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 [22] Filed **Sept. 5, 1969**
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 Neenah, Wis.
 a corporation of Delaware
 Continuation-in-part of application Ser. No. 779,741, Nov. 29, 1968, now abandoned.

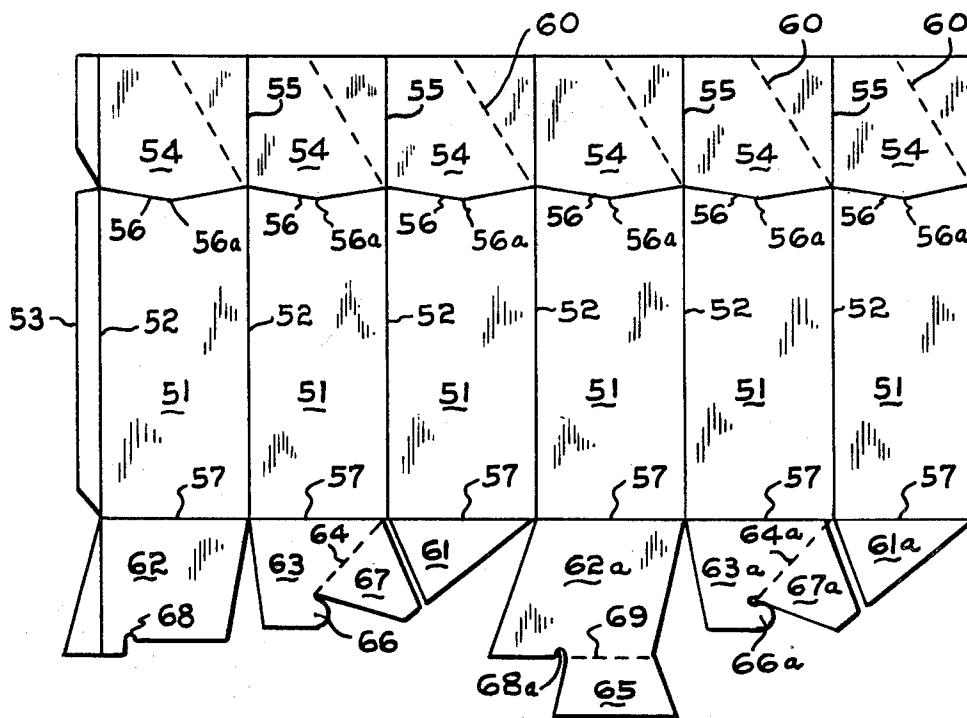
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 Attorneys—Daniel J. Hanlon, Jr. and Raymond J. Miller

[54] **SELF-LOCKING, EASY-OPENING CONTAINER**
 3 Claims, 16 Drawing Figs.
 [52] U.S. Cl. 229/39,
 229/37, 229/38
 [51] Int. Cl. B65d 5/10
 [50] Field of Search 229/38, 37,
 14B, 41C

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ABSTRACT: A collapsible, disposable container for receiving and temporarily storing waste materials or the like. The container comprises a multiwalled, open-sided tube in which flexible flaps, forming the upper and lower portion of the tube walls, are specially scored and folded in a manner to form a self-locking quick-opening closure at the top, and a self-locking floor at the bottom. The container is preferably made from disposable semirigid sheet material, such as paperboard. A plastic bag may be utilized as a liner for the container. The top portion of the liner bag cooperates with the self-locking flaps in a manner to seal in odors or the like when closed. The disposable container is especially useful for receiving and storing soiled diapers. It may also find use as a garbage receptacle, a bathroom waste basket, or a sanitary waste container for hospitals and sickrooms.



