Jan. 3, 1956 G. A. MOORE 2,729,385

CLOSURE FOR CONTAINERS

Filed June 7, 1952

FIG. 1

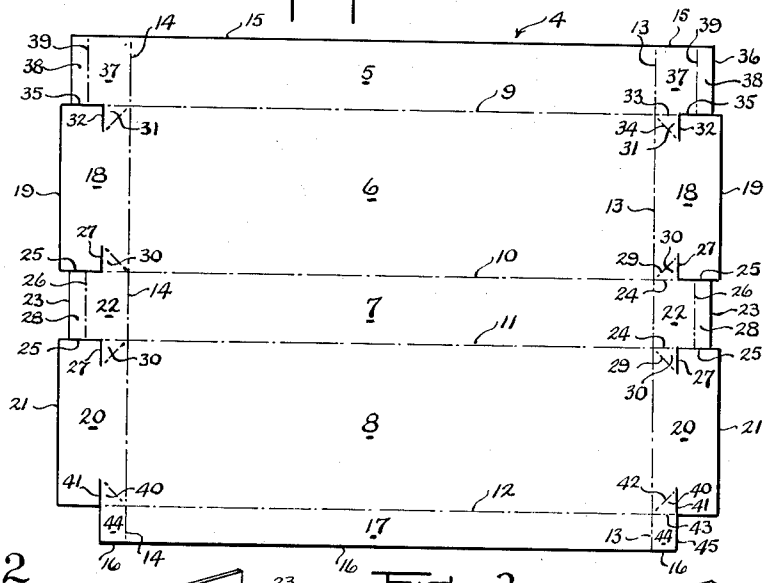


FIG. 2

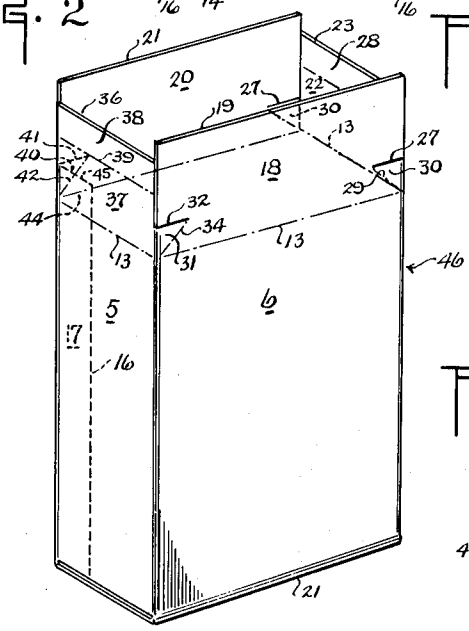


FIG. 3

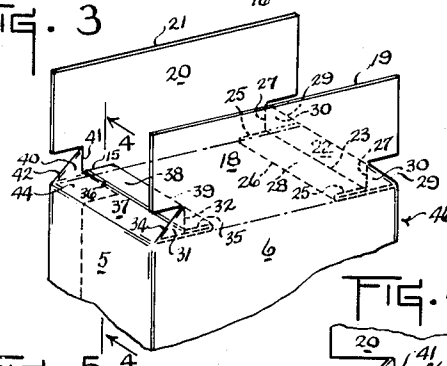


FIG. 4

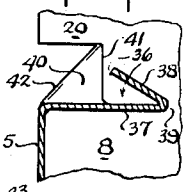


FIG. 5

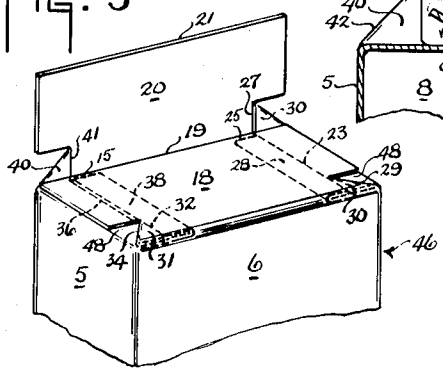
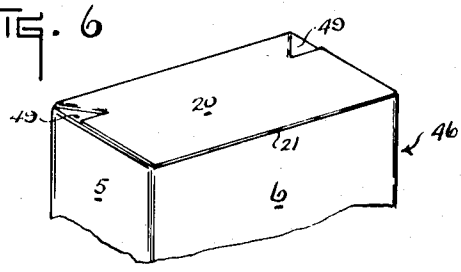


FIG. 6



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CLOSURE FOR CONTAINERS

George Arlington Moore, New York, N. Y.

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7 Claims. (Cl. 229—37)

This invention relates to closures for containers, more particularly the closure is designed for containers made of foldable sheet materials, and has for its objects to provide certain new and useful improvements in closures for containers of this character.

A primary object of the invention is to provide a simple closure that may be folded and sealed to render the container sift-proof without the aid of interior liners.

A further object of the invention is to provide a closure for containers wherein the corners of the closure are sealed with pleats.

A still further object of the invention is to provide a closure for containers, the closure having foldable members integrally united to co-act to form a substantially hermetic closure.

These and other objects of the invention will be apparent upon reading the following descriptive disclosures read in conjunction with the illustrative accompanying drawings, wherein:

Fig. 1 is a plan view of a blank used to form a container provided with the closure of this invention,

Fig. 2 is a perspective view of the container as formed from the blank,

Fig. 3 is a fragmentary view in perspective of the closure in the first stages of being formed,

Fig. 4 is a fragmentary view of a portion of the closure partly in cross-section taken on line 4—4 of Fig. 3,

Fig. 5 is a fragmentary view in perspective of further stages in forming the closure, and

Fig. 6 is a fragmentary view in perspective of the closure completed.

The closure of this invention may be adapted to containers made of sheet materials, such as paper, fibrous board or aluminum. The aluminum may be plain or in the form of laminates with other sheet materials. The various sheet materals may be provided with surfaces of thermoplastic film, such as polyethylene, Saran or suitable vinyl resins.

The closure is particularly adaptable for containers in the class of folding cartons and this type of container is preferably used to illustrate the invention.

Referring to Fig. 1 of the drawing, a blank 4 indicates generally a blank having longitudinally disposed wall areas 5, 6, 7 and 8 defined with parallel creasing lines 9, 10, 11 and 12 respectively, and transversely disposed folding lines 13 and 14 which extend to parallel edges 15 and 16 of the blank. A wall area 17 extends outwardly of the folding line 12 and provides a major portion of the edge 16 of the blank. The blank 4 is provided with longitudinally disposed like ends consisting of panels 18 having end edges 19, the panels extending outwardly of the folding lines 13 and 14, the said panels 18 being lateral extensions of the wall area 6. Panels 20 having end edges 21, also extend outwardly of the lines 13 and 14, the said panels 20 being lateral extensions of the wall area 8. Panels 22 are lateral extensions of wall area 7 and extend outwardly of lines 13 and 14, the said extensions 22 have end edges 23 transversely disposed between the

panels 18 and 20. The panels 22 are defined with parallel folding lines 24 and parallel cut lines 25. Folding lines 26 are disposed inwardly of the edges 23 the lines extending between the cut lines 25. The folding lines 26 are substantially half-way between the edges 23 and cut lines 27 which extend outwardly at right angles from each cut line 25. The folding lines 26 provide sub-areas 28 in the panels 22.

The cut lines 27, folding lines 24 and folding lines 29 define triangular wing-like areas 30 in opposing sides of the panels 18 and 20 adjacent the folding lines 13 and 14. The opposite side of the panels 18 are provided with wing-like triangular areas 31 defined with cut lines 32, folding lines 33 and 34 disposed adjacent the folding lines 13 and 14. The folding lines 33 are in line with cut lines 35 extending to edges 36 of adjacent panels 37 disposed outwardly of the panels 18. The panels 37 are lateral extensions of the wall area 5 and are defined with transverse folding lines 13 and 14, and folding lines 33 disposed at right angles to the lines 13 and 14, and the cut lines 35 and edges 15 of the blank. The panels 37 are provided with sub-areas 38 defined with folding lines 39 disposed inwardly of the edges 36 and extending between cut lines 35 and edge 15. The folding lines 39 are disposed substantially half-way between the cut lines 32 and edges 36 of the panels 37.

The lower sides of the panels 20 are provided with triangular wing-like areas 40 defined with cut lines 41, folding lines 42 and 43 disposed outwardly of the folding lines 13 and 14. The wing-like areas 40 have outwardly disposed extended areas 44 which are lateral extensions of the wall area 17. The areas 44 are defined with transverse folding lines 13 and 14, folding lines 43, end edges 45 and edge 16 of the blank.

The blank 4 may be provided with a surface film of suitable thermoplastic, or the blank may be left plain, depending upon the intended use for the container.

