

Oct. 1, 1963

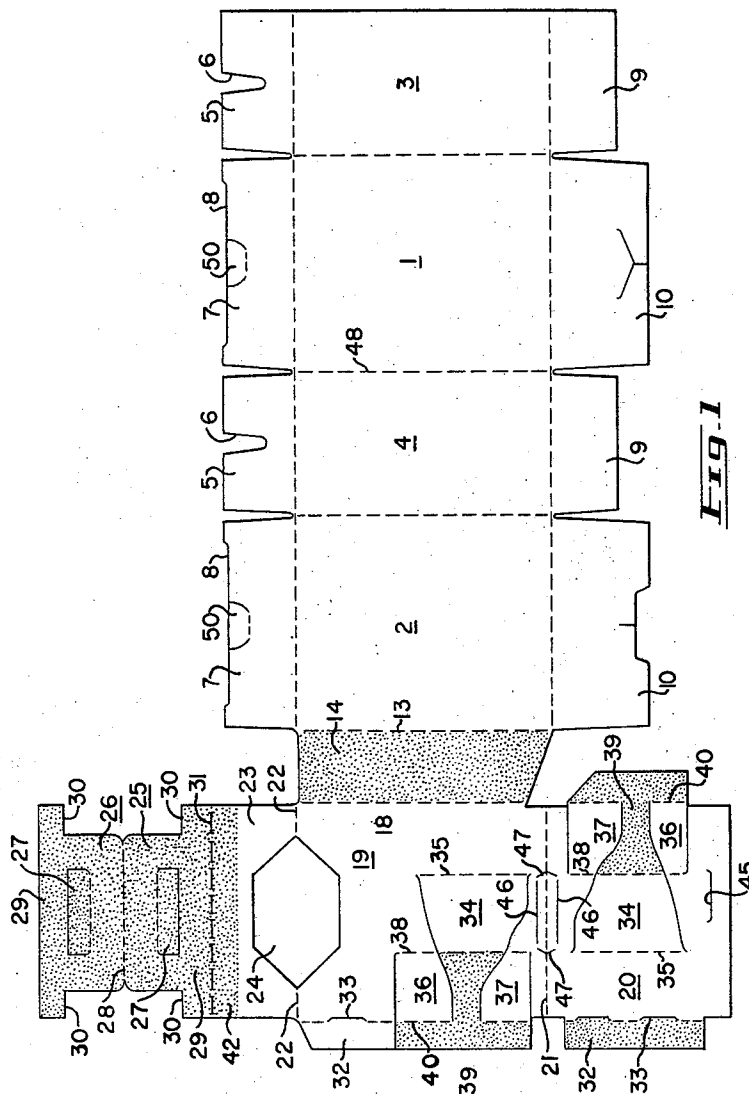
K. ENGEL

3,105,608

CARTONS

Filed Dec. 11, 1961

8 Sheets-Sheet 1



Oct. 1, 1963

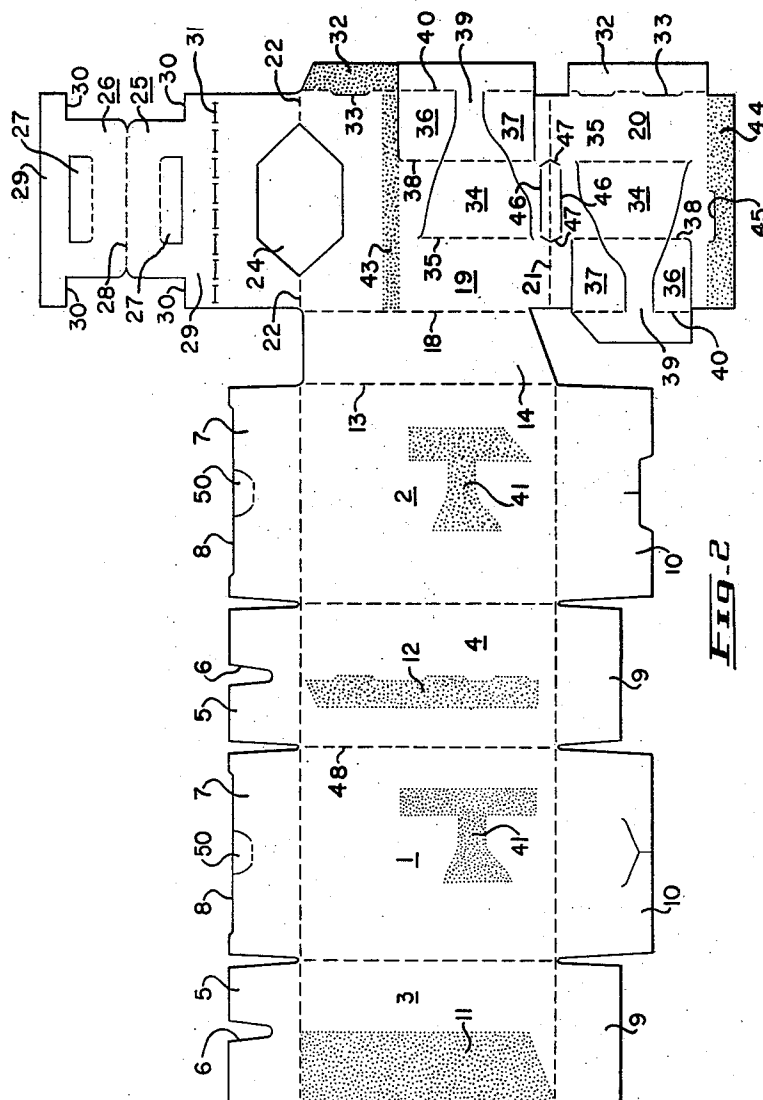
K. ENGEL

3,105,608

CARTONS

Filed Dec. 11, 1961

8 Sheets-Sheet 2



Inventor
Karl Engel
By Cushman, Parley & Cushman
Attorneys

Oct. 1, 1963

K. ENGEL
CARTONS

3,105,608

Filed Dec. 11, 1961

8 Sheets-Sheet 3

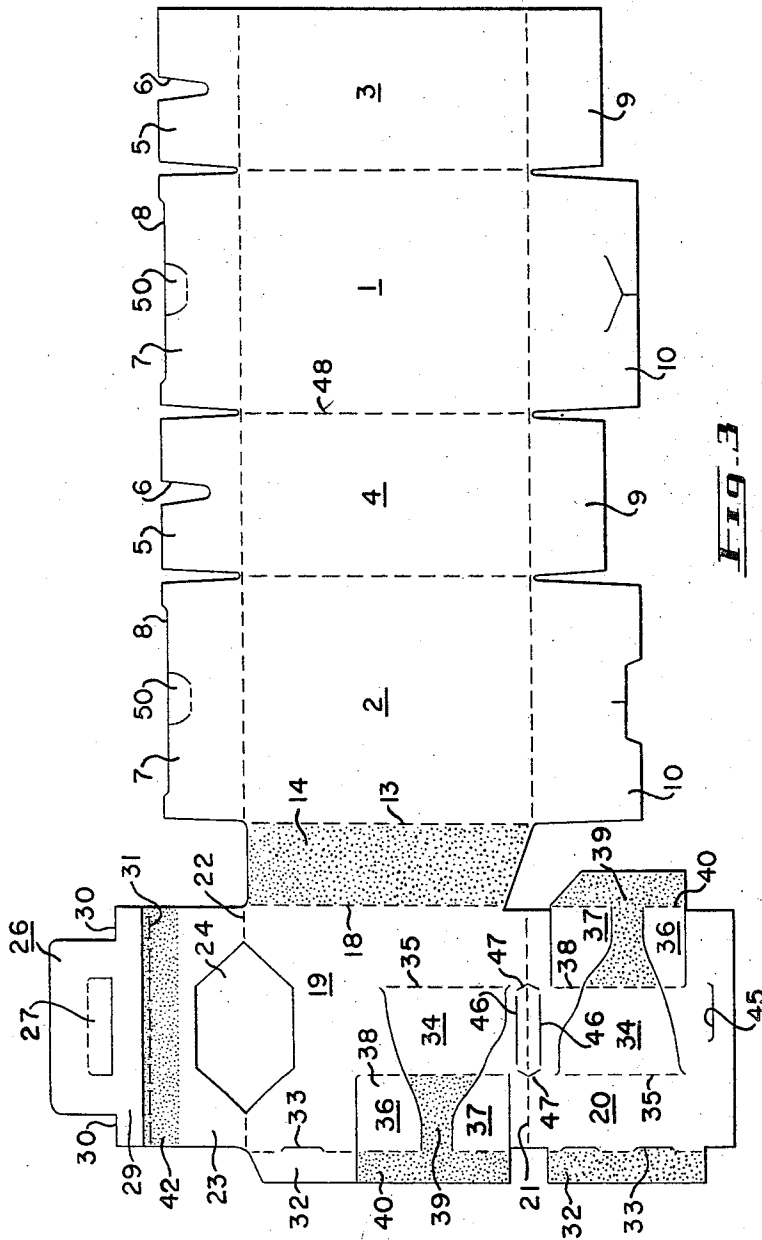


FIG. 3

Inventor
Karl Engel
By Cushman, Darby & Cushman
Attorneys

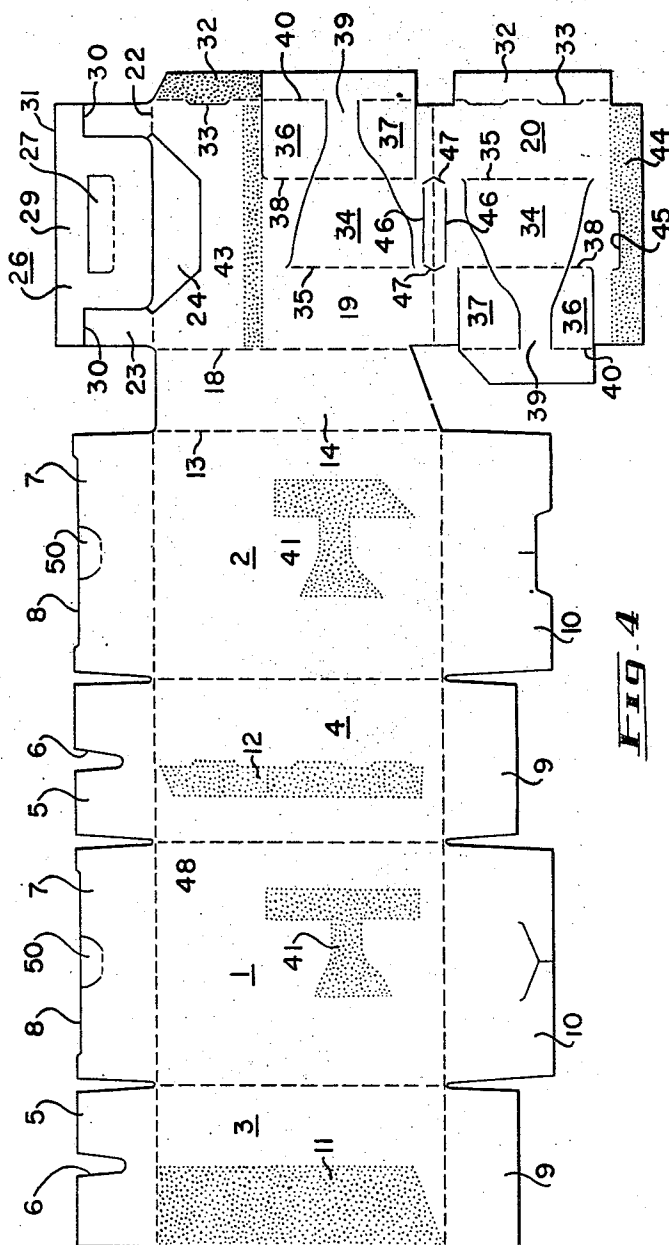
Oct. 1, 1963

K. ENGEL
CARTONS

3,105,608

Filed Dec. 11, 1961

8 Sheets-Sheet 4



Inventor
Karl Engel
By Cushman, Darby & Cushman
Attorneys

Oct. 1, 1963

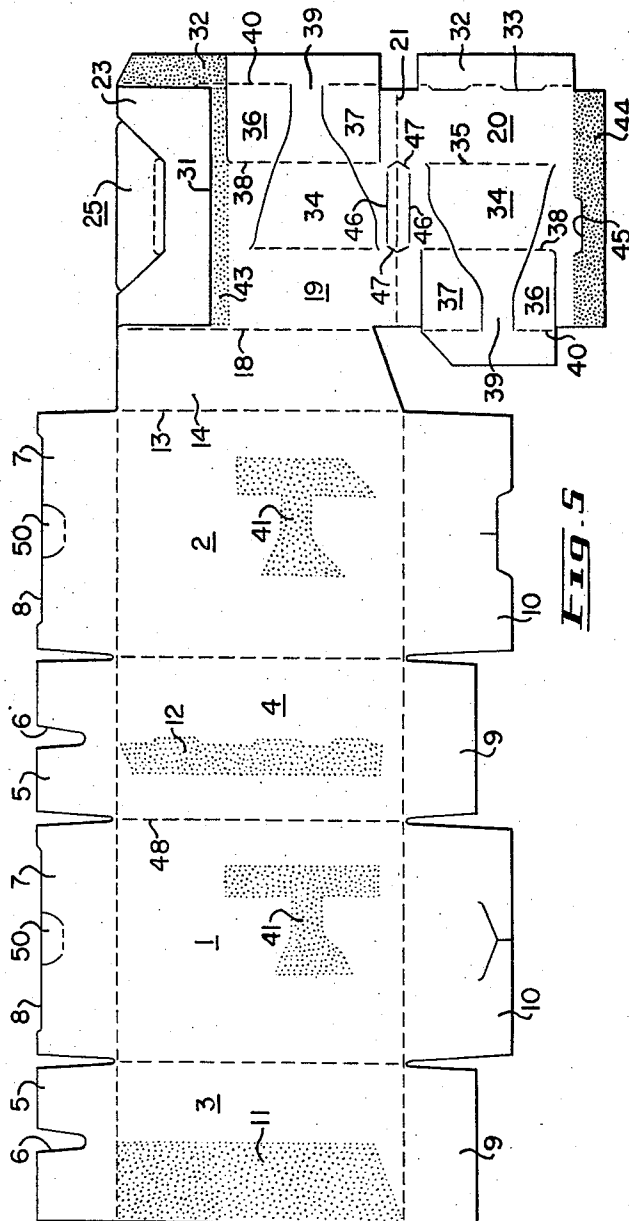
