Nov. 2, 1954 A. L. GIROUX ET AL 2,693,309

MULTICOMPARTMENT SHIPPING CARTON

Filed June 19, 1951 2 Sheets-Sheet 1

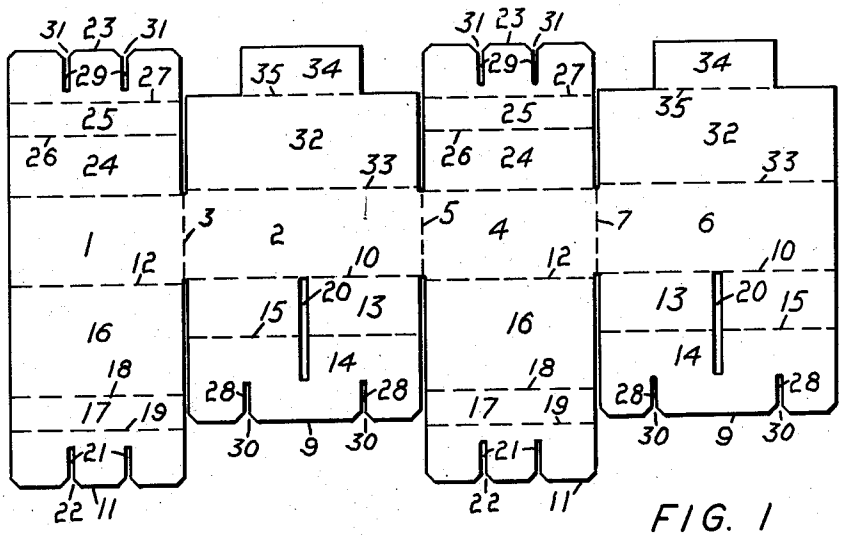


FIG. 1

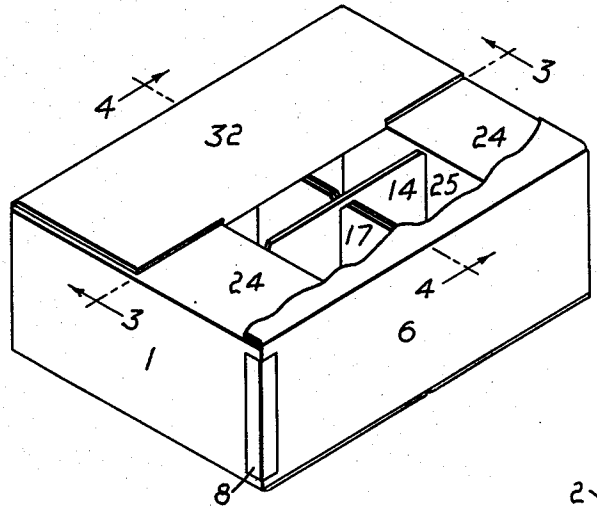


FIG. 2

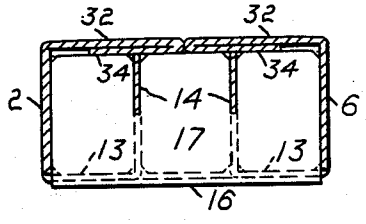


FIG. 4

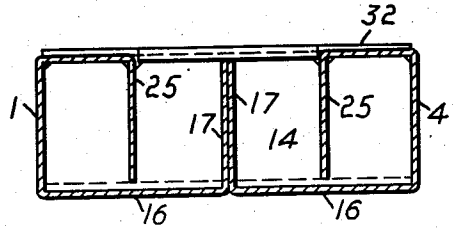


FIG. 3

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MULTICOMPARTMENT SHIPPING CARTON

