April 26, 1949. J. NORDEN 2,468,306

ONE-PIECE PAPER CONTAINER

Filed Dec. 18, 1946 7 Sheets-Sheet 1

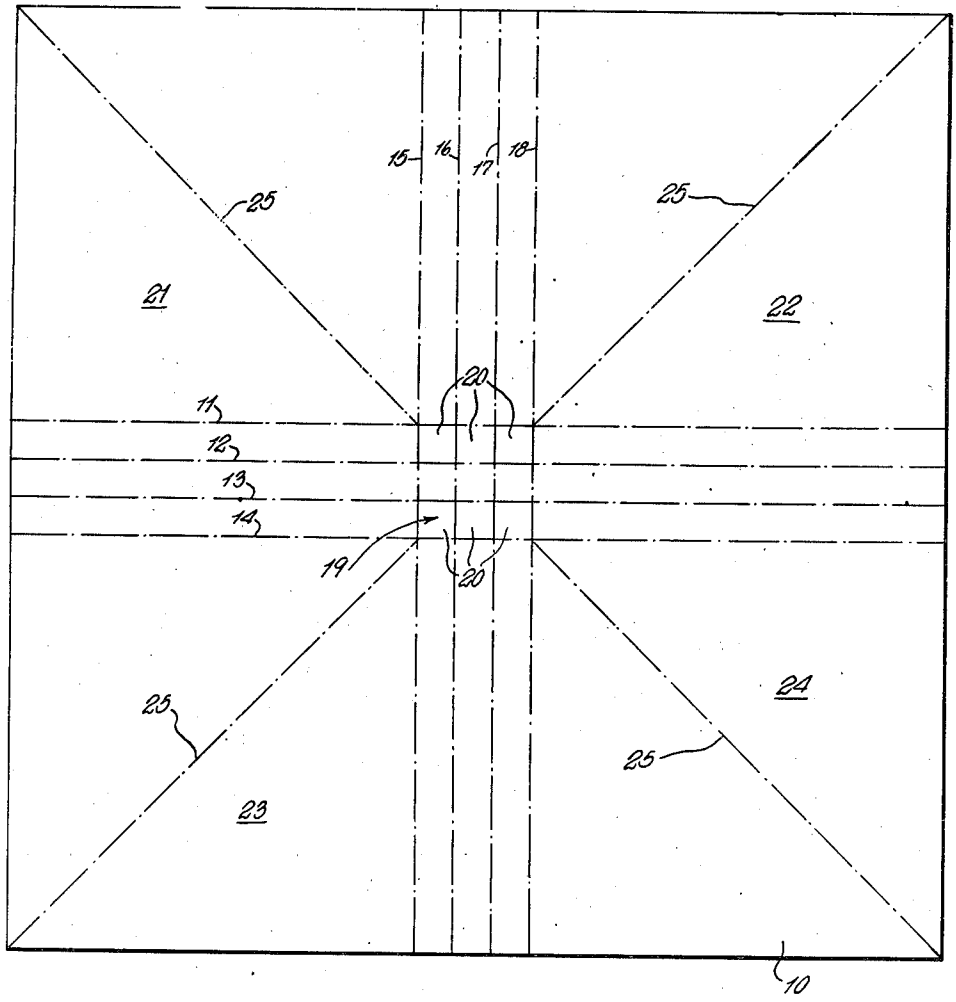


Fig. 1.

