Aug. 11, 1959 G. A. MOORE 2,898,822

METHOD AND APPARATUS FOR MAKING CONTAINER FOR LIQUID PRODUCTS

Filed June 11, 1957 2 Sheets-Sheet 1

FIG. 1

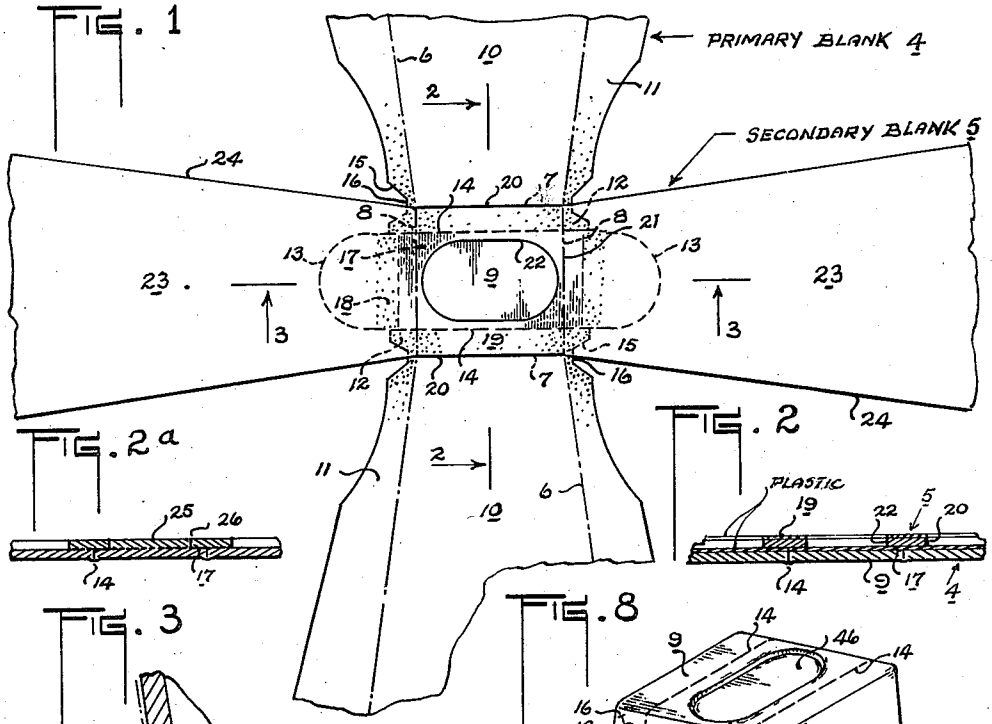


FIG. 2a

FIG. 2

FIG. 3

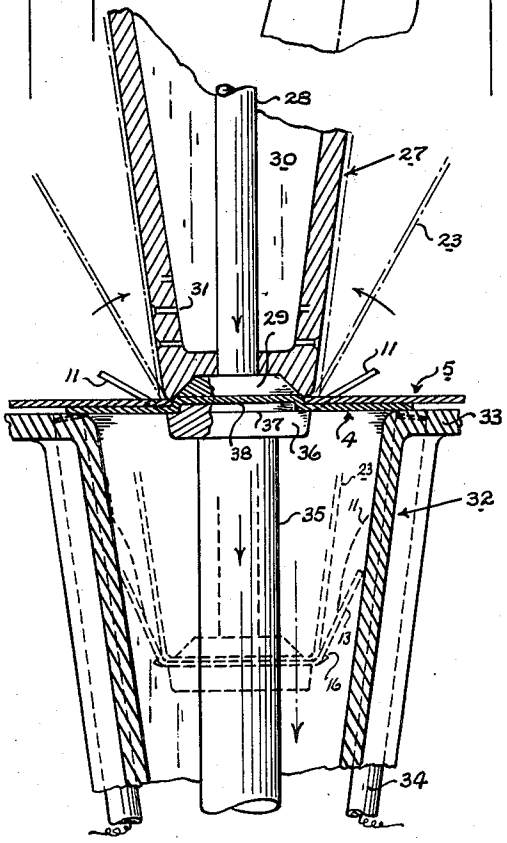


FIG. 8

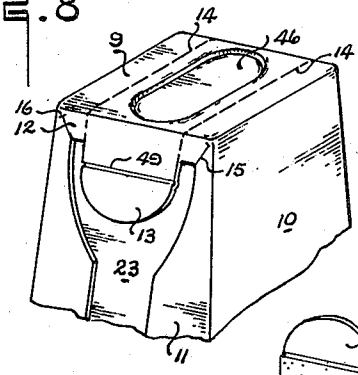
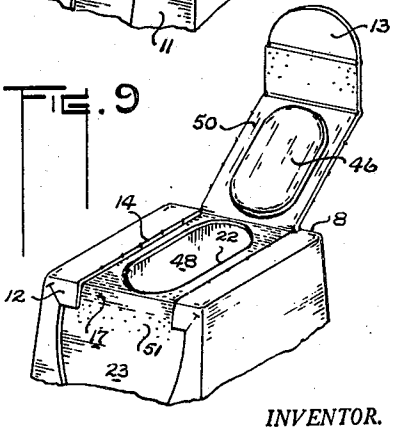


