United States Patent

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[54] **SKIVING MACHINE DEVICE AND METHOD OF PREPARING A PROTECTED PAPERBOARD SIDE SEAM**
3 Claims, 13 Drawing Figs.

[52] U.S. Cl. ..... **93/58 ST,** 93/1 G, 93/52, 93/94 PS
[51] Int. Cl. **B31b 1/14,** B31b 1/64, B31c 5/00
[50] Field of Search ..... 93/94 PX, 1 G, 52, 58 H, 58 ST

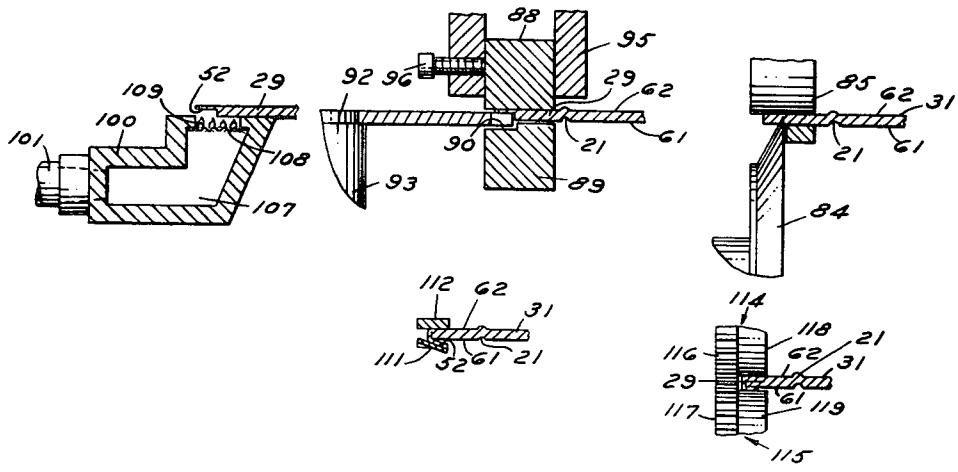
[56] **References Cited**

UNITED STATES PATENTS

1,062,002	5/1913	Harbeck	93/94
1,281,356	10/1918	Harbeck	93/94
2,152,323	3/1939	Moore	93/35
2,190,479	2/1940	Moore	93/77
2,196,666	4/1940	Moore	93/39.1
2,233,207	2/1941	Gillam	93/58 ST
2,268,668	1/1942	Moore	93/59
3,058,868	10/1962	Schroeder	93/36
3,122,070	2/1964	Kauffman	93/52
3,242,829	3/1966	White	93/94
3,365,111	1/1968	McNair	229/17
3,434,399	3/1969	Palmer	93/58 ST
3,489,067	1/1970	Hallis	93/58 ST
3,444,792	5/1969	Thesing	93/94 (PX)
3,495,507	2/1970	Haas	93/94 (PX)

Primary Examiner—Wayne A. Morse, Jr.
Attorney—Frank B. Hill

ABSTRACT: An improved skiving machine device and a new method for preparing and forming paperboard side seam blank providing it for a smooth edge which a roughened skived surface can fold around and adhesively secure to its adjacent surface forming a protected edge for the side seam flap of a paperboard container blank with contact being made between the roughened paper surface and the adjacent side seam flap giving good bond characteristics and accuracy.



