United States Patent

[11] 3,550,834

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[54] **SHIPPING CONTAINER**
4 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **229/22,** 229/40
[51] **Int. Cl.** **B65d 5/08**
[50] **Field of Search** 229/22, 40

[56] **References Cited**

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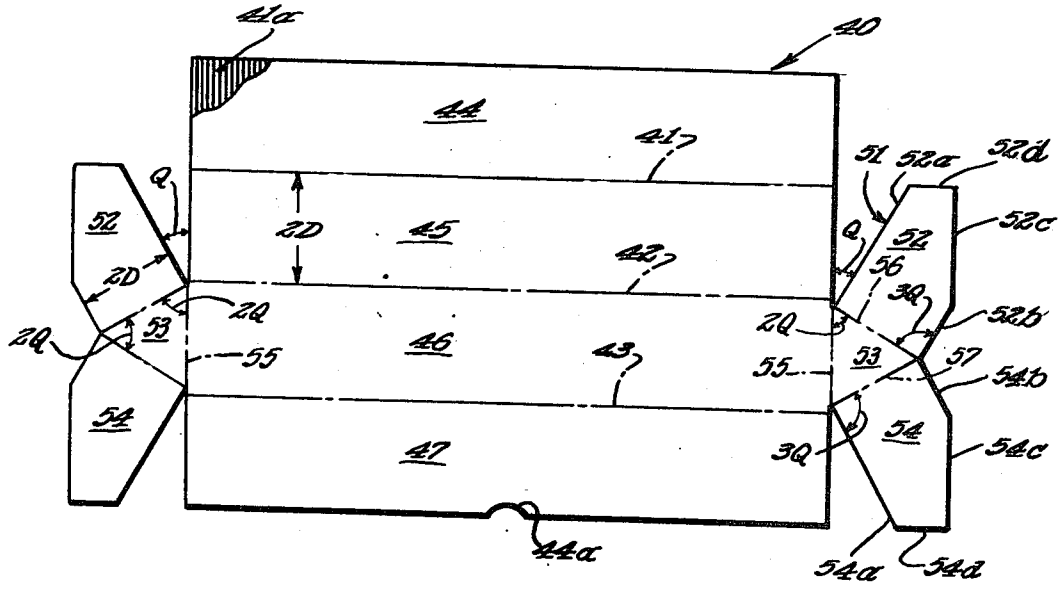
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ABSTRACT: A foldable corrugated shipping container having a one-piece blank, scored, stripped and cut for assembly into an elongated triangularly-shaped container having opposed end flaps defining reinforced double-walled portions projecting inwardly from the ends of the container protecting the contents thereof and having a closure flap with means for opening the sealed container.



