

July 3, 1934.

L. E. LA BOMBARD

1,965,418

PAPER CONTAINER

Filed March 30, 1932

2 Sheets-Sheet 1

Fig. 1.

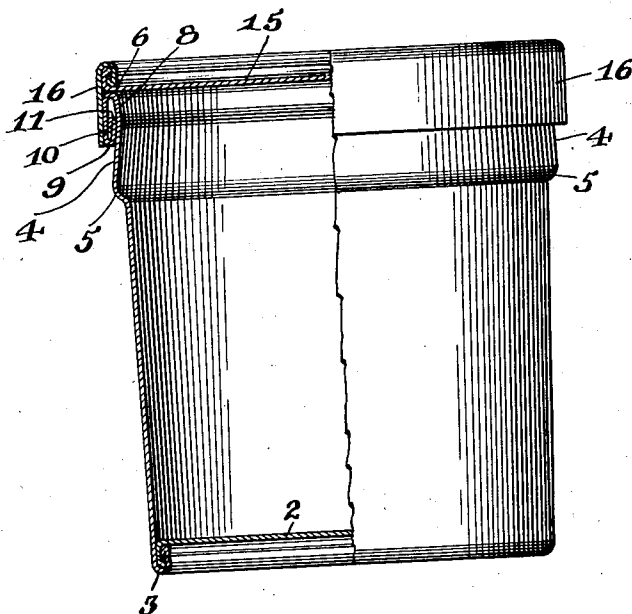
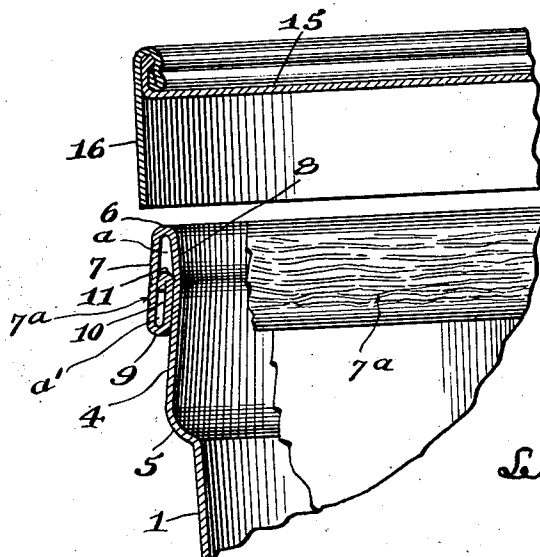


Fig. 2.



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2 Sheets-Sheet 2

Fig. 3.

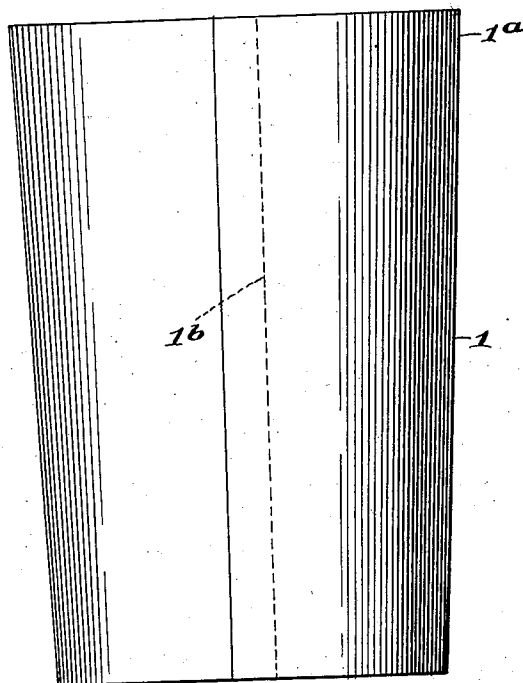
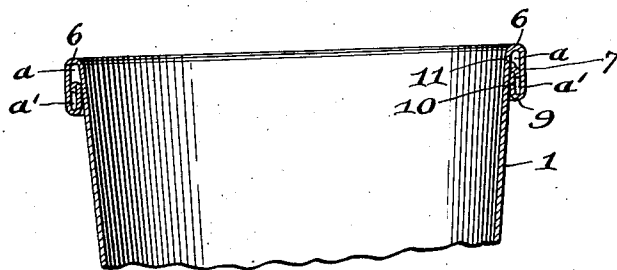


Fig. 4.



