

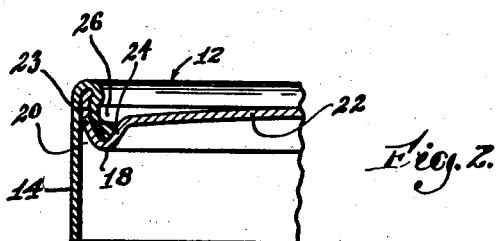
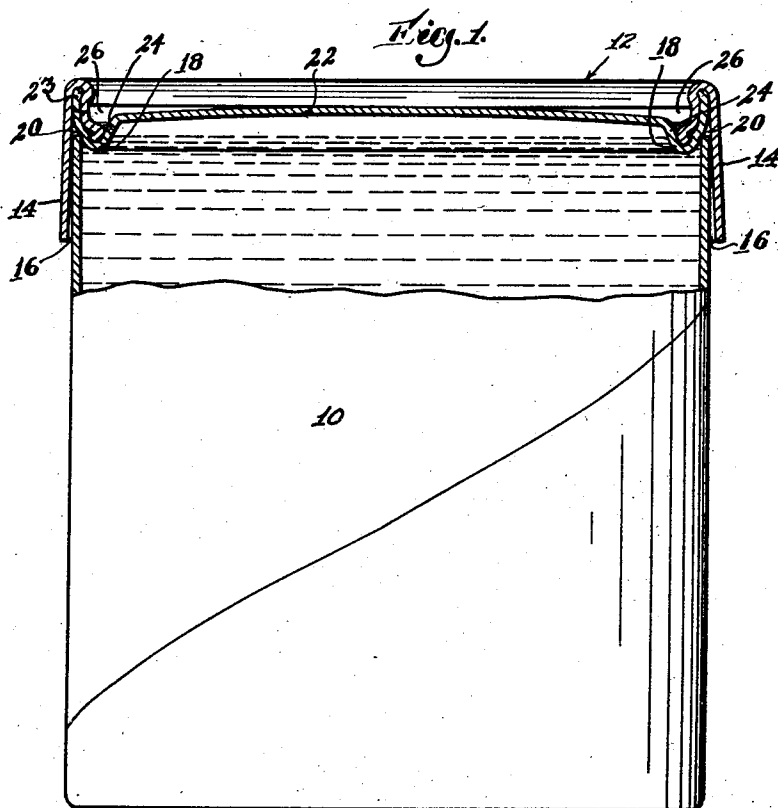
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CONTAINER MADE OF PAPER

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CONTAINER MADE OF PAPER

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1 Claim. (Cl. 229—5.6)

This invention relates to improvements in containers made of paper. More particularly it relates to cylindrical containers, of the type generally known as "paper cans". Such a can, for holding liquids, powders, etc., is formed of a suitable length of paper board tubing, and ordinarily has its bottom permanently closed and sealed by a disk.

The invention provides improvements in a cap closure for the top or mouth of such a paper can, introducing structural features in the cap, which facilitate the placing of the cap on the container when filled, and which attain a superior seal against escape of contents at this top cap closure.

Cylindrical cans of the general class to which the invention relates are often required to serve as accurate measures of contents, when filled flush with the top edge of the can body. Heretofore, the preferred type of closure has been a cap comprising a disk with cylindrical flange, to engage across and around the upper portion of the can body. The reliance to prevent leakage has been to a great extent the nicety and closeness of fit of the cap flange around the container.

Certain disadvantages are incident to use of the prior cap closures. The required nicety of fit of cap flange around the container body makes it difficult for a person to fit the cap on the container. When contents are liquid, especially, extreme care has had to be exercised, in order not to spill any, for the contents should come flush with the container top in order to constitute full measure. As a result, not infrequently, the clerk may purposely give less than full measure so as to avoid any slopping out of contents in the capping operation; or, unintentionally, some of a full measure of liquid contents may be spilled because of difficulty encountered in applying the cap.

Another objection has been that a rapid applying of cap on container results in an entrapping of air within the cap, above the liquid contents of the container. During the forceful seating of the cap this entrapped air presses down on the liquid contents of can, and may be pushed so strongly as to force some of that liquid out through the annular seal at the bottom of the can, or even to force out the can's bottom.

The present invention has for an object the provision of a flanged cap closure which may be very similar in outward appearance and in general procedure for use, to those heretofore employed, but embodying the important feature that it may be readily and conveniently ap-

plied to a container without danger of spilling any of the contents.

Another object is to accomplish a liquid-tight seal, between the annular lip portion of the top of the container body and an annular seat interiorly of the cap, whereby the cap flange proper need not fit around the container with the tightness and nicety of fit heretofore required.