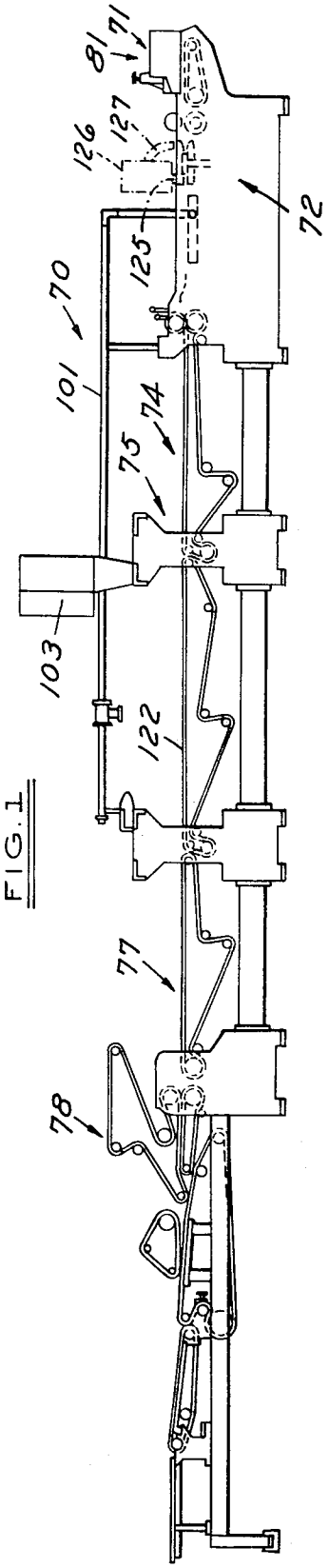


FIG. 1

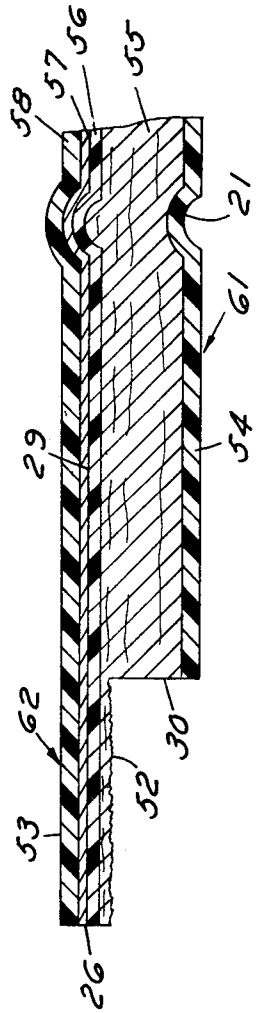


FIG. 11

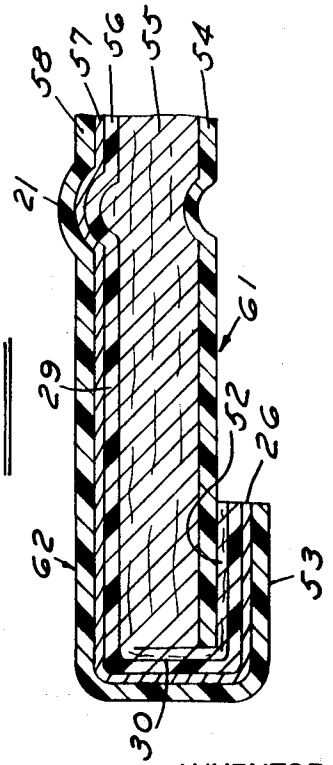


FIG. 12

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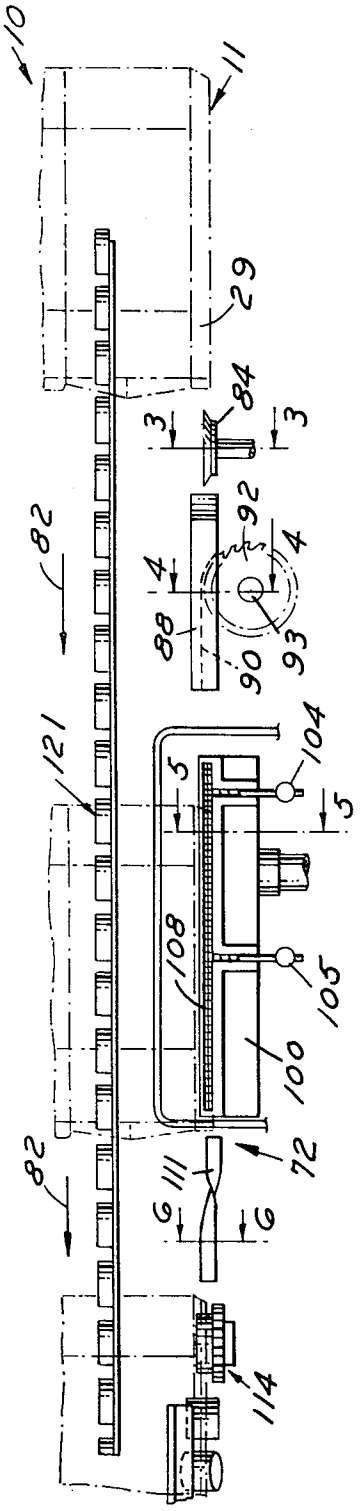

