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[54] **RECTANGULAR CARTON HAVING SIFT-PROOF AND SQUARING CLOSURE**
 7 Claims, 8 Drawing Figs.

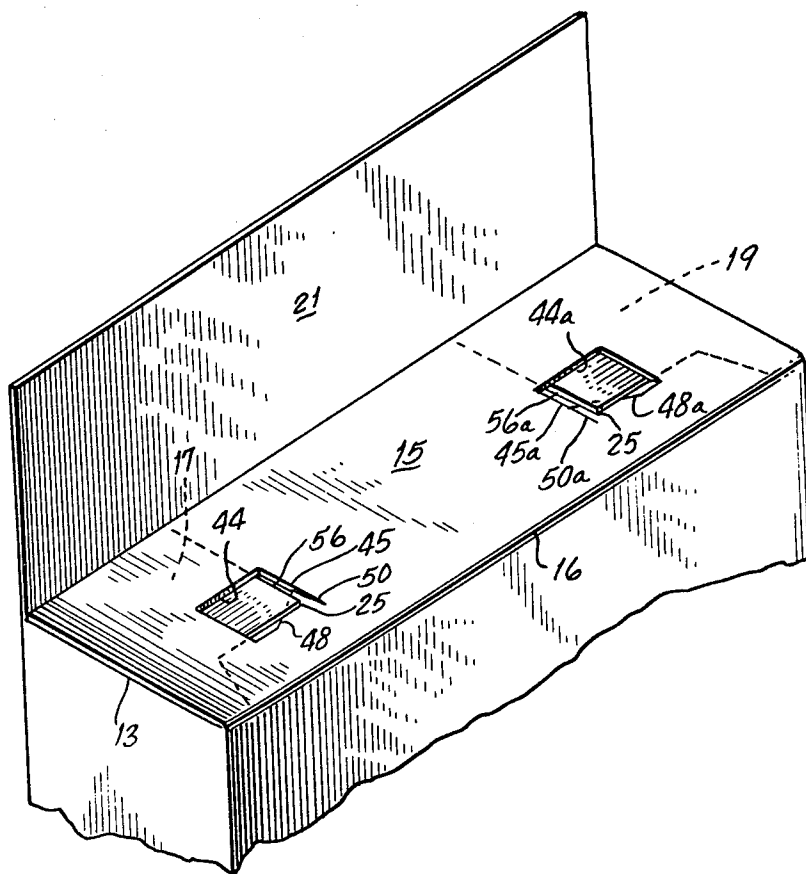
[52] U.S. Cl. 229/39
 [51] Int. Cl. B65d 5/10
 [50] Field of Search 229/37, 39

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ABSTRACT: The invention provides an improved carton for powdered materials and the like, of rectangular or square shape, which has a top or bottom closure of inwardly foldable flaps, and preferably both, wherein the inwardly foldable flap on the rear wall of the carton is provided with two cutout portions each having a side edge which is engaged by a tongue provided on the sidewall flap so as to maintain the carton in squared condition; and at the same time such cutouts each have an oblique angled portion which permits one of said tongues to be interlocked therewith, so that the extension members on the rear wall and sidewalls may be readily glued or sealed to the flap on the front wall of the carton to provide a squared and sealed carton ready for shipping, stacking and display purposes.