INVENTOR.
JESSE NORDEN
BY
John & Rose
ATTORNEYS

April 26, 1949. J. NORDEN 2,468,306

ONE-PIECE PAPER CONTAINER

Filed Dec. 18, 1946 7 Sheets-Sheet 2

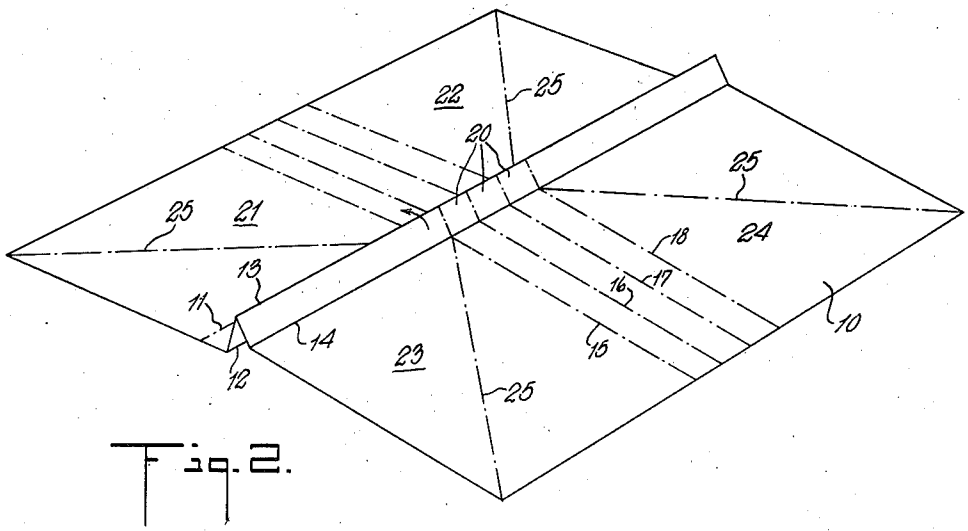


Fig. 2.

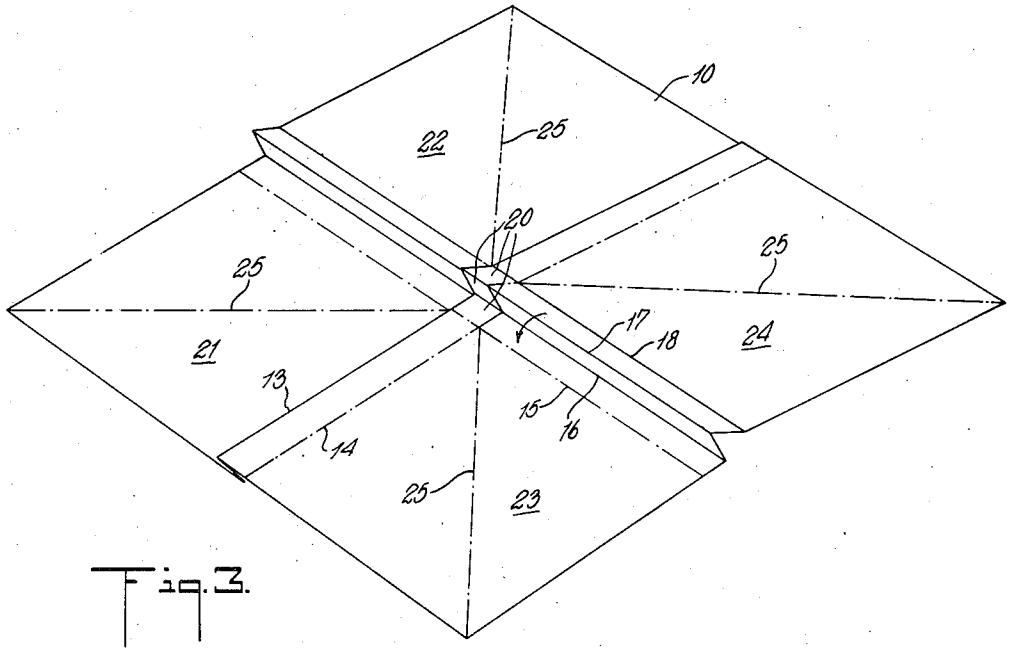


Fig. 3.

