

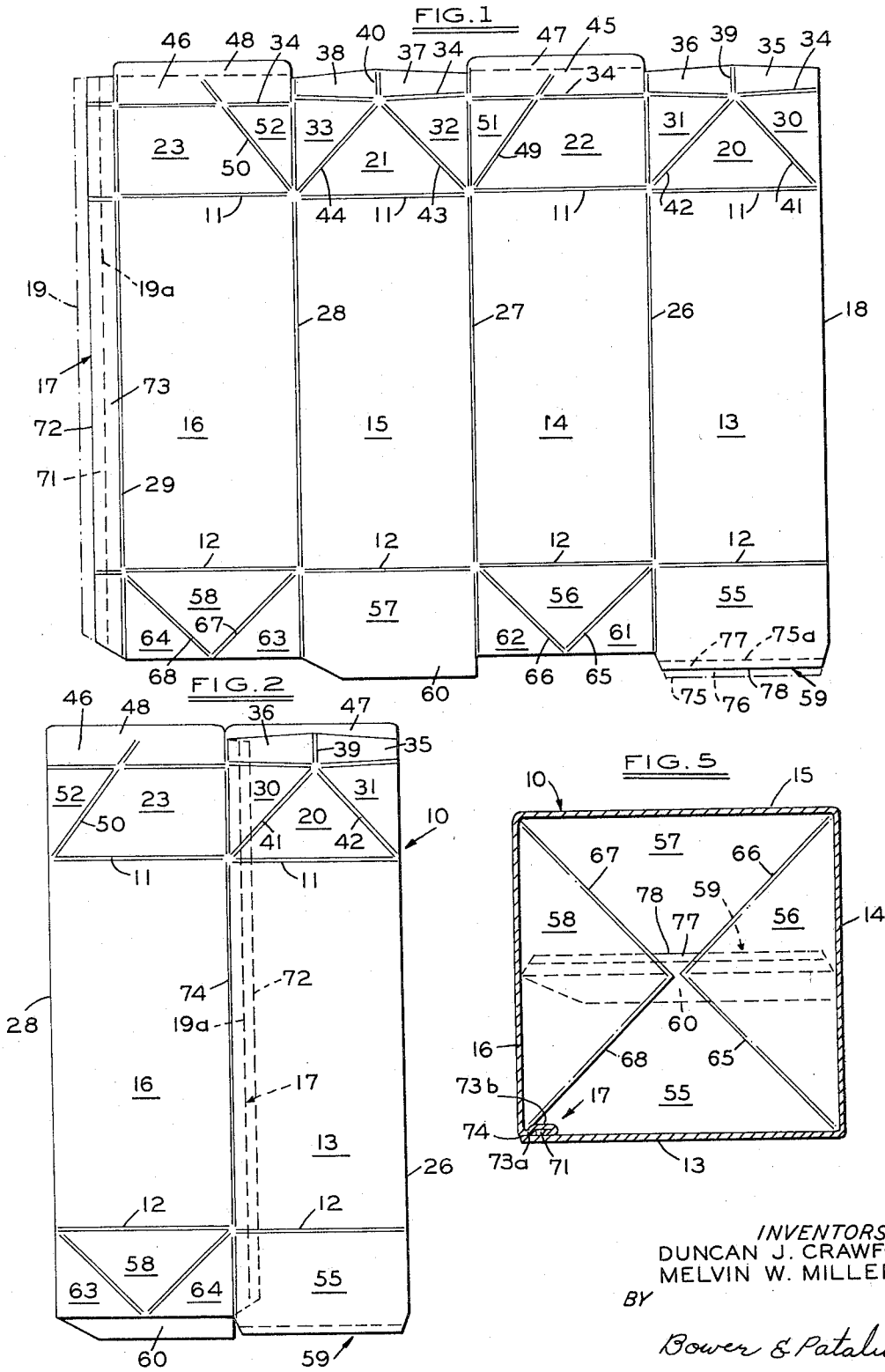
Dec. 27, 1966

M. W. MILLER ETAL
PAPERBOARD CONTAINER AND METHOD OF ELIMINATING
EDGE WICKING IN THE CONTAINER

3,294,310

Filed April 26, 1965

2 Sheets-Sheet 1



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FIG. 3

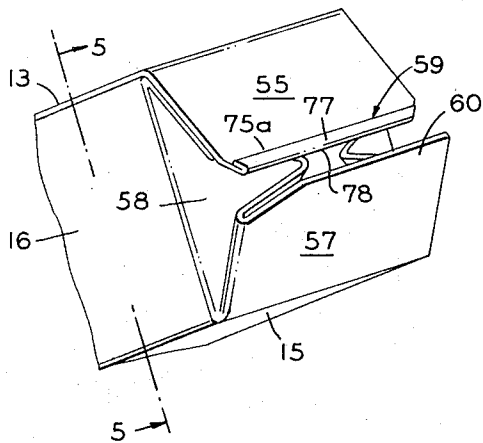


FIG. 4

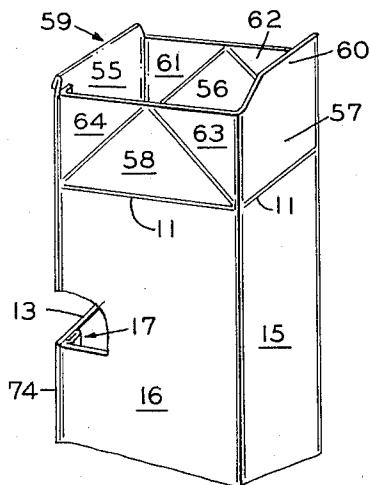
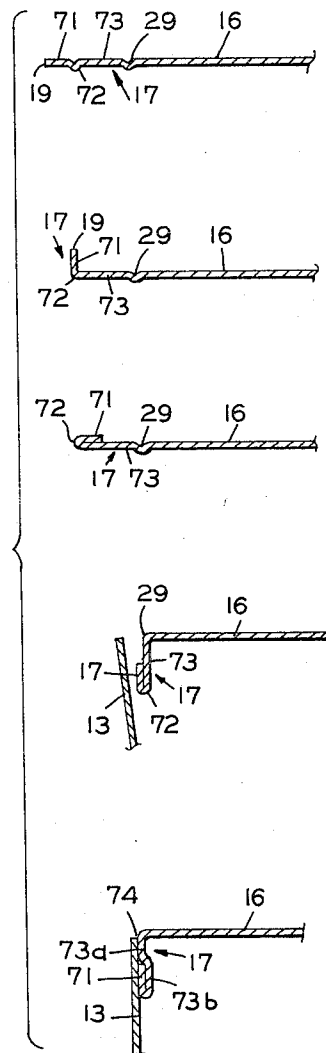


FIG. 6



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PAPERBOARD CONTAINER AND METHOD OF ELIMINATING EDGE WICKING IN THE CONTAINER

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1 Claim. (Cl. 229—48)

This invention relates generally to thermoplastic coated paperboard containers, and more particularly to an improved thermoplastic coated paperboard container and a method of eliminating edge wicking through the exposed panel edges in the interior of the container.

Coated paperboard containers have been widely used for packaging milk and other food products which do not require a long shelf life. These containers have raw edges because they are cut from large blanks. These raw edges are subject to wicking or penetration of the wall panels by the food product in a container. This wicking action eventually weakens the container and does not permit the container to be used for packaging foods which may be stored for long periods of time as, for example, juices, syrups and the like. Accordingly, it is an important object of the present invention to provide an improved coated paperboard container in which the raw edges inside of the container have been eliminated so as to provide a container having a long shelf life.

It is another object of the present invention to provide a coated paperboard container in which the interior cut edges have been folded under to form sealed edges which are impervious to moisture, and wherein edge wicking action is eliminated.