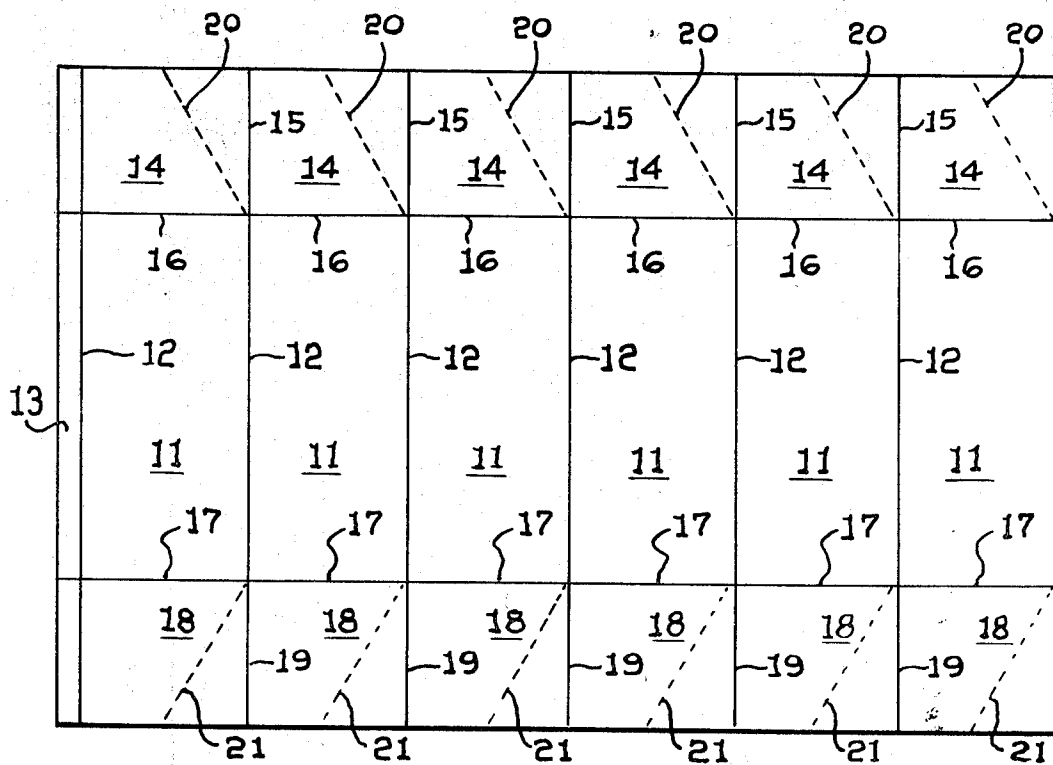


Fig. 1

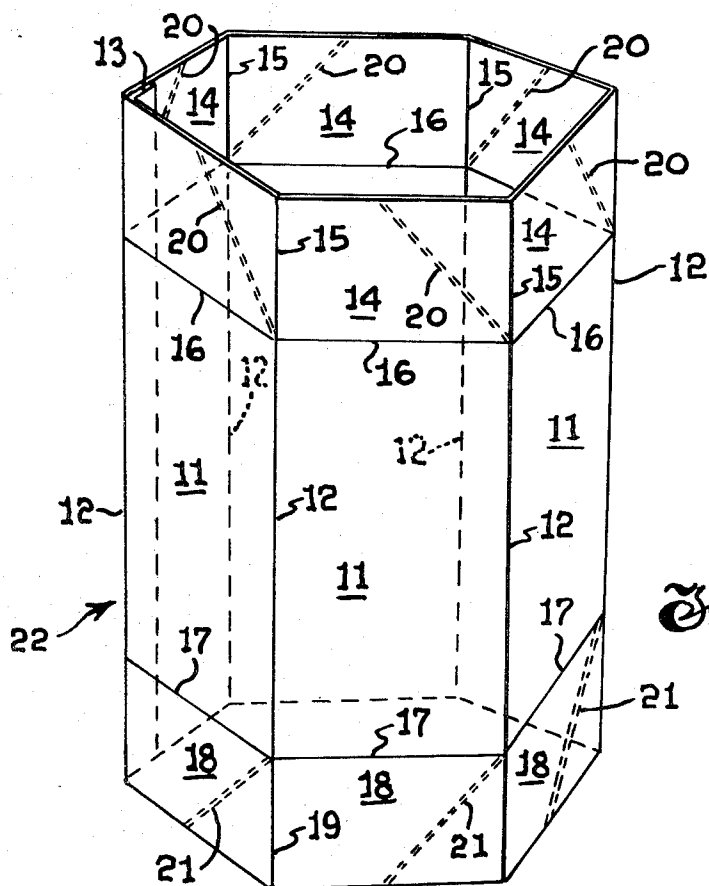


Fig. 2

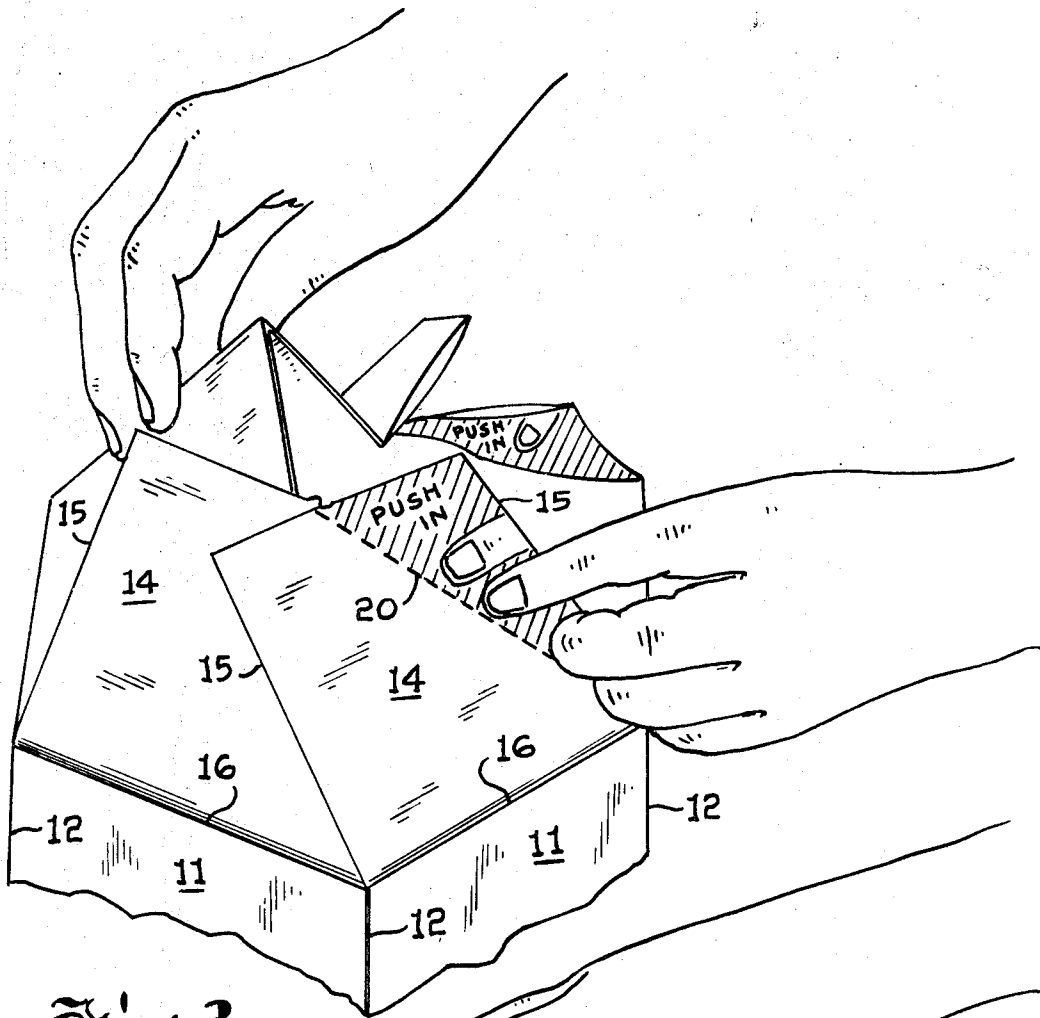


Fig. 3

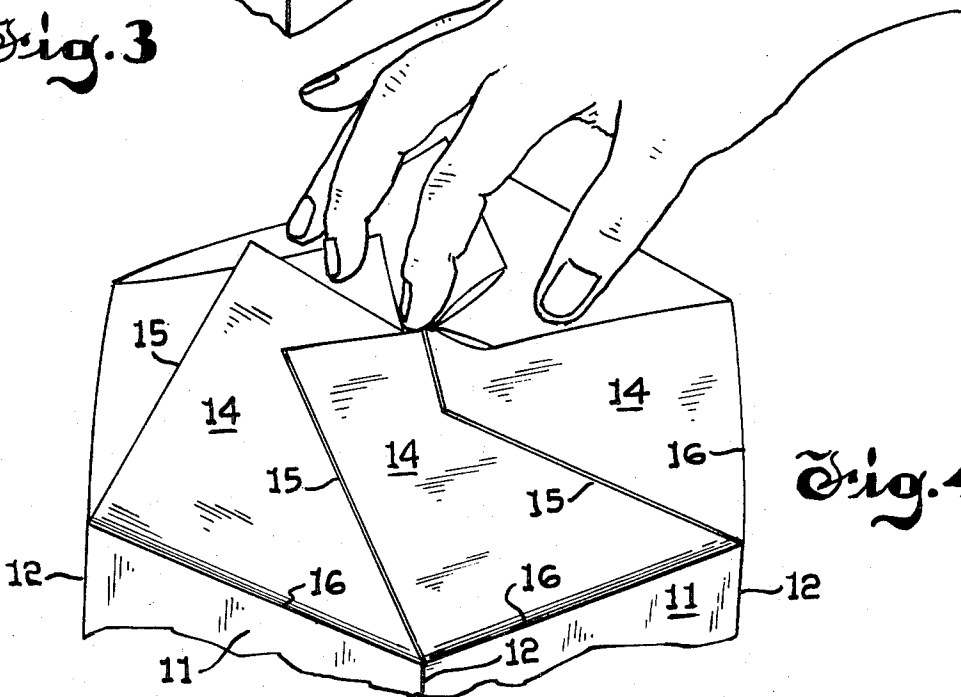