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SHEET 1 OF 2

Fig. 1

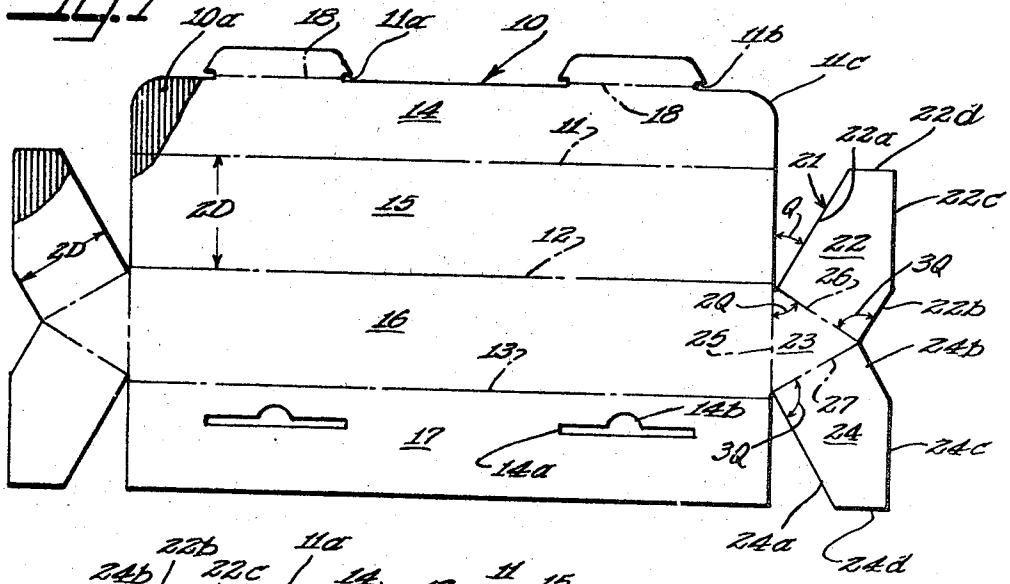


Fig. 2

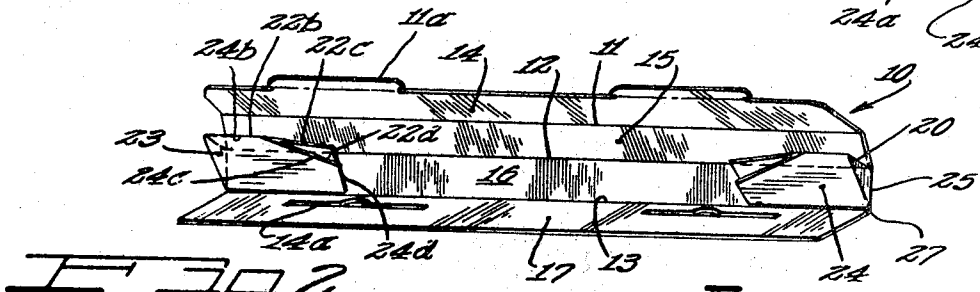


Fig. 3

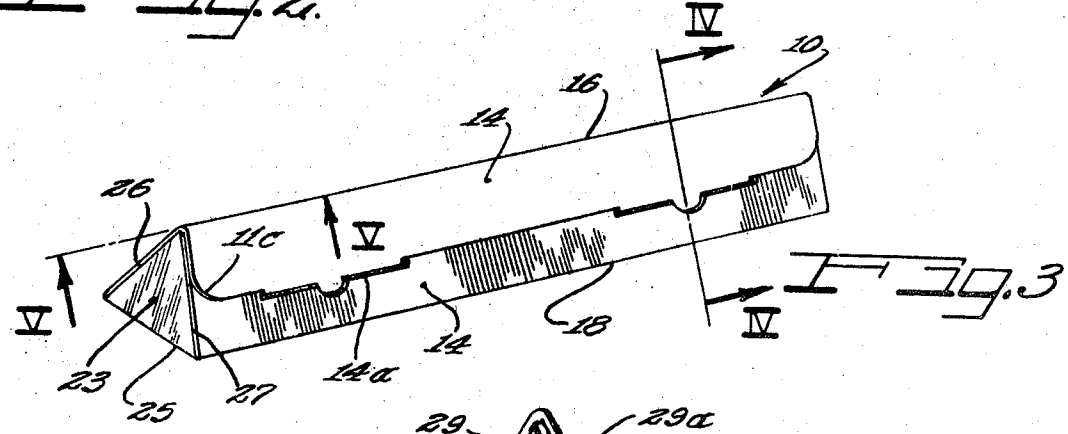
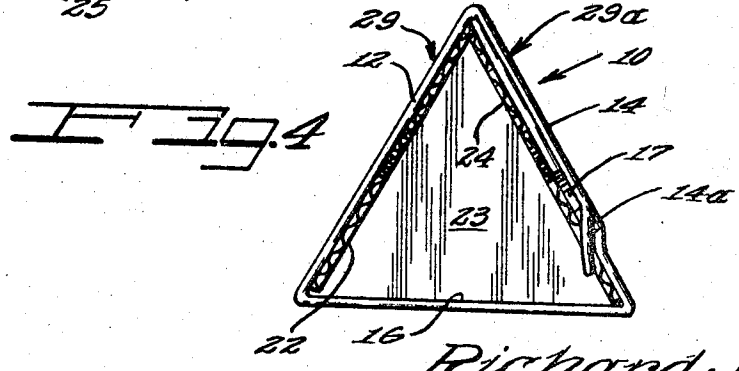


