United States Patent [19]

Paxton

[11] **3,905,541**

[45] **Sept. 16, 1975**

[54] **CONTAINER**

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[73] Assignee: **SWF Machinery, Inc.,** Sanger, Calif.

[22] Filed: **June 18, 1973**

[21] Appl. No.: **370,981**

[52] **U.S. Cl.** ..... **229/23 R;** 229/41 R; 206/509

[51] **Int. Cl.**[2] **B65D 5/35;** B65D 13/00

[58] **Field of Search** .... 229/23 R, 23 C, 16 R, 16 A, 229/41 R, 41 B; 206/503, 509

[56] **References Cited**

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1,974,527	9/1934	Bliss	229/23 R
3,253,765	5/1966	Train	229/23 R
3,709,425	1/1973	Stapp	229/23 C

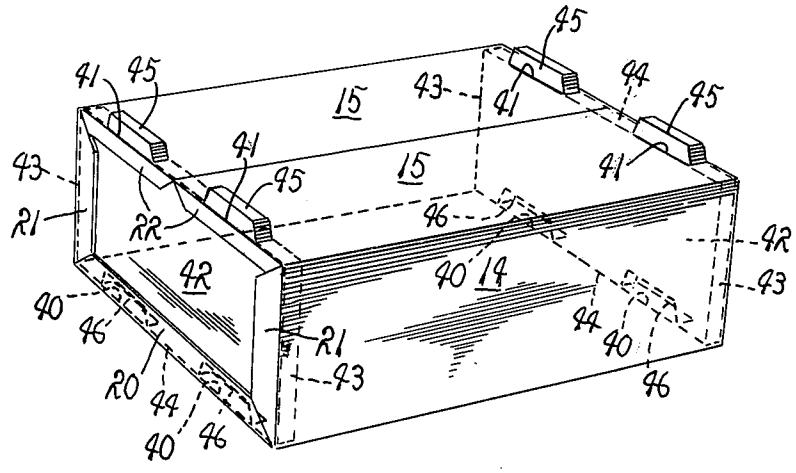
Primary Examiner—Leonard D. Christian

Attorney, Agent, or Firm—Huebner & Worrel

[57] **ABSTRACT**

A container presenting smooth continuous internal surfaces to contents thereof, the container having a pair of spaced substantially congruent end walls with circumscribing peripheral edges providing successive angularly related substantially straight segments; and a unitary wall member wrapped about the end walls in conforming relation to the peripheral edges thereof having fold lines interconnecting corresponding angular junctures of the segments of the opposite end walls and flaps integral with the wall member folded outwardly over the end walls and bonded thereto.