FIG. 9



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Aug. 11, 1959 G. A. MOORE 2,898,822

METHOD AND APPARATUS FOR MAKING CONTAINER FOR LIQUID PRODUCTS

Filed June 11, 1957 2 Sheets-Sheet 2

FIG. 5

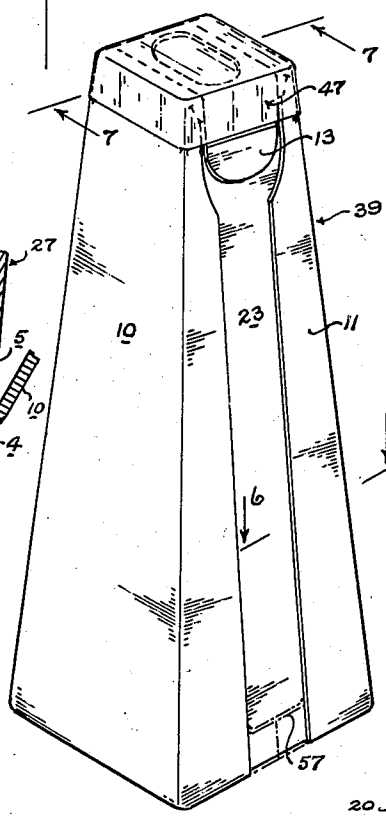


FIG. 4

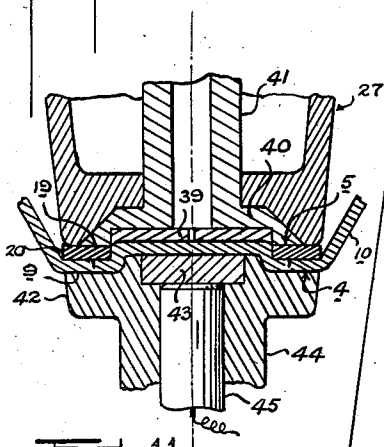


FIG. 11

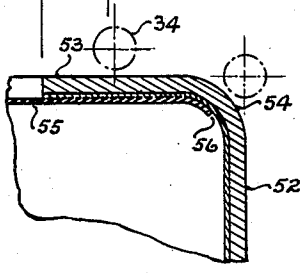


FIG. 7

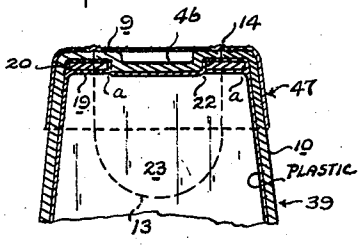


FIG. 10

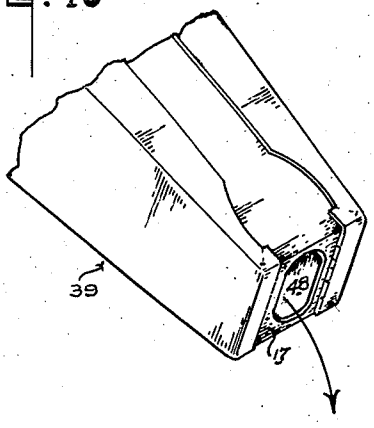
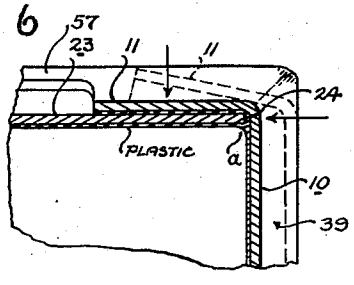


FIG. 6



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United States Patent Office

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METHOD AND APPARATUS FOR MAKING CONTAINER FOR LIQUID PRODUCTS

George Arlington Moore, New York, N.Y.

Application June 11, 1957, Serial No. 664,937

10 Claims. (Cl. 93—51)

This invention relates to containers of paper-board or other sheet material and in combination with plastic materials, and more particularly to novel means and methods for constructing a liquid-tight and sterile structure of the container basically embodied with a strictly sanitary dispensing end closure having novel features for efficient utility which facilitates easy opening thereof without imposing deleterious effects to clean and sterile surfaces exposed by the opening of the container for dispensing purpose. The opposite open end of the container being adapted for rapid filling without back pressure, after which the end may be closed in hermetic seam forming relationship.

It is generally known that conventional paper containers in use are limited to a relatively short duration of time for distribution of a limited variety of particular products that may be packed therein to reach the consumer before deteriorating. A majority of such containers are treated with paraffin wax in order to cover up the vulnerable weaknesses of the wall structure and closures thereof. This fact is especially recognized by those skilled in the art. On the other hand, glass containers such as bottles are breakable, cumbersome and costly to use, besides, difficult to dispose of after use.

