Dec. 4, 1962 G. A. MOORE 3,066,844

CONTAINER CONSTRUCTION

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FIG. 1

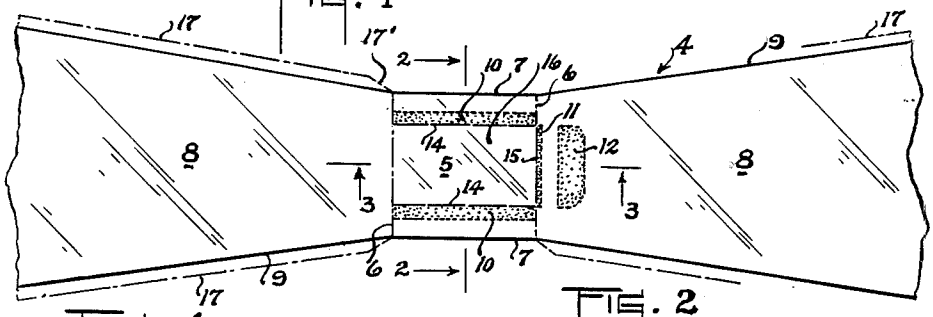


FIG. 2

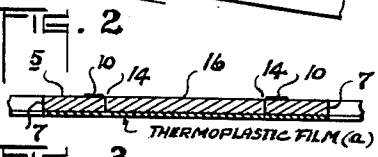


FIG. 3

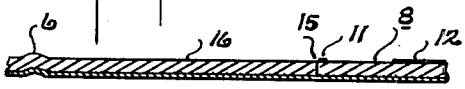


FIG. 4

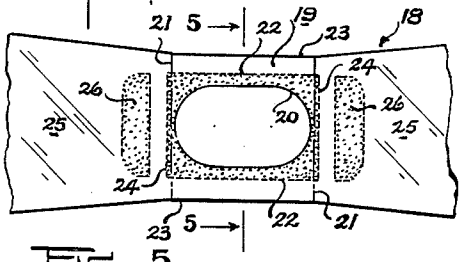


FIG. 5

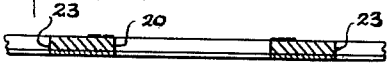
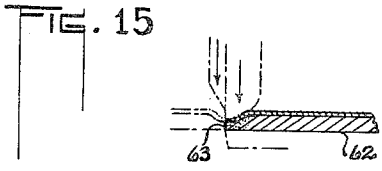