Filed June 19, 1951 2 Sheets-Sheet 2

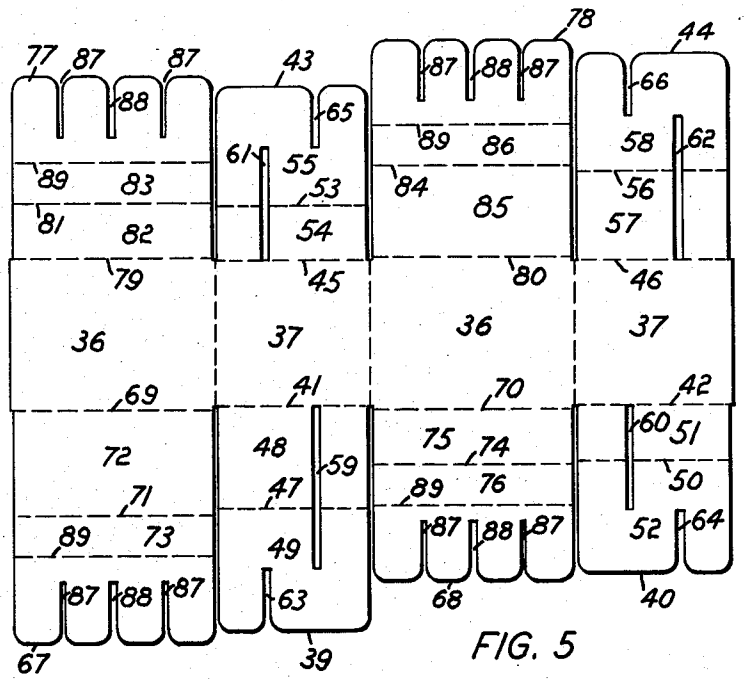


FIG. 5

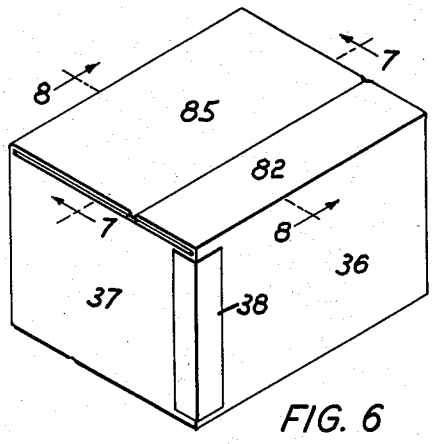


FIG. 6

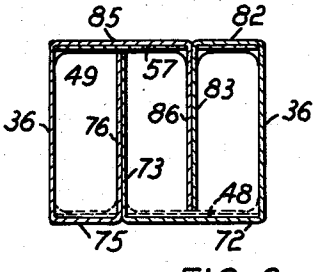


FIG. 8

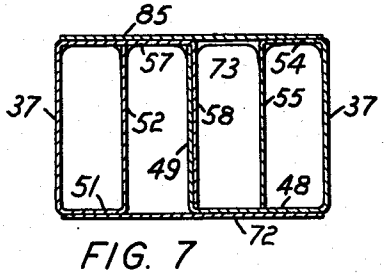


FIG. 7

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MULTICOMPARTMENT SHIPPING CARTON

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Application June 19, 1951, Serial No. 232,404

4 Claims. (Cl. 229—28)

This invention relates to multicompartment shipping cartons and is a continuation-in-part of our copending application Serial No. 143,644, filed February 11, 1950. The invention has for its object to provide a knockdown multicompartment carton that has great rigidity and strength when assembled.

In packaging fragile articles such as goblets, cups, vases and the like for shipment, it has been the usual practice to carefully pack the individual articles in a shipping container of rigid construction, the articles being so packed that they are held against relative movement in the container and the container being of a strong and rigid construction so that the articles will not be subjected to compression due to distortion of the container by weight imposed thereon. The alternatives, high cost of shipment and high percentage of loss due to breakage, have resulted in retail prices so high as to greatly impede the sale of such articles.

The present invention has for an object to provide a knockdown multicompartment carton of paperboard or the like which is of simple and inexpensive construction, which can be shipped and stored in knockdown form, which is easy to assemble, and which has the strength and rigidity necessary for the protection of fragile articles against breakage.

The carton of the present invention has a collapsible body of rectangular form and a combined closure wall and partition structure in which the partitions are formed integrally with the closure walls and interlock to provide a crisscross system of upright partitions within the body which not only stiffen the end wall structure, but also internally brace the collapsible body portion of the carton.