INVENTOR.
JESSE NORDEN
BY
John & Poe
ATTORNEYS

April 26, 1949. J. NORDEN 2,468,306

ONE-PIECE PAPER CONTAINER

Filed Dec. 18, 1946 7 Sheets-Sheet 3

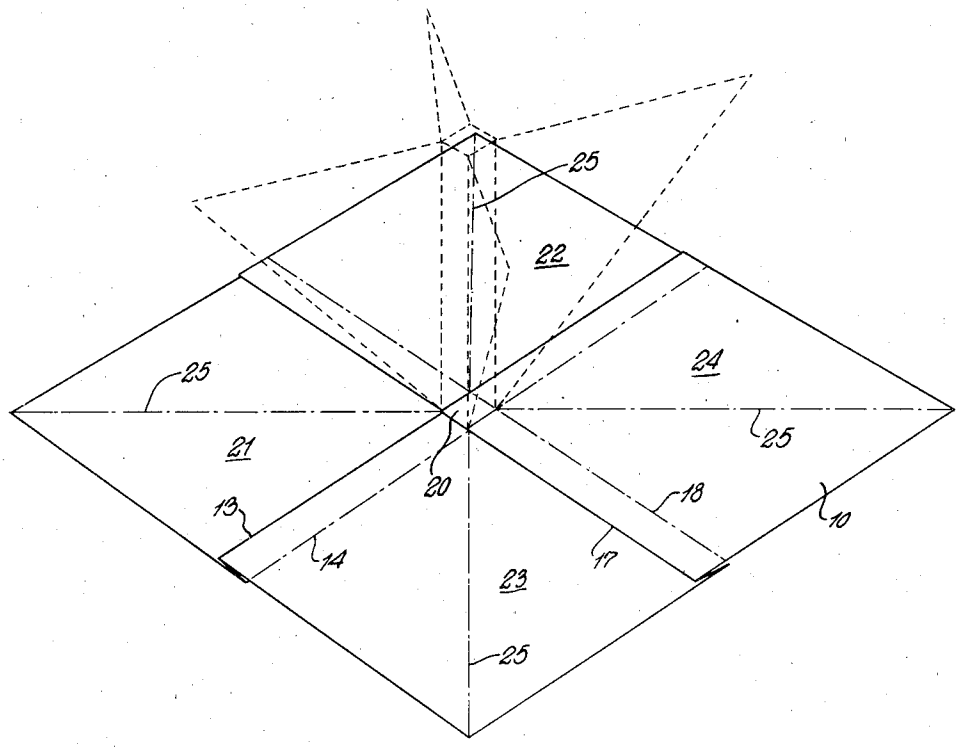


Fig. 4.

INVENTOR.
JESSE NORDEN
BY
John & Rose
ATTORNEYS

April 26, 1949. J. NORDEN 2,468,306

ONE-PIECE PAPER CONTAINER

Filed Dec. 18, 1946 7 Sheets-Sheet 4

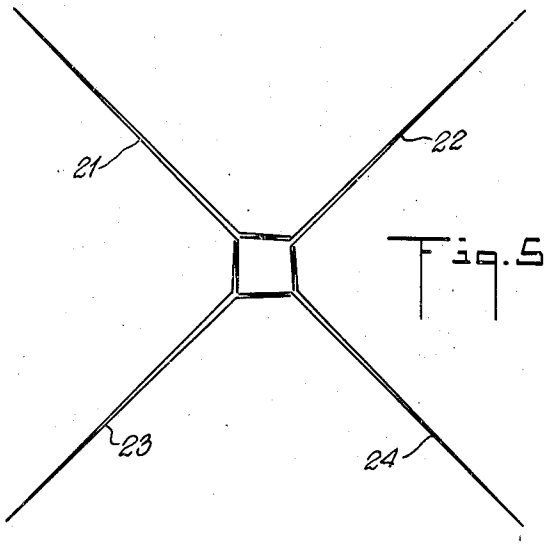


Fig. 5.

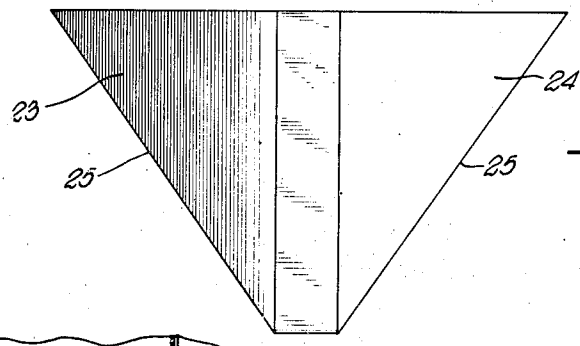


Fig. 6.

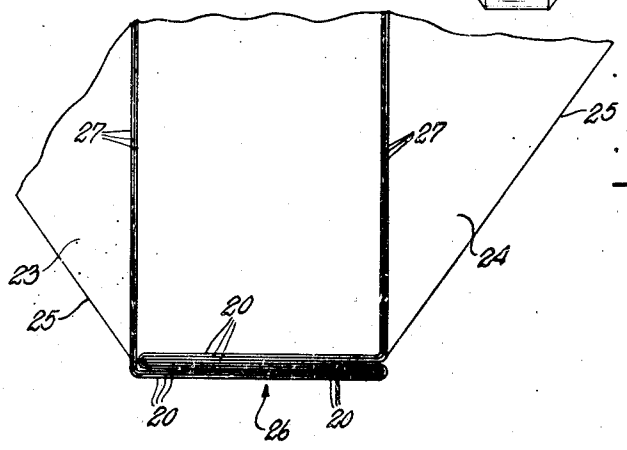


Fig. 7.

