118-39 CROSS REFERENCE SEARCH ROO

Aug. 15, 1939. P. M. GILFILLAN 2,169,638

CONTAINER

Original Filed Jan. 5, 1938

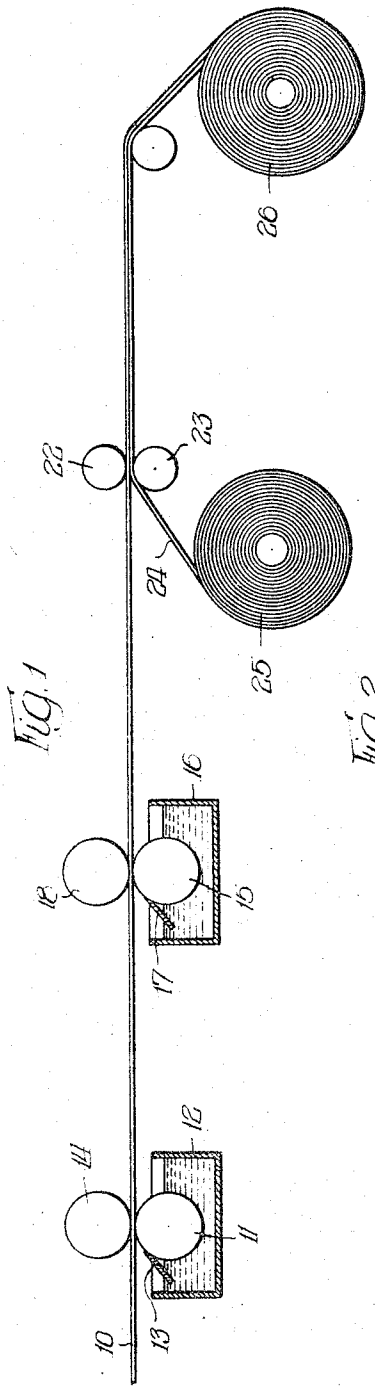


Fig. 1

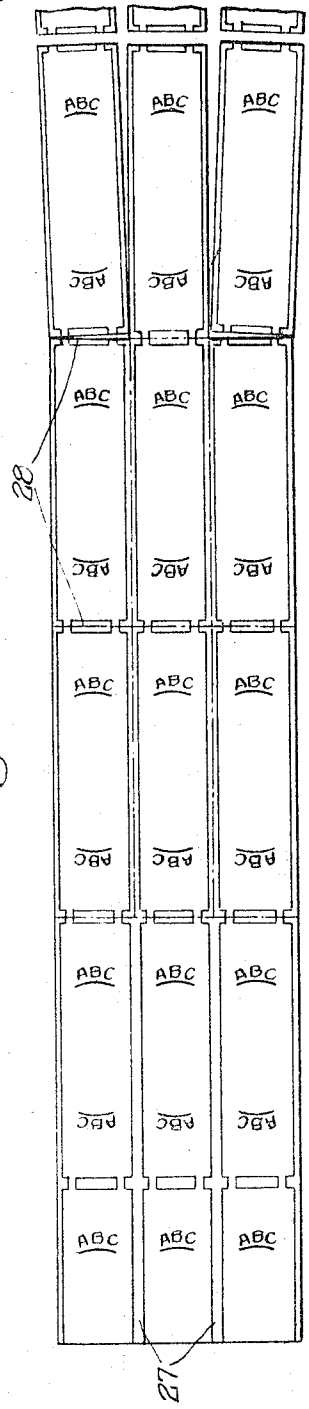


Fig. 2

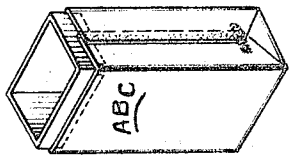


Fig. 4

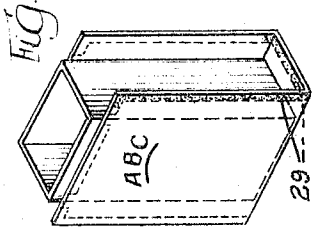


Fig. 3

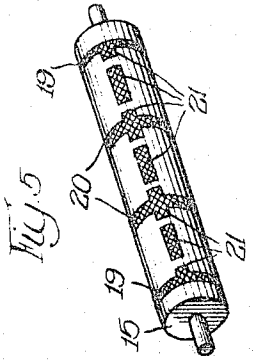


Fig. 5

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CONTAINER

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Original application January 5, 1938, Serial No. 183,417. Divided and this application July 16, 1938, Serial No. 219,631

3 Claims. (Cl. 229—61)

The present invention relates to the manufacture of containers composed of a material such as transparent cellulose sheeting or Cellophane and refers in particular to the production of a duplex material from which containers of this sort are produced.