Reference should be had to the accompanying drawings forming a part of this specification, in which:

Figure 1 is a plan view of a paperboard blank from which the multicompartment carton embodying the invention can be formed;

Fig. 2 is an isometric view of the carton formed from the blank shown in Fig. 1;

Fig. 3 is a vertical longitudinal section through the carton taken on the line indicated at 3—3 in Fig. 2;

Fig. 4 is a vertical transverse section through the carton taken on the line indicated at 4—4 in Fig. 2;

Fig. 5 is a plan view of a blank from which a modified form of carton embodying the invention may be formed;

Fig. 6 is an isometric view of a carton formed from the blank shown in Fig. 5;

Fig. 7 is a vertical section through the carton taken on the line indicated at 7—7 in Fig. 6; and

Fig. 8 is a vertical section through the carton taken on the line indicated at 8—8 in Fig. 6.

In Fig. 1 of the drawings there is shown a paperboard blank having a central portion from which the collapsible body of the carton is formed. An end wall **1** is hinged to a side wall **2** by means of a transverse fold line **3**. A second end wall **4** is hinged to the side wall **2** by means of a fold line **5** and a second side wall **6** is hinged to the end wall **4** by means of a fold line **7**.

The walls **1**, **2**, **4** and **6** form the collapsible body of the carton which is rectangular in shape, the fold lines **3**, **5** and **7** being at three of the vertical corners of the body. An end of the side wall **6** is attached to an end of the end wall **1** by suitable means such as a strip of tape **8** glued to the walls which forms a fourth hinged connection between the upright walls of the body so that the body may be collapsed for shipment.

A pair of flaps **9** are hinged to the bottom edges of the side walls **2** and **6** by means of fold lines **10**, and a second pair of flaps **11** are hinged to the walls **1** and **4** by means of fold lines **12**. The flaps **9** and **11** provide a combined bottom wall and partition structure for the carton, each of these flaps having portions that are disposed horizontally to form the bottom wall of the carton, and portions which are disposed in upright position to form crossing partitions when the carton is assembled. Each of the flaps **9** has a bottom wall portion **13** and a partition portion **14** which is hinged to the wall portion **13** to swing about a fold line **15** that extends transversely across the flap parallel to the fold line **10** along which the flap is joined to the bottom edge of the side wall.

Each of the flaps **11** has a bottom wall portion **16** and a partition portion **17** that is hinged to the wall **16** along a fold line **18** that extends transversely across the flap parallel to the fold line 12. The partitions are preferably of the same height as the carton walls and in order to facilitate assembly of a carton having relatively high partitions, the partition portions **17** of the flaps **11** may be made bendable by means of a fold line **19** extending across the same parallel to the fold line **18**. The flaps **9** are provided with slots **20** to receive the partition portions **17** of the flaps **11**. The slots **20** extend from the fold lines **10** at right angles thereto across the bottom wall portions **13** of the flaps and partially across the partition portions **14** thereof. The slots **20** of the two flaps **9** are transversely alined when the flaps are folded inwardly to position the bottom portions **13** thereof horizontally between the side walls **2** and **6**.

In assembling the carton the flaps **9** are first folded between the side walls **2** and **6** to dispose their bottom wall portions horizontally and their partition portions upright. The flaps **11** are then folded inwardly to position the wall portions **16** thereof beneath the wall portions **13** of the flaps **9**, and the partition portions **17** of the flaps **11** are then inserted into the slots **20**. The wall portions **16** of the flaps **11** are of a length to extend lengthwise of the wall portions **13** of the flaps **9** from the end wall to the slots **20**, and the slots **20** are of a width to receive the partition portions **17** of the flaps **11** back to back. In the carton shown in Fig. 1, the slots **20** are centrally disposed so that the partition portions **17** of the flaps **11** form a transverse partition of double thickness between the walls **2** and **6** midway between the ends thereof. In order to provide three rows of compartments, the width of the bottom portion **13** of each of the flaps **9** is substantially one-third the width of the carton so that the partition portions **14** form longitudinal upright partitions parallel to each other and to the side walls of the carton and spaced equally from one another and from the side walls.

