

[54] BULK MATERIAL CONTAINER	1,987,461	1/1935	Boby	229/14 R X
	2,016,863	10/1935	La Grua	229/23 A X
[75] Inventors: Robert A. Bamburg; Farris N. Duncan, both of West Monroe; Roger M. Floyd, Monroe, all of La.	2,794,588	6/1957	George et al.	229/14 R X
	2,902,202	9/1959	Fallert	229/23 R
	3,055,568	9/1962	Zalkind	229/14 BE
[73] Assignee: Olinkraft, Inc., West Monroe, La.	3,063,615	11/1962	Bronte et al.	229/23 R
	3,276,662	10/1966	Farquhar	229/23 BT
[22] Filed: May 28, 1974	3,503,550	3/1970	Main et al.	229/14 R X
[21] Appl. No.: 473,849	3,726,467	4/1973	Shepherd	229/23 R

Primary Examiner—Davis T. Moorhead

- [52] U.S. Cl..... 229/23 R; 229/14 BL; 229/14 BE
- [51] Int. Cl..... B65d 13/00; B65d 25/14
- [58] Field of Search..... 229/14 PL, 14 BW, 14 BE, 229/14 R, 23 BT, 23 R

[57] ABSTRACT

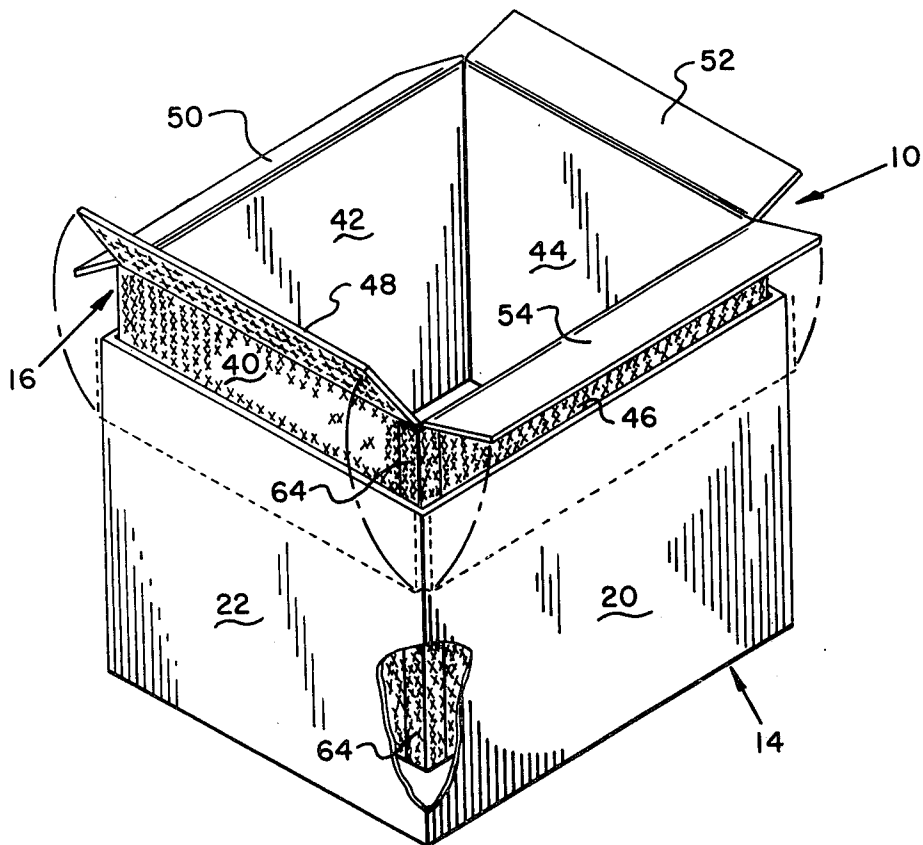
A container has an open top shell and an inside liner in the shell. A plurality of flaps integral with the liner are folded down over the top edge of the shell and secured to the outer surface of the shell.