INVENTOR.
JESSE NORDEN
BY
Jones & Roe
ATTORNEYS

April 26, 1949. J. NORDEN 2,468,306

ONE-PIECE PAPER CONTAINER

Filed Dec. 18, 1946 7 Sheets-Sheet 5

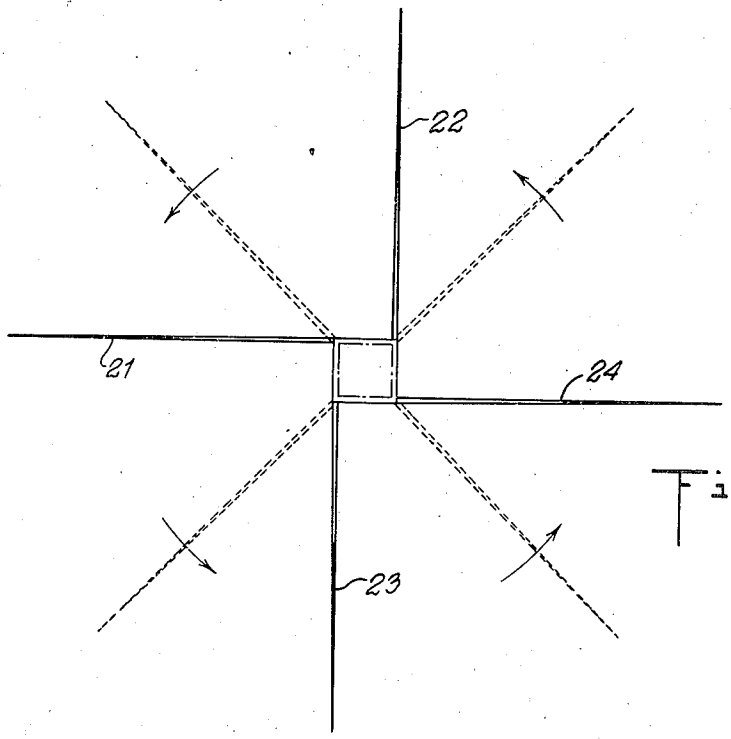


Fig. 8.

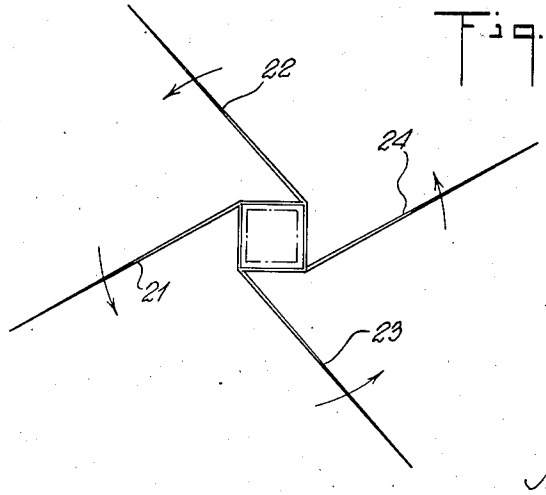


Fig. 9.

INVENTOR.
JESSE NORDEN
BY
Jones & Rose
ATTORNEYS

April 26, 1949. J. NORDEN 2,468,306

ONE-PIECE PAPER CONTAINER

Filed Dec. 18, 1946 7 Sheets-Sheet 6

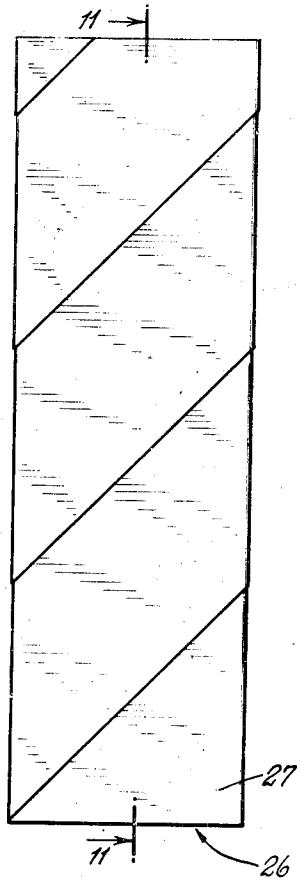


Fig. 10.