In order to provide an interlock between the partition portions **14** and **17**, the partition portions **17** are provided with notches **21** spaced apart a distance corresponding to the spacing of the partition portions **14** so that when the partition portions **17** are inserted into the slots **20** of the flaps **9** the notches **21** will receive the portions of the partitions **14** between the upper end of the slots **20** and the top edges of the partitions, thus forming a rigid interlock between the crossing partitions. The notches **21** may be provided with flared entrance portions **22** to facilitate assembly.

In the twelve compartment carton shown in Figs. 1 to 4 the wall portions **16** of the flaps **11** are of a width twice that of the wall portions **13** of the flaps **9** and the partition members **14** and **17** provide compartments on opposite sides of the double thickness partition formed by the partition members **17** which are twice as long as they are wide, so that by insertion of an intermediate partition between the central partition and the end wall **6**, square compartments can be formed on each side of the central partition.

In order to increase the rigidity of the carton the additional partitions are preferably part of a top closure structure, being formed by portions of flaps **23** that are hinged to the top edges of the end walls **1** and **4**. Each flap **23** has a wall portion **24** of a width corresponding to the wall portions **13** of the flaps **9** and, hinged to the

wall portion 24, there is a partition portion 25 that is hinged to the wall portion 24 along a fold line 26 extending across the flap. To facilitate assembly the partition portion 25 may be made bendable by means of a fold line 27 parallel to the fold line 26.

The partition portions 14 are provided with spaced notches 28 to receive the partition portions 25 of the top flaps 23 and the partition portions 25 are provided with spaced notches 29 that receive portions of the partitions 14 below the lower ends of the notches 28. The notches 28 and 29 are of a width to snugly receive the partition members and to facilitate assembly these notches may be provided with flared entrance portions 30 and 31.

When the carton is assembled as shown in Fig. 2, the collapsible body of the carton is rigidly braced by means of the interlocking partition structure in which the individual partitions are disposed at right angles to the upright walls and abut the same intermediate the ends thereof. The rigidity of the carton is also greatly increased by the overlapping wall portions 13 and 16 of the flaps, together with the wall portions 24 of the top flaps 23 which provide a rigid brace between the side walls at the ends thereof.

The carton may be provided with a cover formed by flaps 32 hinged by fold lines 33 to the top edges of the side walls 2 and 6. Each of the flaps 32 is of a width corresponding to one-half the width of the carton so that the two flaps can abut edge to edge along the longitudinal center line. Since the portions 24 of the top partition flaps rests upon the top edge of the partitions 14, the flaps 32 are preferably provided with central tabs 34 connected thereto by fold lines 35, the tabs 34 being of a length to bridge the space between the partition members 25 so that by folding the taps inwardly against the inner faces of the cover flaps 32 the tabs 34 will rest upon the top edges of the partitions 17 and extend across the space between the partitions 25, thus additionally stiffening the top of the carton.

In Figs. 5 to 8 of the drawings there is shown a twelve compartment container having an end closure and partition structure formed by flaps forming continuations of the side and end walls of the carton and hinged to the top and bottom edges thereof, an interlock being provided between the partition forming flaps to securely lock the same in folded position.

The carton shown in Figs. 5 to 8 has a collapsible body composed of side walls 36 and end walls 37 that are connected by fold lines which hingedly connect the walls at three corners, a hinged connection at the fourth corner being provided by a tape 38 glued to the adjoining side and end walls. The four walls hinged at their corners are collapsible and are reinforced by the combined end wall and partition structure formed by flaps hinged to the top and bottom edges of the walls. Flaps 39 and 40 are connected by fold lines 41 and 42 to the bottom edges of the end walls 37, and flaps 43 and 44 are connected by fold lines 45 and 46 to the top edges of the walls 37. The flap 39 has a transverse fold line 47 extending across the same parallel to the fold line 41 providing the flap 39 with an inner wall portion 48 and an outer partition portion 49. The flap 40 has a transverse fold line 50 dividing the same into an inner wall portion 51 and an outer partition portion 52.

The width of the wall portion 48 of the flap 39 is equal to one-half the length of the side walls 36, and the width of the wall portion 51 of the flap 40 is equal to one-quarter of the length of the side walls 36, so that when the carton is assembled the wall portions 48 and 51 are disposed in the same horizontal plane and the partition portions 49 and 52 are disposed vertically as shown in Fig. 7, the partition portion 49 of the flap 39 extending across the space between the side walls 36 midway between their ends and the partition portion 52 of the flap 40 being disposed vertically and extending transversely across the space between the side walls 36 half way between the partition member 49 and the wall 37 to which the flap 40 is hinged.

The top flap 43 has a transverse fold line 53 dividing the same into a wall portion 54 and a partition portion 55. The top flap 44 has a transverse fold line 56 dividing the same into a wall portion 57 and a wall portion 58. The wall portion 54 of the flap 43 is of the same width as the wall portion 51 of the flap 40, and the partition portion 57 of the flap 44 is of the same width as the wall portion 48 of the flap 39, so that when the flaps 39, 40, 43 and 44 are in position in the assembled carton the partition portions 49 and 58 are disposed in face to face contact and form a partition of double thickness transversely across the space between the walls 36 midway between the ends of the carton, and the partition portions 52 and 55 extend transversely across the space between the walls 36 midway between the central partition and the end walls 37, as shown in Fig. 7.

The bottom flaps 39 and 40 are provided with slots 59 and 60 which extend from the fold lines 41 and 42 at right angles thereto across the bottom portions 48 and 51 and into the partition portions 49 and 52. The slots 59 and 60 are offset laterally with respect to the center lines of the flaps 39 and 40 and are in alinement in the assembled carton. The distance from the slots 59 and 60 from one edge of the flaps is substantially twice the distance of the slots from the opposite edge of the flaps. The flaps 43 and 44 are provided with slots 61 and 62 which are disposed perpendicularly to the fold lines 45 and 46. The slots 61 and 62 extend across the wall portions of the flaps into the partition portions thereof and are offset with respect to the center line of the flaps oppositely with respect to the slots 59 and 60. The slots 61 and 62 are alined in the assembled carton in the same manner as the slots 59 and 60 and are positioned midway between the slots 59 and 60 and the side wall 36 farthest from the slots 59 and 60. The flaps 39 and 40 have notches 63 and 64 which are alined with the slots 61 and 62 and the flaps 43 and 44 have notches 65 and 66 which are alined with the slots 59 and 60.

The side walls 36 have bottom flaps 67 and 68 hinged to the bottom edges of the walls 36 by fold lines 69 and 70. The flap 67 has a fold lnie 71 parallel to the fold line 69 and extending transversely across the same, dividing the flap into a wall portion 72 and a partition portion 73. The flap 68 has a transverse fold line 74 parallel to the fold line 70 which divides it itno a wall portion 75 and a partition portion 76. The width of the wall portion 72 of the flap 67 is equal to two-thirds of the width of the end wall 37 and the wall portion 75 is of a width equal to one-third of the width of the wall portion 37, the width of the wall portion 72 corresponding to the width of the space between the slots 59 and 60 and the edge of the flaps 39 and 40 that are contiguous to the wall 36 to which the flap 67 is hinged. The width of the flap 75 corresponds to the width of the space between the slots 59 and 60 and the edges of the flaps 39 and 40 that are contiguous to the wall 36 to which the flap 68 is hinged. In the assembled carton the wall portions 72 and 75 underlie the wall portions 48 and 51 of the flaps 39 and 40, and the partition portions 73 and 76 are positioned back to back in the alined slots 59 and 60 which are of a width to receive the partition portions 73 and 76 which form a partition of double thickness extending between the end walls 37 as shown in Fig. 8.

Flaps 77 and 78 are connected to the top edges of the side walls 36 by fold lines 79 and 80. The flap 77 has a transverse fold line 81 providing a wall portion 82 and a partition portion 83 hinged thereto. The flap 78 has a transverse fold line 84 providing a wall portion 85 and partition portion 86. The wall portion 82 is of the same width as the wall portion 75 of the bottom portion 68 and the wall portion 85 is of the same width as the wall portion 72 of the flap 67 and in the assembled carton the wall portions 82 and 85 overlie the wall portions 54 and 57 of the flaps 43 and 44 and the partition portions 83 and 86 are disposed back to back in the slots 61 and 62 forming a second partition of double thickness extending from one end wall 37 to the other, as shown in Fig. 8.

The bottom flaps 67 and 68 and the top flaps 77 and 78 are provided with notches 87 that receive the partition portions 52 and 55 of the flaps 40 and 43 and each of these flaps is provided with a central notch 88 that is of a width to receive a double thickness partition. The notches 87 and 88 of the bottom flaps 67 and 68 register in the assembled carton and the same is true of the notches 87 and 88 of the top flaps 77 and 78. The central notches 88 of the top and bottom flaps receive the central transverse partition formed by the partition members 49 and 58.

The partition portions 73 and 76 of the bottom flaps 67 and 68 are received in the slots 59 and 60 of the bottom flaps 39 and 40 and in the notches 65 and 66 of

the top flaps 43 and 44, the notches 87 of the bottom flaps 67 and 68 receiving the portion of the bottom flap 40 above its slot 60 and the portion of the top flap 43 above its notch 65, the registering notches 88 of the bottom flaps 67 and 68 receiving the portion of the bottom flap 39 above its slot 59 and the portion of the top flap 44 above its notch 66. In a like manner the partition portions 83 and 86 of the top flaps 67 and 68 are received in the slots 61 and 62 of the top flaps 43 and 44 and in the notches 63 and 64 of the bottom flaps 39 and 40, the notches 87 of the top flaps 77 and 78 receiving the portion of the top flap 43 below its slot 61 and the portion of the bottom flap 40 below its notch 64, the registering notches 88 of the top flaps 77 and 78 receiving the portion of the top flap 44 below its slot 62 and the portion of the bottom flap 39 below its notch 49.

The flaps 39, 40, 43 and 44 form a central transverse partition of double thickness and two transverse partitions of single thickness midway between the central partition and each end wall as shown in Fig. 7, and the flaps 67, 68, 77 and 78 form two longitudinal partitions of double thickness as shown in Fig. 8 and all partitions are firmly interlocked at their intersections by their slots and notches.

All of the partition members are preferably of substantially the same height as the carton walls 36 and 37 and, in order to facilitate the assembly of the carton, the side wall flaps 67 and 68 and 77 and 78 are preferably provided with transverse fold lines 89 across their partition portions, the fold lines 89 serving to facilitate the insertion of the partition portions 73, 76, 83 and 86 into the slots 59, 60, 61 and 62 and the alined notches 63, 64, 65 and 66.

The flaps 39, 40, 43 and 44 provide an inner partition and bracing structure while the flaps 67, 68, 77 and 78 are the main closure flaps which also serve to complete the partition structure.

By reason of the fact that the partition portions of the closure flaps 67, 68, 77 and 78 are relatively long and confined back to back in the slots and notches of the partition portions of the flaps 39, 40, 43 and 44 and by reason of the fact that the partition portions are connected to the walls of the carton by relatively narrow wall portions, a considerable pull on the flaps is required to open them and the carton when once assembled is securely held closed by frictional engagement of partition portions 67, 68, 77 and 78 with one another and in the slots and notches of the other flaps so that it is unnecessary to employ tape to secure the closure flaps in closed position.

The double thickness partitions extending longitudinally and transversely of the carton also serve to give the carton great strength and rigidity and effectively protect fragile articles that are packed in the container compartments.

It is to be understood that in accordance with the provisions of the patent statutes, variations and modifications of the specific devices herein shown and described may be made without departing from the spirit of the invention.

