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METHOD OF FORMING CONTAINER BLANKS

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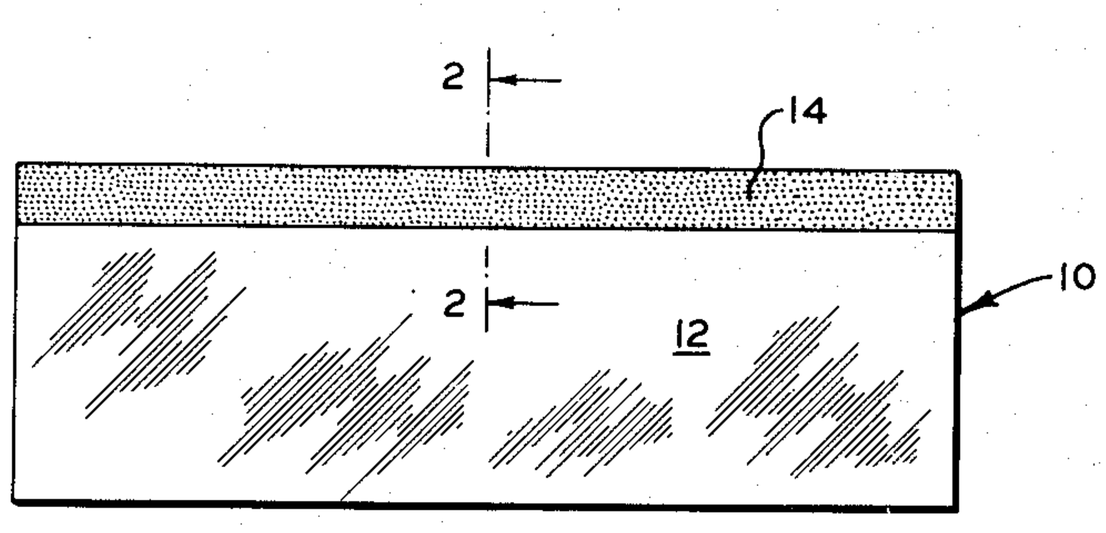