The blank may be folded and glued by conventional methods, the wall area 17 being folded to overlap and become united with the interior side of the wall area 5. When the blank is provided with thermoplastic adhesive film, the wall area 17 may be united with the wall area 5 by the application of heat or solvents with which to activate the thermoplastic adhesive film.

The container 46 (Fig. 2) is illustrated with the bottom closure completed which is formed identically the same as the top closure now about to be described. Panels 22 and 37 (Fig. 3) are folded inwardly and downwardly to oppose each other on a horizontal plane. The inward movement of the panels draws the material of the wing-like areas 30, 31 and 40 out of the panels 18 and 20 to form pleats disposed inwardly from the corners at the top of the container. The pleats inwardly overlap portions of the panel walls 18 and 20 adjacent the corner junctions of the folded panels 22 and 37, the cut edges 27 and 41 of the pleats 30 and 40 are vertically disposed in opposing relationship. The cut edges 27 and 32 of the pleats 30 and 31 are also vertically disposed in opposing relationship at the opposite side of the first mentioned pleats. The sub-areas 28 and 38 of the folded panels 22 and 37 respectively are doubled back or folded outwardly in opposite directions to overlap the horizontal walls 22 and 37, the free edges 23 and 36 of the overlapping folds being disposed in linear alignment with the free cut edges 32, 41 and 27 of the pleats.

The horizontally folded panels 22 and 37 (Figs. 3 and 4) are integral with the upwardly disposed panels 18 and 20, the pleats co-acting to limit any further downward movement of these inwardly folded panels. The pleats 40 have their anchorage from the united portions 44 of the inner overlapping wall area 17, the portions 44 being

disposed horizontally with the walls of the folded panels 22 and 37.

The panel 18 (Fig. 5) is folded inwardly and downwardly against the faces 28 and 38 of the previously folded panels 22 and 37. The edge 27 of the pleat 30 is now disposed in substantial abutment with the edge 23 of the overlapping wall area 28, the edge 32 of the pleat 31 is now disposed in substantial abutment with edge 36 of the overlapping wall area 38. The said pleats 30 and 31 are substantially flush with the surfaces of the overlapping folds 28 and 38. The inner wall of the folded panel 18 engaging the overlapping wall portions 28 and 38 closes the container, the edge 19 of the panel 18 is in substantial abutment with the inner face of the upwardly disposed panel 20. The edges 15 and 35 of the folded panel 37 and edges 25 of the folded panel 22 are in substantial abutments with the inner wall surfaces of the folded panel 18 and the upwardly disposed panel 20.

When the container is provided with thermoplastic film, the overlapped wall portions 28 and 38 of the folded panels 22 and 37, provides upturned faces of thermoplastic film which engages the thermoplastic film on the inner wall of the downwardly folded panel 18. Application of heat and pressure to the exterior wall of the folded panel 18 activates the thermoplastic film to unite the contacting inner walls in seam forming relationship. The panel 20 is then folded inwardly and downwardly to overlap the exterior wall of the panel 18 immediately preceding the withdrawal of the heating means applied to the said panel. The thermoplastic film on the inner surface of the folded panel 20 contacts the previously heated wall of the panel 18 which activates the thermoplastic film and unites the panels together. The exterior wall of the folded panel 20 is preferably retained under pressure until sufficient heat is dissipated to solidify the activated plastic adhesive film.

The notches 48 disposed at adjacent corners of the closure are covered by the overlapping panel 20. The pleats 30 and 40 formed in the overlapping wall panel 20 are disposed against portions of the exterior wall of the inner panel 18 leaving notches 49 disposed at the opposite side of closure to the covered notches 48.

When containers are formed of relatively thick sheet material, the folding lines 29, 34 and 42 of the pleats 30, 31 and 40 respectively, may be cut scored to facilitate the folding of the said pleats.

The closure of this invention provides efficient means to effect a tight closure structure which is reinforced with sealed corners. The overlapping wall areas 38 (Fig. 4) and 28 exert spring-like resistance to the overlapping panel 18 and the pleats 30, 31 and 40 are integrally united to the inner folded panels 22, 37 and overlapping panels 18 and 20, wherein the co-action of the folded panel members provide a means to support the closure to resist downward pressure sufficiently to insure a tightly united closure of the container. Liquid or viscous adhesives including hot-melts, may be employed in sealing the closures of the containers if desired.

The closure thus described for containers, may be employed to eliminate in many instances the necessity of inner liners or bags within the container with which to hold the product intended.

