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MULTIPLE COMPARTMENT TRAY

Earl A. Wagonseller, River Forest, Ill., assignor to Container Corporation of America, Chicago, Ill., a corporation of Delaware

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8 Claims. (Cl. 229—42)

The invention herein disclosed relates to packaging and display devices composed of paperboard or other fibrous sheet material and, more particularly, to a multi-partitioned, compartment forming tray element composed of a material such as paperboard, so cut and scored that it may be set up or erected and enclosed within a bag or wrapper as a divider and protective means for bakery goods such as cakes and cookies or other confections or for any commodity for which a device of its nature may be desired.

One of the principal objects of the invention is to provide a compartmented tray which may be composed of paperboard or the like but which is relatively strong and rigid in its construction for employment within a bag or wrapper whereby such commodities as cakes, cookies and various other confections as well as other items may be packaged in segregated arrangement and protected against damage by contact with one another or by externally applied crushing or other forces.

Another object is to provide a compartmented paperboard or the like tray of a construction and arrangement such that it may be made from a single piece or blank of the material, and such that the tray may easily be erected into its final form from the blank phase either by hand operation or by machinery.

Still another object is to provide a compartmented tray of such construction that it may be employed within a relatively transparent wrapper or bag where the material of the bag or wrapper, in itself, would not be self-sustaining nor strong enough to protect the contents of the package but which, in combination with such wrapper or bag, will provide a strong, firm and relatively rigid package to secure and protect the contents against injury by normal handling.

A further object of the invention is to provide a paperboard tray element of simple and economical construction, one easily and economically prepared for use, and one requiring simple manipulation in loading and wrapping or bag inserting operations.

Many other objects as well as advantages and some of the uses of the invention will become apparent after reading the following description and claims and upon viewing the drawings in which:

Fig. 1 is a perspective view of a multiple compartment tray embodying a preferred form of the invention, as the same appears enclosed within a conventional bag of transparent material such as cellophane, certain of the compartments being represented as occupied by commodities indicated by dotted lines;

Fig. 2 is an end elevation of the tray shown in Fig. 1;

Fig. 3 is a side elevation of a portion of the tray of Fig. 1, the view being taken from the position of line 3—3 of Fig. 2 looking in the direction of the arrows;

Fig. 4 is a bottom plan view of a portion of the tray of Fig. 1; and

Fig. 5 is a plan view of the blank from which the tray element of Figs. 1 to 4, inclusive, may be made, the solid lines within the blank perimeter indicating the cuts to be made through the blank and the dotted lines indicating score or crease lines along which folding or hinging of the several parts will be performed in erecting the tray to its condition shown in the other figures of the drawings.

The blank of Fig. 5 preferably will be composed of a fairly stiff paperboard one or both of the surfaces of which may be impregnated with wax or covered with a laminating sheet of waxed paper to prevent the individual

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items of the packaged commodity from sticking to such surfaces. In the illustration of Fig. 2, the paperboard 6 is represented as having a thin sheet 7 of waxed paper covering one surface, the covering sheet 7, for the sake of ease of reference, being shown as peeled away from the surface at corners of parts of the paperboard tray. As will be appreciated, the character and quality and other aspects of the material employed in the blank will depend upon the commodity to be packaged and other desiderata.

It may be assumed, for purposes of description, that the blank is to be employed to form, when erected, a tray having fifteen compartments for fifteen bakery items such as cookies. Accordingly, the rectangular blank of Fig. 5 will be so prepared with partitions that there will be three longitudinal rows of compartments; a center row and a parallel row at each side, with five compartments in each row. As revealed in Fig. 1, the proportions of the tray will be adjusted to conform, as permitted, to the size and shape of the commodity items to be packaged. The bags or wrappers to be disposed about the assembled tray and its contents preferably will be of such size and proportions as to make a relatively snug fit thereabout.

The rectangular tray blank of Fig. 5 is cut and scored, within its marginal edge bounds, in such manner as to provide three major structural or partition forming elements, to wit, a bottom strip generally designated 8, 8' which extends continuously and without break or crease score from one of the blank ends or edges of narrow width to the other midway between the side or longitudinal edges, a pair of longitudinal partition forming strips, generally designated 9 and 9', each of which is formed from one of the longitudinal edge margins and portions of the end margins of the blank, and eight (8) transverse partition forming panels comprising a group of four (4) designated 11 and a second group of four (4) designated 11'. As will be observed from Fig. 5 the several structural parts or elements of the blank are symmetrical with respect to the blank axes represented by the strip designating arrows 8, 8' and 9, 9'.