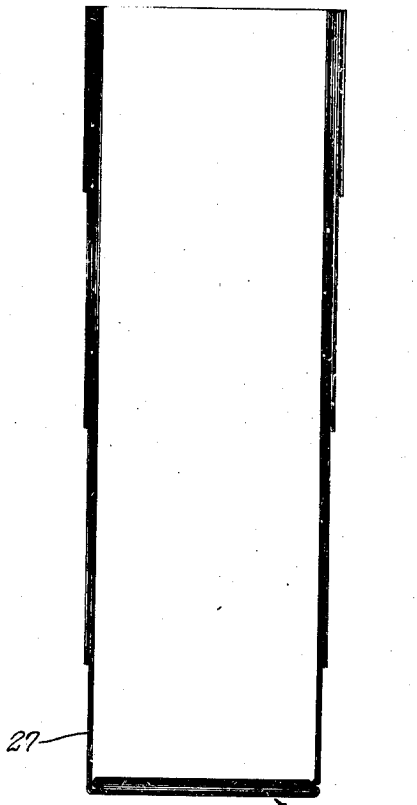


Fig. 11.

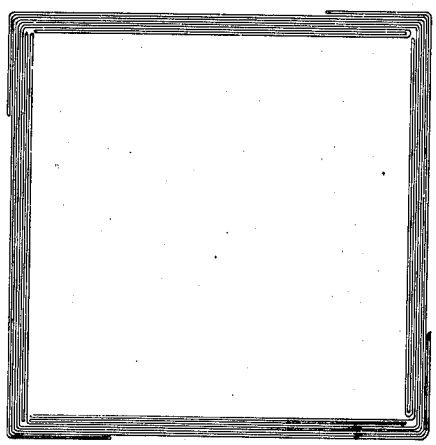


Fig. 12.

INVENTOR.
JESSE NORDEN
BY
Jones & Rose
ATTORNEYS

April 26, 1949. J. NORDEN 2,468,306

ONE-PIECE PAPER CONTAINER

Filed Dec. 18, 1946

7 Sheets-Sheet 7

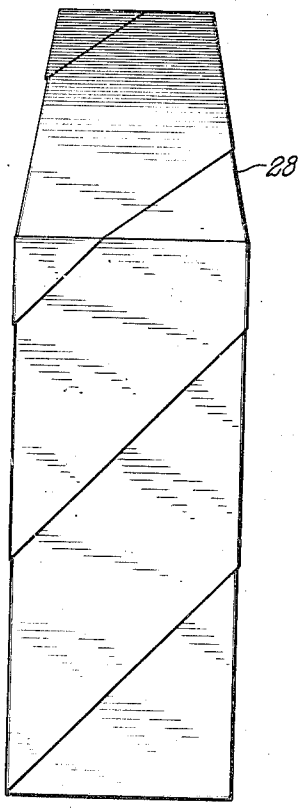


Fig. 13.

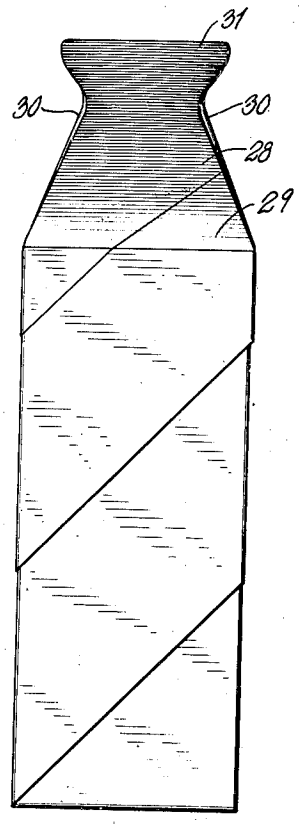


Fig. 14.

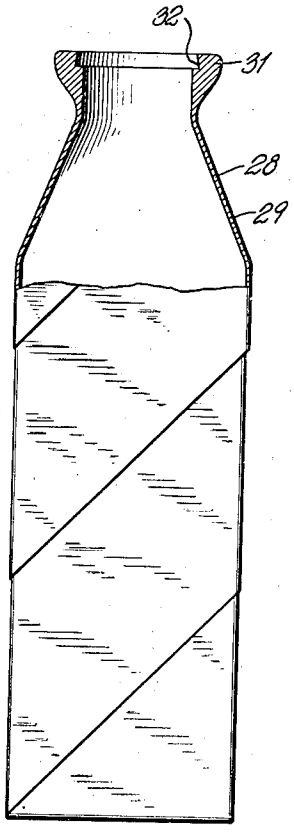


Fig. 15.

