Feb. 8, 1949. C. O. BALL ET AL 2,461,251

CONTAINER

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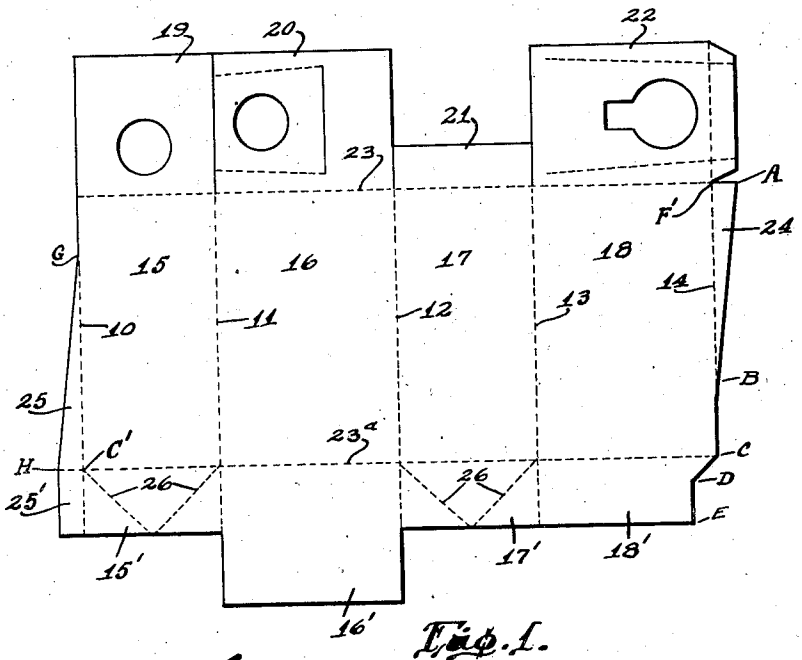

Fig. 1.

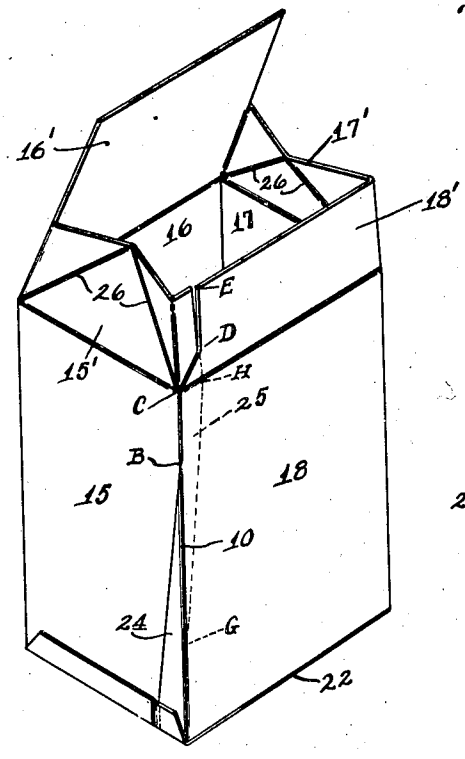

Fig. 3.

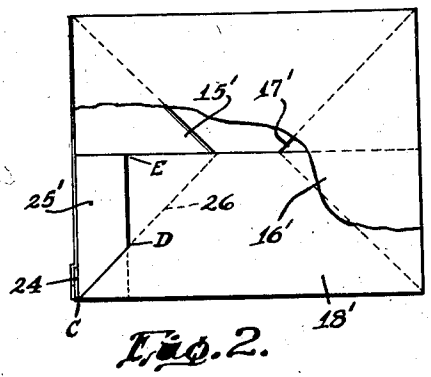

Fig. 2.

