

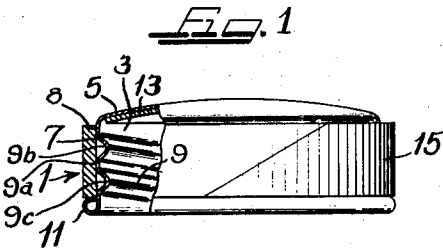
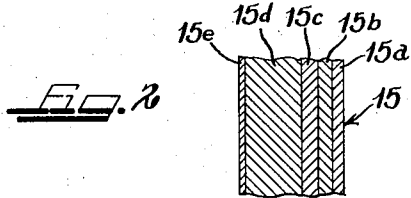
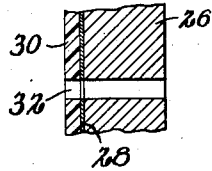
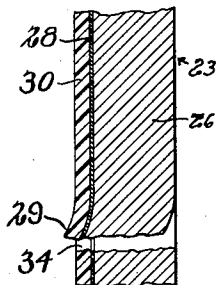
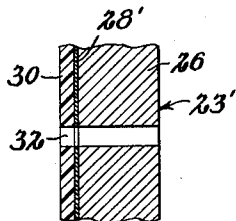
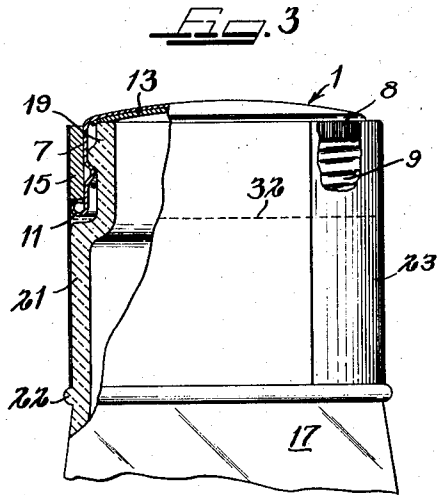
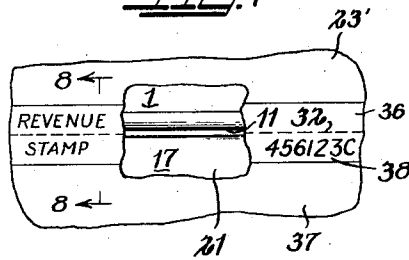
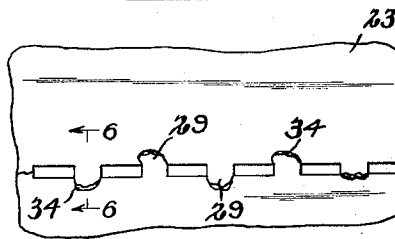
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M. R. FIELDS

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MEANS FOR SEALING A BOTTLE OR THE LIKE

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Inventor
MACK R. FIELDS
Morris Spector
Att.

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MEANS FOR SEALING A BOTTLE OR THE LIKE

Mack R. Fields, Libertyville, Ill.

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This invention relates to bottle closures and to tamper-resistant seals applied around bottle necks and their closures, particularly when used with screw caps.

A commonly used screw cap is a single shell type drawn to the required depth and having a rolled thread impressed in the side thereof, a rolled beaded flange at the open end of the cap, and a knurled surface at the upper periphery to provide a finger-gripping portion. A single shell metal screw cap is an economical closure and is adaptable to rapid automatic application to bottle tops by automatic machinery and is adaptable to the application of shrink-type seals or labels. Because of the irregular surface of the aforementioned single shell bottle cap created by the threading and the beaded flange thereon, the cap is not receptive to inflexible paper seals which may be secured around the cap.

Accordingly, it is one of the objects of the present invention to provide an inexpensive bottle closure, preferably one utilizing a single-walled metal cap having threading impressed in the skirt thereof, which is provided with a collar to form a smooth outer surface to which inflexible sealing strips, labels, and the like may be securely adhered. Another object of the invention is to provide a bottle closure which utilizes a single-walled metal threaded cap which includes means for building up the diameter of the cap to approximately the outer diameter of the beaded flange of the cap so as to provide a smooth, attractive cylindrical surface resembling more expensive, smooth-walled, plastic or metal caps.

