Aug. 8, 1950 J. M. FIELD 2,517,552

CONTAINER

Filed July 25, 1946 2 Sheets-Sheet 1

Fig. 1.

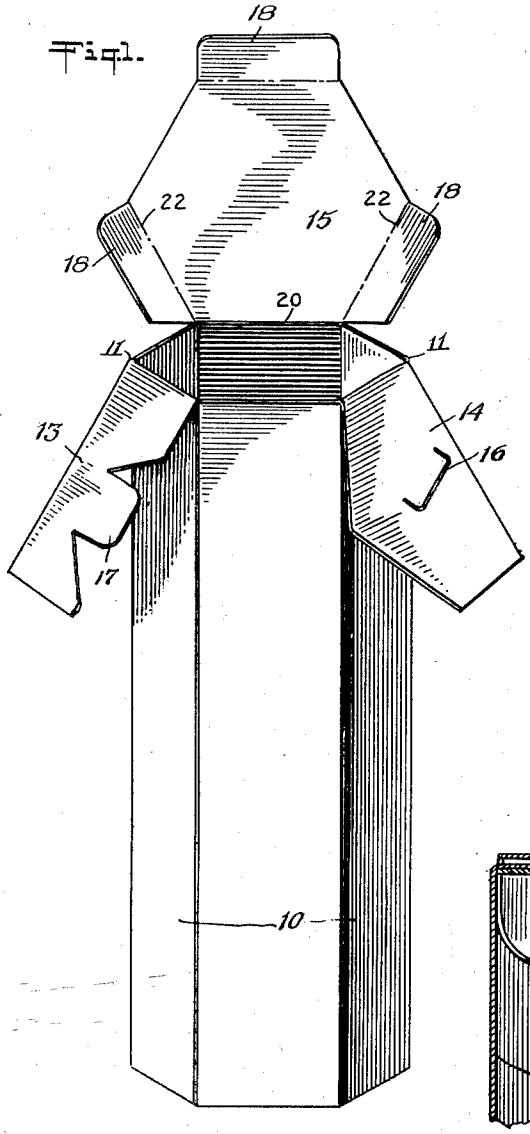


Fig. 3.

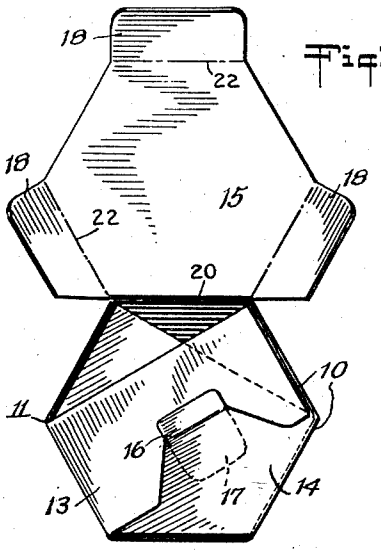


Fig. 4.

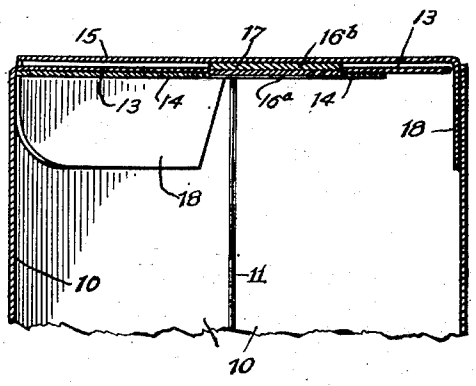
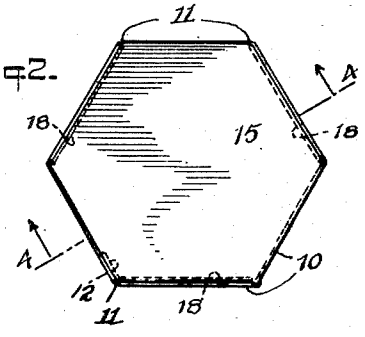


Fig. 2.