A further object is to provide within the cap a space for entrapped air to stand above the contents of the container after the cap has been applied, thereby minimizing the tendency to force contents of the can out at the bottom by a rapid applying of the cap.

Still another object is to accomplish the above stated ends without material change in apparatus as heretofore employed for making cap closures, and without increase in the number of operations, or in the cost, necessary to produce them.

It is, moreover, an important feature that the invention, in the case of liquid contents of the container, involves an incidental moistening of inter-engaging portions of container and cap, with a resultant slight swelling of the paper stock, which latter may thus lock the cap immovably on the container, so that a destruction of the cap is necessary before there can be a loss or removal of container contents.

These objects and results may be attained by forming, interiorly of the closure disk of the cap, an annular bead which projects prominently inward and has its walls sloping in character. Prior caps have had interior beads of this general sort, formed as an incident to the making of the crimped annular joint between the closure disk and its flange. Heretofore, however, the interior bead has stood close up against the flange of the cap, and has served only as a stop, against the crown of which the container end would engage when the cap was pressed home.

According to the present invention the annular bead is spaced a little from the flange of the cap, toward the axis, thereby providing an annular groove adjacent to said flange, in which groove the lip of the container is adapted to be seated. The sloping character of the bead walls causes a pinching of the container lip between bead and flange, such that liquid cannot pass.

Further ensuring against leakage of liquid, the bead is such that, when the cap is being pressed to place, the bead dips into the liquid contents of the container, displacing a little liquid into the annular groove, to moisten the inter-engaging portions of can and cap. This moistening results

in a slight swelling of the paper stock and with very slight or even inappreciable lapse of time the cap may become immovably locked on the can.

5 The disk of the cap closure is slightly dished, with concavity interiorly of the cap, thereby to provide an air space between contents of the container and the disk closure, in which space entrapped air may stand after the cap is seated.

10 My improved cap may be made according to prior practices and with substantially the same apparatus as have been heretofore employed for paper cans. The interior bead is made more pronounced than has been usual, and is disposed
15 toward the axis a little to provide the mentioned annular groove. The flange has slightly greater diameter than has been customary, so that it fits easily on the can. Changes in machinery for accomplishing these slight variations are incon-
20 sequential.

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

In the accompanying drawing:

25 Figure 1 is an elevation of a container having a cap closure embodying features of the invention, the cap and the upper portion of the container being in section; and

30 Figure 2 is an elevation of a fragment of the cap of Figure 1, in medial section, and on an enlarged scale.

Referring to the drawing, the container 10 may be considered representative of cylindrical
35 containers in general, although the present invention may be considered to have its greatest value with those of the liquid-tight sort. These latter ordinarily are formed of two-ply paper board tubing, with a bottom closure disk perma-
40 nently secured in one end of the tube by a crimping operation.

The top or mouth of the container has a removable closure, usually a flanged disk closure cap. And it is to improvements in such caps
45 that this present disclosure is directed.

In the drawing the cap 12 has the outward appearance of closure caps of prior constructions. Heretofore, however, the cylindrical flange 14
50 has been required to fit snugly around the top portion of container 10, to ensure tightness against escape of liquid contents of the container. The nicety of fit thus required makes difficult the putting of the cap on the container; and the cap-
55 ping is always attended with danger of spilling contents, especially when liquid.

The invention eliminates much of this danger by providing so that the cap 12 fits over the container easily, with a suitable clearance between container and cap flange as indicated at 16.
60 The increased internal diameter of the cap flange need be relatively little over what has been usual, and may be provided for in the forming of the tubes from which the pieces for cap flanges are cut. Or, the ordinary size of tubing may be used
65 for the cap flange, and, after completion of a cap, the cap flange may be stretched to a diameter which will readily receive the top of the container 10.

70 Although the cap disk and flange piece may be assembled, and be provided with the usual sealing crimp, the same as in making prior caps and with the same machinery, yet the annular bead which is ordinarily formed in the disk and pressed close up against the inner surface of the
75 flange, interiorly of the cover is, according to

the present invention, made considerably more prominent, and is spaced a little from the flange toward the axis of the cap, and functions differently. The bead 18, in consequence, provides one wall of an annular groove 20 of which the flange provides the other wall. This groove 20 is adapted to receive the top lip of container body 10 when the cap is applied to the body; and the sloping bead-wall of the groove provides a con-
10 tracting throat which results in a pinching of said lip, as the lip is inserted, which seals against the escape of container contents.