K. ENGEL

3,105,608

CARTONS

Filed Dec. 11, 1961

8 Sheets-Sheet 5



5-617

Inventor
Karl Engel
By Cushman, Parly & Cushman
Attorneys

Oct. 1, 1963

K. ENGEL
CARTONS

3,105,608

Filed Dec. 11, 1961

8 Sheets-Sheet 6

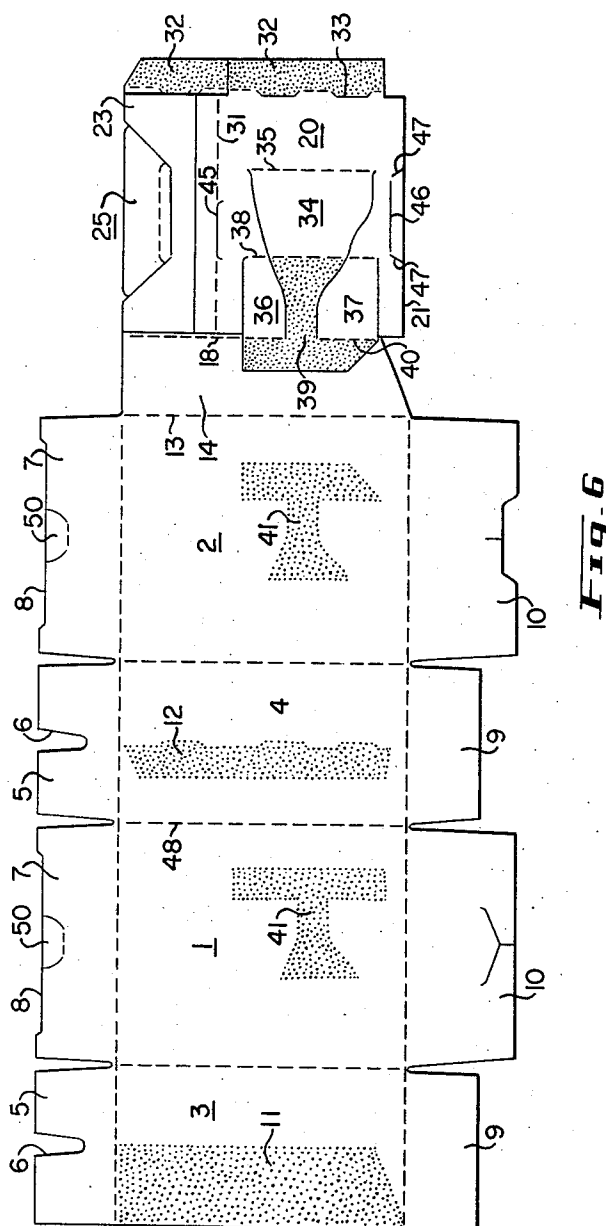


Fig. 6

Inventor
Karl Engel
By Cushman, Darby & Cushman
Attorneys

Oct. 1, 1963

K. ENGEL
CARTONS

3,105,608

Filed Dec. 11, 1961

8 Sheets-Sheet 7

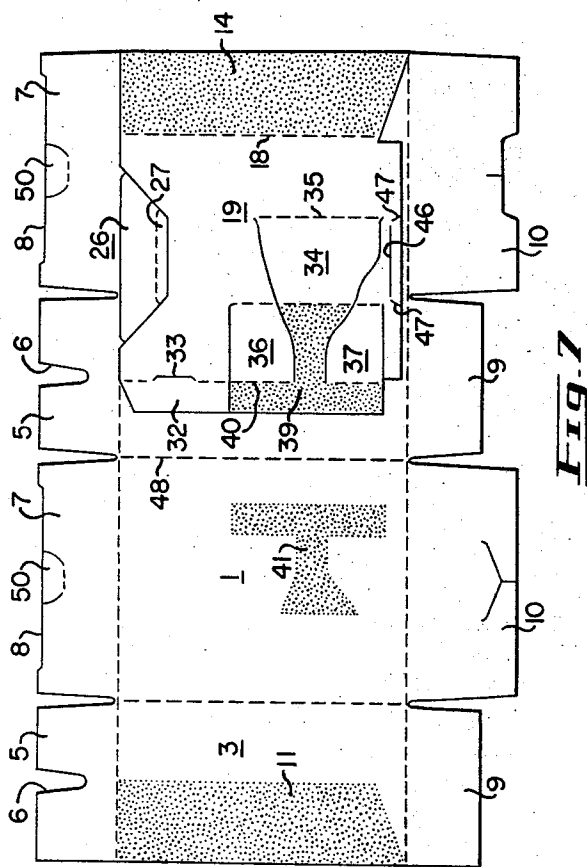


Fig. 7

Inventor
Karl Engel
By Cushman, Darby & Cushman
Attorneys

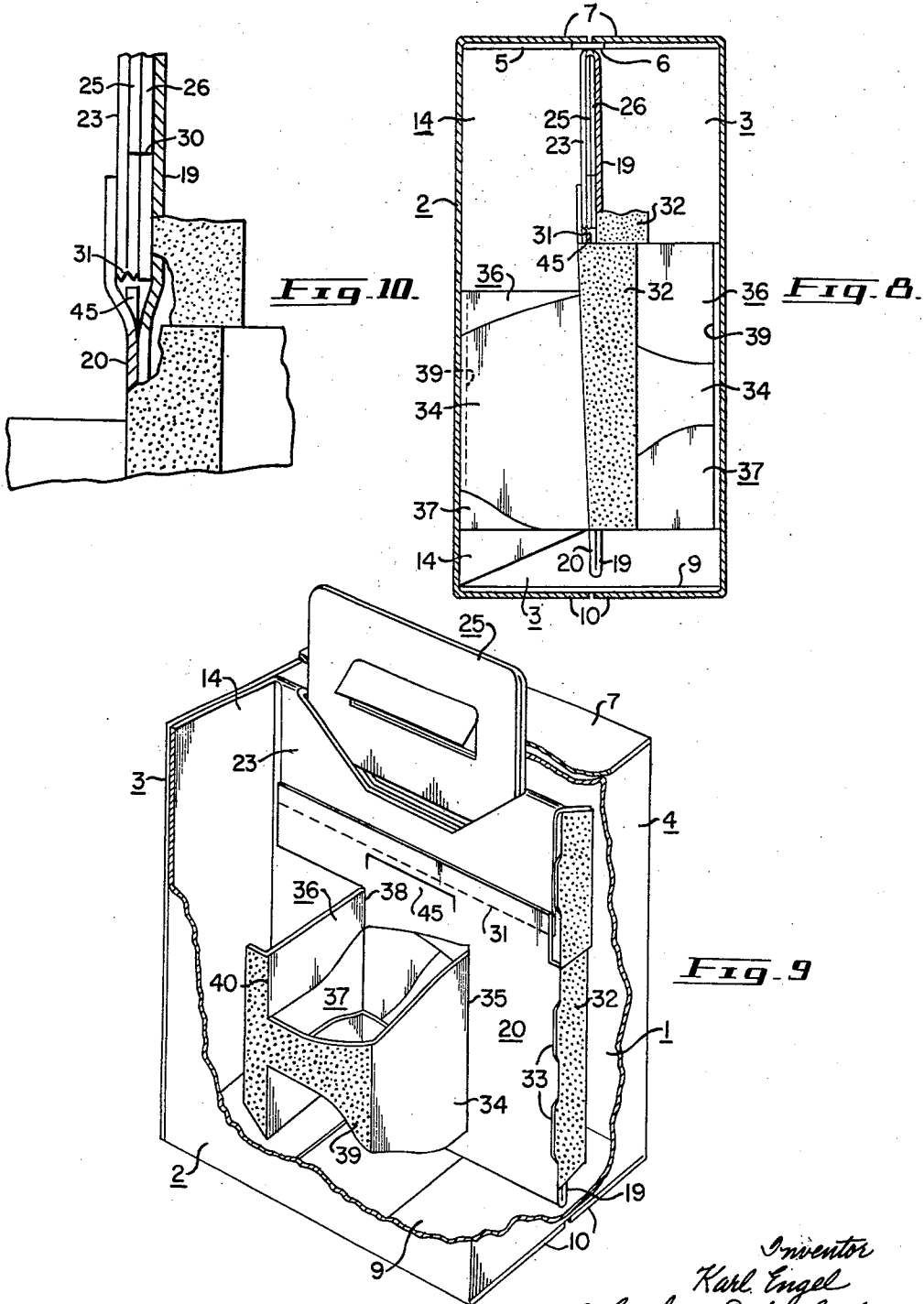
Oct. 1, 1963

K. ENGEL
CARTONS

3,105,608

Filed Dec. 11, 1961

8 Sheets-Sheet 8



Inventor
Karl Engel
By Cushman, Darby & Cushman
Attorneys

1

3,105,608
CARTONS