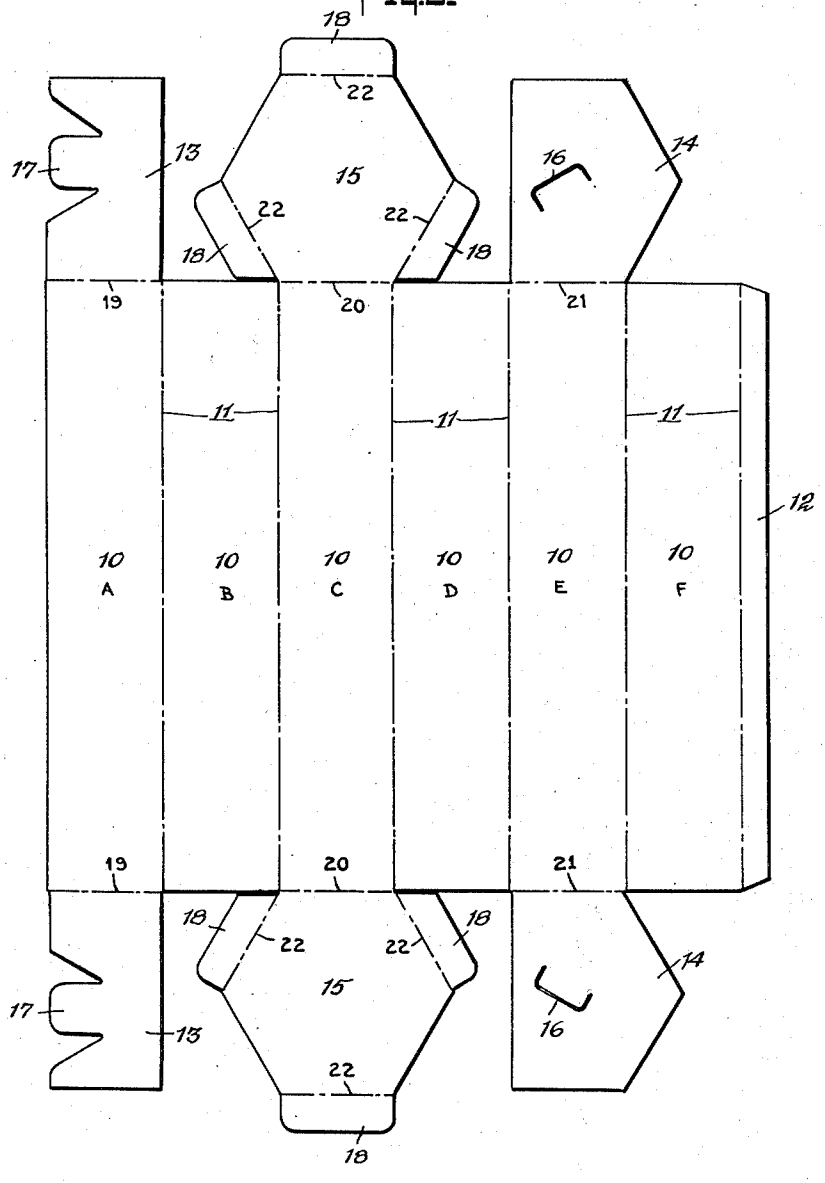
INVENTOR.
Jacob M. Field
BY
Norman S. Armitage
Attorney

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CONTAINER

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Fig. 5.



INVENTOR.
Jacob M. Field
BY
Attorney

Patented Aug. 8, 1950

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2,517,552

CONTAINER

Jacob M. Field, Brooklyn, N. Y., assignor to Deering, Milliken & Co., Inc., New York, N. Y., a corporation of New York

Application July 25, 1946, Serial No. 686,233

4 Claims. (Cl. 229—39)

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The present invention relates to containers and, more particularly to hexagonal cartons of pasteboard, cardboard and the like, adapted for retaining their shape and rigidity when packed and shipped.

Hexagonal cartons have been known to the container industry for many years and are a preferred shape for packaging rolled materials and cylindrical objects as they are very economical of space both within the carton and as packed together in a shipping case or crate. Their use in the past, though favored from this viewpoint, has been relatively limited due to certain disadvantages believed to be inherent in the hexagonal shape.

The constructions of hexagonal cartons formerly employed were not in general adapted for being formed into a tube and shipped to the packager in flat, knockdown condition sealed along one edge and ready to be closed only at their ends after filling. The hexagonal, tubular cartons which were made had end closure constructions which were not adapted for strength and rigidity, especially under normal pressures, after filling and in shipment. This caused the filled carton to arrive at its destination in broken, bent, crumpled, and otherwise unsightly condition.

It is an object of the present invention to provide a novel carton blank so constructed as to be readily and economically formed into a hexagonal carton having strength and rigidity.

It is another object of this invention to provide a hexagonal container of improved construction for packaging rolled materials and cylindrical objects which is of sufficient strength to be rigid in use.

A further object of the invention is to provide a hexagonal carton of such construction which can be filled and shipped with other like cartons without substantial danger of breaking or crumpling.

The present invention also provides a new hexagonal carton having a rigid structure and effective and secure closure members.

