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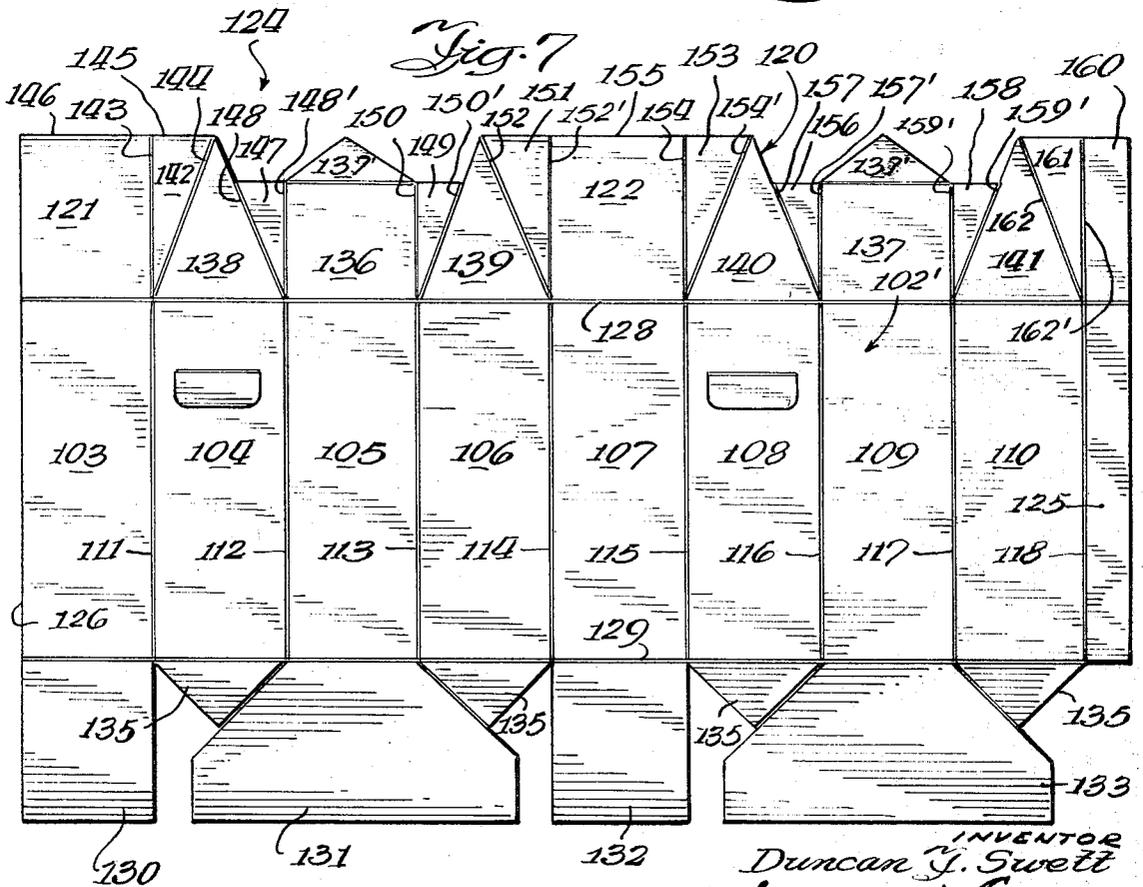
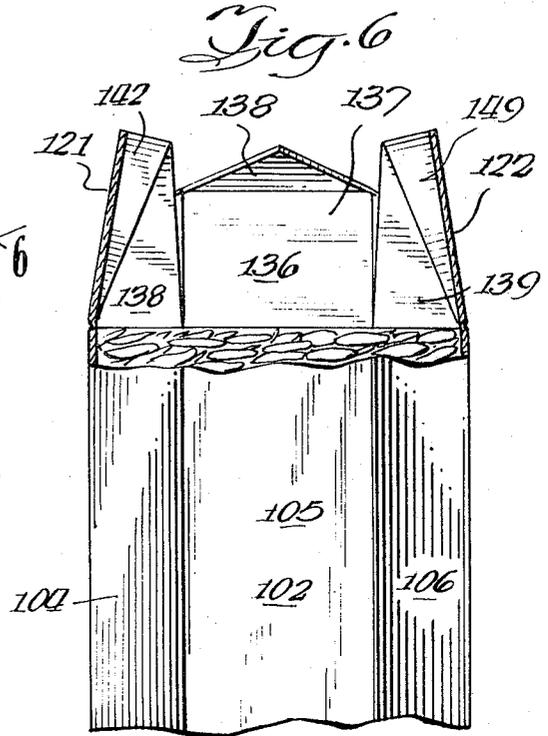
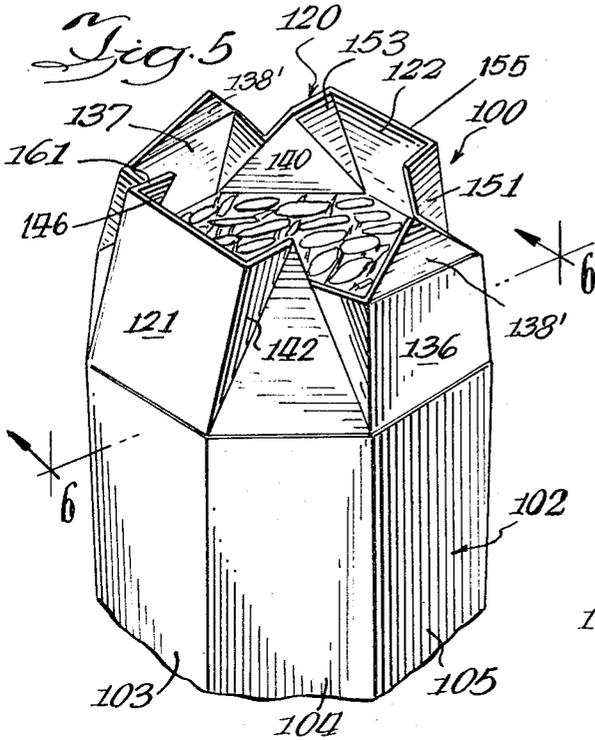
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3,526,352