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CONTAINER

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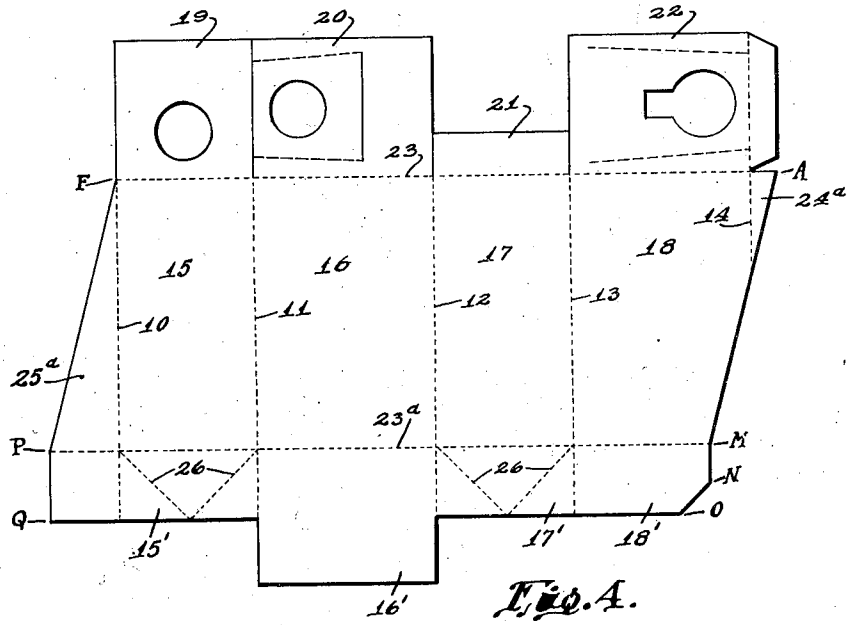

Fig. 4.

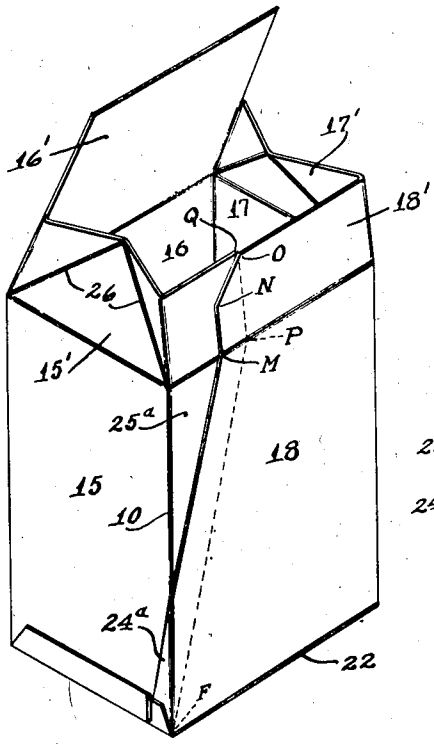

Fig. 6.

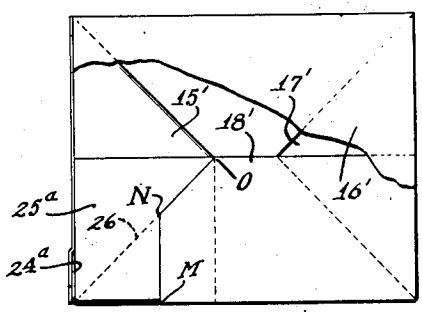

Fig. 5.

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CONTAINER

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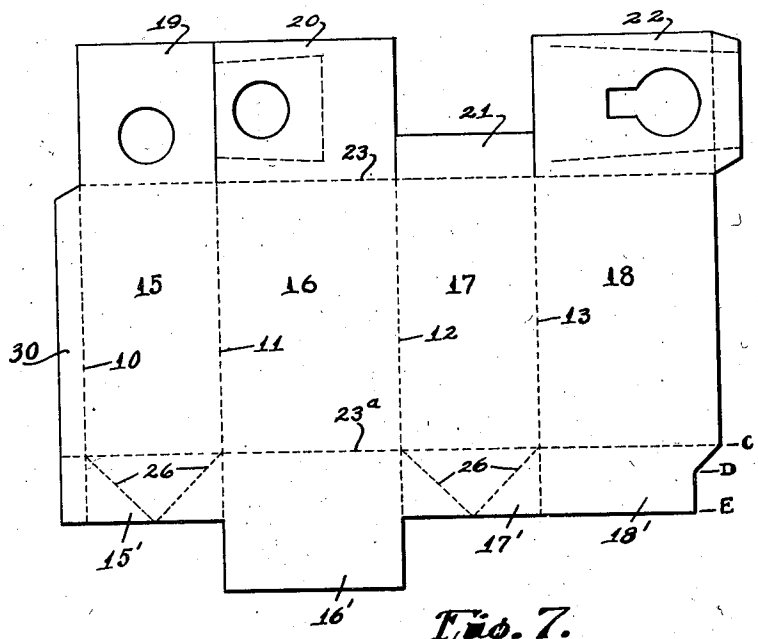

Fig. 7.