FIG. 6

FIG. 15



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FIG. 7

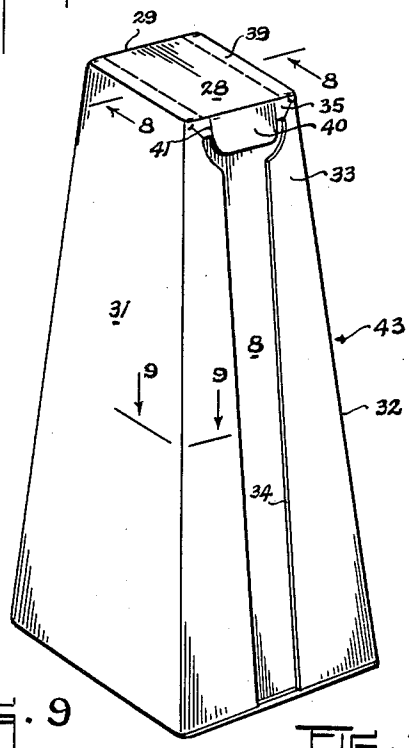


FIG. 11

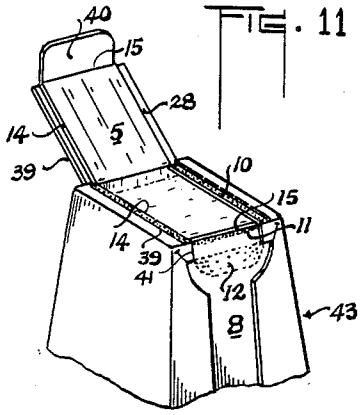


FIG. 12

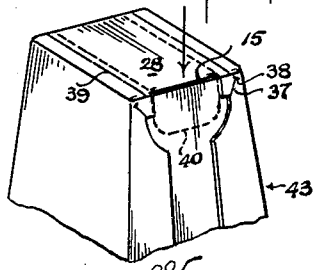


FIG. 9

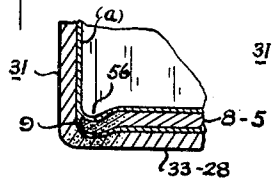


FIG. 10

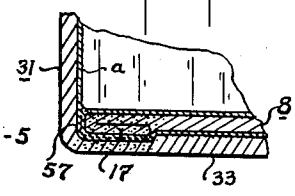


FIG. 8

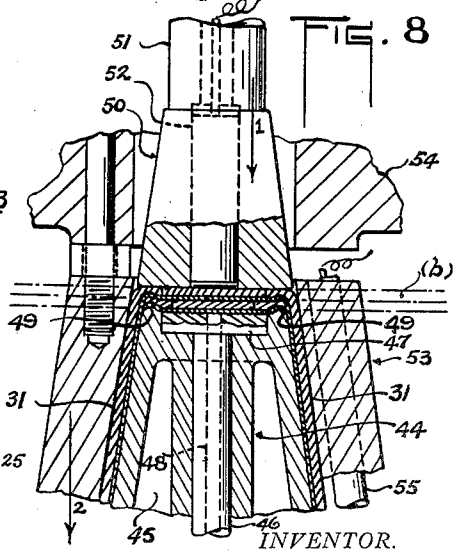


FIG. 13

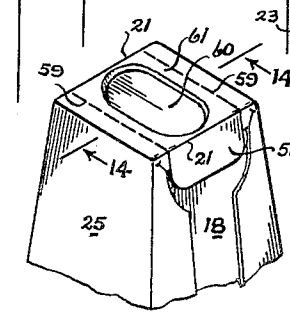
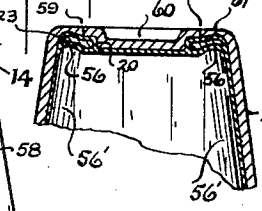


FIG. 14



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United States Patent Office

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Patented Dec. 4, 1962

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CONTAINER CONSTRUCTION

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Filed Sept. 26, 1958, Ser. No. 763,747
6 Claims. (Cl. 229—48)

This invention relates to containers of paper-board or other sheet material in combination with selective plastic materials, and more particularly to novel features of structure embodied into the construction of the container made effective to render its interior impervious including provisions to coordinate therein novel facilities for the efficient utility of the container in general.

Many difficulties have been experienced in the past in attempts to make containers of paper-board or other fibrous material that are required to hold liquids or greasy products and avoid the deleterious effects of interior wall surface absorbtion of the product especially with respect to the notorious wicking absorbtion by the particular raw cut edges of the fibrous material that are disposed within the interior of the container structure. This includes other difficulties that become prevalent in attempts to provide a satisfactory means for opening the container where it becomes necessary to separate sealed surfaces in a particular part of the structure and avoid the experience of tearing or splitting the paper material itself rather than effect a clean opening desired. In my copending U.S. patent application Serial No. 664,937, filed June 11, 1957, and now Patent No. 2,898,822, there is disclosed a novel method and apparatus for constructing a container having structural features intended to cope with the foregoing described difficulties.

The present invention, however, constitutes noteworthy improvements made on the invention of the prior application and one of the prime objects herein is to provide an improved container having its seam formed construction made in a manner to be impervious including all interior wall surfaces thereof to avoid any penetration therein of the product that may be filled into the container intended for commercial distribution which may include liquids or greasy commodities.

Another object of the invention is to provide in a container of fibrous material a novel means and method with which to effect an orderly and clean separation of sealed surfaces of the structure material in a particular wall section of the container in order to open it for dispensing purposes and avoid any rupture of the wall surfaces that are exposed by the opening including the adjacent wall portions.

A further object of the invention is to structurally associate the impervious and reinforcing effects of the seam formed construction to augment the strength of the particular wall section of the container constructed to be opened.

A still further object of the invention is to provide in a container blank of paper-board material with cut edge compacted treatment effected in such novel manner as to transfix the porosity of the cut edge to resist its otherwise subjectivity for wicking absorbtion.

Other objects and novel features of the invention will appear more fully hereinafter from the following detailed description when considered in connection with the accompanying drawings, wherein several embodiments of the invention are illustrated. It is to be expressly understood that these drawings are intended to serve for purposes of illustration only, and are not to be construed as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

In the drawings, wherein similar reference characters refer to similar parts throughout the several views;

FIG. 1 is a plan view of a blank with ends broken away and to be used in the construction of the container of the present invention;

FIG. 2 is a cross sectional view of the blank of FIG. 1 taken along line 2—2 showing the boundary cut sides of the wall section of the blank adapted to be released to effect an opening for the container;

FIG. 3 is another cross sectional view of the blank taken along line 3—3 showing the transversely cut end boundary of the wall section;

