June 16, 1936. H. ROSSI 2,044,103

KNOCK-DOWN END CLOSING CARTON

Filed Oct. 25, 1933

Fig. 2.

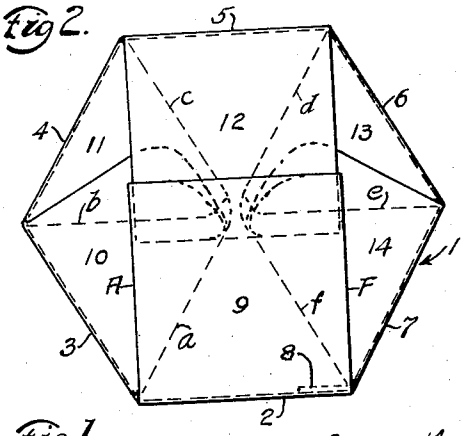

Fig. 1.

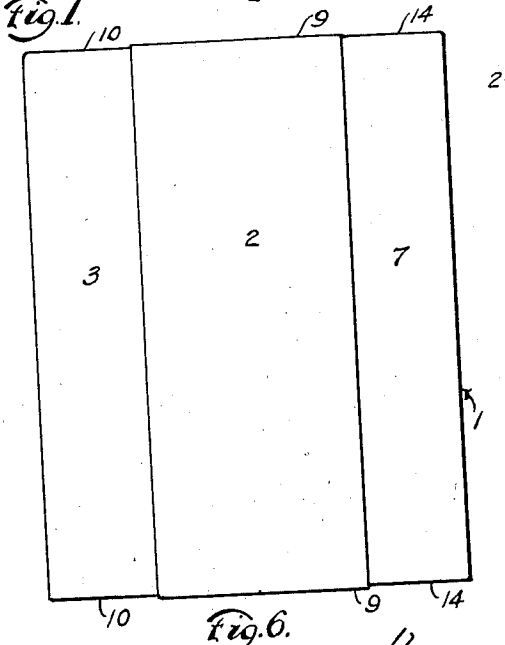

Fig. 4.

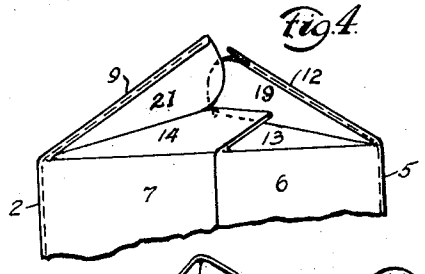

Fig. 3.

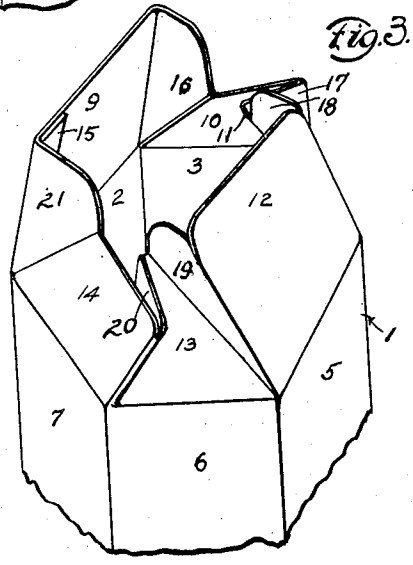

Fig. 6.

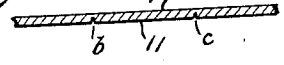

Fig. 5.

INVENTOR
Harry Rossi;
BY
Harold D. Penna ATTORNEY.

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KNOCK-DOWN END CLOSING CARTON

Harry Rossi, New York, N. Y., assignor to Robert Gair Company, Inc., New York, N. Y., a corporation of Delaware

Application October 25, 1933, Serial No. 695,073

13 Claims. (Cl. 229—37)

The present invention relates to knock-down cartons or containers, made, preferably, from paper board and the like, and has for its principal object the provision of an integral web-end closure thereon, of a collapsible, tucking and interlocking nature.

Another feature of the structure herein disclosed relates to the manner of scoring some of the panels forming the tuck closure and of cut-scoring others of the web panels to permit the cover to be readily collapsed to closing position, especially if made of comparatively stiff or heavy board, and to be readily opened, and reclosed, as often as desired.

The closure, as will be more readily ascertained as the description proceeds, is comprised of a plurality of minor triangular web-forming panels scored, and cut-scored from their associate panels, and two main panels, the latter being rectangular, and forming, when in closing arrangement, locks for releasably locking all of the webs and panels when in closed position.

These and other capabilities will be apprehended as the herein description proceeds and it is obvious that modifications may be made in the structure herein without departing from the spirit hereof or the scope of the appended claims.