FIG. 2

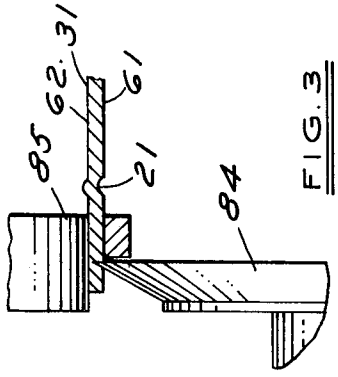

FIG. 3

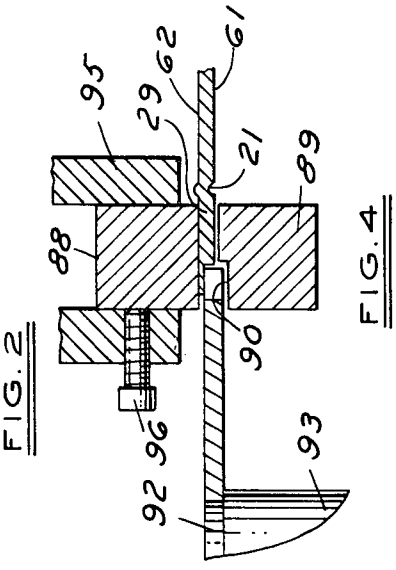

FIG. 4

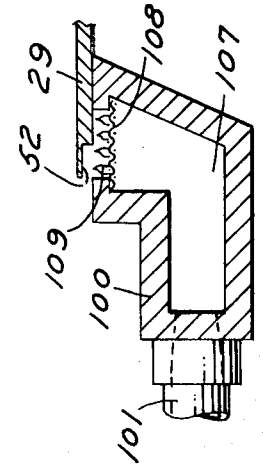

FIG. 5

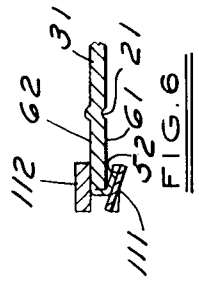

FIG. 6

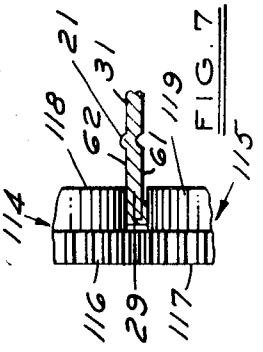

FIG. 7

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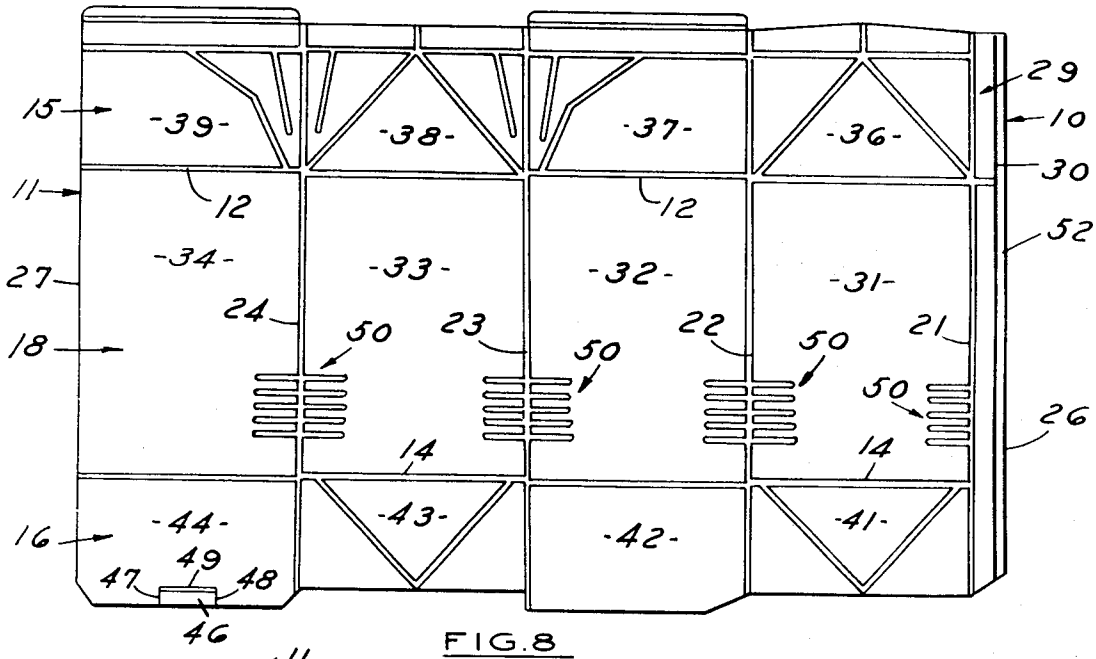