As stated above in the brief description of Fig. 5, the full lines within the marginal edges of the blank define cuts through the material whether composed of one layer or several thicknesses (laminated) while the dotted or dash lines indicate certain crease scores along which parts are to be folded or hinged.

Extending longitudinally of the blank at predetermined but equal distances from each side of the longitudinal axis are two lines of crease or cut scores, those of one line being designated 12^a, 12^b, 12^c, 12^d and 12^e and those of the other 13^a, 13^b, 13^c, 13^d and 13^e, each score of each line being in alignment with the other scores of that line. The scores 12^a correspond in position, length and function with scores 13^a, and similarly, each of scores 12^b and 12^c correspond, respectively, with scores 13^b and 13^c. These two lines of crease scores provide the hinge or fold lines about which the longitudinal partition strips are to be swung upward in erecting the tray.

Crease or cut scores 14, 14 and 14', 14' parallel to one another and extending at right angles (normal) to and across the lines of scores 12^a, 12^b, etc., and 13^a, 13^b, etc., provide hinge or fold lines about which the panels 11 and 11', respectively, will be swung upward in erecting the tray. In the instant embodiment the scores 14 are at one and the same predetermined distance from the end edges of the blank and each score 14' is at a slightly less distance from the respectively adjacent parallel score 14 than each score 14 is from the adjacent end edge of the blank. The distance between each pair of scores 14', directly across the transverse axis from one another, is the same as that between either of such scores and the adjacent score 14. Accordingly, with the exception of the compartments at the ends of the tray rows, all compartments will be of the same length and those at the row ends will be only slightly larger.

Each of the four end panels 11 is cut free from the blank sheet from one end of its score hinge line 14 to the opposite end, such cut including a straight portion 15 parallel to the longitudinal axis of the blank; two portions 16 and 17 disposed at an obtuse angle to one another

other and between them providing a recess or notch 18 the apex of which occurs on the line of scores 12^a, 12^b, etc., or 13^a, 13^b, etc., as the case may be, a straight portion 19 substantially parallel to the portion 15, and an arcuate portion 21 that forms a concave recess or notch in the panel edge and leaves a convex projection 22 on the adjacent longitudinal partition strip. From the outer end of each score 14 diagonally to the adjacent end of the adjacent score 12^b or 13^b, as the case may be, is a cut 23 which, at its junction with portion 21 provides a notch 24.

A somewhat similar cut separates each panel 11' from the blank from one end of its hinge score 14' to the other end thereof. In this instance the cut has a straight portion 15' in alignment with the portions 15 of panels 11 on the same side of the longitudinal axis of the blank, portions 16' and 17' with a groove or notch 18' at their junction corresponding in every particular to the lines 16 and 17 and groove 18, a straight portion 19' corresponding to and substantially aligned with the straight portion 19, and an arcuate portion 21' providing a projection 22' corresponding, respectively, with arcuate portion 21 and projection 22. A diagonal cut 23' extends from a junction with cut portions 19', 21' at the outer end of score 14' to the adjacent end of score 12^c or 13^c as the case may be.

It will be noted that the cut lines 17' and 23 are spaced from one another throughout their lengths although in the instant embodiment they are not parallel. It should also be noted that the perpendicular distance from each of the cut portions 19 and 19' to the adjacent one of the parallel lines of scores 12^a, 12^b, etc., and 13^a, 13^b, etc., is equal to the perpendicular distance between such lines of scores. The bottoms of notches 16 and 16' are spaced equal distances from the respectively adjacent hinge scores 14 and 14' and the perpendicular distance from each of the line of scores 12^a, 12^b, etc., and 13^a, 13^b, etc., to the respectively adjacent line of cut portions 19, 19' (including the bottoms of notches 24, 24') will be substantially the same.

The adjacent pairs of cuts 17'—23 and also the adjacent pairs of cuts 23', at the same side of the longitudinal axis of the blank, define web portions A and B, respectively, which support and rigidify the longitudinal partition strips 9, 9', the end parts C of which are made of substantial width for strength and rigidifying purposes. So too, the cutting and scoring of the instant arrangement provides a bottom construction that is unique in lateral and longitudinal compression resistance and, likewise, resistance to bending and twisting forces when the tray is erected.

The bottom strip, as noted above, is continuous from end to end of the tray and its end parts E are purposely made of substantial length and width (area) to aid in effecting rigidity to protect the package. The parts I intermediate of the panels 11, 11 and 11', 11' and the parts I' intermediate of panels 11', 11', have substantial areas longitudinally and transversely of the tray and include triangular portions projecting laterally outward to the outer or side edges of the tray and, together with the panels 11 and 11', when those panels are erected, impart transverse rigidity and strength against crushing.

