Feb. 17, 1970 H. J. HAAS ET AL 3,495,507

METHOD OF MAKING SIDE SEAM SEALED CONTAINER

Filed April 5, 1967

FIG.1.

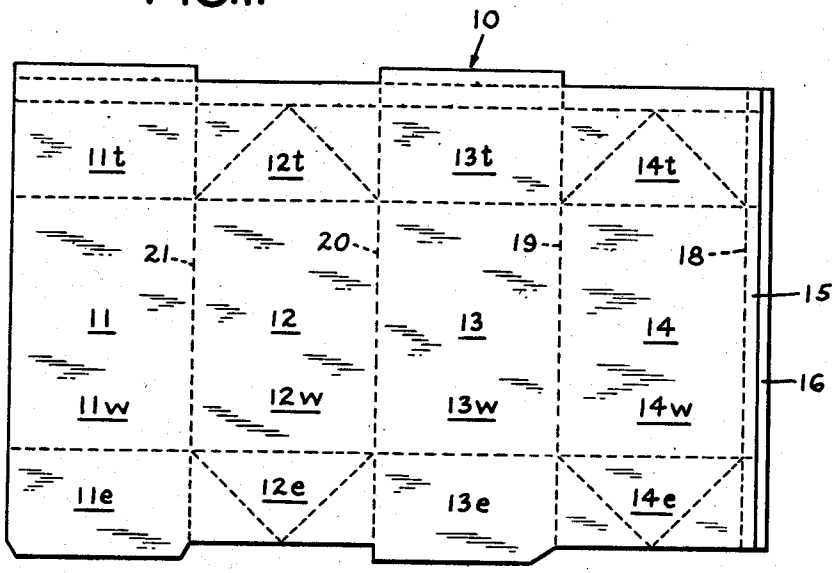


FIG.2.

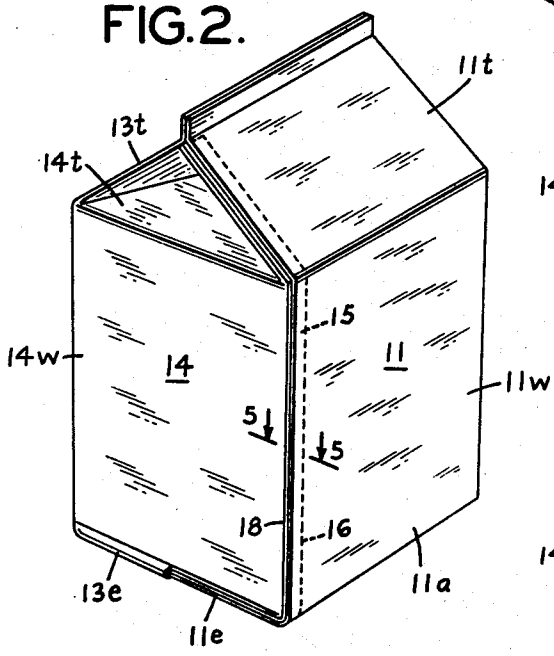


FIG.3.

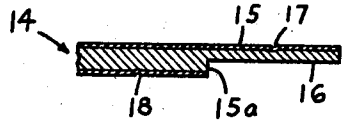
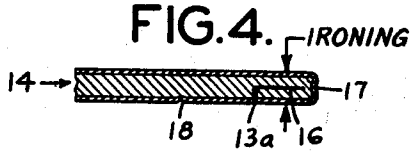


FIG.4.



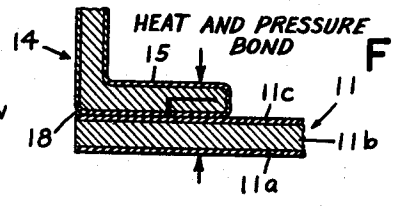


FIG.5

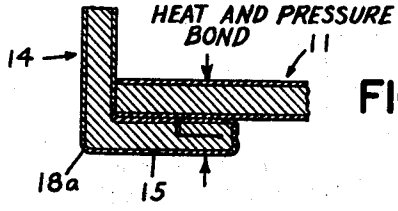


FIG.6.

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METHOD OF MAKING SIDE SEAM SEALED CONTAINER

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U.S. Cl. 93—94 6 Claims

ABSTRACT OF THE DISCLOSURE

A container for packaging fluids is made from a scored folded blank of coated paperboard. The container is made resistant to leakage by preventing the uncoated edge of a side sealing panel from taking up fluid. This edge is protected by skiving a strip adjacent to the edge of the sealing panel, scoring the center of the skived strip and folding it on the scoring so that the skived faces are in intimate contact with each other. The container is folded from the prepared blank and seam sealed.

