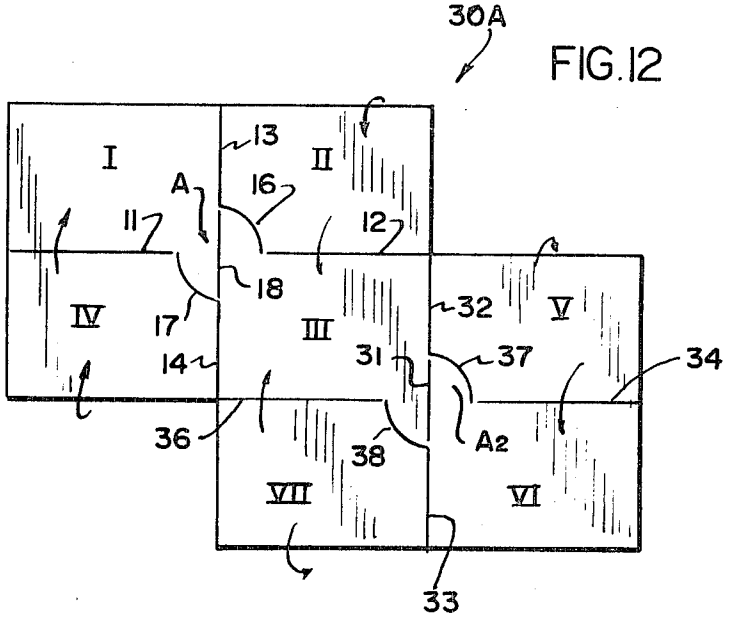


FIG. 12



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FIG. 14

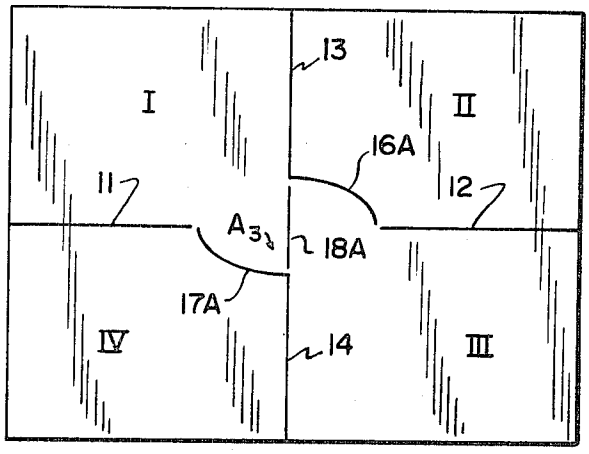


FIG. 15

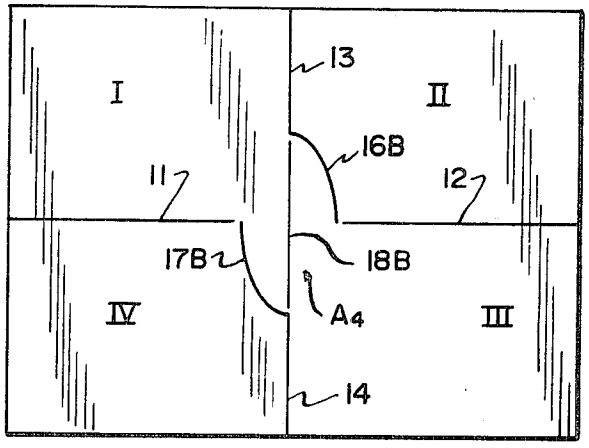
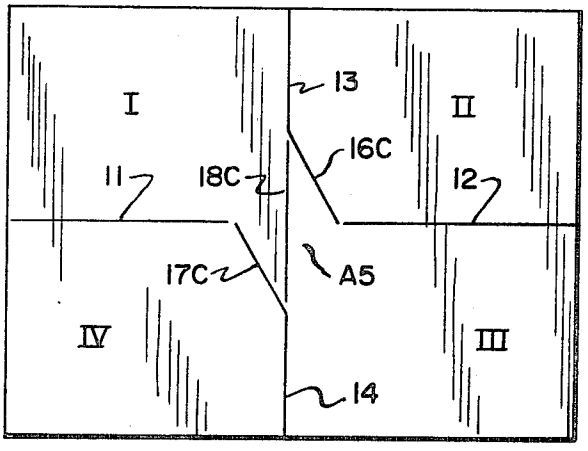


FIG. 16



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PARTITION DIVIDER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a partition structure for dividing a container or receptacle into a plurality of compartments, generally four in number. The invention finds particular application in the shipment of gallon size paint containers, or the like, these being customarily shipped in container containing four 1-gallon cans.

2. The Prior Art

The structure according to the present invention constitutes an improvement over that shown in Lauritzen U.S. Pat. No. 2,830,749 which discloses a partition divider formed from a unitary cut and scored blank which is folded to a position to form a structure generally in the shape of a cruciform. However, it is not possible in the Lauritzen structure to maintain the structural integrity of the cruciform by reason of the fact that the partition elements are not locked into position after the forming operation.