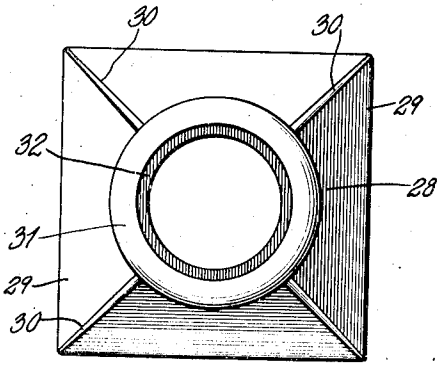


Fig. 16.

INVENTOR.
JESSE NORDEN
BY
Jome & Roa
ATTORNEYS

Patented Apr. 26, 1949

2,468,306

UNITED STATES PATENT OFFICE

2,468,306

ONE-PIECE PAPER CONTAINER

Jesse Norden, Woodmere, N. Y.

Application December 18, 1946, Serial No. 716,959

4 Claims. (Cl. 229—3.5)

1

In the field of paper containers, and more especially with respect to milk bottles, there is still considerable to be desired to render them thoroughly practical. The principal objection is that bottles of this type are not sufficiently rugged to withstand the rough handling to which they are so frequently subjected, thereby causing breakages or ruptures which ruin the containers and thus defeat the essential object sought—namely, that of economy. Other defects reside in the excessive number of parts required to produce a container, accompanied, obviously, by an increased cost of manufacture; they do not lend themselves to economical, large scale production; they lack the proper contour which makes for easy handling and compact storage.

I have eliminated the aforesaid inherent disadvantages by constructing a bottle from a single sheet of fibrous material, as paper, which is characterized by maximum strength and rigidity; which permits of economical quantity production; and which is fashioned in modern design to expedite handling, packing and storage.

In a general sense, the present invention comprehends a container formed from a rectangular sheet of fibrous material—paper for example—which is subjected to double folding in two directions in such manner as to produce a contraction of the original sheet into a relatively flat form incorporating a stratified base with manifold flaps extending therefrom which are subsequently deflected upwardly to constitute the body, neck and lip portions.

More specifically, the invention comprises a rectangular sheet of paper which is folded transversely upon itself so that one portion overlaps the other portion. The larger portion is then folded rearwardly whereby it extends beyond the edge of the smaller portion for a distance equivalent to the overlap of the larger portion. Thereafter the forward and reverse folding operations are repeated with respect to the two portions previously folded, but at right angles to the first forward and reverse folds—presenting a rectangular form of reduced pattern which consists of corner flaps having a single thickness of paper, and medial and intermediate flaps of plural layers of paper, all of the flaps designed to be struck-up from the medial flaps, with the corner flaps creased at their diagonal centers and folded exteriorly of, and hugging, the adjacent intermediate flaps—said flaps thus constituting the body, the upper extremities of which are moulded into a tapering neck provided with a lip having a cap-receiving recess.

2

In the drawings:

Fig. 1 is a top plan view of the blank employed.

Figs. 2 and 3 are perspective views of forward and reverse folding operations.

Fig. 4 is perspective of the sheet after it has been subjected to two double foldings at right angles to each other—the position of the flaps after subsequent flexing being shown in dotted lines.

Fig. 5 is a top plan showing the shape of the components after they have received a preliminary upward folding, and Fig. 6 is a front elevation thereof.

Fig. 7 is a fragmentary view of the lower extremity of the form illustrating the relationship of the flaps,

Figs. 8 and 9 are top plan views exhibiting the manner of pleating the flaps to produce the body.

Fig. 10 is a side elevation of the container as it appears subsequent to the completion of the folding operations.

Fig. 11 is a vertical sectional elevation taken along lines 11—11 of Fig. 10.

Fig. 12 is a top plan of the container as depicted in Fig. 9.

Figs. 13, 14 and 15 are side elevations of the container showing the different stages in the formation of the neck and lip, and the reinforcements therebetween, and

Fig. 16 is a top plan view of the receptacle in its final form.