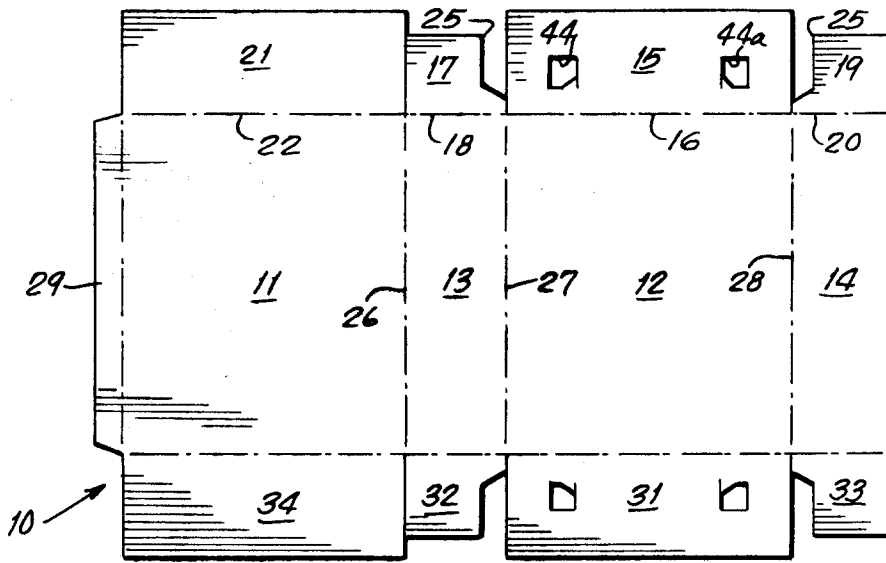


Fig. 1.

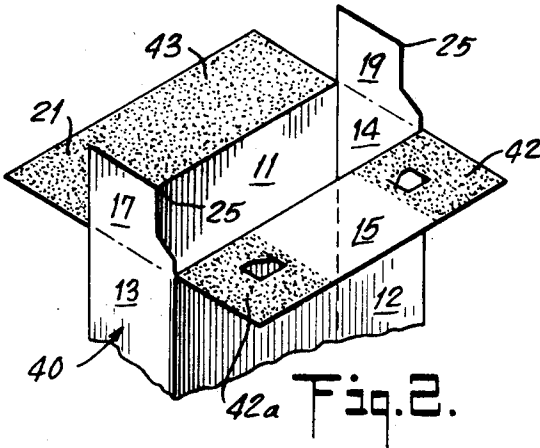


Fig. 2.

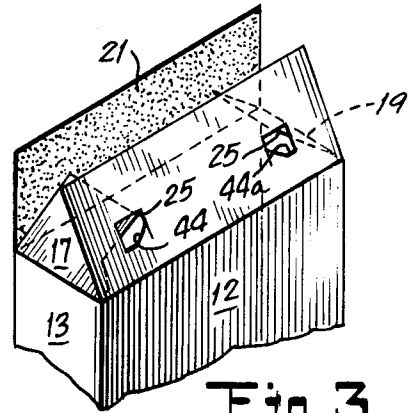


Fig. 3.

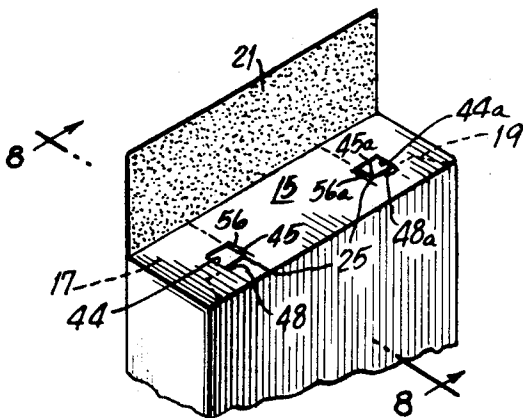


Fig. 4.

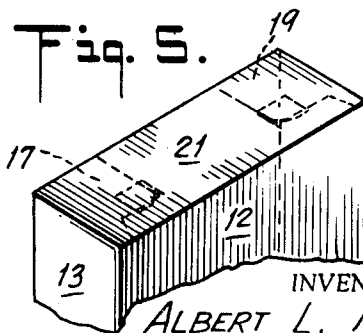


Fig. 5.