FIG. 8

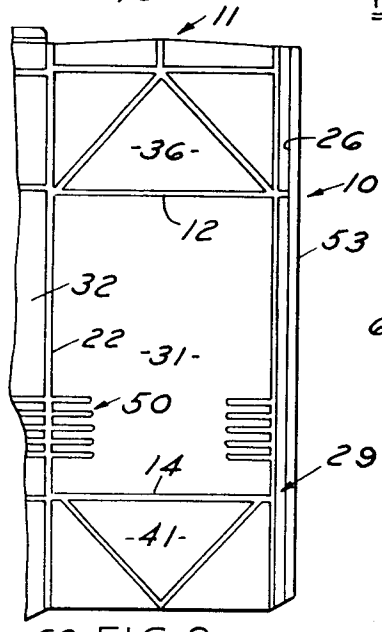

FIG. 9

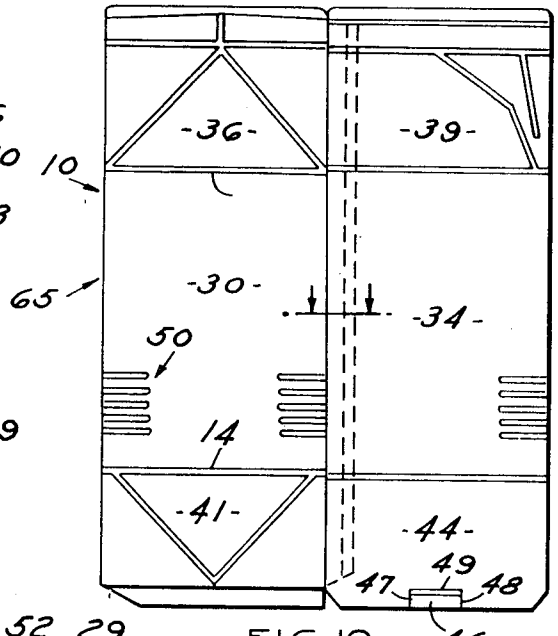

FIG. 10

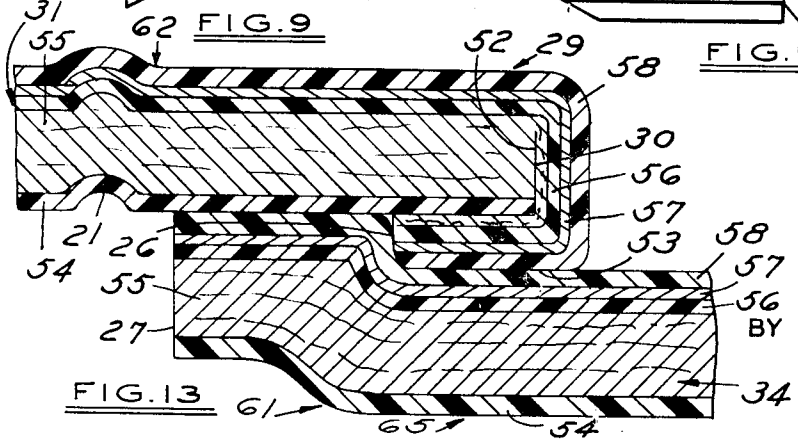

FIG. 13

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SKIVING MACHINE DEVICE AND METHOD OF PREPARING A PROTECTED PAPERBOARD SIDE SEAM

This invention relates to a skiving machine device for preparing a side seam flap of a precoated paperboard container and the method of preparing a container blank to assure strong bonding between the skived area and the side seam panel and the skived side seam flap and the wall panel, which it is adhesively secured to and more particularly to an improved thermoplastic precoated paperboard container where a skived surface area is prepared with a roughened or fuzzy surface.

Paperboard containers have been utilized for many years for the packaging of various liquid products. The main utilization has been in the dairy industry where products are packaged in refrigerated condition and continued in a cooled atmosphere until consumed by the ultimate user. Over the last few years the use of paperboard containers outside the dairy industry has increased considerably and particularly for various packaging of liquid products. One of the reasons for this fast increase in growth has been that the paperboard containers have been protected by a precoating operation which does not smudge or peel off in use and the quality increased with a financial savings. Some of the new applications which the precoated paperboard containers have been successful in are liquids that do not require refrigeration but do require a much longer shelf life than the dairy products. Some of the uses are liquids which have a very low viscosity and will act quickly on any raw edge of the paperboard exposed to it causing the paperboard wall sections to wick. This wicking action causes the container's wall panels to become very soft and spongy, ruining the effective use of it for the customer. It is a requirement in most of these types of applications that all raw edges, which are exposed inside the constructed container, be protected so that the contents are not able to act on the raw edges so the container can give its usual and expected long life and reliable performance.

Because of the high quality required when packaging comestible products, the complete packaging operation for making containers to handle comestibles has been made through application of high quality equipment which have proved to be very effective and reliable in operation. This equipment is very expensive to duplicate and manufacture because of the large volume they handle and the necessary research and development required to meet the continuing requirements for speed reliability and sanitation standards. Thus with this additional raw edge protection requirement, it has been desirable to have equipment which could be tied in with the presently available equipment to perform this additional operation and provide a final structure of the container which in most appearances would appear in the same form as the prior container it is applied to. This would provide a container with the raw edge protection but not alter any of the container's converting equipment, the packaging filling and sealing equipment nor the distribution cases and the retail store facilities used in handling it.

One of the principle objectives of the present invention is to provide a skiving machine device unit which can be adapted with presently available side seam sealing equipment to produce containers which will appear to the casual user as the same container as formerly utilized, while actually the equipment will provide a container where the side seam flap, which is positioned inside the container when completely constructed, will have no side seam raw edges exposed to the contents of the container.

Another objective of the present invention is to provide a skiving machine device unit which will prepare a paperboard container blank which is precoated on both its inside and outside surfaces with thermoplastic material by skiving its side seam flap to provide a skived surface with a roughened paper layer in conjunction with the inside precoated surface which can be wrapped around the container's edge and heat sealed to the outside precoated surface.

A still further objective of the present invention is to provide a paperboard container having a skived surface which acts with a substantially smooth cut edge to provide for the skived area to be wrapped around the cut edge and adhesively secured to the outside surface of the container providing the side seam flap with a protected edge surface.

A still further objective of the present invention is to provide a skived side seam area on a paperboard container having inside and outside thermoplastic coated surfaces which provide for the skived side seam area to be conditioned with a roughened or fuzzed paper surface in conjunction with the inside precoated surface which will be positioned around a substantially smooth cut edge and act on the precoated outer surface and adhere to it in a heat-sealed manner to provide for a reliable side seamed paperboard blank.

A still further object of the present invention is to provide a method of skiving an inside and outside precoated paperboard container to provide for skiving a side seam flap of the container having a substantially smooth cut edge which the skived area can be wrapped around and the skived area can be in a roughened or fuzzed condition and heat-sealed to the opposite precoated surface.

Another object of the present invention is to provide a skiving means for a paperboard container where the skiving is performed by a milling cutter blade on the under side of the container blank in conjunction with a stationary lower control plate and an adjustable upper control plate.

