

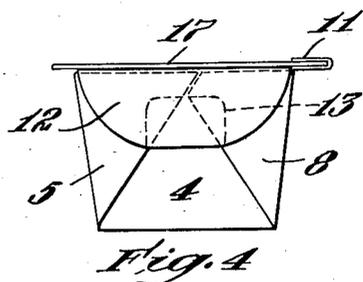
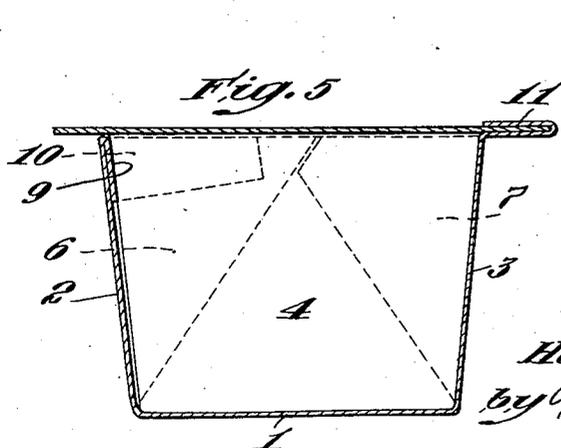
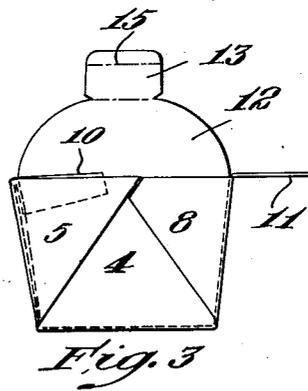
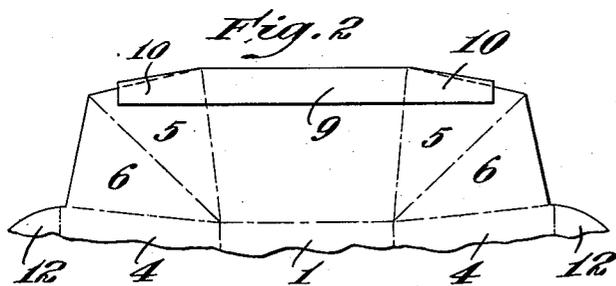
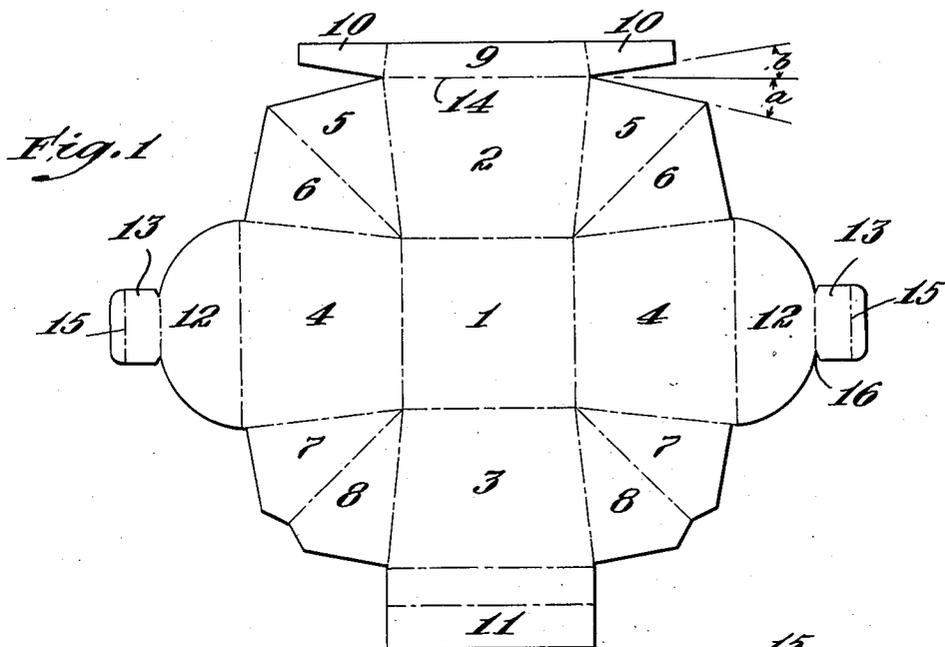
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H. B. CRANSHAW

2,485,704

FOLDED BLANK CUP

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# UNITED STATES PATENT OFFICE

2,485,704

## FOLDED BLANK CUP

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Application October 5, 1944, Serial No. 557,245

1 Claim. (Cl. 229—24)

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This invention relates to a folded cup made from a single piece of stiff paper or other suitable material, the cup comprising a bottom, sides folded to upright position, usually to somewhat less than 90°, and corner gussets folded along two opposite sides, together with means for holding the parts in folded position, the holding means usually comprising flaps on said two opposite sides which fold over the folded gussets to retain the gussets in folded position. While cups of this kind are used for many purposes, they are used extensively as sputum cups in hospitals and the like.

Inasmuch as cups of the aforesaid type are usually not provided with handles the customary way to pick them up is to grasp them with the thumb and fingers engaging opposite sides. Owing to the fact that the cups are usually made of medium weight paper they tend to collapse when grasped in this way. The two opposite sides along which the gussets are folded are stiffened considerably by the gussets and the locking flaps, and sometimes the back is stiffened by a hinged cover or a hinged flap for supporting a hinged cover. However, the front of the cup collapses very easily. To stiffen the front and also to provide a folded edge instead of a sharp edge in front, it has been proposed to provide a flap or flange along the upper edge of the front of the cup, the flange being folded inwardly. However no satisfactory way has been found to hold the front flange firmly against the inside of the top of the cup.

Objects of the present invention are to provide a cup of the aforesaid type which holds the aforesaid front flange firmly against the inside of the front of the cup, which is simple and economical to produce, and which is more rigid and durable in use than prior cups of the aforesaid type.

According to the present invention the front flange has integral arms extending laterally between the folds of the adjacent gussets so that, when the gussets are locked in folded position by the overlapping flaps, each integral arm is clamped between the overlapping halves of the adjacent gussets, thereby holding the front flange firmly in folded position. To effect this pinching action the gussets are folded outwardly along the outside of the cup instead of inwardly along the inner faces of the cup.

The invention also involves V-shaped notches between the arms and gussets to permit the cup to be folded with flaring front, back and side walls instead of vertical walls, the angle of the

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notches being proportional to the degree of flare of the walls. Thus in a cup having side walls which flare slightly the notches should be narrow and in a cup having widely flaring walls the notches should be wide.

To force the front flange more firmly against the inner face of the front of the cup the aforesaid arms are preferably cut so as to project above the upper edges of the gussets when the gussets are in folded position. Thus when the flaps or side extensions are folded over the gussets to lock them in folded position the flaps press the upwardly projecting arms downwardly into line with the upper edges of the gussets, thereby forcing the front flap against the inner face of the front of the cup at the front corners of the cup.

To cause the aforesaid arms to project above the edges of the gussets when the gussets are in folded position, in cutting the blank the opposing edges of the arms and gussets are inclined in opposite directions away from the crease line between the front flange and the front of the cup, so that the angle between the edge of the gusset and the crease line is at least approximately equal to the angle between the edge of the arm and the crease line, and preferably the first angle is larger than the other.

In a more specific aspect of the invention the integral extensions on the sides of the cup for locking the gussets in folded position have ends which fold up under the gussets to lock the extensions in folded position, as described and claimed per se in copending application Ser. No. 557,246, filed October 5, 1944, now abandoned.

For the purpose of illustration a typical embodiment of the invention is shown in the accompanying drawing in which

Fig. 1 is a plan view of the blank from which the cup is made;

Fig. 2 is a similar view of a part of the blank showing the aforesaid front flange folded over;

Fig. 3 is a side view of the cup showing the sides folded into upright position, the gussets also being folded but the extensions for locking the gussets in folded position not having been folded yet;

Fig. 4 is a similar view showing the completed cup; and

Fig. 5 is a central section from front to rear of the finished cup.

The particular embodiment of the invention chosen for the purpose of illustration comprises a bottom 1, front 2, back 3, sides 4, front corner gussets each comprising two parts 5 and 6, rear

corner gussets each comprising two parts 7 and 8, front flange 9 having lateral arms 10, rear flange 11 and lateral flaps 12 with projecting tabs 13, the blank preferably being provided with crease lines as indicated by broken lines in Fig. 1 to facilitate bending and folding. As shown in Fig. 1 the angle  $a$  between the edge of the gusset 5 and the crease line 14 is preferably greater than the angle  $b$  between the crease line and the opposing edge of the arm 10. As more fully described in the aforesaid copending application the tabs 13 preferably have crease lines 15 extending transversely of the tabs near their outer edges and also notches 16 at the junctions between the tabs and the flaps 12. As shown in Fig. 4 the back flange 11 may be folded over the edge of a cover 17 and secured thereto by cement or other suitable means.

In folding the cup the first step is to fold the flange 9 inwardly about the fold line 14 against the inner face of the front 2 with the arms 10 overlapping the gussets 5. Then the front, back and sides are folded upwardly to the upright position shown in Figs. 3, 4 and 5, with the gussets folding outwardly instead of inwardly so that their inner faces come together. Inasmuch as the arms 10 lie along the inner faces of the gussets 5 they are disposed between the gusset parts 5 and 6 when the box is folded. After the front, back and sides have been folded upwardly, with the gussets projecting outwardly, the folded gussets are swung against the outer faces of the sides 4 as shown in Figs. 3 and 4. In this position the edges of the arms 10 project upwardly above the edges of the gussets as shown in Fig. 3, this being due to the difference between the two angles  $a$  and  $b$ . Then when the flaps 12 are folded outwardly over the upper edges of the gussets, the arms are forced downwardly until their upper edges are flush with the upper edges of the gussets as shown in Fig. 5. This forces the flange 9 firmly against the inner face of the front 2. As the flaps are being folded downwardly and as they approach their final position against the

outer faces of the folded gussets, the tabs 13 are tucked upwardly under the gussets. As more fully described in the aforesaid copending application the crease lines 15 facilitate this upward tucking of the tabs and the notches 16 cause the tabs to remain more securely in tucked position.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claim. For example, the cuts 16 may be slits instead of notches.

I claim:

A paper cup of the type having a bottom, outwardly flaring sides, and corner gussets folded outwardly along the outside of two opposite sides, a flange integral with the upper edge of a third side and folded inwardly, the flange having integral arms tapering toward their free ends extending laterally between the folds of the adjacent gussets, said opposite sides having integral extensions adapted to fold over and then under said gussets to hold the gussets in said folded position, and the upper edges of said arms projecting above the upper edges of the gussets when the gussets are in said folded position, whereby when said extensions are folded as aforesaid they press the arms downwardly to hold said flange firmly against the inside of the cup.

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