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O. I. WARING

2,016,936

CONTAINER CLOSURE

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Fig. 1.

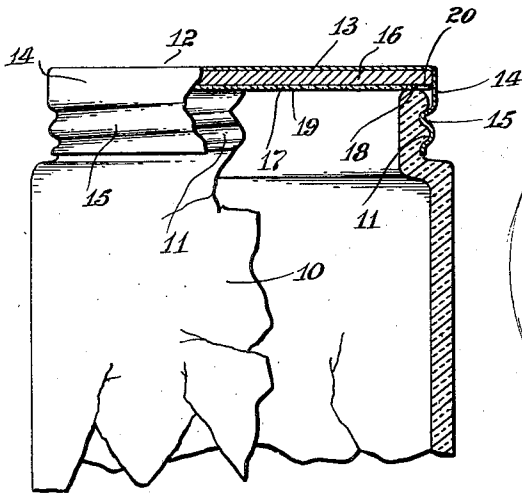


Fig. 2.

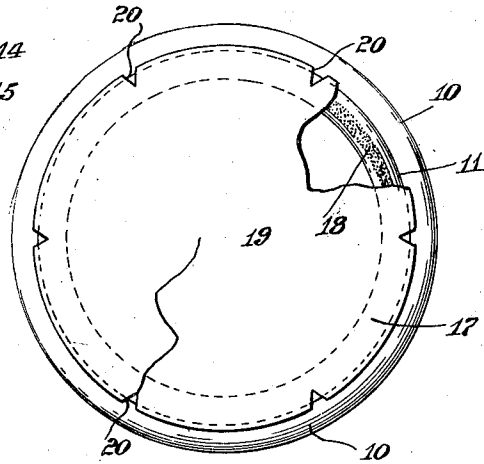


Fig. 3.

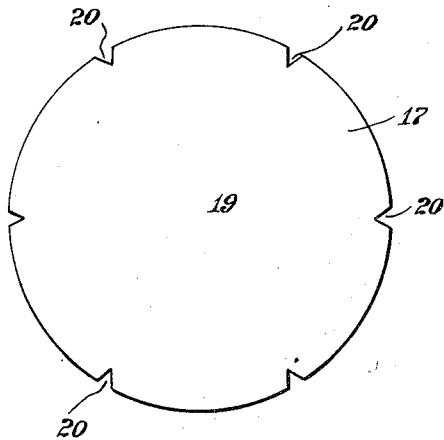
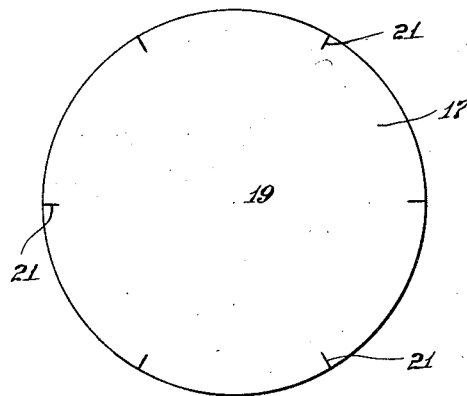


Fig. 4.



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CONTAINER CLOSURE

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7 Claims. (Cl. 215—37)

The invention relates to container closures, and more particularly to improvements in a closure of the re-seal type wherein access to the contents of the container is prevented by means of a disk spanning and bonded to the top about, the mouth of the container.

In closures of the type to which the invention relates, the inner sealing disk is usually of thin flexible material, the properties of which vary according to the character of the materials being packaged. Said disk not only prevents access to the contents of the container by the mere removal of the screw cap or re-seal cap, but also serves to prevent the loss of volatile constituents of the material within the container until the seal afforded by the disk is broken by the removal of the disk from the container.

While an inner disk seal of the character above referred to, ordinarily affords an adequate safeguard against the removal of a disk from, and its replacement upon, a container, with some commodities it is possible to remove the inner disk without mutilation thereof, thus permitting its replacement upon the same or a similar container after a part of its contents has been removed, or there has been a dilution or substitution of materials within the container. This practice is particularly objectionable when disks have identifying marks indicating the quality or origin of the contents of the container impressed thereon for the purpose, in part of preventing the use of a disk by others than the original producer of the merchandise in illicit trade practices known as "bootlegging" of standard products.