SUMMARY OF THE INVENTION

The present invention overcomes the disadvantages of the prior art and provides a one piece partition structure comprised of divider elements formed from a unitary cut and scored blank of paper or the like, said blank being adapted to be folded into a cruciform, the divider elements thereof being locked into position as a result of a simple folding operation.

DRAWINGS

FIG. 1 is a perspective view showing a partition structure according to the present invention shown in situ in a container for the purpose of dividing same into four compartments;

FIG. 2 is a plan view of a cut and scored blank for forming the partition structure seen in FIG. 1;

FIG. 3 is a detailed elevation view looking in the direction of the arrows 3—3 of FIG. 1;

FIG. 4 is a fragmentary detail plan view;

FIG. 5 is a perspective of the cut and scored blank seen in FIG. 2;

FIG. 6 is a view similar to FIG. 5, and showing one of the quadrants of the blank of FIG. 5 being folded to a position normal to an adjacent quadrant of the blank;

FIG. 7 is a view similar to FIG. 6, showing another step in the movement of the quadrant to the normal position;

FIG. 8 is a view showing the erected quadrant elements being rotated with respect to each other in their separate planes to erect the partition structure;

FIG. 9 is a view similar to FIG. 8, showing a further step in the rotation of the now side by side quadrants;

FIG. 10 is a perspective view showing the partition structure in its erected position;

FIG. 11 is a perspective view showing another form of partition structure;

FIG. 12 is a plan view of a cut and scored blank for forming the structure seen in FIG. 10;

FIG. 13 is a detailed fragmentary view of the structure seen in FIG. 10;

FIG. 14 is a plan view of a cut and scored blank having many elements of similarity to the cut and scored blank seen in FIG. 2, and capable of being folded to form a partition structure according to the invention;

FIG. 15 is a plan view of a cut and scored blank similar to the one seen in FIG. 2, and also capable of forming a partition structure according to the invention; and

FIG. 16 is a plan view of a cut and scored blank somewhat similar to the one seen in FIG. 2, and capable of forming a partition structure, but under conditions where the folding thereof causes interference between elements of the cut and scored blank.

One form of the partition structure according to the present invention is seen in FIG. 1 and is referred to by the reference numeral 10. It is adapted to be inserted into a carton C shown in phantom outline, and it is formed from a cut and scored blank 10A. The latter includes a fold line 11 extending in alignment with a similar fold line 12, the two fold lines 11 and 12 being interrupted by a midportion area A in the cut and scored blank 10A for a reason as will appear.

Laterally extending slits 13 and 14 extend normally to the fold lines 11 and 12 and are in alignment with a fold line 18. A curved slit line 16 extends from the inner end of laterally extending slit 13 to the inner end of fold line 12. In the same fashion, a curved slit 17 extends from the inner end of laterally extending slit 14 to the inner end of fold line 11, both of the curved slit lines 16 and 17 lying on the loci of points defining a circle having a center on the fold line 18 and on the imaginary line connecting fold lines 11 and 12.

The cut and scored blank 10A is thus divided into four quadrants: I, II, III and IV. As seen with respect to FIGS. 5 to 10 especially, quadrant IV is adapted to be folded about the score line 11 with respect to quadrant I, as is also quadrant II adapted to be folded about fold line 12 with respect to quadrant III. As seen in FIG. 7 particularly, the quadrants II and IV are moved through an angle greater than 90° to allow for the resiliency of the material from which the blank 10A is formed. Thereafter, and as seen in FIGS. 7 and 8 particularly, the quadrants II and IV are rotated about fold line 18 to adopt a cruciform shape as seen in FIG. 10. During such rotation, the quadrants II and IV are in essentially sliding contact along their proximate faces, and in such movement cut line 16 is in contact with the edge of area A. In the same fashion, cut line 17 also is in contact with area A, there being a certain amount of frictional resistance to the rotative movement of the quadrants II and IV, this frictional resistance facilitating the locking of the quadrants I through IV in their cruciform.

Referring now to FIGS. 11 to 13 inclusive, there is shown another form of the invention denoted generally by the reference number 30 and adapted to be placed in a carton C_2 shown in phantom outline. This embodiment of the invention is formed from a cut and scored blank 30A and differs from the form seen in FIGS. 1 and 2 in that extra quadrants are added to the blank seen in FIG. 2, these quadrants being numbered V through VII, inclusive.

Quadrant V is separated from quadrant III by a cut line 32 which is aligned with a cut line 33 separating quadrant VI from quadrant VII. Quadrant V is joined to quadrant VI along a fold line 34 which is aligned with a fold line 36 foldably connecting quadrant III with quadrant VII. A fold line 31 is in alignment with cut lines 32 and 33, and a cut line 37 connects the inner end of cut line 32 with the inner end of fold line 34. In like fashion, a cut line 38 connects the inner end of cut line 33 with the inner end of the interrupted score line 36, both cut lines 37 and 38 being preferably on the loci of points defining a circle having a center located at the intersection of fold line 31 with an imaginary line connecting the fold lines 34 and 36.