Fig. 4

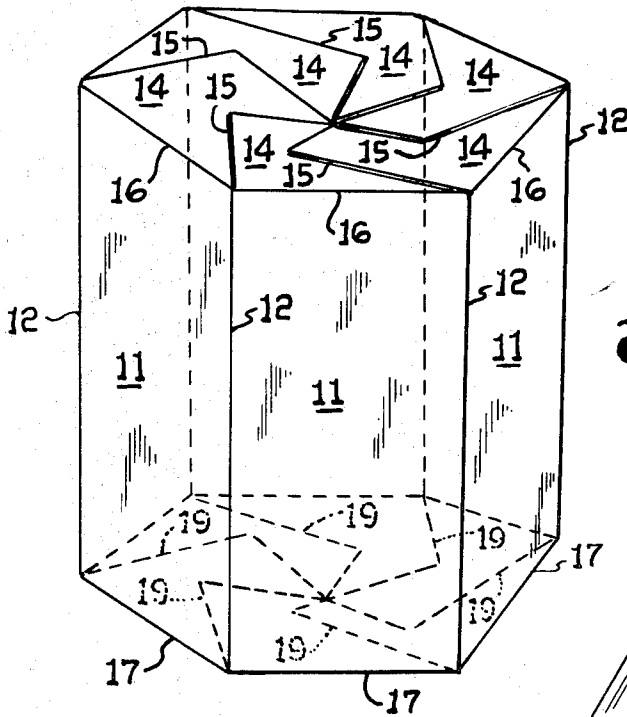


Fig. 5

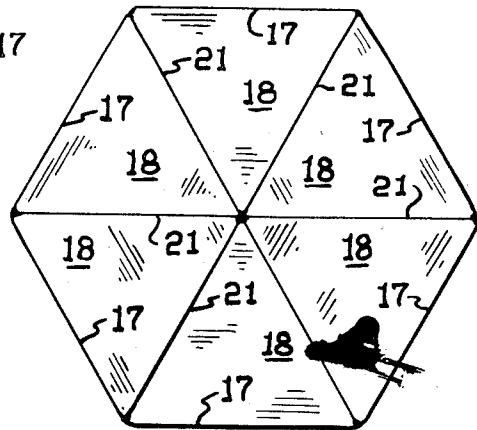


Fig. 6

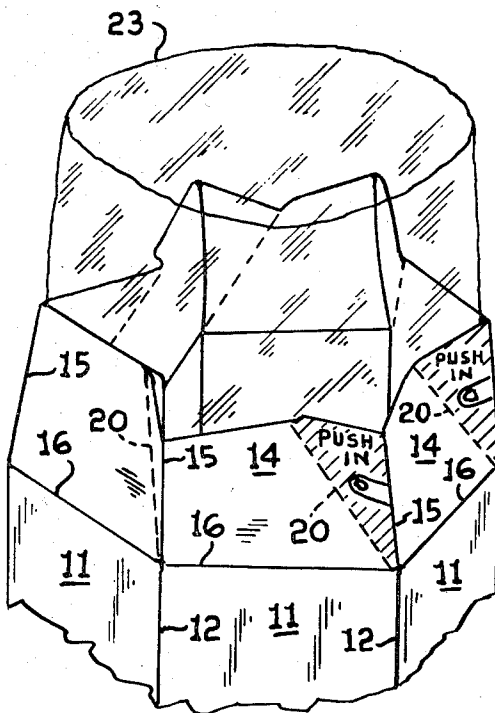


Fig. 7

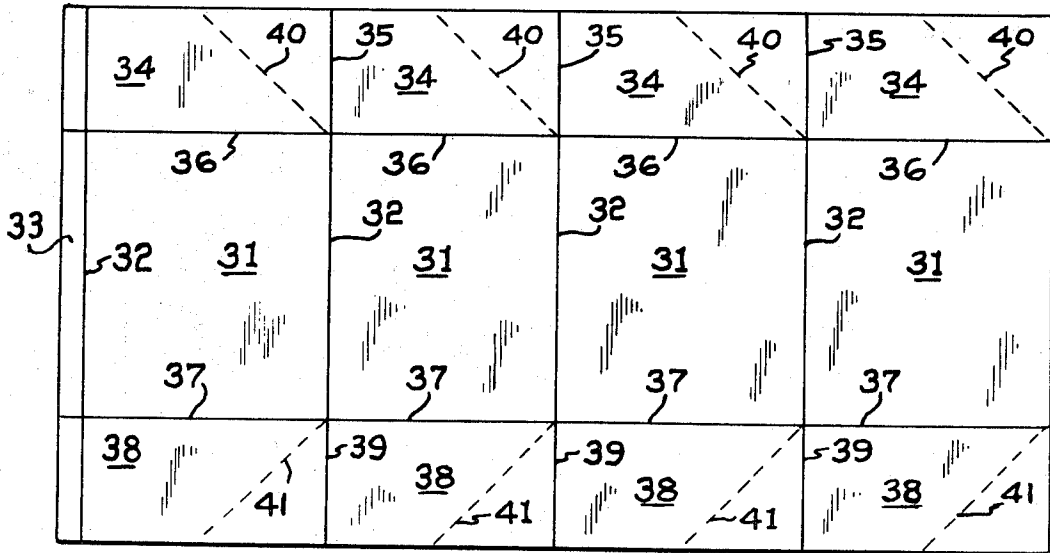


Fig. 9

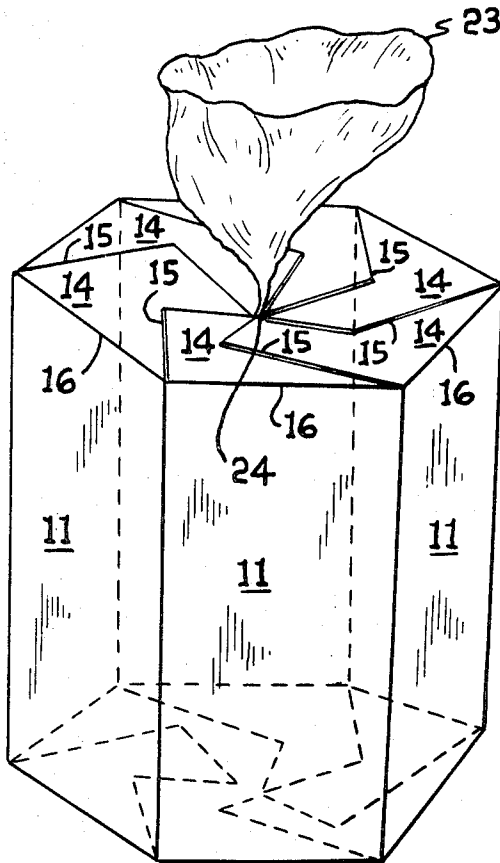
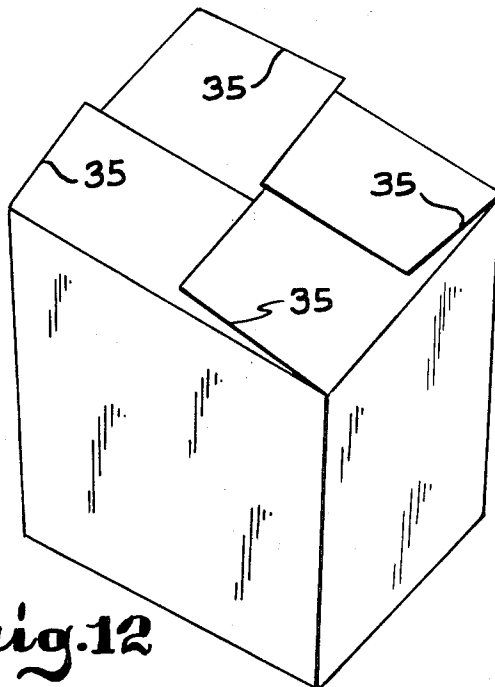
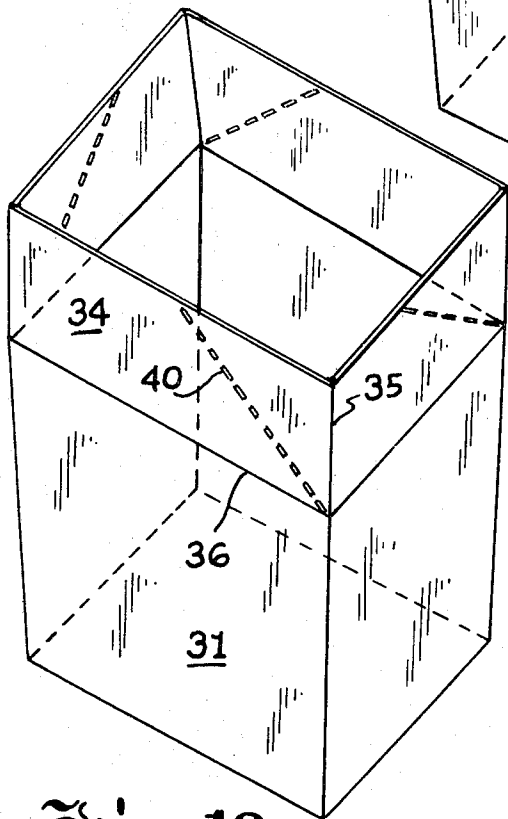
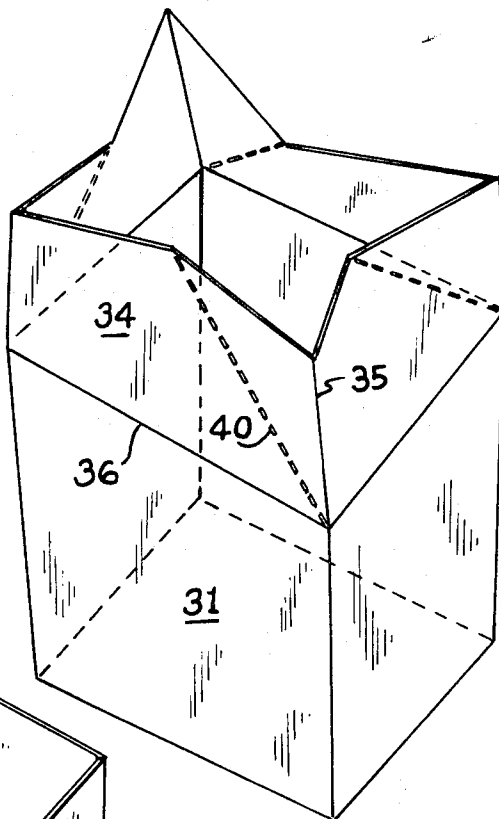