It is a further object of the present invention to provide a method for eliminating edge wicking in a coated paperboard container by folding under the interior cut edges of a container.

It is still another object of the present invention to provide a novel and improved coated paperboard container which is simple and compact in construction, economical of manufacture, efficient in use, and possessed of long shelf life.

Other objects, features and advantages of this invention will be apparent from the following detailed description, appended claim, and the accompanying drawings.

In the drawings:

FIG. 1 is a lay-out view of a thermoplastic coated paperboard blank from which a container of the present invention is formed, and showing the inside surface thereof;

FIG. 2 is a flat side seam blank made from the container blank shown in FIG. 1, and showing the outside surface thereof;

FIG. 3 is a fragmentary perspective view of a container made in accordance with the invention, and showing the container bottom closure structure in a partially closed position;

FIG. 4 is a fragmentary perspective view of the upper end of a container made in accordance with the invention, with parts broken away, and with the top closure panels in the open position;

FIGURE 5 is a slightly enlarged, section view of the container structure illustrated in FIG. 3, taken along the line 5—5 thereof, looking in the direction of the arrows, and showing the inside of the bottom closure structure in the fully closed and sealed position; and,

FIG. 6 is a diagrammatic view illustrating the successive steps employed in sealing the raw edge of a container blank in accordance with the method of the present invention.

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Referring now to the drawings, the numeral 10 generally indicates a coated paperboard container made in accordance with the principles of the present invention. The container described in this application is made from paperboard having a polyethylene coating thereon, but it should be understood that other suitable heat sealable thermoplastic coatings may be employed as a coating for the container.

Referring more specifically to FIG. 1, the container 10 is shown in flat blank form with a pattern of appropriate score lines and having the inside surface of the blank showing. The container blank is separated into three vertically disposed groups of panels by the score lines 11 and 12. The material above the score line 11 is termed the top closure, the material between the score lines 11 and 12 is termed the body panel group and the material below the score line 12 is termed the bottom closure panel group. The body panel group comprises the four panels indicated by the numerals 13, 14, 15 and 16, and the side seam flap 17. The container blank is defined on the sides by the edges 18 and 19. The body panels 13 through 16 are separated by the score lines 26 through 29.

The top closure contains the end panels 20 and 21 and the roof panels 22 and 23. The end panel 20 is connected to the fold-back panels 30 and 31 at the score lines 41 and 42, respectively. The end panel 21 is connected to the fold-back panels 32 and 33 at the score lines 43 and 44, respectively. Secured to the fold-back panels 30 and 31, at the score line 34, are the inner rib panels 35 and 36, respectively. The inner rib panels 35 and 36 are connected at the score line 39. The fold-back panels 32 and 33 are connected to the inner rib panels 37 and 38, respectively, at the score line 34. The inner rib panels 37 and 38 are connected at the score line 40.

The roof panels 22 and 23 are attached to the outer rib panels 45 and 46, respectively, at the score line 34. The outer rib panels 45 and 46 are provided with the sealing flaps 47 and 48, respectively. The roof panels 22 and 23 include the pouring spout flap portions 51 and 52 which are formed by the score lines 49 and 50, respectively.

The bottom closure panel group comprises the panels 55 through 58. The bottom closure panels 55 and 57 are substantially square in plan configuration. The bottom closure panels 56 and 58 are substantially triangular in plan configuration. The bottom closure panel 55 is provided with an extended tuck-in flap 59, and the bottom closure panel 57 is provided with an extended tuck-out or tuck-over flap 60. The bottom closure panel 56 is connected to the adjacently disposed triangular fold-back panels 61 and 62 at the score lines 65 and 66, respectively. The bottom closure panel 58 is connected to the adjacently disposed triangular fold-back panels 63 and 64 at the score lines 67 and 68.