While several of my prior issued patents disclose various improvements made in the structure and service utility of paper containers, for example the Patent No. 2,750,097 issued June 12, 1956, the present invention, however, constitutes new and novel improvements made on these prior inventions and one of the prime objects herein is to provide an efficient container structure that may be made liquid-tight and by a novel method which includes the forming of a flat basic dispensing closure built into the base area of a flat blank assembly prior to the forming of the body side walls of the container from corner edges of the basic closure.

Another object of the invention is to provide in the base wall portion of the above container selective surface areas that are coated with a non-thermoplastic material conjunctively related with adjacent surface areas that are coated with thermoplastic material, the major portion of the areas defining the wall surface boundary of the above dispensing closure structure including its severable wall portion.

Yet another object of the invention is to provide a pair of cut blanks treated with thermoplastic material and assembled together in cruciform relationship adapted to be formed by a novel method to complete the structure of the container from the boundary corner edges of the prior formed base dispensing closure part of the container structure in one cycle of operation.

A further object of the invention is to provide the above container with tapered side walls square or rectangular shape in horizontal cross section, the tapering walls being effective to form the flat dispensing closure end with a relatively small surface area compared with a large surface area at the opposite end closure of the container when formed, and which closure constitutes the

base bottom end of the completed container thus making the small end adapted for drinking the intended liquid content of the container directly from the mouth of a novel orifice when opened for dispensing purposes.

Another object of the invention is to provide the interior wall surfaces of the container with plastic covering material that is bacteriostatic treated to render the container sterile, and further including a separate sterile plastic bonnet to be disposed over the exterior surface portions of the dispensing closure part of the container structure thus insuring clean and sanitary wall surfaces.

Still another object of the invention is to form the interior structure of the container totally free of exposed raw cut edges of fibrous material to prevent wall absorption from contents intended for distribution in the container.

A further object of the invention is to provide a novel and simple method for forming the above container of the cruciform blank upon registry with a male and female die adapted with novel central apparatus parts to clamp and emboss the central surface area of the blank and then projecting it while clamped into the female die to form and complete the wall structure and seams of the container by the co-acting effects of the simple dies and clamping members.

Other objects and novel features of the invention will appear more fully hereinafter from the following details of description when considered in connection with the accompanying drawings, wherein several embodiments of the invention are illustrated. It is to be expressly understood that the drawings are utilized for purposes of illustration only, and are not to be taken 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 partial plan view of a cruciform blank adapted to be formed into a container of the above type;

Fig. 2 is a sectional view of the blank shown in Fig. 1 taken along line 2—2 showing the initial step of constructing the above dispensing closure for the container to be formed of the blank;

Fig. 2*a* is a sectional view of the blank taken along a line similar to 2—2 showing a modification in preparation for constructing a dispensing closure with modified features;

Fig. 3 is a sectional view of die apparatus adapted for forming the container and showing a sectional portion of the blank of Fig. 1 in initial registered position with the die apparatus parts;

Fig. 4 is an enlarged partial sectional view of the die apparatus taken transversely through the center of Fig. 3 and showing a modification to apparatus parts;

Fig. 5 is a view in full perspective showing the completed container;

Fig. 6 is an enlarged partial sectional plan view of a body wall portion of the container shown in Fig. 5 taken along line 6—6 thereof;

Fig. 7 is a partial sectional view of the container taken along line 7—7 in Fig. 5 showing a cross section of the sealed dispensing closure and its plastic bonnet;

Fig. 8 is a partial perspective view of the container showing the sealed dispensing closure end thereof;

Fig. 9 is a partial perspective view of the container showing the dispensing closure of Fig. 8 after being opened;

Fig. 10 is a partial perspective view of the container shown in tilted position with its dispensing orifice open and fully exposed for dispensing purposes, and

Fig. 11 is an enlarged partial sectional plan view showing a modification that may be made to the body structure of the container.

The instant invention is particularly directed to a means and method for forming an improved container having an efficient dispensing end closure that may be initially built into the central base wall portion of a pair of flat blanks that are assembled together in cruciform relationship, and in the cycle of operation complete the construction of the dispensing closure constituting the initial step of forming the complete structure of the container of the blank assembly in co-acting die apparatus consisting of male and female die members arranged with embodied shaft platen heads that oppose each other to compressively emboss the flat walls of the closure prior to the forming and securing of the body walls of the container and in one co-acting cycle operation of the above simple dies and central reciprocal apparatus parts.