Fig. 4



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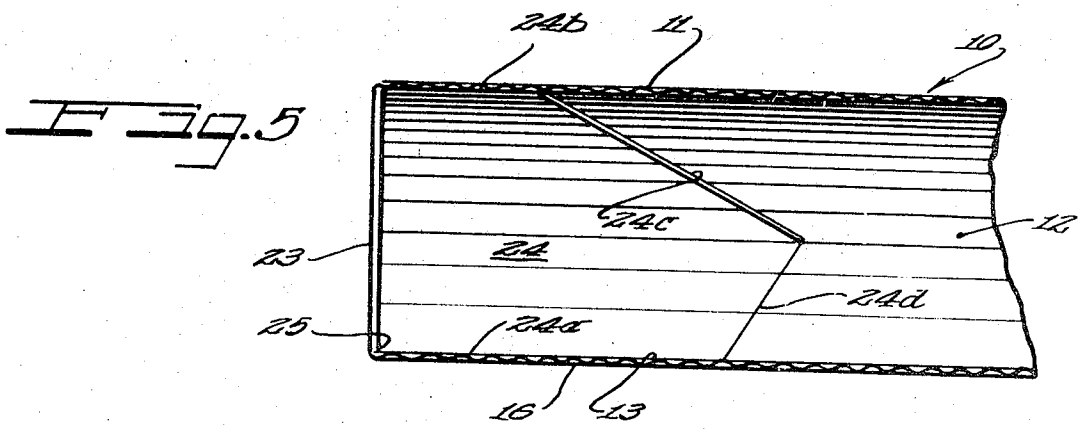


Fig. 5

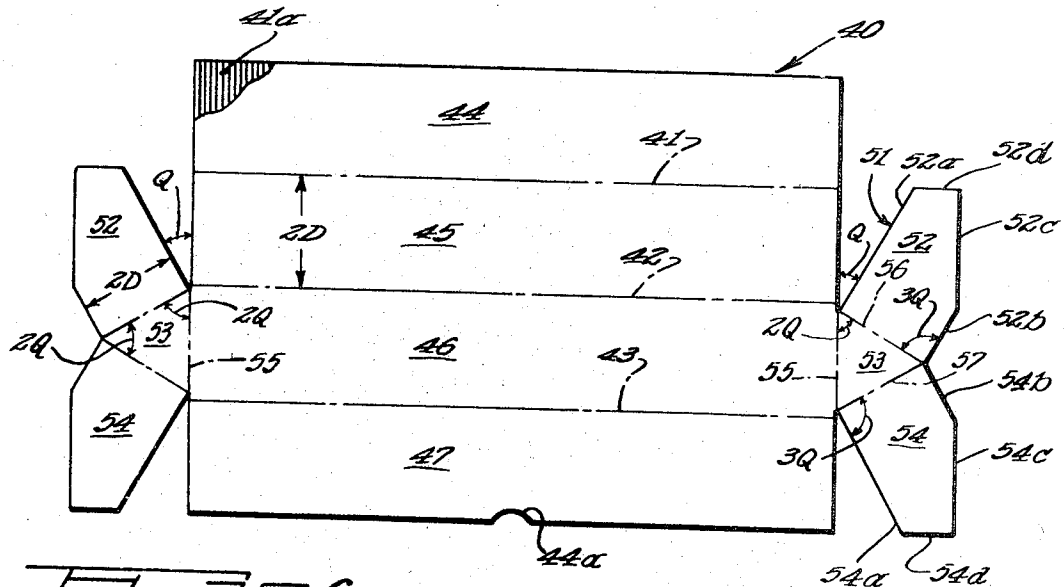


Fig. 6

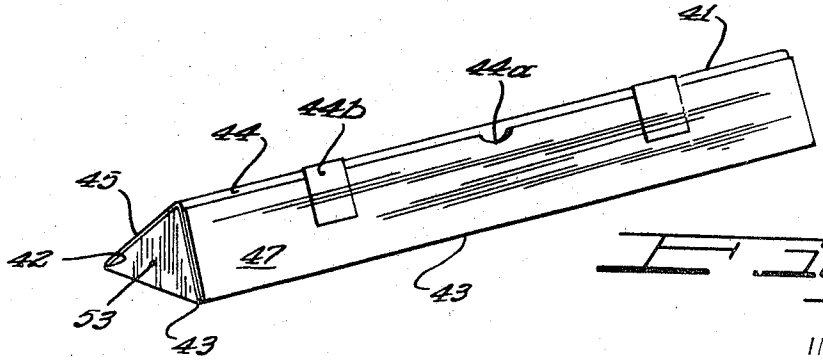


Fig. 7

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SHIPPING CONTAINER

The present invention relates to shipping containers and more particularly relates to elongated shipping containers adapted for shipment of cylindrical objects.

A number of configurations for shipping containers are known for protecting variously shaped objects. However, such known containers have numerous drawbacks, including utilization of excess material, insufficient protection for the interior of the container, inability to be easily stored or stacked, relative complexity of assembly, etc.

Accordingly, it is an object of the invention to provide a shipping container overcoming the aforesaid deficiencies.

It is a further object of the invention to provide an improved shipping container especially adapted for mailing cylindrical objects.