Other objects and advantages of the invention will be apparent from the following description, taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a perspective view of a carton according to this invention with its top open;

Fig. 2 depicts a top plan view of the carton;

Fig. 3 represents a bottom plan view of said carton with the bottom cover open and with interlocking flaps closed;

Fig. 4 illustrates a fragmentary vertical section

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of the carton, taken on line 4—4 of Fig. 2 looking in the direction of the arrows; and

Fig. 5 is an inside plan view of a carton blank according to the invention.

The carton of the present invention comprises six side walls consecutively connected to each other at their side edges at an angle of approximately 120°. Three alternate walls of the carton are provided at their top and bottom edges with closure means comprising at each end two interlocking flaps and a cover, each attached to one of said three alternate side walls. The cover is of substantially regular hexagonal shape, each edge thereof being of length substantially equal to the width of a side wall. Each of three alternate edges of said cover, not including the edge which is attached to the side wall, is provided with a tab adapted to be inserted in the carton when the carton is closed.

The construction of the end flaps is a feature of the invention, and one of said flaps is of substantially convex polygonal shape and adapted to abut substantially the full inside widths of three side walls (exclusive of the wall to which it is attached) when the carton is closed. This convex flap has a slit therein suitable for accommodation of a tongue. The other flap is a concave polygon of length sufficient to abut the inside of the side wall opposite that to which it is attached, and it is provided with a tongue adapted to fit into the slit in the convex flap, so that said flaps may cooperate by interlocking with each other. This provides a secure closure, and the abutment of the flaps with the insides of the walls effectively provides strength and rigidity not found in hexagonal cartons of the prior art.

The carton blank of the invention comprises six rectangular side wall sections of substantially equal size and having fold lines therebetween, and a narrow connecting strip attached to either the first or the last of said side wall sections, said connecting strip being of substantially the same length as the wall section. There is a fold line between said strip and the wall section to which it is attached. This connecting strip is thus adapted to be adhesively attached to the wall section at the opposite end of the carton blank in forming the blank into a tube.

At each end of the wall section at the end of the blank opposite to the section to which the connecting strip is attached, there is a concave polygonal flap as described above. The wall section next to that to which the connecting strip is attached has at each end thereof a convex polygonal flap as described, and the wall

section midway between those to which the flaps are attached is provided at each end with a cover section having three tabs thereon. Fold lines separate the respective flaps and cover sections from the wall sections to which they are attached. This construction of the blank permits it to be formed into a tube and then flattened out for shipment without having portions of the flaps or covers extending beyond the width of the flattened body of the carton. In other words, the whole width of the tube thus formed is substantially equivalent to the total width of three side walls, thus requiring minimum shipping space.

The invention will now be more fully described for the benefit of those skilled in the art with reference to a particular embodiment thereof. Reference may be had to the accompanying drawings wherein like characters denote similar parts in the respective figures. Referring to Figs. 1 to 5, a novel carton blank according to this invention comprises six rectangular wall sections 10, lettered for convenience in Fig. 5 from A to F, having fold lines 11 therebetween, and there is a connecting strip 12 integrally attached to outer wall section 10F, a fold line 11 being provided between section 10F and strip 12.

There is a concave polygonal flap 13 attached to each of top and bottom edges of section 10A, fold lines 19 being located between these flaps and section 10A. Each flap is rectangular except for the outwardly facing concave portion, and the concavity is provided with a tongue 17 adapted for cooperation with a slit in another flap (to be described) in locking the ends of the carton to be formed. Flaps 13 are substantially coextensive in width with the width of a wall section, and their length is approximately equal to the width of the finished carton measured between opposite sides; that is, the length of flaps 13 is approximately equivalent to 1.73 times the width of a side wall section.

Convex pentagonal flaps 14 are attached, respectively, to the top and bottom edges of wall section 10E, and these flaps are adapted to fold along lines 21. One edge of each of flaps 14 is coextensive in width with wall section 10E to which it is attached. A second edge of the flaps 14 is in alignment with fold line 11 between sections 10D and 10E and is thus at right angles to the first edge of the flap; this edge is substantially equal in length to flaps 13 and is thus of a length approximately equivalent to the width of the finished carton measured between two sides thereof. A third edge of the flaps 14 is at right angles to the second edge and is thus opposite the first edge described, and said third edge is substantially equal in width to said first edge. The remaining two edges of the pentagonal flaps 14 are at angles of approximately 120° with said first and third edges, respectively, and therefore at approximately an angle of 120° with each other. The flaps 14 are therefore wider than a wall section and somewhat overhang wall section 10F. Flaps 14 are each provided with a slit 16 so disposed as to permit the accommodation of tongues 17 when the carton is closed. The slit 16, as shown in Fig. 1, is generally U-shaped and thus defines a small flap or tab. In Fig. 4 the edge of the slit opposite the tab is identified as 16*a* and the tab itself as 16*b*.

