

Dec. 21, 1954

E. MORAND
PLURAL COMPARTMENT BOX FORMED FROM
A SINGLE BLANK OF SHEET MATERIAL

2,697,544

Filed June 21, 1951

3 Sheets-Sheet 1

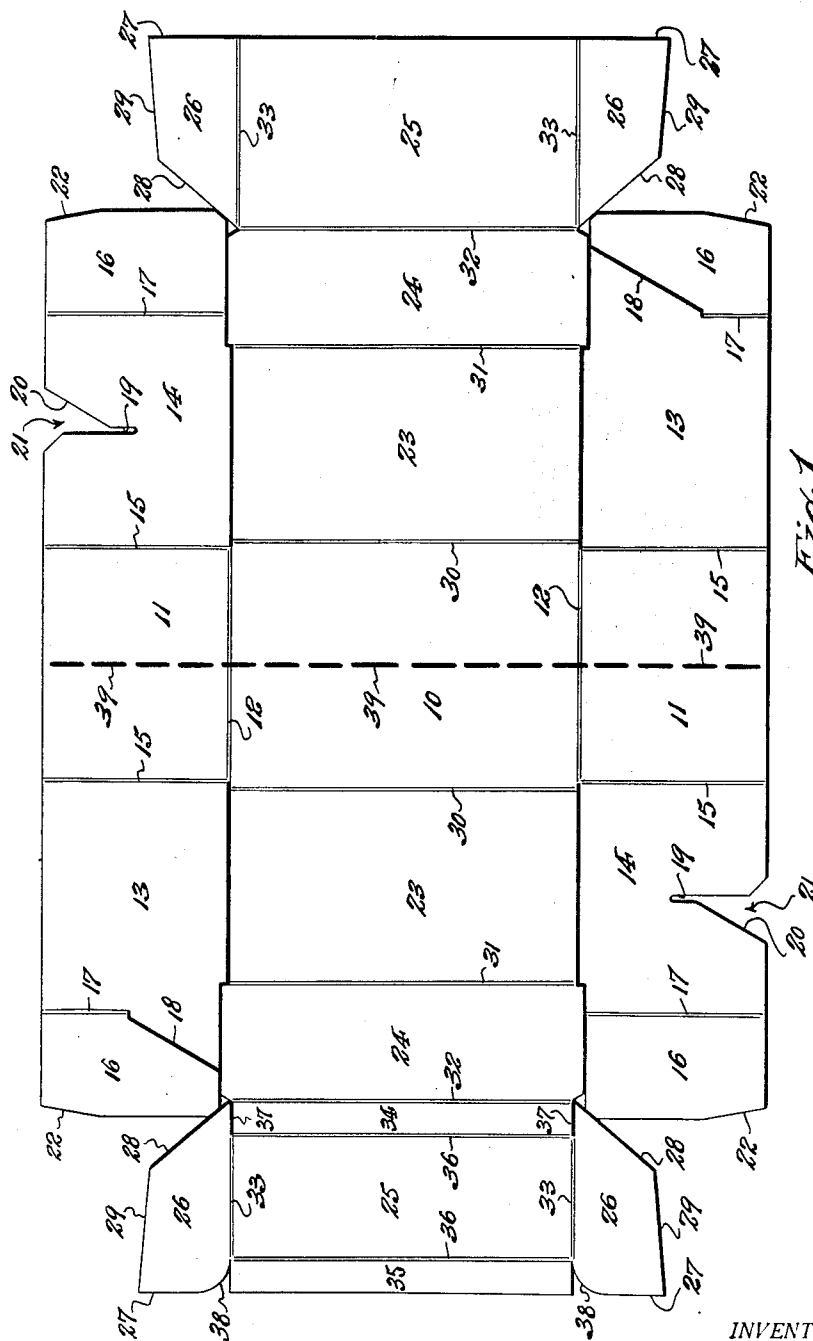


Fig. 1

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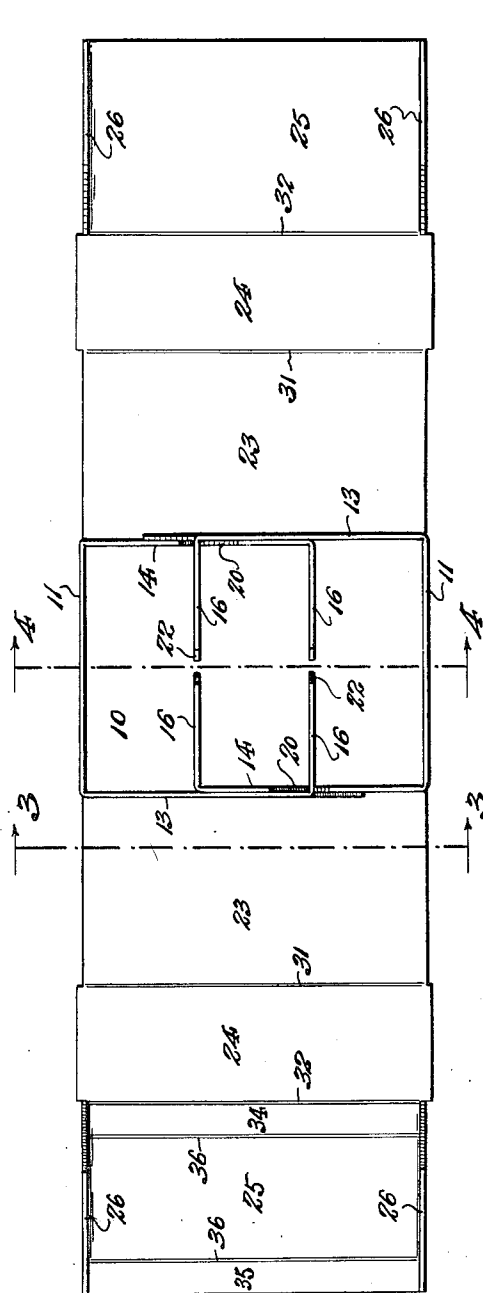