It is a further object of the invention to provide a novel, triangularly-shaped container utilizing a minimum amount of stock with novel end pieces which are sequentially foldable with the flaps and panels of the container to provide an increased amount of protection to the interior of the container.

It is still a further object of the invention to provide a novel, triangularly-shaped container having end flaps with reinforcement sides extending inwardly to define double-walled portions along both ends of the container.

Many other features, advantages and additional objects of the invention will become apparent to those versed in the art upon making reference to the detailed description which follows and the accompanying drawings in which preferred structural embodiments of a container incorporating the principles is shown by way of illustrative example, however, variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure.

On the Drawings

FIG. 1 is a development of a one-piece blank used to construct an embodiment of the container of the invention;

FIG. 2 is a somewhat reduced view showing the blank of FIG. 1 with side, top and end panels moved into assembly position;

FIG. 3 is a perspective view of the assembled container of FIG. 1;

FIG. 4 is a cross-sectional view taken substantially along lines IV–IV of FIG. 3;

FIG. 5 is a cross-sectional view taken substantially along lines V–V of FIG. 3;

FIG. 6 is a development of a one-piece blank used to construct another embodiment of the container of the invention; and

FIG. 7 is a perspective view of the assembled container of FIG. 6.

As Shown in the Drawings

The shipping container or mailer box of the present invention is made of a sheet form member such as a double faced form of corrugated paper blank indicated generally at **10** and having the usual laminar construction consisting of corrugations **10***a*, with the double faces provided by an inside surface sheet and an outside surface sheet joined to said corrugation in a suit suitable manner. The outside surface sheet may contain any desired indicia-bearing information. It will be noted that the corrugated paper blank is so arranged that the corrugations **10***a* extend substantially in a transverse direction to the principal extension of blank **10**. This disposition of the corrugations materially aids the strength characteristics of the assembled container.

In accordance with the principles of the invention, the die cutting process is carried out to afford substantially simultaneous cutting and scoring operations. Thus, the blank **10** is simultaneously cut to the proper peripheral configuration along the desired cut lines and also provide it with the proper scoring lines dividing the blank into a plurality of panels disposed in a predetermined position for assembly of the container. It will be noted that the four principal score lines are substantially perpendicular to the direction of the corrugations, while the score lines of the end flaps are substantially parallel to the direction of the corrugations. This arrangement further contributes to the overall strength characteristics of the novel container.

More specifically, sheet **10** comprises a main body portion having a first score or score lines **11** thereby defining a first panel in the main body portion which will be referred to herein as top wall **14**. It will be understood that the terms top, bottom, etc. will be used throughout the specification of the invention for purposes of illustration, but that the relative positions of these panels can be interchanged without departing from the basic inventive concepts. A second score line **12** is formed in the body portion in spaced relationship from the score line **11** thereby forming or defining a second panel in the main body portion adjacent the first panel and hingeably integrated therewith. This second panel will be referred to hereinafter as sidewall **15**.

The body portion of the sheet form member **10** is provided with a further score line **13**, which is spaced from score line **12** forming a third panel adjacent and hingeably integrated with sidewall **15**. The third panel will be referred to herein as bottom wall **16**. The remaining fourth panel is defined by the score line **13** and is spaced from and hingeably integrated with bottom wall **16**. The fourth panel, which will be referred to herein as closure flap **17** is provided with a pair of cutout apertures **14***a* having enlarged areas **14***b* for ease of gripping. It will also be noted that top wall **14** is provided with further score lines **18** along its outer peripheral edge to define locking tabs **11***a*. Tabs **11***a* are in registry with and mate with apertures **14***a* of the closure flap **17**. The locking tabs **11***a* may be provided with relief margins **11***b* to aid in their locking function. The top wall **14** is also provided with rounded edges **11***c* for safety.