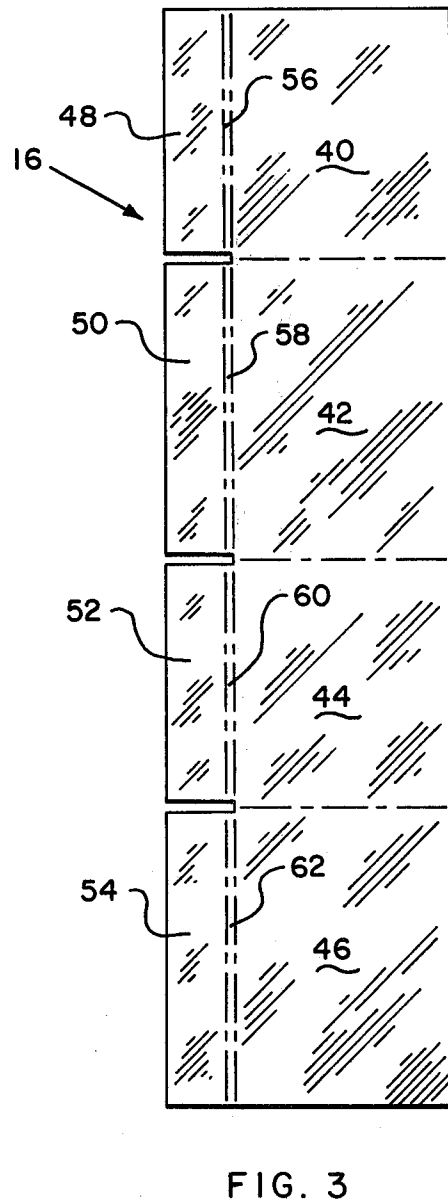
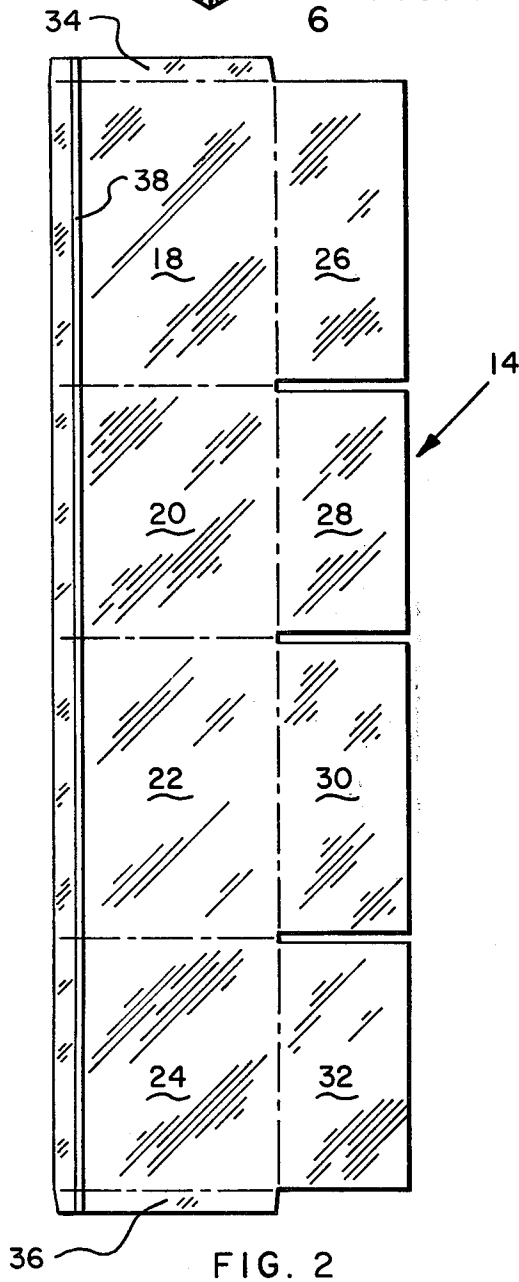
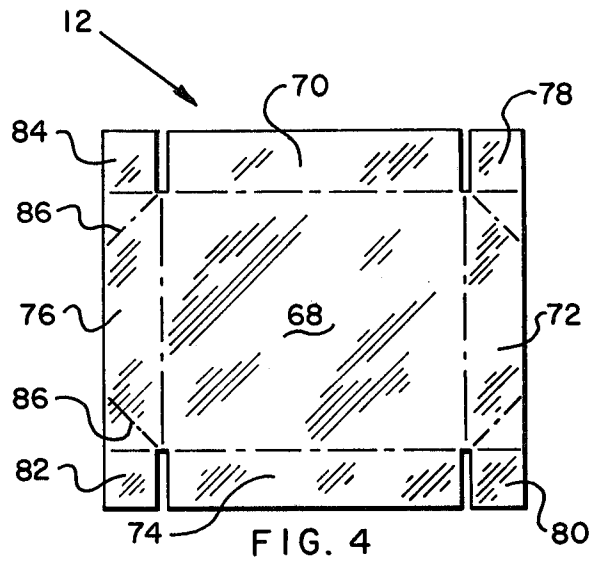
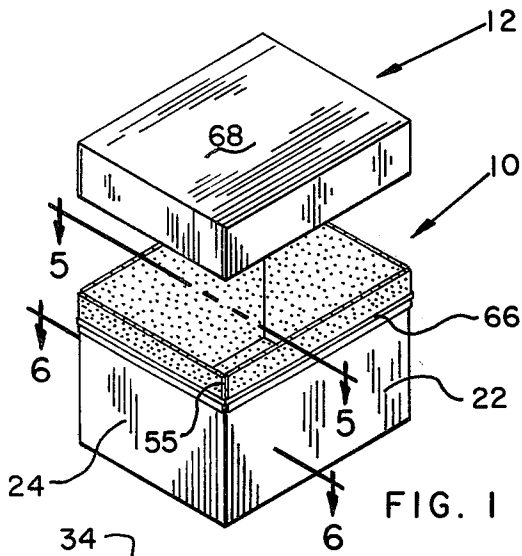
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19 Claims, 7 Drawing Figures





