

Nov. 29, 1938.

M. E. GAZETTE
CONTAINER MADE OF PAPER
Filed April 8, 1937

2,138,401

Fig. 1

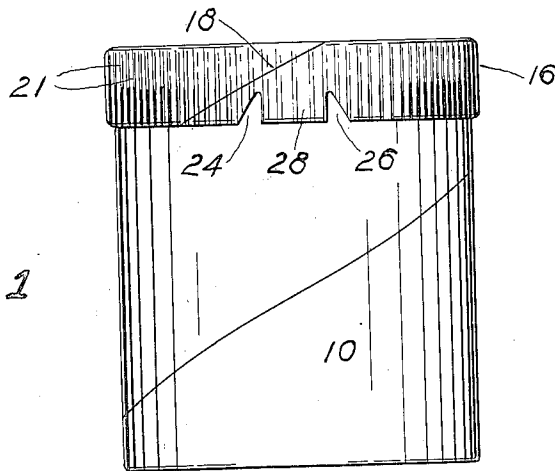


Fig. 2

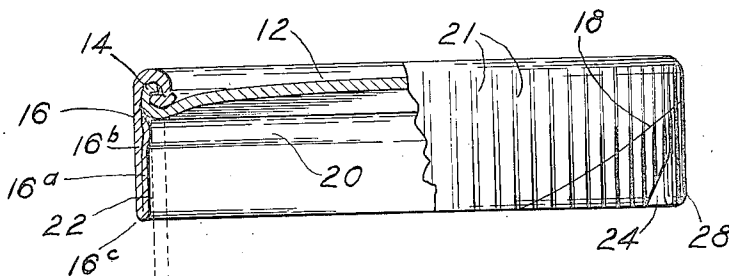
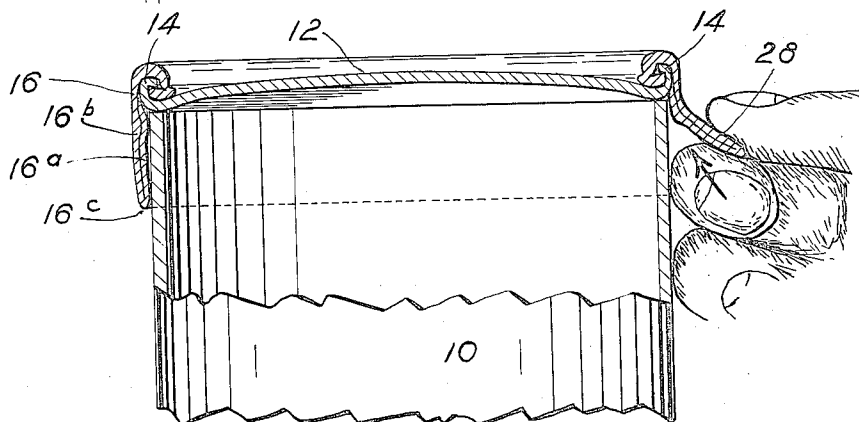


Fig. 3

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2,138,401

CONTAINER MADE OF PAPER

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Application April 8, 1937, Serial No. 135,624

5 Claims. (Cl. 229—5.5)

This invention relates to improvements in containers made of paper.

More especially it relates to containers of the general type commonly called paper cans, which have extensive utility as single-service containers for liquids, semi-liquids and powders. The invention provides improvements which are particularly applicable to closures for such containers, to make the closures easier to apply and to remove, without sacrificing required tight-sealing characteristics, and without making the closures any more bulky than the less effective closures heretofore available.

Paper cans or containers of the general type to which the invention relates have heretofore had flanged covers, in which the flange, throughout the whole major portion of its width has fitted closely around the container body, with tightness, for assuring against escape of contents. The closeness of fit has made it difficult for a person to start the applying of a cover on a container body, especially if that body were brim full of liquid contents. And, when one of these prior covers has finally been caught over a container rim, the body of air entrapped within the cover finds no normal avenue of escape as the cover is forced to its seat. This results in the building up of a pressure within the container, with consequence that sometimes contents are forced out under the cover flange, or through the crimped seal at the bottom of the can.

A further difficulty with prior containers of this general type has been due to expansion of the paper stock when wetted by the contents. This frequently locks a cover on so securely that the cover cannot be loosened, and can be removed only by a difficult destroying of the cover. And in cases where neither of these evils arises, as where the compressed air has worked its way out, and there is no ill effect by wet expansion of paper stock, the lifting off of a cover is resisted by an interior partial vacuum, which becomes built up as the interior space above the contents is increased.

It is among the objects of the invention to eliminate the mentioned objectionable characteristics, of prior flanged cap closures for paper cans, by providing a cover whose flange fits easily and loosely over the rim of a can body, but which effectively and securely seals the container against escape of contents, and which is easily removable. This is done by a bead-and-rim engagement, attained in the final stage of travel of the cover to its seat.