FIG. 4 is a plan view of a similar blank with ends broken away and showing a modification that may be emboded in a wall section thereof;

FIG. 5 is a cross section of the modified blank of FIG. 4 taken along line 5—5 to show the cut-out wall section thereof and the plastic surface composition of the blank material;

FIG. 6 is a fragmentary plan view showing the assembly relationship of the blank of FIG. 1 with another form of blank to be used in conjunction therewith to form the complete container;

FIG. 7 is a perspective view showing the form of the completed container as constructed of the assembled blanks shown in FIG. 6;

FIG. 8 is a fragmentary view mostly in cross section showing related apparatus parts used to form the complete container, the end wall and two opposed side walls thereof being shown in cross section as formed by the function of the apparatus;

FIG. 9 is a fragmentary view of one of the typical seam formed constructions shown in enlarged cross section and taken along the line 9—9 of the completed container shown in FIG. 7;

FIG. 10 is a fragmentary view of a modified seam formed construction shown in enlarged cross section and taken along a similar line as the line 9—9 in FIG. 7 with respect to the container so modified.

FIG. 11 is a fragmentary view in perspective of the container showing its end wall structure as may be sectionally opened for container dispensing purposes;

FIG. 12 is a similar fragmentary view in perspective of the container showing the opened wall section as may be restored into closed condition after dispensing a portion of the container contents;

FIG. 13 is a fragmentary view in perspective of a container shown with a modified end wall construction as effected by the use of the blank shown in FIG. 4 in constructing the container;

FIG. 14 is a fragmentary view in cross section of the modified container shown in FIG. 13 and taken along line 14—14 thereof; and

FIG. 15 is a fragmentary view in cross section of a wall portion of a container forming blank of paper-board material and showing its cut edge compacted with its adjacent wall surface compressed in contour.

The present invention is particularly directed to a means and method of constructing an improved container of paper-board material in combination with selective plastic materials, thermoplastic and non-thermoplastic, novel means having been provided for forming the container of two blanks cut from the prepared above material. Each of these blanks have been prepared with a conditioned wall portion adapted to co-ordinate with each other and constitute a dispensary openable and reclosing sectional part thereof to be self-embodied in the container during its initial construction. The novel manner provided for forming the structure of the container results in constructed impervious seam joined wall sections of the end wall embodied with the above dispensary section, and from which the side walls of the container are formed and connected together with like seams all of

which are rendered impervious and joined to be continuous with the impervious interior wall surfaces of the constructed container.

Accordingly, the container is formed of the blanks that are registered to the container forming apparatus in crossed relationship with the dispensary conditioned wall portions superimposed. A pre-scored boundary area of the superimposed wall portions is heated and compressed thereby forming the end wall part of the container that constitutes a base end closure from which the continuing side walls are formed and connected together completing the container in the continuous cycle of operation. The interior exposed surfaces of the end and side walls are covered with thermoplastic film material having been selected to be suitable for the duty requirements of the container and render these wall surfaces impervious to the product intended to be contained therein. In connecting the walls together two opposed side cut edges of the inner layer of the end wall are each brought into edge to face abutment upon each opposing interior surface of two adjacent side walls. The side cut longitudinal edges of the adjacent two side walls that are continued from the inner end wall layer are also brought into like abutments with the first mentioned two adjacent side walls. These cut edges are susceptible to wicking absorbtion, and in order to insure the imperviousness of the interior surfaces of the container construction in its entirety, means have been provided to highly concentrate pressure and heat upon these edges while forming their respective abutments upon adjacent side walls thereby materially reducing the thickness of the edges including its adjacent wall surface portion. Therefore, the compacted high density of each edge changes its susceptibility to wick-absorb and become negative in this respect. Due to the particular contour of the adjacent plastic covered surface from the edge, the abutments are tightened and the compressed edges of the seam formed abutments are encased in the plastic film that is compressed into meeting engagements with the adjacent film and heat-fused together along each corner of the connected walls of the completed container structure.