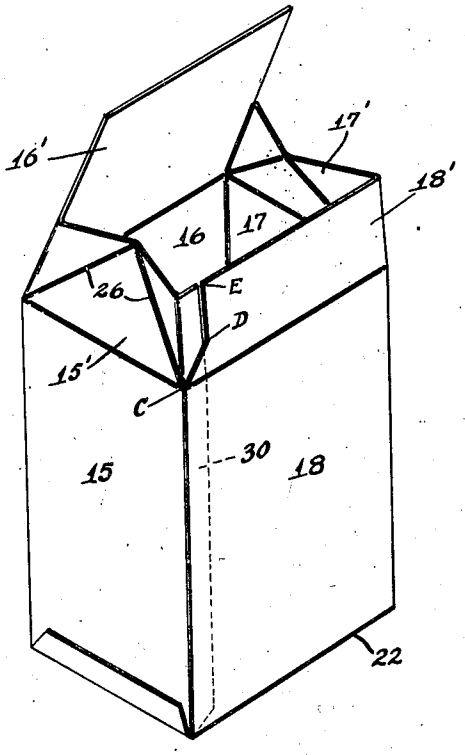

Fig. 9.

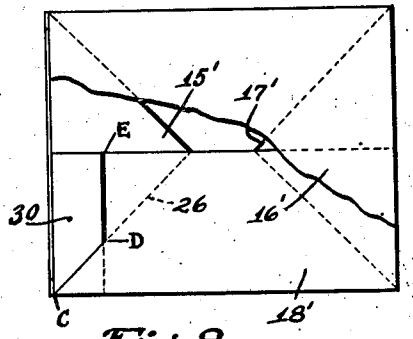

Fig. 8.

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2,461,251

CONTAINER

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Application March 12, 1945, Serial No. 582,250

4 Claims. (Cl. 229—37)

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Our invention relates to containers made of sheet material such as paper or cardboard, the containers being formed from blanks of the sheet material provided with creases or score lines at which the blanks are folded to shape the containers. The invention provides containers suitable for holding milk and other liquids.

The bottom of a paper container, for liquids such as milk, of ordinary folding flap construction or of any other construction in which a joint occurs in the exact corner, is unreliable and prone to leakage because such a corner joint is easily injured, during ordinary or normal use of the container, in a manner to cause leakage.

An object of the present invention is to overcome this weakness by providing a novel and practical construction in which the formation of joints at the bottom corners thereof is avoided and in which such corners are reinforced and protected in a manner to give greater strength and resistance to leakage than in structures having joints or flaps at the corners thereof.

Other objects of the invention will appear hereinafter.

Referring to the accompanying drawings:

Fig. 1 is a plan view of a blank with score lines or creases adapting it to be folded to form a container in accordance with the present invention.

Fig. 2 is a bottom end view of the container on a somewhat larger scale and with a portion of the outer end flap broken away.

Fig. 3 is a perspective view of the container in inverted position, the end portion of the blank forming the bottom of the container being only partly folded.

Figs. 4, 5, and 6 illustrate a modification and correspond respectively to Figs. 1, 2, and 3.

Figs. 7, 8, and 9 are views similar to Figs. 1, 2, and 3 respectively, and show a further modification.

Referring to Fig. 1, which shows the blank of sheet material from which the container is formed, the blank is provided with vertical creases or score lines 10, 11, 12, 13, and 14 at which the blank is folded to form a tubular body, rectangular in cross section and having vertical, rectangular sides 15, 16, 17 and 18. The term score line is used herein to designate any crease or weakened line adapting the sheet material to be folded or bent along such line. The upper end of the container comprises a series of flaps 19, 20, 21 and 22 integral with the body portion of the container and folded inwardly along a

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crease 23 which defines the upper margin of the tubular body.