7 Claims, 6 Drawing Figures



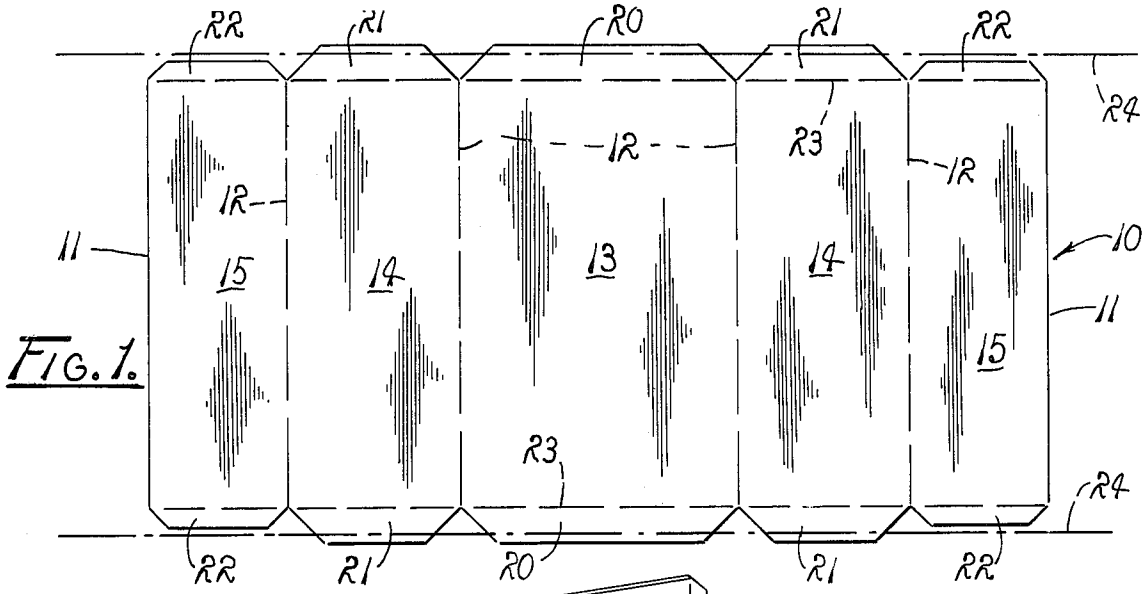


FIG. 1.

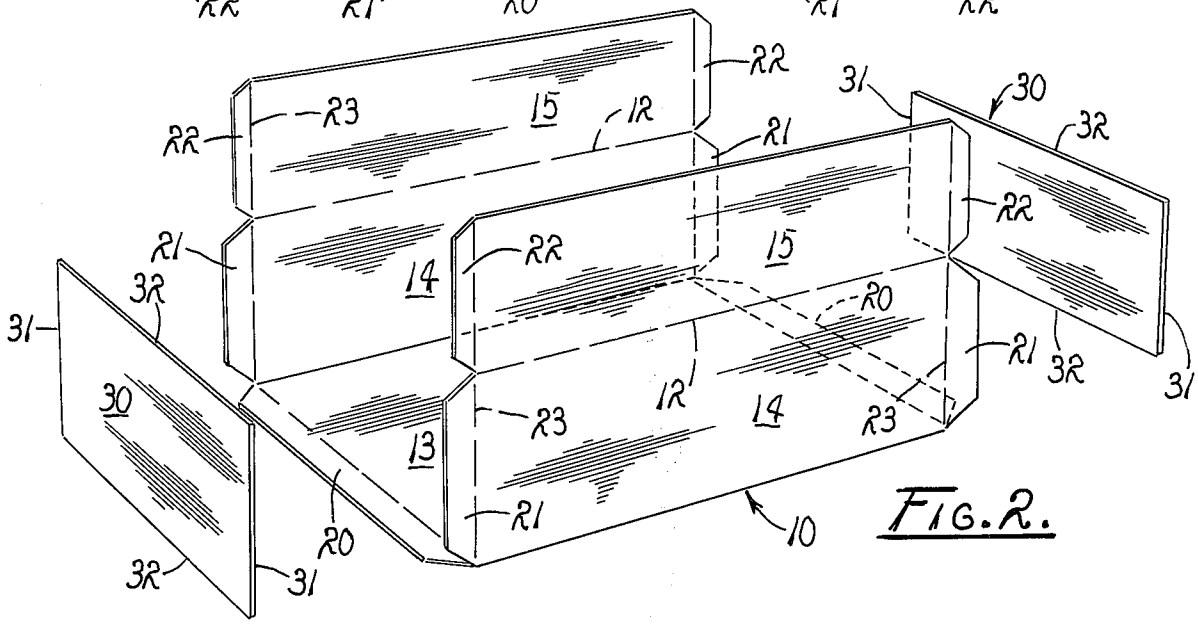


FIG. 2.

