United States Patent

[11] 3,622,065

[72] Inventor **Sydney T. Butterfill**
Dorval, Quebec, Canada

[21] Appl. No. **842,954**
[22] Filed **July 18, 1969**
[45] Patented **Nov. 23, 1971**

[73] Assignee **Consolidated Paper (Bahamas) Limited**
Nassau, Bahamas

[54] **LOCK BOTTOM CONTAINER**
1 Claim, 7 Drawing Figs.

[52] U.S. Cl. **229/38**
[51] Int. Cl. **B65d 5/08**
[50] Field of Search ..... 229/37 R, 38, 44

[56] **References Cited**

UNITED STATES PATENTS

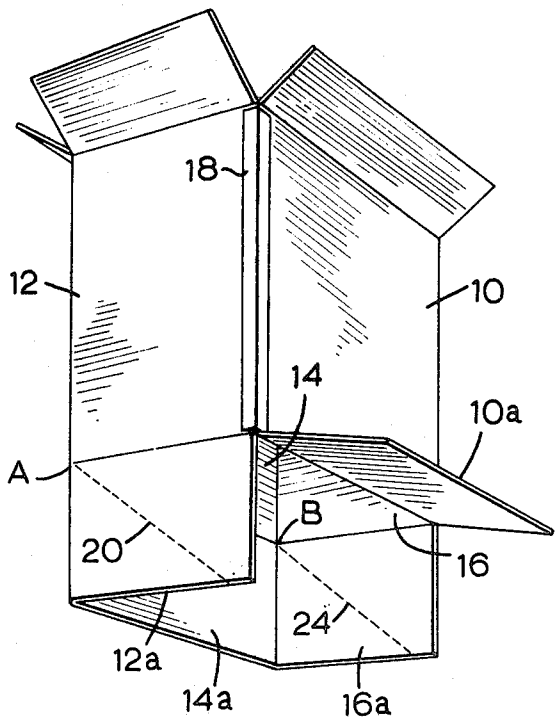
637,642	11/1899	Morgan	229/38
829,563	8/1906	Anderson	229/38

FOREIGN PATENTS

157,954	8/1954	Australia	229/38
1,017,965	12/1952	France	229/38
980,391	1/1965	Great Britain	229/38

Primary Examiner—Joseph R. Leclair
Assistant Examiner—Steven E. Lipman
Attorney—Fetherstonhaugh & Co.

ABSTRACT: This invention relates to a paperboard container. The feature is the bottom formation which is formed from end flaps that hinge to the sidewalls. Three of the end flaps are interconnected and opposed end flaps are formed with a fold line so that the three interconnected end flaps can be hinged upwardly into an operative position in a flat folded condition. The single end flap is then interleaved with the folded portions of the three interconnected end flaps.