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UNITED STATES PATENT OFFICE

1,965,418

PAPER CONTAINER

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Application March 30, 1932, Serial No. 602,061

10 Claims. (Cl. 229—5.5)

This invention relates to paper containers; and from a specific phase of my invention relates to paper containers of the type of the United States patent to W. L. Wright and J. T. Bond No. 1,731,916, dated October 15, 1929; and the objects and nature of my invention will be apparent to those skilled in the art in light of the following explanations of the accompanying drawings illustrating the preferred mechanical expression or embodiment of the invention from among other forms and arrangements within the spirit and scope thereof, as well as the novel steps followed in the production thereof.

An object of the invention is to render paper containers built to receive and be sealed by removable exterior slip covers or lids of the approximately cylindrical flange type, more efficient and effective in the liquid and air tightness of the seal between the container annular mouth wall or rim and the cover flange, and in the facility with which the cover can be applied and removed, and in the cover retaining strength of the friction grip between the cover flange and container rim.

A further object of the invention is to improve paper containers having tapered bodies or of the so-called nesting type, built with peculiar exterior annular rims around their mouths to receive and grip the exterior flanges of slip covers for tightly closing and sealing said containers, and having exterior annular shoulders to limit the extent to which such containers can be longitudinally nested to prevent such nested containers from sticking or so-called freezing together.

And a further object of the invention is to render the production of paper containers formed with cover flange gripping and receiving rims, simple, efficient and effective.

With the foregoing and other objects in view the invention consists in certain novel and advantageous features of structure, formation and arrangements and in the production thereof.

Referring to the accompanying drawings, forming part hereof:

Fig. 1 is a sectional side elevation of an example of a paper container produced in accordance with my invention and disclosing an embodiment of my invention, an exterior cylindrical flanged slip cover being shown in sectional elevation closing and sealing the mouth of said container.

Fig. 2 is a detail sectional elevation of the large or mouth end portion of the container on an enlarged scale, the cover not being shown, the rim being shown in its final completed form.

Fig. 3 is a longitudinal section of a longitudinally tapered paper container body blank with

an overlong large tapered end, partially broken away, before the formation of the rim and exterior annular shoulder.

Fig. 4 shows the body of Fig. 3, partially broken, after the completion of the preliminary rim formation, and before the formation of annular exterior stop shoulder and the completion of said rim to its final form.

In the particular example shown, the container body 1, contracts or tapers downwardly from its large open upper end or mouth portion to its small end or base which is closed by a preferably liquid-tight usually permanent bottom closure, such as 2, which preferably is inset to provide the container with an annular depending flange-like base 3, although I do not wish to so limit my invention.

The liquid tight body 1, is usually composed of one or more flat sheet paper or other suitable sheet material blanks, bent or otherwise formed on a mandrel or other means to tubular truncated cone form (Fig. 3) with the blank vertical ends or edge portions overlapped and cemented or otherwise united to form a longitudinal liquid tight preferably permanent seam 1b, throughout the length of the tubular body 1. I prefer to thus form the tubular body 1, of an imperforate paper or other suitable sheet to render possible the reshaping thereof to other permanent forms, approximately as hereinafter recited, but do not wish to so limit all features of my invention.

The tubular body blank 1, (Fig. 3) is decidedly overlong at its upwardly enlarging tapered upper end to provide the ample surplus top length 1a, necessary for taking up or absorption in the formation of the peculiar hereinafter described rim, and in the formation of the annular enlargement 4, that provides the annular downwardly facing stop shoulder 5, to limit the distance the tapered containers can telescope or nest one within the other to avoid freezing or sticking together. The shoulder 5, is located around the large upper end portion of the tapered container a short distance below the exterior annular cover flange gripping top rim of the container, and when the containers are nested, each stop shoulder 5, abuts the rounded annular top mouth edge or lip 6, of the container of a pair into which the other container is telescoped to limit the inward telescoping movement thereof.