Another object of this invention is to provide a closure of the aforementioned type which includes a cardboard collar press fitted around the aforementioned single walled metal cap, and wherein the collar and cap are designed to provide maximum frictional resistance to prevent slippage between the collar and the cap so that a cap which is tightly threaded on a bottle neck may be unthreaded therefrom by application of a twisting torque applied to the cap through the collar.

In accordance with one aspect of the invention, a single-walled threaded metal bottle cap is surrounded by a multiply spirally wound cardboard collar which is press fitted thereover to cover the impressed threading thereon. The direction in which the collar is spirally wound corresponds with the direction of the helical threading on the bottle cap, so that application of a twisting torque to the collar tending to unthread the bottle cap will cause the collar to tighten about the metal. The inner plies of the collar are of a soft chipboard and an outer ply of the collar is of a relatively rigid or hard chipboard which maintains its shape under the forces resulting from press fitting the inner plies over the cap. The collar has an outer diameter equal to the diameter of the cap at the curled flange at the lower extremity of the cap. The closure is applied to a bottle having a threaded neck at the top thereof for receiving the cap and a subjacent neck portion of a larger diameter the same as that of the collar so that there is created an even cylindrical surface from the top of the

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closure down along the neck of the bottle. A sealing strip may then be readily secured across the closure and the subjacent bottle neck. Where the sealing strip is of paper, it may be coated with any well known, quick-setting, water insoluble, resin-type adhesive which adheres well to paper and glass. Therefore, the sealing strip may not be removed by merely soaking off the sealing strip, as can be done with the shrink-type seals heretofore used.

It is a further object of this invention to provide a bottle closure which includes a sealing strip bonding the bottle closure and the bottle neck, and wherein the portion of the sealing strip secured to the closure may be torn from the portion of the sealing strip secured to the bottle neck by unscrewing the cap from the bottle neck.

In accordance with the invention, the sealing strip is perforated or weakened to provide a line of tear where it is desired that the strip should tear during unscrewing of the cap. The paper sealing strip is reinforced by a facing or outer layer of clear plastic acetate material. This prevents fracturing of the paper sealing strip under normal handling conditions along the weakened perforated portion of the strip. The plastic outer layer further provides a scuff-proof surface to protect any printed surface on the paper from shop wear and finger soiling.

The sealing strip has a base layer which is overlaid with a layer of a color which contrasts substantially with the color of the base layer. When the closure is unthreaded from the bottle, the sealing strip will tear in an irregular manner at the line of perforation, the outermost colored layer pulling away from the subjacent layer of the strip in places, forming deformed rough edges. The contrasting colors at the torn edges give a sharp visible indication that the bottle has been opened.

It is a still further object of this invention to provide a sealing strip which may not readily be removed from the bottle without so damaging the sealing strip as to indicate that the strip has been tampered with.

A still further object of this invention is to provide a bottle closure for a liquor bottle or the like which includes a sealing strip which has as a part thereof a Federal revenue stamp, and which is so applied to the bottle that it is difficult if not impossible to remove the revenue strip or stamp from the bottle without destroying the stamp. Another object of this invention is to provide a sealing strip for a liquor bottle closure which includes a revenue stamp which is applied to the bottle in a manner which materially reduces the cost of applying revenue stamps thereto. In accordance with this invention, the aforementioned outermost visible layer of the laminate sealing strip which includes the revenue stamps is wound around the top of the bottle to enable the use of conventional, label-applying machinery which materially reduces the cost of applying revenue stamps to liquor bottles. Machinery for applying labels around the necks of bottles are so highly developed that there is little likelihood that the machinery will damage the expensive revenue stamps in applying them around the bottle necks.

These and other objects, advantages and features of the invention will become apparent upon making reference to the specification to follow, taken in conjunction with the drawings showing preferred embodiments of the invention.