Karl Engel, Toronto, Ontario, Canada, assignor, by mesne assignments, to Unipak Overseas Ltd., Vancouver, British Columbia, Canada

Filed Dec. 11, 1961, Ser. No. 158,416

Claims priority, application Canada May 11, 1961

4 Claims. (Cl. 220-105)

This invention relates to cartons and more particularly to the type of carton formed from a unitary member.

Heretofore, many proposals have been made for forming cartons from a single unitary member. However, for one reason or another, such proposals have not proved to be too satisfactory.

For instance, it has been known to form a carton from a unitary member so as to provide a wall structure with an interior partition assembly secured thereto dividing the carton into a pair of adjacent compartments, and an extensible carrying handle cooperating with the partition assembly. Due to the choice of design of the unitary member, however, it has been impossible to provide such a carton with a top closure integral with the wall structure. Moreover, neither of the pair of compartments have been sub-divided by partitions into a plurality of smaller compartments which, it will be appreciated, is a desirable feature when considering the transportation of fragile articles such as glass bottles.

Accordingly, the object of this invention is to overcome the above disadvantages by forming a carton having a wall structure, an integral top closure, and an interior assembly of mutually transverse partitions therein including an extensible carrying handle, from a single unitary member.

A further object of the present invention is to provide novel means, integral with said interior assembly, serving to limit the amount of downward movement of the extensible handle.

This invention is illustrated, by way of example, in the accompanying drawings, in which:

FIGURE 1 is a plan view of one form of one-piece blank adapted to form the wall structure and interior assembly of the carton;

FIGURE 2 is an obverse view of FIGURE 1;

FIGURES 3-7 show various stages of assembly of a knock-down carton formed from the blank of FIGURE 1;

FIGURE 8 is a detailed end view of an erected carton formed from the blank shown in FIGURE 1, with the end wall panel removed to show the handle member in retracted and non-detached position.