Fig. 2

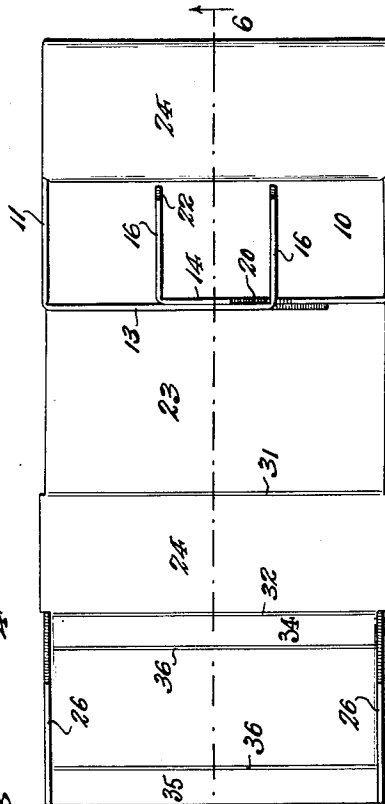


Fig. 3

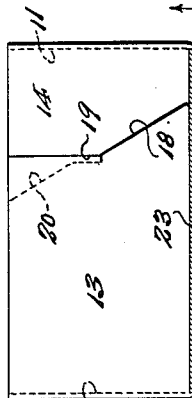


Fig. 4

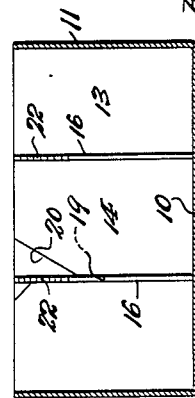


Fig. 5

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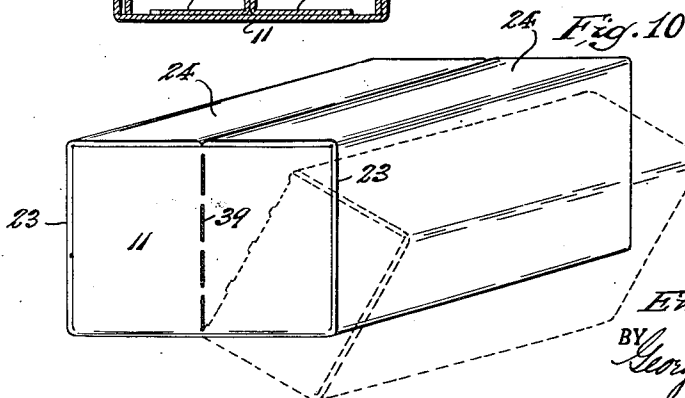
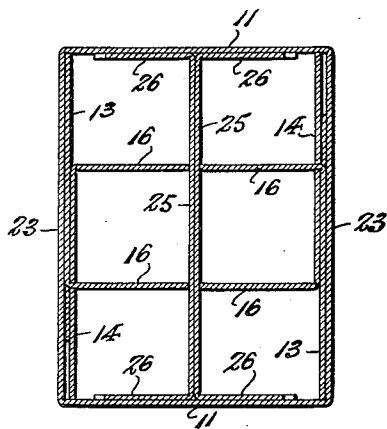
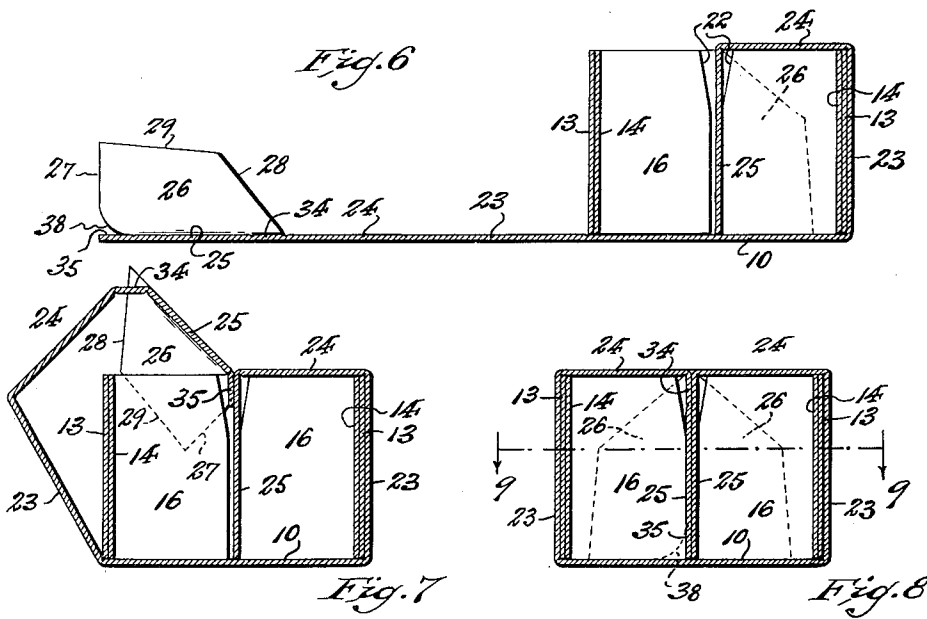
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PLURAL COMPARTMENT BOX FORMED FROM A SINGLE BLANK OF SHEET MATERIAL

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Application June 21, 1951, Serial No. 232,800

1 Claim. (Cl. 229—15)

This invention relates to an improved construction of plural compartment box adapted to be produced from a single flat foldable blank of paper stock of any suitable kind.

The invention has for an object to provide a novel plural compartment box formed from a single blank of paper stock which is shaped and scored to provide relatively foldable parts comprising a bottom panel from the respective opposite sides of which extend, in sequence, an outer side panel, a top panel, and a tuck-in partition panel, the latter having end flaps respectively bordering its opposite end margins, together with end panels extending respectively from the respective end margins of the bottom panel, said end panels having interlock sections extending respectively from its respective side margins, and terminating in cross partition elements adapted to be disposed in transverse inward extension therefrom; the interlock sections, which extend from corresponding sides of the respective end panels, when said end panels are erected, are adapted to be inwardly turned and interlocked together in upstanding relation to the bottom panel and in extension between the erected end panels, thus defining the interior of the box which is formed from the blank, and also serving to support the cross partition elements within the formed box interior.