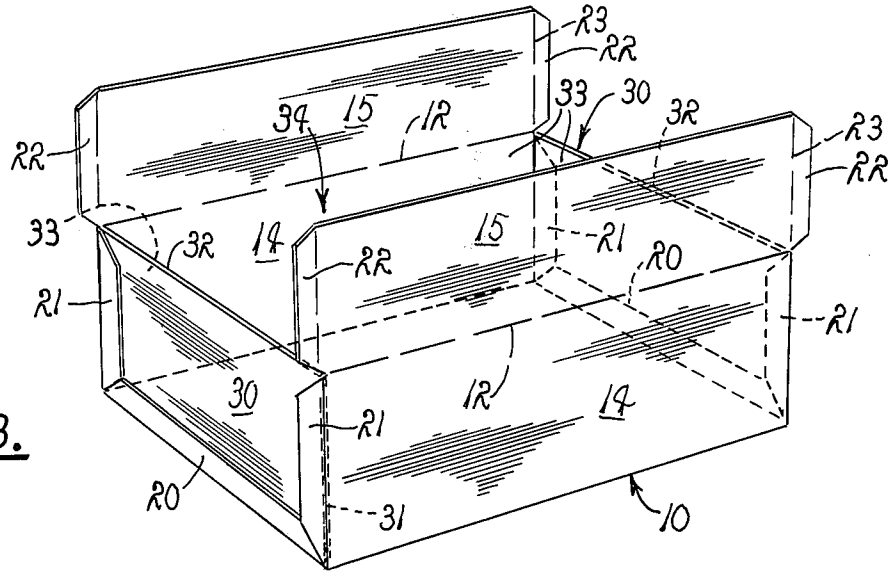


FIG. 3.

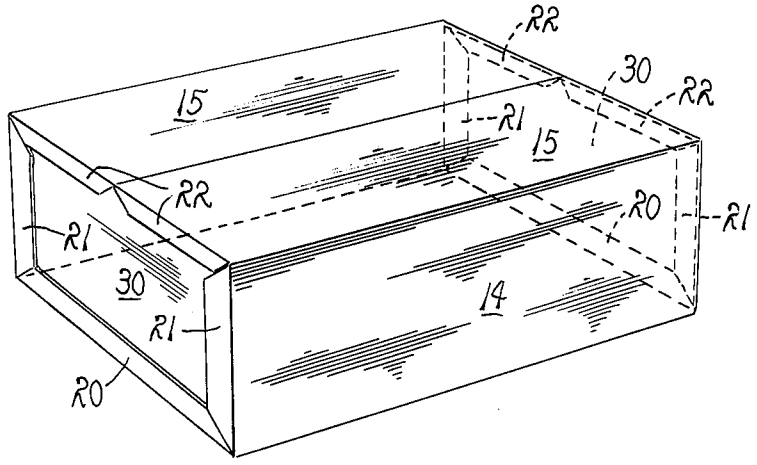


FIG. 4.