FIG. 1

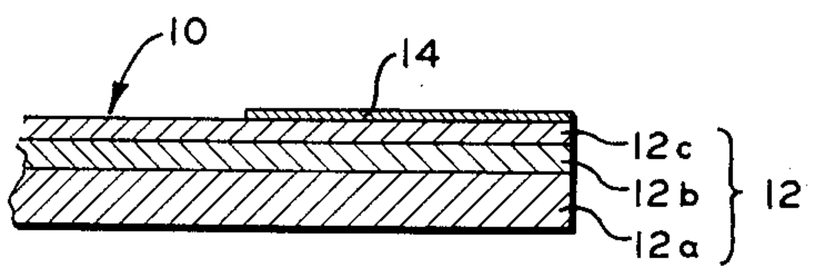


FIG. 2

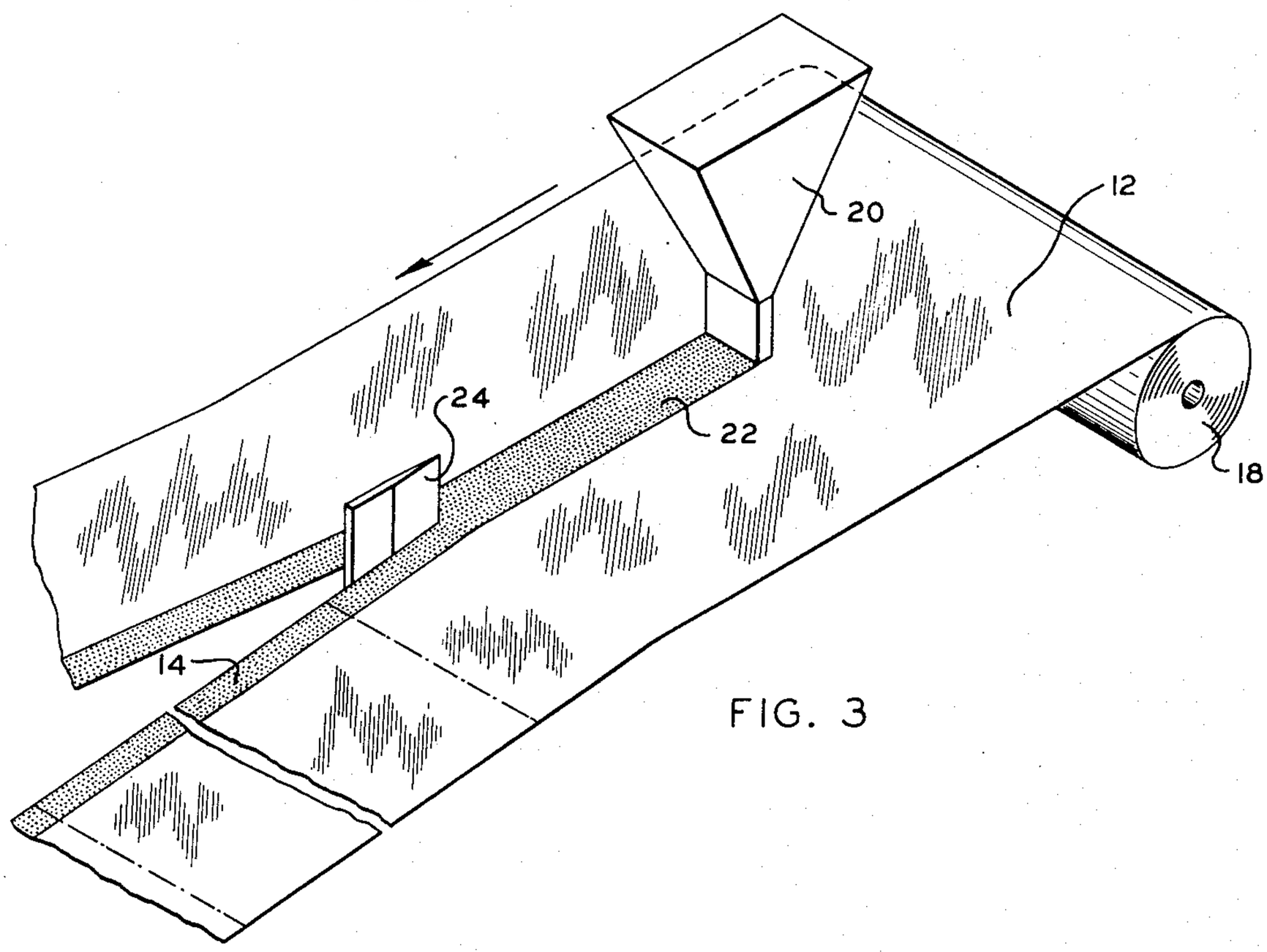


FIG. 3

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## METHOD OF FORMING CONTAINER BLANKS

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1 Claim. (Cl. 154—116)

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This invention relates to an improved process for forming container blanks.

One object of the present invention is the provision of an improved method of providing a continuous, thermoplastic sealing strip along one marginal edge of a container blank in such a way that said strip extends to the very edge of but not over the edge of the blank.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the process involving the several steps and the relation and the order of one or more of such steps with respect to each of the others which are exemplified in the following detailed disclosure, and the scope of the application of which will be indicated in the claim.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings wherein:

Figure 1 is a top plan view of a container blank formed in accordance with the present invention;

Fig. 2 is a section taken along line 2—2 of Fig. 1; and

Fig. 3 is a somewhat diagrammatic, perspective view showing the formation of the blank of Fig. 1 in accordance with the present invention.

Containers such as are shown in application Serial No. 74,791 of Edwin H. Land, filed February 5, 1949, entitled "Single Use, Disposable Container" embody a sealed passage whose walls are uniformly secured together throughout the length of the passage so that they will peel open over their entire length when the container is suitably squeezed.

A rectangular blank 10, from which said container is formed, is shown by way of example in Figs. 1 and 2 to illustrate one application of the process of the present invention. As shown, blank 10 comprises a sheet material 12 suitable for the container walls and along the marginal portions adjacent one long edge of said material there is applied a sealing strip 14. Sheet material 12 may be of multi-ply construction comprising a base 12*a*, for example of paper, an intermediate layer 12*b*, for example of metal foil, such as lead foil, and coating layer 12*c* formed of a suitable thermoplastic resin, such as polyvinyl butyral. Layer 12*c* can be adhered to itself by the application of heat and/or pressure. Sealing strip 14 is preferably ethyl cellulose or a mixture of ethyl cellulose and paraffin in which the paraffin does not exceed 50% by weight of the composition. The selection of the material of the sealing strip is

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made for the purpose of obtaining an affinity between the sealing strip and the inner coating 12*c* of sheet 12, which is less than the affinity of the material of said inner coating 12*c* for itself. To form the container, blank 10 is folded about its longitudinal center line and the marginal edge portions secured together.

