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CUP-SHAPED FOIL CAPSULE

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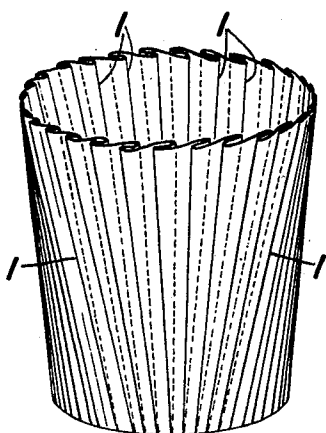


FIG. 1.

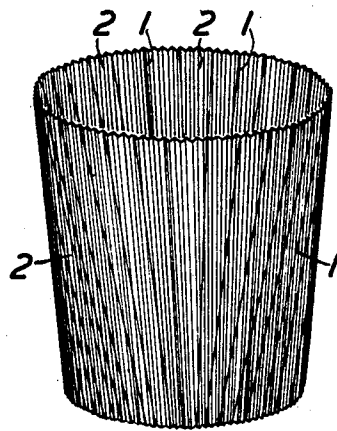


FIG. 2.



FIG. 3.

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UNITED STATES PATENT OFFICE

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CUP-SHAPED FOIL CAPSULE

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1 Claim. (Cl. 229—4.5)

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The present invention relates to cup-shaped capsules of the kind which are made from thin pliable foil such as metal foil by forming a flat blank of foil into cup shape with pleated side-

folds which are compressed and flattened to overlap each other. Such capsules are commonly used as bottle capsules and as containers for confectionery, ice cream and the like. The shape of the compressed sidefolds is retained by the inherent plasticity of the foil material, but with thin foil the stiffness is so small that the folds will easily open up and deform the capsule upon the exercise of the smallest tension. One object of the present invention is to produce a capsule of this kind in which the resistance against opening of the overlapping, flattened sidepleats is materially increased and the coherence of the walls is thereby improved.

A further object is to increase the stiffness of the sidewalls.

A still further object of the invention is to conceal the pleated structure of the sidewalls and thereby enhance the decorative effect of the capsule and to hide the effect of irregularities in the pleating.

According to the invention this is achieved by impressing a number of indentations into the sidewalls of the capsule after forming the same, whereby the overlapping sidepleats are interlocked and the capsule sides stiffened.

Preferably these indentations take the form of narrow relief grooves which intersect and cut the folding lines of the pleats.

Such superimposed relief grooves improve the capsule in several ways. Firstly they stiffen the sidewalls in the same way as corrugated iron sheets are stiffened by the corrugation. Secondly they interlock the overlapping layers of the compressed sheets by compressing the layers jointly into the narrow grooves. Thirdly a work hardening of the foil material takes place by pressing the grooves, which is particularly remarkable with aluminum foil. Lastly the impressed grooves will conceal irregularities in the original folding of imperfectly pleated capsules and thereby improve the decorative effect of such capsules.

It is important that the pitch or spacing apart of the grooves is narrower than that of the side pleats, so that the grooves will form a close pattern which will overlap the folding lines in as many places as possible.

The impressing of the indentations may be effected by compressing the capsule between a male member which fits inside and a female member

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which fits outside. Both members may be hard with their surfaces suitably formed to produce the indentations in the capsule, or one of the members may be of soft material such as rubber and may form part of the walls of a chamber to which pressure fluid is introduced, thereby pressing the capsule sidewalls against the surface of the hard member.

In order that the invention may be the more clearly understood a number of capsules in accordance therewith will now be described together with methods of producing them, reference being made to the accompanying drawings, wherein:

Figure 1 is a perspective view of a pleated capsule before indentations have been impressed into the side walls thereof in accordance with the invention;

Figure 2 is a similar view of the same after indentations have been impressed into the side walls thereof in accordance with the invention;

Figure 3 is an end view to a much larger scale of a portion of the wall of the capsule of Figure 2.

Referring to Figure 1, this shows an ordinary pleated capsule in which the side pleats are compressed to overlap each other all in the same direction. It will be appreciated that it is only for the better illustration of the structure of the overlap that clearances are shown between the overlapping folds. Actually there would be little or no such clearance. Figure 2 shows the same capsule after a plurality of narrow relief grooves have been impressed into the pleated side walls thereof. The reference 1 designates the fold lines of the pleats and the reference 2 the relief grooves. It will be seen that the relief grooves 2 run in line with the generatrix of the capsule. As the side pleats absorb a gradually increasing area of foil towards the open end of the capsule they will increase in width and the fold lines 1 will run at an angle to the generatrix and consequently the said relief grooves 2 will intersect said fold lines. It will further be seen that the spacing apart of the relief grooves 2 is several times narrower than that of the fold lines 1.

Figure 3 illustrates the manner in which the relief grooves 2 produce an interlocking effect between the overlapping parts of the foil, and it will readily be understood that there will be an enhanced interlock at the points at which the relief grooves and the fold lines intersect.

It will be seen that it is possible to use a punch and die as in Figure 3 only when the relief grooves are to be in the line of the generatrix.

What I claim and desire to secure by Letters Patent is:

As an article of manufacture, a container having a side wall formed as a surface of revolution comprising thin soft metal foil formed into cup shape and having pleated side walls of compressed overlapping layers of foil material, said container having a number of relief grooves impressed over the entire surface of the side walls thereof and being superimposed over said pleats, said relief grooves being closer together than the fold lines of the side folds and being parallel to the generatrix of the side wall and intersecting said fold lines, whereby to cause the overlapping layers of the foil material to interlock, the said overlapping layers of foil being held together solely by said relief grooves and without the use of adhesive.

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Number
1,030,637
1,067,237
1,405,112
1,741,490
1,805,212
2,017,054
2,041,437
2,131,438
2,218,388
2,272,920
2,296,889
2,367,749

5

10

15

20

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
	Beadle	June 25, 1912
	Brandt	July 15, 1913
	Greenwald	Jan. 31, 1922
	Angell	Dec. 31, 1929
	Graffenberger	May 12, 1931
	Bruun	Oct. 15, 1935
	Sidon	May 19, 1936
	Jensen	Sept. 27, 1938
	Twombly	Oct. 15, 1940
	Merta	Feb. 10, 1942
	Wiley	Sept. 29, 1942
	Barbieri	Jan. 23, 1945

FOREIGN PATENTS

Number	Country	Date
346,664	Great Britain	Apr. 7, 1931
444,725	Great Britain	Mar. 26, 1936