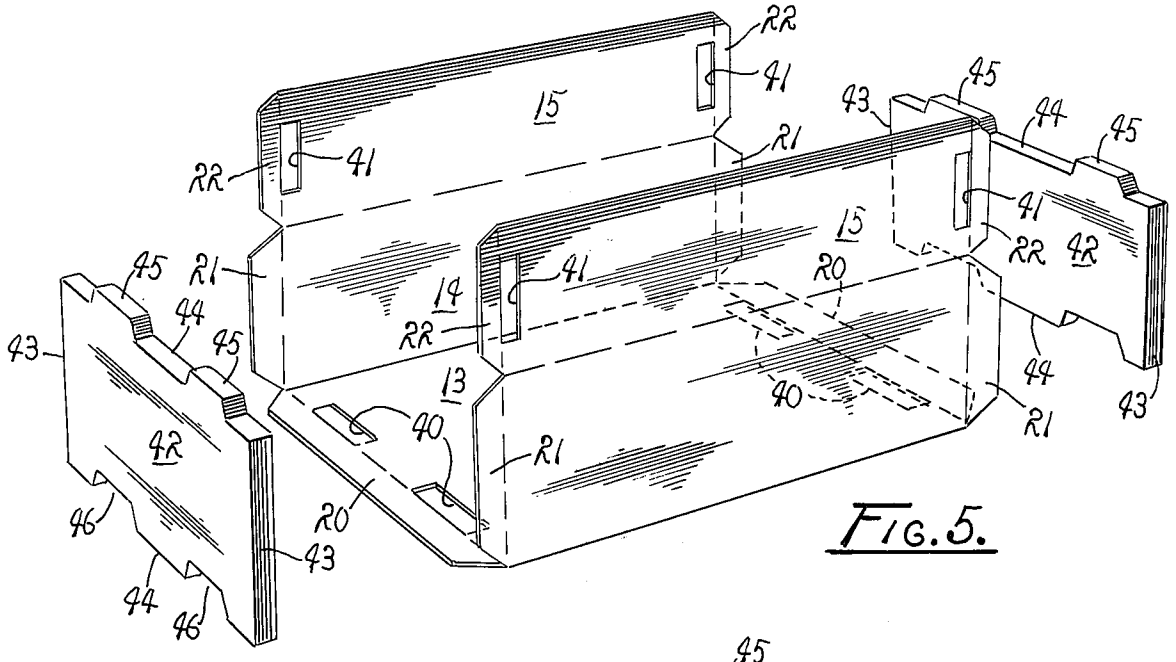


FIG. 5.

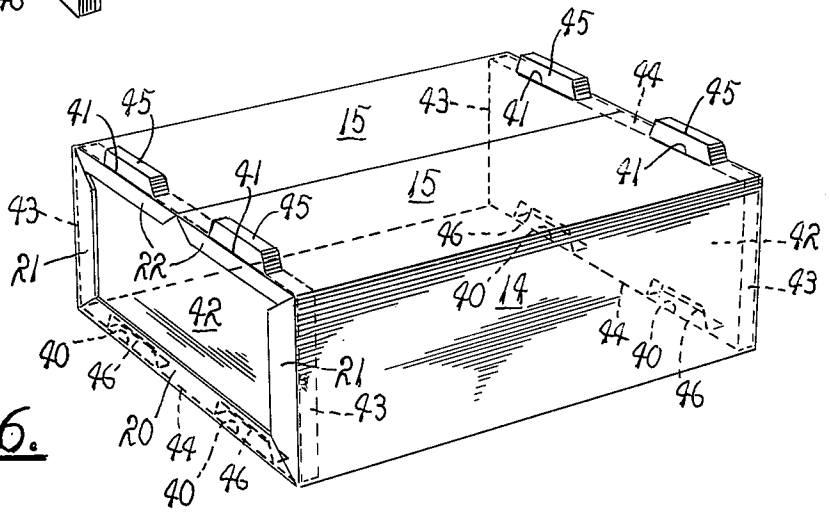


FIG. 6.

CONTAINER

BACKGROUND OF THE INVENTION

The present invention relates to an improved container and more particularly to such a container which employs a minimum of construction material, is economical, and has smooth, continuous internal surfaces permitting uniform, tightly fitted enclosure of its contents for optimum strength and ease of handling.

Mass produced containers for use on assembly lines in the packaging of a variety of goods have long been known. The Burdick U.S. Pat. No. 696,936 discloses one such container having opposite end walls, and continuous side and bottom walls folded about the end walls and having flaps folded adhesively to engage the end walls. This type of container is known in the trade as a Bliss Box and is the general type of box to which the present invention relates. A similar container is disclosed by the Roesner et al U.S. Pat. No. 3,456,563. Another type of mass produced Bliss Box is that disclosed by the Northway U.S. Pat. No. 3,197,108 which is reinforced for stacking purposes. A further somewhat similar type of container, in its simplest form, is constructed from a single blank of material having side portions which fold up to make side walls and side flaps, end portions which fold up to make end walls and end flaps and tabs or flanges which secure the side walls in engagement with the end walls so as to form the box.