As will be seen in Fig. 1, I begin with a rectangular sheet of paper 10 which is scored or similarly weakened transversely at equidistantly spaced intervals 11, 12, 13 and 14, and at right angles thereto—see 15, 16, 17, and 18, so that the scorings intersect centrally to form a miniature checkered design 19, in the present example, consisting of nine squares 20. To further facilitate folding, the corners 21, 22, 23 and 24 of sheet 10 are diagonally scored at 25.

With the scored delineations serving as a guide, the next step consists of folding the sheet forwardly along line 13—see Fig. 2—and reversely at 12. Then with the portions folded as indicated at the front edge of Fig. 3, the sheet is folded forwardly along line 17 at right angles and then reversely at 16, also illustrated in Fig. 3. Succinctly, each of the preceding steps involves double folding operations—forward and reverse—and one set of folding operations transpires at right angles to the other set, with the result that I form a perfect rectangle of reduced pattern and incorporating a multi-ply bottom 26 with nine superimposed layers plies (Fig. 7)—or all of the

squares 20 of the checkered design 19—and corner flaps 21, 22, 23, and 24, of one thickness and triple layered intermediate flaps 27, as will be observed in Fig. 4. Thereupon, the corner flaps are folded at their diagonal scoring lines 25 and caused to assume a triangular shape. Subsequently all of the flaps are struck-up vertically from the bottom, the intermediate flaps or plies constituting the inner side walls of a square container body and the corner flaps radiating therefrom, as shown in Figs. 5 and 6.

The corner flaps are then wrapped spirally and anti-clockwise, about the side walls (Figs. 8 and 9) and the container takes on the form exhibited in Figs. 10 to 12 inclusive, wherein in addition to the fortified base, it will be observed that the side walls assume a multi-ply construction and that the thickness thereof is progressively increased to impart further strength and to provide an abundance of paper at the upper extremity just where it is required, that is, to permit crushing and molding of the paper by suitable compression in the form of a tapered neck 28, with shoulders 29 reinforced by the ribs 30, and a lip 31 having an annular recess 32 to receive a suitable cap—all of which latter portions are of ample thickness of stock to effectively resist rough handling. (Figs. 13–16.)

The sheet from which the container is manufactured is preferably impregnated with a desirable waterproof material, as paraffine. This serves to make the folds adhere to each other, as well as, to impart rigidity to the bottle, in its entirety.

The ultimate container also possesses strength in the maximum degree. The square shape with flat sides makes this bottle easier to grip and hold; the short neck insures easy pouring like a pitcher, with no gurgling and practically no dripping; these bottles pack "square," requiring 43% less room in a given space than the old style round bottle; and they may be manufactured in mass quantity production at a cost of only a few pennies each, which permits of their being thrown away when emptied, and which further, avoids the expense of washing and sterilizing equipment.

I claim:

1. An open ended container formed from a blank of paper or the like having pleats forming a multi-ply bottom from the central portion of the blank and multi-ply side walls formed from portions extending radially of the central portion, the free edges of the blank terminating substantially in a common plane at the open end of the container, and the plies of the bottom and side walls being sealed together.

2. An open ended container rectangular in cross-section formed from a blank of paper or the like having pleats forming a multi-ply bottom from the central portion of the blank and multi-ply side walls formed from portions extending radially of the central portion, the free edges of the blank terminating substantially in a common plane at the open end of the container, and the plies of the bottom and side walls being sealed together.

3. An open ended container rectangular in cross-section formed from a rectangular blank of paper or the like having pleats forming a multi-ply bottom from the central portion of the blank and multi-ply side walls formed from portions extending radially of the central portion, the free edges of the blank terminating substantially in a common plane at the open end of the container, and the plies of the bottom and side walls being sealed together.

4. A container blank comprising a rectangular sheet of paper or the like having two sets of four equally spaced scorings extending at right angles to each other through the medial portions of the blank and intersecting each other at the center of the sheet to define fold lines for forming bottom and side panels for a container, and diagonal scoring extending from the points of intersection of the two sets of scorings and defining fold lines for folding the material joining adjacent side panels reversely.

JESSE NORDEN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
736,955	Garman	Aug. 25, 1903
1,677,040	McGiehan	July 10, 1928
2,046,628	Hoff, Jr.	July 7, 1936
2,248,534	Jagenberg et al.	July 8, 1941
2,328,579	Pelosi	Sept. 7, 1943
2,330,840	O'Neil et al.	Oct. 5, 1943
2,367,749	Barbieri	Jan. 23, 1945