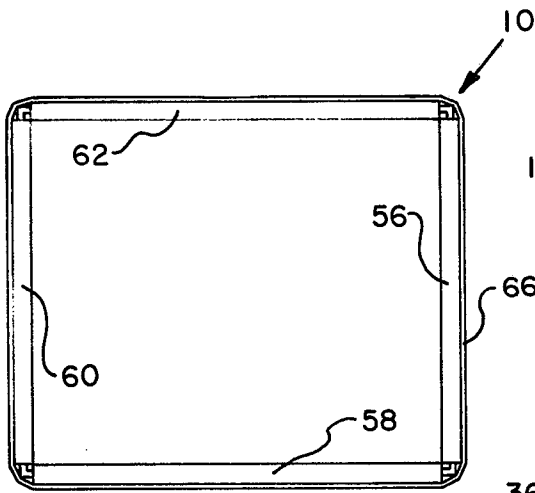


FIG. 5

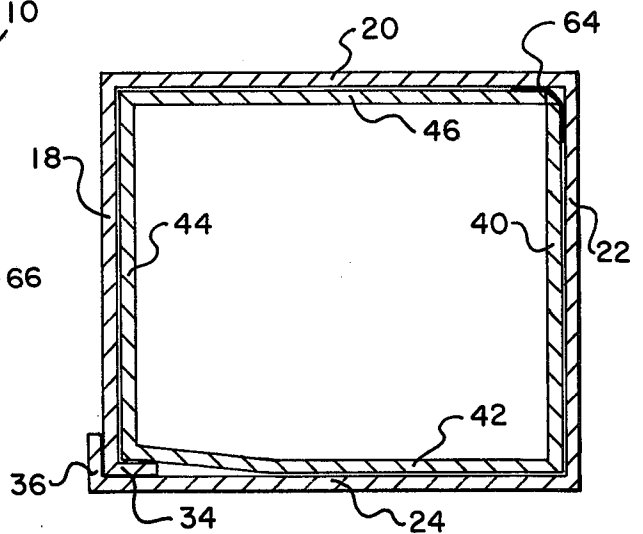


FIG. 6

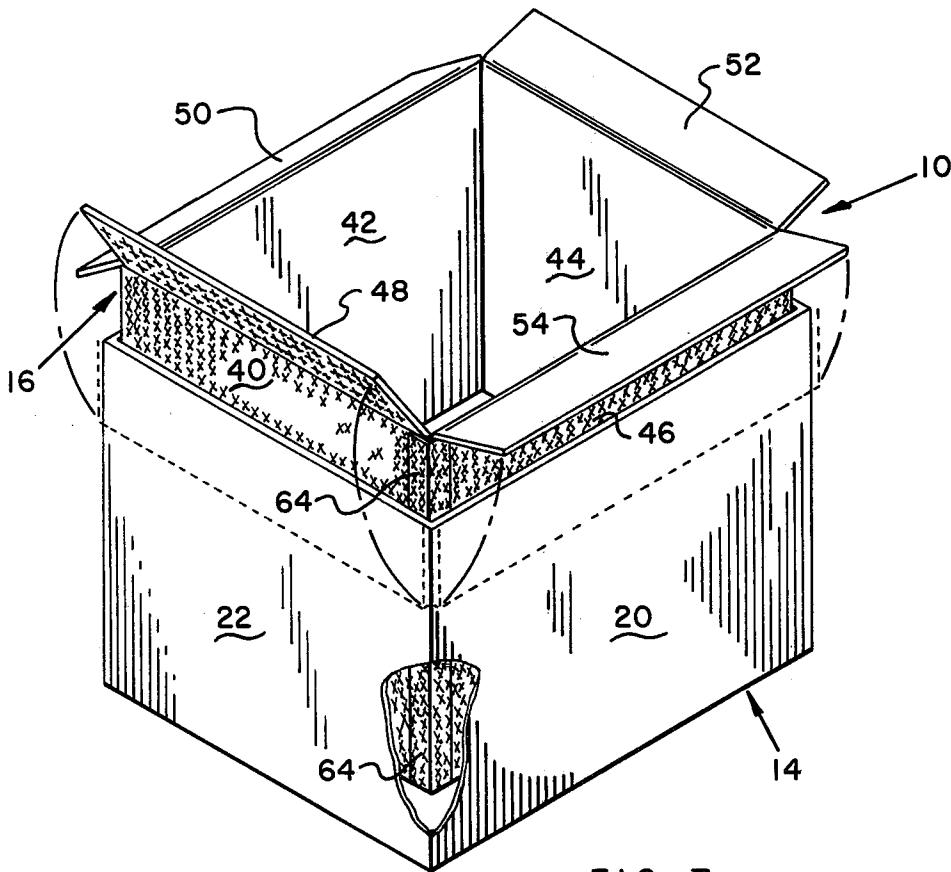


FIG. 7

## BULK MATERIAL CONTAINER

## BACKGROUND OF THE INVENTION

## 1. Field of the Invention

The invention relates to containers, and in particular, to a container for storing and shipping bulk materials, such as pellets of synthetic polymers.

## 2. Description of the Prior Art:

The prior art as exemplified in U.S. Pats. No. 1,241,633, No. 1,893,801, No. 2,488,194, No. 2,577,588, No. 2,845,210, No. 3,265,284, and No. 3,643,856, contains a number of containers including containers for storing and shipping bulk material. Prior art containers formed from corrugated paperboard and the like generally have one or more deficiencies, such as not being capable of withstanding multiple stacking in storage, being subject to bulging of the sides of the container when filled with a bulk material, being subject to tear particularly at corners of the container, and particularly being subject to bulging or tearing when tipped and inverted to dump the contents out of the container, thus rendering the box unacceptable for later use in shipping or storage.

## SUMMARY OF THE INVENTION

The invention is summarized in that a container includes a shell having an enclosed wall portion and a bottom portion, the shell being open at the top edge of the wall portion of the shell, a liner having a wall portion telescoped within the wall portion of the shell, a plurality of flaps integrally formed on the top edge of the wall portion of the liner and folded down over the top edge of the wall portion of the shell, and means for securing the plurality of flaps to the outside of the wall portion of the shell.

An object of the invention is to construct a relatively inexpensive container which is capable of containing quantities of bulk material and is capable of supporting other containers stacked on top.

Another object of the invention is to provide a container which has anti-bulge and anti-tear features on the upper portion of the container.

It is also an object of the invention to design a container capable of being tipped and inverted for dumping the contents out of the container without bulging the container or tearing the container allowing later use of the box.