In the drawings:

Fig. 1 is a view, partially in elevation and partially in section, of a bottle closure constructed in accordance with the invention;

Fig. 2 is a section through the cardboard collar of Fig. 1;

Fig. 3 is a view, partially in elevation and partially in section, showing the bottle closure of Fig. 1 applied to the neck of a bottle, and which also includes a tamper-re-

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sistant sealing strip which secures the bottle closure to the bottle neck;

Fig. 4 is an enlarged fragmentary section through the sealing strip;

Fig. 5 is an enlarged fragmentary view of the sealing strip in place on a bottle neck after it has been once removed from a bottle closure;

Fig. 6 is a section through the tampered sealing strip of Fig. 5, taken along section line 6—6 thereof;

Fig. 7 shows a bottle with a modified form of sealing strip applied thereto which forms a Federal revenue stamp; and

Fig. 8 is a section through the revenue stamp of Fig. 7, taken along section line 8—8 thereof.

Reference should now be made to the drawings where like reference numerals indicate like elements throughout.

Refer now more particularly to Fig. 1 which shows a bottle closure made in accordance with the present invention. The bottle closure, generally indicated by the reference numeral 1, includes a single-walled metal bottle cap 3 of conventional form which has a convex top wall 5, a skirt 7 depending from the top wall 5 which skirt has a knurled exterior portion at 8 and threading impressed therein, and a peripheral beaded flange 11 formed by rolling the bottom of the skirt outward. The threading may extend one and one-half times around the cap, and in such case an external crimped ridge 9a is formed between the overlapping grooves 9b and 9c of the threading on the outside of the cap skirt. The cap skirt has a circular cross section except at 9a where the aforementioned crimping of the metal causes the metal to project beyond a circle coextensive with the half of the skirt where there is only a single turn of the thread. The walls of the skirt also generally taper slightly outward toward the bottom thereof to provide a locking taper.

A resilient disk 13 is press fitted within the cap to enable the cap to be tightly held in place on a threaded bottle neck. The cap is preferably made from a sheet steel blank which is pre-coated on opposite sides with enamel.

Covering the impressed threading 9 in the skirt of the bottle cap is a collar or sleeve 15 which is preferably cut from a cylindrical tube of multi-ply, spiral-wound cardboard having relatively soft chipboard innermost layers 15a, 15b and 15c, an intermediate layer 15d of hard chipboard, and an outer wrap 15e of a hard, smooth-finished cover paper. The inner diameter of the collar before it is applied to the closure cap is somewhat less than the minimum outer diameter of the circular portion of the metal cap.

An example of a cylindrical cardboard collar which may be used with a metal cap having a rolled flange of .050 inch is as follows:

(a) Soft chipboard layers 15a, 15b and 15c each .009 inch thick.

(b) Hard chipboard layers 15d, 0.17 inch thick.

(c) Smooth surfaced covering paper .006 inch thick.

(d) Inner diameter of collar is from .010 to .012 inch less than the outside diameter of metal cap before the threads were rolled thereon.

The cardboard collar is press fitted or forced down over the cap with the spiral of the collar extending or winding in the same direction as the threading 7. The softer innermost layers of chipboard 15a, 15b and 15c yield compressively to adapt itself to the configuration of the metal cap, including the non-cylindrical portion 9a and the roughened knurled portion 8. It is important that the inner layers of the cardboard collar extend into the interstices of the knurled portion 8 providing a frictional friction lock to aid in maintaining a non-slipping hold between the collar and the cap when a twisting torque is applied to screw or unscrew the closure.

Since the softer innermost layers or laminae 15a, 15b, 15c are designed to deform so as to conform to the external configurations of the skirt portion 7 when the collar 15 is press fitted in surrounding relation to the skirt portion, these innermost laminae will deform into the threading grooves 9b, 9c and around the crimped ridge 9a formed between the threading grooves. The ridge 9a conventionally projects slightly outwardly from the plane of the cap skirt portion 7 in which it is formed due to the deformation of the metal of the cap during the thread forming operation. Hence, the innermost lamina of the collar will be frictionally engaged in grooves 9b, 9c and about the ridge 9a to provide a positive locking action between collar 15 and cap skirt 7 insuring that the cap will turn with the collar in the direction of the applied torque.

The outer wrapping of cover paper 15e provides a surface for ready adhesion with any number of well known quick setting, non-water soluble adhesives which will adhere to both paper and glass. The smooth surface of the covering paper prevents the absorption of an excessive amount of adhesive material. Also, because the spiral of the collar lies in the same direction as the threading on the metal cap, a twisting torque applied to the collar in a direction which tends to unthread the cap will tighten the collar against the walls of the bottle cap.