Also, an object of the present invention includes the provision of a side seam skiving mechanism structure capable of accomplishing the above specified objectives with the minimum of material and equipment cost and manufacturing expenses, and at the same time, being composed of simple and ruggedly formed structure which will be feasible in application.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the means and features hereinafter fully described and particularly pointed out in the claims, the annexed drawings and the following description setting forth in detail certain methods and means for carrying out this invention, such disclosed methods and means illustrating, however, one of various ways in which the principles of the invention may be used. In the annexed drawings:

FIG. 1 is a side elevational view of a side seam sealing machine having a skiving machine device unit as part of its equipment and illustrating the principles of the present invention.

FIG. 2 is a partial top plain view of the side seam sealing unit as shown in FIG. 1 specifically showing the sequence of operation in the skiving machine device unit and illustrating the principles of the present invention.

FIG. 3 is a partial cross-sectional view taken generally along line 3—3 of FIG. 2 illustrating the cutting knife acting on the side seam panel of a paperboard container blank as it passes through the skiving machine device unit and looking in the directions of the arrows.

FIG. 4 is a partial cross-sectional view taken generally along line 4—4 of FIG. 2 illustrating the skiving milling blade acting on the side seam flap of a paperboard container as it passes through the skiving machine device unit and looking in the directions of the arrows.

FIG. 5 is a partial cross section view taken generally along line 5—5 of FIG. 2 illustrating the heating operation on the side seam flap and its skived area before they are folded together to provide a protected side seam flap edge as it passes through the skiving machine device unit and looking in the direction of the arrows.

FIG. 6 is a partial cross-sectional view taken generally along line 6—6 of FIG. 2 illustrating the skived portion of the side seam flap being wrapped around the cut edge and being drawn into contact with the outside precoated surface of the container blank in a heated condition as it passes through the skiving machine device unit and looking in the direction of the arrows.

FIG. 7 is a cross-sectional view taken generally along line 7—7 of FIG. 2 illustrating the pressure rolls acting on the

skived area of the side seam flap panel to iron or press them into final bonding for the heat-sealing process as they pass through the skiving machine device unit and looking in the direction of the arrows.

FIG. 8 is a plain layout view of the outside surface of a thermoplastic precoated paperboard container when in the flat blank form and showing the skived area surface before the skived area surface is folded into final position and appears as it would looking up from the bottom of the side seam sealing machine and the container blank is passing through the machine.

FIG. 9 is a partial plain view of the precoated paperboard container in the flat blank form similar to FIG. 8 showing its outside surface after the skived area surface has been folded about the side seam flap into final position.

FIG. 10 is a plain view showing the precoated paperboard container illustrated in FIG. 8 after it has had its side seam structure completed and appearing as a flat side seamed blank and appearing as it would be discharged from the side-seamed sealing machine illustrated in FIG. 1 looking from the top down.

FIG. 11 is an enlarged partial cross-sectional view of the side seam flap member of the skived area surface as illustrated in FIG. 4 and looking in the direction of the path of travel.

FIG. 12 is an enlarged partial cross-sectional view of a protected side seam flap member showing the skived area surface after it has been positioned around the side seam flap and after it has passed the plow member shown in FIG. 6 and looking in the direction of the path of travel.

FIG. 13 is a partial cross-sectional view of the side seam container blank taken generally along line 13—13 of FIG. 10 and looking in the direction of the arrows.

A general description of this invention is the fact that we have a four-paneled paperboard container blank which has a fifth panel designated as the side seam flap. The side seam flap is adhered to a first panel of the container and is heat-sealed to the fourth panel. Before the side seam flap is heat-sealed to the fourth panel of the container, its free edge is skived and the skived area if folded about a cut to provide a protected side seam flap edge which is positioned within the constructed container.

The side seam sealing machine illustrated in FIG. 11 is well known in the art and its full operation is explained in detail in a patent owned by the assignee of the present invention; namely, U.S. Pat. No. 3,122,070, which issued Feb. 25, 1964.

In order to more easily understand the function and operation of the invention, we shall review one specific application which is directed to a precoated paperboard container blank as illustrated in FIGS. 8 through 13. This container will be briefly discussed before the machine skiving operations are covered. It is hoped that this will enhance and give a fuller understanding of this invention.

Referring generally to FIGS. 8 through 13, there is disclosed a container 10 which appears in a flat blank form 11 in FIG. 8. The container 10 is separated into three general sections by staggered score lines 12 and 14. The material above staggered score line 12 is generally referred to as the top section 15. The material below staggered score line 14 is generally referred to as the bottom member 16. The material between staggered score lines 12 and 14 is referred to as the body member and is indicated by numeral 18.

The staggered score lines 12 and 14 are generally parallel and horizontal to each other and extend across the container 10. The flat blank form 11 is divided into sections by four substantially vertical and parallel score lines 21, 22, 23 and 24. They act with the staggered score lines 12 and 14 to provide various elements of the container 10. Outer edges 26 and 27 define the sides of the flat blank form 11. A side seam flap 29 extends along the score line 21. A cut edge 30 extends along the length of the container 10 on side seam flap 29 and is substantially parallel to the outer edge 26.