Such prior art containers are deficient in several important respects. Conventional mass produced containers do not provide smooth, continuous interior surfaces when sealed. The majority of conventionally available containers have covers formed of end flaps which extend only partially across the containers overlaid by side flaps. The side flaps are folded over the end flaps in juxtaposition so as to present a smooth external appearance. However, the short end flaps make the interior surface of the cover uneven. If the end flaps are closed tightly over contents of such containers so as to hold the contents tightly in position, the contents between the end flaps is not engaged by the end flaps or the side flaps. This allows the contents to shift within the sealed containers during shipment and handling which weakens the containers, sometimes damages the contents, and in some cases ruptures the containers. Such containers are difficult to handle and do not stack as easily and securely as desired.

Still another problem encountered with conventional mass produced containers is the amount of construction material required for each container. Because of the scale on which such containers are produced, the elimination of even a small quantity of material required for each container translates into significant savings both in cost and raw materials. Depletion of our natural resources demands the most efficient utilization thereof. Thus, it has long been a goal in the industry to produce a container requiring an absolute minimum of such materials. However, in order to produce a container of usable strength, significantly more than the minimum has conventionally been required. The dwindling of available supplies of raw materials used in such containers and the corresponding increase in the cost of such materials has made this a problem of accelerating significance.

For these and other reasons which will subsequently become apparent, it has long been recognized as desirable to have a container which utilizes a minimum of construction material, is economical, has smooth, continuous interior surfaces permitting it to be tightly fitted about its contents and which is particularly well-suited for use in the packaging of goods on an assembly line basis.

SUMMARY OF THE INVENTION

In view of the foregoing, it is an object of the present invention to provide an improved container.

Another object is to provide such a container which is adapted for use in the packaging of goods on an assembly line.

Another object is to provide such a container which utilizes a minimum of construction material per container.

Another object is to provide such a container which has smooth continuous interior surfaces permitting it to be tightly fitted about its contents.

Another object is to provide such a container which is significantly stronger than conventional containers when sealed.

Another object is to provide such a container which is adapted to be formed from a blank of sheet material, filled and sealed without the necessity of a sophisticated container sensing mechanism.

Another object is to provide such a container which is particularly well suited for use in the sealing apparatus of the Paxton U.S. Pat. No. 3,821,875.

Another object is to provide such a container which may indiscriminately be employed in a variety of heights in cooperation with the aforementioned sealing apparatus without the necessity for accommodating adjustment of the sealing apparatus.

A further object is to provide such a container which presents a uniform, attractive appearance when sealed.

A still further object is to provide such a container which facilitates opening and lends itself to retail market displays.

Further objects and advantages are to provide improved elements and arrangements thereof in a device for the purposes described which is dependable, economical, durable and fully effective in accomplishing its intended purposes.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a plan view of a construction blank for the container of the present invention.

FIG. **2** is an exploded view of the container.

FIG. **3** is a perspective view of the assembled container ready for filling and with its cover open.

FIG. **4** is a perspective view of the container in sealed condition.

FIG. **5** is an exploded view of the container of an alternate form of the present invention.

FIG. **6** is a perspective view of the container of FIG. **5** in its sealed configuration.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring more particularly to the drawings, a container wall member or construction blank is generally indicated by the numeral **10** in FIG. **1.** The blank may be of any suitable sheet material, fiberboard being excellently suited to the purpose. The blank has opposite ends **11** and has transverse fold or score lines **12.** The lines are formed therein so as to delimit a central bottom wall **13,** a pair of side walls **14** bounding the bot-

tom wall on opposite sides thereof and a pair lid or wall panels **15** continuous with the side walls and extending to the opposite ends of the blank.