The partition structure 30 shown in FIG. 11 is formed in a similar manner to the partition structure seen in FIG. 1, and the blank 30A is marked with arrows indicating the direction of the rotative movement of the respective quadrants I through VII. A first cruciform is formed by the steps described with reference to FIGS. 1 to 10, and thereafter quadrant V is rotated with respect to quadrant VI in the direction as indicated by the arrow shown on quadrants V and VI. Quadrant VII is then rotated with respect to quadrant III as indicated by the arrow on quadrants III and VII to form a second cruciform. In the formation of the second cruciform, the fold line 31 will be at the top thereof as seen in FIGS. 11 and 13.

Referring now to FIGS. 14 and 15, there is shown a cut and scored blank having many points of similarity to that seen in FIG. 2. The center of the blank seen in FIG. 14 has an area A_3 in the shape of an ellipse having its major axis lying along a line connecting score lines 11 and 12, and a minor axis extending along a line 18A connecting cut lines 13 and 14. When quadrants IV and II are folded through an angle of 90° with respect to quadrants I and III, and then rotated in planar contact along fold line 18A with respect to each other, there will

naturally result frictional contact at the edge of quadrant II defined by cut line 13 and the area A_3. In the same fashion, there will be frictional contact with the edge of the quadrant IV defined by the cut line 14 with respect to the other edge of the elliptical area A_3.

However, if quadrants II and IV are folded through 180° into contact respectively with quadrants I and III, and blank of FIG. 14 is rotated 180° along line 13 and 14 place fold lines 11 and 12 in contact, the divider may then be erected by turning quadrants II and IV through 90° to assume the form of FIG. 1.

Referring now to FIG. 15, there is shown a cut and scored blank identical to that seen in FIG. 14, and having many points of similarity to the form shown in FIG. 2, excepting for the fact that the area A_4 thereof has its major axis lying along a fold line 18B which is aligned with cut lines 13 and 14. When quadrants IV and II are folded with respect to their respective quadrants I and III, the periphery of area A_4 does not interfere with the operation when the quadrants II and IV are rotated about fold line 18B. Contact is had only when the blank is folded to the cruciform, at which time the curved cut line 16B contacts area A_4. In similar fashion, the cut line 17B contacts area A_4 only towards conclusion of the forming operation resulting in the cruciform.

As with the embodiment seen with respect to FIGS. 1 and 2, there is a certain amount of frictional engagement with the area A_4 which locks the cruciform.

Referring now to FIG. 16, there is shown a cut and scored blank having many points of similarity to those previously described. However, the blank of FIG. 16 is characterized by a central geometrical area A_5 in the form of a regular shaped quadrilateral having its major axis extending along a fold line 18C and its minor axis lying on a line connecting the fold lines 11 and 12. When quadrants II and IV are folded with respect to quadrants I and III, and then rotated in planar contact about the fold line 18C, cut line 16C will frictionally engage with the edge of the quadrilateral shaped area A_5 as the blank is moved to the cruciform. In like fashion, cut line 17C thereof will also frictionally engage with the edge of the area A_5. Depending upon the dimensions chosen with the quadrilateral shaped area A_5, a certain amount of frictional engagement is desirable, which engagement will assist in the maintenance of the cruciform.

However, if the blank of FIG. 16 is folded by the alternate method of FIG. 14 as previously described, the blank of FIG. 16 may also be erected to assume the form of FIG. 1.

I claim:

1. A rigid partition divider formed from a cut and scored blank of paperboard or the like for dividing a receptacle into a plurality of separate compartments, comprising:

a. a plurality of partition members extending laterally of each other and defining said compartments;

b. said partition members being defined by;

i. a pair of fold lines and a pair of first slits extending normal thereto,

ii. an arcuate connecting slit extending from the inner end of each of said first pair of slits to a correlative one of said fold lines near the inner end of said fold lines;

c. a central panel connecting a pair of diagonally disposed of said partition members;

i. said central panel being defined in part by a circle having its loci of points including said arcuate connecting slits;

d. a fold line in said central panel aligned with said pair of first slits;

e. the other pair of said partition members being defined by said first pair of fold lines, said first named slits and said connecting slits;

f. each of said other pair of partition members being foldable with respect to its contiguous partition member and being connected to one of said first pair of diagonally disposed partition members along the said first named fold lines;

g. each of said other pair of partition members being rotated with respect to and past each other in a plane normal to the planes of the first pair of partition members about the fold line in said central panel to a position where the planes of said first pair of partition members have been displaced relative to each other by an angle of approximately 180°;

h. said central panel being concomitantly folded about the fold line therein whereby portions of said central panel are folded through an angle of 90° into facing relationship;

i. said connecting slits being so configured and arranged whereby said other pair of partition members rotate to the aforesaid position, and whereby such rotative movement is free from substantial resistance by said central panel.

2. A partition divider according to claim 1 wherein said rotated partition members have an interference fit with the boundaries of said central panel as defined by said arcuate connecting slits when moved to the cruciform position to maintain said rotated partition members in locked position.

* * * * *