The outermost and hard chipboard layer 15d retains its cylindrical shape and provides strength to the collar to prevent buckling thereof when the collar is press fitted over the cap. Although the hard chipboard layer 15d should provide sufficient rigidity and strength for this purpose, it should also have a certain degree of flexibility so that the pressure of a person's finger may be readily transferred through the walls of the collar to increase the gripping action between the softer innermost layers of the collar and the cap skirt.

The bottom edge of the collar 15 when applied to the cap abuts the top of the beaded flange 11 so that the beaded flange defines a seat for the bottom edge. The collar 15 extends up to and preferably slightly below the top of the cap skirt. The outer diameter of the collar 15 is made equal with the outer diameter of the beaded flange 11 so that there are no projecting surfaces on the outside of the bottle closure. The cardboard collar 15 thus converts the irregular contour of a standard single-shelled metal cap into an even surface, which surface may be made flush with the neck of a bottle to which it is to be applied, as will be described hereinafter.

Referring now more particularly to Fig. 3, the closure 1 may be applied to a glass bottle 17 having a reduced, threaded neck portion 19 which joins a wider, smooth surface cylindrical neck portion 21 therebeneath. The bottom of the smooth wall neck portion 21 is provided with a peripheral integrally molded bead or projection 22.

The bottle closure 1 is threaded onto the reduced threaded neck portion 19 of the bottle and is dimensioned such that the outer diameter of the collar 15 is equal to the diameter of the smooth-walled portion 21 of the bottle neck, so that upon application of the closure to the bottle the cap appears to be a continuation of the bottle neck. When the closure is fully threaded onto the bottle neck, the top edge of the bottle compresses the resilient gasket or disk 13 in the top of the bottle closure to hold the closure tightly in place. Also, the closure is dimensioned so that the bottom of the metal cap 3 is spaced a small distance above the smooth neck portion 21 of the bottle to accommodate the wide tolerances commonly used in the manufacture of glass bottles and metal bottle caps.

A sealing strip 23 is wrapped around and adhesively secured to the bottle closure and bottle neck, with the sealing strip extending between the peripheral bead 22 on the bottle neck and the top of the cardboard collar 15 of the bottle closure. The raw edge at the top of the cardboard collar 15 is preferably colored to conform with the

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background color of the top of the bottle cap. This may be accomplished by providing a collar where the superimposed layers of the collar, including the outer cover paper, may be of a dark color throughout their individual thickness so that the cut edge conforms to the cover of the cap.

As above stated, the adhesive used to adhere the sealing strip to the metal bottle cap and the glass bottle is any one of a number of well known, non-water soluble, resin-type adhesives which have quick setting properties and adhere well to glass and cardboard or paper. The length of the wrap-around sealing strip is equal to the circumference of the cardboard collar plus about $\frac{1}{8}$ inch or so for overlap. The sealing strip prevents loosening of the bottle closure due to vibration during shipment and provides an ornamental appearance to the bottle when suitably decorated and colored. The background of the sealing strip 23 is preferably of the same color as the exposed top portion of the bottle cap, so that the entire closure appears to be an integral unit. The sealing strip is constructed so as to provide numerous other advantages as will be hereinafter set forth.

In order to achieve a rapid adhesion or cementing of the laminate sealing strip to the bottle when it is wound about the cylindrical surfaces of the closure and the bottle neck, it is desirable to incorporate a film of metallic foil in the laminate sealing strip to provide a sealing strip having a "dead-fold" or non-spring-back characteristic, so that the sealing strip will be held in place on the bottle neck before the adhesive securing the strip to the bottle has completely hardened. This increases the speed of processing the bottles by reducing the amount of time the label applying machinery must maintain contact pressure on the newly applied sealing strips to hold them on the bottles before the adhesive has hardened sufficiently to prevent the strips from falling off of the bottle necks. If the sealing strip were made only of paper, the resilient property of the paper to spring back to a normal flat state would require that contact pressure be applied by the label applying machinery for a longer period until the adhesive has practically completely hardened. Incorporating a metallic foil lamina in the sealing strip counteracts the resiliency of the paper base layer thereof. In one example, aluminum metal foil was used as the outermost colored layer 28 of the sealing strip. The paper backing 26 was .002 inch thick, the metal foil was .0003 inch thick and the clear acetate facing layer was .0008 inch thick.