A pair of opposingly disposed three-panel flap members **21** are hingeably attached to the bottom wall **16**. Score line **25** separates bottom wall **16** from the end flaps **21**. It will be noted that each flap member is somewhat wing-shaped and has a main portion **23** hingeably attached to the bottom wall **16**, while the two end portions **22** and **24** are hingeably attached to such main portion but extend away from the bottom wall **16**. The main portion of the end flaps **21** will be referred to hereinafter as reinforcement panel **23**. More specifically, the end flaps are each provided with a further score line **26** extending at an angle to the sheet form member **10** to form a first end reinforcement panel **22**. Reinforcement panel **22** is hingeably integrated with end panel **23** but is not otherwise attached to the sheet member **10**. An angle Q defines the area of separation between the exterior transverse edge of sheet member **10** and the interior peripheral edge **22***a* of reinforcement panel **22**. A portion of the outer peripheral edge **22***b* of reinforcement panel **22** adjacent the end panel **23** is cut parallel with the interior peripheral edge **22***a* thereof. The remaining portion of the peripheral outer edge of reinforcement panel **22** is cut parallel with the transverse peripheral edge of sheet member **10**, as along **22***c*. The remaining edge **22***d* of reinforcement panel **22** is cut to be somewhat parallel with the principal score line in sheet member **10**. A substantially identical but opposing reinforcement panel **24** is provided along the opposed side of end flap **23**. Thus, the reinforcement panels **22** and **24** are irregularly shaped pentahedron panels hingeably attached to and separated by a center triangularly-shaped panel. The score lines **26** and **27** each define an angle **3Q** with the respective inner peripheral longitudinal edges **22***a* and **24***a* of the reinforcement flaps **22** and **24**. Further, the score lines **26** and **27** also define an angle **2Q** with the score line **25** of end flap **23**.

It may also be pointed out that the spacing between the respective inner peripheral edges **22***a*, **24***a* and the respective angular exterior peripheral edges **22***b*, **24***b* is **2D**. Likewise, the spacing between principal score lines **11**, **12**, **13** is also equal to about **2D**. The dimension D substantially corresponds to the diameter of a cylindrical object that is to be placed in the

assembled container. In this manner, it is possible to construct containers suitable for a variety of cylindrical objects without waste of material or space within the containers. Of course, as will be appreciated, the dimensions 2D include not only two times the diameter of the cylinder to be shipped, but also allow for the thickness of the corrugated material.

In assembling the container, substantially as illustrated at FIGS. 2 and 3, the three-panel flap members 21 are first folded upwardly along score lines 25 into substantially perpendicular position in respect to the bottom wall 16. Then, the pentahedron reinforcement flaps 22 and 24 are folded inwardly along score lines 26 and 27, respectively, whereby their respective bottom edges 22*a* and 24*a* contact the surface of bottom wall 16, while their respective angular upper edges 22*b* and 24*b* contact each other to define a somewhat triangularly-shaped reinforcement piece. Thereafter, panels 15 and 17 are folded upwardly along score lines 12 and 13 respectively so as to have surface portions thereof contiguous with reinforcement panels 22 and 24. Then top panel 14 is folded downwardly along score line 11 to overlie panel 17. During the folding of the top flap 14 over the closure panel 17, lock tabs 11*a* are inserted into apertures 14*a* to provide an integral unit. In this manner, opposed double-walled portions are provided along opposed edges of the assembled container which provide additional strength to the interior thereof.

As best seen in FIG. 4, when the sequential folding process is complete, there are substantially identical but opposed reinforced double-walled portions 29 and 29*a* along the opposed longitudinal edges of container 10. The reinforced double-walled portions 29 and 29*a* are defined by, respectively, reinforcement panel 22 having a surface contiguous with side panel 12 and reinforcement panel 24 having a surface contiguous with top panel 11. Thus, the container has two reinforced double-walled portions and 29 and 29*a* defined by its sidewalls (and the reinforcement panels of the flap members) that abut one another at particular (i.e., about 60°) angles to provide maximum protection for the interior of the container. The flat-sided container thus provided is easily stored or stacked and is easy to handle while providing sufficient protection for cylindrical objects.

As shown in FIG. 5, the reinforcement panel 24 has its outer angular edge 24*b* abutting against the main panel portion along score line 11. The inner peripheral edge 24*a* of reinforcement panel 24 abuts on the main body portion 10 along bottom panel 16 at score line 13. Of course reinforcement panel 22 has similarly disposed edges substantially opposed to panel 24.

FIG. 6 illustrates another embodiment of the container of the invention. A corrugated paper blank generally indicated at 40 has the usual laminar construction consisting of corrugations 41*a* with double faces provided by an inside surface sheet and an outside surface sheet joined to the corrugations in a suitable manner. Of course, if desired, the outside surface may contain any desired indicia-bearing information. It will again be noted that the corrugations are generally transverse of the blank 40.