To this end, two elongated cut blanks of selective combinations of sheet material are prepared with protective plastically treated surfaces, the seam forming surface areas being thermoplastic. The central base area of each blank is arranged with selectively separated wall areas constituting a structural base for the construction of a dispensing closure when superimposing the blanks together in cruciform relationship, the central base areas thereof being adhered together. Lateral wall portions extending outwardly from the boundary sides of the base surface areas constituting side walls when forming the container. Two opposed lateral wall portions including the base area thereof having opposed marginal foldable flanges selectively cut and pre-bent. The blank assembly is registered into apparatus consiting of a male and female die having body wall surfaces shaped coincident with the shape of side walls designed for the body of the container. The female die member is embodied with heating means, and associated with a central reciprocal shaft having a platen head. The male die member having a similar central reciprocal shaft with a platen head, both heads being adapted to clamp and emboss the registered blank upon opposite surface sides of its central base area and thereby initially complete the end wall formation of the dispensing closure. While clamped, the blank assembly is drawn inwardly of the female die whereby, the co-acting effects of the die apparatus members upon the blank forms the side walls extending transversely from the corner edges of the prior formed end closure wall portions. The marginal flanges of side walls are heated and wedge drawn tightly in seam forming relationship to secure the associated walls of the formed structure together and thereby complete the wall structure of the container. The greatly enlarged area of the open end of the formed structure being adapted for rapid filling of the container without back pressure. The body side walls at the open end being adapted for support of capping means or alternatively may be provided with folding end elements to constitute a hermetic closure to seal the container and thereby form the bottom base end thereof. The dispensing closure end being adapted to be opened with fingers without imposing deleterious effects to the wall surfaces that are adjacent the edge of the exposed orifice.

Referring more particularly to Fig. 1, the present invention is illustrated therein as including a container blank assembly consisting of a primary blank member 4 and a superimposing secondary blank member 5. The primary blank is preferably cut of foldable fibrous sheet material and the interior surface coated or otherwise treated with a film of plastic material having thermoplastic properties. The plastic material being originally formulated with bacteriostatic treatment. The blank may be scored with tapering lines 6 and squared lines in pairs 7 and 8 defining a central wall panel 9 and two laterally opposed outwardly extended wall panels 10. Each wall panel 10 is provided with a pair of outwardly flaring marginal flange portions 11 extended outwardly of the longitudinal score lines 6, and the central wall panel 9 is provided with like opposed flange portions cut to define portions 12 and 13 extended outwardly of each score line 8. The wall portion 13 is further defined by a pair of substantially parallel perforated cut lines 14, each line being spaced inwardly of the score line 7 of the blank member 4 and extending parallel with lines 7 across the panel 9 including the flange portions 12, and terminating at their opposite ends into outwardly projected finger tab wall portions 13. The continuous marginal flange portions 11 and 12 are partially separated by a cut notch having mitred edges 15 sloping inwardly toward each other to a blunt fillet edge 16 of each notch. The blunt edge 16 of each of the four notches is substantially central of the terminal end of the transversely disposed score lines 7. In inner surface portion of the central wall panel 9 or alternatively, the coincident exterior surface of the panel 19 defined between the perforated lines 14 may be pattern coated with a non-thermoplastic material 17 indicated by broken hatched lines, and the material being originally formulated with bacteriostatic treatment. The pattern plastic coating 17 is preferably extended outwardly of the pair of scored lines 8 to terminate inwardly of a thermoplastic sealable border surface area 18 of the tab portions 13.

The secondary blank 5 of the assembly may be cut of the same treated material used for the companion blank 4 or alternatively, cut from other sheet material such as aluminum, plastic or of any composition form of material desired that may serve particular purpose. The blank 5 is provided with a coincident central wall panel 19 defined with two opposed parallel cut edges 20 in line with the underlying scored lines 7 of the blank member 4, and a pair of opposing transversely disposed scored lines 21 in line with the underlying scored lines 8 of the wall panel 9. The wall panel 19 is provided with a cut open hole section constituting an orifice having its corner edge 22 spaced inwardly of the parallel perforated lines 14 and the transversely scored lines 21. Each of two laterally opposed wall panels 23 extend outwardly of each scored line 21 and having a pair of opposed outwardly sloping longitudinal corner edges 24 coincident for alignment with the sloping scored lines 6 of wall panels 10 when forming the container. The inner surface of the wall panel 9 of the blank 4 and the exterior surface of the wall panel 19 of the blank 5 may be initially adhered together within the boundary lines that define the panels. At least the flange portions 11 of the wall panels 10 are preferably pre-bent to be freely articulated along their respective scored lines 6 to facilitate the subsequent operation of forming the blank assembly into the container. Fig. 2 is intended to clarify the defined relationship of the superimposed adhered wall portions of the blank assembly. It is to be noted that the open section of the wall panel 19 is covered on one side thereof by the wall panel 9, and the pair of perforated lines 14 are sealed against the adhered surface portions of the panel 19.