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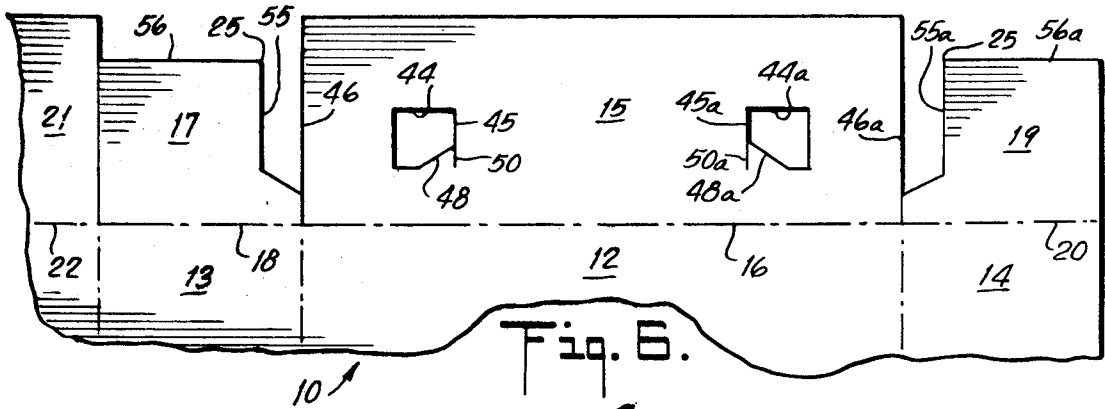
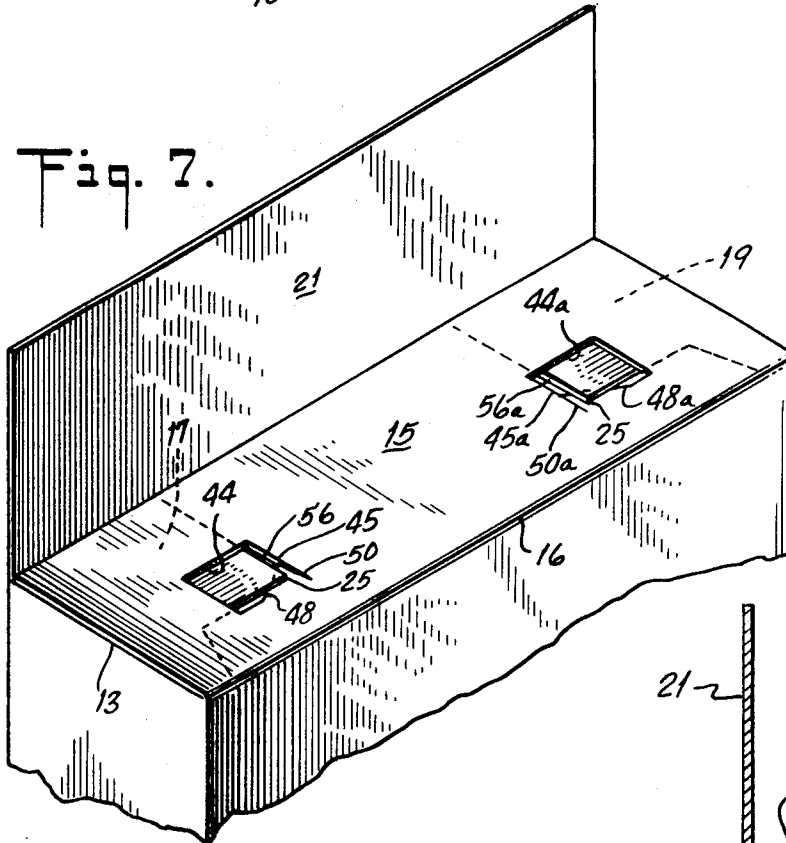
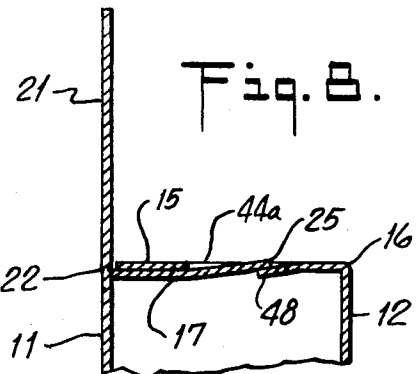


Fig. 7.