FIGURE 9 is a perspective view of the carton with part of the wall structure broken away to show the handle detached from its associated longitudinal partition and in its extended position; and

FIGURE 10 is a detail of FIGURE 9, on an enlarged scale showing the position of the aforementioned novel means for limiting the amount of downward movement of the handle member.

Referring to the drawings, and in particular to FIGURES 1 and 2, the one-piece blank shown therein is scored and incised to provide a pair of side wall panels 1, 2, a pair of end wall panels 3, 4, a pair of top end closure flaps 5 each having a slot 6 therein, a pair of top side closure flaps 7 each having a recessed portion 8, a pair of bottom end closures 9, and a pair of bottom side closures 10. End wall panel 3 is provided, on one face thereof, (see FIGURE 2), with a strip 11 of any suitable pressure sensitive adhesive extending, in depth, from its associated top end closure flap 5 to its associated bottom end closure 9. Moreover, one face of end wall panel 4

2

is also provided with a strip 12 (see FIGURE 2) of pressure sensitive adhesive.

Side wall panel 2 is integrally connected, by means of a common score line 13, to a partition end flap 14 corresponding in area to the area of adhesive strip 11 on end wall panel 3, one face of said end flap 14 being coated with pressure sensitive adhesive as is shown in FIGURE 1.

The end flap 14 is integrally connected, by means of a common score line 18, to a first primary panel 19 which is integrally connected to a second primary panel 20 by means of a common score line 21. The main panel 19 is also integrally connected, by means of a common score line 22, to a third primary panel 23, said first and third primary panels 19 and 23 having a common cut-out 24 therein.

A pair of complementary handle panels indicated generally at 25, 26, each provided with a hinged portion 27 adapted to form a hand hole, are integrally connected together along a common score line 28. Each of said handle panels are provided with a main body portion 29 having a pair of spaced shoulders 30 and handle panel 25 is integrally and detachably connected to the third primary panel 23 along a weakened score line 31.

Each of the first and second primary panels 19 and 20 is provided with a hingeable end tab 32 integrally connected thereto along an interrupted line 33 of alternate incisions and scoring, one face of each of said tabs 33 being coated with pressure sensitive adhesive.

Moreover, each of said first and second primary panels 19 and 20 is provided with a plurality of secondary panels 34, 36 and 37, each of said secondary panels 34 being integrally and hingedly connected, at one end thereof, to its associated primary panel along a common score line 35. One end of each of the secondary panels 36 and 37 is integrally and hingedly connected to the associated primary panel along a common score line 38. Each pair of secondary panels 36 and 37 is spaced apart by means of a tertiary panel 39 which is integrally and hingedly connected, at one end thereof, to the adjacent secondary panel 34 along said common score line 38. The other end of each of said tertiary panels 39 is hingedly and integrally connected to the adjacent secondary panels 36 and 37 along an interrupted score line 40.

As will be seen from reference to FIGURE 2, each of the side wall panels 1, 2, is provided with an area 41 of pressure sensitive adhesive corresponding to the area of the tertiary panels 39, one face of which, as will be seen from FIGURE 1, is similarly coated. As will also be seen from FIGURE 1, one face of each handle member 25, 26, and a marginal strip 42, adjacent the weakened score line 31, of the third primary panel 23, is also coated with pressure sensitive adhesive.

Referring now to FIGURE 2, it will be seen that a strip 43 of pressure sensitive adhesive is provided on the obverse face of the first primary panel 19 as is a similar strip 44 on the second primary panel 20. A tab 45 is also provided in the second primary panel 20 adjacent its marginal side edge, the strip 44 of adhesive not being applied to the tab 45.

An incision 46, adjacent the common score line 21, is provided in each of said first and second primary panels 19 and 20, said incisions 46 being parallel with one another. A pair of angular incisions 47, spaced apart by said incisions 46, is provided in each of said first and second primary panels 19 and 20.

In assembling the one-piece blank shown in FIGURES 1 and 2 to provide a knock-down carton, the handle panel 26 is folded along score line 29 so that its coated face is in registry with the coated face of handle panel 25, as is shown in FIGURE 3. The blank is then turned over, as is shown in FIGURE 4 and the combined handle panels

3

25, 26 folded along the weakened score line 31 so that they overlie the third primary panel 23. Thereafter, the combined handle panels 25, 26 and the third primary panel 23 is folded along score line 22 so that they overlie the upper part of the first primary panel 19 as is shown in FIGURE 5.

The second primary panel 20 is then folded along the common score line 21 so that it overlies the first primary panel 19 and the lower portion of the third primary panel 23, thereby bringing its coated strip 44 into registry with the coated strip 43 of primary panel 19 as well as with the coated strip 42 of the third primary panel 23, this position being shown in FIGURE 6.

It will be seen from FIGURE 6 that the lower edge, formed by the weakened line 31, of the third primary panel 23 is substantially in alignment, or slightly above, the upper edge of the tab 45 formed in the second primary panel 20. It will also be recalled, and will be seen from FIGURE 2, that the pressure sensitive adhesive strip 44 on the second primary panel 20 does not extend over the tab 45. Thus, when the knock-down carton is formed, only the coated marginal edge 44 of the second primary panel 20 will adhere to the coated strips 43, 42 of the first and third primary panels 19, 23 respectively and not the tab 45. Accordingly, when pressure is brought to bear on the blank, as is described hereafter, the tab 45 will be angulated with respect to the vertical plane of its associated second primary panel 20.

The partition end flap 14 is then folded along the score line 13 so that the former overlies the side wall panel 2 and so that the coated face of tertiary panel 39 of the second primary panel 20 is brought into registry with the coated area 41 of said side wall panel 2, and so that the coated face of each tab 32 is brought into registry with the strip 12 on end wall 4, as is shown in FIGURE 7. It will be noted from FIGURE 7 that the upper edge of the combined handle members 25, 26, will, at this stage, be coincident with the upper edge of the first and third primary panels 19 and 23.

Finally, side wall panel 1 is folded over along a common score line 48 integrally connecting it to the end wall panel 4 so as to bring about registry between (a) the coated area 41 on said side wall panel 1 and the coated face of tertiary panel 29 of the first primary panel 19 and (b) the coated strip 11 on the end wall panel 3 and the coated face of partition end flap 14.

Pressure is then applied to the blank to bring about adhesion between the components and to form a knock-down carton.

When it is desired to fill such a carton, it is duly erected and, in so doing, the partition end flaps 14 and 32 will, due to their adhesion with their associated and respective end wall panel 4, 3, bend along the respective score lines 18 and 33 so as to extend at right angles to the primary panels 19, 20 and 23, and handle member. Thus, the primary panels 19, 20 and 23 will extend at right angles along the centre longitudinal axis of the carton between the two mutually opposed end walls 3 and 4, as will the handle member.

Similarly, due to the adhesion between each side wall panel and its associated tertiary panel 39, the secondary panels 34, 36 and 37 of the first primary panel will hinge about their respective score lines 35, 38 and 40, so as to extend at right angles between said first primary panel 19 and its adjacent side wall panel 1. Concurrently, the secondary panels 34, 36 and 37 of the second primary panel 20 will similarly hinge so as to extend at right angles between the latter and the adjacent side wall panel 2.

The bottom closure flaps are sealed in any convenient manner, such as e.g. by pressure sensitive adhesive, staples, or masking tape.

When the carton has been filled with the desired contents, the top closure flaps are folded over and sealed in any convenient manner such as just described in connection with the bottom flaps.

4

When it is desired to carry the carton, the user inserts his fingers within the recessed portions 8 of the top side flaps 7 pushing downwardly on tabs 50, and grasps the upper edge of the handle member, formed by the two panels 25 and 26, pulling upwardly.

Referring now to FIGURE 8, this shows the handle member in its lowermost position and before it has been detached from the third primary panel 23. On the other hand, FIGURE 9 shows the handle member in its fully extended, and hence detached, position.

As will also be seen from FIGURES 8 and 9, the first primary panel 19 constitutes a first longitudinal partition and the second and third 20 and 23 constitute a second longitudinal partition. The pair of longitudinal partitions extends along the central longitudinal axis of the carton, and said latter partitions and the transverse partitions formed by the secondary panels, divide the interior of the carton into a plurality of article receiving compartments as well as constituting an interior assembly which also includes the handle member.

Initial upward movement of the handle member, serves completely to sever the weakened score line 31 so that the handle member is detached from the third primary panel 23. The handle member will continue to move upwardly under the direction of the user's hand, until the shoulders about the underside of the common upper edge, formed by score line 22, integrally connecting the pair of longitudinal partitions together. When this occurs, further upward or outward movement of the handle will be prevented. Thus, the handle member will be capable of movement between a first retracted position in which, when the top closure is in its closed operative position, said handle member lies beneath the top closure and a second operative position in which a portion thereof projects above the top closure for carrying purposes, the cooperation between the shoulders 30 of the handle member and the underside of the common upper edge of the pair of longitudinal partitions, forming means to limit the extent of movement of the handle member in one direction.

Due to the angulation of the tab 45 on the second primary panel 20 and due to its location between the pair of longitudinal partitions, when the handle member is moved downwardly, the lower edge of said handle member will abut the upper edge of said tab. Thus, the tab 45 and the lower edge of the handle member form cooperating means on the latter and the longitudinal partition to limit the extent of movement of the handle member in its other or downward direction.

Thus, the handle member will be slidably disposed within said pair of longitudinal partitions, and the slots 6 in the top end closure flaps, permit the handle member upward movement through the top closure flaps when the latter are in closed operative position.