The dispensing closure may be modified in structure as illustrated in Fig. 2*a* whereby the open section of the wall panel 19 may be altered by leaving the hole cut material 25 in its original place thereby constituting a plug having a boundary cut outline 26 adapted to release the plug from the hole by its surface attachment to the severable underlying wall panel portion when being severed on the perforated lines 14 thereof.

The blank assembly of Fig. 1 is now defined as being prepared to be formed into the container of the present invention. To this end, the central wall panel portions of the blank assembly is registered into die apparatus illustrated in Fig. 3 and being shown in cross section coincident with the line 3—3 across the blank shown in Fig. 1. The apparatus consists of a male die member 27 having tapered exterior side wall surfaces shaped coincident with the defined wall panel areas of the blank. The die may be mounted for support (not shown) in any suitable manner desired and be attached to reciprocal mechanical means for cycle motion such as a cam actuated arm or

lever. A shaft or rod 28 having a platen head 29 is supported by suitable bearings provided within the male die and the shaft being disposed through the center of the male die and attached to similar reciprocal mechanical means for independent cycle motion. The platen head is seated home in the small nose end of the male die and the face portions thereof being substantially flat and coplanar in surface relationship. The interior of the male die is cored to provide an enclosed vacuum chamber space 30 suitably connected with a source of vacuum. A series of holes 31 are drilled through the side walls into the chamber to provide air suction means for a purpose hereinafter to be described. The female die member 32 is provided with interior side wall surfaces shaped dimensionally coincident with the side walls of the male member, and the large end of the tapered side walls terminating into a transversely disposed rim portion 33 having a flat top surface. The female die may be made in sectional parts if so desired to be mechanically actuated to open and close in cycle movement. The die 32 is provided with heating means which may consist of Calrod electrical heating elements 34 that are inserted into rifle drilled holes longitudinally disposed through the body of the die and adjacent each converging corner end of the interior surfaces of the inner tapering walls thereof. The die may be supported in fixed stationary position in any suitable manner desired and in concentric central alignment with the male die. A shaft 35 having a platen head 36 is suitably mounted in bearings disposed outwardly of the small open end of the female die, and the shaft attached to reciprocal mechanical means to suitably move the platen head longitudinally through the center of the cavity space of the female die. The platen head 36 is provided with a stepped end surface that forms an outer shoulder portion 37 and a transversely projected end surface portion 38 of reduced boundary area. The side wall surfaces of the platen head are tapered to extend coincident with the tapered body side walls of the male die member.

The container is formed of the blank assembly as follows: the central adhered wall panel portions of the blank assembly is registered in boundary alignment with the surfaces of the nose of the male die and the platen heads 29 and 36, which heads are initially separated in openly spaced gap relationship in order to register the blank in properly aligned position after which, the platen heads are moved by the reciprocal means in face opposing relationship to clamp the registered section of the blank between their respective face surfaces. The flat surface end of the male die including the seated platen head 29 is moved by its reciprocal means firmly opposed by the platen head 36 thereby offsetting a portion of the wall 9 of the blank snugly embossing it into the open hole section of the wall portion 19 and completing the end wall formation of the dispensing closure part of the ultimate container. The pressure opposed platen heads together with the compressed wall portion of the blank are moved by the reciprocal actuation of the male die into the female die. The wall panels 23 of the secondary blank member 5 are first folded in advanced acceleration upwardly and inwardly from corner edges of the clamped wall portion and by apparatus means (not shown), the panels 23 being registered upon the corresponding surfaces of two opposing side wall surfaces of the male die and temporarily fastened thereupon in registered position by the effects of the air suction acting through the series of holes 31. This accelerated action is desirable to take place early in the cycle movement of the male die into the female die as shown in dotted lines, and in order to prevent disorderly alignment of the corner edges 24 of the wall panels 23 during subsequent formation with the score lines 6 of wall panels 10, which panels are folded upwardly and inwardly from their respective corner edges of the clamped wall portion thereof by the guiding walls of the female die. The pre-bent flange portions 11 of panel walls 10 are folded at right angles to overlap the corresponding exterior surface portions of the pre-registered side wall panels 23. The flange portions 12 and 13 are folded upwardly and inwardly upon the corresponding exterior surface portions of the wall panels 23 thereby closing the notches of the flanges and bringing the edges 15 thereof into abutment to form mitred joints and the blunt base of each joint being puckered and compressed to seal the corner ends of the end wall structure. The action of the male die inserted into the female die draws and swedges the flange portions into overlapping relationship with the corresponding surface portions of the pre-registered wall panels thereby compressing the edges 24 of the side walls 23 into tightly sealed abutment upon the corresponding interior plastic surface of corresponding marginal portions of the wall panels 10 adjacent the longitudinal corner ends. The heat exchange effected by the heating elements 34 through the wall portions of the female die and conducted into the plastic interior surface of the swedged flange portions, almost instantly activates the plastic face portions of the engaging wall surfaces and firmly welds them together in exceptionally tight seam forming relationship including the edge to surface abutments thereof. It is to be noted that the side wall surfaces of the male and female dies are flat, smooth and tapered. Therefore, the swedging pressure exerted by the co-action of the engaging dies plus the heat exchange, irons while drawing the engaging surfaces of the wall portions together under compression thus, the seams formed on the container structure are efficiently welded together in such manner that the interior wall surface structure of the formed container is completely void of exposed raw cut edges of fibrous material including the interior surface of the pre-formed dispensing closure end thereof. Upon retraction of the male die and platen heads 29 and 36 the completed container may be ejected from the dies. The container 39 formed by the simple die apparatus defined, is illustrated in Fig. 5 with the exception of the embodiment shown therein of a plastic bonnet applied upon a portion of the container that is included for illustration in the view.