POLYGONAL CARTON WITH SNAP-ACTION SELF-LOCKING END CLOSURE

Filed Nov. 13, 1968

5 Sheets-Sheet 2



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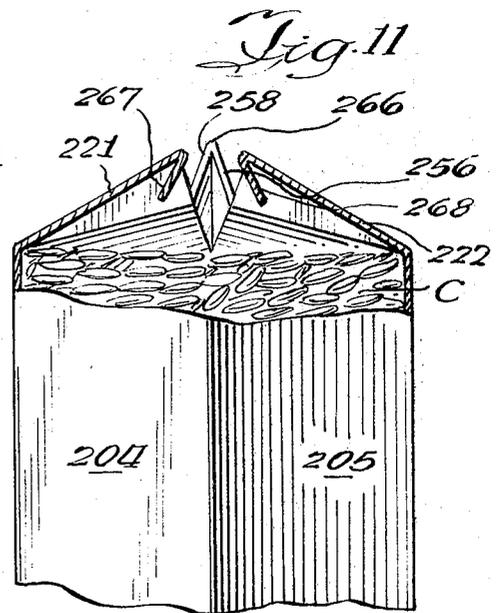
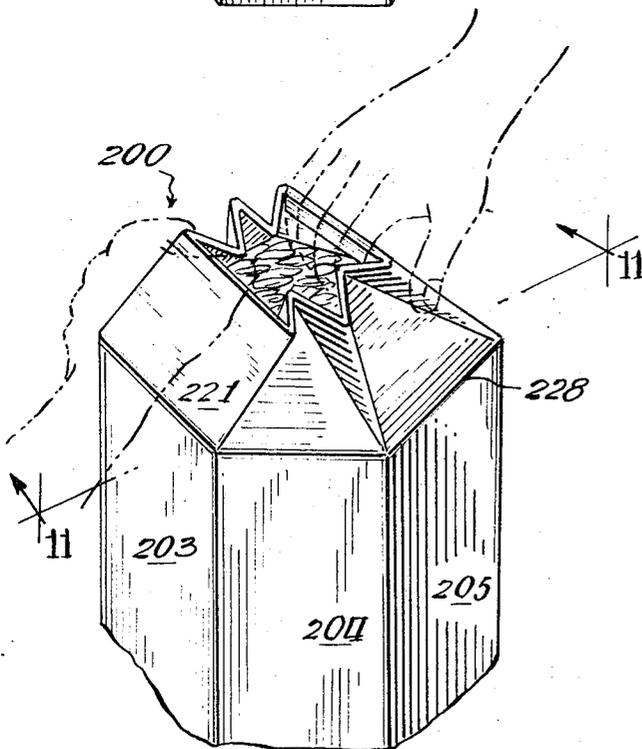
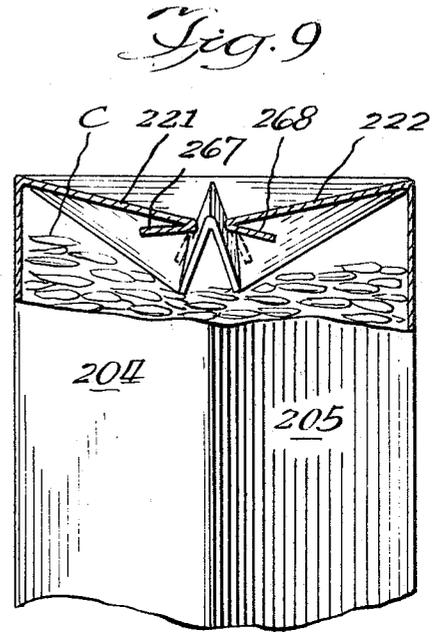
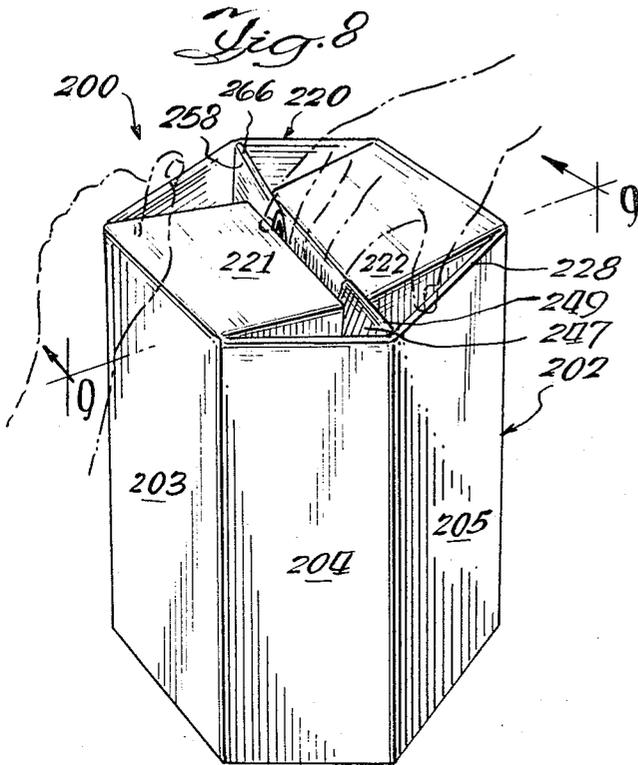
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5 Sheets-Sheet 3