To provide for manual removal of a sealed bottle top without the use of a sharp edged instrument for severing the sealing strip below the closure, a line of perforations 32 forming a tear line is formed in the strip extending lengthwise therethrough. The perforated line is positioned such that the tear line will lie opposite the clearance space or gap between the bottom of the closure 1 and the shoulder on the bottle neck formed by the reduced threaded neck portion 19 thereof.

To aid in providing a tamper-resistant seal in the manner to be explained, the sealing strip is a laminated body having a paper backing or lamina 26 with an exceedingly thin, relative to the thickness of the base layer 26, colored layer 28 having a given background color with or without lettering or ornamentation thereon, and which background color contrasts substantially with the color of the base paper layer 26. The exceedingly thin colored layer 28 may be an exceedingly thin colored paper layer or may be a layer of colored ink. The colored layer 28 is faced or overlaid with a clear plastic acetate layer 30 which is also thin relative to the thickness of the base layer 26. The acetate plastic layer is a non-water soluble plastic material which is intimately fused to the colored intermediate layer 28.

The closure is removed from the bottle neck by applying a twisting force to the metal cap 3 through the sealing strip and the cardboard collar in a direction to unthread

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the cap from the threaded bottle neck. This force will sever the sealing strip along the line of perforations 32. The fracturing of the laminate sealing strip provides a series of serrated edges or nibs 29 formed by the material of the sealing strip between the perforations 32. The bond between the transparent plastic outer layer 30 of the sealing strip and the thin colored layer 28 is made greater than the bond between the colored layer 28 and the paper backing 26. Also, the bond between the paper backing 26 and the glass of the bottle and the collar 15 is greater than the bond between the colored layer 28 and the backing layer 26, so that the serrated portions 29 are comprised of only the colored layer 28 and the plastic outer layer 30 which have pulled away from the paper backing 26. If the paper backing 26 is a white color and the layer 28 is of a black color, the deformed serrations 29 will expose the white color of the backing layer, as at 34 (Fig. 5), 26 which immediately indicates to an observer that the seal has been broken.

If the closure with the attached upper portion of the sealing strip is then re-threaded onto the bottle neck, it will not be possible to obscure the white background to camouflage the fact that the seal had once been broken.

Because the plastic facing layer 30 is made of a non-water soluble material, the use of a solvent which would penetrate and dissolve the outer layer would in all probabilities also act as a solvent for the printing ink used in the layer 28 so that this kind of tampering with the bottle will be readily apparent. The laminate seal of the invention is therefore a definite deterrent to tampering with the bottle before it has reached the ultimate consumer.

Refer now to Figs. 7 and 8 showing an alternative embodiment of the invention. In this new embodiment, a revenue stamp is incorporated in a modified sealing strip 23' which is similar in size and construction to the sealing strip 23 just described and is similarly applied to the bottle neck and bottle closure. The strip 23' includes a paper backing layer 26 and a colored intermediate layer 28' and may comprise a layer of ink or a separate thin paper layer which has a background color which contrasts substantially with the color of the backing layer 26. The layer 28' has a band 36 containing revenue stamp markings which when the strip is applied to the bottle neck closure surround and overlap adjoining portions of the closure 1 and the bottle neck portion 21. The sealing strip is perforated at 32 and the perforations pass through the revenue stamp marking portion 36 and is positioned to be opposite the gap between the bottle closure and the bottle neck.

The portions 37—37 outside of the revenue stamp portion 36 may be provided with suitable ornamentation, printed matter, and the like. The paper body comprising the backing layer 26 and the layer 28' may be furnished by the Federal Government. The transparent, waterproof plastic layer 30 is adhesively secured to the outside of the layer 28' by the distiller.

The sealing strip 23' is preferably applied to a liquor bottle or the like by suitable well known label-applying machinery which greatly reduces the cost of applying revenue stamps to liquor bottles and the like.

