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[56]

References Cited

UNITED STATES PATENTS

3,257,021	6/1966	Brockett.....	215/40
3,361,281	1/1968	Kehe	215/39

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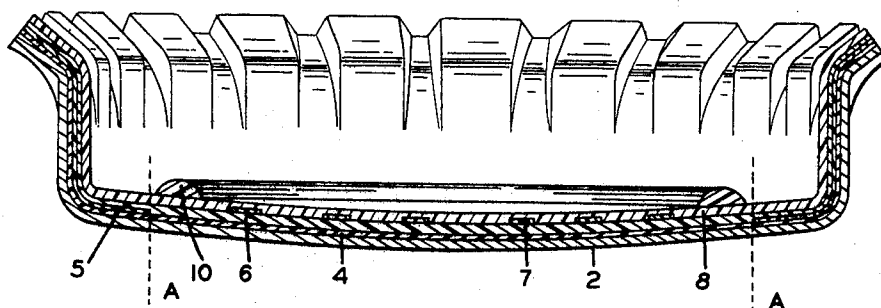
[54] **CROWN CLOSURE HAVING REMOVABLE LINER**
3 Claims, 2 Drawing Figs.

[52] U.S. Cl..... **215/40**

[51] Int. Cl..... **B65d 23/00,**
B65d 53/00

[50] Field of Search..... **215/39, 40**

ABSTRACT: A removable liner structure for a crown closure consists of a sandwich wherein printed matter is contained between two layers constituting the sandwich. The inside of the rigid shell of the crown is provided with a varnish coat followed by an adherence coating in the area of the skirt. This is then followed by the sandwich structure constituting the removable liner with the indicia between the two layers forming the sandwich. A ringseal is then provided over the sandwich.



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3,557,987

FIG. 2

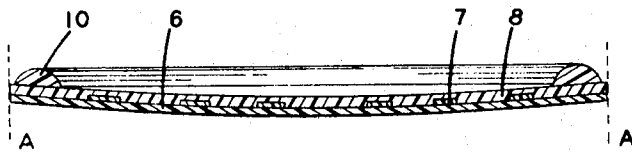
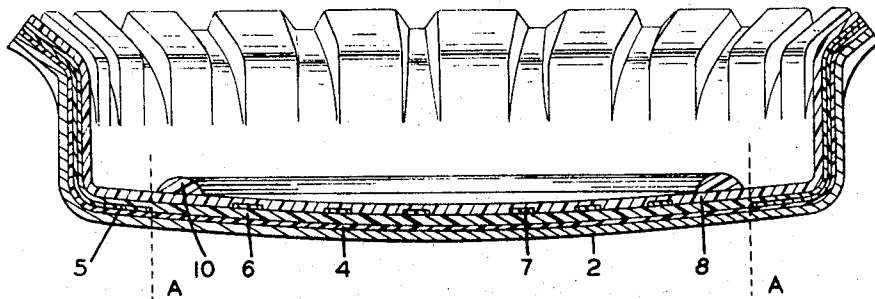


FIG. 1

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CROWN CLOSURE HAVING REMOVABLE LINER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to closures having a rigid shell structure and a sealing liner or cushion therein and is more particularly concerned with the provision of an adherence coating in the skirt portion of the shell structure for assisting in the retention of the liner within the shell.

2. Description of the Prior Art

Crown closures having liner closures are useful in cases where a bottler or seller conducts a promotional campaign depending upon proof of use of a product, or where attention to product complaints requires identification of lot number, date or other identification of the goods. In the past, such campaigns or complaints concerning beverages or the like, bottled with crown closures, have required the consumer to return the entire crown closure. The crown shells are bulky and difficult to mail and have caused damage to mail canceling machines when enclosed in an envelope.

The crown closures presently in commerce are made with the sealing liner tightly adhering to the shell. The usual practice is to provide an overall lacquer or enamel coating on one face of the metal stock sheet, and to print the bottler's name, etc. on the other face with pigmented inks, so that the sheet has a number of such printings thereon. The individual blanks are then punched out and formed into shells with corrugated skirts by punchpress operation. Liners are then disposed in the shell. In one practice, cork discs are secured to the shells by an adhesive such as albumin. In another practice, a measured quantity of plastisol or other elastomer-providing substance is introduced and then hot molded to provide a desirable sealing gasket which possesses a firm bond to the inner lacquer coating.

The prior art structures have such a good bond between the metal shell or inner lacquer coating and the liner that it is extremely difficult to remove the liner from the crown shell. One of the first uses of a semiadherent or removable liner is set forth in U.S. Pat. No. 3,257,021. There indicia is printed on the lacquer coating, and the liner is then placed over the indicia. The greater adherence of the indicia for the liner than for the lacquer coating inside of the shell permits the indicia to be removed with the liner when the liner is stripped from the shell. Experience has shown that when the bond between some area of a liner structure and the metal shell is weakened, there is a tendency for the liner to shift relative to the crown and provide an improper seal or for the liner to actually separate from the shell and drop into the bottle, resulting in a bottle without any type of sealing action. Consequently, the object of this invention is to provide a liner configuration that adheres to the shell when it is being used to seal a bottle, but that is removable from the shell by grasping the liner and pulling it therefrom.