PATENTED NOV 23 1971

3,622,065

SHEET 1 OF 2

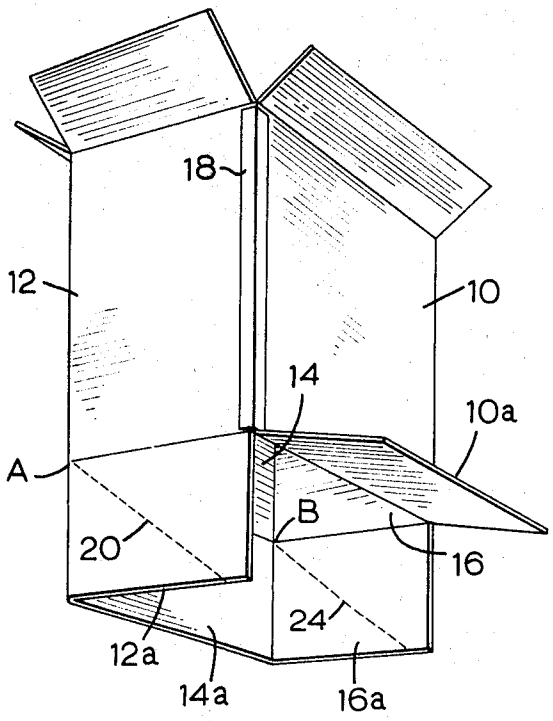


FIG. 1

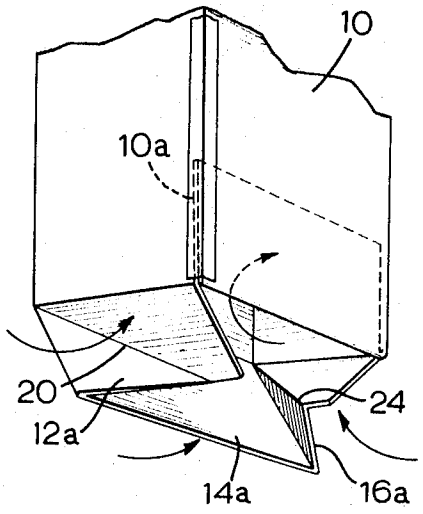


FIG. 2

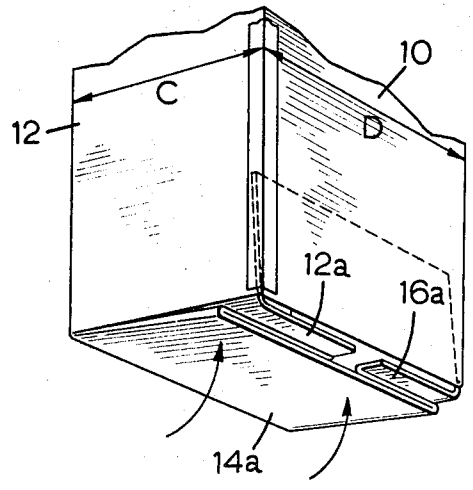


FIG. 3

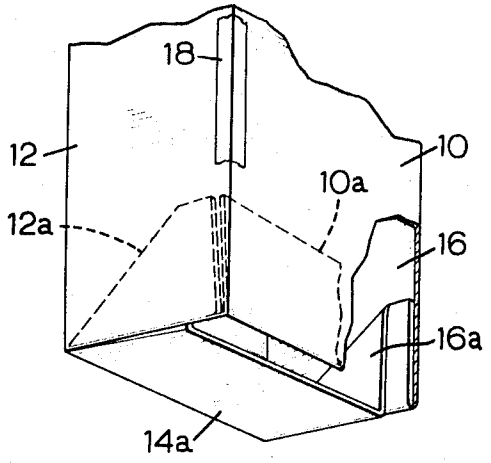


FIG. 4

INVENTOR.
SYDNEY T. BUTTERFILL
BY Fetherstonhaugh & Co.
ATTORNEYS

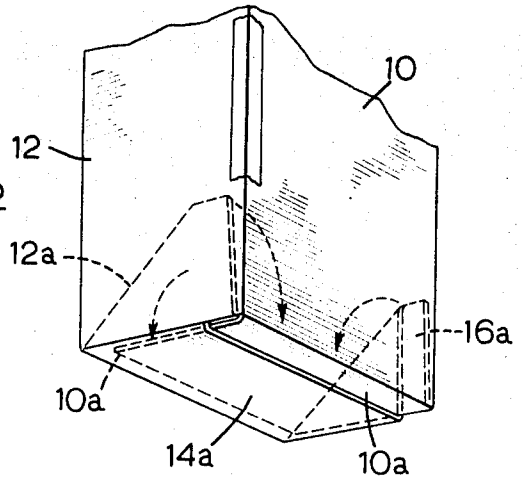


FIG. 5

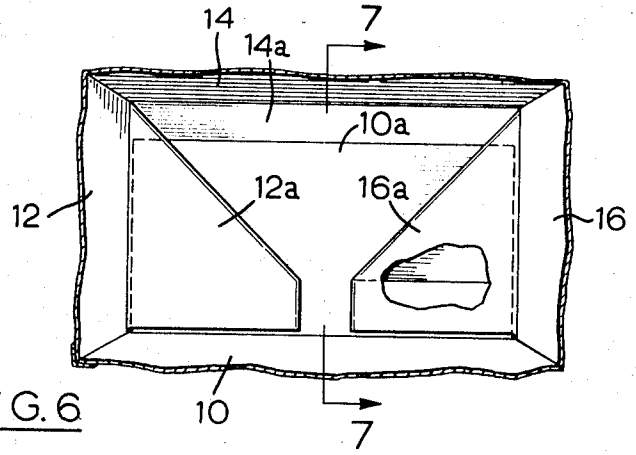


FIG. 6

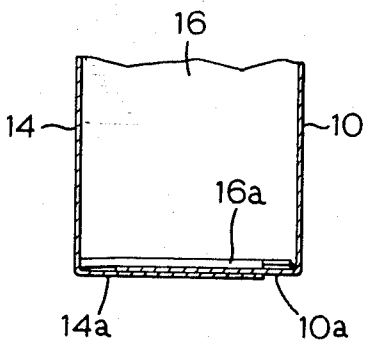


FIG. 7

INVENTOR.
SYDNEY T. BUTTERFILL
BY Fetherstonhaugh & Co.
ATTORNEYS

LOCK BOTTOM CONTAINER

FIELD OF INVENTION

This invention relates to the manufacture of cardboard containers and is particularly concerned with a container having a self-locking bottom whereby the bottom end of the container may be closed and locked without taping, stitching or glueing.