A principal object of the invention is the provision of a duplex tube or container blanks consisting of two webs of Cellophane or the like secured together by narrow strips of an adhesive along the longitudinal edges thereof and provided with means for holding the ends of the webs in contiguous relation without the entrapment of air.

Another object of the invention is to provide a container blank formed of two adjacent sheets of material, at least one of which is transparent and printed in reverse with a design, the two sheets of material being secured together along their edge portions.

Still another object of the invention is to produce container material by printing a plurality of transversely spaced designs on a relatively wide web of cellulose sheeting, printing a longitudinal line of adhesive between said designs, printing spaced transverse lines of adhesive between certain of said designs, adhering said web to a second web and cutting the combined webs into container blanks with the longitudinal lines of adhesive forming the edges of the blanks and the spaced transverse lines of the adhesive forming the ends thereof.

This application is a division of my earlier application, Serial No. 183,417, filed January 5, 1938.

These and other objects will be observed from a consideration of the following description of a preferred embodiment of the invention and by reference to the accompanying drawing in which

Fig. 1 is a diagrammatic view showing the various steps in the process of manufacturing the combined or duplex sleeve;

Fig. 2 shows the appearance of the duplex webs before the webs are cut into container blanks;

Fig. 3 is a perspective view showing how the container lengths are wrapped about a hollow mandrel;

Fig. 4 is a view similar to Fig. 3 showing the completed container formed about the hollow mandrel; and

Fig. 5 is a perspective view showing an adhesive applicator of the type employed in producing the improved type of duplex material.

As shown in Fig. 1 the process involves the passage of a continuous web 10 of transparent cellulose material such as Cellophane or cellulose acetate through an intaglio printing machine in which the web initially is printed by one or more color units and provided with adhesive. The initial printing unit consists of an etched cylinder 11 which rotates in a color bath 12 provided with a volatile lacquer ink and a doctor blade 13 which removes the excess ink from the etched cylinder. A conventional impression cylinder 14 is positioned above the printing cylinder and the web passes between the two cylinders to receive the deposit of the quick-drying ink. Quick-drying intaglio inks of this sort are well known and there is no necessity for giving any particular formulas. Generally, the ink consists of low viscosity nitro cellulose, gums, resins, plasticizers and pigments contained in a suitable organic solvent of high volatility. It will be understood that any number of printing units of this sort may be utilized for providing the desired color or multicolor on the printed web. In a preferred embodiment of the invention the cylinder 11 is etched so as to provide recurring oppositely-positioned designs as shown in Fig. 2. That is, the design "ABC" is oppositely positioned in its adjacent occurrences. The purpose of this will be understood from the description occurring hereinafter.

The second intaglio unit shown in Fig. 1 consists of a printing cylinder 15, color bath 16, doctor blade 17, and impression roller 18. This color unit is of substantially the same construction as the first described color unit and the etched intaglio cylinder 15 is provided with an etched design as shown in Fig. 5. This etched design consists of relatively narrow and continuous side portions 19, relatively wide continuous circular portions 20, and spaced transverse sections 21. The liquid medium in the bath 16 is adhesive in character and may or may not be colored. In one satisfactory embodiment of the invention the liquid medium in the color bath 16 is a transparent relatively quick-drying adhesive of the type which forms a satisfactory adhesive between two webs of transparent cellulose sheeting.

Immediately after the application of the adhesive by the etched cylinder 15 the web 10 is brought in contact between compression rollers 22 and 23, with a second web 24 taken from roll 25, this second web being the interior web of the resulting duplex material. The rolls 22 and 23 cause the web 24 to adhere to the under side of web 10 and the combined webs then are wound into roll form as shown at 26.

Where it is desired that the interior of the container be visible, as usually is the case, the web 24 is composed of a transparent cellulose sheeting.

However, in some cases it will be found desirable to substitute a translucent or opaque material for the transparent web and the inner layer of the duplex material may be composed of foil, glassine or the like. Where an opaque material is used it is desirable to provide window openings through which the contents of the container may be observed, the openings preferably being in predetermined position with respect to the printed design on the exterior web.