I claim:

1. A closure for rectangular containers having four side walls arranged in opposing pairs, two of said opposing side walls having like and first foldable end wall portions each of said portions being marginally divided into two foldable portions, two other opposing adjacent side walls having like and second foldable end panel portions each of said adjacent portions being provided with a pair of horizontally opposed slit lines, each of said lines being joined with two creased lines to provide foldable triangular wall portions integrally related with said first foldable wall portions, each of said first mentioned wall portions being first folded inwardly and downwardly of its

depending side wall, said folded portions being opposed in substantially horizontal position, said triangular wall portions being folded in self-superimposing flat pleats disposed at substantially right angles from each opposing end side of said first folded wall portions and thereby lie in a vertical position with respect to the horizontal position of said first folded wall portions, each of the innermost marginal portions of said first folded portions being folded upwardly, outwardly and downwardly in self-superimposing relationship upon an inner portion of its folded wall, the free end side edges of said portions being in abutment with said opposing adjacent side walls of the container, the transversely disposed free end edge of said portions being presented in line with the perpendicular free end edges of said flat pleats, each of said second adjacent wall panel portions being folded inwardly and downwardly in overlapped container closing relationship.

2. A closure for rectangular containers in accordance with claim 1 wherein the first folded adjacent wall panel is engaged upon the top surface of said inner-most marginal folded portions of said first folded wall portions, the free end side edges of said pair of folded pleats being disposed in abutment with a portion of said free end edge of each first folded wall portion, the second folded adjacent wall panel being engaged upon the exterior surface of said first folded adjacent wall panel, said pair of folded pleats in the said second folded panel being disposed downwardly upon exterior wall portions of the said first folded adjacent wall panel.

3. A closure for rectangular containers having side walls arranged in opposing pairs to provide a body portion of the container and a marginal longitudinal seam to secure said body, said side walls being provided with extended foldable end closing panels comprising a first pair of substantially like panels being folded inwardly at substantially right angles to their respective side walls, the opposed sides of each folded first panel being provided with a pair of upwardly extended triangular shaped flat folds of material taken from slit wall portions of a second pair of adjacent up-standing foldable end closing panels, one of said triangular folds being supported by an end marginal portion of said longitudinal body seam of the container, each of the first pair of in-folded panels having an inner marginal wall portion thereof being provided with a transverse crease line spaced inwardly substantially equi-distance from the up-standing inner disposed edges of said pair of triangular folds and to the inner disposed end corner edge of said wall portion, the inner-most marginal wall portions each being folded upwardly, outwardly and downwardly in self-superimposing relationship, said end corner edge being disposed to meet the lower edge portion of the triangular fold, the opposed side edges of said folded self-superimposed marginal portions being disposed in abutment upon corresponding interior surface portions of the pair of opposing side walls that are integrally related with said second pair of panels upon which the triangular folds are flattened, said second pair of end closing panels being folded alternately inward and downward in overlapping relationship, marginal portions of the inner disposed folded panel being disposed flatly upon said self-superimposed folded margins, said edges of the triangular folds being disposed in parallel alignment with the outer disposed corner edge of said self-superimposed folded wall margins thereby to seal said edges from being exposed within the interior of the container, the surfaces of said first and second pair of folded panels including the corner closing triangular folds being engaged in seam forming relationship.

4. A blank of sheet material being cut and creased to form a folded rectangular shape container, the blank being creased to form side walls arranged in opposing pairs when folded, and having a marginal wall portion to provide a longitudinal seam for the body of the con-

tainer when formed, two opposing sides of said blank being provided with foldable extended panels, said panels being foldable upon two opposed parallel crease lines disposed vertically of the blank, which lines define the ends of said body forming portion of the container when formed, said extending panels comprising a first upper pair being horizontally opposed and each panel of said pair being disposed outwardly of a portion of said parallel crease lines, the lower horizontal side of said upper pair of panels being defined with portions of a horizontal crease line that cross said vertical crease lines and extends outwardly thereof in spaced relation to an outwardly extended slit line having a slit line portion thereof extending at substantially right angles downwardly of the terminal end of said horizontal crease line, each panel of the upper pair being provided with a vertical crease line being spaced outwardly of and parallel with said panel defining vertical crease lines, said vertical crease line being also spaced equi-distance outwardly of the converging corner of said slit lines and the outer vertical end edge of said panel, a second lower pair of said panels being defined with a downwardly spaced horizontal crease line, which line crosses said panel defining vertical crease lines and extends outwardly thereof in spaced relation to an outwardly extended slit line having a slit line portion thereof extending at substantially right angles upwardly of the terminal end of said downwardly spaced horizontal crease line, a third lower pair of said panels being defined with a downwardly spaced horizontal crease line, which line crosses said panel defining vertical crease lines and extends outwardly thereof in spaced relation to an outwardly extended slit line having a slit line portion thereof extending at substantially right angles downwardly of the terminal end of said last mentioned downwardly spaced horizontal crease line, said third pair of panels each being provided with a vertical crease line being spaced outwardly of and parallel with said panel defining vertical crease lines, said vertical crease line being also spaced equi-distance outwardly of the converging corner of said slit lines and the outer vertical end edge of said panel, a fourth lower pair of said panels being defined with a downwardly spaced horizontal crease line, which line crosses said panel defining vertical crease lines and extends outwardly thereof in spaced relation to an outwardly extended slit line having a slit line portion thereof extending at substantially right angles upwardly of the terminal end of said last mentioned downwardly spaced horizontal crease line, which crease line is spaced upwardly of a lower marginal portion of said blank having opposed vertical end edges extending downwardly in line with said upwardly extended slit lines.

5. A closure for rectangular folded containers of sheet material comprising a first pair of extending foldable panels being integrally united with a pair of opposing side walls and foldable opposing end forming wall portions of the container, a second pair of extending foldable end closing panels being provided that are integrally united with two other opposing side walls of the container, said first pair of extending panels being folded inwardly of the container in opposing relationship and being disposed in a substantially horizontal plane with respect to the vertical side walls of the container, said panels each having an inner-most marginal portion being folded upwardly, outwardly and downwardly in self-superimposing relationship upon an inner marginal portion of its folded wall, the second pair of extending panels being folded inwardly one over the other and over said first pair of folded panels and supplying portions of material adjacent the corners of the closure and thereby providing said first pair of folded panels

with triangular flatly folded corner closing pleats presenting free edges paralleling the outer longitudinal free edges of said self-superimposed folded marginal portions of said first folded pair, said pleats also forming support for the horizontal plane of said first pair of folded panels prior to inward folding of said second pair of panels with their respective pleat folds, which second pair when folded, closes said container in seam forming relationship.

6. A corner closing construction for cartons which comprises an inwardly and downwardly folded flap, said flap having a flat up-right triangular pleat folded of a portion of an adjacent up-right foldable end closing panel, said flap being provided with an inner-most marginal portion thereof being folded upwardly, outwardly and downwardly in self-superimposing relationship upon an inner portion of its folded wall, the opposed side end edges of said superimposed folds being disposed in abutment with interior surface margins of a pair of adjacent opposing side walls of the container, the outer disposed transverse end edge of the superimposed fold being disposed in line with the up-right free end edge of said folded pleat, said panel having the folded pleat being folded inwardly and downwardly upon said self-superimposed folded margin, said pleat being disposed flatly upon an outer margin of said in-folded flap, the free edge of said pleat being disposed in abutment with a portion of the free end edge of said self-superimposed folded margin.

7. A closure for rectangular containers having side walls arranged in opposing pairs, two of said opposing side walls being provided with substantially like and first foldable minor end wall portions, each of said minor portions being marginally divided into two foldable marginal portions, two opposing adjacent side walls being provided with substantially like and second foldable full end closing panel portions being provided with a pair of horizontally opposed slit lines, each of said slit lines providing means to provide foldable pleats integrally related with said foldable minor portions, each of said minor wall portions being first folded inwardly and downwardly of its depending side wall and being disposed in substantially horizontal position, said pleats being folded in flat self-superimposing relationship and being disposed at substantially right angles from each opposing end side of said folded minor portions, an inner-most marginal portion of each of said minor folded portions being further folded upwardly, outwardly and downwardly in self-superimposing relationship upon an inner portion of its folded wall, the lower and upper opposed end edges of said self-superimposed folded marginal portions being in abutment with interior marginal surface portions of said opposing adjacent side walls of the container, the transversely disposed outer end edges of said folded minor portions being presented in line with the perpendicular end edges of said flat pleats, each of said second full end closing panels being folded inwardly and downwardly in overlapped relationship, said folded panels positioning the free end edges of said pleats in abutment with portions of said transversely disposed outer end edges of the folded minor portions, said folded panels being disposed in seam forming relationship.

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