

[54] DECORATED OR PRINTED  
CONTAINERS

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[58] Field of Search .....229/43; 200/45, 40; 53/38, 53/39, 42, 329

[56]

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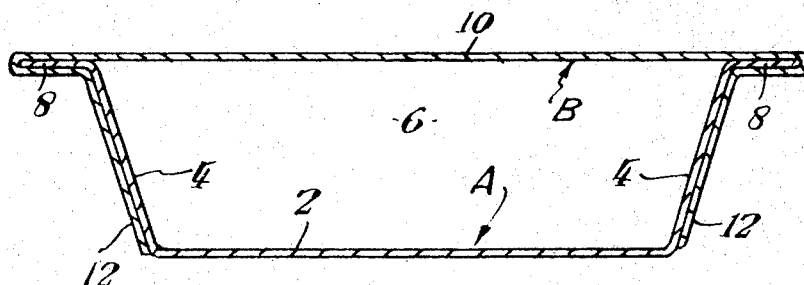
Attorney—Beale & Jones

[57]

ABSTRACT

A formed container body having a planar top with straight edges is decorated by applying a preprinted blank of sheet material to the top, around the edges and over the sides. Apparatus for applying the blank has a pattern or cam the same shape as the external profile of the side portions of the container. A cam follower operates a pressure member which brings the sheet material into face-to-face contact with the side portions of the container.

6 Claims, 4 Drawing Figures



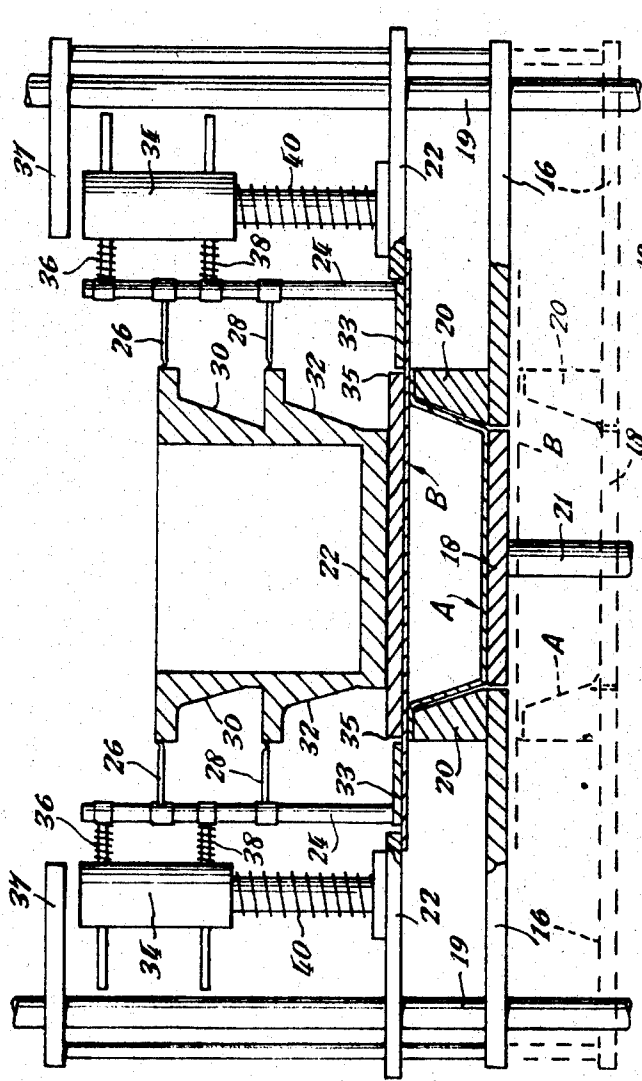


Fig. 1.

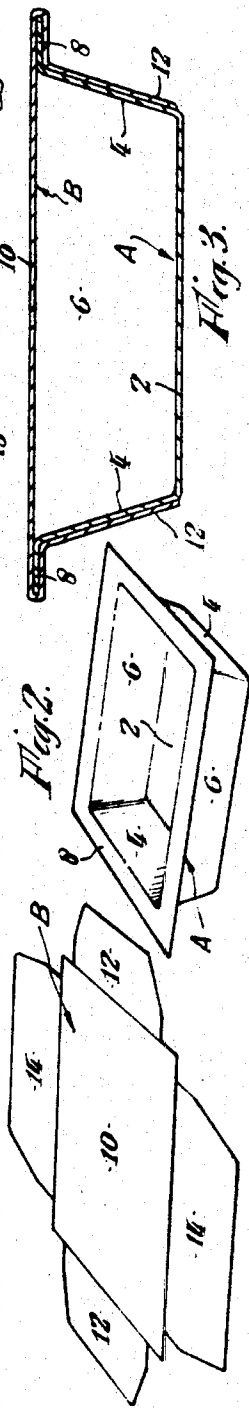


Fig. 2.

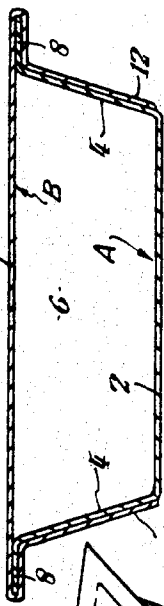


Fig. 3.

**DECORATED OR PRINTED CONTAINERS**

This invention relates to the production of decorated or printed containers. More particularly it relates to containers having formed bodies, for example made from thermoformed plastics material, injection moulded plastics material, cold formed plastics material, pressure formed aluminum foil, and moulded paper pulp.

It is difficult to produce high quality printing or decoration (herein generally referred to as decoration) on the surface of three-dimensional formed articles. Where the article is formed from sheet material, the sheet can be printed prior to forming, but this means that some distortion of the print must be accepted or else some method must be devised for protecting the printed areas against distortion during forming. It has been proposed to apply printed matter in a previously distorted form such that the forming operation will restore the print to its correct proportions. It is usually a difficult and expensive process, however. The alternative has been to print the container body after forming, but this again is a difficult process to carry out satisfactorily.

According to the present invention a container comprises a formed body having a planar top with at least two straight edge portions, and a preprinted blank of sheet material applied to the top, around said edge portions and over at least the side walls of the container.

The invention also includes a method of producing a decorated formed container body having a planar top with at least two straight edge portions, which comprises applying a preprinted blank of sheet material to the top, passing it around said edge portions and over at least the side walls of the container.

The invention further provides an apparatus for applying a preprinted blank of sheet material to the top and at least two sides of a container, which comprises a pattern or cam of the same external profile as the side portions of the container to which the blank is to be applied, a follower for traversing the cam or pattern, a pressure member for bringing the blank into face to face contact with said side portions of the container, and means for connecting the follower with the said pressure member so that it moves in unison with said follower. Preferably a separate pressure member is provided for each said side portion. Preferably also each pressure member is led by twin patterns each with its own follower working in unison to ensure that movement of the pressure member conforms to that of the follower exactly.

The top of the body preferably has more than two straight edge portions, and the blank is in the form of a main panel with a number of extension panels corresponding to the straight edge portions, the main panel covering the top of the body and the extension panels being turned around the straight edge portions and over the side walls. The blank may be entirely adhered to the container, or alternatively it may be adhered only to the side walls or bottom or both. The body may be in the form of an open-topped tray having an out-turned peripheral flange at the top of the side walls, the tray being closed by a layer of sheet material extending over the top and continuously peripherally sealed to the flange. A preprinted blank may form the layer of closure material.

One form of apparatus for carrying out the present invention is illustrated in the accompanying drawing wherein:

FIG. 1 is a perspective view of the sheet to be applied to the container,

FIG. 2 is a perspective view of the container to which the closure sheet of FIG. 1 is to be applied,

FIG. 3 is a section through the closed container,

FIG. 4 is a diagrammatic side elevation, partly in section, of the apparatus for applying the closure sheet.

Referring to the drawings and first to FIGS. 1 and 2, a thermoformed container A comprises a bottom 2, an upstanding wall consisting of two opposite side wall panels 4 and two other opposite side wall panels 6, and an outturned peripheral flange 8. The closure sheet B comprises a thermoplastic sheet blank having a lid-forming panel 10 with a first pair of opposite extension panels 12 and a second pair of opposite extension panels 14. The extension panels may be long enough to reach the bottom 2 or may extend for a distance under the bottom 2.

Referring to FIG. 4 the apparatus comprises a horizontal table 16 and an independently movable platform 18, the table and platform being arranged for vertical movement on guide pillars 19 and supporting pillars 21 respectively. The platform 18 is adapted to support bottom 2 of the open-topped container, and the table 16 has supporting four blocks 20 for engaging under the flange 8 at each side of the container.

Above the table 16 there is provided a stationary bed 22 upon which are mounted cams 30, 32 each having the same external profile as the container. Posts 24 carry followers 26 and 28 which are rigidly fixed thereto and the ends of which are adapted to contact and traverse the cams 30 and 32 respectively. The posts 24 pass through apertures 35 in the bed 22 and carry pressure plates 33 adapted to bear on the closure sheet as described later. The posts 24 are horizontally slidably mounted to support members 34 which are vertically movably mounted to the bed 22. Springs 36, 38 urge the posts 24 away from their respective support members 34 so that the followers 26, 28 contact the cams, and springs 40 urge the support members 34 upwards. An arm 37 extends horizontally over each support member 34, is vertically slidable on the pillars 19 and is arranged to move with the table 16. For simplicity only two of these cam follower arrangements are shown, on opposite sides of the container, but it is to be understood that there will be a similar arrangement on the other two sides.