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RECTANGULAR CARTON HAVING SIFT-PROOF AND SQUARING CLOSURE

The present invention relates to an improved carton especially adapted for packaging pulverant or powdered materials without leakage. More particularly, the present invention relates to a rectangular or square carton which has four sidewalls with inwardly foldable overlapping flaps which provide the bottom and top closures for such carton.

It has long been recognized in the prior art that it is highly desirable in the production of cartons for pulverant or powdered materials such as soap powders, cereals and the like that such cartons should have a tight bottom and stop seal; and that for ease in packing, shelf display and stacking, such cartons should have a squared configuration. It also has been recognized that such cartons should be capable of production economically on existing equipment without waste of carton material.

It is also well understood by people skilled in the art to which this invention pertains that it is highly desirable to have a tight glue seal with the overlapping portions of the flaps on the side, rear and front walls of the carton. This has been difficult to attain, however, with existing equipment and current practices for the reason that the inwardly directed sidewall flaps and rear wall flap when suitably coated with glue did not remain in fixed position when the front wall or outer flap was pressed into sealing engagement with the same.

One of the prior art attempts to minimize these problems resulted in what is known as a carton with "Van Buren" ears. Such "Van Buren" ears are extensions provided on the side edges of the rear wall flap which overlie and are sealed to the sidewalls of the carton before the front wall or outer flap is sealed. Such "Van Buren" ears, however, require extra material in the preparation of the carton resulting in considerable waste of the blank material from which they are cut, and also require additional equipment for cutting and sealing the same. Such "Van Buren" ears, however, while providing a good seal for the carton at extra cost do not assure that the carton will be fully squared so as to lend itself to shipping, stacking and display practices.

It is an object of the present invention to provide a carton which overcomes all of the foregoing shortcomings of the prior art. More particularly, it is an object of the present invention to provide a carton which in the course of manufacture with existing types of equipment will provide a tightly sealed bottom and top closure and which will maintain its rectangular or squared configuration to facilitate packing in larger shipping cartons and for stacking and display in supermarkets and other retail stores.

With these objects in view, the present invention provides an end closure for a carton wherein each of the inwardly turned flaps on the sidewalls has been cut away to provide a tongue, and the inwardly foldable area of the back wall has been provided with two cutout portions to receive the leading edge of such tongues which then slightly overlap the same whereby said two side flaps and said foldable portion of the back wall are interlocked and held in rigid assembly. Before interlocking, glue is applied to the exposed inner surface of the rear wall flap surrounding said cutout portions and to the inner surface of the front flap so that when the two side flaps are interlocked with the cutout portions of the rear wall flap the front flap may be pressed into sealing engagement with the same.

The present invention also provides the cutout portions in the flap of the rear wall with at least one edge surface which is parallel to the sidewall so that when the tongue on each sidewall flap is engaged in such cutout portions the straight edge of the sidewall flap will bear against the parallel wall of the cutout portion and thereby maintain the carton in squared condition.

For a better understanding of the invention reference will now be made to the accompanying drawings wherein:

FIG. 1 is a plan view of a carton blank prepared according to the present invention;

FIG. 2 is a fragmentary perspective view of a carton before top closure;

FIG. 3 is a fragmentary perspective view similar to FIG. 2 and showing the tongues on the side flaps of the carton about to enter the cutouts in the flap on the rear wall of the carton;

FIG. 4 is a fragmentary perspective view similar to FIG. 3 showing the tongues on the side flaps interlocked with the flap on the rear wall of the carton;

FIG. 5 is a fragmentary perspective view similar to FIG. 4 and showing the flap of the front wall sealed to the interlocked tongues of the side flaps and the rear wall flap;

FIG. 6 is a somewhat enlarged fragmentary plan view of the closure structure of the basic blank;

FIG. 7 is a fragmentary perspective view on an enlarged scale showing the interlocking of the side flap tongues with the cutouts in the rear wall flap; and

FIG. 8 is a sectional view taken along the line 8-8 of FIG. 4 looking in the direction of the arrows and showing the interlock of a side flap tongue with a cutout in the rear wall flap.