I claim:

1. A carton of the type formed from a unitary member and having an integral wall structure comprising a pair of mutually opposed side walls, a pair of mutually opposed end walls and a bottom; said carton including a top closure integral with said wall structure, and an interior assembly; said interior assembly including a pair of longitudinal partitions connected together along a common upper edge and each extending along the central longitudinal axis of the carton between a selected pair of mutually opposed walls and being secured thereto; a slot in said common upper edge; a plurality of transverse partitions each integrally and hingedly connected, at one end thereof, to an associated longitudinal partition and being secured, at the other end thereof, to an adjacent wall, said longitudinal and transverse partitions dividing the interior of the carton into a plurality of article receiving compartments; said interior assembly also including a handle member, having an underedge integral with and detachably secured to a selected one of said longitudinal partitions; a pair of shoulders on said handle, the latter being slidably disposed within said pair of longi-

5

tudinal partitions and in said slot and being movable between a first retracted position in which, when said top closure is in its closed operative position, said handle member lies beneath said top closure and a second operative position in which a portion thereof projects above said top closure for carrying purposes; said handle member being adapted, upon initial movement towards its said second operative position, of detachment from its said associated longitudinal partition; said shoulders being adapted to abut the underside of said common upper edge to limit the extent of movement of said handle in its said second operative position and after said detachment; and a tab on a selected one of said longitudinal partitions and angulated with respect to the vertical plane of the latter, said tab being located above said transverse portions and between said pair of longitudinal partitions whereby it is adapted to be contacted by said underedge of said handle member to limit the extent of movement of the latter to its first retracted position after said detachment.

2. A carton according to claim 1 wherein the longitudinal partition to which the handle member is detachably secured is constituted by an upper panel and a lower panel, said handle member being detachably secured to the lower edge of said upper panel; and wherein said tab is integral with said lower panel and is located below the lower edge of said upper panel; the upper marginal edge, bordering said tab, of said lower panel being secured in face-to-face contact with the lower marginal edge of said upper panel as well as with the remaining longitudinal partition whereby said tab is urged into its angulated position with respect to said longitudinal partitions.

3. A one-piece blank adapted to form a multi-cell carton having an interior assembly defining partitions therein and an extensible handle member, said blank including a plurality of panels disposed in seriatim side-by-side relation and integrally and hingedly connected together; certain of said panels being adapted, on folding of the blank, to form a pair of mutually opposed end walls and a pair of mutually opposed side walls; each of said certain panels being provided with a pair of spaced flaps integrally and hingedly connected thereto, each of said pairs of flaps, on folding of the blank, being adapted to form carton top and bottom closure flaps; a first primary outer one of the remainder of said panels being scored and incised to form, on folding of the blank, a first longitudinal partition within the carton extending along the central longitudinal axis of said carton; one end of said outer panel member being integrally and hingedly connected to a partition flap and, at its other end, being integrally connected to a selected one of said wall panels by means of an intermediate partition flap; said flaps, on folding of the blank, each being secured to an adjacent wall panel and being adapted, on erection of the carton, to form a pair of partitions transverse to said longitudinal partition so as to locate opposite ends of the latter; said first primary panel also being integrally and hingedly connected to second and third primary panels, adapted, on folding of the blank, to cooperate with one another and said first primary panel to form a second longitudinal partition extending along the central longitudinal axis of the car-

6

ton; said first and second longitudinal partitions being connected together along a common upper edge provided with a slot therein; each of said first and second primary panels having a plurality of secondary panels integrally and hingedly connected thereto along common score lines and adapted, on folding of the blank and erection of the carton, to form a plurality of transverse partitions extending at right angles between an associated longitudinal partition and an adjacent wall of the carton to which they are secured; said third primary panel having at least a first handle panel detachably secured thereto along a common weakened score line to form an extensible handle member, having a pair of shoulders and an underedge, slideably disposed between said pair of longitudinal partitions and in said slot and movable between a first retracted position in which, when said blank is folded and the carton erected, said handle member lies beneath said top closure flaps, and a second operative position in which a portion thereof projects above said top closure flaps for carrying purposes; said weakened line permitting said handle member, upon initial movement towards its second operative position, to be detached from said third primary panel; said shoulders being adapted to abut the underside of said common upper edge to limit the extent of movement of said handle member in its said second operative position and after said detachment; a selected one of said first and second primary panels being incised to provide a tab which, when said blank is folded and said carton is created, is angulated with respect to the vertical plane of its associated primary panel and is located above said transverse partitions and between said pair of longitudinal partitions whereby it is adapted to be contacted by said underedge of said handle thereby to limit the extent of movement of the latter to its said first retracted position after said detachment.

4. A one-piece blank according to claim 3 including a further handle panel member, articulated to said first mentioned handle panel member, each provided with a pair of shoulders and a reduced carrying portion, a selected one of said handle panel members being detachably secured to said third primary panel along said common weakened score line, and wherein said tab is integral with said second primary panel and is located below the lower edge of said third primary panel; the upper marginal edge, bordering said tab, of said second primary panel and when said blank is folded, being secured in face-to-face contact with the lower marginal edge of said third primary panel as well as with said first primary panel whereby said tab is urged into its angulated position with respect to said longitudinal partitions.

References Cited in the file of this patent

UNITED STATES PATENTS

55	2,609,137	Toensmeier	Sept. 2, 1952
	2,943,762	Richardson	July 5, 1960
	3,059,828	Giora	Oct. 23, 1962
	3,070,258	Engel	Dec. 25, 1962

FOREIGN PATENTS

60	843,718	Great Britain	Aug. 10, 1960
----	---------	---------------	---------------