In the drawing,—

Fig. 1 is a view, in elevation, of the carton with both ends closed;

Fig. 2 is a plan view of Fig. 1;

Fig. 3 is a fragmentary view of the carton, in perspective, showing the closing panels in operative position, as bent on the provided score lines;

Fig. 4 is a fragmentary, elevational view of the carton as viewed from the right-hand side of Fig. 1, showing the cover lock panels just before final telescopic closing;

Fig. 5 is a fragmentary view of the carton blank, before being erected into a carton, showing the scored panels and their outlines; and

Fig. 6 is an enlarged sectional view taken on the line 6—6 looking in the direction of the arrows, Fig. 5, to better show the cut-scoring of the triangular panels.

The present carton, as in Fig. 1, is of polygonal cross-section, and as shown in the blank layout of Fig. 5, comprises a plurality of side-forming panels 2 to 7 inclusive, defined from each other by score lines A to E inclusive, and a glue flap 8, defined from panel 7 by a score line F, whereby panel 7 may be affixed to panel 2 by glueing as in Fig. 2.

Each side-forming panel has an integral cover-forming panel defined therefrom by the common score line G, Fig. 5.

The side-forming panels are defined from each other by vertical score lines A to F inclusive Fig. 5, and these same score lines define the cover-forming webs and panels.

Each cover-forming panel is defined from its adjacent associate panel by score lines or by cut-score lines. Rectangular panel 9 has a semi-triangular web 16 defined therefrom by score line A; web 16 has, cut-scored therefrom on its inside face, by cut-score *a*, a full triangular panel 10, which latter panel has scored therefrom by score line B, a semi-triangular web 17, this latter web has, cut-scored therefrom by cut-score *b* on its inside face a full triangular panel 11, this latter panel in turn has, cut-scored therefrom on its inside face by a cut-score *c*, a semi-triangular web 18. Web 18 is defined from rectangular lock panel 12, by score line C on its one side and lock panel 12 on its opposite side is defined from semi-triangular web 19, by a score line D. Web 19 is defined from triangular panel 13 by a cut-score *d*, on its inside face and panel 13 is defined from semi-triangular web 20 by a cut-score line *e* on its inside face. Web 20 is defined from triangular panel 14 by score line E and this latter panel is defined from a semi-triangular web 21 by a cut-score line *f*, on its inside face. Web 21 has a glue flap 15, similar to glue flap 8, defined therefrom by a score line F. When the carton is glued to assembly, flap 15 is attached to the inside face of panel 9, as at Fig. 3.

When the carton is glue-assembled, it can be collapsed flat on its opposing score lines B and E, and is so shipped to the consumer in bundles.

All cut-score lines defining the cover-forming panels and webs from each other are all located on the inside faces of the walls forming the cover panels, when the carton is erected. The reason for this is that each of the panels so cut-scored, are bent on the cut-score lines in a direction reverse to those of the scored lined panels, with their outer faces adjacent to one another, when they lie in covering, superposed relation to each other, on the carton. The cut joint afforded by the cut-scores predisposes the inwardly drawn triangular panels to automatically take their respective closing positions relative to the web-like, semi-triangular panels 16 to 21 inclusive. In effect, panels 9 to 14 are closure panels while the semi-tringular panels 16 to 21 inclusive act as webs between the closure panels, so that in the act of closing the panels as in Fig. 3, the webs draw the closure panels into orderly, closing relation to one another.

In cut-scoring the web panels from their associate panels, as described, the cut-scores, as at *c* and *b*, Fig. 6, are cut deeply into the paper board nearly to the outside liner 1 thereof. Thus the cut-score lines, as described are weakened and dispose the so defined panels to readily break into desired conformity and thereafter permit the folded panels to lie closely together, when in carton-closing position.

It will be noted that, with the exception of

panels 9, 11 and 13, the panels all have rounded outer ends. It will be further noted that panels 9 and 21 are longer, from the score line G, than any of the other panels; it will further be noted that panels 12, 18 and 19, are a little shorter than panels 9 and 21, and that panels 10, 11, 13, 14, 17 and 20 are shorter than panels 12, 18 and 19. This is because, as the panels are so scored, and thus disposed to automatically and sequentially assume their related positions in a fixed sequence, as will now be explained.

In closing the webbed cover over the carton, with the panel 5 facing the user, the panels 10 and 14, are simultaneously bent on their score lines B and E respectively to bring the web panels 17 and 20, respectively flat against said panels 10 and 14. This is done by pinching the panels 10 and 14 against panels 17 and 20, this operation being shown, partly completed in Fig. 3.