The forming, filling and sealing of the container 10 is shown in detail in U.S. Patents Nos. 3,002,328, 3,120,335 and 3,166,994. These patents are assigned to the assignee of the subject application and the disclosures thereof are incorporated by reference for a more complete description of the container.

It will be understood that after the coated paperboard containers have been formed, filled and sealed, there will be raw edges of some of the panels exposed to the food product inside of the container. In the illustrative container the side seam raw edge 19 is normally exposed and in some cases the raw edge 75 of the tuck-in flap 59. In accordance with the method of the present invention the flap raw edges 19 and 75 are folded under so as to prevent wicking or penetration of the food product into the container side walls through these raw edges.

As shown in FIG. 1, the raw edge of the side seam 19 is folded under to the position 19a so that it is not exposed when the container blank is folded to form a flat

side seam container blank as shown in FIG. 2. The method for folding under the side seam edge is shown in FIG. 6.

The top illustration in FIG. 6 shows the side seam flap 17 provided with a fold or score line 72 about which is folded the outer portion 71 of the flap 17. The second and third illustrations in FIG. 6 show the flap portion 71 being folded under the remaining portion 73 of the side seam flap to a completely folded over portion. The fourth illustration in FIG. 6 shows the body panel 13 being folded into engagement with the side seam flap 17. The fifth illustration in FIG. 6 shows the side seam joint 74 after the body panel 13 has been bonded to the side seam flap 17.

The side seam joint 74 is formed by folding the panel 16 and the side seam flap 17 about score line 28 until their inside surfaces meet the inside surfaces of panels 15 and 14, respectively. Panel 13 is then folded above score line 26 until its inside surface contacts the inside surface of panel 14 and outside surface of the folded under side seam flap 17. The last described meeting surfaces are heated to activate the thermoplastic coating and tape, for bonding these surfaces together. Pressure is then applied to secure the bond between these surfaces. The last described method of forming the flat side seam container blank is well known in the art and any suitable apparatus for performing the folding, heating and pressure steps may be employed.

After the side seam flap 17 has been sealed to the body panel 13 the side seam flap 17 is formed as shown in the bottom illustration of FIG. 6. In the last-mentioned illustration the side seam portion 73 has the one part 73a adhered to the panel 13 and the other part 73b adhered to the portion 71 which is in turn bonded to the panel 13.

In containers of the type where the interior raw edge 75 of the tuck-in flap 59 may be exposed to food products, the edge 75 may also be folded under in the same manner as described for the side seam edge 19. As shown in FIGS. 1 through 4, the raw edge 75 of the tuck-in flap 59 has been folded under to provide the sealed edge portion 78 which is formed by folding over the edge portion 77 of the tuck-in flap.

It will be seen that a coated paperboard container provided with folded edges in accordance with the present invention has increased shelf life and may be used to package juices, syrups and the like.

While it will be apparent that the preferred embodi-

ment of the invention herein disclosed is well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claim.

What we claim is:

A self sustaining collapsed container formed from a one-piece foldable blank of paperboard having an overall surface coating of heat sealable thermoplastic material, said collapsed container comprising:

- (a) a group of four rectangular body panels and a lap side seam flap defined by a network of spaced vertical and horizontal score lines,
- (b) a group of top closure panels connected to said body panels,
- (c) a group of bottom closure panels connected to said body panels,
- (d) two of said body panels being folded along their score lines into overlapping relation to the remaining two body panels,
- (e) said lap side seam flap being secured to the inner face of the free side seam portion of the overlapped body panel adjacent thereto to unite said body panels in a lap side seam,
- (f) the improvement wherein said side seam flap being folded back upon its outer face along a vertical intermediate score line such that its uncoated raw edge is positioned parallel to and approximately midway between said intermediate score line and the vertical edge of said overlapped body panel wherein substantially equal portions of the outer and inner surface of said side seam flap are heat sealed to the inner face of said overlapped body panel to form a moisture impervious lap side seam.

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