Thus cut and scored, the operation of setting-up or erecting the tray is simple indeed. Whether by machine or by hand, the first operation may be the raising of first one and then the other of the longitudinal partition strips 9, 9', or both may be raised simultaneously, to the position shown in Figs. 1 to 4, inclusive, the strips being swung about the cut or crease scores 12^a, 12^b, etc., and 13^a, 13^b, etc., as hinges. Next the transverse panels 11 and 11' are swung upward about the cut or crease scores 14, 14', respectively, until their upper edges, at notches 18, 18', "snap" under the downwardly directed projections 22, 22' and come to rest in the notches 24, 24', respectively. When the notched edges are interengaged they successfully interlock the transverse partition panels 11, 11' and the longitudinal partition strips so that the tray is positively fixed in erected condition.

With the commodity items to be packaged disposed in the compartments and the whole secured within a snugly fitting wrapper or bag, even though such wrapper or bag enclosure is not in itself strong and lacks self-sustaining quality, a relatively rigid and strong package results. The cookies, confectionery or other delicate or fragile items packaged are well protected against stick-

ing to or otherwise injuring one another, are given adequate support against crushing from all directions. Multiple numbers of packages may be stacked one upon another and one beside another without injury to the contents.

The invention is susceptible of embodiment in other forms and for other uses, as will be apparent to those skilled in the art. Therefore, I do not desire to be limited other than by the invention spirit as embraced within the scope of the appended claims.

I claim:

1. A multi-partition multi-compartment forming blank formed from a single piece of folding paperboard cut and crease scored to provide a central, longitudinally extending bottom strip, a pair of longitudinal partitioning strips, and a plurality of lateral partition wall panels arranged in two rows spaced from each other along the sides of the bottom strip, each of the longitudinal partition strips including spaced web portions integrally hinged to the adjacent side of the bottom strip along aligned axes, a plurality of spaced and relatively rigid portions extending in a laterally outward direction from each side of the bottom strip, the lateral partition wall panels being hinged to said spaced relatively rigid extending portions on the bottom strip, the lateral panels being formed from areas of the blank within the bounds defined between the longitudinal partition wall strips and the bottom strip and having parts that extend between the hinge axes of said spaced web portions and the bottom strip whereby parts of each panel may extend to each side of the erected position of the longitudinal partitioning strips, the effective height of a predetermined upper edge part of each lateral partition wall panel when erected being substantially equal to the vertical distance from the bottom strip to a predetermined part of the under edge portion of the erected longitudinal partition strip, said predetermined edge parts when erected being cooperatively associated to retain one another in erected position.

2. A multi-partition multi-compartment forming blank as defined in claim 1, in which at least one of said cooperatively associated edge parts is in the form of a notch.

3. A one-piece generally rectangular blank composed of sheet material pre-cut and pre-scored for folding into a tray having a center row of commodity receiving compartments and two substantially parallel side rows of commodity receiving compartments, there being one side row at each side of the center row, said blank including, a tray bottom forming strip extending continuously between one pair of opposite edges of the blank, a pair of longitudinal partition forming strips extending between said pair of opposite edges of the blank in substantially parallel relation to one another, there being one of said longitudinal partition strips at each side of and in spaced relation to said bottom strip, each of said longitudinal partition strips being connected to said bottom strip by transversely extending web portions at predetermined intervals, the web portions of each longitudinal partition strip having hinged connection with said bottom strip along substantially aligned score lines whereby the longitudinal partition strips may be folded upward to be disposed substantially normal to the plane of the bottom strip, and a plurality of spaced panels at each side of said bottom strip to form transverse partitions, each panel having hinged connection with said bottom strip along a score line extending transversely of the score lines by which said webs and bottom strip are connected.

4. A one-piece generally rectangular blank composed of sheet material pre-cut and pre-scored for folding into a tray having a center row of commodity receiving compartments and two substantially parallel side rows of commodity receiving compartments, there being one side row at each side of the center row, said blank including, a tray bottom forming strip extending continuously between one pair of opposite edges of the blank, a pair of longitudinal partition forming strips extending between said pair of opposite edges of the blank in substantially parallel relation to one another, there being one of said longitudinal partition strips at each side of and in spaced relation to said bottom strip, each of said longitudinal partition strips being connected to said bottom strip by transversely extending web portions at predetermined intervals, the web portions of each longitudinal partition strip and the opposite end portions of such partition strips having hinged connection with said bottom strip along substantially aligned score lines whereby the longitudinal

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partition strips may be folded upward to be disposed substantially normal to the plane of the bottom strip, and a plurality of spaced panels at each side of said bottom strip to form transverse partitions, each panel having hinged connection with said bottom strip adjacent to one side thereof and along a score line extending transversely and to each side of the score lines by which said webs and partition strip ends at its side of the bottom strip are connected with the bottom strip.