The sealing strip may be coded by the distiller by impressing or imprinting a symbol, such as the numbers and letters 38 shown in Fig. 7, on the plastic facing layer 30 (Fig. 8) at the same time that the sealing strip is applied to the liquor bottle. The imprinted, coded symbol cannot be easily removed or smudged as in the case of an exposed printed symbol. In addition to the advantage of providing a suitable imprint surface, the plastic outer layer also increases the difficulty of removing the strip 23' from the bottle without damaging the revenue-containing strip, as explained above in connection with the embodiment of Figs. 1 through 6.

Where a state revenue stamp sticker is to be applied to the bottle, either independently of a Federal revenue

stamp as in the case of bottle wines, or in addition thereto, it is preferably secured to the strip 23 or 23' in a location crossing the perforation 32. This may be done by securing the state stamp sticker directly to the layer 28 or 28' before the plastic facing layer 30 is applied thereto or by applying it to the outside of the facing layer 30 after the strip has been fabricated. Removal of the bottle cap would therefore tear the state revenue stamp.

The application of the revenue strip around the bottle neck as distinguished from applying it in a conventional manner across the top of the bottle also renders it more difficult to remove the revenue stamp from the bottle in an undamaged condition, since it permits the overlapping of the ends of the revenue stamp containing strip 23. Additionally, the laminate character of the strip 23' and the color difference between the background of the outermost layer 28' and the subjacent layer 26 prevent the re-application of a closure and strip to a bottle without the severance line between the previously torn parts of the strip being visible.

It should be understood that numerous modifications may be made of the preferred embodiments of the invention above described without deviating from the broader aspects of the invention.

I claim:

1. In combination with a bottle having a threaded neck portion defining a filling opening into the bottle, a closure covering said opening and threaded around said neck portion and a multi-layered sealing strip secured around the outside of said closure and the neck portion therebelow and adhered to both, said sealing strip having a non-water soluble transparent outer facing layer overlying an outermost colored layer which is of a color which contrasts substantially with the color of the subjacent layer of the sealing strip and which is less securely bonded to said subjacent layer than said subjacent layer is bonded to the bottle neck and closure and said transparent outer layer is bonded to said outer colored layer, and said strip being weakened to form a tear line at the bottom of the closure, whereby the unthreading of the bottle cap will tear the sealing strip generally along the tear line and cause the outermost colored layer of the sealing strip to pull away from the subjacent layer of the strip to expose the contrasting color of the subjacent layer to indicate that the seal of the bottle has been broken.

2. In combination with a bottle having a threaded neck portion defining a filling opening into the bottle, a closure covering said opening and threaded around said neck portion and a multi-layered sealing strip secured around the outside of said closure and the neck portion therebelow and adhered to both, said sealing strip having an outermost colored layer which is of a color which contrasts substantially with the color of the subjacent layer of the sealing strip and which is less securely bonded to said subjacent layer than said subjacent layer is bonded to the bottle neck and closure and said strip being weakened to form a tear line at the bottom of the closure, whereby the unthreading of the bottle cap will tear the sealing strip generally along the tear line and cause the outermost colored layer of the sealing strip to pull away from the subjacent layer of the strip to expose the contrasting color of the subjacent layer to indicate that the seal of the bottle has been broken.

3. In combination with a bottle having a threaded neck portion defining a filling opening into the bottle, a closure covering said opening and threaded around said neck portion and a multi-layered sealing strip secured around the outside of said closure and the neck portion therebelow and adhered to both, said sealing strip having an outermost colored layer which is of a color which contrasts substantially with the color of the subjacent layer of the sealing strip and which is less securely bonded to said subjacent layer than said subjacent layer is bonded

to the bottle neck and closure and said strip being weakened to form a tear line at the bottom of the closure, whereby the unthreading of the bottle cap will tear the sealing strip generally along the tear line and cause the outermost colored layer of the sealing strip to pull away from the subjacent layer of the strip to expose the contrasting color of the subjacent layer to indicate that the seal of the bottle has been broken, one of the layers of the strip being substantially non-resilient so that the strip has an overall non-spring-back quality.