Two cover sections 15 are respectively attached to the upper and lower edges of wall section 10C, said cover sections being regularly hexagonal in shape, and each edge of the hexagon being

substantially equal to the width of a wall section. The cover sections 15 make a juncture with section 10C along a fold line 20, and three side edges of each hexagon, alternately spaced and not including the edge attached to section 10C, are provided with tabs 18. Fold lines 22 are located between these tabs, respectively, and the cover sections.

In forming a carton from this blank, the blank is folded along lines 11, and connecting strip 12 is adhesively attached to wall section 10A at the outer edge thereof. This results in the formation of a regular hexagonal tube having flaps and a cover at each end thereof (see Fig. 1). This tube is now in a position to be pressed flat with deep folds along the fold lines between sections 10A and 10B and sections 10D and 10E, whereby the flattened tube is ready for shipment.

Upon receipt by the packager, the tube is opened up to hexagonal shape again and the lower flap 14 is folded inwards along fold line 21 to a position perpendicular to the planes of the walls 10. The edges of flap 14 fit along the inside lower edges of walls 10F, 10A and 10B.

Lower flap 13 is then folded inwards along fold line 19 to a position overlying flap 14, and tongue 17 is fitted into slit 16 so that the two flaps interlock. An edge of flap 13 abuts the lower inside edge of wall 10D. The bottom cover 15 is then folded inwards and tabs 18 are upwardly folded at substantially right angles to said bottom cover. The tabs are fitted between the edges of the flaps and walls 10B, 10D and 10F, respectively.

The carton is now ready to receive its ultimate content and, after filling, the top flaps and cover are closed in the same manner as just described for the bottom of the carton.

The resulting carton, due to the support provided by the novel closure means comprising flaps and cover, is strong and rigid and is adapted to withstand the pressure of other similar cartons, filled and packed upon and around it. The cartons of the invention can be packed in shipping cases and crates and can be shipped without substantial danger that the carton will arrive at its destination in a mutilated or unsightly condition.

Although the present invention has been described with respect to a particular embodiment and particular constructive features, it will be appreciated that variations and modifications thereof may be made and equivalents substituted therefor without departing from the spirit of the invention. Such variations and modifications are believed to be within the scope of the present specification and within the purview of the appended claims.

I claim:

1. As a new article of manufacture, an integral blank of foldable material for forming a carton hexagonal in cross section which comprises a body portion having a first terminal rectangular section, a second rectangular section adjacent thereto, a third rectangular section adjacent to the second, a fourth rectangular section adjacent to the third, a fifth rectangular section adjacent to the fourth and a second terminal rectangular section adjacent to said fifth section, said sections being of substantially equal width, a connecting strip integrally attached to one of said terminal sections and adapted for adhesive attachment to the other of said terminal sections, fold lines separating said sections from each other and from said connecting strip and extend-

ing transversely of said body portion, a concave polygonal flap attached to each end of said first terminal section and being substantially coextensive in width therewith and of length approximately equal to 1.73 times the width of a rectangular section, a tongue disposed in a concavity of said flap, a convex polygonal flap attached to each end of the fifth section of length substantially equal to the length of the concave flap and having each of four sides thereof substantially equal in length to the width of a rectangular section, a slit in said convex flap adapted for interlocking cooperation with said tongue, a hexagonal cover section attached to each end of said third section, each cover section having each side thereof substantially equal to the width of a rectangular section, and three tabs disposed respectively on three alternate sides of each cover section.

2. As a new article of manufacture, a hexagonal carton comprising in integral combination with six substantially equidimensional rectangular side walls, a top and a bottom, each of which comprises a convex polygonal flap attached to a first side wall along substantially its full width and adapted to abut substantially the full inside widths of a second, third and fourth side walls when the carton is closed, said first, second, third and fourth side walls being respectively adjacent to each other, a concave polygonal flap attached to the third side wall along substantially its full

width and being of length sufficient to abut the inside of a sixth side wall adjacent to the first wall, a regular hexagonal cover having edges substantially equal in length to the width of a side wall and attached to a fifth side wall adjacent to the fourth wall, and three tabs integral with said cover and adapted to be disposed within the carton when closed along the insides of said second, fourth and sixth side walls.

3. The invention set forth in claim 2 wherein the convex and concave flaps are provided with interlocking means for cooperation with each other in forming a secure closure.

4. The invention set forth in claim 2 wherein the convex flap is provided with a slit and the concave flap is provided with a tongue, said slit and tongue being so disposed upon said flaps respectively as to be adapted for cooperation with each other in forming a secure closure.

JACOB M. FIELD.

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