Referring to the drawings for further details of the present invention, FIG. 1 includes a particular blank 4 that may be used in the construction of the above container. The blank is provided with a central panel 5 separated by two parallel spaced score lines 6 and having two parallel spaced transversely disposed side cut edges 7, each of two lateral panel portions 8 having outwardly sloping side cut edges 9 extends outwardly from each of the opposed scored lines 6. The exterior surface side of the central panel 5 of the blank including one of the laterally extended panels 8 is provided with a pattern coated deposit of non-thermoplastic material such as a clear lacquer. The pattern coated areas consists of two parallel marginal stripes 10 extended transversely between the score lines 6 and each stripe being spaced inwardly of a side edge 7. A very thin stripe 11 of the deposit is disposed transversely of the stripes 10 and is extended outwardly of and along one of the score lines 6, the opposite ends of the thin stripe terminate in line with the inner border lines of the stripes 10. A further deposit portion 12 is spaced outwardly of the thin stripe and its opposite boundary ends being disposed in line with the ends of the stripe 11. The pattern coating described may be further extended to provide a protective overcoat upon the blank as illustrated by the dot and dash lines 13 representing the outer boundary lines of the area to be coated shown on the blank 4 in FIG. 6. The surface areas outwardly of the border lines 13 remain free of the non-thermoplastic coating for seam forming purposes during construction of the container. The central panel 5 in addition is provided with two substantially parallel cut lines 14, each line being cut along the inner border edge of each stripe deposit 10. Another cut line 15 extends transversely between the two lines 14 and along a portion of the score line 6 to form the inner boundary edge of the thin stripe deposit 11. These cut lines are shown in the cross sections of the blanks illustrated in FIGS. 2 and 3. Thus, the central panel 5 is provided with an openable panel portion 16 retained in flat plane by minute interruptions in the cut lines 14 and 15.

The blank 4 may be modified by providing marginal flange portions to be projected outwardly on the opposite sloping sides of each panel 8 and illustrated by the dot and dash lines 17 shown along the longitudinal sides of the panels. The purpose served by this modification will hereinafter be fully described. The particulars thus described for the central panel 5 of the blank 4 represents a novel preparation provided for the inner wall layer of the ultimate end wall construction of the container when formed.

A modification for particular purpose may be embodied in a similar blank 18 illustrated in FIGS. 4 and 5 wherein the central panel portion 19 is provided with a cut-out hole section 20 having its circular cut end edges spaced inwardly of the adjacent parallel spaced score lines 21. The exterior surface of the blank is provided with a pattern deposit of the non-thermoplastic coating material. This deposit consists of a rectangular shaped area that surrounds the edge of the hole 20 and having two parallel border lines 22 each spaced inwardly from each side cut edge 23 of the central panel. The transverse opposite border lines 24 of the deposit extends slightly outward of the score lines 21 and on the surface of the laterally extended panels 25 of the blank. Like coated deposits 26 are each spaced outwardly of each border line 24.

A primary blank is used in conjunction with the previously described blank 4 or 18, and for purposes of illustration the blank 4 is shown in FIG. 6 crossed by the primary blank 27. This blank is provided with a central panel 28 with boundary score lines that are arranged in transversely opposite pairs 29 and 30 respectively. Panel portions 31 each extend laterally outward of each score line 30 and having outwardly sloping boundary score lines 32. Each panel 31 is provided with a pair of opposed longitudinal flanges 33 having outwardly sloped side edge portions 34. Each side flange is longitudinally continuous thereby providing flange portions 35 and 36 projected outwardly of each score line 29 of the central panel. An angular cut notch having mitre edges 37 and a blunt apex 38 is provided in the flange and disposed centrally at each terminal end of the pair of score lines 30. The central panel 28 is provided with a pair of perforated cut lines 39 spaced inwardly of the score lines 30. The flange 35 is interrupted by an outwardly projected tab portion 40 having cut sides 41 terminated at the score line 29. Two longitudinally opposed cut lines 42 transversely connect the adjacent terminal ends of the pair of perforated lines 39 and tab cut edges 41. The interior surface of the primary blank is provided with thermoplastic film material, the exterior surface may be overall coated with the non-thermoplastic film material used on the companion blank 4.

As illustrated in FIG. 6 showing the registered assembly of blanks, it is to be noted that the prepared exterior surface of the central panel portion of the blank 4 is covered by the interior thermoplastic surface of the central panel portion of the blank 27. The container is constructed by first compressing and heating the super-imposed central panel walls 5 and 28, and while kept under this compression the laterally extended panels 8 are folded downwardly and inwardly from two corner edges of the end forming panel portion 5, followed by folding the laterally extended panels 31 downwardly and inwardly while articulating their flange portions 33, 35, 36 and 40 that are brought into overlapping relationship upon the corresponding exterior surface portions of the advance folded panels 8. Heat and pressure that is imposed upon these flange portions effects the seam forming relation-

ships more fully to be described hereinafter. The resultant container 43 is shown in FIG. 7.