Referring now to the drawings in detail the blank 10 for producing the carton of the present invention is shown in FIG. 1 and comprises a front wall 11, rear wall 12, and sidewalls 13 and 14. The rear wall 12 has an upper flap 15 which is adapted to be folded inwardly along the fold line 16. The sidewall 13 has an upper flap 17 which is adapted to be folded inwardly along the fold line 18. The sidewall 14 has an upper flap 19 which is adapted also to be folded inwardly along the fold line 20. The front wall 11 has an outer flap 21 which is adapted to be folded inwardly along the fold line 22 to overlap the flaps 15, 17 and 19.

It will also be noted that the sidewall flaps 17 and 19 have been cut away along their edges which adjoin the side edges of flap 15 on the rear wall and have also been cut horizontally so as to provide a corner tongue 25.

Starting with the blank shown in FIG. 1 an empty carton of rectangular shape in front elevation and in horizontal cross section is formed by folding such blank along its vertical fold lines 26, 27 and 28 and sealing or gluing the side flap 29 to the inner face of end wall 14 to produce an open-ended carton.

According to the present invention the bottom flap 31 attached to the rear wall and flaps 32 and 33 attached to the sidewalls and flap 34 attached to the front wall may be sealed in conventional manner, as the bottom closure of a carton before filling does not present the same problems as are solved by the present invention in connection with the top closure. I prefer however to have the bottom closure similar to the top closure as this assures a more perfect seal and squaring of the carton as will be hereinafter more fully described.

For brevity of disclosure I will now describe how the top closure is made,—it being understood, however, that this type of closure can also be used for the bottom of the carton before it is filled with the material to be packaged.

FIG. 2 shows the upper open end of a carton 40 prepared from a blank 10, such open end comprising the rear flap 15, side flaps 17 and 19 and front flap 21. The carton shown in FIG. 2 is in a condition to receive or has already received the material to be packaged. Such material can be pulverant or powdered material such as soap powders, cereals and the like, as well as dried fruits and other products which are normally packaged in semirigid cartons.

With the carton in the condition shown in FIG. 2 suitably filled with the material to be packaged the inner face of flap 15 is suitably coated with glue or other sealant over at least two areas 42, 42a, and the inner face 43 of the outer flap 21 is also coated with such glue or sealant. In the drawings such glue or sealant is indicated by dots. It will be particularly noted that the flap 15 on the rear wall 12 is provided with two cutout portions 44, 44a which are best seen in FIG. 6 (which is an enlarged fragmentary view of the upper end of the carton blank 10). Each cutout portion 44, 44a has an edge 45, 45a which is substantially parallel to the edges 46, 46a respectively of flap 15. Each such notched portion also has an oblique edge 48, 48a which intercepts at an angle the edges 45, 45a respective-

ly, which are remote from the lateral edges 46, 46a of the flap 15. A slit 50, 50a is also preferably provided as an extension of the edges 45, 45a.

As before mentioned the flaps 17 and 19 respectively provided on sidewalls 13 and 14 have been notched or cut away as shown at 55, 55a and the upper edges of such flaps have been inwardly cut horizontally to provide inward edges 56, 56a whereby there is provided corner tongues 25.

Referring now to FIG. 3 of the drawings it will be noted that after the inner faces of upper flap 15 on the rear wall and upper flap 21 on the front wall have been suitably coated with glue or other sealant the tongue 25 on side flap 17 and the tongue 25 on side flap 19 are respectively inserted within notches 44, 44a until they assume the position shown in FIG. 4 with such tongue overlying that portion of the flap 15 which is adjacent the oblique edge 48, 48a respectively and with the top edges of such flaps 56, 56a in abutting engagement with the edges 45, 45a of such cutouts 44, 44a. FIG. 7 is an enlarged view similar to FIG. 4 showing such elements in better detail and perspective.