BACKGROUND OF INVENTION

The packaging in paperboard containers of fluids such as soft drink syrups raises problems of leakage both into and out of the container. The containers are made of coated paperboard, scored and folded to the desired shape. The blanks for the containers are cut from the paperboard and thus have unsealed edges. If the "fifth" or sealing panel is on the inside, the contained fluid wicks into the raw edge weakening the container so that it may rupture under stress. If the sealing panel is on the outside, unwanted foreign material may leak into the container by wicking.

Efforts have been made in the past to inhibit and hopefully to stop this leakage with mixed results. The uncoated edges have been coated with sealing material. The coating on one face and the paperboard have been removed in a strip and the remaining coating folded over. The edge portions of the container material have been skived and folded together with intervening adhesive. Feather edge or tapered skiving has also been used.

Summary of invention

Containers of the kind contemplated are made from blanks of paperboard coated with a substantially impervious layer or film of a plastic material such as polyethylene or another plastic having suitable qualities. Many containers of this kind are of rectangular section, usually square. For making such a container the blank is scored to define four side wall panels and a relatively narrow side sealing panel sometimes called the "fifth" panel. The blank is further scored to divide each panel into top, body, and bottom or end sections.

In order to better solve the noted problems of making coated paperboard containers, it is proposed in accordance with this invention to prepare the container blank for assembly by skiving a strip on the sealing or the fifth panel to a depth equal to half the thickness of the blank. A line is then scored down the middle of this strip on its unskived face dividing it into two parallel, halfwidth strips. The skived portion is then folded on the scored line so that the skived faces are in contact. Since the skived portion of the strip is half thickness and the strip portions flanking the scored line are equal in width, the edge of the strip when folded fits tightly against the edge of the ledge formed by skiving and the folded portion is of the same thickness as the main stock. Because of the scoring and of the snug fit, no adhesive is needed in the fold.

However, it is important that the fold line be ironed to reduce the spring-back tendency and thus keep the fold from unfolding through the heat activation period.

The side seam panel, which is bounded on its inner edge by a scored line between it and the adjacent body panel, is folded on this line to fit against a mating panel. The direction of the folding is such that the folded-over portion of the skived strip makes contact with the mating panel. Thus if the fifth panel is on the inside the folding is in one direction and if on the outside, in the other direction, and it is scored accordingly.

The sealing seam is wider than the folded over skived strip by enough to obtain a bond beyond this strip. This part of the sealing seam may be as wide as or somewhat wider than the folded strip. The sealing may be accomplished by the application of heat and pressure to the mating portions of the folded blank. The top and bottom portions of the container are formed on their scored lines and suitably sealed.

Brief description of drawing

The features of this invention will be understood more fully and clearly from the ensuing description of illustrative embodiments thereof taken in connection with the appended drawings in which:

FIG. 1 shows a container blank on which the location of the scored lines and of the skived portion are indicated;

FIG. 2 is a perspective view of the erected container;

FIG. 3 is a section of the blank showing the location of skived and scored portions;

FIG. 4 is a section similar to FIG. 3 but with half of the skived portion folded unto the other half;

FIG. 5 is a section on line **5—5** of FIG. 2 showing a side seam assembled with the sealing or fifth panel inside the adjoining body panel; and

FIG. 6 is a section similar to that of FIG. 5 but with the sealing panel outside of the adjoining body panel.

Description of illustrative embodiments

As seen in FIG. 1, the blank **10** comprises the four body panels **11, 12, 13** and **14**, and the side seam panel **15**. The panel **15** has a strip skived over a portion of its width as indicated by **16** as is more fully shown in FIG. 3. The side wall portions of the blank are denoted as **11***w*, **12***w*, **13***w* and **14***w*. The portions of the top and bottom or end of the container are denoted as **11***t*, **12***t*, **13***t* and **14***t* and **11***e*, **12***e*, **13***e* and **14***e*, respectively. The location of some of the necessary scored lines is indicated by dotted lines **18, 19, 20** and **21**.

FIG. 2 shows the assembled container in perspective. The side seam panel is on the inside and its edge is indicated by the dotted lines. The reference characters correspond to those of FIG. 1.

The sectional view of a portion of the container blank shown in FIG. 3 indicates where the side seam panel **15** has been reduced up to the shoulder **15***a* by skiving. The skiving removes material down to essentially half the thickness of the blank leaving a half thickness portion **16**. A line **17** is scored down the middle of the skived strip on its coated side and parallel to the scored line **18** at the intersection of the panels **14** and **15**.

In the view of FIG. 4, the skived strip **16** is bent on the scored line **17** so that the skived faces are in contact. The edge of the strip **16** fits snugly against the shoulder **15***a* of the full thickness portion of the fifth panel **15**. Because of the scored line **17** and a good fit, no adhesive is required in this fold. However, the fold line **17** should be ironed, as by passing the blank between a pair of rollers after the fold has been made, as shown in FIG. 4, to reduce the tendency for the end of panel **16** to spring

back. Such ironing keeps the fold from unfolding during the heat activation period.