The annular exterior cover-flange gripping rim of the finally completed container, exteriorly surrounds the annular outer side of the upper end

portion 8, of the interior tapered wall of the container, and depends from the top rounded annular mouth edge or lip 6, of the container for a substantial distance, to provide an annular vertically wide or long exterior rim, the outer cover flange engaging wall surface 7, of which slightly flares or bevels and increases in diameter downwardly or flares outwardly from the lip 6, approximately continuously to the bottom end wall 9 of the rim 9, or in other words slightly enlarges downwardly on an unbroken or continuous taper or flare to produce an approximate wedge form. The said annular vertically-flaring and enlarging outer surface 7, is substantially throughout its flaring length roughened or irregular as by a vertical series of slight circumferential irregularities or approximate clinging flattened wrinkles, folds or creases, indicated at 7a, providing an exceedingly effective cap flange gripping friction holding surface even when more or less heavily paraffined for waterproofing purposes.

This vertically elongated downwardly and outwardly continuously tapered exterior annular cover flange contacting wall portion 7, of said rim, constitutes an exterior downward continuation of annular lip 6, and is spaced exteriorly a substantial distance radially from the outer surface of the inner wall portion 8, and at the bottom end of the rim, said wall portion 7, curves and turns back inwardly and upwardly forming the inner upstanding wall portion 10, of the rim in loose engagement with the exterior surface of said inner wall portion 8, of the container, extending up from the annular rounded more or less flexible bottom edge 9, of the rim that constitutes a more or less resilient compressible and expansible connection between the depending annular wide outer wall 7, of the rim and the upstanding annular vertically short inner wall 10 of the depending rim.

The vertically-arranged relatively-short annular inner wall 10, of the rim extends upwardly along and rests more or less loosely against the outer surface of the portion 8, of the inner container body wall. The annular upper edge portion 11, of said rim inner wall 10, is bent or upset outwardly to form an annular approximately horizontal more or less spring or resilient supporting or backing annular flange or rib 11, that more or less loosely abuts the inner surface of the outer rim wall 7, approximately midway its vertical length or width to limit the inward radial movement of said more or less flexible cushioning outer wall 7, and to brace and back the same against permanent deformation and to exert radial outward pressure thereon for resiliently maintaining the same in its downwardly flaring form.

It will be noted, that the outer rim wall 7, is spaced radially from the outer surfaces of container body wall 8, and inner rim wall 10, to provide the cushioning annular approximately trapped air spaces a, a' , that back the outer rim wall 7, and perform important functions in sustaining the rim in the form desired and in cushioning rim wall 7, and rendering the same more or less resilient to attain the desired liquid tight seal and friction grip between the cover flange and rim, and to accommodate slight variations in the internal diameters of the flanges of different covers although rated as of the same size.

These containers can be equipped with and are adapted for various kinds of annularly flanged exterior slip covers, although I show a liquid tight,

usually paper material, cover having flat impermeate top 15, and depending annular possibly slightly yieldable flange 16, having a preferably smooth cylindrical inner surface of a vertical length usually slightly exceeding the vertical length of the outer wall 7, of the container rim, and of a diameter to facilitate or more or less freely or easily initiate the entrance of the upper end of the container rim into the cover flange, and then require possibly increasing pressure to force the flange down the annular wedge-like rim wall 7, of downwardly increasing diameter, to radially slightly compress the same with an increasing friction holding grip and liquid tight fit between the outer clinging sealing irregular or rough surface 7a, of rim wall 7, and the inner surface of the cover flange, as the flange descends thereon under forcing pressure.

When the cover is finally seated in sealing closing position on the container, the cover top 15, fits down on the container top lip 6, and the cover flange surrounds and possibly extends below the rim outer wall 7 and said wall 7, is preferably radially compressed against the opposing radial outward pressure and tension of the trapped air in chambers a, a' , the rounded lower edge 9, of the rim and the annular intermediate backing or bracing rib 11.

By reason of the continuous or unbroken downwardly enlarging diameter of the outer rim wall 7, resiliently backed and cushioned, the descending cover flange exerts a cam or wedge-like action in exerting inward radial possibly flexing or compressing pressure thereon and placing the same under pressure, with the result that an unexpectedly liquid tight joint is established between the cover flange and rim when the cover is forced home to its final closing position on the container, and this liquid tight joint is so remarkable that I find it to be proof against liquid leakage even when such covered liquid container is maintained in reversed position or upside down for a very substantial length of time.