DESCRIPTION OF PRIOR ART

The common type of cardboard container employs overlapping flaps extending downwardly from the sidewalls of the container for forming the bottom wall. Following inward folding of the flaps whereby they are overlapped, they are normally locked by being taped, stitched or stapled. Thus, the formation of a container bottom wall involves at least two steps, namely folding of the flaps and a subsequent locking step. One exception to this usual procedure consists of the prior application to the flaps of a press-seal adhesive so that a locking action takes place automatically as the flaps are folded. However, in this case there is the extra step of applying the press-seal adhesive to the flaps at some time prior to the folding step.

SUMMARY

It is therefore the main object of this invention to provide a container having a bottom wall flap arrangement which is self-locking as the flaps are folded, thereby eliminating the usual further step of locking the bottom wall by taping, stitching or stapling or eliminating the prior step of applying press-seal adhesive to the flaps.

It is a further object of the invention to provide a self-locking bottom in a carton construction which will not require any major modifications to the equipment used for forming the container.

It is a still further object of the invention to provide a container having a self-locking bottom which can be set up quickly and easily by hand at any packing station in a user's plant and does not require any additional material or equipment such as tape or stapling machines.

It is a final and basic object of the invention to provide a carton having a self-locking bottom which can be manufactured at a relatively lesser cost than self-locking cartons heretofore available and which can also be set up at a lesser cost than required to set up similar cartons known heretofore.

PREFERRED EMBODIMENT

The above and further objects of the invention will be more thoroughly understood from the following description of a preferred embodiment thereof as read in conjunction with the accompanying drawings.

In the drawings which illustrate this preferred embodiment of the invention,

FIG. 1 is a perspective view of a container in accordance with this embodiment of the invention showing the container in a partially set up form prior to the closing of the bottom wall;

FIG. 2 is a perspective view similar to FIG. 1 but showing only the lower end of the carton and illustrating a first step in the folding operation by which the bottom wall of the container is closed;

FIG. 3 is a view similar to FIG. 2 and showing a second step in this folding operation;

FIG. 4 is a view similar to FIGS. 2 and 3 and showing a third step in the folding operation with a portion of the carton being broken away for better illustration;

FIG. 5 is a perspective view similar to FIGS. 2 to 4 and showing the final folding step in closing the bottom wall of the container;

FIG. 6 is a top view of a carton having its bottom wall fully closed; and

FIG. 7 is a vertical cross-sectional view taken along the line 7—7 of FIG. 6.

Referring to FIG. 1, the container illustrated is formed of any one of the several container materials such as paperboard or corrugated cardboard. The actual material used to form the container of the invention is not critical as the self-locking bottom which is the chief feature of this invention is adaptable to use in most containers of this general type which are either square or rectangular in cross-sectional shape.

The container is formed of a paperboard or cardboard blank and includes four sidewalls **10** to **16** with two of the sidewalls being connected by the usual paper or cloth tape **18**. The connection may also be made in another conventional manner, e.g. by gluing or stitching. The carton may or may not be provided with a number of upper end flaps for use as a top closure.

The lower end of the container carries bottom wall forming flaps **10***a* to **16***a* which consist of extensions of the sidewalls. The bottom walls of cartons known heretofore have also normally been formed of sidewall extension flaps which are inwardly folded in an overlapping arrangement and taped or stapled.

In accordance with the present invention, the bottom wall flaps **10***a* to **16***a* are so formed that when the flaps are inwardly folded and overlapped in a particular manner, a self-locking bottom wall is achieved as to avoid the need to subsequently tape, stitch or staple the flaps.