The bottom wall **13** has a pair of oppositely extending unitary construction or end flaps **20**, as shown in FIG. **1**, of a predetermined width. Each of the side walls **14** has a pair of unitary construction or end flaps **21** of substantially the same width as end flaps **20**. Each of the top wall panels **15** has a pair of foreshortened container sealing flaps **22** continuous therewith corresponding to the end flaps **20** and **21** but of a width approximately one-half that of the end flaps. The flaps **20**, 21 and **22** are defined in the blank **10** by longitudinal fold or score lines **23**. As schematically illustrated in FIG. **1**, a pair of substantially parallel dashed lines **24** extend across the end flaps **20** and **21** but do not contact the sealing flaps **22**. The lines indicate the relative paths of travel of glue applicators, not shown. Any suitable form of applicator may be utilized, such as that of U.S. Pat. No. 3,590,700. However, a significant feature of the present invention is the difference in lengths of the flaps **20** and **21** as compared with the flaps **22**. For reasons that will subsequently become apparent, the flaps **20** and **21** are glued as the container is formed while the flaps **22** receive no glue. Thus, by causing a glue applicator to traverse the straight paths **24**, the flaps **20** and **21** are effectively glued while the flaps **22** remain unglued without requiring any sophisticated control or skip mechanisms.

The blank **10** is adapted to be folded by a container forming machine about a pair of spaced, substantially parallel end walls **30**, as shown in FIG. **3**. Each end wall has a pair of end edges **31** and a pair of side edges **32**. When folded into the configuration shown in FIG. **3**, the blank and end walls define smooth, continuous interior surfaces **33** bounding a receptacle **34** for goods to be packaged.

Alternatively, the container can be constructed as shown in FIGS. **5** and **6**. In this configuration the bottom wall **13** of the construction blank **10** has a pair of substantially rectangular slots **40** formed therein adjacent to each of the end flaps **20** in alignment substantially parallel to the adjacent score line **23**. A slot **41** is formed in each top wall panel **15** adjacent and substantially parallel to both of the score lines **23**. Each slot **41** is positioned so as to be in alignment with a corresponding slot **40** in the bottom wall when the container is assembled, as shown in FIG. **6**. In this alternate form of the invention, a second form of end wall **42**, as shown best in FIG. **5**, is employed in place of the end walls **30**. The end walls **42** are preferably of greater thickness than the end walls **30** and are fabricated from any suitable material such as Styrofoam. Each end wall **42** has end edges **43** and side edges **44**. A pair of tongues **45** are integrally provided on one side edge of each end wall **42** spaced and tapered so as to permit insertion of the tongues into corresponding pairs of slots **40**. A pair of receptacles **46** are formed in the opposite side edge of each end wall **42**. The receptacles are spaced and configured so as to permit them to be placed in mating engagement with a pair of tongues of another such end wall of a container on which said container is stacked.

OPERATION

The operation of the described embodiments of the subject invention is believed to be clearly apparent and is briefly summarized at this point. As previously discussed, the construction blank **10** and end walls **30** are adapted to be assembled to form a container, filled and sealed on an assembly line. The construction blank and end walls can, of course, be assembled by hand but are specifically designed to be assembled by any one of several conventional container assembly machines. A plurality of the construction blanks are deposited in stacked relation in a magazine or other mechanism adapted successively to feed such blanks borne by the particular assembly machine employed. Similarly, a plurality of end walls are deposited in stacked relation in a magazine or pair of magazines provided for the purpose on the machine.

Depending upon the particular construction and mode operation of the machine, the blanks **10** are successively fed through the machine in such a manner that adhesive applicator drive mechanisms borne by the machine individually contact the end flaps **20** and **21** along paths of travel represented by the dashed lines **24** in FIG. **1**. The drive mechanisms operate the adhesive applicators of the machine to deposit and spread a predetermined quantity of adhesive on each of the end flaps. It will be noted that the paths of travel of the drive mechanisms as represented by lines **24** do not contact the sealing flaps **22** of the top wall panels so that adhesive is not deposited thereon.