The feature improvements constituted by the present invention is further illustrated in FIGS. 8 and 9. In FIG. 8 there is illustrated fragments of the basic parts shown in apparatus formation that is used to construct the container 43 shown in FIG. 7. One of the major parts consists of a male form member 44 having four side walls and an end wall with surfaces provided conforming in shape coincident with the container to be formed thereupon such as the container 43. The form is provided with an interior core or open space 45 through which to circulate water or other coolant fluid in order to control the temperature of the heat that is conducted into the form 44 during the operation of the apparatus. An ejector shaft 46 is provided through the center of the form and having a head plate 47, its top surface forming a major portion of the end wall of the form member, the shaft and head having a vent hole 48. The end wall surface adjacent two opposed corner edges of the male form are contoured in bead-like rib formations 49 and they project slightly outward from the flat base surface of the wall and dimensionally defined as being projected about one-half of the thickness of the single blank material. For example, if the thickness of blank material is .020 inch then the pair of contoured bead-like surface ribs may be projected outwardly of the flat surface approximately .008 to .010 inch.

A first functional part in the apparatus is a platen head 50 that is mounted upon the end of a shaft 51 adapted to slide by actuated moving means. The head is provided with heating means such as an electrical cartridge element 52 that may be inserted or otherwise attached thereto and be wire connected through a temperature control thermostat and to a source of electrical current supply. The heated platen head upon being actuated by its shaft is moved into surface to surface contact with the superposed wall portion 28 of the previously registered blanks (*b*) placed upon the end wall of the male form. Strong pressure actuated upon the top end of the shaft 51 causes the bottom surface of the head 50 to heat and compress the wall layers 5 and 28 together, the wall opposing ribs 49 on the end wall of the male form further causes the side cut edges 7 of the inner wall portion 5 to be materially reduced by concentrated pressure from its original thickness including a portion of its adjacent wall surface. This reduction in wall thickness offsets the densely compacted edge upwardly of its parent interior wall surface and the exterior surface of the outer wall portion 28 pressed by the head 50 remains in uniform surface plane. The heat and pressure thus imposed activates the thermoplastic film material on the compressed wall layers 5 and 28 thereby firmly bonding these layers together but excluding the surface areas that are defined by the pattern coated portions thereof having the non-thermoplastic material disposed on the intermediate surface of the compressed wall layers. The thermoplastic film material overlying the areas of the non-thermoplastic material are incompatible to each other with respect to bonding union, however, the heat and pressure imposed upon these areas causes the meeting surfaces to adhere together by surface tension adhesion maintained in this condition by the other firmly bonded related surface areas of the wall layers. The cut lines 14 and 15 in the inner wall layer 5 are sealed by the heat activated thermoplastic film on the interior surface of the wall layers 5 and 28. The perforated severable lines 39 in the outer wall layer 28 are offset with respect to the cut lines 14 in the inner layer and are therefore sealed by the inner wall 5. Working in conjunction with the male form and platen head is a female form member 53 hereinafter referred to as a female die and having four side walls with inner surfaces of the wall cavity shaped to be coincident with the exterior of the container to be formed. The die 53 may be supported on a cross head carriage 54 that is adapted to be

reciprocated in stroke movements and dwell periods by actuating mechanical means. The inner wall surfaces of the die are flatly parallel with the side wall surfaces of the male form when engaged thereupon. The die 53 is provided with electrical heating elements 55 that may be inserted into holes drilled into the walls of the die, each element being located adjacent each of the four corner ends of the side walls thereof. These heater elements are to be wire connected through a suitable temperature control thermostat to the electrical current supply line. Following the operational function of the platen head 50, the female die 53 is caused by actuated means to move downwardly upon the outwardly extended panels of the firmly clamped central portions of the blanks (*b*). The mouth of the die is arranged with a pair of opposed projected flexible prongs (not shown) that first engage the surface portions of the panels 8 of the blank 4 and bending these two panels downwardly each from a corner edge 6 of its clamped wall section and directed inwardly upon the coincident side wall surfaces of the male form 44 and followed by the bending of the panels 31 of the blank 27 from the corner edges 30 and upon the adjacent side wall surfaces of the male form by the directing action of the inner wall surfaces of the moving female die. During this action, the flanges 33 including their intermediate portions 35, 36 and 40, are articulated along their respective corner edges 32 and 29 in this order by the co-action of the interior wall surfaces of the die thereby placing the plastic face of the bent flanges upon the corresponding exterior surface portions of the first bent panels 8. The surfaces of the two opposed side walls of the male form upon which are placed the bent wall panels 8, are provided with continued bead-like contoured projections adjacent the longitudinal corner edges in the same manner as hereinbefore described for the bead-like or rib surface contours 49 disposed on the top surface of the end wall portion of the same form. These side wall corner projected ribs are contacted by the inner face of the bent panels 8 and the flanges 33 of the transversely disposed panels 31 overlap the corresponding surfaces of these panels 8 thus forming two ply thicknesses of material over these contoured surface portions of the male form. As the heated female die nears the end of its downward movement the wedge-like taper of the inner surfaces of the side walls opposed by the like taper walls of the male form begins to heat iron the exterior surfaces of the die articulated flanges, and at the end of the movement of the considerable pressure exerted upon these flanges highly compresses the two-play material upon these opposing contoured side walls of the male form. The material sections of the structure opposed by the contoured surface portions of the male form are compressed excessively compared with the other sections of the pressed material such as shown in FIG. 9.