The body portion of the blank includes side strips or flaps 24 and 25 at opposite ends thereof adapted to be folded along the creases 14 and 10 respectively for forming a body seam. The flap 24 is in the form of a triangle A, B, F', the upper side F', A of the triangle being an extension of the line 23, and the outer edge of the flap being inclined to the crease 14 and meeting the latter at the point B. Below the point B, the outer edge of the blank extends vertically downward in line with the crease 14 to the point C at the end of a horizontal score line 23^a which defines the bottom margin of the container.

The flap 25 at the opposite side of the blank includes a vertical portion in the form of a triangle G, H, C', similar in shape to the flap 24, but having the short side of the triangle coinciding with the end portion of the score line 23^a and the inner edge of the strip formed by the score line 10. When the blank is folded to shape the tubular body of the container, the flap 24 is folded over on the outer surface of the side 15 and the flap 25 is folded inwardly and lies against the inner face of the side 18, the flaps being glued or adhered to the sides of the container to form a liquid-tight seal. It will be seen that with this construction, the flaps 24 and 25 overlap and form a double wall thickness along that portion of the vertical edge of the container between the points B and G.

The bottom end of the container is formed from that portion of the blank below the horizontal score line 23^a, said portion comprising a continuous unbroken strip extending the full width of the blank. The score lines 10, 11, 12, and 13 are extended to the lower edge of the blank and provide the corner creases along which the end portion is folded inwardly after the body of the container has been formed as shown in Fig. 3. These bottom end extensions of the side panels 15, 16, 17 and 18 are designated respectively 15', 16', 17', and 18'. Each of the sections 15' and 17' is provided with a pair of diagonal creases 26 along which the section is folded concurrently with the folding inwardly of the section as a whole. The section 16' is of greater width than the section 18' and covers the end sections 15', 17' and 18' in the folded bottom end.

The side seam strip 25 is extended downwardly beyond the margin line 25 and this extension 25' folds inwardly to overlie the section 15'. One corner of the section 18' (Fig. 1) is cut away

along the diagonal line C, D, and vertical line D, E, so that in the folded position, the edge D, E abuts the edge of the strip 25'. This construction avoids the double wall thickness of the side seam being extended to overlie the folded extension 15'.

In the modification shown in Figs. 4, 5, and 6, the right-hand edge of the body-forming portion of the blank (Fig. 4) is a straight diagonal line extending between the points A and M. This line is at a greater angle to the vertical than the corresponding line A, B, in Fig. 1, and thereby forms a comparatively short folding strip 24a. It also cuts off a section of the side panel 18. Below the line 23a, the edge is extended vertically downward from a point M to N and thence diagonally downward and inward to a point O at the bottom edge of the section 18'.

The left-hand end of the blank below the score line 23 is outlined by a diagonal line extending from the point F downward and outward to the point P at the end of the score line 23a, and thence vertically downward to a point Q at the lower left-hand corner of the blank. The diagonal line F, P is at a wider angle with the vertical than the corresponding line in Fig. 1, thereby providing a comparatively wide side seam strip. These diagonal lines at opposite ends of the blank are substantially parallel so that in the folded blank they overlap and provide a side seam of substantially uniform width extending along the vertical panel 18 with the triangular section 24a folded over the vertical side 15 and with the strip 25a forming a corner portion of the vertical side 18 of the container. The lower right-hand corner of the blank is cut away along the line N, O so that in the folded container bottom it will not overlap the double thickness of the material formed by the folded end section 15'.

The construction shown in Figs. 7, 8, and 9 differs from that of Figs. 1, 2, and 3, in the outline of the end portions of the blank and in the resulting modification of the side seam in the finished container. The triangular strip 24 of the Fig. 1, forming a portion of the side seam, is entirely omitted in the blank shown in Fig. 7 so that the edge of the blank is vertical between the upper and lower score lines 23 and 23a and forms a vertical edge of the container when the blank has been folded. The left-hand end of the blank is provided with a side seam strip 30, the outer edge of which is parallel with the score line 10, the strip 30 being of equal width substantially throughout its length. In the folded container the side seam strip 30 is extended into the bottom end portion of the container, the same as in the form shown in Figs. 1 to 3.