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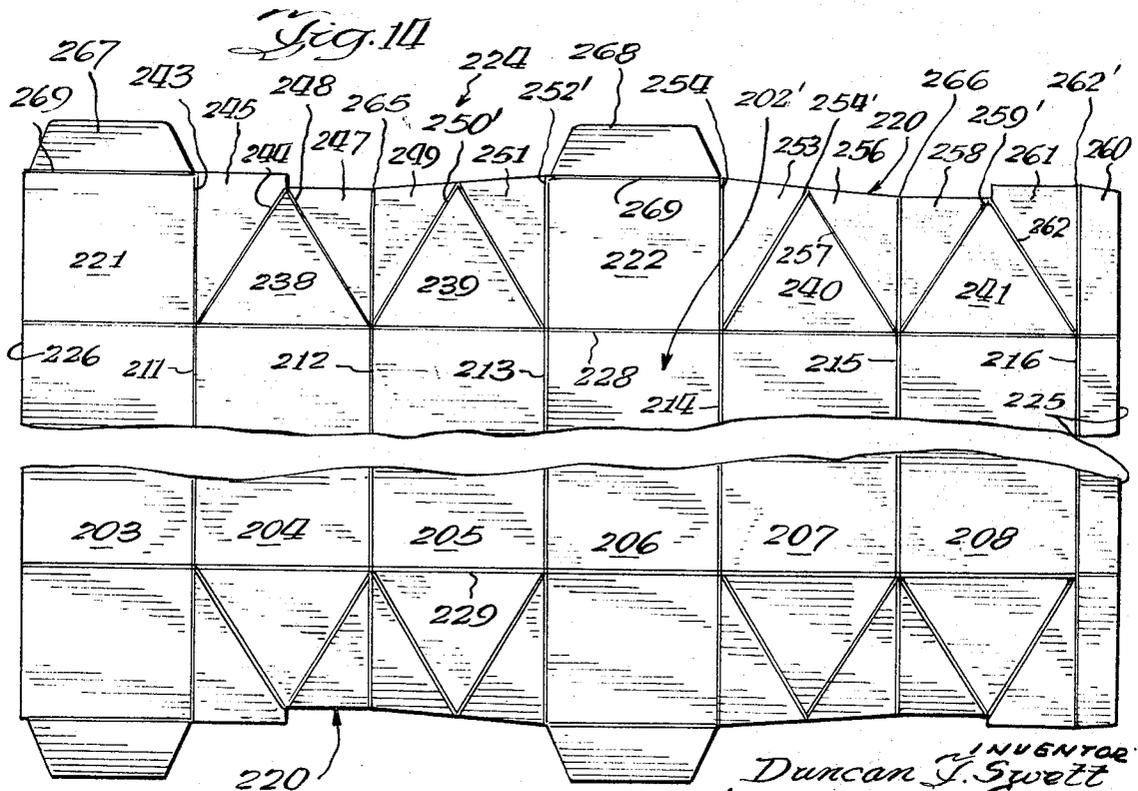
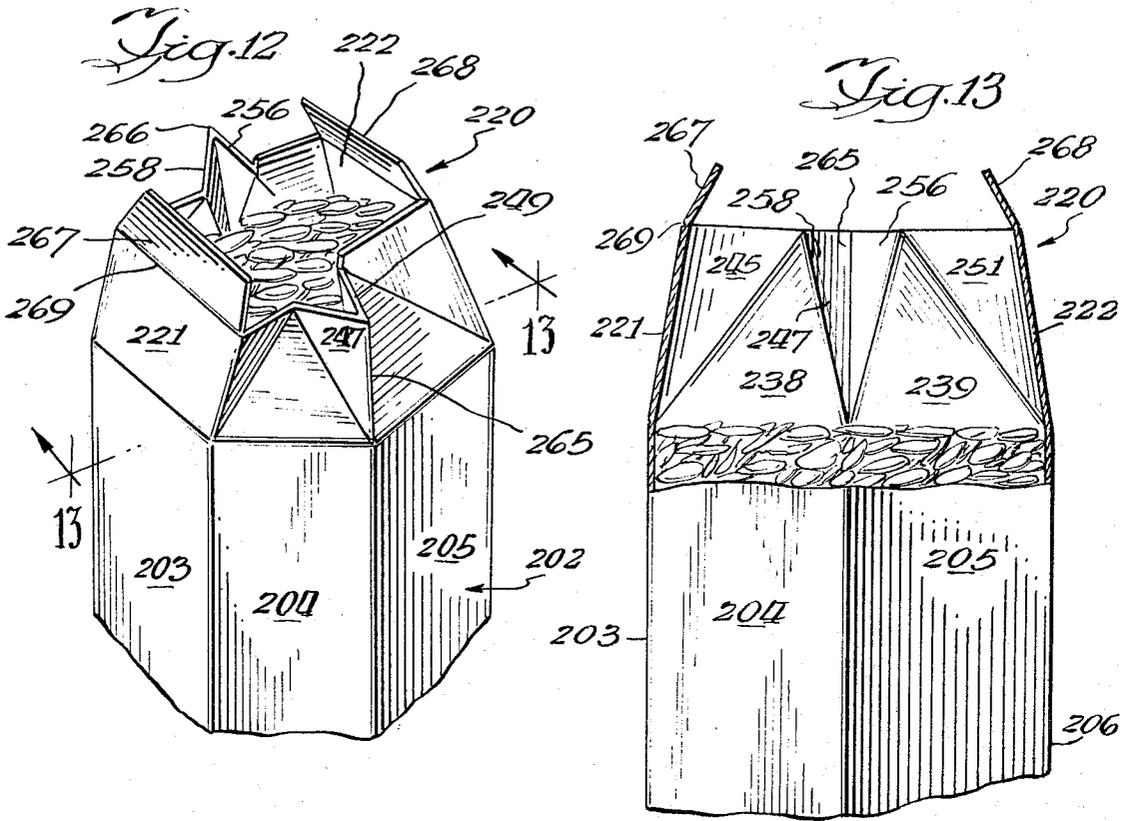
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POLYGONAL CARTON WITH SNAP-ACTION SELF-LOCKING END CLOSURE

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5 Sheets-Sheet 4



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**POLYGONAL CARTON WITH SNAP-ACTION
SELF-LOCKING END CLOSURE**

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10 Claims

ABSTRACT OF THE DISCLOSURE

A dispensing carton of generally rectangular polygonal shape formed from a unitary blank of foldable material. The carton has a collapsible self-locking end closure provided by a plurality of hingedly interconnected flap elements joined to the side panels of the carton and arranged to be manually folded inwardly in a snap-action to releasably lock the end closure in a closed position. The end closure can be opened and closed repeatedly without requiring additional securing means for holding the end closure in a closed position. The end closure has hand-grip formations provided by certain of the flap elements for manually manipulating said end closure between its closed position and its extended open condition to permit access to the contents of the carton. The contents of the carton may be packaged in a separate sleeve or bag carried inside the carton. A plurality of embodiments for the carton and modifications in the unitary blank from which the cartons can be erected are contemplated.

This invention relates generally to a dispensing carton formed from a unitary blank of foldable material, such as corrugated paperboard and more particularly, relates to such a carton of rectangular polygonal shape having an improved self-locking end closure which can be releasably locked in a closed condition by a snap-action, inwardly collapsing movement of the flap elements comprising the end closure.

The carton embodying the invention preferably is made of corrugated paperboard or other suitable paperboard which can be die-cut to form a one-piece blank from which the carton can be erected. The one-piece blank can be shipped by the manufacturer to the user in a knocked-down flat condition suitable for being erected easily to a complete carton for filling with a product. The product may be encased in a bag or liner which is accommodated in the carton. At least one end of the polygonal-shaped body portion of the carton is provided with an integral collapsible self-locking end closure which eliminates the need for a separate cover or lid. The end closure preferably is provided at one end of the carton constituted its top end while the opposite or bottom end of the carton may have a conventional end closure arrangement. However, it is contemplated that both ends of the polygonal body portion may have end closures constructed in accordance with the invention. The end closure of the invention can be manipulated manually for opening and closing the carton without recourse to additional securing means for maintaining the carton closed. Thus, the carton can be used repeatedly as a dispensing carton also.

One of the objects of the invention is to provide a paperboard carton of generally polygonal prism shape which is formed from a unitary blank of foldable sheet material by conventional die-cutting techniques to include a novel self-locking end closure integral with the blank which can be folded to a closed position with a snap-action movement releasably locking the same in said closed position.

Another object of the invention is to provide a self-

locking end closure for a carton of polygonal prism shape which includes a pair of top oriented flap formations which also provide manual grip means for manipulating the end closure between its opened and closed positions, said top oriented flap formations adapted to be abutted in frictional engagement one with the other for releasably locking the end closure in closed position.

Another object of the invention is to provide a modified form of end closure of the character described which includes a pair of wall partitions derived from certain others of said end flap elements against which said top oriented flap elements are abutted in the closed position of the end closure.

Another object of the invention is to provide a carton of the character described having advantageously located openings in certain of the side panels forming the body portion of the carton to provide means for hand-carrying the carton.

A further object of the invention is to provide a one-piece carton blank of novel shape which may be folded quickly and easily to erect a carton of rectangular polygonal shape having said collapsible end closure.

The foregoing and other objects will be apparent from the ensuing disclosure in which several embodiments of the invention have been described in detail and illustrated in the accompanying drawings. It is understood that the drawings are for purposes of illustration only and that minor variations in the size, construction, and arrangement of the several parts thereof may occur to the skilled artisan without departing from the scope or sacrificing any of the advantages of the invention.

BRIEF DESCRIPTION OF THE FIGURES

FIG. 1 is a perspective view of a carton embodying the invention, the carton being in erected condition and with the novel self-locking end closure thereof in closed position;

FIG. 2 is a fragmentary sectional view taken through said end closure along the line 2—2 of FIG. 1 and in the general direction indicated;

FIG. 3 is a partial perspective view of the carton of FIG. 1 and with the novel end closure illustrated in the initial posture of opening same;

FIG. 4 is a fragmentary sectional view taken through the end closure along the line 4—4 of FIG. 2 and in the general direction indicated;

FIG. 5 is a partial perspective view of said carton with said end closure in a fully opened position;

FIG. 6 is a fragmentary sectional view taken through the end closure along the line 6—6 of FIG. 3 and in the general direction indicated;

FIG. 7 is a plan view of a unitary blank from which the carton of FIG. 1 is formed;

FIG. 8 is a perspective view of a modified form of the carton embodying the invention and with the novel end closure thereof shown in a closed position;

FIG. 9 is a fragmentary sectional view taken through the said end closure along the line 9—9 of FIG. 8 and in the general direction indicated;

FIG. 10 is a fragmentary perspective view of the carton of FIG. 8 with the end closure shown in a partially opened condition;

FIG. 11 is a fragmentary sectional view taken through said end closure along the line 11—11 of FIG. 10 and in the general direction indicated;

FIG. 12 is a fragmentary perspective view of said carton of FIG. 8 with the end closure in an opened position;

FIG. 13 is a fragmentary sectional view taken through said end closure along the line 13—13 of FIG. 12 and in the general direction indicated;

FIG. 14 is a top plan view of the one-piece blank from which the carton of FIG. 8 is formed;

FIG. 15 is a fragmentary perspective view of a second modified form of the carton embodying the invention with the end closure thereof shown in opened condition;

FIG. 16 is a fragmentary sectional view taken through the end closure along the line 16—16 of FIG. 15 and in the general direction indicated; and

FIG. 17 is a plan view of the one-piece blank from which the carton of FIG. 15 is formed.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

For convenience, the carton of FIG. 1 and the blank of FIG. 7 from which said carton is formed will be described in detail using reference characters from 100 to 199. The carton embodiment of FIG. 8 and the blank of FIG. 14 from which said carton is formed will be described using reference characters from 200 to 299. The carton of FIG. 15 and the blank of FIG. 17 from which said carton is formed will be described using reference characters from 300-399. Where parts of each embodiment are identical or substantially similar, these parts will be identified by a reference character using a prefix digit corresponding to the embodiment in which it is described and terminal digits which are the same for those structural parts common to the several embodiments.