5. A one-piece generally rectangular blank composed of sheet material pre-cut and pre-scored for folding into a tray having a center row of commodity receiving compartments and two substantially parallel side rows of commodity receiving compartments, there being one side row at each side of the center row, said blank including, a tray bottom forming strip extending continuously between one pair of opposite edges of the blank, oppositely directed laterally projecting portions on said bottom strip at predetermined intervals, a pair of longitudinal partition forming strips extending between said pair of opposite edges of the blank in substantially parallel relation to one another, there being one of said longitudinal partition strips at each side of and in spaced relation to said bottom strip, each of said longitudinal partition strips being connected to said bottom strip by transversely extending web portions, each web portion of each longitudinal partition strip having hinged connection with one of the laterally projecting portions of the bottom strip along substantially aligned scored lines whereby the longitudinal partition strips may be folded upward to be disposed substantially normal to the plane of the bottom strip, and a plurality of spaced panels at each side of said bottom strip to form transverse partitions, each panel having hinged connection with said bottom strip along a score line extending transversely of the score lines by which said webs and bottom strip are connected.

6. A multi-compartment tray comprising a single generally rectangular piece of sheet material cut, scored and folded to provide three parallel and adjacent rows of compartments extending between one pair of opposite edges of the material, the center row of compartments having a continuous and unscored bottom strip extending from adjacent to one of said pair of edges to adjacent to the other, a pair of upstanding partition members extending in substantially parallel and spaced relationship to one another between said pair of opposite edges, one of said partition members being at one side and the other at the opposite side of said bottom strip, each of said partition members adjacent to its opposite ends being connected with said bottom strip along aligned scored hinge lines, and a pair of upstanding and transversely directed partition panels, there being at least one of said panels at each side of said bottom strip, adjacent to the partition member at such side, said panels having hinged connection with said bottom strip along score lines extending substantially normal to the said aligned score lines, each of said panels having its upper edge disposed in frictional engagement with a portion of the adjacent partition member.

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7. A multi-compartment tray comprising a single generally rectangular piece of sheet material cut, scored and folded to provide three parallel and adjacent rows of compartments extending between one pair of opposite edges of the material, the center row of compartments having a continuous and unscored bottom strip extending from adjacent to one of said pair of edges to adjacent to the other, said bottom strip having a laterally projecting portion at each side thereof intermediate of its ends, a pair of upstanding partition members extending in substantially parallel and spaced relationship to one another between said pair of opposite edges, one of said partition members being at one side and the other at the opposite side of the bottom strip, each of said partition members adjacent to its opposite ends being connected with the bottom strip along aligned scored hinge lines, and a pair of upstanding and transversely directed partition panels, there being at least one of said panels at each side of said bottom strip adjacent to the partition member at such side, each of said panels having hinged connection with one of said laterally projecting portions of said bottom strip along a score line extending substantially normal to the said aligned score lines, each of said panels having its upper edge disposed in frictional engagement with a portion of the adjacent partition member.

8. A multi-compartment tray comprising a single generally rectangular piece of sheet material cut, scored and folded to provide three parallel and adjacent rows of compartments extending between one pair of opposite edges of the material, the center row of compartments having a continuous and unscored bottom strip extending from adjacent to one of said pair of edges to adjacent to the other, said bottom strip having a laterally projecting portion at each side thereof intermediate of its ends, a pair of upstanding partition members extending in substantially parallel and spaced relationship to one another between said pair of opposite edges, one of said partition members being at one side and the other at the opposite side of the bottom strip, each of said partition members adjacent to its opposite ends being connected with the bottom strip along aligned scored hinge lines, each of said laterally projecting portions of the bottom strip being extended laterally outward beyond the partition member at its side of the bottom strip, and a pair of upstanding and transversely directed partition panels, there being at least one of said panels at each side of said bottom strip adjacent to the partition member at such side, each of said panels having hinged connection with one of said laterally projecting portions of said bottom strip along a score line extending substantially normal to the said aligned score lines, each of said panels having its upper edge extending across and disposed in frictional engagement with a downwardly directed edge portion of the adjacent partition member.

No references cited.