As perhaps best represented in FIG. **2**, the machine subsequently positions a pair of end walls **30** in spaced, substantially parallel relation. The blank **10** is then wrapped about the end walls in conforming relation to the end and side edges **31** and **32** respectively and folded along the score lines **23**. The end flaps **20** and **21** having the adhesive deposited thereon are folded outwardly over the end walls so as adhesively to engage them in overlapping relation, as best shown in FIG. **3**. Thus, each of the blanks in cooperation with its respective end walls forms a receptacle **34**. The top wall panels **15** remain in upstanding relation during this interval so as to leave the receptacle accessible for the receipt of goods to be packaged. This operation is normally performed by automated packing equipment at a next work station on the assembly line.

After the deposit of goods within the receptacle **34** of each container, the containers are successively driven along the assembly line into a suitable machine for sealing. Although the container of the present invention is adapted to be sealed by conventional sealing machines, it is particularly well suited for sealing by the apparatus disclosed by the Paxton U.S. Pat. No. 3,821,875. The apparatus disclosed therein is adapted to fold the top wall panels **15** in overlaying relation to the receptacle **34** with their respective sealing flaps **22** extending laterally therefrom. The apparatus has a pair of adhesive applicators which are positioned to contact each of the sealing flaps and to deposit adhesive thereon. Thereafter, each container is successively manipulated by the apparatus so as to fold the sealing flaps outwardly over the side edges **32** of their respective end walls **30** and into adhesive engagement with the walls. Each container is retained by the apparatus in the configuration shown in FIG. **4** until the adhesive congeals sufficiently to retain the container in sealed relation.

In the alternate form of the invention shown in FIGS. **5** and **6**, the container is assembled, filled and sealed in the same sequence of steps described above. When the goods have been deposited within the receptacle **34**

thereof, the sealing apparatus folds the top wall panels **15** downwardly in covering relation to the receptacle so that the tongues **45** are inserted through the slots **41** of the top wall panels. The container is thereafter sealed as described above so as to form the configuration shown in FIG. **6**. Thus, as shown, the tongues extend through their respective slots **41** of the top wall panels and the receptacles **46** communicate with the slots **40** of the bottom wall **13**.

Therefore, the container of the present invention employs a minimum of construction material since it does not require overlapping top wall panels or an equivalent structure as required by conventional containers. The container has smooth, continuous interior surfaces **33** which permit a uniform, tightly fitted enclosure of its contents thus making possible a sealed container of maximum strength and ease of handling. Furthermore, the use of sealing flaps **22** which are folded outwardly over the end walls **30** increases the strength of the bond since an upward force on the top wall panels **15** creates a "shear" force at the bond rather than the "tear" force encountered with conventional containers. Such sealed containers present a pleasing, uniform appearance, as shown in FIG. **4** and are easily opened by exerting an outward tear force on the sealing flaps or by cutting through the single layer of top wall panels. As previously noted, the smaller width of the sealing flaps **22** relative to that of the end flaps **20** and **21** permits automatic control of the assembling and sealing processes in an automatic sealing apparatus. Moreover, in the alternate form of the container the sealed relationship of the sealing flaps relative to the tongues **45** received in the slots **41** securely retains the tongues in position and further reinforces the container. A plurality of such containers can be stacked with the tongues of one container received in the receptacles **46** of the above container to insure stack or load stability.

Although the invention has been herein shown and described in what are conceived to be the most practical and preferred embodiments, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the illustrative details disclosed.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A fiberboard container presenting smooth continuous internal surfaces to contents thereof comprising an elongated substantially rectangular wall member having spaced substantially parallel transverse first fold lines defining a rectangular bottom wall therebetween, a second transverse fold line outwardly spaced from each first fold line and therewith defining a rectangular side wall, and an end edge outwardly spaced from each second fold line and therewith defining a rectangular top wall portion, the wall member being bent substantially 90° at each said fold line and its end edges abutting in a common plane substantially parallel to the bottom wall; a pair of spaced substantially identical end walls fitted between the bottom wall, side walls and top wall portions of the wall member in right angular relation thereto; said bottom wall and side walls having flaps continuous with the wall member folded outwardly over the end walls and bonded thereto; and said top wall portions having foreshortened flaps for the individual application of adhesive thereto for folding outwardly over the end walls and into bonding engagement therewith.