Referring to FIG. 1, the carton of this embodiment is designated generally by the reference character 100. Said carton 100 is formed from a foldable sheet material such as corrugated paperboard to provide a container body portion 102 of generally rectangular polygonal configuration. In this embodiment, the body portion 102 is octagonal in configuration formed from eight rectangular side panels 103, 104, 105, 106, 107, 108, 109, and 110 of the same size which are interconnected along respective fold or score lines 111, 112, 113, 114, 115, 116, 117 and 118.

As seen in FIG. 1, the herein designated top end of the body portion 102 has an integral self-locking end closure designated generally 120, illustrated in closed condition with a pair of hands in phantom outline arranged gripping specific flap elements 121 and 122 of the end closure 120 for opening same to the condition thereof illustrated in FIG. 3. The opposite or herein designated bottom end of the carton 100 may have an end closure 120 or one of conventional end closure construction which is not self-locking. Consequently, it has not been deemed necessary to illustrate the bottom end of the carton 100 although a suitable nonself-locking closure arrangement will be discussed in connection with the one-piece blank 124 of FIG. 7 from which the carton 100 is erected.

Referring to FIG. 7, the blank 124 is a unitary paperboard member of panel and flap elements capable of being folded to form the completed carton 100. The blank has a substantially rectangular body portion 102' scored transversely along the lines 111, 112, 113, 114, 115, 116, 117 and 118 to delineate a plurality of panels 103, 104, 105, 106, 107, 108, 109 and 110 which form the sides of the carton when it is erected. Panel 110 has a pasting or securing flap 125 adapted to be folded along the line 118 so that it can be adhesively secured to the inside surface of panel 103 with the free edge 126 of panel 103 in substantial registry with the fold line 118 to form the rectangular, octagonal container body portion designated 102 in FIG. 1. In the preferred form of blank shown, the body portion 102' has eight rectangular panels of equal size forming a carton 100 of octagonal cross section, but the invention contemplates cartons of hexagonal or other polygonal cross section and is not limited to side panels which are of the same size.

The body portion 102' has a group of integral flap elements hingedly connected along the longitudinally extending fold line 128. These flap elements cooperated to provide the self-locking end closure 120 embodying the invention. Along the longitudinal fold line 129 is hingedly connected a plurality of flap members 130, 131, 132, 133 and four triangular-shape flaps 135 which can be folded

to form a conventional bottom end closure for the carton 100 which is not self-locking. Since the construction of the bottom end closure is not material to the herein invention, the flaps 130 through 135 will not be described in detail. However, as will be apparent, the flap arrangement hingedly connected along the fold line 128 to provide the end closure 120 also can be provided along the fold line 129 in lieu of the flaps 130 through 135.

The flap arrangement constituting the end closure 120 includes a rectangular flap 121 connected to the panel 103 and a rectangular flap 122 connected to the panel 107, the flaps 121 and 122 being of the same size and considered the main rectangular flaps. There are two smaller rectangular flaps 136 and 137, the rectangular flap 136 being connected to the panel 105 and the flap 137 being connected to the panel 109. Each flap 136 and 137 has a triangular tab 137' connected to the free edge thereof opposite the fold line 128.

There are four triangular flaps 138, 139, 140 and 141 of generally isosceles triangular shape, each such flap being hingedly connected along its base edge to the body portion 102. Thus, the flap 138 is connected to the panel 104; the flap 139 is connected to the panel 106; the flap 140 is connected to the panel 108; and the flap 141 is connected to the panel 110.

The flaps 121 and 138 are hingedly connected together by a right triangular web 142 along the fold lines 143 and 144. The base edge 145 of the web 142 is flush with the free edge 146 of the flap 121.

The flaps 136 and 138 are hingedly connected together by a right triangular web 147 along the fold lines 148 and 148'. Likewise, the flap 136 is hingedly connected to the flap 139 by a triangular-shape web 149 along the fold lines 150 and 150'. The webs 147 and 149 are identical in size and they have their base edges flush with the edge 136' of the flap 136.

The flaps 139 and 122 are hingedly interconnected by a triangular-shape web 151 along the fold lines 152 and 152'.

The flaps 122 and 140 are interconnected by the web 153 along the fold lines 154 and 154'. The webs 151, 153 and 145 are identical in size with the base edges of webs 151 and 153 flush with the free edge 155 of the flap 122.

Flaps 140 and 137 are interconnected by a web 156 along the fold lines 157 and 157'. The flaps 137 and 141 are interconnected by a web 158 along the fold lines 159 and 159'. The webs 156 and 158 are identical in size one to the other and to the webs 147 and 149.

Finally, the securing flap 125 has an appendage 160 hingedly connected thereto and the appendage 160 is hingedly connected to the flap 141 by the triangular web 161 along the fold lines 162 and 162'. When the carton is erected to the condition thereof shown in FIG. 1, the appendage flap 160 will be adhesively secured to the inside surface of the flap 121 with the lateral edge 126 also aligned with the fold line 162'.