A corner joint between the side sealing panel **15** and the side wall panel **11** is shown in FIG. 5. The side wall or body panel **14** is shown as bent on the scored line **18**. This represents a corner with the fifth panel **15** inside of the container.

In FIG. 5, the laminae of the coated paperboard are denoted. The plastic coatings **11***a* and **11***c* are on opposite faces of the paperboard **11***b*. This of course applies to the whole blank and not only to what is disclosed on panel **11**.

In FIG. 6, the fifth panel **15** is represented as outside of the first panel **11**. In order that this may be done a scored line **18***a* may be made on the side of the blank **10** opposite to the line **18** as it is shown in FIGS. 3 and 4.

The joint is bonded by the application of heat and pressure thereto by conventional means for sealing containers of this kind. It will be noted in the joints of both FIGS. 5 and 6 that the folded over portion **16** of the panel **15** is between **15** and the panel **11** to which it is sealed. It will be further noted that the bonding includes a portion of the panel **15** that has not been skived and is therefore of the full thickness of the blank. In FIG. 6 the edge of the panel **11** butts tightly against the side of the panel **14**. Thus, a strong leak-proof joint is afforded.

The foregoing is a description of illustrative embodiments of the invention and is not intended as a limitation on what is claimed.

What is claimed is:

1. The method of sealing the side seam of a container formed from a blank of foldable, fibrous sheet material coated with a plastic layer on each face, and having a plurality of scored lines dividing the blank into five contiguous panels including first, second, third and fourth side wall panels, and a side seam panel, which comprises skiving a strip on one surface of said side seam panel along the free edge of said side seam panel to a substantially uniform depth equal substantially to one-half of the panel's thickness thereby to provide a skived surface parallel to the unskived surface of said side seam panel and a shoulder parallel to said free edge of said side seam panel, scoring a line down the middle of said strip on its other surface to divide said strip into two equal portions, folding the skived strip upon itself with the skived surfaces of said portions in contact, said folding being along said scored line to insure alignment of said equal portions and abutment of said free edge of said strip against said shoulder, and applying heat and pressure to seal the unskived surface of the folded strip and an adjacent strip of the side seam panel to a surface of the first side wall panel.

2. The method of sealing the side seam of a container as in claim **1** comprising the additional step of ironing the folded skived strip prior to said step of applying heat and pressure.

3. The method of sealing the side seam of a container as in claim **1** in which the skiving is done on the outside of the side seam panel so that the folded over portion is in contact with and sealed to the first side wall panel on its inside surface.

4. The method of sealing the side seam of a container as in claim **1** in which the skiving is done on the inside of the side seam panel so that the folded over portion is in contact with and sealed to the first side wall panel on its outside surface.

5. In a method of making a fluid container, the steps comprising selecting a blank of foldable plastic coated sheet material, scoring the blank to define side wall panels and a side seam panel, skiving the side seam panel in a strip adjacent a free edge thereof to a substantially uniform depth equal substantially to half its thickness thereby to provide a skived surface parallel to the unskived surface of said side seam panel and a shoulder parallel to said free edge of said side seam panel, scoring a fold line in the center of said strip to divide said strip into two equal portions, folding said strip so that the skived surfaces of said portions are in contact, said folding being along said score line to insure alignment of said equal portions and abutment of said free edge of said strip against said shoulder, ironing said folded strip, and sealing the ironed, folded over strip and an adjacent strip of the side seam panel along the free edge of a mating side wall panel so that the folded over strip is within the seam.

6. The method of sealing the side seam of a container formed from a blank of foldable, fibrous sheet material coated with a plastic layer on each face, and having a plurality of scored lines dividing the blank into five contiguous panels including first, second, third and fourth side wall panels, and a side seam panel, said first side wall panel and said side seam panel being outside panels and each having a free edge, which comprises skiving a strip on one surface of one of said outside panels along and adjacent the free edge thereof to a substantially uniform depth equal substantially to one-half of the panel's thickness thereby to provide a skived surface parallel to the unskived surface of said one panel and a shoulder parallel to said free edge of said one panel, scoring a line down the middle of said strip on its other surface to divide said strip into two equal portions, folding the skived strip upon itself with the skived surfaces of said portions in contact, said folding being along said score line to insure alignment of said equal portions and abutment of said free edge of said strip against said shoulder, and applying heat and pressure to seal the unskived surface of the folded strip and an adjacent strip of the panel in which said strip is formed to a surface of another one of said panels.

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U.S. Cl. X.R.

93—1, 36.01, 49, 58.2, 59, 77