Fig. 8



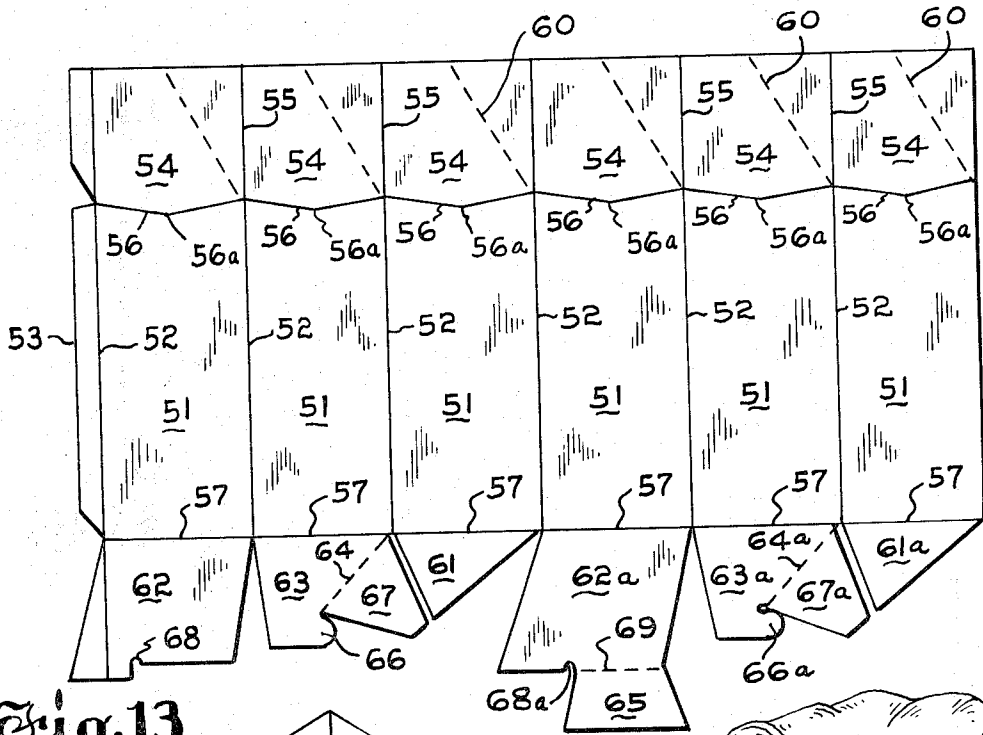


Fig. 13

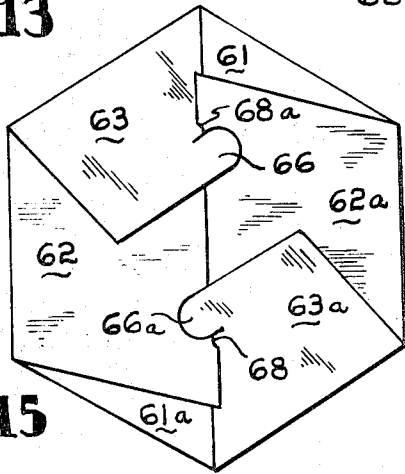


Fig. 15

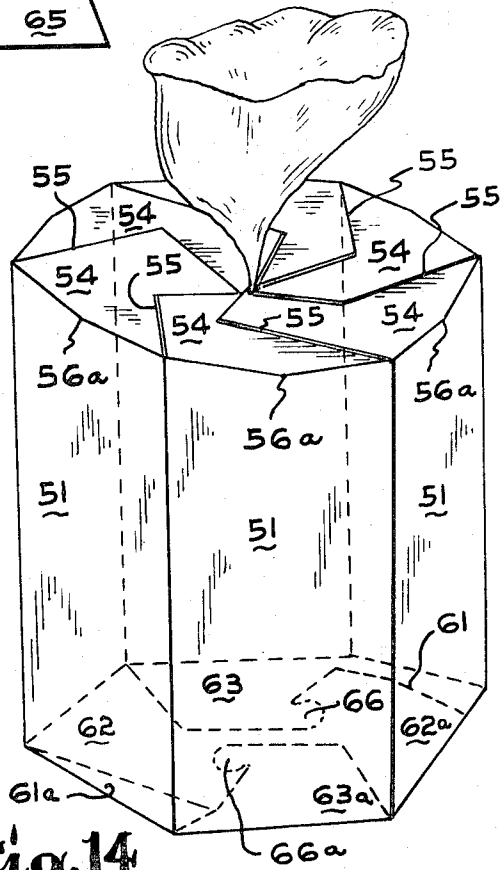


Fig. 14

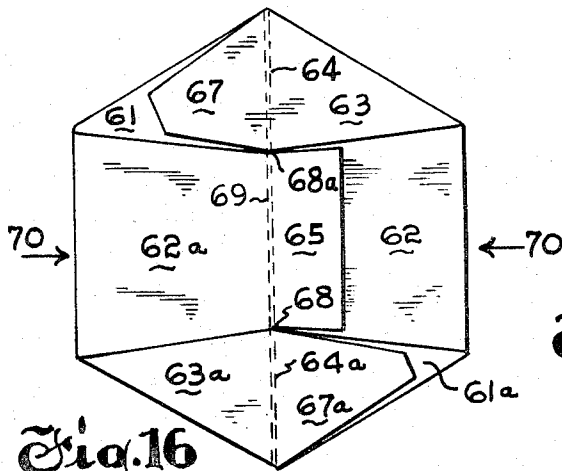


Fig. 16

SELF-LOCKING, EASY-OPENING CONTAINER

BACKGROUND OF THE INVENTION

This is a continuation-in-part of copending application Ser. No. 779,741 filed Nov. 29, 1968, now abandoned.

This invention relates primarily to an inexpensive, reusable and collapsible container of paperboard or the like which may be opened and closed with a single simple movement, and which preferably is disposable after limited use.

In hospitals and homes there is a need for a disposable container into which undesirable odor-producing materials may be temporarily stored before eventual disposal. Such a container should be of economical construction and should be provided with the convenience of an easy-opening, self-locking closure which, when closed and locked, substantially seals the container so that noxious odors may be confined therein. Metal garbage cans with foot-operated hinged lids are presently in widespread use for this purpose, but these require regular cleansing and disinfecting treatments if they are to remain sanitary and unobjectionable in use.

The present invention provides a neat attractive container which may be made of economical disposable materials and which has certain advantages over the more expensive permanent units commonly used for such purposes.

SUMMARY OF THE INVENTION

In the present invention a container for waste disposal is constructed from a unitary flat blank of flexible, semirigid, sheet material. The blank is formed into a multiwalled tube with open ends which fold to form self-locking closures. Each of the walls is of substantially the same size and shape, and is comprised of a rectangular central panel with flap portions at each end. The flaps at the open ends are joined to each other by vertical fold lines, and to the central panels by horizontal fold lines. Each of the flaps has an additional line of weakness, or a score line, running diagonally from an interior corner of the flap to the center of the flap's outer edge with the diagonal lines in each set of top or bottom flaps being substantially parallel to each other. The top flaps are folded inwardly toward each other on the diagonal lines, and outwardly on the vertical lines. When the edges of the flaps meet each other at the approximate center of the opening, and approximately at the terminal point of the diagonal lines, the top will remain closed. When pushed downward beyond a plane coincident with the horizontal fold lines, the flaps automatically lock in place and the top of the container is temporarily sealed. The locked container may be snapped open by pulling up on the outward folds.

In one embodiment, the bottom flaps are folded to form a similar closure except that the diagonal lines are folded outwardly while the horizontal lines are folded inwardly. This latter style of folding forms a locked bottom which when viewed thru the open container from the top has the same configuration as the configuration of the closed and locked top. Since anything placed in the container will exert downward pressure, the bottom flaps will automatically remain locked while in use. In another embodiment, the bottom flaps comprise more conventional individual extensions of the walls. These flaps may be formed in a number of ways to interlock with each other to provide a flat bottom.