After bringing panels 10—14, 17 and 20 together, they are, both simultaneously, swung downwardly towards the closing position, on score lines b and e, and thus, reversely, or inwardly folding the panels 11 and 13. This action draws in webs 18 and 19 and with them inner closure panel 12. This action, further, draws in webs 16 and 21, and with it top, outer closure panel 9.

Further downward movement of panels 10 and 14 brings the ends of inner shorter and narrower closure panel 12 and its associate webs 18 and 19 into the opening formed by the folded outer, longer and wider closure panel 9 and its associate webs 16 and 21, about as indicated in Fig. 4, until finally, the outer rounded ends of the folded panel 12 and webs 18, 19 telescopically pass into the interior of the folded outer longer closure panel 9 and its associate webs 16 and 19; a final pressure completes the closing of the carton, which remains closed due to the telescopic lock of the closure panels 9 and 12 and their associate webs, as illustrated in Fig. 2. Thus, the rounded corners of the panels permit of smooth infolding of the panels in closing the same over the carton.

When the carton is thus closed, it is proof against accidental opening because all of the coacting webs and panels are overlaid by portions of the associate panels, and are all locked in this position by the telescopic lock of the cover panels 9 and 12.

To reopen the carton, the side edges A—F, Fig. 1, of the cover panel 9 are lifted, thus drawing up both outer cover panel 9 and inner cover panel 12, so that as they reach the positions shown in Fig. 4, the entire cover is instantly released and opened up to the full area of the carton interior.

What I claim is:

1. A hexagonal carton of foldable material comprising six integral side-forming panels connected to form a body by a glue flap, two opposing side panels of said body having substantially rectangular closing panels foldably attached thereto, a second pair of opposing side panels having a triangular panel and triangular webs foldably connected together and a third set of opposing side panels having a substantially triangular panel and web foldably connected thereto, one of said last webs having a glue flap.

2. A single blank of foldable material for forming a hexagonal carton, comprising a body portion having six sides and a glue flap, for forming the six sides of the carton, said sides and flap being defined from one another by body score lines, and a plurality of infolding cover-forming and end-closing webs; panels and a cover glue flap, said webs and panel being defined from said side-forming panels by a common score line, one of the terminal body panels having a substantially rectangular cover panel, the next adjacent body panel having a substantially triangular cover panel and web thereon, the next adjacent body panel having two substantially triangular webs and one practically triangular panel thereon, the next adjacent body panel having a substantially rectangular cover panel thereon, the next adjacent body panel having two substantially triangular webs and one triangular cover panel thereon, the next adjacent body panel having a substantially triangular cover panel and web thereon, said cover glue flap being on said last-noted web, all of said latter webs, panels and flap being defined from one another by scoring.

3. A single blank of foldable material for forming a hexagonal carton, comprising a body portion having six sides and a glue flap, for forming the sides of the carton, said sides and flap being defined from one another by body score lines, and a plurality of infolding cover-forming and end-closing webs and panels and a cover glue flap, said webs and panels being defined from said side-forming panels by a common score line, one of the terminal body panels having a substantially rectangular cover panel, the next adjacent body panel having a substantially triangular cover panel and web thereon, the next adjacent body panel having two substantially triangular webs and one practically triangular panel thereon, the next adjacent body panel having a substantially rectangular cover panel thereon, the next adjacent body panel having two substantially triangular webs and one triangular cover panel thereon, the next adjacent body panel having a substantially triangular cover panel and web thereon, said cover glue flap being on said last-noted web, all of said webs and panels being defined from one another by scoring, the scoring between all of said webs and their associate cover panels being cut scores.

4. A carton formed from one blank of paperboard comprising a body having a relatively narrow side wall, an opposed wall wider than the first wall, two pairs of interposed side walls connecting the narrow and wide walls; and a continuous band extending from said walls at one end of the carton to lockingly close the latter thereat; said band including foldable panels which are the same width as the respective walls, the panels of the interposed walls having scores therein and being formed into foldable portions, whereby the ends of the wide panel and its associated portions may embrace the ends of the narrow panel and the associated portions thereof.

5. A carton formed from a blank of material comprising a body having a narrow side wall, an opposed wall wider than the first wall, two pairs of interposed side walls connecting the narrow and wide walls, said body being of modified hexagonal form, and a band extending from said walls at one end of the carton and closing the latter thereat; said band including inwardly folded rectangular sections which are the same width as the respective walls, one end of the wide section being disposed over an end of the narrow section, the sections of said interposed walls having score lines therein and being formed into foldable panels and webs, certain of said webs being continuous with the respective narrow and wide sections, so that said wide end and its associated webs may telescopically embrace said narrow end and the associated webs thereof in releasable holding relation.