Modifications may be resorted to within the spirit and scope of our invention. For example, in Figs. 1 and 3, instead of flap 24 being folded over the outer surface of the side 15 and the flap 2 lying against the inner face of the side 18, the flap 24 may be folded inwardly to lie against the inner face of side 15 and the flap 25 may be folded over the outer surface of the side 18. Similar modifications may be made in the design shown in Figs. 6 and 9.

We claim:

1. A blank of sheet material adapted to be folded for forming a container having a rectangular tubular body and a closed bottom end, said blank being of generally rectangular shape and having parallel score lines spaced to define the four sides of said body and along which the blank is adapted to be folded for forming said body, and a transverse score line in position to define the lower edge of the four sides of said body, the portion of the blank below said transverse score line being in the form of a bottom strip adapted to be folded inwardly and form the bottom end of the container, the blank including a side seam flap at one end thereof, one of said vertical score lines forming the inner edge of said flap, said flap being continued downward below said horizontal score line and through said bottom strip, whereby when the blank is folded to shape the container, the side seam is carried into a bottom end portion of the container, said side seam flap being tapered inwardly and upwardly from a point adjacent to said horizontal score line with the upper end of its outer edge terminating in a said vertical score line at a point spaced below the upper end of said body.

2. A blank of sheet material adapted to be folded for forming a container having a rectangular tubular body and a closed bottom end, said blank being of generally rectangular shape and having parallel score lines spaced to define the four sides of said body, along which the blank is adapted to be folded for forming said body, and a transverse score line in position to define the lower edge of the four sides of said body, the portion of the blank below said transverse score line being in the form of a bottom strip adapted to be folded inwardly and form the bottom end of the container, the blank including a side seam flap at one end thereof, one of said vertical score lines forming the inner edge of said flap, said flap being continued downward below said horizontal score line and through said bottom strip, whereby when the blank is folded to shape the container, the side seam is carried into a bottom end portion of the container, said side seam flap having its outer edge extending diagonally upward and inward from said bottom margin score line and terminating in a said vertical score line, said blank comprising a second side seam flap at the end of the blank opposite said first mentioned flap, said second flap having its inner edge defined by a said score line and its outer edge extending diagonally downward and inward from a point adjacent the upper end of the body portion of the blank, the lower end of said second flap being spaced below the upper end of the first mentioned flap.

3. A blank of sheet material of a shape to be folded for forming a container having a rectangular tubular body and a flat closed bottom end, said blank having vertical score lines spaced to define the four sides of said body and along which the blank is adapted to be folded for forming said body, said blank having upper and lower transverse score lines extending along the inner edges of top and bottom strips and along which the upper and lower portions respectively of the blank are foldable for forming the upper and lower ends of the container, said blank having a side seam flap at one end thereof, said flap having an outer diagonal edge extending diagonally downward and outward from the upper to the lower transverse score line, the flap being extended downward through said bottom strip, the blank having a second diagonal edge at the opposite end of the blank from said strip, said second diagonal edge being extended diagonally downward and inward from the upper to the lower said transverse score line, substantially parallel with said first mentioned diagonal edge, said second diagonal edge being positioned to meet a said vertical score line at an intermediate point

between said transverse score lines, whereby a tapered side seam flap is formed above said intermediate point.

4. A container comprising a rectangular, tubular body and a closed bottom end, said container being formed of a single piece blank of flexible sheet material, said blank being folded along vertical score lines forming the vertical edges of said body, and a horizontal bottom score line forming the bottom edges of said body, said container having a side seam extending vertically along one vertical edge of the body and comprising inwardly folded integral flaps, said flaps being of tapered form, one said flap being tapered downwardly and inwardly from the upper edge of the body, the other flap being tapered upwardly and inwardly from the lower edge of the body, said flaps having overlapping portions intermediate the upper and lower edges of said body.

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