A feature is that air may escape freely from within during the major portion of the travel of a cover to its seat, so that no objectionable amount of pressure is built up within the capped container.

A further feature is that a relatively small travel of opening movement of a cover will open the interior freely to atmosphere, thereby obviating the creation of an objectionable vacuum within the container as the major portion of the cover's opening movement is accomplished.

Another feature is that means is provided on the cover flange, for facilitating the lifting off of a seated cover, which means coact with the loose-fitting portion of the flange to open an air passage past the seal, in case the cover may have become locked on by expansion of the paper stock.

It is another feature that my improved cover flange preferably has a rounded leading edge, which makes for an easier applying of cover to body than where the cover flange is single thick and has a raw edge, and yet, since no air cushioning space is needed at the edge, this double thick flange can by compression be condensed so as to have its exterior diameter be approximately the same as that of covers with single-thick flanges. It follows that packaging spaces as provided heretofore, for holding a given number of containers as heretofore commonly made, can accommodate an equal number of containers equipped with my improved closure covers.

The mentioned objects and results are attained by forming an annular bead, being an annular ridge projecting toward the axis, interiorly of the cover flange at a location to engage around the rim of the can body as and when the cover is in the latter part of the travel to its seat thereon. The diameter of the bead annulus is such as will make a tight sealing engagement around the rim, while the major portion of the axial extent of the flange may have a larger internal diameter, so that it loosely surrounds the body walls adjacent to the rim, thereby to permit easy insertion of the body-rim within the cover flange when the cover is being applied. Preferably the exterior of the cover flange will be impressed with corrugations suggesting and affording grip for rotation of the cover when applying and removing it.

This looseness of fit of the leading edge portion of flange makes practicable a further feature of the invention, by which a portion of the cover flange may, without any sacrifice of tightness, constitute a flap-handle for lifting off a cover.

This handle is preferably defined by two adjacent notches, which permit out-bending of the portion of flap between them. By an upward and outward pull applied to the flap, by a person grasping it, the part of the bead seal adjacent to the flap may be loosened enough to permit air to pass the seal, thus to create an internal condition whereby the cover may be lifted off easily.

In a preferred form the cover flange has double-thick walls which are condensed together to such an extent that the exterior diameter of the cover flange is no greater than the customary exterior diameter of a single-thick cover flange.

It is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty exist in the invention disclosed.

In the accompanying drawing:

Figure 1 is a side elevation of a paper can whose closure cover embodies features of the invention;

Figure 2 is an elevation of the closure cover of Figure 1, on an enlarged scale, one portion thereof being in medial vertical section; and

Figure 3 illustrates a cover closure similar to that of Figure 2, in medial vertical section, applied on a container body, in the act of being lifted therefrom.

Referring to the drawing, the container body may be of a conventional helically-wound-paper style as represented, although the invention is applicable to types and styles of container bodies otherwise made, if having a cylindrical rim-of-wall portion capable of receiving a cap cover.

The cap cover may comprise a closure disk annularly crimped as at 14 in one end of a short tube of paper which constitutes the flange 16 of the cover. Preferably this tube of paper will be made of a plurality of plies of paper, helically wound, the helical winding being indicated by the line 18 of juncture of the windings; but the plurality of the plies, a customary construction in this art, is not shown in order the better to show, without confusion, the double-thickness of flange illustrated in Figures 2 and 3.

Referring to Figure 2, the cover flange 16 has a double thickness of the stock of the initial tube. One thickness 16^a is intumed and laid against the other thickness 16^b, and this makes the fold edge of the flange rounded as at 16^c which, as contrasted with a single-thick raw-cut edge, eases the inserting of a lip of can body 10 within the flange when a person essays the applying of the cover to a body. Interiorly of the flange, immediately adjacent to the crimp 14, I provide an annular bead 20, which is a formation of the paper into a ridge bowed inward toward the axis, and which is dimensioned so as to engage snugly around the lip of a container body 10 when the cover is seated thereon. Preferably the internal diameter of the cover at this annular bead location will be slightly less than the exterior diameter of the lip of the container body so that a seating of the cover will accomplish a tight sealing engagement between the flange bead and the lip or rim portion of the body, such as will prevent escape of liquid contents of the container.

The extent of the flange outward from the bead 20 toward the fold-rounded edge 16^c, which may be the major portion of the width of the flange, preferably has internal diameter slightly greater than the external diameter of the body

wall around which it stands during seating of the cover and while the cover is fully seated. Thus a slight clearance, as from the dotted line at 22 (Fig. 2) permits an easy inserting of the body lip within the flange, and provides a thin but sufficient passage for escape of entrapped air during the major travel of the cover in being seated. When the entering body-lip reaches the bead 20, the gentle slope of the bead permits of the lip being easily forced within it; and by the mutual pressure, of body-rim and cover-bead together, a secure and effective seal is accomplished against escape of contents, whether liquid or other.