In the case of liquid contents, a further provision against liquid leakage is present. The bead 18 is such that, as the cap is being applied, it dips
15 into liquid at the level of the body top, and displaces a little of that liquid into the annular groove 20. Thus the inter-engaging portions of container and cap become moistened; and there is a consequent slight swelling which locks said lip tightly in the groove 20, as well as eliminating all possibility of leakage of liquid at the cap. Although the paper stock has been preliminarily treated to give it liquid-resisting properties, as is customary, yet the mentioned slight swelling
25 does in fact occur. Presumably it is effective for the most part at the raw and untreated cut edge of the container. The result is such that the cap becomes locked on the container, so securely that it is immovable by ordinary hand effort; and so
30 that it seldom can be removed without destruction of the cap.

Another important feature is the provision to minimize the tendency to force can contents out at the bottom when the cap is pressed home.
35 Owing to the slight flare in the flange of the cap, most of the air within the cap can escape easily as the cap is being applied. This is because the tightness of flange, heretofore requisite, is not needed, since the insertion of container edge into the cap's V-groove provides all needed tightness. For accommodating any small quantity of air that may remain and be entrapped when the cap is moved the last fraction of distance to its seat,
40 the cap disk is slightly dished as at 22 to provide an interior concavity wherein entrapped air may stand after the cap is fully seated.

Thus, by changes which are slight in a dimensional sense but are important in the relations of the parts concerned, real annoyances and disadvantages prevalent in prior constructions are eliminated. This makes the paper can type of container more satisfyingly serviceable, both to retailer and consumer. In manipulation, when in service, it is more agreeable; as a measure it is
55 more accurate; as a container it is stronger; and the superior degree of rightness attained between body and cap is a distinct advance in the art. Since these containers primarily are designed for single service use, the fact is unimportant, that a cap is so secure that it must be destroyed in getting access to container contents. And in cases where there is suspicion of re-use of already used containers, this guarantee that the once-used can cannot be re-used is an advantage.

The crimp of cap flange 14 and top closure disk 22 together involves a departure from usual construction, in that the disk, at a location near its circumference, is annularly bent downward from the plane of the disk and then upward at a slight
70 incline toward the flange, to form an annular groove 24. This groove is on the exterior of the disk, and it forms the bead 18 interiorly of the cap. The flange 14 is a short tube, of which a part is turned over the thus upturned portion of disk,
75

and into the groove thus formed. In the crimping of them together, outward radial pressure makes an annular outward depression 26 in the turned over portion of the flange; and this depression involves a severe creasing of the paper stock and thus tends to maintain the tightness of crimp. The extremity of the turned over portion of the flange reaches deeply into the exterior groove 24 in the disk and is upset therein by the crimping pressure. The extreme edge of the disk which as above stated is turned upward, reaches deeply into the fold between the tubular flange part and its own turned-in portion 26, and constitutes an annular edge portion which fills the flange fold with substantial thickness so that when the top lip of the can body is thrust upward into this same fold at 20 it finds a throat which narrows to a mere crack, and affords sufficient resistance to pinch the lip firmly. In this manner a secure sealing crimp is attained, and subsequent securely tight closure of the can, even though the bead 18 is spaced from the flange 14 sufficient to form therebetween the groove 20. The annular depression 26 whose bottom extends radially outward is a primary factor in the accomplishment of the improved crimp whereby the peripheral portion of the disk is maintained clamped tightly between the flange 14 and the turned over portion of this original short tube.

The turned-in part of the flange tube thus makes an arched or bowed support, which is braced against the back of the inner wall 24 of the head 18, for holding the upturned edge portion 23 of disk 22 firmly outward toward the flange tube 14, whenever a top lip of body 10 is thrust

up into the throat 20 between 23 and 14. Both ends of this arch are anchored, the one by head wall 18, the other by the infold of flange 14.

I claim as my invention:

A container comprising a can body of paper 5 and a closure cap therefor of paper, wherein the lip of the can is cylindrical, and the cap is a disk with flange for engaging around said lip; the flange being a tube crimped with the edge of the disk and, for being combined with the lip of the can, flaring slightly outward from the crimp, in conical form, the body of the flange being loose around the lip, while the very edge of the lip fits close within the part of the flange which is at the crimp; the disk part of the cap being formed 15 with an annular ridge so prominent as to project into the can body, when the cap is tight on the body, a considerable distance from the plane of the lip-edge of the body, which ridge has its face that is remote from the axis spaced radially from 20 the cap flange to an extent which constitutes an annular mouth and contracting throat for receiving the lip, said face being inclined from the flange at an angle which facilitates slip of the entering lip over said face, said angle being less 25 than 45°; said ridge and flange providing an annular, deep crevice the side walls of which, constituting the said throat, are each inclined relative to the cylindrical lip, and the said crevice being of diameter to receive the lip of the can body 30 with wedge fit; there being an appreciable space around said lip, between it and said flange, except at that edge of the lip which is deep-seated and pinched in said annular crevice.

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