It will be readily appreciated, therefore, that if a uniform seal is to be obtained by means of sealing strip 14, it is necessary that a continuous layer of said sealing strip exist throughout the entire area of the bond. Accordingly, it is extremely desirable that the sealing strip 14 be applied to the very edge of the blank 10. While this can be accomplished by known techniques, in such cases the material of the sealing strip 14 must be so generously applied adjacent the edge of the blank that it flows over the edge and onto the bottom (as viewed in Fig. 2) or outer surface of the blank 10.

The present invention comprehends a simple and convenient method for forming blanks 10 from a continuous sheet of material in such a way that the extension of sealing strip 14 to the very edge of the container blank is assured, and yet there is no flowing over of the material of the strip beyond the edge. As shown diagrammatically in Fig. 3, the process may be performed by providing a supply of sheet material 12 of a width twice the width of blank 10. Sheet material 12 is advanced past an applicator 20 which applies a film 22 of the material of strip 14 to said sheet, film 22 being just twice as wide as strip 14 of the finished blank. Film 22 is applied to the center of the sheet and at a suitable point in the further travel of the sheet, preferably after film 22 is dry, a cutting blade 24 severs the sheet into two strips of equal width, blade 24 being preferably located so that its cutting edge is perpendicular to the plane of sheet 12 as it moves past said cutting edge. This cutting operation provides two bands of sheet material 12 on opposite sides of the blade, each of which is as wide as blank 10 and each of which contains adjacent one edge thereof a strip of the sealing material of a width equal to strip 14. Thereafter each of the two bands may be cut transversely to provide individual rectangular blanks 10, or a plurality of connected containers may be formed, filled and sealed directly from said bands.

It will be observed that so long as film 22 is continuous, the foregoing operations must provide the bands formed thereby with strips 14 of adhesive material which extend to but not over the edge of said blanks.

Although in the foregoing description the op-

eration is performed with a sheet material 12 of twice the width of the blank, it is to be readily appreciated that by providing a second applicator 20 and two additional cutting blades 24 it may be possible to use a supply of the sheet material 12 which is four times the width of the sheet material shown in Fig. 3 and to obtain four longitudinal bands from each of which container blanks 10 may be cut.

Some greater multiple of the width of sheet of Fig. 3 could also be used as the supply material with one or more additional applicators and at least two additional cutting elements to form a greater number of bands from which the blanks may be cut.

There is thus provided a novel process for applying a continuous sealing strip to a container blank in such a way that the sealing strip extends to but not over the edge of the blank. It is extremely important in the manufacture of a container wherein a uniform unsealing of a sealed passage is to be had that the sealing strip for said passage be continuous and that it extend to the very edge of the blank. Otherwise, a seal would be obtained which included direct adhesions between the coatings underlying the sealing strip. In the above-described example wherein the coating under the sealing strip is a plastic, such as polyvinyl butyral, that has a greater affinity for itself than for the material of the sealing strip, a stronger seal would result wherever direct contact between said coatings occurs.

It is also undesirable to have the material of the sealing strip flow over the edge of the blank, although by so doing it becomes possible to insure the desired continuity of the strip up to the very edge of the blank. The overflow of material tends to foul up such mechanism as may operate on the container blank during the filling and forming of the container. Moreover, so much of the material as flows under the blank changes the thickness of the blank sufficiently to modify the pressure effect of the sealing members which form the heat and pressure seal, tending to produce nonuniformity of sealing.

Since certain changes may be made in the above process without departing from the scope of the invention herein involved, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.



What is claimed is:

In the process of forming a container blank from a piece of sheet material, the width between the longitudinal edges of said sheet material being twice the width between the longitudinal edges of said container blank, said piece of sheet material comprising a ply of metal foil the outer face of which is backed by a thin layer of paper and the inner face of which is coated with a thin layer of polyvinyl butyral, the steps of coating on said layer of polyvinyl butyral, along the longitudinal center line of said sheet material, a narrow strip of adhesive, said adhesive comprising ethyl cellulose, said layer of polyvinyl butyral and said strip of adhesive forming discrete laminations, cutting the sheet material and strip along said longitudinal center line to form at least a container blank having a first longitudinal edge constituting said longitudinal center line and a second longitudinal edge constituting one of said longitudinal edges of said sheet material, folding the container blank along a line substantially midway between said first longitudinal edge and second longitudinal edge of said container blank to provide two substantially planar container portions the layers of polyvinyl butyral of which are adjacent to each other, and securing said first longitudinal edge to said second longitudinal edge, whereby said first longitudinal edge and said second longitudinal edge of said container blank have the characteristic of peeling evenly throughout their length.

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