The tight narrow bead is safe against slipping over the nearby edge of lip, for the clearance at 16^c is too slight to permit any casual tipping of the cover when it has once been seated.

In the particular embodiment portrayed in the drawing, the annular bead 20 is attained by condensing the stock of the cover flange by radial pressure applied exteriorly, as by a wheel, while the flange is mounted on an arbor. The arbor may have an annular groove for leaving the bead 20 projecting when the flange stock is elsewhere subjected to pressure against the arbor. Preferably the pressure will be such as elsewhere to reduce the double thickness of flange wall so as to approximate the dimensions of single thick flanges of prior style; and the pressing wheel preferably will be ribbed or corrugated to impress corrugations 21 in the exterior surface of the flange as seen in Figure 1.

It should be understood however that, if desired, the cover flange may have but a single-thick wall, which may be provided with the interior bead for sealing engagement with a container body, while the remaining portion of flange loosely surrounds the body walls adjacent to the body's lip.

A preferred embodiment of handle is shown, in which the cover flange 16 has two deep notches 24, 26, cut inward from the edge of flange, to define a flap 28 which may be bent outward by one's fingers to constitute a handle for lifting off a cover. Ordinarily a cover may be removed, without such a handle, by a slight rotary motion accompanied by a lifting. But with liquid contents it may happen that the edge parts of the paper stock have become expanded to an extent which locks the cover on the can body. In such a case the handle 28 may be gripped by the fingers as in Figure 3 and, while holding the container with the other hand, an upward pressure draws the flange tight against the body walls as indicated at the left of Figure 3, at the same time loosening the engagement of that part of bead 20 which is next to the handle, so as to permit air to enter. This tends to release the locking of the seal, so that the cover may be lifted off by the handle. If this is not sufficient to release the cover, in extreme cases of locking, an increase of lift applied to the handle will extend the notches 24, 26, upward, by tearing the flange stock, thereby to release the cover.

The invention eliminates objectionable characteristics that have heretofore attended the use of paper cans, while preserving their meritorious features; and it provides so that the improved covered cans occupy no greater shipping and storing space than those less satisfactory covered cans.

I claim as my invention:

1. A container made of paper, including a con-

5 tainer body and a flanged cover therefor; said
body having a cylindrical lip portion, and the
flange of said cover having its stock at the mar-
ginal portion of the flange in a state of condensa-
10 tion to less than the thinness of its stock nearer
the disk part of the cover, and having an annu-
lar region thereof near the disk not so condensed,
thereby providing an annular bead spaced from
the edge of the flange and adapted to engage the
15 lip of said body with sealing tightness when the
cover is fully seated on the body; the portion
of the extent of said flange which is at the flange
edge having diameter for fitting the body walls
loosely as the cover is being applied to said
20 body.

2. A container made of paper, including a con-
tainer body and a flanged cover therefor; said
body having a cylindrical lip portion; and the
flange of said cover having one thickness of its
25 paper stock turned inward and laid against an
outer thickness thereof; said inner and outer
thicknesses of flange stock being condensed to-
gether in the outer extent of said flange so as
to approximate the dimension of a single normal
30 thickness of the paper stock; and there being,
interiorly of the flange, deep within the cover,
an annular portion whereat the flange stock is
less condensed, thus constituting an annular
bead; bead being adapted to engage with sealing
35 tightness around the lip of said body when the
cover is fully seated; and a portion of the extent
of said flange, at the flange edge, having interior
diameter large enough for loosely encircling the
body walls as the cover is being applied to said
body.

3. A flanged cover made of paper, for closing
a container body, said cover comprising a tube
of paper stock and a closure cap disk marginally
and annularly crimped with one end of the tube;
5 said tube having its other end folded inward, laid
against an adjoining portion of cover flange, and
ending at said crimp interiorly of the cover; an
extent of the doubled flange stock at the region
of its fold, being condensed to a thickness sub-
10 stantially less than the normal double thickness
of the tube stock; and there being, at a location
interiorly of the flange, deep in the cover, a
greater thickness of the doubled stock, being less
condensed and constituting an annular bead.

4. A container made of paper, including a con- 15
tainer body and a flanged cover therefor; said
body having a cylindrical lip portion, and the
flange of said cover having on its interior sur-
face, deep within the cover, an annular bead
adapted to engage with sealing tightness around 20
the lip of said body when the cover is fully seated
on the body; there being a pair of notches cut
deeply into the flange from its edge, and termi-
nating close to said annular bead, defining a flap
portion of flange which may constitute a handle 25
for lifting the cover from the container body.

5. A flanged cover made of paper, for covering
a container body, the flange of said cover having
an interior annular bead, deep in the cover, and
having a pair of notches cut in the flange, from 30
its edge nearly to the bead, defining a flap por-
tion of flange which may constitute a handle for
lifting the cover from the container body.