SUMMARY OF THE INVENTION

The invention is directed to a removable liner structure for a crown closure in which the liner is capable of expurgatorial action. The interior metal shell of the closure is provided with a varnish coating. Printed thereover is an adherence coating in the area of the crown skirt. This coating provides a good bond between a sandwich liner structure and the varnish coating. Over the adherence coating and the exposed varnish coating in the center of the crown is placed the bottom layer of the sandwich structure. Over this is provided the indicia for the promotional purpose. Over this is then placed the second layer of the sandwich structure of the liner. Over this is then placed the ringseal. The liner can be removed, resulting in the removal of the sandwich structure with the printed indicia therebetween and the ringseal thereabove. Remaining in the shell of the closure is the sandwich structure in the vicinity of the adherence coat and the complete varnish coat.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a cross-sectional view of the crown with the liner therein, and FIG. 2 is a cross-sectional view of the portion of the liner removed from the crown.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In accordance with the invention a metal shell 2 is provided with an overall internal coating of a varnish 4. In the skirt area of the shell 2 there is provided an annular ring 5 of an adherence coating. Over this is placed the lower layer 6 of the sandwich structure forming the liner. This lower layer 6 covers both the adherence coating 5 in the vicinity of the skirt and the exposed varnish coat 4 in the center portion of the crown shell. The adherence coating causes a good bond between the layer 6 and the varnish 4 in the region of the skirt of the crown. Where there is no adherence coating and the lower layer 6 is in direct contact with the varnish 4, there is minimum adherence there between. Over the layer 6 is placed the indicia 7 forming the design which is useful for promotional purposes. An upper layer 8 is applied over the indicia and the lower layer 6. The two layers 6 and 8 are bonded together to form an integral structure with the indicia embedded therein. Over the layer 8 is placed the ringseal 10. Grasping of the outer edge of the ringseal will cause removal of the liner section as shown in FIG. 2 between the lines A-A of FIG. 1. The removable section is composed of the lower layer 6, the indicia 7, the upper layer 8 and the ringseal 10. It is the low adherence between the layer 6 and the varnish 4 which permits this section of the liner to be removed.

The varnish coating 4 is a modified epoxy crown finishing varnish such as Interchemical varnish E213-24 which is a type commonly used by crown manufacturers to coat the decorative outer portion of the crown shell. The lower layer 6 and the upper layer 8 of the sandwich structure are composed of a blend of 1 part of the following first listed organosol with 8 parts of the following second listed organosol.

	Parts by weight
First organosol, ingredients:	
Poly vinyl chloride-----	41
Poly vinyl chloride containing pendant carboxyl groups-----	3
Hydrocarbon lubricant-----	1
Polyester-type plasticizer-----	33
Diisobutyl ketone/mineral spirits, 2/1 blend-----	20
Second organosol, ingredients:	
Poly vinyl chloride-----	41
Hydrocarbon lubricant-----	1
Diisobutyl ketone/mineral spirits, 2/1 blend-----	20

The viscosity of the above blend is adjusted by the ketone/mineral spirits for a period of 16-30 seconds on a 04 Zahn cup at 77° F.

The sealing ring 10 of this invention is formed of the same material as the sealing ring of U.S. Pat. No. 3,171,560.

The indicia 7 is printed by a vinyl ink, but could be printed by the use of any regular alkyd ink which is the conventional ink used in printing of indicia on crowns.

The formulation of the adherence coat is as follows:

	Parts by weight
Ingredients:	
The above first listed organosol-----	4. 62
Polyester-type plasticizer-----	4. 62
Finely divided silica bonding agent (Santocel Z)-----	0. 28
Dibutyl phthalate plasticizer-----	0. 48

The removable liner closure of this invention is produced in the following manner. The varnish coating is applied to the overall surface of the metal sheet which is to form the crown blank. This varnish coating is then cured by being baked at 325° for 10 minutes. The adherence coating 5 is then applied to the outer peripheral portion of the varnish layer in the regions where the skirt of the crown will be formed. This coating is then baked at 335° for 10 minutes. The layer 6 is then placed over coats 4 and 5 and baked at 350° for 10 minutes. The indicia 7 is applied over coating 5 and is then covered by the layer 8, which is then baked at 370° for 10 minutes. The crown blank with the above-mentioned coatings thereon is formed as a crown by a stamping and punching machine. The ringseal 10 is then disposed in the interior of the crown over the layer 8.

I claim:

1. A crown closure, comprising:

- a. an internally varnished rigid shell;
- b. a liner structure disposed within the rigid shell;
- c. material providing indicia adherent to the liner structure in the central portion of the rigid shell; wherein the improvement comprises:
- d. an adherence coating between the varnish and the liner structure about the skirt portion of the rigid shell such that only the portion of the liner structure with the indicia adherent thereto in the central portion of the rigid shell may be removed therefrom, the remainder of the liner structure being firmly secured to the rigid shell.

2. A crown closure, comprising:

- a. a rigid shell having a central portion and a skirt portion about the periphery of said central portion;

- b. a varnish coating in the interior of said rigid shell;
- c. an adherence coating upon said varnish coating only about said skirt portion of said rigid shell so as to leave a portion of said varnish coating uncovered within said skirt portion;
- d. a first layer upon said adherence coating and upon the uncovered portion of varnish coating;
- e. a second layer upon said first layer;
- f. means defining indicia between said first and second layers; and
- g. sealing means upon said second layer only about said central portion of said rigid shell, said first and second layers, said means defining indicia and said sealing means being adapted to be separated from said rigid shell only about said central portion thereof at the portion of said varnish coating not covered by said adherence coating.

3. A method of making a crown closure, comprising the steps of:

- a. applying a varnish coating to one face of a metal sheet;
- b. applying an adherence coating upon the varnish coating only upon that portion of the metal sheet which is to form the skirt of the crown closure;
- c. applying a liner structure upon the adherence coating and upon that portion of the varnish coating that is not covered by the adherence coating; and
- d. forming the metal sheet into a crown closure such that the adherence coating is located only in the area of the skirt portion of the crown closure in order that the liner structure will securely adhere to the skirt portion but not securely adhere to the central region of the crown closure.