Additional features of the invention include the provision of a reinforcing band surrounding the upper portion of the container and holding a plurality of flaps integrally formed on the top edge of an inner liner against a shell in which the liner is telescoped; the provision of a top cap, laminated shoulder and side walls for supporting containers stacked on top thereof; the provision of a taped inner joint for a liner and an overlapping exterior joint for preventing tear of the corners of the box; the provision of full surface lamination between the surfaces of a liner and the surfaces of a shell for preventing bulging of the sides of the container.

Other objects, advantages and features of the invention will become apparent from the following description taken in conjunction with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a container in accordance with the invention with a cap thereof shown disassembled.

FIG. 2 is a plan view of a blank used for forming a shell for the container of FIG. 1.

FIG. 3 is a plan view of a blank used for forming a liner in the container of FIG. 1.

FIG. 4 is a plan view of a blank used for forming a cap for the container of FIG. 1.

FIG. 5 is a top view taken along lines 5—5 of the container in FIG. 1.

FIG. 6 is a cross section top view taken along lines 6—6 of the container in FIG. 1.

FIG. 7 is a perspective view with portions broken away of a partially assembled liner and shell of the container in FIG. 1.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

As illustrated in FIG. 1, the invention is embodied in a container including an open-top box indicated generally at 10 and a cap 12 for enclosing the open top of the box 10. As shown in FIG. 7, the box includes an outer shell indicated generally at 14 and an inner liner indicated generally at 16.

The shell 14, as shown in FIG. 2, is formed from a scored blank having four serially joined and hinged outer side panels 18, 20, 22 and 24. Bottom flaps 26, 28, 30 and 32 are hinged on the bottom edges of the respective side panels 18, 20, 22 and 24. Manufacturer's joint flaps 34 and 36 are integrally hinged upon the respective ends of the serially joined side panels 18, 20, 22 and 24. As illustrated in FIG. 6, the outer side panels 18, 20, 22 and 24 are folded into a rectangular configuration to bring the ends of the side panels 18, 20, 22 and 24 together. The manufacturer's joint flaps 34 and 36 are suitably overlapped with and fastened to the respective side panels 24 and 18 to form an enclosed outer wall portion. The bottom flaps 26, 28, 30 and 32 are folded and secured together in a conventional manner to form a bottom for the container. A reinforcing tape 38 may be applied after the flaps 34 and 36 have been secured.

As shown in FIG. 3, the liner 16 is formed from a scored blank and has serially hinged and joined inner side panels 40, 42, 44 and 46. Flaps 48, 50, 52 and 54 are integrally joined by hinge portions 56, 58, 60 and 62 to the upper edges of the respective side panels 40, 42, 44 and 46. The hinged portions 56, 58, 59 and 60 have a width which is approximately equal to the thickness of the blank 14. As illustrated in FIG. 6, the inner side panels 40, 42, 44 and 46 are folded together into a rectangular configuration and the ends of the series of panels secured together by a strip of adhesive tape 64 extending lengthwise of the seam between the panels 40 and 46 to form an enclosed inner wall portion. The panels 40, 42, 44 and 46 have sizes slightly smaller than the respective panel 22, 24, 18 and 20 such that the liner may be telescoped within the assembled shell 14. The tape 64 on the liner is positioned in the corner between panels 20 and 22 and is sandwiched between the liner and the shell so as not to be exposed to the interior of the container. As illustrated in FIGS. 5 and 7, the flaps 48, 50, 52 and 54 are folded over the respective panels 22, 24, 18 and 20 so that the hinged por-

tions 56, 58, 60 and 62 extend over the upper edges of the respective panels 22, 24, 18 and 20. As indicated by the stippling in FIG. 7, the panels 40, 42, 44 and 46 have a layer of adhesive coated on the entire outer surface of the panels 40, 42, 44 and 46 securing the panels 40, 42, 44 and 46 to the respective interior surfaces of the panels 22, 24, 18 and 20. Similarly, the entire underside of the flaps 48, 50, 52 and 54 are coated with a layer of adhesive securing the respective flaps 48, 50, 52 and 54 to respective upper outside surface portions of the panels 22, 24, 18 and 20. Adhesive tape 55 may be applied over the outside exposed corner surfaces of pairs of adjoining flaps 48, 50, 52 and 54.

As shown in FIG. 5, a reinforcing band, such as a steel band 66, circumferentially extends around the box 10 of the container parallel to the upper edge thereof and in engagement with the flaps 48, 50, 52 and 54.