The adhesive used in bonding an inner disk to the neck of the container is selected according to the nature of the commodity to be packaged and the material of the disks. Some users of closures of the type herein referred to, require an inner disk seal made of a transparent or semi-transparent material, such as a well known commercial product known as "cellophane", and where the merchandise to be packaged has unctuous properties, adhesives adapted for use in cementing "cellophane" to glass may weaken the bond sufficiently to permit the removal of the disk intact, thus permitting it to be again used upon the same or upon a different container. This is particularly true because the edge of the disk projects slightly beyond the pouring lip at the mouth of the container, the curvature of which permits a grip to be obtained upon the projecting edge of the disk when removing it from the container.

Transparent or semi-transparent materials of the character above referred to, possess high tensile strength and are not readily torn under normal conditions, but if the edge of such material be slightly mutilated, any stresses applied upon opposite sides of the mutilated portion, however slight, will extend the mutilation into the body of the material.

With the above conditions in mind, I have provided a container closure embodying therein a re-seal cap and an inner disk seal, wherein a continuous uniform bond is formed within the edge of the material of the inner disk seal and an imperforate portion of this disk spans the mouth of the container, and yet wherein, with the application of the slightest lifting stresses in removing the disk from the top of a container, the material of the disk will be torn in a manner to perforate or puncture the portion of the disk across the neck of the container and thus prevent the subsequent use of the disk in the re-sealing of the same, or the sealing of a different, container.

In a closure embodying the invention, it is impossible to remove the disk without destroying its utility as a sealing medium. By reason of this it is possible to use transparent or semi-transparent materials of light weight in the inner disk seal, thus exposing the contents of the container through the inner disk seal when the re-seal cover is removed and yet afford an adequate protection against the use of the disk by others than the original producer, in sealing a container.

The closure of the invention affords a degree of protection not present in a closure of the type to which the invention relates wherein it is anticipated that the practice followed in opening the container will involve the deliberate destruction of the disk, and meets the condition where an attempt to use the disk by unauthorized persons in sealing a container, may be anticipated.

The invention consists primarily in a container closure embodying therein a shell having a skirt provided with attaching means adapted to operate with complementary means exteriorly of the neck of a container, a liner within said shell, an inner seal disk consisting of thin, tough, rupturable material having an imperforate central portion adapted to span and engage the top about the mouth of a container, and an edge portion having a plurality of spaced mutilations, whereby stresses applied to said edge portion will extend said mutilations into the imperforate central portion of said disk, and a stratum of adhesive bond-

ing said disk to the top of the neck of the container intermediate said mutilations and said central portion; and in such other novel characteristics as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawing,

Fig. 1 is a side view, partly in section, of the upper portion of a container with a closure of my invention applied thereto;

Fig. 2 is a plan view thereof with the re-seal cap removed; and

Figs. 3 and 4 are two forms of inner seal disks capable of use in the closure of the invention.

Like numerals refer to like parts throughout the several views.

In the embodiment of the invention shown in the accompanying drawing, a glass container is shown at 10, the neck of which container is provided with exterior screw threads 11 by means of which a re-seal cap may be applied to and removed from the container by a rotary movement of the cap.

The re-seal cap comprises a shell 12 having a closed top 13 and a depending skirt 14 provided with screw threads 15 adapted to co-operate with the screw threads 11 about the neck of the container in drawing the cap downwardly of said neck until a liner 16 is pressed against the neck sufficiently to form a seal adequate to prevent seepage of the contents of the container between the skirt of the cap and the neck of the container.

This construction of re-seal cap and container is old and well known in the closure art, and in actual practice takes a wide variety of different forms, all of which have the feature in common that there are complementary means about the outer wall of the neck of the container and within the skirt of the shell which, with the turning of the cap, are adapted to draw the cap downwardly and press the liner or sealing gasket 16 against the top of the container neck.

Positioned between the liner 16 and the top of the neck of the container 10 is a thin disk 17 of transparent or semi-transparent material, such as a cellulose product known commercially as "cellophane", this disk being substantially of the same diameter as the liner 16, and being retained within the skirt of the shell in any desired manner without being so bonded to the liner as to prevent a free relative movement of these parts and their free separation, in a manner to be more fully described hereinafter.