The felted mass of the portion of the paper forming the outer surface part of depending wall 7 is preferably softened or crushed and its resiliency is approximately broken down, by a peculiar spinning operation employed in spinning the extended end of the container wall over and down in the preliminary rim formation, and this spinning operation also, preferably, forms said wall with the vertical series of circumferential annular flattened surface folds, wrinkles, creases or hardly perceptible lines of irregularity, indicated more or less diagrammatically at 7a. Fig. 2, substantially as described and claimed by the patent application of Wilbur L. Wright, for Paper container, filed March 29, 1932, Serial No. 601,853. I find that when this peculiar paper wall surface 7a, is included as an element in the organization of my instant invention, said wall surface functions to better advantage than heretofore, and in a peculiar way cooperates with the features of my invention.

The large upper end of the container tapered tubular barrel or body 1, is stiffened and the top annular rim carrying portion thereof is braced and strengthened, against downward as well as against inward radial pressures, by the peculiar formation that provides the annular downwardly facing stop shoulder 5.

If so desired, the tubular barrel, can be first formed with the hereinbefore described rim 7, 9, 10, 11, with its outer annular depending wall 7, approximately cylindrical, the barrel then being

of an approximately continuous or unbroken taper from end to end including the large end portion 8, as in Fig. 4. Then by any suitable method and the utilization of any suitable apparatus and pressure, the large end of the barrel is radially and annularly expanded and shaped to its permanent final form, wherein the taper of the annular top wall portion 8, is reversed from its form of Fig. 4, and instead of enlarging or flaring to the top of the body, it extends upwardly on a contracting taper from the stop shoulder portion 5, to a transverse plane just below the transverse plane of the rounded annular mouth edge or lip 6. The lip 6, in its final form is of the same shape and diameter as in the form of Fig. 4, but the expansion of the container end to form the shoulder 5, and the top wall portion 8, decreasing in diameter upwardly on a contracting taper, has slightly expanded or radially enlarged the lower end of the cover flange receiving rim 7, in such manner, through the medium of rim inner wall 10, edge formation 9, and possibly backing rib 11, as to tilt the outer rim wall 7, by radially expanding its lower edge portion and thus produce the upward reducing or tapering bevel of said wall 7, as hereinbefore described, with the resulting surprising increased efficiency pointed out.

This permanent radial expansion of the large end of the body provides a somewhat abrupt outwardly and upwardly flaring annular exterior stop shoulder 5, that merges outwardly and upwardly on an enlarging curved bulge that gradually contracts and merges into the upwardly contracting tapered wall portion 8, that merges and loses itself upwardly, in the top container wall portion of its original diameter and form usually immediately below the top out turn that begins the rounded top edge 6, although I do not wish to so limit and restrict all features of my invention, nor do I wish to limit all features of my invention to any particular method or methods of producing the finished product nor do I wish to limit all features to the enlargement and stop shoulder formations, nor do I wish to limit other novel and advantageous features of my invention to the advantageous novel flaring and/or beveling of the rim outer wall 7; nor do I wish to limit my invention to the particular tubular container body example shown as the container body will be within my invention whether made of one or more plies of sheet material or of one or more sheet paper blanks, nor do I wish to limit all features of my invention to any particular container body formation to provide an annular rough or smooth flexible gripping, wedging and sealing surface that bevels upwardly, to receive and cooperate with the cover flange, broadly, as hereinbefore set forth, whether formed by an enlarged rim of more than one wall or paper thickness or otherwise.

What I claim and wish to secure by Letters Patent is:—

1. A container body of flexible sheet material, having an open end surrounded by a top lip and a slip-cover-flange-receiving exterior annular rim depending from said lip and embodying a depending longitudinally-elongated flexible annular radially-yielding outer wall, an up-turned annular wall within and radially spaced from the outer wall and backed by the inner longitudinal wall of the body and at its top edge forming an annular backing rib against the inner surface of an intermediate portion of said outer wall of the rim, and an annular inwardly extending

radially yielding portion forming the lower edge of the rim and joining the outer and inner walls of said rim.

2. A nesting container body of flexible sheet material having the material of the body extending outwardly around the body mouth to form the top lip of said mouth and downwardly from the annular outer portion of the lip to form the annular depending outer wall of a cover-flange-receiving rim and then inwardly at the bottom of said wall to form the bottom edge wall of the rim and then upwardly from said bottom edge wall along the outer surface of the inner longitudinal wall of the body and within the outer rim wall to form the inner wall of said rim, the annular top end of said inner wall extending radially outwardly to form an outer rim wall backing brace, said rim walls and the container wall cooperating to form an annular trapped air chamber backing said rim outer wall.