The body member 18 is provided with four side panels, namely, wall panels 31, 32, 33 and 34. The top member 15 is provided with end panel 36, roof panel 37, end panel 38 and roof panel 39, which are adhered with the wall panel 31, 32, 33 and 34, respectively, along staggered score line 12. Bottom member 16 is provided with minor panel 41, major out-panel 42, minor panel 43, and major in-panel 44. The major in-panel 44 is illustrated as having a full back tab 46 which is defined by cut lines 47 and 48, and score line 49.

Referring generally to FIG. 11 for illustrative purposes, the precoated container 10 shows the cross section where the skived area between the cut edge 30 and the outer edge 26 is indicated as skived area surface 52. The bottom portion of the skived surface 52 is indicated generally as bottom surface 53. The outer layer is indicated by numeral 54, the major layer of the container structure is indicated as layer 55, which illustrates the layer of paperboard material, next to the paperboard material is a laminating layer indicated as layer 56. A layer of protective material is designated as layer 57 and the laminating layer 56 bonds it to the paperboard material, layer 55. The inside layer is indicated by numeral 58. Various materials could be utilized for the different layers. For the present discussions of the invention, examples of the materials which could be used would be polyethylene for the outside layer 54, the laminating layer 56 and the inside layer 58. This is particularly useful in this application because of its adhesive and heat sealing characteristics. A protective layer 57 could be of various material, one example would be the use of aluminum foil because of its economical ease of working in the foil state. The paperboard layer 55 could be made of various forms of paperboard materials, one of the important determining factors is whether the paperboard would be used for comestible or noncomestible products. If the container is to be used for comestible products, high standards of sanitation requirements would dictate the type of paperboard.

This type of container is well known in the art and is reviewed in detail in a patent owned by the assignee of the present invention; namely, U.S. Pat. No. 3,239,126, which issued Mar. 8,1966. In reviewing the cross-sectional areas of the container blank, particularly reference being made to FIGS. 11, 12, and 13, it should be clearly understood and noted that these views are not in scale but are used to illustrate principles of the invention and of the various basic physical relationships of the parts. In actual form they would appear much different in physical portions than actually illustrated in the drawings.

To more clearly illustrate this typical example of dimension thickness which would be designated for various layers and be practical in utilizing. The following are examples of some that have been used successfully in commercial applications:

Layer 54—0.0005 inch
Layer 55—0.0260 inch
Layer 56—0.0005 inch
Layer 54—0.00035 inch
Layer 58—0.0015 inch

The skived area surface 52 could be of various thicknesses, for illustrative purposes the present example would be to maintain the paperboard thickness on the adhesive layer 56 in the nature of 0.003 inch to 0.005 inch. Thus the overall thickness of the skived area surface 52 could be in the order of 0.00535 inch to 0.00735 inch, as examples.

Because we are utilizing the cross section of the container 10 as an illustrated example, the precoating on the outside of the paperboard container 10, which is designated outside layer 54, in the present illustration, will be also indicated as an outside coating layer 61, because it could be made up of one or more layers of various materials. The precoating applied to the inside of the paperboard for the container 10 could be of one or more various layers although three layers are shown and this will be referred to as inside coating layer 62.

After the container 10 has had its skived area surface 52 prepared, it will be wrapped around the cut edge 30 of the side seam flap 29 in a counterclockwise direction, as viewed in FIG. 11, forming contact with the cut edge 30 and making adhesive contact with the outside layer 54 of the outside coating layer 61 forming its final condition as viewed in FIG. 12. Then the side seam edge 29 will then appear as indicated in FIG. 9.

The container flat blank 11 will then continue through the side seam sealing machine 70 and be put into a side seam blank form as indicated in FIG. 10 and referred to by numeral 65. This is accomplished by turning the flat blank form 11 so that the inside surface would be up. The wall panel 31 would be rotated about score line 22 so that its inside surface will come in contact with the inside surface of wall panel 32. Then wall panel 34 will be rotated about score line 24 so that its inside surface will come in contact with the inside surface of wall panel 32. Then wall panel 34 will be rotated about score line 24 so that its inside surface will come in contact with the inside surface of wall panel 33. This will cause the inside surface portion of the container 10, which is located along its outer edge 27, to come in contact with the outside surface of the side seam flap 29 and the bottom surface 53 of the skived area surface 52 positioned on the outside surface of side seam flap 29. This is illustrated in FIGS. 10 and 13. The contacting areas will be adhesively secured to each other. In the present illustration, this would be a heat seal bond between the thermoplastic surfaces; namely, outside layer 51 and side layer 58.

Now we are referring generally to FIG. 1 where there is illustrated a side seam sealing machine 70 which has various elements along its length as will be explained below. At the far right of the machine there is a loading unit indicated generally by numeral 71. Then we have the skiving machine device unit 72, which is located between the loading unit 71 and a prebreaking unit 74. When the container blanks leave the prebreaking unit 74, they will enter a heating unit operation indicated by numeral 75. After the portions of the panel which are to be sealed together are selectively preheated for side seaming, they enter the folding and sealing unit 77. After the container blanks are bonded at the folding and sealing unit 77, they are passed into the discharge and stacking unit 78.

The action which takes place in the skiving machine device unit 72 discloses the principle features of the present invention. The operation which takes place before the container arrives at, and after they leave the skiving machine device unit 72, are operations which have been practiced for a considerable length of time and are well known in the art; and as stated above, are reviewed in detail by U.S. Pat. No. 3,122,070.