The above-mentioned self-locking feature is gained primarily through the provision of a pair of scored fold lines **20** and **24** in two opposed end wall flaps which, in the illustrated embodiment, are the flaps **12***a* and **16***a*. A second principal feature is that the scored end wall flaps (**12***a* and **16***a*) are joined at one side margin to one of the other flaps which, in the illustrated case, is flap **14***a*. Preferably, this joining can be integral in the blank and this can be best achieved by locating the tape **18** at the corner of sidewalls **10** and **12** or **10** and **16**. However, apart from economic reasons there is no other reason why the tape could not be located at the corners formed at the intersection of sidewalls **12** and **14** or **16** and **14**, provided the tape is extended as to also join the side edges of flaps **12***a* and **14***a* or the flaps **14***a* and **16***a*.

The score lines **20** and **24** commence at their upper ends at points A and B and extend downwardly at an angle of 45°. Thus, the length of the fold line varies with the length of the flaps **12***a* and **16***a*.

The first step in forming the bottom wall is to inwardly fold flap **10***a*, as shown in FIG. **2**, until it rests against the inside surface of the sidewall **10**. Then the other bottom wall flaps are folded as shown in FIG. **2** with care being taken to see that the flaps **12***a* and **16***a* fold inwardly along the score lines **20** and **24**. When this last folding operation is completed, the carton appears as illustrated in FIG. **3**. Then, as shown in FIG. **4**, the flaps **12***a* and **16***a*, which are now folded upon themselves, are raised upwardly against the inside surfaces of the sidewalls **12** and **16**. Flap **10***a* is then folded down against the top surface of flap **14***a* and finally, the flaps **12***a* and **16***a* are folded down along the top surface of flap **10***a* as shown in FIG. **5**.

Following the folding operation above described, the bottom wall is now effectively locked. It is found that the strength of the bottom wall so formed is even greater than if the wall is locked by taping or stapling. This is partly due to the fact that the weight of the contents of the carton actually assists in the locking action.

It is even found that without the final folding step wherein the flaps **12***a* and **16***a* are laid down upon the top surface of flap **10***a*, a quite effective locking action is achieved. In certain sizes and shapes of cartons, it is found that it is preferable not to downwardly fold the flaps **12***a* and **16***a* as a final step as these flaps will overlap and create a bulge in the bottom of the carton. This is the case when the carton is longer in dimension C than in dimension D (see FIG. **3**).

It will be appreciated that the self-locking action for the container bottom wall of the invention is achieved through the connection of the side edges of the flaps **12***a* and **16***a* with the side edges of flap **14***a* as combined with the feature of the fold

lines **20** and **24** and by forming these flaps of sufficient length that when they are inwardly folded they effectively form a means of blocking any tendency of the flap **10***a* to fold downwardly under the influence of the weight of the contents of the container. It will be appreciated that there are variations possible within the scope of the invention with respect to the dimensions of the end wall flaps as long as the aforementioned features are retained.

As previously mentioned, one of the chief advantages of the container of the invention is that the bottom wall does not require locking through the use of taping, stitching or stapling or press-seal adhesive strips. It will also be appreciated that the bottom wall can be readily and quickly formed by hand at the user's plant and in this connection, it will be recognized that cartons of this type are normally shipped to the user's plant in a knocked-down form. Generally, the final manufacturing step at the plant of the container maker is the application of the strip **18** and pressing the carton into a flattened tube. Thus, the user simply has to open up the tube and form the bottom wall as described above.

What I claim as my invention is:

1. In a container formed from a folded blank of paperboard or the like:

a. opposed sidewalls and front and rear walls foldably interconnected to define a tube of rectangular cross section;

b. structures for closing the bottom of said tube comprising:

c. a closure flap foldably connected to said front wall and folded to a preliminary position in facing relationship with the inside of said front wall;

d. said closure flap being free from a fold line within the area thereof;

e. a second closure flap foldably connected to said rear wall;

f. an interconnecting flap foldably connected to each sidewall and to a correlative side of said second closure flap;

g. a fold line in each interconnecting flap extending diagonally from a free edge of said interconnecting flap to the juncture of the lines of fold between said interconnecting flap and the sidewall connected thereto and between said interconnecting flap and the second closure flap connected thereto;

h. each of said interconnecting flaps being folded upon itself with elements thereof lying in facing relationship along the inner side of a correlative sidewall;

i. said second closure flap being folded into position upon the folding of said interconnecting flap along fold lines connecting said interconnecting flaps to said sidewalls;

j. said first closure flap being folded to a final position in facing and contacting relationship with said second closure flap;

k. each of said interconnecting flaps being folded while in their aforesaid facing relationship along the fold line connecting it to a related sidewall into a final position in facing and contacting relationship with said first closure flap to maintain said first and second closure flaps in locked position.

* * * * *