3. A container having a body wall, and a paper material annular mouth-rim wall bevelled upwardly throughout its substantial longitudinal length and forming an unbroken upwardly decreasing taper and wedge form, said wall being radially flexible independently of said body wall, and throughout its tapered length having a clinging, gripping cover-flange-contacting surface adapted to cooperate with the straight annular flange of a slip cover with a strong clinging tight sealing fit in constituting the sole means for tightly maintaining the cover in closing sealing position on said wedge-form mouth-rim wall, and a backing abutment for said radially flexible mouth rim wall, said wedge-form wall adapted at its small diameter upper end to receive said cover flange and to be subjected thereby to increasing inward radial pressure as the cover is forced down thereon.

4. A container embodying a slip cover having a relatively stiff annular paper material flange; and a container body having its mouth surrounded by a radially flexible annular paper material wall of substantial length bevelled upwardly and forming a continuous upwardly decreasing taper and wedge form from its lower end to its upper end and having a crushed paper clinging sealing cover-flange-contacting surface constituting the sole means in cooperation throughout its length with said cover flange to hold the cover in tight sealing closing position on said container, said bevelled flexible wall being spaced from said body and provided with an intermediate annular backing abutment, said cover being applicable to the small-diameter upper end of said wedge form to be forced down to held, sealed and closed position thereon throughout the length of said surface, with a constantly increasing inward radial pressure on said wall.

5. A container having an annular radially-flexible mouth wall of substantial longitudinal length of upwardly decreasing diameter forming an unbroken upward taper or wedge form throughout its length having a cover-flange-contacting sealing surface constituting the sole means, in cooperation with the cover flange, to hold the cover in liquid-tight, sealing-container closing position, said wedge form adapted to be subjected to increasing inward radial pressure as the cover is forced down thereon to sealing closing position; and an annular backing for an enlarged diameter portion of said wall against said inward radial pressure.

6. A container embodying a slip cover having a straight, annular, stiff paper-material flange;

and a container body having its mouth surrounded by an annular, relatively flexible paper wall of substantial length tapered upwardly to wedge form, and at least below its upper end, of greater external diameter than the internal diameter of said cover flange, whereby said cover, when forced down on said wedge form will exert constantly increasing inward radial pressure on said wall, said wall being flexible independently of said body and between its upper and lower ends provided with a backing abutment, said wall having a friction gripping and sealing cover-flange-contacting surface adapted throughout its length to cooperate with said flange in tightly gripping and sealing the same to constitute the sole means for holding the cover in closed position on and sealing the container.

7. A container having an annular radially flexible paper wall surrounding its mouth and decreasing upwardly in diameter to produce a longitudinally tapered or wedge form throughout its length having an exterior cover flange gripping and sealing surface adapted throughout its length to tightly engage and grip the cover flange and cooperate therewith in holding the cover in tight sealing position on the container; and an annular abutment backing said wall intermediate its length to resist radial inward compression of the large diameter portion of said wall under the constantly increasing inward radial pressure of the cover flange on the wall as the cover is forced down thereon to closing sealing position.

8. A container having a radially-flexible paper material annular wall surrounding its mouth, said wall being of substantial longitudinal length

and throughout its length having a cover-flange-contacting and gripping and sealing surface, the upper end of said wall being of such exterior diameter as to freely enter the annular, substantially straight flange of the slip cover for said container, said wall being of increased diameter below said upper end and provided with a backing abutment to resist inward compression of said wall when the cover is forced down thereon.

9. A paper material container body having an annular radially flexible wall of substantial length surrounding the container mouth and having an exterior slip cover contacting and gripping surface, said wall contracting upwardly to tapered wedge form, said container body being expanded to form an exterior circumferential shoulder a distance below said wall, said annular container body contracting upwardly from said shoulder on a taper extending within and backing the enlarged lower end of said wall.

10. In the method of producing paper container bodies, those steps which include spinning the over-long end of the tubular container body to form an annular cover-flange-contacting and gripping wall surrounding and extending longitudinally of the container mouth with the end portion of said wall upturned around the container body and within and backing said wall, and then radially expanding said body to form an exterior circumferential shoulder a distance below said wall and an upwardly contracting expanded taper within and expanding the lower portion of said wall to upwardly reducing wedge form.

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