The precoated blanks, appearing in condition as illustrated in FIG. 8, will be stacked in a feeding mechanism 81, which is part of the loader unit 71, having their outside coating layer 61 orientating down and the inside coating layer 62 positioned up. The top member 15 would be the leading portion and the bottom member 16 would be the trailing portion of the container 10 as it passes through the side seam sealing machine 70. The feeding mechanism 81 is a bottom feeder style unit and will feed the blanks into the side seam sealing machine 70 one at a time. These blanks will run through the machine at high speeds, common speeds would be 800 to 1,000 feet a minute. Referring generally to FIG. 2, arrows 82 indicate the direction of flow through the skiving machine device unit 72. The flat blank form 11, after leaving the feeding mechanism 81, will initially pass by a cutting knife 84, best viewed in FIG. 3, which acts with a backup roller 85 to form the cut edge 30 in the side seam flap 29. This operation provides a smooth clear cut surface for the cut edge 30. The flat blank form 11 then proceeds between a holddown bar 88 and a guide or support bar 89. The guide bar 89 has a slot 90 provided at its top outside edge portion as seen in FIGS. 2 and 3. The slot 90 permits the skiving milling blade 92, which is positioned on a spindle 93 to act on the side seam flap 29, removing the material between cut edge 30 and the outer edge 26, thus forming the skived area surface 52. The holddown bar 88 can be adjustably positioned in a mounting block 95 by a securing means indicated by numeral 96, which in the present illustration is shown as a securing bolt. One or more of these securing bolts can be positioned along its length to hold the holddown block 88 in its desired position. Because of the aerodynamic effect upon the container 10, as it moves through the machine, at the speeds which it travels and the force caused by the action of the skiving milling blade 92 acting on the side seam flap when the mill blade 92 is forming the skived area surface 52, the container blank 11 is located off the holddown bar 88. Then the operator wants to change the depth of the skiving area surface 52, he will lower the holddown bar 88 to decrease the thickness and raise it to increase the thickness.

As the flat container blank 11 continues through the side seam sealing machine 70, it passes into a heating operation where a burner 100 applies heat to the side seam flap 29. This is best viewed in FIGS. 2 and 5. The gas is supplied to the burner 100 through a gas supply line 101. The gas supply is a proper mixture of air and gas. The proper mixture of which is controlled by an indicator panel 103, as seen in FIG. 1. Ignition and flame detection devices 104 and 105 are utilized to ignite the gases at the surface of the burner which are received from a gas chamber 107 and discharged through an outlet 108. Flames indicted by numeral 109 heat the outside coating layer 61 and the skived area surface 52, so that the skived area surface 52 can be adhesively secured to the side seam flap 29, as discussed above and will be explained in more detail below.

When the container 10, as the flat blank form 11, leaves the burner 100, it is acted upon by a plow member 111, which folds the skived portion of the side seam flap 29 about the cut edge 30, moving it into contact with the preheated portion of the outer layer 54 of the outside coating layer 61, as best viewed in FIG. 6. This causes the skived area surface 52 to heat-seal with the thermoplastic outside layer 54. A guide member 112 acts above the side seam flap 29 so that the plow member 111 will have a firm support to act in conjunction with, while the skived area surface 52 and the side seam flap 29 are being joined and placed in final position. As soon as the container 10 leaves the plow member 111, it will then be acted on by two pressure rolls 114 and 115. One of the pressure rolls 114 and 115 are driven by a common power source which drives the side seam sealing machine 70. The powered pressure roll 114 or 115 drives the other by the interaction of their gear teeth 116 and 117, respectively. Each of the pressure rolls 114 and 115 have ironing cylinders 118 and 119, respectively, which are mounted on the gear teeth 116 and 117. The ironing cylinders 118 and 119 are so positioned to apply pressure to the side seam flap 29 as it passes between them causing a solid heat sealing action to take place between the roughened skived surface 52 and the side seam flap area, which it acts upon. This action has a tendency to also compress the paperboard material, tending to make the surface thickness at the skived portion of the side seam flap substantially the same as the rest of the container blank.

Holddown rollers 121 are used to hold the containers 10 in their horizontal plain as they are passing through the side seam sealing machine 70. The container 10 is passed through the machine 70 in an untimed manner by friction belts which act as carrying belts and are generally indicated as 122. After the skived portion of the side seamed blank 29 is acted upon by the pressure rolls 114 and 115, it will appear somewhat as shown in FIG. 12, the compressed characteristic is not shown. Recognizing that the dimensional relationships are not as they actually would be, as stated above, however, the relative positions of the elements are illustrated.