Another object of the invention is to provide cooperative interlock sections of the blank with novel form and arrangement of mutually interengageable interlocking structure, whereby to couple the same together in box formation relation.

The invention has for a further object to provide one of the tuck-in partition panels with yieldable side marginal sections, with the end flaps of said panel specially formed and arranged in relation thereto, whereby to facilitate manipulation and insertion of said tuck-in partition panel into the box interior after the other or opposite tuck-in partition panel has first been inserted within the latter.

The invention has for another object to provide a plural compartment box, adapted to be produced from the described blank, which can be separated into two completely closed compartment boxes, each one-half size of the original box; and, to this end, the bottom and end panels are provided with a continuous perforated or weakened line extending longitudinally thereof intermediate their sides.

Other objects of this invention, not at this time more particularly enumerated, will be understood from the following detailed description of the invention.

An illustrative embodiment of the invention is shown in the accompanying drawings, in which:

Fig. 1 is a plan view of the cut and scored blank from which the compartment box according to the invention is produced.

Fig. 2 is a plan view of the blank with its end panels erected perpendicular to the bottom panel, and with the interlock sections at corresponding sides of the end panels inwardly turned and interlocked together for extension between the erect end panels, whereby to define the box interior, and with the cross partition elements disposed in angular extension from the interlock sections into the box interior; Fig. 3 is a vertical cross-sectional view, taken on line 3—3 in Fig. 2; and Fig. 4 is another vertical cross-sectional view, taken on line 4—4 in Fig. 2.

Fig. 5 is a view similar to that of Fig. 2 but showing the side, top and tuck-in partition panels at one side of the box in closed relation thereto; Fig. 6 is a vertical sectional

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view, taken on line 6—6, in Fig. 5; Fig. 7 is a similar longitudinal sectional view, but showing the remaining side, top and tuck-in partition panels in process of being moved into closed relation to the box; Fig. 8 is another similar sectional view of the box in completely closed condition; and Fig. 9 is a horizontal sectional view, taken on line 9—9 in Fig. 8.

Fig. 10 is a perspective view of the completely closed box, but showing by broken lines the manner by which the box is divided into two completely closed and separate units of half size.

Similar characters of reference are employed in the hereinabove described views, to indicate corresponding parts.

