March 29, 1949. W. A. RINGLER 2,465,661

COLLAPSIBLE HEXAGONAL CONTAINER

Filed June 13, 1945

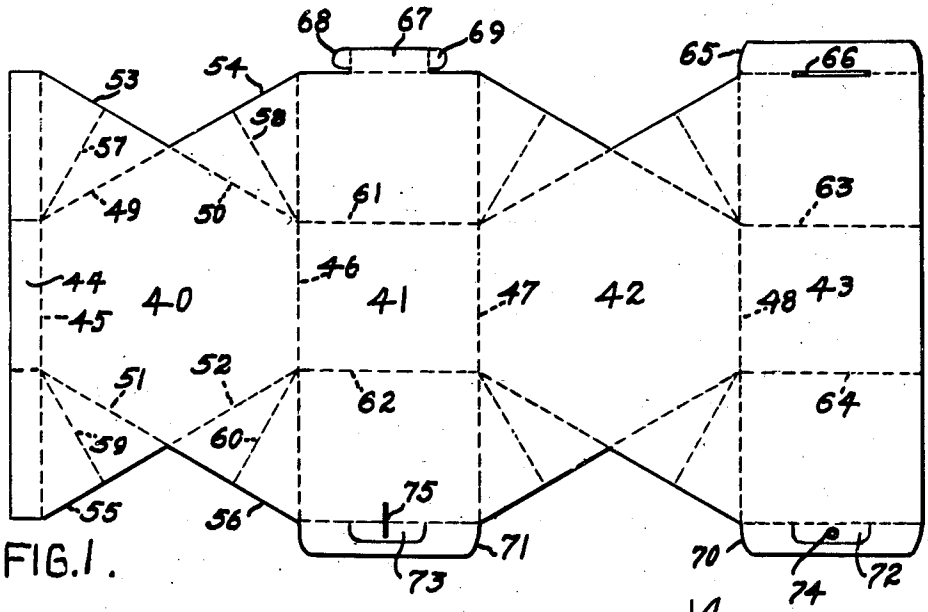


FIG. 1.

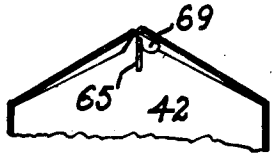


FIG. 3.

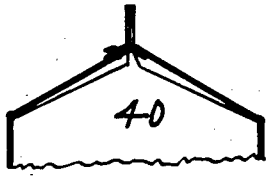


FIG. 4

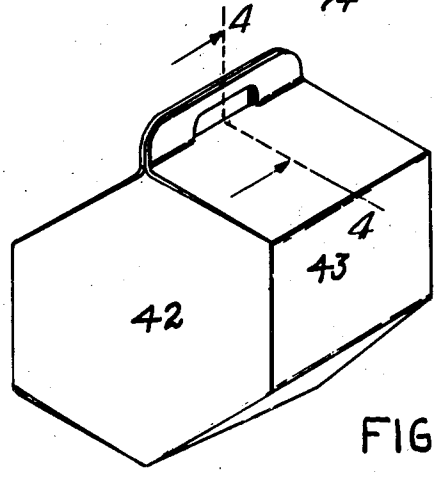


FIG. 2.

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UNITED STATES PATENT OFFICE

2,465,661

COLLAPSIBLE HEXAGONAL CONTAINER

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Application June 13, 1945, Serial No. 599,156

1 Claim. (Cl. 229—41)

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My invention relates to the provision of paperboard packages for articles of polygonal, round or spherical form, of such structure that the package conforms more closely to the shape of the article.

It is an object of my invention to provide polygonal packages other than cubical or rectangular, of one-piece or unitary character, and manufactured by operations current and usual in the folding carton industry. It is an object of my invention to make polygonal cartons which can be handled, shipped and stored in the knocked-down condition, but can be readily set up by hand. It is an object of my invention to provide polygonal containers which when set up are both tight and strong, giving good protection to the contents.

My structures, by way of example, may be used as hat boxes, but they also may be employed for a wide variety of other articles such, for example, as game balls, and may be made in appropriate sizes for the purpose. It is an object of my invention to produce a polygonal container which, as manufactured, shipped and stored, is in the form of a tubular structure, and which is produced by bending, cutting and scoring boxboard to produce blanks and by tubing such blanks on the ordinary carton tubing machines.

These and other objects of my invention which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that construction and arrangement of parts in folding paperboard cartons of which I shall now set forth certain exemplary embodiments. Reference is made to the accompanying drawings in which:

Figure 1 is a plan view of a blank for a carton which is hexagonal in cross-section.

Figure 2 is an isometric view of the closed carton.

Figure 3 is a partial cross-sectional view through a closure of one type.

Figure 4 is a partial sectional view of another type of closure which I may employ, and is taken along the line 4—4 of Figure 2.