FIG. 8, which is a sectional view taken along the lines 8-8 of FIG. 4 shows the overlapping and interlocking engagement of the tongue 25 and oblique edge 48 of the cutout 44a.

The final step in effecting the closure, as shown in FIG. 5, is sealing the inner face of flap 21 which has been suitably coated with glue or other sealant to the overlapped and interlocked flaps 17, 19 and 15.

As before mentioned, while the present invention has been illustrated and described primarily with reference to a carton top closure, the bottom closure may also be similarly constructed.

While the carton closure of the present invention has been illustrated and described in its preferred form, it will be understood that variations may be made therein without departing from the scope of the appended claims.

What I claim is:

1. A carton comprising:

- a. front, rear and sidewalls joined together to provide a hollow rectangular tube;
- b. flap extensions on the lower end of each of said front, rear and sidewalls adapted to be overlapped to provide a bottom closure;
- c. flap extensions on the upper end of each of said front, rear and sidewalls adapted to be folded inwardly to provide a top closure;
- d. the upper flap extension on the rear wall having two cutout portions each having an edge remote from the adjacent edge of such flap and parallel thereto;
- e. said sidewall flaps each having a tongue for engagement in said cutout portions and having an edge parallel to the side flap fold; and

f. said cutout portions also having an oblique edge for overlapping and interlocking engagement with said tongues, whereby said rear wall flap and said sidewall flaps are maintained in interlocking engagement, and the carton is squared by engagement of the edges of the tongues parallel to the side flap folds with the edges of the cutout portions parallel to and remote from the side edges or the rear flap.

2. A carton according to claim 1, wherein the upper flap extension on the rear wall is coated with a sealant around such cutout portions, and the inner face of said front flap extension is also coated with a sealant.

3. A carton according to claim 1, wherein the flap extensions on the lower end of the rear wall also have two cutout portions each having an edge remote from the adjacent edge of such flap and parallel thereto, said side flaps at the lower end of each sidewall each having a tongue for engagement in said cutout portions and having an edge parallel to the side flap fold, each of said cutout portions also having an oblique edge for overlapping and interlocking engagement with said tongues.

4. A carton according to claim 1, wherein the sidewall flaps have been cut away adjacent the edge of the rear wall flap and have also been cut horizontally parallel to the side flap fold.

5. A carton according to claim 1, wherein the cutout portions in the upper flap extension on the rear wall have slits connected thereto.

6. A carton according to claim 1, wherein the upper flap extension of the rear wall is coated with a sealant around such cutout portions, the inner face of such front flap extension is also coated with a sealant, and the said front flap extension is sealed to the overlapped and interlocked sidewall and rear wall flap extensions.

7. A carton blank comprising:

- a. front, rear and sidewalls joined together along fold lines and adapted to be folded into a hollow rectangular tube;
- b. flap extensions on the lower end of each of said front, rear and sidewalls adapted to be folded inwardly to provide a bottom closure;
- c. flap extensions on the upper end of each of said front, rear and sidewalls adapted to be folded inwardly to provide a top closure;
- d. the upper flap extension on the rear wall having two cutout portions each having an edge remote from the adjacent edge of such flap and parallel thereto;
- e. said sidewall flaps each having a tongue for engagement in said cutout portions and each said tongue having an edge parallel to the side flap fold; and
- f. said cutout portions also having an oblique edge adapted for interlocking and overlapping engagement with said tongues.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,580,477 Dated May 25, 1971

Inventor(x) ALBERT L. ROTH

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

In the abstract and specification and also in the claims the expressions "sidewall" and "sidewalls" should be two words and not one word.

Claim 1, column 4, line 7, "or" should read --- of--

Signed and sealed this 22nd day of February 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents