July 2, 1935. S. J. KLEIN 2,006,952

COLLAPSIBLE BOX

Filed Nov. 28, 1933

Fig. 1.

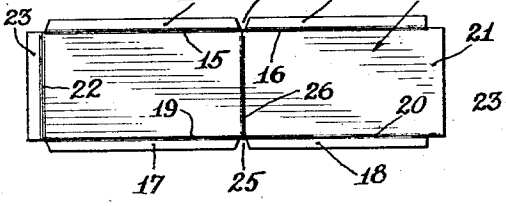


Fig. 2.

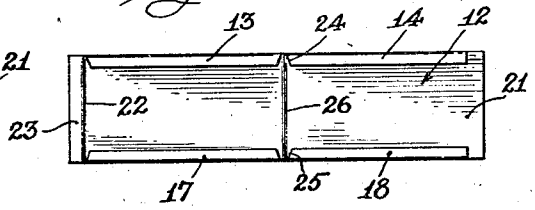


Fig. 3.

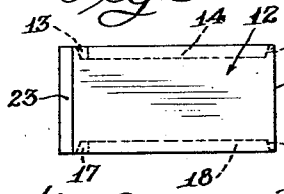


Fig. 4.

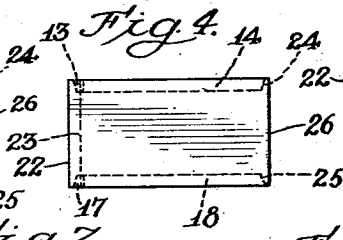


Fig. 5.

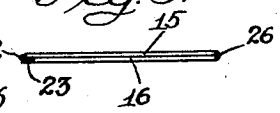


Fig. 6.

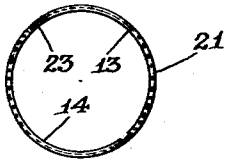


Fig. 7.



Fig. 8.

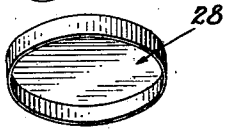


Fig. 9.

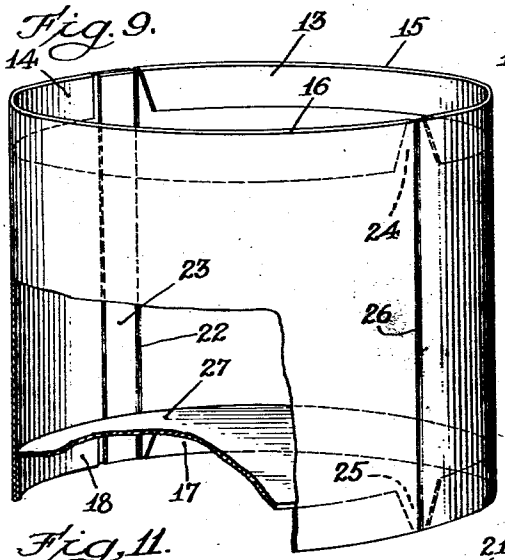


Fig. 10.

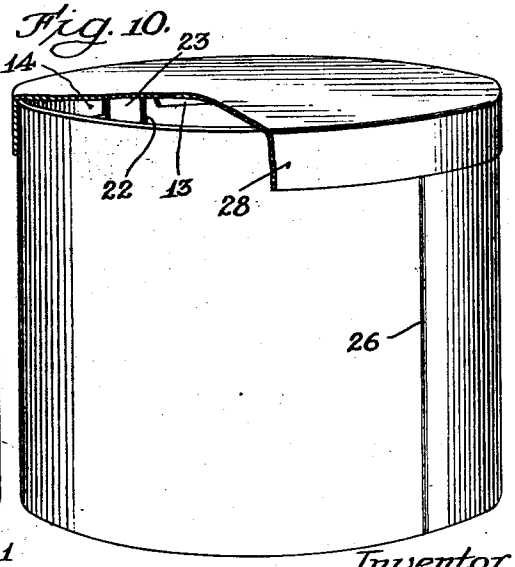
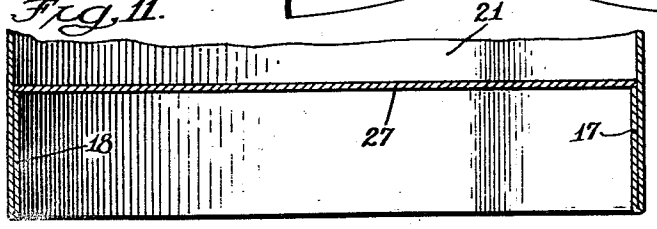


Fig. 11.



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COLLAPSIBLE BOX

Stanley J. Klein, New York, N. Y., assignor to Empire Box Corporation, Chicago, Ill., a corporation of Illinois

Application November 28, 1933, Serial No. 700,102

1 Claim. (Cl. 229—41)

This invention relates to collapsible boxes which may be used in a variety of ways as for packaging hats, bakery goods, flat products, such as filter papers, and the like, and particularly relates to boxes that are either cylindrical or polygonal in outline. Heretofore cylindrical and polygonal boxes adapted for such packaging have been made up and shipped by the manufacturers in completed form, ready for use, but this is disadvantageous because of the problems involved in handling and storing such completed boxes which are susceptible to being damaged easily, as by being punctured, and which require considerable storage space when stacked in stock rooms or the like.

One of the objects of my invention is to furnish novel collapsible cylindrical or polygonal boxes which may be distended as they are put to use, and to provide boxes which when collapsed will require very little space for storage and which may be handled freely without material likelihood of damage.

Boxes of the kind to which my invention appertains usually comprise side walls, bottoms and lids, and another object of my invention is to ship and store the parts of the boxes separately and preferably the parts are stacked or telescoped to facilitate handling and storage.

A further object is to maintain the boxes when distended by positioning parts, shaped similar to the desired configuration, in the distended parts, and an ancillary object is to accurately orient and retain the positioned parts against displacement by providing locating and retaining portions on the distendable parts.

A selected embodiment of my novel collapsible box is illustrated in the accompanying drawing wherein

Fig. 1 is a plan view of the blank for the side wall;

Figs. 2, 3 and 4 are plan views illustrating successive steps in the folding of the blank shown in Fig. 1;

Fig 5 is a bottom view of the side wall folded as shown in Fig. 4;

Fig. 6 is a plan view showing the blank illustrated in Fig. 4 distended;

Fig. 7 is a perspective view of a bottom for the box;

Fig. 8 is a perspective view of a lid for the box;

Fig. 9 is a perspective view, drawn to an enlarged scale and in which certain parts are broken away, showing the side wall distended and having a bottom positioned therein;

Fig. 10 is a view similar to Fig. 9 showing the completed distended box; and

Fig. 11 is a fragmentary transverse sectional view of the bottom part of the distended box.

The side wall of the box is formed from an elongated blank 12, Fig. 1, which is cut from a sheet of paper board or the like. The blank 12 has flaps 13 and 14 along one side edge thereof and joined to the body 21 of the blank along score lines 15 and 16. Flaps 17 and 18 are joined to the body 21 at the opposite side edge of the blank along score lines 19 and 20. The flaps 14 and 18 are terminated inwardly of the adjacent end of the body 21. The flaps 13 and 17 are terminated inwardly of the opposite end of the body and a fold line 22 extends across the main body 21 between the ends of the fold lines 15 and 19 and a tab 23 is joined to this end of the body along the fold line 22. The outer ends of the flaps 13 and 17 are tapered away from the fold line 22. The flaps 13 and 14 are separated from each other substantially medially in the longitudinal extent of the body by a substantially V-shaped notch 24. The flaps 17 and 18 are separated from each other by a similarly located substantially V-shaped notch 25. The apex of the V-shaped notch 24 lies at the juncture of the fold lines 15 and 16 and the apex of the V-shaped notch 25 lies at the juncture of the fold lines 19 and 20. A fold line 26 extends transversely across the body 21 between the apices of the notches 24 and 25.

The first step in making a side wall from the blank 12 is to fold the flaps 13, 14, 17 and 18 inwardly onto the adjacent part of the main body 21. These flaps are then pasted or otherwise suitably secured in this folded position. The blank so folded is illustrated in Fig. 2.

The blank is next folded on the fold line 26 to overlap the parts of the body on opposite sides of this fold line and also to overlap the flaps 13 and 14 and 17 and 18. The blank so folded is illustrated in Fig. 3. By referring to this view it will be noted that the flaps 14 and 18 are shorter than the flaps 13 and 17.

When the blank has been folded as described thus far, the end of the blank adjacent the outer ends of the flaps 14 and 18 overlies the fold line 22. The tab 23 is next folded inwardly to underlie that portion of the main body 21 extending beyond the outer ends of the flaps 14 and 18 and this tab is pasted or otherwise suitably secured to this part of the body 21, thus interconnecting the ends of the blank. This completes the folding of the blank into a

flat package and when so folded the fold lines 22 and 26 lie at opposite ends of the flat blank.

When the flaps 13 and 14 are folded onto the main body portion 21, the edges of the V-shaped notch 24 relieve these flaps away from the fold line 26 and likewise the edges of the V-shaped notch 25 relieve the flaps 17 and 18 away from the fold line 26. The tapering of the outer ends of the flaps 13 and 17 relieves these flaps away from the fold line 22. This relief of the flaps enables the blank 21 to be folded upon itself, as described, and prevents bulging of the flaps at the fold lines and insures a flat package of substantially uniform thickness. A number of such flat packages may be stacked evenly, one upon the other, and this facilitates handling and storage.

When it is desired to form a box, a blank, such as that illustrated in Figs. 4 and 5, is picked up and by resting the fingers against the fold lines 22 and 26 and moving the fold lines toward each other the blank is distended. A blank folded as above described will, when distended, assume a substantially cylindrical shape. However, by providing transverse score lines on the main body 21 at suitably spaced intervals and notching the flaps similarly to the notches 24 and 25 at these fold lines the blank will, when distended, assume polygonal shape, the number of sides being determined by the number of score lines.

After the blank has been distended as shown in Fig. 6, the bottom 27, Fig. 7, is positioned therein. This bottom has an outline similar to that desired in the completed box and hence, in the present instance, the bottom is circular in outline. The bottom 27 is passed into the distended blank until it rests against the inwardmost edges of the flaps 17 and 18, when these flaps are to be arranged at the bottom of the box. These edges of the flaps provide what is, in effect, a ledge. If the flaps 13 and 14 are to be arranged at the bottom of the box, the bottom 27 is then engaged with the inwardmost edges of these flaps. Since the bottom 27 has an outline similar to that desired in the box, this bottom holds the box in distended shape, as is illustrated in Fig. 9. The flaps provide retaining portions which serve to not only orient the bottom in the distended side wall but also to retain the bottom in the side wall, and therefore a rigid self-retaining box is provided into which the product or products to be packaged may be introduced.

The lid 28, Fig. 8, includes a flat disc having a depending lip at the periphery thereof which is adapted to embrace the periphery of the side wall at the end thereof opposite that at which the bottom 27 is arranged. When the lid 28 is arranged in position all portions of the box are brought into the desired configuration and the articles are effectively retained within the now closed box. Inasmuch as the box is formed by distending a flat blank there is some tendency for the blank to unfold and this has the effect of tightly clamping the bottom 27 and the lid 28 to the side wall and this materially aids in retaining the bottom and lid in position.

While I have illustrated and described a selected embodiment of my invention it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claim:

I claim:

A collapsible box comprising a continuous side wall formed from a strip having flaps on each side edge thereof, said strip having an inwardly directed substantially V-shaped notch in each side edge thereof substantially midway between the ends thereof and separating the flaps on the respective side edges, said strip having a fold line extending thereacross between the apices of the notches, each of said flaps terminating in spaced relation with the adjacent end of the strip, said strip having another fold line extending thereacross between corresponding ends of the flaps on opposite side edges of the strip at one end of the strip to provide a flap at one end of said strip, said ends of said flaps being tapered away from said fold line, the flaps on the side edges of the strip being folded inwardly onto the adjacent part of the strip and being pasted thereto to lie flatly thereagainst, said strip being folded upon itself along the fold line extending between said notches, the flap at the end of the strip being folded inwardly upon the adjacent part of the strip and being pasted to the portion of said strip extending beyond the ends of the flaps at the end of said strip opposite the flap whereby said flap lies flatly against said portion of said strip, the fold line at the inner edge of said flap being thereby disposed at one end of the folded strip and the fold line extending between the notches being disposed at the other end of the folded strip whereby the folded strip may be unfolded into the outline of the box by pressing the fold lines toward each other, a bottom passed into the unfolded strip and engaged with the inner edges of the inwardly folded flaps at the bottom of said unfolded strip to retain the strip unfolded in the outline of the box, and a top for the box including a depending lip adapted to engage the periphery of the unfolded strip outwardly of the inwardly folded flaps at the top of the unfolded strip and cooperating with these flaps to reenforce the box and cooperating with the bottom to retain the strip unfolded in the outline of the box.

STANLEY J. KLEIN.