

June 10, 1952

H. E. MCCRERY ET AL

2,599,567

BAG BOTTOM STRUCTURE

Filed Dec. 28, 1944

3 Sheets-Sheet 1

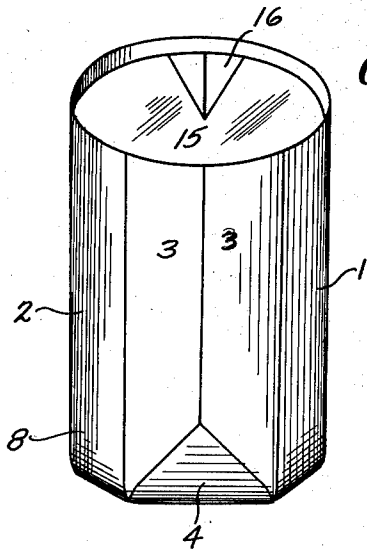


Fig. 1

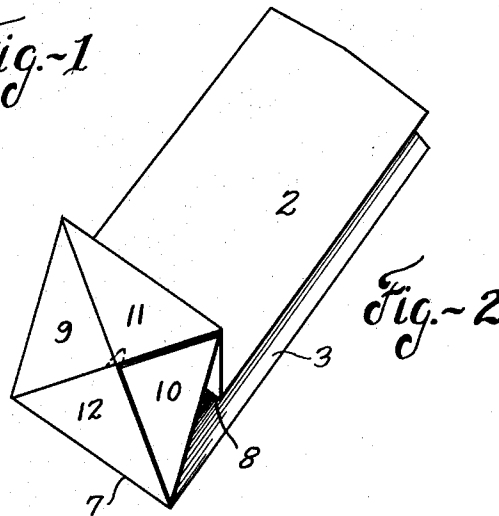


Fig. 2

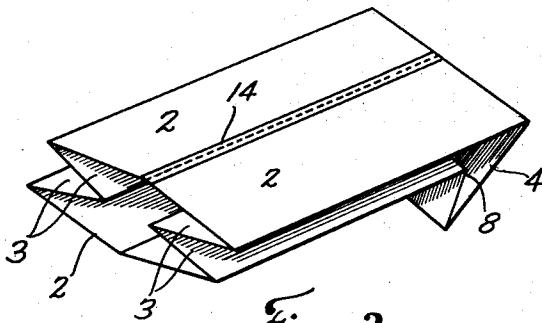


Fig. 3

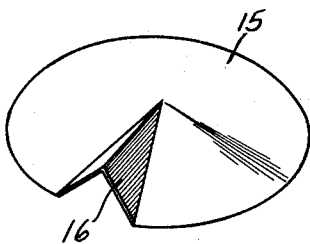


Fig. 5

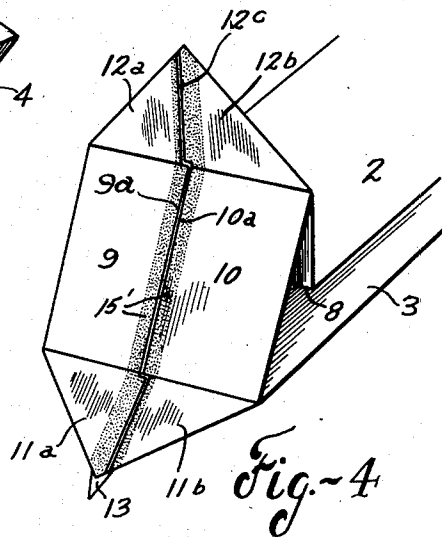


Fig. 4

Harold E. McCrery
BY and Albert E. Leiber
D. L. Walker ATTORNEY.

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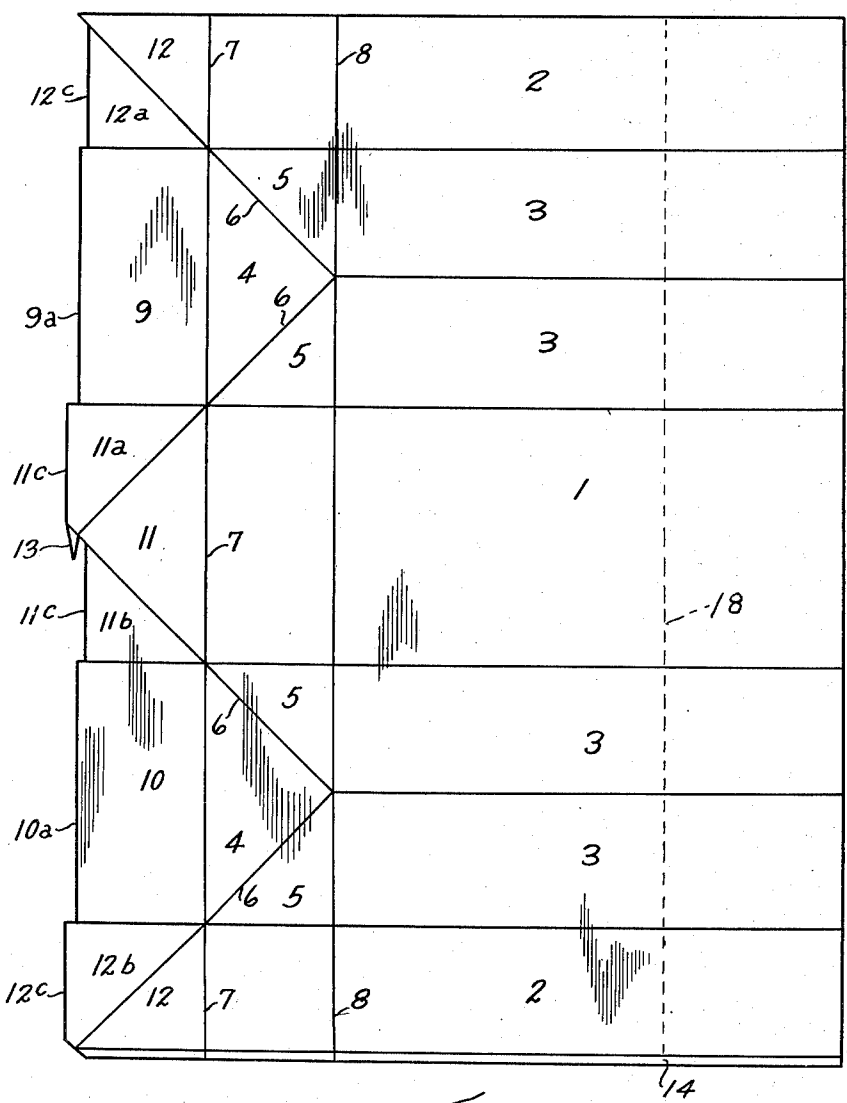


Fig. 6

Harold E. McCreary INVENTORS
and Albert E. Jessor
BY J. L. Walker ATTORNEY.

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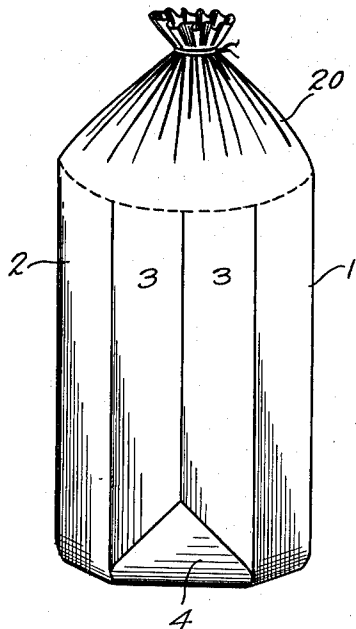


Fig. 7

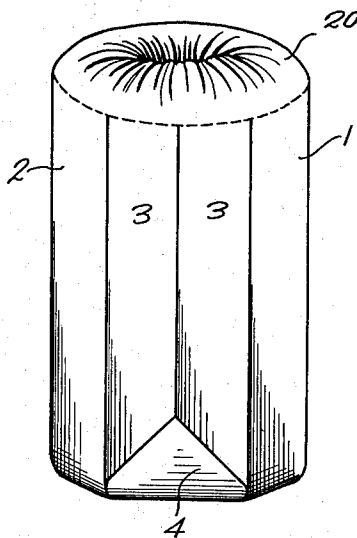


Fig. 8

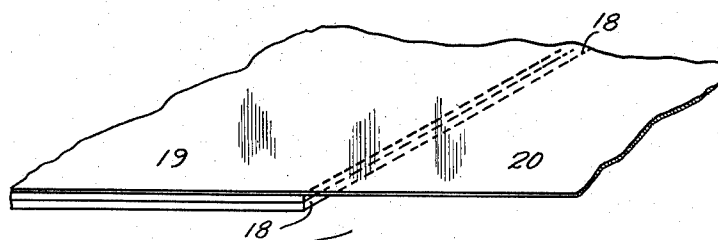


Fig. 9

Harold E. McCrery INVENTORS
BY *Alfred E. Jessor*
J. L. Walker ATTORNEY.

UNITED STATES PATENT OFFICE

2,599,567

BAG BOTTOM STRUCTURE

Harold E. McCrery, Dayton, Ohio, and Albert E. Jesser, Alhambra, Calif., assignors to Plyfiber Container Company, Garwood, N. J., a corporation of New Jersey

Application December 28, 1944, Serial No. 570,060

10 Claims. (Cl. 229—57)

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This invention pertains to paper receptacles, and more particularly to a square bottomed bag which is especially adapted to contain solidified, initially fluid or plastic materials, such as tar, wax, rosin, heavy grease and the like, but which obviously is suitable for holding other commodities.

In the present disclosure there is contemplated a collapsible container of heavy sheet material, having a multi-thickness reinforced leak-proof bottom, which is foldable into compact form for storage and shipment, and which when distended will assume a substantially cylindrical form and serve the purpose of a keg or drum.

The object of the invention is to improve the construction of flexible containers, whereby they may not only be economically constructed, but will be more efficient in use, of compact form when collapsed, of increased strength when distended, and leak tight when filled.

A further object of the invention is to provide an improved form of reinforced folded bottom, wherein the joints of superposed folds are relatively offset and effectively sealed.

A further object of the invention is to provide a bag type container having the advantageous structural features and inherent meritorious characteristics, and mode of assembly herein set forth.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described or illustrated in the accompanying drawings.

In the drawings, wherein is illustrated the preferred but obviously not necessarily the only form of embodiment of the invention,

Fig. 1 is a perspective view of a container embodying the present invention in a filled condition.

Figs. 2 and 3 are reverse perspective views of bags or containers embodying the present invention in collapsed or folded condition.

Fig. 4 is a perspective view of the bottom of the container in a partially folded and unsealed condition.

Fig. 5 is a perspective view of a closure lid for the container removed therefrom.

Fig. 6 is a plan view of the shaped and scored blank from which the present container is formed.

Fig. 7 is a perspective view of a modification, wherein the container is closed by crushing and

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tying its top, which is soft and flexible for that purpose.

Fig. 8 is a similar view, wherein the flexible top is crushed and pushed into the body of the bag.

Fig. 9 is a detail sectional view of a portion of the stock material used for such modified container.

Like parts are indicated by similar characters of reference throughout the several views.

The present container is formed from a single substantially rectangular blank, indented along one edge, as illustrated in Fig. 6, scored and folded to form a compact flat assembly when collapsed, as shown in Figs. 2 and 3, but which when distended expands into substantially a cylindrical bag, as appears in Fig. 1, having a multi-thickness bottom, the joints of which are staggered or laterally offset out of registry with each other, as indicated in Fig. 4, to assure a leak-proof structure.

The greater area of the blank is divided by parallel spaced score lines into a succession of relatively wide and narrow panels 1, 2 and 3, which in the final assembly comprise the vertical side walls of the container. The pairs of narrow panels 3—3 are scored to infold into diametrically opposite accordion plaits, while the larger panels 2—2 interconnecting the accordion plaits are foldable to close parallel relation when the assembly is collapsed.

Contiguous to the ends of the narrow panels 3—3 are triangular gores 5 which enable the infolding of the panels 3 into a plait. Transverse fold lines 7 and 8 enable the wider panels 2—2 to collapse into close parallel relation. The fold line 8 is effective and used only across the wide panel 2, as shown in Figs. 6 and 3, the two half panels of which are joined together into a single panel in the final assembly. For convenience of manufacture, by passing the blank beneath a scoring roller the score line 8 is extended the full length of the blank, thus defining triangular gores 5—5 contiguous to the ends of the plait panels 3—3. The continuation of the score line 8 across the panels 1 and 3 is not necessary and may be omitted if other means of scoring the panel is employed.

The remainder of the blank at the left of Fig. 6, the margin of which is progressively indented or offset on parallel lines, is divided by a series of diagonal score lines 6 into a succession of rectangular panels 9 and 10 which conjointly form the main bottom section, and triangular gores 11, 11a, 11b, 12, 12a and 12b which together form a pair of flaps of double thickness

to overlie the bottom section comprising the panels 9 and 10.

One of the gores is provided with a small triangular tongue 13, which in the final assembly projects from the apex of one of the triangular bottom flaps, as appears in Fig. 4, to seal the middle point of the joint between the main bottom panels 9 and 10 intermediate the apices of the triangular flaps.

In assembling the bag container, the blank, shown in Fig. 6, is rolled into cylindrical tubular form and is connected end to end by overlapping the marginal flap 14 of a half panel 2 at one end of the blank over the margin of the terminal half panel 2 at its opposite end, and uniting the overlapped areas by cementing, stitching, or stapling. The bottom panels 9 and 10 are then infolded on score line 7 into a common plane perpendicular to the axis of the tubular cylinder into which the blank has been rolled by bringing their margins 9a and 10a into abutting relation. The intermediate gores are then folded by turning the gores 11a and 11b into a common plane beneath the larger gore 11, with their margins 11c in abutting relation, thus forming a triangular flap of double thickness. In the same manner the opposite flap is formed by infolding the smaller triangular gores 12a and 12b into parallel relation with the larger triangular gore 12, and with their margins 12c in abutting relation. Due to the marginal indentation or offsetting of the original blank, Fig. 6, the abutting joints 11c and 12c of the oppositely disposed flaps are staggered or offset in opposite directions out of line with the joints 9a—10a of the main bottom panels 9 and 10, as is shown in Fig. 4. While the flaps are open in distended relation in a plane common with that of the main bottom panels 9 and 10, the assembly is passed beneath a glue wheel by which a broad stripe 15' of adhesive is applied across the inner faces of the triangular flaps, including the tongue 13 and outer face of the bottom section 9—10. The flaps are then infolded into adherent relation, as illustrated in Fig. 2. By this arrangement the bottom is not only reinforced, but the joints are offset out of registry in the superposed strata thereof, and each joint is covered by double strata of the material. When the container is filled, it will be distended into cylindrical form and the juncture of the side walls with the square bottom will assume a somewhat rounded shape, as is shown in Fig. 1.

To provide a closure, a disc 15 of preferably, but not necessarily, similar material, having a diameter to agree with the interior diameter of the container when distended, is formed with a gore or plait 16, which when contracted forms the disc into a cone of low altitude, the base diameter of which is sufficiently small to permit it to be readily inserted into the open end of the container on top of the contents thereof. By then flattening the conical lid or cover 15, it is caused to closely fit the container walls. If the contents are of tar, rosin, grease, or other commodity for which the container is well adapted, but to which it is not in any way limited, the inserted cover disc will adhere thereto, and so retain its position without other fastening means.

In lieu of the disc closure before described, when the container is to receive either tar, wax, resin and other adhesive material, or some comminuted, powdered, pulverized, or non-adhesive commodity, it may be desirable that a different form of closure be effected by contracting and

twisting, tying or infolding the top of the container, while retaining the advantageous characteristics before described, including the reinforced folded bottom structure and collapsible feature.

The container as hereinbefore described is preferably made of comparatively stiff multi-ply stock throughout. However, to enable the container to be closed by crushing and twisting or tying its top, such top section must be of flexible character. Wherefore, while the blank employed for the modified construction is substantially like that shown in Fig. 6, and is folded upon similar lines, the bottom and sides of the container are of thick and stiff multi-ply stock extending approximately to the line 18—18 of Fig. 6, which indicates the margin of the underlying shorter plies of stock material comprising the stiff area 19, while the outer plies thereof afford a flexible, crushable top area 20 extending therebeyond throughout the full area of the blank, illustrated in said Fig. 6. In practice the bottom and side areas 19 of the container are usually of three-ply stock, while the top of the side walls comprising the outer ply, which is flexible, is extended as a single ply 20 beyond the limits of the three-ply material (line 18—18) to form such soft, crushable top of the container, which may be contracted and twisted, and pushed into the body of the bag or tied.

Except for this difference in the method of closure, the latter structure is quite the same as that first described. In assembling the stock material, two or more narrower strips or plies thereof are superposed one upon the other, and a considerably wider sheet or ply is superposed thereon, as indicated in Fig. 9.

The construction is such that the reinforced bottom is rendered leak tight to retain initially fluid contents, such as hot tar, which becomes quite fluid when superheated. The division line formed by the abutting edges 9a and 10a of the panels 9 and 10 are overlaid and sealed throughout substantially its entire length by adhesion of the reinforcing flaps 11 and 12. However, to assure against possible leakage intermediate the adjacent apices of the flaps, the tongue 13 which is integral with the apex of one flap is adhesively attached to the abutting panels 9 and 10 across the intermediate joint or division line thereof, and is adhesively overlaid by the apex of the opposing reinforcement flap. The bottom area of the container thus is not only reinforced, but the joint between the panels 9 and 10 is effectively sealed even though, due to slight irregularities of manufacture, leakage might otherwise occur at a mid-length point thereof intermediate the flaps 11 and 12.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications

within the legitimate and valid scope of the appended claims.

Having thus described our invention, we claim:

1. A flexible bag container, comprising a single integral blank of flexible material rolled upon itself and connected end to end to form a tubular body, including opposite rectangular side panels and intermediate inwardly folding plaits, parallel and intersecting fold lines defining said panels and plaits, upon which the tubular body may be contracted into a flat compact form, a multi-thickness bottom therefor, including a pair of substantially equal rectangular bottom panels disposed in marginally abutting relation and flexibly connected with opposite side wall areas of the tubular body coincident with the inwardly folding plaits thereof, opposing groups of triangular gores intermediate the flexibly connected bottom panels, each group including a larger triangular gore flexibly connected with the tubular body coincident with a rectangular side panel thereof and two smaller triangular gores of unequal size, one margin of each of which is flexibly connected with the margin of the larger triangular gore, and another margin of each of which is flexibly connected with one end of one of the rectangular bottom panels, said smaller triangular gores of each group being foldable into marginally abutting relation beneath the larger triangular gore of the same group, said abutting margins of the smaller gores of the respective groups when so folded being offset in opposite directions out of bisecting relation with the corresponding larger triangular gore, the construction and arrangement being such that when folded into overlapping parallel relation with the rectangular bottom panels, the abutting marginal edges of one pair of smaller triangular gores will be disposed in spaced relation at one side of the abutting marginal edges of the bottom panels, and the abutting edges of the other pair of said smaller triangular gores will be disposed in spaced relation at the opposite side of the abutting marginal edges of the bottom panels, said folded triangular gores being adhesively attached to the marginally abutting bottom panels to seal the joint therebetween.

2. A container bag of flexible material, comprising a tubular body having spaced parallel score lines defining oppositely spaced infolded plaits and opposed broad panels therebetween and a multi-thickness bottom therefor, including substantially equal marginally abutting rectangular bottom sections, opposing triangular flaps hinged to the broad body panels, marginally abutting triangular gores of different size hinged to the ends of the rectangular bottom sections and to the triangular flaps disposed in parallel overlapping relation with the triangular flaps, the abutting margins of which are laterally offset relative to the abutting margins of the rectangular bottom sections to break joint therewith.

3. A container of flexible material, comprising a body portion, a multi-thickness bottom therefor including opposing bottom panels integral with opposite portions of the body, a marginally abutting joint between the bottom panels, triangular flaps integral with the body portion folded into opposing overlapping relation with the bottom panels, marginally abutting joints formed in said triangular flaps and offset in opposite directions relative to the marginally abutting joint of the bottom panels when the triangular

flaps are folded into overlying parallel relation therewith.

4. A container of flexible material, comprising a body portion and a multi-thickness bottom therefor, including opposing bottom panels integral with opposite areas of the body portion, a marginally abutting joint between the bottom panels, opposing triangular flaps integral with opposite areas of the body portion and foldable into overlapping parallel relation with the bottom panels to seal and reinforce the marginally abutting joint therebetween, and an integral tongue projecting from the apex of one of the triangular flaps into overlapping relation with the apex of the other triangular flap in sealing relation with the marginally abutting joint of the bottom panels intermediate the apices of the triangular flaps.

5. A single integral blank for a flexible container, comprising a side wall area including a succession of side panels defined by fold lines, and a connected bottom area the margin of which is progressively offset, including relatively spaced rectangular bottom panels and alternating groups of triangular gores also defined by fold lines, the construction and arrangement being such that the marginal edges of certain of the triangular gores extend beyond the marginal edges of the rectangular bottom panels, and the marginal edges of the latter extend beyond the marginal edges of others of the triangular gores thereby defining said progressively offset margin of the blank.

6. A flexible container bag, comprising a side wall portion and a multi-thickness bottom therefor, including marginally abutting bottom panels and triangular gores foldable into parallel overlapping relation with the marginally abutting bottom panels, the margin of one of said gores when so folded being offset in one direction relative to the abutting edges of the bottom panels and the margin of another of said gores being offset in the opposite direction relative to said abutting edges of the bottom panels when so folded relative thereto.

7. A flexible container bag, comprising a side wall portion and a multi-thickness bottom therefor, including opposing marginally abutting bottom panels integral with the side wall portion, opposing triangular flaps also integral with the side wall portion and foldable into overlapping parallel relation with the marginally abutting bottom panels, and an integral tongue projecting from the apex of one of the triangular flaps into overlapping relation with the apex of the other triangular flap sealing the joint between the abutting edges of the bottom panels between the apices of the flaps.

8. A flexible container bag, including marginally abutting bottom panels integral with opposite side walls of the container, and overlapping flaps integral with the intermediate side walls of the container, including marginally abutting portions, the abutting margins of which are disposed out of registry with the abutting margins of the bottom sections when said flaps are folded into overlapping relation with the bottom panels, the flaps being adhesively united thereto.

9. A bag type container comprising a side wall portion and a folded bottom area, including abutting bottom panels thereof disposed in substantially a common plane and meeting on a medial line, opposing folded triangular flaps overlying the abutting panels, a sealing tongue carried at the apex of one of the folded triangular flaps,

and having adhesive contact engagement with the apex of the opposing triangular flap and with the abutting panels at opposite sides of their meeting line to afford a leak-tight joint.

10. A container bag of flexible material, comprising a tubular body portion, a multi-thickness bottom therefor, including a pair of rectangular bottom panels marginally abutting along a line of contact, oppositely disposed triangular flaps overlapping the rectangular bottom panels, including triangular panels abutting on the line of contact, said lines of contact being laterally offset with those portions of the triangular bottom panels adjacent their line of contact adhesively secured to those portions of rectangular panels adjacent their line of contact, to seal the triangular flaps to the rectangular bottom panel.

HAROLD E. McCRERY.
ALBERT E. JESSER.

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