As shown in FIG. 4, the cap 12 has a rectangular top panel 68. Respective top side panels 70, 72, 74 and 76 are integrally hinged on respective side edges of the four sides of the top panel 68. Manufacturer's joint flaps 78 and 80 are hinged on opposite edges of the side panel 72 while manufacturer's joint flaps 82 and 84 are hinged on opposite edges of the flap 76. As shown in FIG. 1, the side panels 70, 72, 74 and 76 are bent downward. The flaps 78 and 84 are secured to the panel 70 and the flaps 80 and 82 are secured to the panel 74. The top panel 68 has a size to cover the open top of the box 10 and to telescope the side panels 70, 72, 74 and 76 over the upper portion of the box 10 to enclose the open top of the container. Diagonal score lines 86 are formed in the panels 72 and 76 so that the cap 12 may be folded flat when not in use.

The blanks for the cap 12, the shell 14, and the liner 16 are suitably formed from a corrugated paperboard, cardboard, or the like.

As shown in FIG. 1 by the stippling, the entire inside surface of the liner 16, the inside surface of the bottom of the container, the exposed surfaces of the hinged portions 56, 58, 60 and 62, and a portion of exposed surfaces of the flaps 48, 50, 52 and 54 extending downward all around the upper outside of the container are coated with a release coating. The release coating is any suitable nonadherent material which can be utilized to form a surface on paperboard impervious to oils, fats, moisture, and the like. Suitable materials include synthetic polymers such as a silicone polymer or a polyvinylidene chloride. The non-adherent property of the coating is selected to minimize adherence of the materials, chemicals, or the like, in the container to the surfaces of the container; thus the bulk materials may be poured from the container without adhering to the surfaces.

In use of the container of FIG. 1, bulk material is placed within the box 10 of the container and the top or cap 12 is assembled closing the container. The container may be used for shipping the bulk material or for suitably storing the bulk material.

The flaps 48, 50, 52 and 54 being secured to the outer wall panels 22, 24, 28 and 20 substantially reinforce the upper edge of the box 10. Thus the box 10 of the container is retarded from buckling and being deformed when the box 10 is tipped and inverted to pour out the contents from the container. Additionally, the flaps 48, 50, 52 and 54 reinforce the container walls and particularly the upper edges to make the walls

more rigid to withstand the weight of containers placed on top of the cap 12.

Additionally, the steel band 66, and particularly in combination with the flaps 48, 50, 52 and 54, provides additional strength and reinforcement for the upper edge of the container.

Having the flaps 48, 50, 52 and 54 integrally formed with the panels 40, 42, 44 and 46 with a release coating formed continuously over the surface thereof down the outside of the container over a portion of the flaps 48, 50, 52 and 54 produces a substantially smooth and non-adherent upper edge on the container which is particularly adapted for aiding in pouring bulk material from the container. Further, the hinged portions 56, 58, 60 and 62 provide additional strength for the box 10 and prevent bulging and bending of the side wall of the container.

Since many variations, modifications and changes in detail may be made to the described embodiment, it is intended that all matter in the foregoing description and in the accompanying drawings to interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A container comprising a shell having an enclosed wall portion and a bottom portion, a said shell being open at the top edge of the wall portion of the shell, a liner having a wall portion telescoped within the wall portion of the shell, a plurality of flaps integrally formed on the top edge of the wall portion of the liner and folded down over the top edge of the wall portion of the shell, and means for securing the plurality of flaps to the outside of the wall portion of the shell.
2. A container as claimed in claim 1 wherein there is included a layer of adhesive securing the flaps to the outside of the wall portion of the shell.
3. A container as claimed in claim 1 wherein the securing means includes a reinforcing ring tightly secured around the container in engagement with the plurality of flaps.
4. A container as claimed in claim 1 wherein the inner surfaces of the container as well as a portion of the exposed outer surfaces of the flaps are coated with a release coating to aid in emptying the contents of the container by minimizing adherence of the contents to the container walls.
5. A container as claimed in claim 4 wherein said release coating includes a polymerized silicone.
6. A container as claimed in claim 2 wherein said release coating includes a polyvinylidene chloride.
7. A container as claimed in claim 1 wherein the liner includes an elongated member having at least four serially joined planar panels folded to bring the ends of the elongated member in juxtaposition, and a tape joint securing the juxtapositioned ends of the member, said tape joint being positioned between the liner and the shell.
8. A container as claimed in claim 1 including a top cap enclosing the top and fitted over said flaps to protect the contents of the container and to aid in stacking similar containers on top of each other.
9. A bulk material container comprising