Referring to FIG. 5, the carton 100 is shown with the end closure 120 thereof in extended open condition. It will be seen that the flap and web elements forming the closure 120 are interconnected to form a unitary or integral end closure arrangement surrounding the top end of the container body 102. They are of suitable length and width to cooperate to close off said end. To close the carton to the condition thereof shown in FIG. 1, one grips the flap 121 in one hand with the fingers gripping the web parts 161 and 142, respectively. The other hand grips the flap 122 with the fingers thereof engaging the webs 151 and 153, respectively. The hands are moved inwardly, one toward the other, causing the flaps 136 and 137 to collapse inwardly ahead of the flaps 121 and 122 and pulling inwardly the various webs described. This condition is shown in FIG. 3 where the end closure 120 is in a condition in which the flaps 122 and 121 are oriented above the plane of the top end of the container body 102 defined by the fold line 128. It may be noted

that the free edge 155 of flap 122 and the free edge 146 of the flap 121 are spaced apart in FIG. 3.

For self-locking, the flaps 121 and 122 are continued to be pressed or collapsed inwardly to move said edges 146 and 155 downwardly past the plane in which the fold line 128 is locked. The edges 155 and 146 will abut and continued downward pressure against the flaps 121 and 122 will effect a snap-action movement of said flap 121 and 122 downwardly past the fold line 128 into a self-locking closed position shown in FIG. 1.

As seen in FIG. 1, the entire top end of the container body 102 is closed by reason of the interengagement of the connecting webs 142, 147, 149, 151, 153, 156, 158 and 161 with the flap elements 121, 138, 136, 139, 122, 140, 137 and 141.

To open the container 100, one grips the flap members 121 and 122 as shown in FIG. 1 by the phantom outline of the hands and pulls said flap members 121 and 122 outwardly to disengage the same and space the free edges 146 and 145 as shown in FIG. 3. Obviously, the container can be opened and closed repeatedly and no additional means for holding the end closure 120 in a closed condition is needed. Thus, the carton can serve as a dispensing container also.

Referring to FIG. 8, the carton 200 has a container body 202 of hexagonal cross section provided by side panels designated 203, 204, 205, 206, 207, 208 of substantially similar size. The upper end of the container body is closed off by a self-locking end closure 220 of modified construction hereinafter to be described. In the case of the carton 200, the bottom end closure is the same as the top end closure 220 as will be apparent from the examination of the one-piece blank 224 shown in FIG. 14 from which the carton 200 is erected.

The one-piece blank 224 has a body portion 202' which is divided by the indicated transverse core lines 211 through 216 consecutively. Joined to the fold line 216 is a securing or pasting flap 225 which, when the carton is erected, is adhesively secured behind the panel 203 so that the lateral edge 226 is in substantial registry with the fold line 216.

The flap arrangement forming the end closure 220 is hingedly connected along the longitudinal fold line 228 and in this instance, there will be a second end closure 220 likewise hingedly connected along the second fold line 229. It will be necessary to describe only one of said end closures 220 herein.

The end closure 220 consists of two rectangular flaps 221 and 222 of the frame size. There are four isosceles triangular flaps 238, 239, 240 and 241 of the same size. There are right triangular webs 245, 247, 249, 251, 253, 256, 258 and 261. The web 254 is hingedly connected between the flaps 221 and 238 along the fold lines 243 and 244, respectively. The web 247 is hingedly connected to the flap 238 along the fold line 248. The web 249 is connected along the fold line 250' to the flap 239. The webs 247 and 249 are connected along the fold line 265. At this point, it may be noted that flap 136 found in end closure 120 is not found in end closure 220.

Web 251 is connected to the flap 222 along the fold line 252'. Also, flap 222 is connected to the web 253 along the fold line 254. In turn, web 253 is connected to the flap 240 along the fold line 254' and the flap 240 also is connected to web 256 along the fold line 257.

The web 256 is hingedly connected to the web 258 along the fold line 266. Also, web 258 is connected to the flap 241 along the fold line 259' and flap 241 is connected to the web 261 along the fold line 262. Web 261 is connected to the appendage 260 along the fold line 262'. It may be noted that the flap 137 of end closure 120 is absent from the end closure 220.

Each of the flap elements 121 and 122 has an end tab 267 and 268, respectively, hingedly connected to the flap element along the score line 269 therein.