In Fig. 4 there is illustrated a partial and enlarged detail sectional view of the nose of the male die 27 and the clamped section of the blank disposed between the opposing surfaces of a pair of modified platen heads. The sectional view being shown in transverse direction of the view of the die apparatus shown in Fig. 3, and illustrating an interchangeable morticed plate insert 39 suitably fastened in the face of the modified platen head 40 having a hollow shaft portion 41 disposed through the center of the male die 27. The modified opposing platen head 42 having a similar morticed plate insert 43 and a shaft portion 44 disposed in central alignment with the shaft 41 and extended through the cavity of the female die 32 shown in Fig. 4. The shaft 44 is provided with a central hole in which an electrical heating element 45 may be inserted for purpose of heating the platen head of the shaft to facilitate the blank embossing operation. The inserted plates 39 and 43 may be provided with engraved surface portions with which to impress code informing symbols or any desired trademark into the surface of the end wall closure while constructing the container.

Referring now to Figs. 6 and 7 it will be noted that the cruciform blank and die apparatus has formed the container of substantially square cross section, but not being limited to such shape. In Fig. 6 the edge 24 of wall panel 23 is shown embedded in the heat activated plastic wall lining material. This body wall structural relationship formed of the wall portions 10, 11, 23 and edge 24 is the positive result of being so formed by the co-acting effects of the male, female die and platen head operation upon the wall portions of the blank and, further exemplified by the fact that the wall panels 10 and the transversely disposed panels 23 with the en-

gaging flanges **11** are finally swedged between the tapering wall surfaces of the male and female die. Hence, the end of the stroke movement of the male die within the female member may easily be adjusted to impose any amount of pressure desired in pounds per square inch upon the above mentioned surface areas of the body wall portions. The edge to surface sealed abutments are therefore formed by the positive ironing pressure exerted inwardly simultaneously in transverse directions upon the surfaces of engaging wall portions as shown by the dotted lines and arrows in Fig. 6. The heat imposed by the heating elements in the female die while ironing the wall surface portions of the container structure, heat fuses the thermoplastic material to vulcanize together at all of the converging corner edges designated (*a*) of the formed structure of the container as shown in Figs. 6 and 7. The preferred location of the heating elements **34** with respect to the wall portions that are sealed together is indicated by the pair of circular lines shown in Fig. 11, which illustration hereinafter will be described. In the portion of the structure illustrated in Fig. 7, it will be noted that the edges and surfaces of the end wall portion **19** of side walls **23** are substantially embedded in the plastic lining material. The inner plastic surface of the recessed wall portion **46** of the wall **9** is merged with the inner plastic surface of the wall **19**, which in turn is merged with the inner plastic surface of the walls **10**. Marginal exterior surface portions of the wall **19** between the perforated lines **14** and cut edge **22** is coated with a non-thermoplastic material, and the thermoplastic opposing material on the inner surface of the wall **9** seals these surface engaging wall portions together by surface tension adhesion. The perforated cut lines **14** in the wall **9** are sealed against the exterior surface of the wall **19** and the engaging surface portions of the walls **9** and **19** extending outwardly of the perforated lines are permanently sealed together. The recessed wall portion **46** of the wall **9** seals the open cut section of the inner wall **19**. Thus there is formed a liquid tight closure on the top end of the container that may be covered with a plastic cap or bonnet **47** to keep the exterior surfaces clean and sanitary during the handling period of the container to reach the ultimate consumer of its intended contents.