It will easily be seen that the container may be shipped in flat blank form, or knocked flat after fabrication into its tubular form for shipment and storage.

While the container may be used without a lining, it has been found that a thin plastic bag of suitable size may be inserted in the container with the open end of the bag extending past the ends of the opened top flaps. When the top flaps are closed as indicated above, a top portion of the thin plastic bag is automatically trapped at the central conjunction of the flaps and is locked in place in closed condition to form a substantially sealed closure.

The container may have four or more sides. A preferred embodiment is a six-sided construction which has been found to have high aesthetic appeal.

It is a principal object of this invention to provide a self-locking, easy-opening container of unitary construction.

It is an additional object to provide an economical disposable container of such construction.

Still another object is to provide a disposable self-locking, easy-opening container having a sanitary liner.

Other objects and advantages of the invention will become apparent by reference to the following specification and accompanying drawings wherein there is described and illustrated various selected embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a blank from which one embodiment of the container may be formed.

FIG. 2 is a perspective view of the blank of FIG. 1 assembled in open ended tubular form.

FIG. 3 is a perspective view of the top half of the tube of FIG. 2 showing the top flaps being partially closed.

FIG. 4 is a perspective view similar to FIG. 3 but with the top flaps almost completely closed.

FIG. 5 is a perspective view of a container obtained when the flaps at both ends of the tube of FIG. 2 are completely closed.

FIG. 6 is a bottom view of the closed container of FIG. 3.

FIG. 7 is a perspective view of the top half of the container of FIG. 5 in opened condition and having a plastic bag liner inserted therein with the open end of the bag extending past the opened flaps of the container.

FIG. 8 is a perspective view similar to FIG. 7 but with the top of the container closed and a top portion of the plastic bag locked in place.

FIG. 9 is a plan view of another form of a blank in accordance with the invention.

FIG. 10 is a perspective top view of the blank of FIG. 9 formed into a four-sided container with the top open and the bottom closed.

FIG. 11 is a perspective view similar to FIG. 10 with the top flaps partially closed.

FIG. 12 is a perspective view similar to FIG. 11 with the top flaps closed.

FIG. 13 is a plan view of a blank from which still another embodiment of the container may be formed.

FIG. 14 is a perspective view of a container formed from the blank of FIG. 13 having a plastic bag liner inserted therein.

FIG. 15 is a plan view of the bottom flaps of the blank of FIG. 14 as they would appear looking down into the erected container.