Referring to the drawings, the plural compartment box according to this invention is produced from a single blank of suitable paper stock, such, for example, as paste-board, card-board, corrugated paper board or the like. Said blank is cut and scored to provide box forming parts which comprise a bottom panel 10 and end panels 11. Said end panels 11 respectively extend from opposite ends of the bottom panel, and are foldably joined to the latter by fold line determining scores 12. Extending from one side of each end panel 11 is an outer interlock section 13, and extending from the opposite side of each end panel 11 is an inner interlock section 14. Said interlock sections 13 and 14 are foldably joined to the sides of the end panels from which they extend by fold line determining scores 15. Extending from the free end of each interlock section 13 and 14 is a cross-partition element 16. Said cross-partition elements are foldably joined to the ends of said interlock sections from which they extend by fold line determining scores 17. Each outer interlock section 13 is provided with a suitably located oblique locking slit 18, which extends downwardly and outwardly from a point substantially midway between its top and bottom margins to and so as to intersect the bottom margin. Each inner interlock section 14 is provided with a suitably located vertical locking notch 19, which extends upwardly from a point substantially midway between its bottom and top margins to and so as to intersect the top margin. The body of each interlock section 14 is cut away along the outer side of the open end portion of the locking notch, whereby to provide the latter with an outwardly divergent oblique guide edge 20 which defines an entrance mouth 21 leading into the locking notch 19. Preferably the free ends of the cross-partition elements 16 are provided with chamfered upper corners 22. Extending from each side of the bottom panel 10 in succession, are an outer side panel 23, a top panel 24, and a tuck-in partition panel 25, the latter having end flaps 26 extending from its opposite end margins. Said end flaps 26 have a straight edge 27 aligned with the free margin of the tuck-in partition panels from which they extend, and an oblique opposite edge 28, the free end edge 29 being preferably somewhat downwardly and inwardly inclined from the straight edge 27 to the oblique edge 28. The outer side panels 23 are foldably joined to the bottom panel 10 by fold line determining scores 30; the top panels 24 are foldably joined to the outer side panels 23 by fold line determining scores 31; the tuck-in partition panels 25 are foldably joined to the top panels 24 by fold line determining scores 32; and the end flaps 26 are foldably joined to the tuck-in partition panels 25 by fold line determining scores 33. One of the tuck-in partition panels 25 is provided, respectively along its inner and outer margins, with yieldable side marginal sections 34 and 35, foldably joined thereto by fold line determining scores 36. The portions of the end flaps 26 which border the ends of the inner side marginal section 34 are separated therefrom, as by slits 37. Similarly the portions of the end flaps 26 which border the ends of the outer side marginal section 35 are separated therefrom, and are shaped to provide rounded corner margins 38.

If the box, as formed from the above described blank is to be divisible and separable into two completely closed units of smaller size, the blank is provided with a continuous longitudinal line of weakening perforations 39 extending along the bottom panel 10 and end panels 11 intermediate the sides thereof.

To form the plural compartment box from the above described blank, said blank is manipulated as follows:

First, the end panels 11 are swung upwardly about the scores 12 to stand perpendicular to the plane of the bottom panel 10, whereupon cooperative interlock sections 13 and 14 are swung inwardly about the scores 15 so that an outer interlock section 13 overlaps an inner interlock section 14, the cross-partition elements 16 having been in the meantime turned about the scores 17 to project inwardly from said sections at right angles thereto. The upstanding inner interlock sections 14 are caused to abut the bottom panel 10, whereupon the outer interlock sections 13 are lifted so as to bring the slits 18 thereof into alignment with the guide edges 20 of the locking notches 19 of the inner interlock sections 14, with the cross-partition elements 16 which extend from said outer interlock sections 13 opposed to the entrance mouths 21 of said locking notches 19. This having been accomplished, the outer interlock sections 13 are pushed downward so as to abut the bottom panel 10. During this movement the mouths 21 of the locking notches 19 will provide clearance for the entering cross-partition elements 16 which extend from the outer interlock sections 13, and the oblique guide edges 20 of said mouths 21 will guide the junctures of said cross-partition elements with said outer interlock sections 13 in their downward movement and finally into the locking notches 19, thus coupling together cooperative inner and outer interlock sections 13 and 14 in jointed upstanding relation to the bottom panel 10 and in supporting extension between the end panels 11. When thus interlocked together said interlock sections 13 and 14, with the bottom and end panels, define the interior of the box, into which the cross-partition elements 16 transversely project so as to form a plurality of compartments along each side of said box interior (see Fig. 2).

The locking slits 18 and the locking notches 19 of cooperative interlock sections 13 and 14 are selectively located therein accordingly as it is desired to space the cross-partition elements 16 thereof relative to each other and to the end panels of the box. In the illustrative blank and box formed therefrom as shown, the disposition of the locking slit and notch is such as to arrange the cross-partition elements 16 in equi-spaced relation between the end panels 11 of the box, whereby to provide three equal compartments contiguous to each side of the box interior, and thus a six compartment box. It will be understood however that the spacing may be such as to dispose the cross-partition elements 16 in other spaced relation one to the other and to the end panels of the box; or so that the cross-partition elements 16 lie in face to face contact, whereby to form but two compartments contiguous to each side of the box interior, and then a four compartment box.