4. In combination with a bottle having a neck with a reduced threaded top portion defining a filling opening and a wider smooth neck portion immediately below said threaded portion, a closure for covering said filling opening comprising a cap having a top closure wall overlying the filling opening and a depending skirt with threading impressed therein which is in threaded engagement with said threaded portion of said bottle neck, the outer diameter of said cap skirt being less than the outer diameter of said smooth neck portion of said bottle, said cap skirt having a peripheral flange beneath the threaded portion thereof which flange is flush with said smooth bottle neck portion, a sleeve of cardboard-like material press fitted over said cap and covering the threading portion thereof, the outer surface of said sleeve being flush and adjacent to said cap flange, and a sealing strip secured to the outside of both said sleeve and said smooth neck portion and being perforated at the lower extremity of the closure, said sealing strip having an outer transparent layer of a non-water soluble material overlying an intermediate layer which in turn overlies and is of a contrasting color with the color of a base layer of the sealing strip and which is bonded less securely to said base layer than said base layer is bonded to the bottle neck and closure, the said intermediate colored layer pulling away from said base layer adjacent to the perforated portion thereof upon the unthreading of the closure from the bottle neck.

5. In combination with a container having a filling opening through one end thereof and a closure removably covering said opening; a revenue stamp defining a sealing strip wound circumferentially around and adhered to both said container and said closure, said revenue stamp comprising a laminate body having a base portion, an intermediate portion having a background color which contrasts substantially with said base portion and which includes revenue stamp markings thereon, and said laminate body being weakened along a linear tear line passing through said revenue stamp markings, and upon application of a twisting force to the closure, said laminate body will rupture along said tear line to expose to view the color of said base portion in contrast with the color of said intermediate portion.

6. In combination with a bottle having a neck defining a filling opening into the bottle, and a closure covering said opening and encircling said bottle neck, a revenue stamp wound around and adhered to both said closure and neck, said revenue stamp comprised of a base layer adjacent to the bottle and closure and an outermost colored layer including revenue stamp markings, the color of the background of said outermost colored layer being of a substantially contrasting color to the color of the subjacent layer, the revenue stamp markings being opposite portions of both the bottle closure and bottle and the bond between said outermost colored layer and said base layer of said revenue stamp being weaker than the bond between said base layer and both said bottle neck and closure, so that removal of the closure will pull the outermost colored layer away from said base layer at the lower extremity of the closure and will mutilate said revenue stamp markings along an irregular tear line which will expose a sharp line formed by the contrasting color of said outermost colored layer of the sealing strip and said subjacent layer thereof.

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7. In combination, a single walled bottle cap including a substantially cylindrical skirt portion having a knurled portion adjacent to one end thereof and threading extending from adjacent to said knurled portion to the other end of said skirt adapted for threading around the neck of a bottle; and a laminate cylindrical sleeve of cardboard-like material of slightly less internal diameter than the external diameter of said skirt portion press fitted around said skirt portion in surrounding relation thereto and covering said threading, the innermost lamina of said sleeve being of a softer material than the outer lamina and which is deformed and compressed outwardly by the cap skirt portion so that said innermost lamina conforms to the external configuration of said skirt portion and extends into the interstices of said knurled portion to provide a gripping action between the cap and the sleeve when a twisting torque is applied to said sleeve, and the outer cylindrical lamina being substantially undeformed by the pressure of the cap.

8. In combination, a single walled bottle cap including a substantially cylindrical skirt portion having threading formed in the surface thereof for screwing onto a bottle, said threading having a helical groove and a ridge between the turns of the groove projecting outwardly of said skirt portion, and a beaded peripheral flange about said other end of the skirt portion; and a laminate cylindrical sleeve of cardboard-like material of slightly smaller

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inside diameter than the outside diameter of said skirt portion press fitted around said skirt portion in surrounding relation and covering said thread, with one end of the sleeve against said beaded flange, the innermost lamina of said sleeve being deformed by said skirt portion so that said innermost lamina conforms at least partially to the external shape of said skirt portion and engages about said thread ridge to provide a positive friction lock between the cap and the sleeve when a twisting torque is applied to said sleeve, and the cylindrical lamina being substantially a hoop maintaining the innermost layer under pressure on the cap.

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