The roll 26 is subjected to a slitting and cutting operation in which the composite web is slit along the center of the relatively wide longitudinally extending laminated lines 27 which are deposited by the etched portions 20 of the cylinder 15, it being understood that some of the glue line remains on each of the slit sections to provide three container-forming sections as shown in Fig. 2. Thereafter the blanks are cut transversely along the center of the broken transverse glue lines 28 which are deposited by the broken edge lines 21 of the cylinder 15.

This transverse cutting operation severs three container blanks from the slit sections. Each of these blanks consists of two layers of transparent cellulose sheeting laminated by continuous glue lines along their longitudinal edges and provided with broken or segmental glue lines along their transverse edges, the outer of the laminated sheets having on its under side printed designs reversely positioned at opposite ends of the blank.

The resulting blank is folded evenly about the end of a hollow mandrel as shown in Fig. 3 to form continuous front, bottom and side walls and with the printed designs appearing on opposite sides. Then, the edges of the blank extend beyond the hollow mandrel and the blank is provided with lines 29 of thermo-plastic adhesive which are applied to the edge portions of the outside transparent cellulose sheet. More particularly, marginal lines of thermoplastic adhesive are deposited on the outside of the sheet of transparent cellulose along the length of one side and the width of the bottom, the lines preferably being extended slightly beyond the bottom. The thermoplastic adhesive then is dried and the blank is folded about the hollow mandrel as shown in Fig. 4. Heat and pressure then are applied over the folded over portions to form a complete container. The edge portions of the blank extend somewhat beyond the hollow mandrel, and in the folding operation the bottom sections initially are folded adjacent the mandrel. Then, the glued side sections are folded against the mandrel. The unglued sections finally are folded in overlapped relation with respect to the thermoplastic lines of adhesive to complete the folding operation.

It will be noted that the resulting container has a continuous seal along the longitudinal edges of the composite web and that the outside of the outer section of the container is adhered to the inside of the inner section of the composite material. Also, the open ends of the finished container have spaced glue lines adhering to the inner and outer sections of the composite container.

The winding of the composite web into roll form has a beneficial effect upon the container which subsequently is produced from the webs. Apparently, the formation from a roll has an equalizing effect upon the shrinkage and stretch of the two materials which result in the formation of uniform containers.

The sectional transverse glue lines by which the upper edges of the inner and outer webs are secured together are advantageous from many standpoints. In the winding of the composite into the roll 26 fewer difficulties are encountered where the composite webs 10 and 24 are transversely secured together in spaced intervals by sectional glue lines than where no such transverse securements are provided. The sectional lines likewise are considerably more satisfactory than continuous transverse glue lines which cause wrinkles in the stock as it is wound into roll form and is apt to result in the entrapment of air within the interior of the composite sleeve or tube. The sectional transverse glue lines prevent changes of appearance in the composite container due to atmospheric changes and provides a substantially unitary edge for the open end of the container.

As before stated, the inner web may be composed of various materials. One of the webs may be plain Cellophane and the other web moisture-proof Cellophane. The number of combinations of material possible is almost unlimited. After formation of the container about the hollow mandrel the mandrel may be removed and the container filled and sealed or the container may be filled through the hollow mandrel. Many variations are possible in the method and container. The composition of the ink and adhesives may vary considerably as may the shape and size of the container blanks. The various changes which may be made without departing from the invention are intended to be included in the appended claims.

I claim:

1. A container, comprising two sheets of material adhered together along their longitudinal edges and partially along their transverse edges, said sheets being folded to form continuous side and bottom walls with the marginal portions thereof in overlapped relation, and said marginal portions being sealed together by a thermoplastic adhesive with the outer surface of the outer sheet being adhered to the inner surface of the inner sheet.

2. A container, comprising two sheets of material adhered together along their longitudinal edges and partially along their transverse edges, said sheets being folded to form continuous side and bottom walls with the marginal portions thereof in overlapped relation, and said marginal portions being sealed together by a thermoplastic adhesive with the outer surface of the outer sheet being adhered to the inner surface of the inner sheet, predetermined spaced adhesive on said transverse edges placed in a manner to allow any entrapped air to be expelled, thus resulting in a uniformly smooth surface.

3. A container blank, consisting of two layers of transparent cellulose sheeting laminated by continuous glue lines along their longitudinal edges and provided with broken or segmental glue lines along their transverse edges.

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