The aligned free ends of opposed cross-partition elements 16, when operatively disposed within the interior of the box as described, are spaced apart for a distance approximating twice the thickness of the paper stock of which the box blank is made, whereby to permit insertion therebetween of the tuck-in partition panels 25, when the box is completed in fully closed condition.

The box, as thus far formed, provides an interior structure which is subdivided into a plurality of compartments or cells ready to be packed with a desired content and then closed. To close the box, each foldably related succession of parts comprising an outer side panel 23, a top panel 24 and a tuck-in partition panel 25 with its flaps 26, which respectively extend from opposite sides of the bottom panel 10, are manipulated. As shown, the right hand succession of these parts is first manipulated, and, preparatory to this, the end flaps 26 of its tuck-in partition panel 25 are turned up about the scores 33 to dispose the same perpendicular to the plane of said tuck-in partition panel. To bring the right hand succession of closure parts into box closing position, the outer side panel 23 thereof is upturned about the score 30 to stand perpendicular to the bottom panel 10 and in external overlying relation to the adjacent joined interlock sections 13-14, whereupon the associated tuck-in partition panel 25 and top panel 24 are turned about the respective scores 32 and 31, to so dispose these parts as to direct the free side edge of the tuck-in partition panel subject to entrance between opposed ends of the cross-partition elements 16, with the end flaps 26 likewise directed to enter the box interior

parallel and contiguous to the inner faces of the end panels 11. After this, the tuck-in partition panel 25 is pushed home into the box interior so as to abut the bottom panel 10 and stand perpendicular thereto in extension through the box interior from end to end thereof, with the straight edges 27 of the end flaps 26 also abutting the bottom panel 10, thus supporting the tuck-in partition panel against displacement or distortion. In this manner, the cells or compartments, along that side of the box interior from which the thus manipulated closure parts extend, are completed and closed. The inclined edges 28 and 29 of the end flaps 26 so shape the latter as to assure unimpeded inserting entrance thereof into the box interior. As the insertion of the tuck-in partition panel 25 is completed, the top panel 24 will be moved to closed position in extension over the open tops of the underlying cells or compartments, and one-half of the box interior is thereupon completely closed (see Figs. 5 and 6).

After the right hand succession of closure parts have been brought into closed relation to the box body, the corresponding left hand succession of closure parts are manipulated in similar manner to also bring the same into closed relation to the box body. To facilitate closing manipulation of said left hand succession of closure parts, the tuck-in partition panel 25 thereof has been modified by providing the same with the yieldable side marginal sections 34 and 35. Preparatory to manipulation of said closure parts, the end flaps 26 of the tuck-in partition panel 25 are turned up about the scores 33 to dispose the same perpendicular to the plane of said tuck-in partition panel 25; said end flaps not being connected with the ends of the yieldable side marginal sections 34 and 35, the latter are free for turning movement about the scores 36 relative to the body of the tuck-in partition panel 25 of which they are part. Due to the independent movability of said side marginal sections 34 and 35, when the outer side panel 23 is upturned about the score 30 and the associated tuck-in partition panel 25 and top panel 24 are turned about the respective scores 32 and 31, whereby to dispose these parts so as to direct the tuck-in partition panel for entrance between opposed ends of the cross-partition elements 16, and for face to face contiguous disposition relative to the previously entered tuck-in partition panel of the right hand succession of closure parts, with the end flaps 26 likewise directed to enter the box interior parallel and contiguous to the inner faces of the end panels 11. Since the tuck-in partition panel of said left hand succession of closure parts comprises an articulated member formed by the main body and its opposite side marginal sections 34 and 35, the latter sections can yieldably turn relative to the main body so that the section 35 can be brought parallel to the previously inserted tuck-in partition panel, while the other section 34 can also yield so as to dispose the main body of the tuck-in partition panel 25 in position adapted to offer minimum resistance to its downward movement into the box interior, thus avoiding risk of distortion or other injury thereto (see Fig. 7). The tuck-in partition panel is now thrust downward into the box interior until it abuts the bottom panel 10. When so thrust down into the box, the yieldable side marginal sections 34-35 will swing back into the plane of the main body of the tuck-in partition panel, so that this panel as a whole will stand perpendicular in face to face contact with the first inserted tuck-in partition panel, and across the ends of the adjacent cross-partition elements 16, and so that the straight edges 27 of the accompanying end flaps 26 will also abut the bottom panel 10, thus supporting the inserted tuck-in partition panel against displacement or distortion. At the same time the outer side panel 23 will be brought into external overlying relation to the adjacent joined interlock sections 13-14, and the top panel 24 into closed position in extension over the tops of the underlying cells or compartments, thus completing the closure of the remaining half of the box interior (see Fig. 8).