Referring to FIG. 9, the resultant seam construction is shown enlarged and in cross section representing the typical structure as effected on two opposed corner edges of the end wall construction of the container including the four longitudinal corner edges of the extended side walls of the completely constructed container. It is to be noted that the exterior surface 33 or 28 is disposed in flat plane in contrast with the interior surface 8 or 5 wherein a grooved recess 56 has been formed. It will be further noted that the thickness of the two-ply wall material at the recess has been reduced as compared with the thickness of the adjacent wall material. Hence, the density of the highly-compressed edge 9 section of material is greatly increased in order to decrease the porosity of the paper-board part of the material and thereby arrest the normal tendency of the edge 9 to wick-absorb moisture, liquids or greases. Further protection against this tendency has been provided whereby the pressure imposed at these particular contour surfaces of the recessed sections 56 squeezes the thermo-

plastic film (*a*) outwardly at the same time that the edge 9 is densely compressed into abutment against the film lining of the opposing wall 31. The heat and pressure imposed that forms the recessed wall sections causes the meeting portions of film material (*a*) at the corners to heat-fuse together and thus encase the compressed edges 9 and 7 within the film material. Due to the fact that these corner regions of the structure have been highly compressed and thereby strongly reinforced, the normal tendency of the joined plastic film to break loose due to wall stress and distortion effects in handling the container is arrested and insures the continued stability of the impervious interior surface structure of the container.

For containers of large capacity or heavy duty requirements, the seam structure may be further reinforced and the container materially strengthened by a modification shown in FIG. 10 wherein the longitudinal side edges of the two opposed side wall panels 8 may be provided with the longitudinal marginal flanges 17 extended as illustrated by the dot and dash lines 17 on the blank shown in FIG. 1. By pre-breaking these marginal flanges to take an angle directed away from the interior face of its parent panel while bending these panels into contact with the coincident walls of the male form, the co-acting effects of the female die cavity in articulating the flanges 33 entrains the flange margins 17 to articulate also along their respective longitudinal corner edges and be folded into a hemmed loop of 180 degrees overlapped by the 90 degrees folded flanges 33 as shown in FIG. 10. The thermoplastic film on the interior surface of the panel 8 extended on the folded flange 17 is brought into face to face contact with the film (*a*) on the interior surface of the adjacent side wall 31 including a portion of the film on its folded flange 33 thereby providing two thicknesses of the film material disposed at the wall abutted lop turned corner edge 57 and between the surfaces of the flange 17 and the corresponding portion of the flange 33. The actuated movement of the female die in articulating the flanges also heats and densely compresses these flanges whereby the thickness of the three layers of material formed of the looped flange and flange 33 are compacted into a combined thickness that is substantially equal to the compressed thickness of the extended two layers of material constituted by the wall panel 8 and flanges 33 illustrated in FIG. 10. The thermoplastic film is activated and heat-fused together thereby encasing the flange 17 to provide a strongly reinforced and impervious seam formed construction in the container. It will be noted that the flanges 17 are provided with inwardly tapered end edges 17 terminated at the score line 6 as shown in FIG. 1. Therefore the end wall structure that is formed with the side walls of the modified container illustrated in part by FIG. 10 is substantially of the same construction that is illustrated in FIGS. 8 and 9 or FIG. 14.