As the container continues through the machine 70, it will be acted upon to be put into the condition illustrated in FIG. 10, side seam blank form 65. After the container blanks leave the skiving machine device unit 72, they go through the prebreaking unit 74 where score lines 21, 22, 23 and 24 will be prebroken and then they will pass into the heating unit 75 where the outside surface of the side seam flap 29 will be heated and the inside surface of the container along outer edge 27 will be heated. Immediately upon leaving this operation, the container blanks will pass into the sealing and folding unit 77 where the wall panel 31 and the side seam flap 29 will be in the same plain and rotated about score line 22 so their inside surfaces will come in contact with the inside surface of wall panel 32. At the same time, but at just a little slower timing, the wall panel 34 will be rotated about score line 24 so that its inside surface will come in contact with the inside surface of wall panel 33 and container 10 portion. The portion

along outer edge **27**, which has been preheated, will come in contact with the outside surface of side seam flap **29** and the bottom surface **53** so that the container will then appear as viewed in FIG. **10** as a side seam blank form **65**. A roller will act on the side seamed portion of the blank to assist in securing a firm bond between the side seamed bonding portions of the container **10**. The container blank **65** will then be discharged and stacked by the discharge and stacking unit **78**. They will be then put into shipping cartons (not shown) for storage or for shipment to the various users.

In some applications it may be desirable to have means provided to take care of the container material removed by the skiving milling blade **92**. An example of doing this would be as viewed in FIG. **1**, where there is illustrated in phantom a bracket **125**, which supports a vacuum unit **126** which has a vacuum housing **127**, which would be positioned just in front of the skiving milling blade **92** and would remove the scrape material which this milling blade **92** removes from the container **10**, as they pass through this operation.

Some of the important advantages of the present invention are that the skiving operation is performed on equipment which is familiar to the industry and can be added to equipment presently in use, if desired. The various setup features are very easy to accomplish and provide for a smooth cut edge which could be referred to as the skived edge, generally indicated as **30**, which permits the use of the skiving milling blade **92**, while maintaining the smooth effect of the cut edge **30**. The depth of cut is easily accomplished by merely loosening the securing means **96** and adjusting the holddown bar **88** within the mounting block **95** to the desired position. Because of the short distance and time the burner **100** acts on the container, there is no danger of igniting it. The change in the thickness of the side seam flap **29**, due to the folding over of the skived area surface **52**, is minimal and all the operations provide for a uniform carton blank with no undesirable or detrimental effects taking place in the final structure of the container.

While but one form of the structure and method of the invention has been shown and described, other forms within the spirit and scope of the structure and method of this invention will now be apparent to those skilled in the art. Therefore, the embodiment shown in the drawings are to be considered as merely set forth for illustrative purposes, and are not intended to limit the scope of the invention herein described and shown.

Other modes of applying the principles of my invention may be employed instead of those explained, change being made as regards the means and the steps herein disclosed, provided those stated by any of the following claims or their equivalent be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A skiving machine device unit for skiving a paperboard container blank having inside and outside coating layers comprising, in combination:

a. said container blank having first and second outer edges defining its sides;

b. said inside and outside coating layers having surfaces of polyethylene;

c. a conveyor means to move said container blank through said skiving machine device unit with said first and second outer edges extending in the direction of movement;

d. a circular knife blade acting a predetermined distance from said first outer edge to form a cut edge the length of said container blank and substantially parallel with said first outer edge;

e. a skiving milling blade acting after said circular knife blade on said container blank to remove material between said first outer edge and said cut edge to form a skived strip using the said cut edge as a limit to the relative position of the milling blade;

f. said removed material includes said outside coating layer and a substantial amount of paperboard from said container blank;

g. said skived strip includes the said inside layer and a small layer of roughened paperboard as a skived area surface;

h. a heating unit to heat said skived area surface and the said outside layer adjacent said cut edge; and

i. a folding and sealing means to act on said skived strip to move said skived area surface about said cut edge and into sealing contact with the heated area of said outside layer to form a protective sealed edge.

2. A skiving machine device unit as claimed in claim **1**, including;

a. a backup roller to hold said container blank in contact with said circular knife blade;

b. a guide bar with a slot to receive said skiving milling blade and positioned below said container blank;

c. a holddown bar aligned with said guide bar and positioned above said container blank;

d. an adjustment means to secure said holddown bar in its desired position; and

e. a pressure roller to press said protective edge after said folding means has formed it.

3. A side means sealing machine for side seaming a skived edge container blank having inside and outside coating layers comprising, in combination:

a. said container blank having first and second outer edges defining its sides;

b. said inside and outside coating layers having surfaces of polyethylene;

c. a conveyor means to move said container blank through said machine with said outer edges extending in the direction of movement;

d. a skiving machine device unit as part of said machine;

e. said container blank having four panels and a side seam flap;

f. said side seam flap integral with the first panel and having its side edges as first outer edge;

g. a cutting knife to act on said side seam flap and form a cut edge the length of said container blank substantially parallel to and a predetermined distance from said first outer edge;

h. a milling cutter to remove a layer of material between said cut edge and said first outer edge after said cutting knife and using the said cut edge as a limit to the relative position of the milling blade;

i. a skived area surface formed with said inside coating layer of said container blank by said milling cutter;

j. a heating unit to heat said skived area surface and part of said side seam flap adjacent said cut edge;

k. a folding and sealing means to fold said skived area surface around said cut edge and into contact with the heated area of said side seam flap;

l. said side seam flap and said first panel to have said first panel's surface contact the inside surface of a second panel and said side seam flap inside surface contact the inside surface of the third panel; and

m. said fourth panel folded to have its inside surface contact the inside surface of said third panel and the outside surface of said side seam flap to form the side seam joint of the container blank.