June 7, 1932. C. W. LINDSAY 1,861,603

BOTTLE CAP

Filed Dec. 17, 1929

Fig. 1.

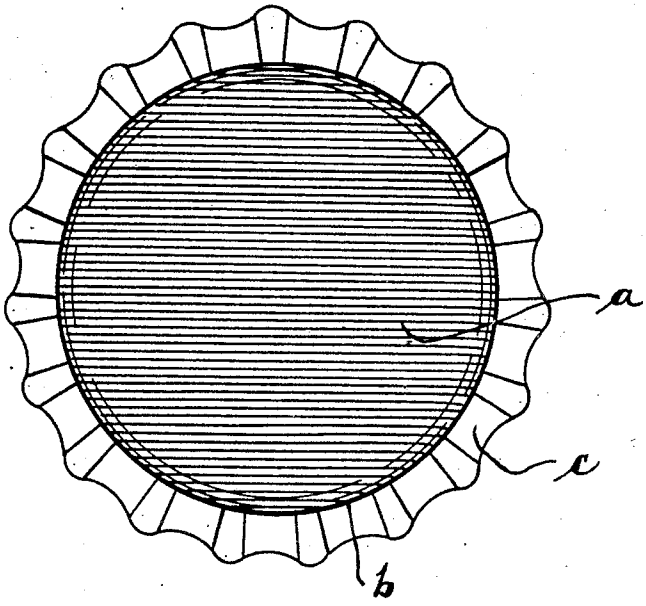


Fig. 2.

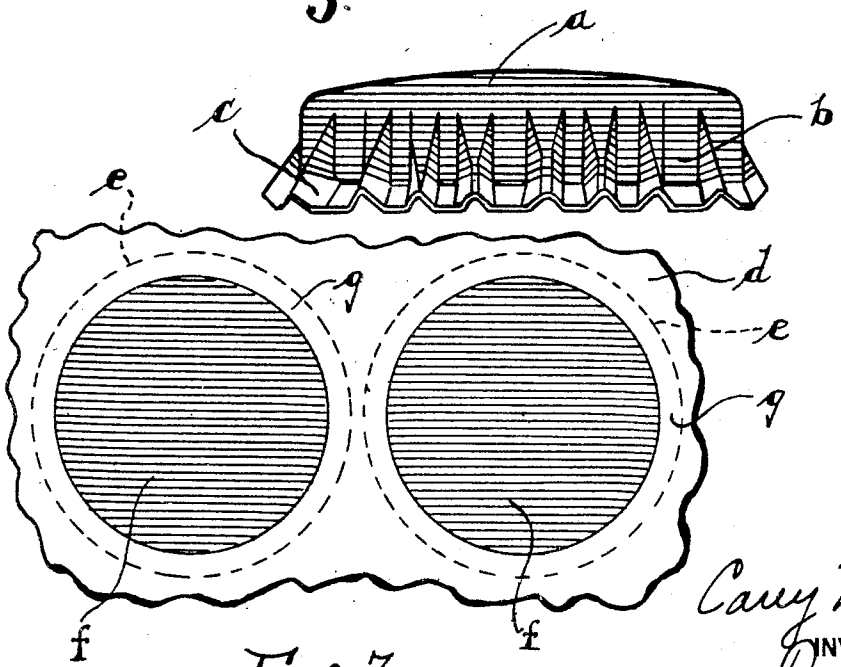


Fig. 3.

Carey W. Lindsay
INVENTOR
BY Frank J. Wentworth
his ATTORNEY.

Patented June 7, 1932

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UNITED STATES PATENT OFFICE

CAREY W. LINDSAY, OF HOMELAND, MARYLAND, ASSIGNOR TO CROWN CORK & SEAL COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

BOTTLE CAP

Application filed December 17, 1929. Serial No. 414,624.

My invention relates to bottle caps, and more particularly to closures of the type known as crown caps, having printed thereon decorative or advertising matter.