The sealed liquid tight closure in perspective view is illustrated in Fig. 8. It is to be noted that the exterior surfaces of the flange portions **11**, **12** and **13** are coplanar in surface relationship including the mitred joints **15** thereof that are constructed upon the exterior surface of the two opposing side wall panels **23**. The flange portions **12** are substantially separated from the central flange portion **13** by the defined pair of cut lines **14** whereby the flange and its integral whole wall portion extending across the wall panel **9** is adapted to be partially or completely severed to cleanly open the container as illustrated in Fig. 9 and likewise cleanly expose the orifice **48** for container dispensing purposes. The tab end portion of the flange **13** may be provided with a scored hinge line **49** thus making the non-adhered tab easy to grasp and pull with the fingers to shear the wall portion along the cut lines **14**. The pull tab being adapted to simultaneously remove the plastic bonnet **47**. The surface portions **17** that are exposed by the opening is covered with the previously defined non-thermoplastic film material which protects the exterior surface of the dependent wall from being torn or otherwise injured including the thermoplastic material **50** upon the interior of the previously sealed surface portion of the severed wall. The stopper formed wall **13** may be opened to the hinge forming corner edge **8** should it be desired to reclose the container during use. In this respect, the male side of the recessed wall portion **46** may again be used to insert and plug into the orifice **48** and be retained therein by the friction imposed on the corner edge **22** of the orifice. Alternatively, the wall portion **13** may be sheared and released by either of the oppositely disposed end tabs and be completely removed from the container if desired. The border indicated at **51** of the opened closure defines the wall surface areas front and back on the walls **23** that were firmly sealed initially with the corresponding surface portions of the severable wall portions. The oppositely sealed border portions co-acting with the stopper plug **46** to augment the previously mentioned sealed section of the closure effected by surface tension adhesion. As described hereinbefore, the surface portions **17** including the inner surfaces of the container are rendered sterile by the bacteriostatic treatment of the original formulation of the plastic materials utilized on the walls of the container structure. The bacteriostatic treatment may be defined as being of an active ingredient such as diisobutyl phenoxyethoxy ethyl dimethyl benzyl ammonium chloride, known by the trade name "corobex." Such prior treatment of the plastic on the walls of the container makes its interior positively germ-proof including the surface portions **17** of the opened dispensing closure which may be contacted with human lips when drinking contents directly from the opened mouth of the container if desired as shown by the opened container illustrated in Fig. 10. The sanitary feature **17** is augmented by the sanitary protection of the adjacent wall portions afforded by the original plastic bonnet **47** disposed over the sealed dispensing closure end of the container.

The body side walls of the container formed by the hereinbefore described die apparatus may be modified as illustrated in Fig. 11 wherein the primary blank may be made of relatively heavy gauge paper-board sheet material and the secondary blank made of relatively thin gauge aluminum sheet. The primary wall **52** and its integral flange portion **53** is shaped with a radial corner **54** which is initiated from a slight radial corner edge from the dispensing closure end and gradually increasing in radius along the corner of the tapering side wall reaching its maximum radius at the base open end of the container body. The secondary blank wall portion **55** of aluminum or of any other sheet material desired, is sealed to the corresponding inner surface portion of the primary wall flange **53**. The longitudinal cut edge **56** of the wall portion **55** is aligned substantially along the longitudinal center line of the variable radial corner edge of the converging side walls of the structure. Hence, the edge **56** can not be abutted as shown by the edge **24** in Fig. 6. However, the edge portion **56** is impervious, but if not, it may be compressed into the interior surface of the wall portion **52** adjacent the edge if the gauge thickness is relatively thin. The primary purpose of the modification shown in Fig. 11 is to provide means for forming round corners on the side walls of the container which will facilitate the closing and seaming thereof with a metal clamping rim cap similar to closures formed on the ends of conventional canister type containers. In order to provide a continuous exterior surface around the entire base of the container for such purpose, the flanges **53** as well as the flanges **11** shown in Fig. 5 may be provided with longitudinal corner edges that will abut with each other or be extended together in part abutment as shown by the dot and dash lines **57**. Alternatively, the side walls can be provided with end elements that are adapted to be folded and sealed together in hermetic seam forming relationship. It will be understood that the cruciform blank may be formed of any two different combinations of sheet materials for constructing the container according to the duty required. This may include initial impregnation treatment of fibrous material component parts, or the flushing, spraying of the container walls with suitable coating material after being ejected from the fabricating dies. In such event, the wall panels of the primary blank which may include the secondary blank, are provided with a pattern coating of thermoplastic adhesive upon the surface portions

that constitute the seam forming areas for the construction of the ultimate container herein described. These areas being indicated by the shaded sections of the blank shown in Fig. 1.

While modifications of the invention have been illustrated and described, it will be understood, by those skilled in the art, that various changes may be made therein without departing from the general 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. The method of forming a container of the character described, which consists in forming a primary blank of sheet material defining a substantially square central area and oppositely extending panels, forming a similar secondary blank with an opening in its central area, superposing said blanks in crosswise relation to bring the central areas into registry, joining said areas under pressure, bending said blanks along the edges of said central areas to bring said extending panels into edge to edge relation, and connecting said panels in said relationship to define a container body having a substantially square cross section.

2. The method of forming a container according to claim 1 which includes the step of embossing the central area of said primary blank during the joining of said central areas to form a plug which fits snugly into said opening of the secondary blank.

3. The method of forming a container according to claim 1, wherein the connection of said panels is accomplished by heating and pressing articulated marginal flanges along the longitudinal edges of brought into said panels overlapping and seam forming relationship.