The chamfered upper corners 22 of the cross-partition elements 16, provide clearance for entering movement of the tuck-in partition panels 25 into the box interior, whereby to further reduce impedance to such entering movement.

When the box is produced in the form adapted to be divided and thus separated into individual closed

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units of smaller or half size, the line of weakening perforations 39 is provided to extend lengthwise across the bottom panel 10 and through the end panels 11. When the box is set up, packed and closed, in the manner above described, said line of perforations 39 runs intermediate the inserted tuck-in partition panels 25. When it is desired to divide the box into two separate units, the same can be broken apart along said line of weakening perforations (see Fig. 10), thus producing two individual yet nevertheless fully closed boxes, since the tuck-in partition panels 25 then become external closure walls which are supported against displacement by the inserted end flaps 26 with which they are provided.

From the above description, it will be apparent that a very strong and durable box is furnished by this invention, in which the interior is subdivided to provide a plurality of goods containing cells or compartments; said box being readily adapted to be furnished either as a single unit or in a divisible two-in-one form.

Although this invention aims especially to provide a plural compartment box as shown and described, it nevertheless also comprehends the provision of a box the interior of which is not subdivided laterally into rows of compartments or cells, but merely into two longitudinal compartments by the inserted tuck-in partition panels. If the latter type of box is desired all that is necessary is to omit the cross-partition elements 16, and then merely couple the cooperative interlock sections 13 and 14 together in flat lapped relation as will be obvious. A box of this latter type can also be furnished in the divisible form by provision of the line of weakened perforations 39.

Having now described my invention, I claim:

A compartmented box formed from a single blank of sheet material comprising a bottom panel and end panels, said end panels having at respective corresponding sides thereof cooperative outer and inner interlock sections adapted to be swung inwardly from the erected end panels into interlocked overlapping extension between said end panels, each interlock section terminating in a cross-partition element adapted to be disposed at a right angle thereto for projection transversely into the box interior, free end portions of so disposed corresponding

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opposed cross-partition elements being spaced apart to provide receiving space therebetween, a relatively foldable succession of closure parts extending from each side of the bottom panel, each said succession of closure parts comprising an outer side panel, a top panel and a tuck-in partition panel, each tuck-in partition panel having end flaps adapted to be disposed at right angles thereto, each succession of closure parts being adapted to be infolded to dispose outer side panels thereof in overlying relation to adjacent coupled interlock sections, with the top panels closed over the open top of the formed box, and with the tuck-in partition panels inserted downwardly into the receiving space between opposed cross-partition elements and thus in contiguous face to face upstanding extension within the box parallel to and intermediate outer sides thereof, and with the free end flaps of said tuck-in partition panels entered within the box contiguous to the end panels thereof, the tuck-in partition panel of at least one said succession of closure parts being divided by longitudinal hinging scores to provide a main body and inner and outer yieldable side marginal sections to facilitate tucking in manipulation thereof, the end flaps of this tuck-in partition panel being connected solely with the ends of its main body so that said side marginal portions are free for turning movement relative to said main body, and the bottom and end panels being provided with a line of weakening perforations extending along the same for alignment between the inserted tuck-in partition panels, whereby to permit division of the box, by rupturing said bottom and end panels along said line of perforations, into two completely closed independent box units.

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