The container 43 shown in FIG. 7 may be filled with its intended product through the large open bottom end which may be closed in any suitable manner but the closure thus formed must be effective to be liquid-tight and impervious. FIG. 11 illustrates how the container may be opened and dispensing purposes. The tab 40 initially sealed in-part upon the side wall 8 and between the pattern deposits 11 and 12, may be grasped with the fingers and pulled upwardly to sever the attachment seal followed by severing the openable panel portion along the perforated lines 39 thus releasing both the inner and outer panel portions partially from their respective end wall layers 5 and 28. It is to be particularly noted that the thin stripe 11 adjacent the cut edge 15 is the key feature that prevents tearing the plastic film and/or the board material upon opening the container. This stripe prevents the thermoplastic film from sealing fast to the wall panel 8 adjacent to the cut line 15. This also applies to the effectiveness of the stripe deposits 10 in affording a clean surface release of the openable wall section. This release is augmented by the exceptionally strong side edge seam construction of the remaining ledges of the formed wall portions 5 and 28 when the container is opened as shown. FIG. 12 illustrates how the container may be efficiently closed after dispensing a portion of its contents. To accomplish this, the tab 40 is inserted inwardly of the exposed edge 15. The stepped pair of ledges having the surface coating 10 forms a seat for the reclosure and the friction fit of the side edges of the inserted tab 40 retains the reclosure in flat wall condition as shown in FIG. 12.

A further modification of the end wall construction of the container is shown in FIGS. 13 and 14 when making a container using the modified blank 18 shown in FIGS. 4 and 5. The central panel portion of the primary blank similar to that of the blank 27 shown in FIG. 6 may be slightly altered to provide the tab 58 as shown in FIG. 13 having side cut edges continued from the pair of perforated severable lines 59. The tab 58 may be provided on each face portion of each of the side walls 18 if desired. The modification is featured by providing an openable stopper construction having a wall portion that is integral with two opposed side walls, the stopper portion being formed in the end wall outer layer of material during the construction of the container. The function of the stopper formed wall portion is made operable by the function of the pattern deposit of non-thermoplastic material on areas of the wall surface illustrated in FIG. 4. Upon registering the blanks upon the end wall of male form 44 and the bottom surface of the platen head 50 having been altered to provide a projected bottom surface portion that is shaped to conform with the wall recess 60 in the end of the container shown in FIG. 13, the compressive effects of the platen head upon the end wall layers of material will offset a portion 60 of the top layer of the end wall 61 into the hole 20 in the inner wall layer 19 as shown in FIG. 14. Otherwise the construction of the end wall of the container is the same as shown on the end of the male form in FIG. 8. Were it not for the surface coating of non-thermoplastic material surrounding the edge 20 of the hole, a pull on the end tab 58 necessary to remove the stopper section from the hole would result in a shearing effect that would split the material itself into a stratified layer that would peal off and thus fail to open the container as desired. Therefore, to the contrary, a pull on the tab 58 will release the stopper wall portion by severing it along the perforated cut lines 59, the release being effected by the function of the intermediately disposed pattern coating that is incompatible with the overlapping surface portions of the thermoplastic film whereby an orderly separation of sealed surfaces surrounding the edge 20 of the hole takes place and avoids mutilating these surfaces. Hence, the stopper may be easily withdrawn from the hole as the lines 59 are severed to open the container for dispensing purposes. The container is adapted to hold liquids and the stopper may be completely removed to drink the contents directly from the container if desired. The hole 20 is shaped to pour liquids over the corner edge 21, the surface coating extended over the corner edge 21 adjacent the edge of the open hole is non-absorbent to the liquid passing over this coated area. This coated portion 24 is extended only slightly beyond the corner edge 21 to insure an orderly release of the stopper wall portion from the pouring corner edge. After dispensing from this container the stopper may be replaced into the hole. As shown in FIG. 14, the depth of the offset recess 60 need not be much in excess of one thickness of wall material in order to be effective as above described.

Within the scope of the teaching of the present invention there is shown in FIG. 15 a fragmentary portion 62 of a container blank cut out of paper-board sheet material that may be provided with a coating of plastic film. The particular cut edge 63 which may include other cut

edges of the blank that are to be ultimately disposed within the interior of the particular container to be formed of the blank, is densely compressed and cut in the manner shown to compact the porosity of the fibrous material at the edge and make it of such solid density that it will resist penetration of substance placed into the container. When making the blank of sheet material having short fibres and/or ground wood composition, the edge may be waxed as commonly practiced and then be compacted in the same manner in order to augment the efficiency of the cut edge's resistance to absorbent penetration of imposed substances.

While several modifications of the invention have been illustrated and described with salient details, it will be understood, by those skilled in the art, that various changes may be made therein without departing from the scope and spirit of the invention. Reference will therefore be had to the appended claims for a definition of the limits of the invention.