The top of the neck of most containers is of smaller diameter than that of the liner 16 and is, about the outer edge thereof, slightly rounded. The difference in diameter between the liner and the portion of the top of the neck of the container with which it contacts, may be an eighth of an inch or more, but there will always be some such difference.

The disk 17, for convenience of expression, may be termed an inner seal disk, since the function of this disk is to close the neck of the container entirely independently of the action of the liner 16 until such time as it is required to remove the contents of the container. To secure this result, a film or stratum of adhesive 18 is interposed between the disk 17 and the top of the neck of the container, this film or stratum, when set, firmly holding or bonding the disk adjacent its edge to the top of the container, and forming a gas and liquid impermeable barrier completely about the neck of the container. The disk 17 and the adhesive 18 must be of inert material, or a material

neutral to the contents of the container, so that the seal effected by means of said disk and said adhesive will not be impaired by contact of the contents of the container therewith, and will have no deleterious action upon said contents as a result of such contact.

When the disk is properly adhered to the top of the neck of the container, the re-seal cap may be removed, and while the contents of the container will be visible through the disk 17, access cannot be had to such contents except by the breaking of the bond secured by the adhesive 18 or the removal of the portion of the disk 17 spanning the open top of the container neck. Ordinarily, a disk 17 thus bonded to the neck of a container affords an adequate protection against the removal of a part of the contents of a container by others than the ultimate users of such contents.

It is desired, by some producers of merchandise packaged in containers by the use of an inner seal, to guard against possibility of the removal of the disk 17 without rupturing same. This is sometimes done by gripping the portion of the disk which overhangs or projects beyond the top of the neck of the container, and slowly lifting the disk while breaking the bond. A slight softening of the adhesive, by the application of heat or a solvent thereto, may also be resorted to to facilitate this removal of the disk.

To prevent this practice, the disk 17 embodied in the closure of the invention, is given a special form, so that if it be attempted to separate the disk in the manner above described mutilation thereof will be inevitable.

As heretofore stated, "cellophane" possesses high tensile strength, considering its thickness and the base from which it is made, and is sufficiently tough to resist efforts to tear same. Nevertheless, if the edge of a "cellophane" sheet be mutilated, the mutilation will continue throughout the body of the sheet upon the application of very slight stresses to the sheet upon either side of the mutilation.

This is the theory upon which the invention of the present application is based, and to secure the desired mode of operation, a disk 17 is used which has an imperforate central portion, the area of which is sufficiently great to completely close the opening in the neck of the container and to lap upon the top of the container throughout at least a portion of the area included in the bond between the disk and the top of the neck of the container. This central portion is indicated at 19.

At divergent points about the edge of the disk, I provide a series of mutilations extending substantially radially of the disk, these mutilations being of a length substantially coextensive with the overhang of the edge of the disk, and may even extend into the area adhered to the top of the neck of the container, provided that it does not interfere with the action of the imperforate portions of the disk in closing the container.

In this manner, the film or stratum of adhesive bonding the disk to the top of the neck of the container is positioned intermediate the mutilations and the imperforate central portions of the disk.

As shown in Figs. 2 and 3 of the drawing, the mutilations consist of a series of narrow gores cut in the edge of the disk. As shown in Fig. 4 of the drawing, these mutilations consist merely of short slits in the edge of the disk. This interruption of the continuity of the material of the disk does not interfere in any way with the application

of the closure to the container, and yet, if it be attempted to remove the disk from the neck of the container, the material of the disk will be torn and the tear will extend across the top of the neck of the container into the normally imperforate central portion as indicated in Fig. 2, thus not only ensuring the mutilation of the disk in a manner to prevent its re-application to a container, but evidencing an attempt to have access to the contents of the container.

It will be borne in mind that the ultimate consumer is educated to a point where any mutilation of the inner seal disk is evidence of a substitution, or of a tampering with the contents of the container, so that tearing of the disk in the manner above described, will have the effect of making the container and its contents unsaleable.

In furtherance of the above aim, a common practice is to so decorate the disk by impressing various protective designs thereon as to make it impossible for the ordinary dealer in such merchandise to obtain disks which may be substituted for removed disks.