a shell formed from an elongated wall-forming blank of material fixedly attached together and scored to form a series of wall panels,

a liner formed from an elongated wall-forming blank of material fixedly attached together and sized and scored to fit within said shell, said liner having formed on the upper portion thereof a plurality of fold-down flaps,

first means, associated with said shell and said liner for bonding said shell and liner together,

second means, associated with said shell and said fold-down flaps, for bonding said flaps to said shell after said flaps have been folded down and positioned in juxtaposition to the upper portion of said shell,

third means, associated with said folded-down flaps, for bonding said flaps to said shell in addition to said second bonding means and for reinforcing the upper portion of the container from distortion caused by upending the container to remove the contents thereof, and

means, associated with the container, for closing at least the bottom end of the container.

10. A bulk material container as defined in claim 7 wherein said first and second bonding means comprising an adhesive and said third bonding means comprises a strap surrounding the folded down flaps and positioned against the flaps.

11. A bulk material container as defined in claim 9 wherein said shell wall-forming blank is fixedly attached together by means of overlapping manufacturer's joint flaps formed on each end of the elongated blank and fixed to the ends of the shell wall-forming blank.

12. A bulk material container as defined in claim 9 including an adhesive tape fixedly attaching opposite ends of said liner wall-forming blank together, said adhesive tape being on the outer surface of the liner.

13. The bulk material container as defined in claim 9 wherein the means for closing the bottom end of the container includes a plurality of flaps hingedly attached to the shell.

14. The bulk material container as defined in claim 9 including closing means on the top of the container.

15. The bulk material container as defined in claim 14 wherein the top closing means comprises a removable top cap positioned over the top of the container and surrounding the fold-down flaps.

16. The bulk material container as defined in claim

9 including a release coating formed on the inside surfaces of the container.

17. The bulk material container as defined in claim 16 wherein said release coating includes a silicone polymer.

18. The bulk material container as defined in claim 16 wherein said release coating includes a polyvinylidene chloride.

19. A bulk material container comprising four serially joined outer side panels;

a manufacturer's joint flap hinged on one end of the serially joined outer side panels and secured to the panel at the other end of the serially joined outer side panels;

four bottom flaps hinged on bottom edges of the respective serially joined outer side panels, said bottom panels being folded and secured to form a bottom on the container;

four serially joined inner side panels telescoped with the outer side panels;

an adhesive tape extending over outer surface portions of both end panels at the ends of the inner side panels for securing the ends of the inner side panels together;

a layer of adhesive bonding each of the inner side panels to each of the outer side panels;

four reinforcing flaps;

four hinge portions integrally formed between the upper edges of the respective inner side panels and the respective reinforcing flaps;

each of the hinge portions and the reinforcing flaps folded over the upper edge of a respective outer side panel;

a layer of adhesive bonding each of the reinforcing flaps to outer upper surface portions of each of the outer side panels;

a steel band tightly surrounding the upper portion of the container and engaging the reinforcing flaps;

a release coating of non-adherent material over the inner surfaces of the inner side panels, the hinge portions, and a portion of the exposed surface of each of the reinforcing flaps contiguous to the inner side panels; and

a cover having a top panel and four cover side panels secured to telescope over the reinforcing flaps;

said outer side panels, joint flap, bottom flaps, inner side panels, reinforcing flaps and cover being formed from corrugated paperboard.

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UNITED STATES PATENT OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 3,880,341  
DATED : April 29, 1975  
INVENTOR(S) : Robert A. Bamburg, Farris N. Duncan, Roger M. Floyd

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, line 61, change the numeral "28" to -- 18 --.

Column 4, line 27, omit the word -- a --.

Signed and Sealed this

Third Day of August 1976

[SEAL]

*Attest:*

RUTH C. MASON  
*Attesting Officer*

C. MARSHALL DANN  
*Commissioner of Patents and Trademarks*