In the practice of my invention I provide tubular structures of four enclosing body walls in articulation. An opposite pair of body walls is configured by score lines to the polygonal shape of the desired carton. The remaining body walls are scored to permit folding about the contour of that polygonal shape. Between projecting portions of the last mentioned body walls and the first mentioned body walls beyond the said score lines, I provide bellows folding portions which

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serve not only to increase the tightness of the structure, but to maintain its shape in a rigid fashion. Means for effecting closures are also included.

In Figures 1 to 4 inclusive, I have shown a carton involving a regular hexagon. Body walls 40, 41, 42 and 43, together with a glue flap 44, are provided, articulated together by means of scores 45, 46, 47 and 48. The walls 40 and 42 are demarked by further score lines 49, 50, 51, 52 into the desired cross-sectional shape. It will be noted that in the case of a regular hexagon, scores 49 and 50, as well as scores 51 and 52, meet centrally of the walls 40 and 42, demarking, in extensions of these walls, triangular portions 53, 54, 55 and 56, which meet at the center. These triangular portions are angularly bisected by slanting score lines 57, 58, 59 and 60.

The walls 41 and 43 are demarked by transverse score lines 61, 62, 63, 64 into portions which will fold and form angularly related sides of the cross-sectional polygon. The ends of walls 41 and 43 are provided with suitable interengagement means. These may vary as to form. I have shown at the top of wall 43 an articulated flap 65 having, along its line of articulation, a shorter cut line 66. I have also shown the wall 41 as having at its top an extension 67, of a length equivalent to that of the cut line 66 and having articulated ears 68 and 69 at its ends.

On the bottom ends of walls 41 and 43, I have shown another type of closure involving flaps 70 and 71 articulated to these walls respectively. Cut lines are used to form sub-flaps 72, 73 within the first mentioned flaps and articulated to walls 41, 43 along the same score lines. The sub-flap 72 is shown as provided with an eyelet 74 and body wall 41 is shown provided with a bendable metallic fastener 75.

It will be clear from the description above how the blank of Figure 1 may be tubed, as by folding along score lines 46 and 48 with the adhesive juncture of the glue flap 44 to the outer edge of wall 43. It will also be clear how the tubed structure may be squared up or erected and brought into polygonal shape by the inward collapse bellowswise of the triangular portions 53, 54, 55 and 56.

In the case of the top closure means illustrated at the top of the blank in Figure 1, closure may be effected by bending inwardly the flap 65, folding over the ears 68 and 69 on the flap 67 and then passing this flap together with the ears through the cut line or slit 66. The ears

then spring outwardly due to the natural resilience of the board, locking the structure together, as illustrated in Figure 3. The turning of the flap inwardly rigidifies the structure at this point, as will be apparent.

In the case of a closure structure such as is shown at the bottom of the blank in Figure 1, the flaps 70 and 71 extend outwardly (Figures 2 and 4) to form handles. The flap 73 extends inwardly. The flap 72 on wall 43 laps the angularly related portion of the opposite wall, as shown in Figure 4, and the bendable metal fastener 75 may be passed through the eyelet or grommet 74 and bent over so as to hold the box closed.

It will be understood that the dimensions as well as the shapes of the various walls of my carton may be modified. Thus the walls 41 and 43 may be made of greater or less width to give boxes of different depths. Also, by re-arranging the score lines in walls 40 and 42 and correspondingly changing the dimensions of the blank elsewhere, cartons may be made to have other cross-sectional shapes. Such shapes may involve other regular polygonal figures, or they may involve shapes of polygonal character but irregular both as to the length and as to the angular disposition of walls of the closed carton along the cross-sectional contour.

Modifications may be made in my invention without departing from the spirit of it. Having thus described my invention in certain exemplary embodiments, what I claim as new and desire to secure by Letters Patent is:

A tubular hexagonal carton formed of a single paperboard blank having four main sections and a glue flap in articulation, said main sections and said glue flap being of the same length, alternate ones of said main sections being scored to form hexagonal panels, the vertical diagonal dimensions of which are less than the length of said sections, said hexagonally scored sections being cut inwardly aslant from their corners to meet the vertically opposite apices of said hexagonal panels, so as to leave triangular portions

of said sections at the corners thereof not comprised within said hexagonal panels, said triangular portions having intermediate score lines therein to enable them to fold bellows-wise, the remaining sections being transversely scored to divide them each into three panel portions, each of said portions being of a size and shape to form a lateral face of a right hexagonal prism formed by said carton when in erected condition, one end of each of said last mentioned sections being provided with engagement means for fastening said ends together, the other ends of said last mentioned sections being provided with flaps having interiorly cut portions forming sub-flaps, said flaps adapted in the erected structure to come together to form handles with hand-holes, and said sub-flaps having interengagement means for detachably holding together the said ends of said sections, said carton being foldable on a pair of alternate score lines intermediate said main sections to allow the carton to be collapsed.

WILLIAM A. RINGLER.

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