While I have herein referred to the use of disks made of transparent or semi-transparent material having a cellulose base, it is not my intention to limit the invention to the use of any particular material, although it is peculiarly adapted for use with the material specified herein. Nor is it my intention to limit the mutilations 20 and 21 to any particular form, except that the general direction thereof shall be radially of the disk so that the mutilations will be extended into the normally imperforate central portion as described.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. A container closure embodying therein a shell having a skirt provided with attaching means adapted to co-operate with complementary means exteriorly of the neck of a container, a liner within said shell, an inner seal disk consisting of thin, tough, rupturable material having an imperforate central portion adapted to span and engage the top about the mouth of a container, and an edge portion having a plurality of spaced mutilations, whereby stresses applied to said edge portion will extend said mutilations into the imperforate central portion of said disk, and a stratum of adhesive bonding said disk to the top of the neck of the container intermediate said mutilations and said central portion.

2. A container closure embodying therein a shell having a skirt provided with attaching means adapted to co-operate with complementary means exteriorly of the neck of a container, and a closed top, a liner within said shell engaging said top, an inner seal disk of a diameter to project beyond or overhang the top of the neck of a container, and consisting of thin, tough, rupturable material having an imperforate central portion adapted to span and engage the top about the mouth of a container, the projecting or overhung edge of said disk being weakened at spaced intervals about the edge thereof, whereby stresses applied to said edge portion will cause the tearing of the disk into the imperforate central portion of said disk, and a stratum of adhesive bonding said disk to the top of the neck of the container intermediate said weakened portions and said central portion.

3. A container closure embodying therein a shell having a skirt provided with attaching means adapted to co-operate with complementary means exteriorly of the neck of a container, a liner within said shell, an inner seal disk consisting of thin,

tough, rupturable material having an imperforate central portion adapted to span and engage the top about the mouth of a container, and an edge portion having a plurality of gores cut therein at spaced intervals, whereby stresses applied to said edge portion will extend said gores into the imperforate central portion of said disk, and a stratum of adhesive bonding said disk to the top of the neck of the container intermediate said gores and said central portion.

4. A container closure embodying therein a shell having a skirt provided with attaching means adapted to co-operate with complementary means exteriorly of the neck of a container, a liner within said shell, an inner seal disk consisting of thin, tough, rupturable material having an imperforate central portion adapted to span and engage the top about the mouth of a container, and an edge portion having a plurality of radially extending slits in spaced relation to each other, whereby stresses applied to said edge portion will extend said slits into the imperforate central portion of said disk, and a stratum of adhesive bonding said disk to the top of the neck of the container intermediate said slits and said central portion.

5. A container closure embodying therein a shell having a skirt provided with attaching means adapted to co-operate with complementary means exteriorly of the neck of a container, a liner within said shell, an inner seal disk of a thin, tough and rupturable transparent or semi-transparent material having a cellulose base, and having an imperforate central portion adapted to span and engage the top about the mouth of a container, and an edge portion having a plurality of spaced mutilations, whereby stresses applied to said edge portion will extend said mutilations into the imperforate central portion of said disk, and a stratum of adhesive bonding said disk to the top of the neck of the container intermediate said mutilations and said central portion.

6. A container closure embodying therein a shell having a skirt provided with attaching means adapted to co-operate with complementary means exteriorly of the neck of a container, a liner within said shell, an inner seal disk of a thin, tough and rupturable transparent or semi-transparent material having a cellulose base, and having an imperforate central portion adapted to span and engage the top about the mouth of a container, and an edge portion having a plurality of gores cut therein at spaced intervals, whereby stresses applied to said edge portion will extend said gores into the imperforate central portion of said disk, and a stratum of adhesive bonding said disk to the top of the neck of the container intermediate said gores and said central portion.

7. A container closure embodying therein a shell having a skirt provided with attaching means adapted to co-operate with complementary means exteriorly of the neck of a container, a liner within said shell, an inner seal disk of a thin, tough and rupturable transparent or semi-transparent material having a cellulose base, and having an imperforate central portion adapted to span and engage the top about the mouth of a container, and an edge portion having a plurality of radially extending slits in spaced relation to each other, whereby stresses applied to said edge portion will extend said slits into the imperforate central portion of said disk, and a stratum of adhesive bonding said disk to the top of the neck of the container intermediate said slits and said central portion.