FIG. 16 is a bottom view of the closed container of FIGS. 14 and 15.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the plan view of FIG. 1 there is shown a unitary blank from which one preferred form of the container may be constructed. The blank is divided into a multiplicity of rectangular, substantially identical adjoining walls 11, and a side flap 13, by fold lines 12. The top portion of each wall 11 comprises top closure flaps 14 joined to the central panel of each of the walls 11 by horizontal fold lines 16, and to each other by vertical fold lines 15. The bottom portion of each wall 11 comprises bottom closure flaps 18 joined to the central panel of each of the wall 11 by horizontal fold line 17, and to each other by vertical fold lines 19. Each of the top flaps 14 is provided with a diagonal line of weakening or score line 20 extending from one corner of the flap to the approximate center of the top edge of the flap. Note that the lines 20 are substantially parallel. Each of the bottom flaps 18 is similarly provided with a diagonal line of weakening 21 extending from a top corner of the flap to the approximate center of the bottom edge of the flap. These lines 21 are also substantially parallel.

Diagonal lines of weakening 20 and 21 are indicated in the drawing as being perforated. This type of weakening makes the lines more flexible than a standard ruled score-line, so that folding thereon is facilitated. However, other suitable means of scoring and weakening may be used for each of the fold lines.

All that is needed to assemble the container is to fasten end flap 13 to its opposing wall 11 by adhesive or other means to form an open ended tube 22 as shown in FIG. 2.

The bottom may then be closed by folding flaps 18 outwardly on each of lines 21 and inwardly on each of lines 19. Downward force exerted from inside the container maintains the bottom flaps in locked condition as viewed in FIG. 6. Note that only fold lines 21 are visible.

The top is formed by pushing in on each of lines 20 while folding lines 15 outwardly as shown in FIGS. 3 and 4. The finished closed container is shown in FIG. 5. Note that fold lines 15 in the top closure are substantially in the same position as fold lines 19 in the bottom closure.

To open the container one need only grasp the top closure at a pair of the fold lines 15 and pull upward and the container will snap open as shown in FIG. 3. Pushing inwardly on lines 20 will automatically close the top. If further downward force is applied, the folded top flaps will be pushed down out of their horizontal plane and will be locked in their closed position.

The bottom flaps remain closed because the pressure of the contents hold them in that position.

It is preferred that the height, or vertical dimension, of the flaps be such that when they are folded in place their outer edges are in firm contact with the outer edges of their associated member flaps. It will be seen therefore, that this dimension should be equal to at least two-thirds the minimum distance between opposing walls in the finished container, and preferably should be slightly longer than that distance.

In FIG. 7, a plastic liner bag 23 is shown in place in the container. This bag may be loosely associated with the container or adhesively secured thereto. When the top closure of the container is snapped shut, the top portion of bag 23 is trapped at the central conjunction 24 (See FIG. 8) of the outer flap edges and is effectively closed and sealed by the locking action of these flaps.

In FIG. 9 a blank for a four-sided container is shown. Four adjoining walls 31 are joined by fold lines 32 along with a side flap 33. The top portion of each wall 31 defined by fold line 36 comprises a top flap 34 joined to adjacent flaps by fold lines 35. A diagonal line of weakening or score line 40 runs from the lower corner of each flap to the approximate center of the upper flap edge. Lines 40 are substantially parallel.

The bottom portion of each panel 31 defined by fold line 37 comprises a bottom flap 38 joined to adjacent flaps by fold lines 39. A diagonal line of weakening or score line 41 extends from an upper corner of each flap to the approximate center of the lower flap edge.

This blank is formed into a four-sided tube by fastening side flap 33 to the edge of its opposing wall 31. The top flaps are closed as shown in FIGS. 10 and 11 by pushing in and folding lines 40 inwardly and folding outwardly on lines 35. The closed container is shown in FIG. 12. The bottom flaps are closed in similar fashion as the bottom flaps in the previously described hexagonal container by folding lines 41 outwardly while folding lines 39 inwardly.

This four-sided container performs much the same as the previously described hexagonal container and the top flaps may be snapped open in the same way by pulling up on the edges formed by fold lines 35.

Many other adaptations will readily become evident to the user.

For example in FIG. 13 through 16 there is shown another variation of a six-sided container in which the top flaps have the same snap open features as previously described but the bottom flaps have a more conventional arrangement comprising cooperating individual end flaps which are not interconnected along vertical fold lines.

In the plan view of the blank of FIG. 13, the central portion of the blank is divided into a multiplicity of elongate substantially equal rectangular sections or panels 51 and a side flap 53 by parallel vertical fold lines 52. Joined to panels 51 by substantially horizontal fold lines 56 are top closure flaps 54 joined together by vertical fold lines 55. Each of these top flaps is also provided with a diagonal score line or line of weakening 60 extending from one corner of the flap to the approximate center of the top edge. Lines 60 are substantially parallel. This top flap arrangement is essentially the same as the top flap arrangements previously described. One important variation should be noted, however, in that each of the horizontal fold lines deviate slightly downward from their ends to their approximate center point where they form a shallow, centrally disposed dip 56a.

It has been found that by modifying horizontal score line 56 in the aforesaid manner, the flaps 54 will remain more securely locked in the closed or down position shown in FIG. 14, because the flaps will be slightly concave. This modification may be used as fold lines for both the top and bottom flaps as a substitute for the embodiments previously exemplified with straight horizontal fold lines.

The lower or bottom flaps in FIG. 13 differ from those previously described in that they are not joined at the edges by vertical fold lines as in previous embodiments, but are of the more conventional type, being independent extensions of central panels 51. In addition these flaps have special locking arrangements. As in previous embodiments the bottom flaps do depend from central panels 51 by horizontal fold line 57.