6. A carton made from one sheet of material which is provided with fold lines to form a body comprising a rectangular side wall, a relatively wide opposed rectangular wall; coacting interposed rectangular side walls; and a foldable band extending from said walls at one end of the carton for closing the latter thereat; said band including sections which are the same width as the respective walls, the section of the narrow wall having rounded corners at its free end; the sections of the interposed walls consisting of tapering panels and webs, certain of said webs being extended at one of their respective sides from the narrow and wide sections and having also round corner at their free end, so that said wide section and its associated webs when partly folded inwardly may form a pocket to receive the rounded portions of the narrow section and its associated webs, whereby to lockingly engage said sections, the free ends of the said panels being disposed below the narrow and wide sections.

7. A carton made from one sheet of material which is provided with fold lines to form a body comprising a relatively narrow side wall, an opposed wall wider than the first wall, coacting interposed walls, one of said latter walls having thereon a glue flap which is attached to said wide wall; and a band extending from said walls at one end of the carton for closing the latter thereat; said band including also a glue flap and having sections which are the same width as the respective walls, the section of the narrow wall having rounded corners at its free end; the sections of the interposed walls consisting of foldable panels and webs, certain of which are also provided with rounded corners at their free ends, certain of said webs being extended at one of their respective sides from the narrow and wide sections, so that the ends of said wide section and its associated webs when partly folded inwardly may receive the ends of the narrow section and its associated webs, whereby to embrace said sections in gripping relation when fully closed inwardly, the free ends of said panels and webs being disposed below said narrow and wide sections.

8. A closure for a carton having six rectangular integral side walls, said closure comprising a band having six coacting rectangular sections which extend from said walls at one end thereof, there being a fold line between said band and said walls; said sections including two pairs of inwardly foldable members, said members being provided with fold lines and having dimensions transversely of the band which are approximately equal to the greater radius of the carton, said later fold lines defining panels and webs in said members; and two opposed inwardly foldable members disposed between said pairs of members and having dimensions which are greater than said radius, whereby when the last-mentioned members are folded inwardly their ends may overlap, so as to cover the ends of the first-mentioned members.

9. A blank of material for forming a carton including a body having six side walls, and an end closure comprising a band having two plain inwardly foldable sections, and two pairs of interposed sections, said sections being extended from said walls and having scores or fold lines therebetween, there also being fold lines between said walls and said sections, and fold lines between the respective walls, said latter lines being linear with the lines between said sections, and the blank being bendable on said lines; and oblique cut scores formed on or struck into the inner faces of said interposed sections so as to facilitate bending the material thereat, whereby said interposed sections may be partly overlapped in substantially flat portions partly below or inwardly of said plain sections.

10. The herein described blank of material for forming a carton including a body having six side walls, and an end closure comprising a band having two plain inwardly foldable sections and two pairs of interposed sections, there being fold lines in the blank whereby to render said walls and said sections individually bendable; said interposed sections having oblique cut scores in their inner faces, whereby said interposed sections may be partly overlapped in substantially flat portions or members partly below or inwardly of said plain sections.

11. A closure for a carton having six integral side walls, said closure comprising a band having sections continuous with said walls at one end of the carton, there being a fold line between said band and the walls; said sections including two pairs of inwardly foldable members which are of less length dimensions transversely of the band than the greater radius of the carton, said members including foldable panels and webs; and two opposed practically rectangular members disposed between the respective pairs of members, one of said rectangular members having a length dimension greater than that of said radius, said latter length dimension being also greater than that of the opposite rectangular member, the longer rectangular member having its end overlapping the end of the other rectangular member, whereby the overlapped ends may cover the ends of said pairs of members.

12. A carton formed from an integral blank of foldable material comprising a hexagonal body including six side panels having continuous therewith at one end of the carton coacting sections which form a band, said band providing an end closure, substantially as described.

13. A polygonal sided container comprising a single sheet of material having weakened lines to provide side folds and twice the number of end folds as side folds, two of the end folds at opposite sides being longer than one half the diameter of the container to form locking end folds, triangular pocket forming folds connected with opposite sides of one locking fold, triangular closing folds connected with the pocket forming folds and foldable beneath them, triangular folds connected with said triangular closing folds and foldable over them, closing end folds having a straight side connected with said last named triangular folds and having their opposite side converging outwardly, and triangular folds connected with said converging sides and with the other locking end fold, the inward folding of said folds having a straight and converging side causing the infolding of the triangular folds connected with the locking folds so that one locking end fold and its triangular folds will enter the pocket formed by the other locking end fold and the triangular pocket-forming folds connected with it.

HARRY ROSSI.