Bottle caps of the type to which my invention relates embody therein a metal shell having a fluted skirt, and a cushion disk within the shell, said disks being made of various material and of various forms. My invention relates more particularly to characteristics of the metal shell, the form of cushion disk and the contour of the shell to adapt it to the particular form of cushion disk or sealing member used, being immaterial to the invention.

In the production of metallic shells for bottle caps of the type to which my invention relates, such shells are stamped from tinned sheets, which, prior to the stamping operation, are coated with lacquer upon one face of the sheet, and have an artistic design or advertising matter printed on the opposite face of the sheet by lithographic methods, and subsequently dried in an oven. This design is usually of general circular form, co-extensive in area with the amount of metal required for forming each shell, so that in the formed shell the inked design extended to the edge of the skirt. If, as the tinned sheets were fed through the stamp press, they were a little out of register, there was always the likelihood of the hard surface coating forming the design being mutilated or chipped by the action of the cutting die. This condition, however, arose very seldom, the main difficulty with bottle caps embodying shells decorated as described arising from the handling of such shells in the bottle cap assembling and the bottle capping, machines.

In such machines, the bottle caps are delivered in bulk to a magazine in which they are constantly agitated so as to accurately position the caps in relation to a feed chute along which they pass into operative relation to the mechanisms for applying the cushion disks to the shells, or for applying such caps to bottles. Part of this latter mechanism consists of a metallic throat passing over the cap and engaging the lower edge of the skirt thereof with a rubbing contact. In caps wherein the decoration extends to the lower edge of the skirt, the impact of caps with each other, while being agitated in the assembling or the capping machine hopper, had a tendency to chip the surface coating forming the decoration about the edge of the skirt. The contact of the throat with this portion of the skirt also had a tendency to scrape the coating forming the decoration from the skirt.

Under such conditions, the result was a defacement of the cap about the edge of the skirt in a manner to be visible when the cap was upon a bottle. The main object of my invention is to provide a metallic shell for a bottle cap which will not be susceptible of such defacement upon the stamping of the shell from the sheet, while the bottle caps are being agitated in the hopper of the bottle cap assembling, or the bottle capping machine, or while the plunger is being actuated to close the fluted skirt upon the bead about the neck of a bottle.

In carrying out my invention, I provide a metallic shell having a fluted skirt the exterior portion of the shell excepting for a narrow strip about the edge of the skirt, having impressed thereon, by lithographic or other printing methods, a surface coating forming a decorative or advertising design, the undecorated portion presenting a narrow band of the tinned surface of the metal about the edge of the skirt.

By so forming the shell, the surface coating forming the decorated portion thereof is positioned sufficiently from the edge of the skirt to minimize likelihood of chipping of the coating, consisting of ink having a varnish vehicle, about this edge as a result of its impact with other shells while in the hopper of a bottle cap assembling or of a bottle capping machine, thus avoiding, particularly during the bottle capping operation, minute particles of the ink advancing with the cap in the feed chute where there is possibility of their entering a bottle and giving an effect of precipitate in the contents thereof.

Furthermore, the absence of surface coating about the bottom of the skirt, will prevent defacement of the skirt of the shell dur-

ing the forming of the shell in the stamp press, and during its agitation in the bottle cap assembling machine hopper, thus permitting the delivery to the bottler of caps perfect in finish and avoiding loss as a result of rejection of caps by the purchaser.

The bright tinned band about the bottom of the skirt will of itself have a decorative quality, in addition to the practical advantage resulting from the avoidance of the presence of the small particles of ink due to the chipping of the baked on ink in the manner above referred to.

The invention consists in a bottle cap as an article of manufacture embodying therein a metallic shell having a fluted skirt, the exterior of the top and the skirt of which has a surface coating extending to a point adjacent the edge of the skirt, but spaced therefrom, whereby a narrow band of the metal of the shell will be exposed about the entire edge of the skirt; 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 top view of a bottle cap embodying the invention;

Fig. 2 is a side view thereof; and

Fig. 3 is a fragmentary portion of a sheet of decorated tin preparatory to the forming of the shells, the dotted lines in said view indicating the maximum diameter of the disks cut from the sheet for forming the shell.