In use, the container A is placed on the platform 18 between the supports 20 in the lowered position shown in broken lines in FIG. 4. The closure sheet B is then placed upon the open container so that the panel 10 lies on the open top of the container, having first prepared the sheet by rendering its undersurface tacky over the panels 12, 14 and the peripheral portion of the panel 10. The table 16 and platform 18 are raised until the closure sheet B is in contact with the underside of the bed 22 and pressure plates 33. The contact pressure is sufficient to seal the periphery of the panel 10 to the flange 8. The table 16 is now withdrawn taking with it the supports 20 and leaving the platform 18 bearing the container A and the closure sheet in the elevated position. As the table 16 is withdrawn it draws with it the

arms 37. After a short distance the arms engage the tops of the support members 34, driving them downwards together with the posts 24 and cam followers 26, 28 which are forced by the springs 36, 38 to bear on the cams 30 and 32 respectively. The pressure plates 33 move with the cam followers 26, 28 first pressing the panels 12, 14 under the flange 8 and into sealing contact with its undersurface, and then into sealing contact with the wall panels 4 and 6 respectively. It must be understood that there are four pressure plates 33, one for each extension panel arranged at right angles one to the next and the device is arranged so that all the pressure plates 33 act in unison on all the panels. Finally the platform 18 is withdrawn, leaving the container (closed as shown in FIG. 3), supported by fingers 33 prior to removal to a delivery point. A fresh container and closure sheet is positioned as before. During the upward movement of the table 16 and platform 18 the support members 34 rise upwards with the posts 24 held retracted until they reach the upper limit of their travel.

The sealing can be effected in alternative ways such as by heat sealing, suitable means being provided for heating. A heat sealing, pressure sensitive or other adhesive compositions can be applied to the undersurface of the closure sheet of the flange and walls of the container or both. The container need not be square but can have any number of side wall panels. The closure sheet need not have extension panels for each side wall panel, but can have such a panel on one side only if desired.

According to a modification the walls of the container are stepped, the bottom being of less area than the open top. Again instead of a container of rectangular cross section as described above it may be round or oval and the wall curved instead of planar. In such case it may be convenient to apply the wall covering area of sheet material by a horizontal movement of the pressure members, the wall covering area in this case being attached to the round or oval top only through a narrow neck.

In all the cases described above the out-turned flange may be omitted.

The applied layer may be in the form of preformed blanks or may be fed to the apparatus in the form of a web, the blanks being successively removed from the web as required.

The applied layer may be paper or other fibrous material, film, foil or a combination of these materials.

One of the advantages of the invention is that the closure or other applied sheet can be printed in the flat before application to the open-topped container or other

article. Another advantage is that decorative matter can be applied to a container whose walls are not straight in profile. The apparatus described and illustrated, is particularly suitable for use with containers having, profiled side walls.

As well as providing a good method of producing attractively decorated formed containers, preprinted sheet material applied over the top and sides of the container provides a ready visual check that the container has not been opened.

We claim:

1. A decorated or printed container comprising a moulded body having a planar top with at least two straight edge portions, and a preprinted blank of sheet material adhered to the moulded body, the blank comprising a main panel applied to the top and extension panels turned around said edge portions and over at least the side walls of the moulded body, with substantially no distortion of the sheet material.

2. A container according to claim 1 wherein the top of the body has more than two straight edge portions, and the blank is in the form of a main panel with a number of extension panels corresponding to the straight edge portions, the main panel covering the top of the body and the extension panels being turned around the straight edge portions and over the side walls.

3. A container according to claim 1 wherein the body is in the form of an open-topped molded tray having an out-turned peripheral flange at the top of the side walls, and the tray is closed by a layer of sheet material extending over the top and continuously peripherally sealed to the flange.

4. A container according to claim 3 wherein the preprinted blank forms the layer of closure material.

5. A method of producing a decorated or printed container body having a moulded body with a planar top having at least two straight edge portions, which comprises applying to the top of the body the main panel of a preprinted blank of sheet material comprising a main panel and extension panels, passing the extension panels around said edge portions and over at least the side walls of the container so that no distortion occurs in the sheet material, and adhering the extension panels to the container body.

6. A method according to claim 5 wherein the top of the body has more than two straight edge portions, and the blank is in the form of a main panel with a number of extension panels corresponding to the straight edge portions, the main panel covering the top of the body and the extension panels being turned around the straight edge portions and over the side walls.

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