4. The method of forming a container of the character described, which consists in forming a primary blank of sheet material defining a substantially square central area and oppositely extended panels, forming a similar secondary blank, said blanks being treated with heat-sealable material, superposing said blanks in a crosswise relation with said central areas in registry, and subjecting said superposed blanks to the deforming and pressing action of opposed heated dies which connect said central areas and fold said panels into edge to edge relation and in seam forming relationship.

5. An apparatus for forming a container of foldable sheet material, comprising a male mandrel die member and a hollow female die member, said dies being complementary with each other with respect to the shape of their respective wall surfaces to conform with the shape to be assumed by the container, said female die member being provided with heating means and adapted to be registered with said male die member in telescopic relationship to complete the forming of said container, a shaft mounted to move through said female die member and having a platen head provided with heating means and adapted to be encountered by the end wall of said male die member, said end wall consisting in part of a platen head on a shaft mounted for reciprocating movement through the male die member, the face of the end wall of the latter die being recessed inwardly of the boundary edges thereof, the face of said platen head positioned within the female die member having a projected area extending outwardly of its boundary edges and shaped to conform with the shape of said recessed face, whereby the central part of an assembled two piece cruciform blank of said sheet material may be clamped, heated and a section thereof offset in planar relation to form a base end closure of the container as a first step prior to the forming of the body side walls thereof upon movement into telescopic registry of the male and female die members to complete said container.

6. The method of forming a container of the character described, which consists in forming a primary blank of substantially rigid sheet material having thermoplastic adhesive on at least seam forming areas and defining a substantially rectangular central area and oppositely extending panels with longitudinal side edge areas defining marginal flanges, forming a similar secondary blank with an opening in its central area, superposing said blanks in crosswise relation to bring the central areas into registry, joining said areas under heat and pressure, first bending said panels of the secondary blank along opposite edges of its central area in advance of bending said panels of the primary blank along opposite edges of its central area to bring said extending panels of both blanks into edge relation, and connecting said panels in said relationship by imposing heat and pressure upon the areas defined by said marginal flanges thereby defining a container body having a substantially rectangular cross section embodied with a liquid tight end closure.

7. The method of forming a container as set forth in claim 6, including a first step of embossing the central area of said primary blank during the joining of said central areas to form a plug which fits snugly into said opening prior to the bending of said blanks to form said container body.

8. In container forming apparatus which includes a male die form defined as having a substantially flat end wall formation and transversely extended tapering longitudinal side walls arranged in opposing pairs, a hollow female die form being provided and having longitudinal side walls that are shaped coincident with said side walls of the male form, said female form having open ends and an actuated slider central shaft passing through its hollow opening, the free end of said shaft being provided with a platen head defined as aligned and shaped coincident with said end wall of the male form, one of said die forms being arranged with means to be moved reciprocally with respect to the other die form in telescopic relationship and independently of said platen head slider shaft actuated movement, the end wall portion of said male form and face of said platen head being adapted to clamp and compress a deformation into the central wall portions of two crossed container forming blanks upon registry therebetween and upon movement of said slider shaft prior to the actuated movement of said one die form, and upon the movement thereof the laterally extended wall panel portions of the clamped blanks are folded, drawn and shaped upon the side walls of the male die form by the influence of the female form, thereby constructing the longitudinal side walls of the container and in seam forming relationship extended transversely from the corner side edges of the base end closure portion thereof constituted by said clamped central portions of the container forming blanks.

9. An apparatus for forming a container of foldable sheet material, comprising a hollow female die member having tapering side walls whose inner surfaces are shaped to conform with the shape to be assumed by the container, said member being substantially rectangular in cross section and provided with heating means adjacent its longitudinal corner ends, a complementary male die member adapted to register into and out of said female die member in telescopic relationship and having an end wall and tapering side walls, the exterior surfaces of said side walls conforming substantially to those of the female die member, a slider shaft extending centrally through the opening of said female die member and mounted for independent reciprocating movement, a platen head on the free end of said shaft and its face adapted to be encountered by the end wall portion of the male die member, whereby the central portion of a cruciform blank of said foldable sheet material may be clamped and compressed between said end wall and platen head just prior to the movement of the male and female die members into telescopic registry with each other, whereby upon said movement the outwardly extended panel portions of said clamped blank are folded transversely and upon the exterior face of the side walls of the male die member thereby forming the tapering body side walls

of the container extended from the corner side edges of the clamped area portion of said blank that constitutes the end wall closure of the longitudinal side walls of the constructed container.

10. An apparatus according to claim 9 wherein said end wall of the male die and encountered surface of said platen head may be provided with complementary surface configuration whereby upon clamping said central closure forming part of the blank between said surfaces said configuration constitutes male and female embossing dies to offset the material of the blank part that is clamped and thereby form an openable dispensary end closure of the body side walls of the container when formed.

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