Referring to FIG. 12, the end closure 220 is shown in

open condition exposing the contents C of the container body 202. By grasping the flap elements 221 and 222 separately and moving the hands together, the end closure flap arrangement is collapsed inwardly as shown in FIG. 10. The webs 247 and 249 fold one toward the other along the line 265 and the webs 256 and 258 fold inwardly along the fold line 266 ahead of the flap elements 221 and 222. There is thus formed two wall portions, best seen in FIG. 8, spaced one from the other and between the flap elements 221 and 222. Before closing the end closure 220, the tabs 267 and 268 are folded inwardly and engaged against the vertical wall portions provided by the collapsed webs 256 and 258 and webs 247 to 249 as seen in FIG. 8. The same snap-action movement is obtained for self-locking of the end closure when the flap elements 221 and 222 are move downwardly past the level of the fold line 228 as seen in FIG. 8. The elements 221 and 222 automatically lock in the closed position illustrated by reason of engagement with said collapsed web portions 256 to 258 and 247 to 249.

To open the container 200, one inserts the fingers of one hand into the closure 220 grasping one of the tabs 267 or 268, depending upon the location of the insertion made. One lifts upwardly, as shown in FIG. 10, to move the flap elements 221 and 222 upwardly past the fold line 228 partially opening the carton 200 as illustrated in FIG. 10.

Referring to FIG. 15, the container 300 is substantially identical to the container 200 and consequently, the blank 324 of FIG. 17 is similar to the blank 224 of FIG. 14. However, blank 324 does not have end tabs corresponding to the end tabs 267 and 268 of blank 224. In all other respects, the structures of FIG. 15 and FIG. 17 are identical, respectively, to the structures of FIG. 12 and FIG. 14. Accordingly, no further description is necessary. It is pointed out that reference characters used in connection with the parts of FIGS. 15, 16 and 17 are correlated to like parts of the carton 200 and the blank 224 from which said carton is erected except that the 300-series reference characters are employed.

The carton 300 and its end closure 320 function in the same manner as the carton 200 and its end closure 220 notwithstanding that end tabs 267 and 268 are omitted. The desirable self-locking feature is automatically achieved by virtue of the free edges of the appropriate connecting webs engaging the inwardly collapsed webs 356 to 358 and 347 to 349 to frictionally lock the end closure flap elements 321 and 322 in a closed condition. Opening of the end closure 320 is accomplished in the same manner as described in connection with the opening of end closure 220 of carton 200.

It is believed that the invention has been described in sufficient detail to enable the skilled artisan to understand and practice the same. The contents C of a carton 100, 200, or 300, which may be a food product, such as potato chips, can be loaded directly into the container body thereof or can be initially packaged in a suitable paper or plastic bag which is encased in the carton thereafter. The carton embodying the invention is easily and rapidly erected after it is shipped in a partially completed flattened condition in which the securing flap, such as flap 125 or 225, or 325, has been adhesively connected to its associated panel 103, 203, or 303 as the case may be. The invention has been distinctly pointed out in the appended claims in language intended to be broadly construed commensurate with the progress in the arts and sciences contributed thereby.

What is desired to be secured by Letters Patent of the United States is:

1. A dispensing carton capable of being erected from a unitary blank of foldable sheet material having a plurality of hingedly connected side walls defining a cross-sectional shape of a rectangular polygon, and a self-locking, foldable end closure hingedly connected to said side walls at one end of the carton comprising a first pair of

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rectangular flaps each connected to a said side wall, a second pair of rectangular flaps of smaller size and each connected to another of said side walls, a plurality of web formations of triangular shape hingedly connected between the pairs of said flaps to form a unitary assemblage constituting the said end closure, said assemblage being manually foldable inwardly in a snap-action past the plane of said one end to releasably lock the end closure in a closed position and movable in a reverse direction past the plane of said one end to an extended opened position, said larger size rectangular flaps being located outwardly of said smaller size flaps to provide hand grip means for moving the assemblage between said closed and opened positions.

2. A carton as described in claim 1 in which there are six side walls of substantially similar size.

3. A carton as described in claim 2 in which said web formations include isosceles triangular shaped flaps and right triangular shaped flaps.

4. A carton as described in claim 1 in which there are light side walls of substantially similar size.

5. A carton as described in claim 4 in which said web formations include isosceles triangular shaped flaps and right triangular shaped flaps.

6. A carton as described in claim 1 in unitary blank form in which the blank has a rectangular body portion having transverse fold lines defining side wall panels and the end closure is provided along a single fold line extending the length of the blank and along an edge of said blank.

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7. A carton as described in claim 1 in which said larger rectangular flaps have frictionally engaged edges in the closed position of said carton and the smaller rectangular flaps are folded below said larger flaps in said closed position.

8. A carton as described in claim 2 in which each of said larger rectangular flaps has an end tab integral therewith.

9. A carton as described in claim 1 in which said web formations are folded to provide a pair of spaced wall partitions having the larger rectangular flaps abutting the spaced partitions in the closed condition of the carton.

10. A carton as described in claim 1 in which there is a self-locking end closure on each end of the carton.

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U.S. Cl. X.R.

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