What we claim is:

1. A rectangular knockdown multicompartment shipping carton comprising a collapsible body formed by upright walls hingedly connected at the four vertical corners and a combined wall and interior partition structure forming the end walls and dividing the interior of the carton into compartments, said structure being formed by two pairs of flaps at each end of the container, the flaps of each pair being hinged to opposite side walls, each flap having a fold line parallel to its hinged edge providing a hinged connection between an inner wall portion and a partition portion, the partition portion of each flap being of substantially the same height as said upright walls, the flaps of each of the two pairs connected to two opposite carton walls having wall portions of unequal width and of a combined width less than the space between the said two walls and spaced parallel partition portions, the flaps of each of said two pairs having alined slots perpendicular to their hinged edges and extending across their wall portions and into their partition portions, the slots of the flaps of one of said pairs being laterally offset with respect to the slots of the other of said pairs, the flaps of each of said pairs having notches in their partition portions that aline with the slots of the flaps of the other of said pairs, the flaps of the other two pairs having wall portions of unequal width and of a combined width equal to the space between the walls to which the flaps are hinged and partition portions disposed back to back in the slots and notches of the flaps of the first two pairs.

2. A rectangular knockdown multicompartment shipping carton comprising a collapsible body formed by upright walls hingedly connected at the four vertical corners of the body and a combined end wall and interior partition structure bracing said walls and dividing the space within the same into compartments, said structure being formed by flaps that are continuations of said upright walls and that are hinged thereto, each flap having a fold line parallel to its hinged edge providing a hinged connection between an inner wall portion and a partition portion, said flaps being positioned in the assembled carton with their partition portions vertical and their wall portions horizontal, each partition portion extending across the space between opposite walls of the carton and being of substantially the same height as said walls, pairs of flaps that are hinged to opposite carton walls having their wall portions in the same plane, the flaps of a first pair at the lower end of the body having alined slots at right angles to their hinged edges that extend across their wall portions and into their partition portions and notches in their partition portions laterally offset with respect to said slots, the flaps of a second pair hinged to the lower ends of opposite parallel walls of the body and having wall portions overlying the wall portions of the first pair and partition portions that are positioned back to back in said slots, the flaps of a third pair hinged to the upper ends of said opposite parallel walls having wall portions parallel to the wall portions of the first and second pairs and closely overlying the end edges of the partition portions of the first pair and having partition portions crossing the partition portions of the first pair and engaging in the notches thereof.

3. A shipping carton as defined in claim 2 wherein the partition portions of said second and third pairs of flaps are made foldable by means of fold lines extending thereacross to facilitate assembly, said last-named fold lines being parallel to and spaced a short distance from the fold lines hingedly connecting said last-named partition portions to the wall portions.

4. A rectangular knockdown multicompartment carton comprising a collapsible body formed by upright end and side walls hingedly connected at the vertical corners of the body and a combined wall and interior partition structure forming top and bottom walls and dividing the interior of the carton into twelve compartments, said structure being formed by flaps at the top and bottom of the container hinged to said upright walls, said flaps having fold lines parallel to their hinged edges providing hinged connections between inner wall portions and partition portions, the partition portions of the flaps being of substantially the same height as said upright walls and the wall portions of the flaps being located in planes perpendicular to said upright walls, one of the flaps that is hinged to the lower end of an upright end wall having a slot at right angles to its hinged edge that extends across its wall portion into its partition portion and a notch in its partition portion laterally offset with respect to said slot, a second flap hinged to the lower end of an upright side wall having a wall portion that closely underlies the outer face of the wall portion of the first flap and a partition portion that is positioned in said slot, a third flap hinged to the upper end of an upright end wall and having a slot alined with the notch in the first flap and perpendicular to its hinged edge, said slot extending across its wall portion and into its partition portion, the slot of the third flap being laterally offset with respect to the slot of the first flap and having a notch in its partition portion that alines with the slot in the first flap and receives the partition portion of the second flap, and a fourth flap hinged to the upper end of an upright side wall and having a wall portion that closely overlies the outer surface of the wall portion of the third flap and a partition portion that is positioned in the slot of the third flap and the notch of the first flap.

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