2. A fiberboard container presenting smooth continuous internal surfaces to contents thereof comprising an elongated substantially rectangular wall member having spaced substantially parallel transverse first fold lines defining a rectangular bottom wall therebetween, a second transverse fold line outwardly spaced from each first fold line and therewith defining a rectangular side wall, and an end edge outwardly spaced from each second fold line and therewith defining a rectangular top wall portion, the wall member being bent substantially 90° at each said fold line and its end edges abutting in a common plane substantially parallel to the bottom wall; a pair of spaced substantially identical end walls fitted between the bottom wall, side walls and top wall portions of the wall member in right angular relation thereto; said bottom wall, side walls and top wall portions having flaps continuous with the wall member folded outwardly over the end walls and bonded thereto; and the bottom wall and each end wall having a downwardly disposed receptacle provided upwardly therein and each end wall having a tongue upwardly extended therefrom through a top wall portion positioned in correspondence to said receptacles to be received in the receptacles of a superimposed container, the flaps on the top wall portion extending to opposite sides of the tongues to strengthen said top wall portion where the tongues extend therethrough and the flaps on the bottom wall portion extending to opposite sides of the receptacles to strengthen the end walls and bottom wall where the receptacles are disposed therein.

3. A container comprising a pair of spaced end walls individually having peripheral edges composed of substantially straight segments successively interconnected at angular junctures; an integral wall member wrapped about the end walls in conforming relation to the peripheral edges thereof and having fold lines interconnecting corresponding angular junctures of the end walls and defining a lid panel for the container; construction flaps borne by the wall member and bonded to the end walls to form the container; and lid flaps borne by said lid panel and foreshortened relative to the construction flaps for the individual receipt of a suitable bonding substance whereby the lid panel can be retained in conforming relation to corresponding peripheral edges of the end wall by bonding engagement of the lid flaps with said end walls subsequent to packing of the container.

4. The container of claim **3** wherein the construction flaps and lid flaps are folded outwardly over the end walls and bonded thereto to provide the container with smooth continuous internal surfaces.

5. The container of claim **4** wherein the wall member has a pair of lid panels having opposite end edges and individual lid flaps adapted to be bonded to the end walls to position the lid panels in a substantially common plane with the end edges thereof juxtaposed to seal the container.

6. The container of claim **5** wherein the end walls have tongue portions which extend through the lid panels when the container is sealed and said end walls and wall member have tongue receiving receptacles in corresponding segments of the peripheral edge adapted to receive the tongue portions of a second container on which said container is superimposed.

7. A container for automated assembling, packing and sealing comprising an elongated substantially rectangular wall member having spaced substantially paral-

lel transverse first fold lines defining a rectangular bottom wall therebetween, a second transverse fold line outwardly spaced from each first fold line and therewith defining a rectangular side wall, and an edge outwardly spaced from each second fold line and therewith defining a rectangular top wall portion, said wall member being bent along each fold line to position its end edges in juxtaposition spaced from said bottom wall; a pair of spaced, substantially congruent end walls fitted between the bottom wall, side walls and top wall portions of the wall member in right angular relation thereto; construction flaps, dimensioned for engagement by adhesive applying means during assembly, borne by the bottom wall and side walls and folded outwardly over said end walls and bonded thereto; and flaps borne by said top wall portions foreshortened to preclude engagement by said adhesive applying means during assembly while being dimensioned for engagement by second adhesive applying means subsequent to packing of the container.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,905,541 Dated September 16, 1975

Inventor(s) Gerald C. Paxton

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 1, after "pair" insert --- of ---,

and after "or" insert --- top ---;

Signed and Sealed this

thirtieth Day of December 1975

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks