April 13, 1948. C. O. BALL 2,439,768

RECEPTACLE

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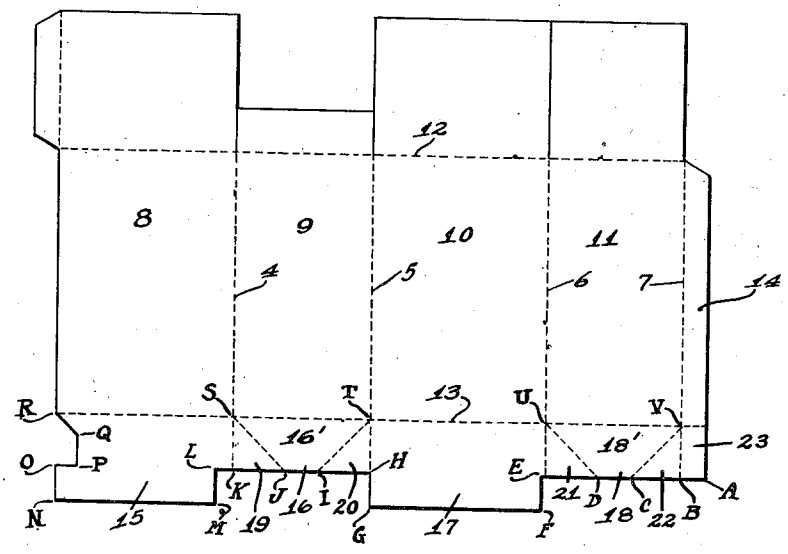


Fig. 1.

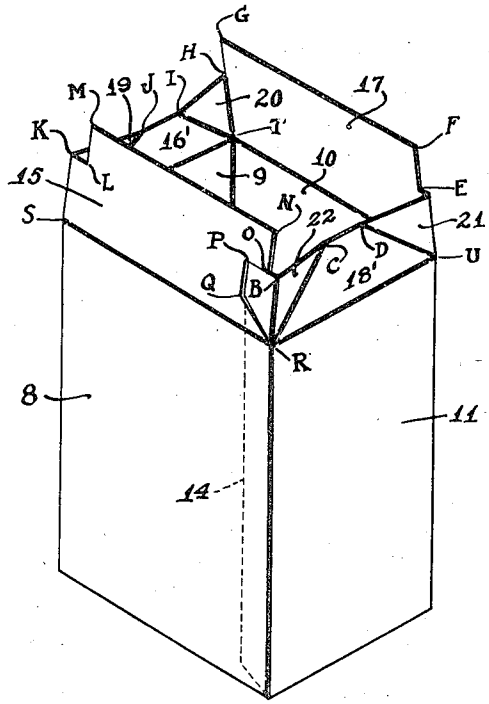


Fig. 2.

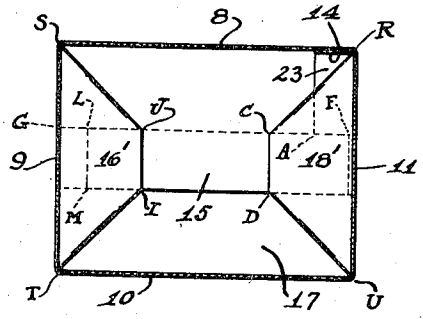


Fig. 3.

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RECEPTACLE

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3 Claims. (Cl. 229—38)

1

My invention relates to articles made from blanks of paper or other sheet material adapted to be folded along fold lines or score lines of predetermined pattern formed in the blanks, for shaping the article. The invention provides an article having a rectangular body with a closed end and, in the form herein illustrated, may be used as a container for milk or other liquids.

An object of the invention is to provide an improved form of receptacle having a rectangular body and a bottom end folded from a single sheet of material designed to provide a bottom which is highly invulnerable to leakage. For this purpose, the bottom end of the receptacle is designed to avoid a thickness of more than three layers or plies of the folded material.

A further object of the invention is to provide a blank giving efficient use of the material, permitting the blanks to be cut from the strip of stock with very little waste of the material.

A still further object of the invention is to provide a novel container of the character indicated in which there are no joints in the bottom corners and no cut edges extending to any of the corners.

Other objects of the invention will appear hereinafter.

Referring to the accompanying drawings:

Fig. 1 is a view of a flat blank of sheet material cut and scored for folding to form a rectangular receptacle embodying my invention.

Fig. 2 is a perspective view on a larger scale, of the receptacle in an inverted position, the bottom end being shown partly folded.

Fig. 3 is a horizontal cross section of the receptacle giving a plan view of the inner surface of the folded bottom.

Referring to Fig. 1, the blank is cut from a strip of paper or other sheet material and is provided with fold lines, shown on the drawing as broken lines, along which the blank is folded for shaping the article. The fold lines may consist of score lines, creases or weakened lines. The blank is adapted to be folded along parallel fold lines 4, 5, 6, and 7, to form the rectangular body of the receptacle, said body comprising panels or sides 8, 9, 10 and 11. The upper and lower margins of the body are defined by horizontal score lines 12 and 13 respectively. A side seam strip 14 is folded inwardly along the line 7 to lie against the inner surface of the panel 8 and is adhered thereto by any suitable adhesive for forming a liquid-tight seam.

The panels 8, 9, 10, and 11 have bottom-forming extensions or sections 15, 16, 17, and 18, foldable inwardly along the score line 13 after the body

2

has been formed, to shape the bottom of the container. These extensions are not separated by lines of cleavage, the adjoining edges of the extensions being united along the fold lines 4, 5, and 6 which are extended downward through the bottom-forming portion of the blank.

The outline of the lower end of the blank is defined by lines extending between the points A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, and R. The score line 13 intersects the vertical corner score lines 4, 5, 6, and 7 at the points S, T, U and V respectively. The section 16 is provided with diagonal score lines extending respectively between the points SJ and TI, thereby dividing it into a main section 16' in the form of a truncated triangle and triangular corner sections 19 and 20. In folding the bottom-forming extensions, the sections 19 and 20 are folded back against the outer surface of the section 16'. The section 18 is also provided with diagonal score lines extending between the points UD and VC and dividing it into a main section 18' and triangular corner sections 21 and 22 which fold back against the section 18'. The seam strip 14 is extended below the score line 13 and provides a rectangular strip 23 which folds into the bottom of the container.

The side panels 9 and 11 as shown, are substantially narrower than the sides 8 and 9, but if desired, the panels may all be of equal width to provide a square body. The bottom outline of the blank is designed to permit nesting of the blanks, the bottom ends of which will fit or nest together when the blanks are placed end to end with the sections 15, 16, 17 and 18 of one blank opposite the sections 18, 17, 16, and 15 respectively of another. For this purpose, the edge EF is offset a short distance to the left of the corner score line 6, thereby shortening the lower portion of the flap section defined by the line EFGH, so that the length of this portion, namely, the length of the line FG, is equal to the line AE. Also the line LM is offset to the left of the score line 4, so that the line HL is lengthened to the length of the line FG.

In folding the blank, the rectangular body is first formed as above described. The bottom forming sections 15, 16, 17, and 18 are then folded inwardly. The sections 16' and 18' fold inwardly to form the innermost layer of the folded bottom. As the section 16' swings inward, the triangular sections 19 and 20 fold back to lie against the section 16' and form intermediate layers. The triangular sections 21 and 22 also fold back against the section 18' to form intermediate layers. The section 15 folds inwardly to lie against the sections 16 and 18. The section 17 when folded in,

overlaps the section 15 and forms the outermost or bottom layer and comprises the major portion of the bottom surface of the container.

The extension 23 of the side seam strip 14 folds inwardly to overlie the triangular section 22, the latter forming an intermediate layer between the strip 23 and the section 18'. The recess in the section 15, defined by the line OPQR, is shaped and positioned so that in the folded bottom, the edge OP abuts the end edge AB of the section 23, and the edge PQ abuts the longitudinal free edge of the section 23. Thus the section 15 has a portion cut out to provide a recess comprising the area defined by the superposed portions of the folded triangular section 22 and the overlying section 23. This avoids a four-ply thickness.

In the folded bottom a butt joint is formed at the edge AB of the section 23 and the edge OP. Butt joints are also formed at the edge MN of the section 15 where it abuts the edges DE and HI of the triangles 21 and 20 folded back or superposed on the sections 18' and 16'. Butt joints offset by one thickness of paper are formed at the edge FG of the section 17 which registers with the edges BC and JK of the triangles 22 and 19 respectively, which fold back to lie against the sections 18' and 16', the section 15 being interposed between the said edges of the triangles and said edge FG. A butt joint offset by one thickness of paper is also formed at the diagonal line QR and the diagonal edge VC with the interposed side seam extension 23. The superposed layers of the folded bottom are secured together by an adhesive material in a conventional manner to provide a liquid-tight receptacle.

Modifications may be resorted to within the spirit and scope of my invention.

I claim:

1. A blank of sheet material for forming an article having a rectangular body and a closed bottom end, said blank having parallel score lines defining panels which form the said body, said panels comprising narrow panels alternating with comparatively wide panels, said blank being formed with a base score line perpendicular to and intersecting the said parallel lines to form the bottom edge of the receptacle, the said panels being extended downward below said base line to provide a foldable bottom-forming portion, the wide panels being extended beyond the narrow panels to provide extensions of greater width than those of the narrow panels, the said extensions of the narrow panels each being formed with downwardly convergent diagonal score lines extending from the base line and thereby dividing each of said extensions of the narrow panels into a central section in the form of a truncated triangle and outer triangular sections, the latter being adapted to fold back against the truncated triangles, the said extensions of the wide panels being shortened in a direction transverse to the panels, with the distance between said extended portions being substantially equal to their length, thereby permitting nesting of the blanks with their bottom ends adjoining.

2. A receptacle having a rectangular body and a closed end, said receptacle comprising the blank defined in claim 1, folded to shape the receptacle.

3. A blank of sheet material for forming an article having a rectangular body and a closed bottom end, said blank having parallel score lines defining panels which form the said body, said panels comprising narrow panels alternating with comparatively wide panels, said blank being formed with a base score line perpendicular to and intersecting the said parallel lines to form the bottom edge of the receptacle, the said panels being extended downward below said base line to provide a foldable bottom-forming portion, the wide panels being extended beyond the narrow panels to provide extensions of greater width than those of the narrow panels, the said extensions of the narrow panels each being formed with downwardly convergent diagonal score lines extending from the base line and thereby dividing each of said extensions of the narrow panels into a central section in the form of a truncated triangle and outer triangular sections, the latter being adapted to fold back against the truncated triangles, said blank being formed with an integral side seam strip extending along one of said parallel score lines, said strip being extended below the said base line at one corner of the blank, said blank being formed with a recess adjacent the opposite lower corner of the blank, said recess being shaped and positioned to register with said strip extension when the blank is folded, the said extensions of the wide panels being shortened in a direction transverse to the panels, with the distance between said extended portions being substantially equal to their length, thereby permitting nesting of the blanks with their bottom ends adjoining.

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