What is claimed is:

1. In a container formed of paperboard coated on its inner surface with a film of thermoplastic material, said container including primary side walls formed by panels having side cut edges which abut the thermoplastic coated faces of secondary side walls adjacent to said primary side walls, each of said side cut edges and a narrow margin adjacent thereto being densely compressed in thickness in order to reduce the porosity of said paperboard at said cut edges, said compressed margins being expanded laterally beyond their pre-compressed dimensions, said lateral expansion causing said side cut edges to be squeezed tightly against the thermoplastic coated faces of said secondary side walls, whereby the densely compacted cut edges will not be subject to wick absorption of the product within the container.

2. A container made of foldable paperboard coated on its inner surface with a film of thermoplastic material, said container having four side walls arranged in opposed pairs, one of said pairs of side walls having side cut edges abutting the inner faces of the other pair, each of said side cut edges and a narrow margin adjacent thereto being densely compressed in thickness to reduce the porosity of the paperboard material at said edges, said side cut edges being squeezed tightly against the thermoplastic coated faces of said other pair of side walls, and the thermoplastic film coating on said narrow margins being blended under heat and pressure with the thermoplastic film on the adjacent walls of said other pair in order to povide a film-encased seam between each of said compressed side edges and the side wall against which it is squeezed.

3. A container made of foldable paper sheet material coated on its inner surface with a film of thermoplastic material and having four side walls, each of two opposed side walls of said container having side cut edges abutting the thermoplastic coated faces of the other two side walls, said other side walls each having marginal flanges along either edge thereof, said flanges overlying the outer faces of said two opposed side walls, each of said side cut edges and a narrow margin adjacent thereto and the portion of the flange overlying said cut edges and narrow margins being densely compressed to a thickness less than the initial two ply thickness of said margin and overlying flange, each of said side cut edges being squeezed tightly into the corner formed by the adjacent side wall and its flange, and the thermoplastic film coating on said narrow margins being blended under heat and pressure with the thermoplastic film on the adjacent other side wall in order to provide a film-encased seam between each of said compressed side edges and the side wall against which it is squeezed.

4. A container made of foldable paperboard coated on its inner surface with a film of thermoplastic material, said container having four side walls and an end closure wall, each of two opposed side walls of said container having side cut edges disposed in edge-to-face abutment with the side walls adjacent to it, said end wall also having side cut edges disposed in edge-to-face abutment with said adjacent side walls, each of said cut edges and a narrow margin adjacent thereto being densely compressed in thickness to reduce the porosity of the paperboard material at said edges, said side cut edges being squeezed tightly against the thermoplastic coated faces of said adjacent side walls, and the thermoplastic film coating on each of said narrow margins being blended under heat and pressure with the thermoplastic film on its respective adjacent side wall in order to provide a film-encased seam between each of said compressed side edges and the adjacent side wall against which it is squeezed.

5. A container made of foldable paperboard coated on its inner surfac with a film of thermoplastic matrial, said container having four side walls arranged in opposed pairs and a two-ply end wall, the inner ply of said end wall and one of said opposed pairs of side walls forming one integral U-shaped element, and the outer ply of said end wall and the other of said pairs of side walls forming another integral U-shaped element, said one U-shaped element having two side cut edges each extending continuously along said one pair of side walls and said inner ply of said end wall, said side cut edges abutting the inner faces of said other pair of side walls, each of said side cut edges and a continuous narrow margin adjacent thereto being densely compressed in thickness to reduce the porosity of the paperboard material at said edges, said side cut edges being squeezed tightly against the thermoplastic coated faces of said other pair of side walls, and the thermoplastic film coating on said narrow margins being blended under heat and pressure with the thermoplastic film on the adjacent walls of said other pair in order to provide a continuous film-encased seam between each of said continuous compressed side cut edges and the side wall against which it is squeezed.

6. A container according to the claim 5 wherein said inner ply of said end wall is provided with an openable section defined by two parallel spaced-apart cuts and a third cut extending transverse to said two parallel cuts between the ends of the latter, each of said parallel cuts being spaced inwardly of the corresponding cut side edge of said inner ply, the outer surface of said inner ply having a pattern coating of non-thermoplastic material extending along said parallel cuts and outwardly thereof, said outer ply of said end wall being provided with a pair of perforated lines, each of said perforated lines being parallel to and spaced outwardly from its corresponding cut in said inner ply, a flange extending outwardly from said outer ply between said perforated lines, the width of said flange being no greater than the distance between said parallel cuts in said inner ply, the section of said inner ply lying between said parallel cuts being bonded to the inner surface of said outer ply whereby when the section of said outer ply between said perforated lines is lifted by tearing along said perforated lines said section of said inner ply lying between said parallel cuts will be lifted along with it.

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