The die cutting process is carried out in such a manner as to substantially simultaneously cut and score the blank to the desired configuration. Thus, the sheet form member 10 is provided with successively spaced score lines 41, 42 and 43 to define first, second, third and fourth panels 44, 45, 46 and 47 respectively (which may be referred to as top, side, bottom and closure panels). These panels are all substantially of equal width, i.e., about 2D wherein D represents the diameter of a cylindrical object to be placed within the container. In this regard, it will be appreciated that allowance must be made in the panel width for the thickness of the corrugated blank. Closure panel 47 is provided with a cut out portion 44*a* along its peripheral edge to aid in opening the closed container. Further, a pair of opposing score lines are provided along the transverse edges of bottom panel 46 to define opposing three-panel flap members 51. End flap members 51 are provided with angular score lines 56 and 57 which abut one another at the outer peripheral edge of a center panel 23 to form irregular pentahedron-shaped reinforcement panels 52 and 54. Panels 52 and 54 are separated from the main blank 40 by an angle Q. Score lines 56 and 57 are separated from score line 55 by the angle 2Q and this same angle, i.e., 2Q, also separates the score lines 56 and 57 from one another.

The reinforcement panels 52 and 54 have respective inner peripheral edges 52*a* and 54*a* and outer abutting angular edges 52*b* and 54*b* which are substantially parallel to one another, i.e., edge 52*a* is substantially parallel to edge 52*b* and edge 54*a* is parallel to edge 54*b*. These edges are separated from one another by the distance 2D. The reinforcement panels 52 and 54 also have outer separated peripheral edges 52*c* and 54*c* and longitudinally extending edges 52*d* and 54*d* respectively.

In assembling the container, the end panels 51 are first bent upwardly along score lines 55 to assume a substantially vertical position in respect to bottom panel 46. Thereafter, reinforcement panels 52 and 54 are bent inwardly along score lines 56 and 57 to contact bottom panel 46 along score lines 42 and 43 and to contact each other along their abutting edge portions 52*b* and 54*b*. Then panel 45 is bent upwardly along score line 42 into substantially contiguous relationship with reinforcement panel 52. Top panel 44 is then bent downwardly along score line 41 to assume a substantially contiguous relationship with the opposed reinforcement panel 54. Thereafter, the closure panel 47 is bent upwardly along score line 43 into contiguous relationship with top panel 44.

A fastening means 44*b* is then provided on the exposed surfaces of panel 47 and panel 45 to maintain the closure of the container. Any suitable type of fastening means may be employed, as for example, strips of tape. Further, a glue line may be established along the inner surface of panel 47 along its outer peripheral edge in somewhat spaced relationship from cut out portion 44*a*. As will be appreciated, the embodiment illustrated in FIGS. 6 and 7 likewise has reinforced double-walled end portions as described previously providing substantial protection for the contents of the interior of the box. While the fastening means is shown as a tab strip 44*b*, of which two are illustrated, an elongated adhesive strip substantially coextensive with the edges of the container could also be used, if desired.

Although minor modifications might be suggested by those versed in the art, it should be understood that I wish to embody within the scope of the patent warranted hereon all such modifications as reasonably and properly come within the scope of my contribution to the art.

I claim:

1. A shipping container comprising:

a series of four elongated rectangular panels of substantially equal size connected by parallel longitudinal fold lines;

said panel panels being folded in such a manner that the first panel overlies the fourth panel to provide a tubular body of triangular cross section;

one of said second and third panels having a three panel flap member connected to each respective end edge thereof by a hinging fold line;

said three panel flap member comprising:

a generally triangularly shaped main portion forming an end wall for the tubular body, and a pair of end portions each connected to said main portion by an angularly disposed fold line,

each end portion having an interior peripheral edge initially disposed at an angle with respect to the transverse edges of the adjoining rectangular panels,

each end portion having an outer peripheral edge extending parallel to its inner peripheral edge for a portion of its length and then extending parallel to the transverse edges of the rectangular panels, and

thereby to form said end portions as irregularly shaped pentahedron panels which are folded inwardly to provide triangularly shaped reinforcements interiorly of the ends of the tubular body.

2. A shipping container as defined in claim 1 and further characterized by said first panel having means forming locking tabs along the longitudinal edge thereof, said fourth panel having corresponding cutout apertures mating with said locking tabs to lock the container in assembly.

3. A shipping container as defined in claim 1 and adhesive strip means fastened to said first panel and projecting over the longitudinal edge thereof to engage the adjoining surface of another panel thereby to lock the container in assembly.

4. A shipping container as defined in claim 1 and further characterized by said container being made of corrugated stock and having the corrugations thereof extending transversely relative to the principal extension of the blank from which said container is formed.