These bottom flaps may be characterized as comprising three differently configured sets of flaps, with one of the flaps in each set being of substantially the same shape as its mate on a directly opposite wall in the hexagonal container as it is set up. One set 61 and 61a comprise a scalene triangular configuration with one side longer than the other.

A second set of flaps generally designated 63 and 63a, adjacent flaps 61 and 61a respectively. Each of flaps 63 and 63a has one edge parallel to the short side of the adjacent triangular flaps 61 and 61a, with a diagonal line of weakness 64 and 64a running from a point at the vertical fold line adjacent the parallel edges to a point short of the opposite outer edge of the flap to form a triangular portion 67 and 67a. At the point where lines 64 and 64a terminate, the edges of each of the flaps 63 and 63a is cut inwardly from the terminal end to form hook portions 66 and 66a, parallel to the outer end of flaps 63 and 63a.

The third set of flaps 62 and 62a comprise diamond-shaped parallelograms leaning slightly away from the second set of flaps, with each outer edge having a notch 68 and 68a cut about one-third of the way from its farthest point. This locking notch cooperates with the hook in the second set of flaps when the container is set up as in FIG. 14 to form a flat, planar bottom wall. One of these flaps, 62a in the drawing may have a further trapezoidal extension 65 joined to its far edge by line of weakness 69. Flap 65 may then be adhesively attached to the surface of flap 62 when the flaps are folded inwardly as shown in FIG. 16.

This cooperating arrangement is more clearly shown in FIGS. 15 and 16.

In FIG. 15, as viewed looking down into the setup container, flap 63 underlies flap 61 which in turn underlies flap 62a whereby notch 68a in flap 62a interlocks with hook 66 of flap 63.

Flap 63a overlies flap 62a and underlies flap 61a which in turn underlies flap 62 whereby notch 68 of flap 62 interlocks with hook 66a of flap 63a. Flap 62 in turn underlies flap 63.

FIG. 16, as viewed from the bottom side of the erected container, triangular flap 61 underlies the adjacent triangular portion 67 of flap 63. A portion of flap 63 underlies a portion of flap 62. A portion of flap 62 underlies triangular flap 61a. Flap 61a underlies triangular portion 67a of flap 63a. A portion of flap 63a underlies a portion of flap 62a which has an extension 65 overlying flap 62. And a portion of flap 62a underlies trian-

gular flap 61. 68 and 68a indicate where the notches contact underlying hooks 66 and 66a respectively, not visible in this view.

In the preferred arrangement, flap 67 is adhesively secured to underlying flap 61, flap 65 is secured to underlying flap 62 and flap 67a is secured to underlying flap 61a. Lines of weakness 64, 69 and 64a then form a continuous diametric fold line.

By applying pressure on opposing walls in the direction indicated by arrows 70, the locking arrangement at points 68 and 68a is opened and the flaps will all fold inwardly into the interior of the container along lines of weakness 64, 69 and 64a, thus permitting the container to be collapsed into a flat condition, since the top flaps will snap open in the manner previously described for the other embodiments.

Various other configurations for the bottom flaps may also be used in combination with the snap open top previously described.

The preferred material for making the described containers is paperboard, however other materials such as flexible semirigid plastic or corrugated board may be used. If made from plastic, the container tube may be extruded in continuous form and then cut to any desired length.

It will be seen that this invention describes a utilitarian container of simple construction. The container has found good acceptance, when a liner bag is used in conjunction therewith, as a sanitary storage unit for soiled disposable diapers, and for used tissues and the like in sick rooms.

In addition to its sanitary uses, the container may be readily adapted in other arts, for example as a knitting goods container, or as a container for children's toys or the like.

I claim:

1. A reusable, collapsible container structure for receiving and storing waste materials and the like comprising a multi-walled open ended tube of semirigid sheet stock, said walls being of substantially rectangular configuration and being joined to each other along vertical fold lines, each of said walls being further divided into a rectangular central panel and top and bottom flaps, said flaps being joined to said central panel

along substantially horizontal fold lines and to each other along said vertical fold lines, each of said flaps having a diagonal fold line running from a corner of said flap adjacent its respective central panel to the approximate center of the outer edge of said flap, the diagonal fold lines in the top set of flaps being substantially parallel to each other and the diagonal fold lines in the bottom set of flaps being substantially parallel to each other, said flaps being adapted for folding on their associated fold lines to form manually operatable top and bottom closures, each of the horizontal fold lines joining each of said top flaps to said central panel deviating slightly downward from its end to its center to form a centrally disposed dip in each of said horizontal fold lines.

2. The container of claim 1 in which each of said substantially horizontal fold lines joining each of said bottom flaps to said central panel deviates slightly upward from the horizontal starting at each of its ends and forming an obtuse angle at its central point.

3. A reusable, collapsible container structure for receiving and storing waste materials and the like comprising a multi-walled open ended tube of semirigid sheet stock, said walls being of elongate configuration and being joined to each other along vertical substantially parallel fold lines, each of said walls being further divided into a rectangular central panel and top and bottom flaps, said top flaps being joined to said central panel along substantially horizontal fold lines and to each other along said vertical fold lines, each of said top flaps having a diagonal fold line running from a corner of said flap adjacent its respective central panel to the approximate center of the outer edge of said flap with said diagonal fold lines being substantially parallel to each other, and said bottom flaps being individual extensions of said central panel attached thereto by horizontal fold lines and divided from each other at said vertical fold lines, said top and bottom flaps being adapted for inward folding on their associated fold lines to form manually operatable top and bottom closures, each of said substantially horizontal fold lines defining said top flaps deviating slightly downward from its ends to its center to form a centrally disposed dip in each of said horizontal fold lines.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,549,081 Dated December 22, 1970

Inventor(s) Howard N. Nelson

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

- ┌ In Column 3, line 33, "two-thirds" should read -- 1/2 --.
In Column 6, line 38, "from" second occurrence, should read
-- form --.

SIGNED AND
SEALED
MAR 9 1971

(SEAL)

Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents

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