Like letters refer to like parts throughout the several views.

As shown in the accompanying drawing, the invention contemplates a bottle cap of the crown type having the usual metallic shell provided with a fluted and flared skirt. In the drawing, the top of the shell is indicated at *a*, the upper portion of the skirt at *b*, and the lower flared portion thereof at *c*.

In the drawing, the cross-hatching indicates the decorative or advertising surface coating, it being noted that this coating is applied only to the portions *a* and *b* of the shell so as to leave a narrow strip or band of the metal from which the shell is formed, extending throughout the portion *c*.

This construction is advantageous both during the production of the shell and during the application of a cap to a bottle.

In the production of the shell, the design constituting the surface coating is applied by lithographic printing methods to the sheet of tin, the designs being spaced apart a distance to afford the usual wastage when punching the caps, plus twice the width of the band *c*. This condition is shown in Fig. 3, in which a fragmentary portion of the metal sheet is shown at *d*, and in which the dotted lines *e* indicate the line of perforation of the sheet preparatory to forming the shell. The surface coating upon the sheet, which, in the drawn-up shell coincides with the parts *a* and *b*, is indicated at *f*, while the space between this portion and the dotted lines *e* indicates the portion *g* of the sheet which will form the flared portion *c* of the shell.

With a bottle cap embodying the invention it will be noted that, when stamping the shells from the sheet, the punch operates along the dotted line *e*, and will thus have no tendency to chip the surface coating or fracture it adjacent the rim of the skirt of the shell.

When assembling the bottle caps, the exposed metal about this rim will prevent the chipping of the surface coating as a result of the contact of the edges of the shells with each other during the tumbling or agitating operation while in the hopper. This condition is also true with the tumbling or agitation of the shells while in the hopper of the bottle capping machine.

When the throat of the bottle capping machine engages the shell to engage it with the bead upon the bottle, it will contact with the portion *c* of the shell and will thus have no tendency to remove from or mar the decorative coating upon any portion of the shell. Furthermore, there will be no, or substantially no, particles of the decorative coating descending the feed chute of the capping machine so as to enter a bottle before the cap is applied thereto.

In addition to the foregoing advantages, the narrow strip or band *c* of bright metal will have a decorative effect after the cap has been applied to the bottle.

Ordinarily the surface coating herein referred to consists of a base color having a design impressed thereon. Ordinarily this base color was extended entirely over the sheet. It will be necessary, in producing shells of the invention, however, to limit this base color to isolated spots so as to leave the metal exposed between the base color and the line *e*, as shown in Fig. 3.

The surface coating is baked upon the sheets and has the characteristics of a thin coating of enamel, peculiarly subject to chipping in the manner herein referred to.

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

1. As an article of manufacture, a bottle cap of the type which is secured to a bottle by having its skirt closed upon the neck of a bottle by mechanisms having rubbing contact with the skirt, embodying therein a metallic shell having a skirt, the exterior of the top and the skirt having a hardened lithographic decorative coating thereon, excepting throughout that portion of the skirt adjacent the lower edge thereof, said portion being free of any coating whereby mutilation of the decoration adjacent the edge of the

skirt is avoided during the formation of the shell, the assembly of the cap and the application of the cap to a bottle.

2. As an article of manufacture, a bottle cap of the type which is secured to a bottle by having its fluted skirt closed upon the neck of a bottle by mechanisms having rubbing contact only with the fluted skirt, embodying therein a metallic shell having a fluted skirt outwardly directed toward the bottom thereof, the exterior of the top and the skirt having a hardened lithographic decorative coating thereon terminating at a point adjacent the outwardly directed fluted skirt, the portion of the skirt adjacent said fluted edge being free of any coating, whereby mutilation of the decoration adjacent the edge of the skirt is avoided during the formation of the shell, the assembly of the cap and the application of the cap to a bottle.

In witness whereof I have hereunto affixed my signature this 12th day of December, 1929.

CAREY W. LINDSAY.