Feb. 6, 1940. J. B. EISEN 2,188,942

CONTAINER CLOSURE

Filed Jan. 25, 1938

Fig. 1.

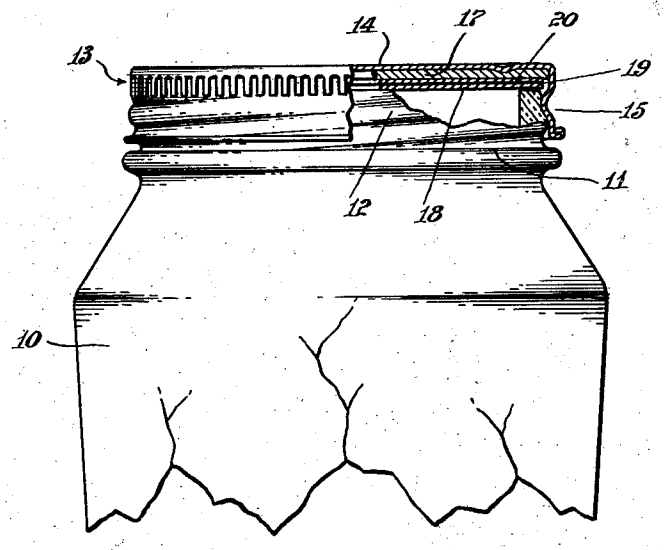


Fig. 2.

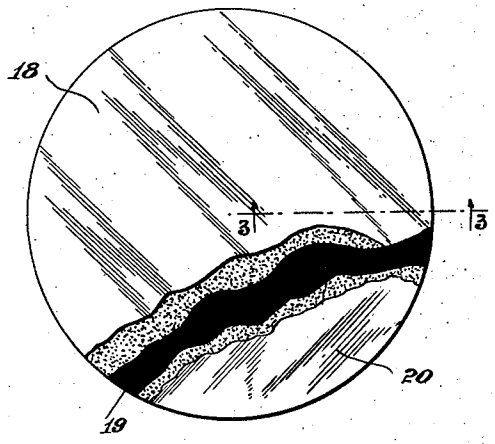
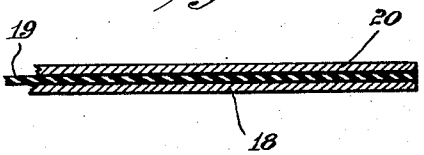


Fig. 3.



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CONTAINER CLOSURE

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7 Claims. (Cl. 215—40)

The invention relates to container closures, and more particularly to a closure adapted especially for use in the packaging of foodstuffs such as mayonnaise and other salad dressings containing a vegetable oil as well as ingredients of a volatile nature. Heretofore, container closures having a thin sealing disc to be cemented to the neck of a container when packaging merchandise, have been extensively used. Such closures have been used largely to prevent a fraudulent adulteration of the contents of the container, or the re-use of containers in the packaging of inferior merchandise. They have also been used to prevent the escape of volatile constituents from material within the container. The discs used for closing the mouths of the containers have been made of various materials, and various adhesives have been used in securing the discs upon the mouth of the container.

Prior to my present invention, attempts to package mayonnaise and other salad dressings with the use of such closures, were unsuccessful, it having been found that the oil constituents of such salad dressings would readily ferment and become rancid, and that the volatile constituents which act as a preservative, such as vinegar, would escape so as to impair the essential delicate flavor of the dressing. This probably was due to the penetration of the disc by air, with a resultant setting up of fermentation in the oil, and with mayonnaise, the egg constituent when exposed to oxidation, and the extension of fermentation from this oil to that in the remaining contents of the container.

I have found that those materials for the disc having inherent properties which adequately resist the oils in mayonnaise or other salad dressing, cannot be secured to the neck of a container by means of an adhesive sufficiently odorless to avoid impairment of the delicate flavor of the contents of the container.

I have also found, by experiment and actual use, that an effective inner seal for containers filled with material containing a vegetable oil and an acid, such as that present in vinegar, is made possible by the use of a laminated disc the face of which presented toward the contents of the container is of a fibrous material of a character largely repellent to vegetable oil or grease, provided that another lamina is used which, in addition to closing any pores in the fibrous lamina, will be acid resistant. The fibrous material alone does not form a seal which will prevent the development of fermentation of the oil and resultant rancidity of the contents of the container.

In closures embodying inner seal discs of fibrous material, such as is above referred to, said discs are not only very thin, but the material thereof has a tendency to curl with varying atmospheric conditions, and this is particularly true when the lamina used for closing the pores in the fibrous material is bonded to the facing stratum.

A laminated disc embodying the invention is so formed as to overcome such a tendency of the disc to curl because of the differential measure of expansion of the materials in the facing lamina and the backing lamina therefor.

In the manufacture of a closure embodying the invention, the inner seal disc is loosely mounted in the shell of the cap and is separable from the sealing gasket, ordinarily a pulp board disc positioned between the inner seal disc and the top of the shell. It is, therefore, highly desirable that the material used for preventing curling of the inner seal disc be of a nature preventing not only adhesion of the inner seal disc to the cushion disc, but preventing the development of friction between the two discs when removing the closure.

By using an inner seal disc having fibrous material upon opposite faces thereof and an interposed stratum of nonabsorbent, acid resisting, gas impervious material cemented in both of said outer laminae, and using the same material in each outer lamina, the possibility of an improper assembling of the inner seal disc in the shell of the closure is avoided.

While material, other than that used for the face of the disc to be presented toward the contents of a container, having substantially the same co-efficient of expansion and contraction as the material in said face, may be used to prevent curling and also to prevent an improper assembly of the disc in the shell, it is preferable to use the same fibrous material for both outer laminae.

The invention consists primarily in a container closure embodying therein a shell having a skirt adapted to be engaged with co-operating means about the neck of a container, a cushion disc within said shell, and a thin laminated inner seal disc of substantially the same diameter as said cushion disc within said shell but separable from said cushion disc comprising a lamina presented toward the neck of the container consisting of a highly condensed oil or grease repellent fibrous material having a high glossy finish, and a backing lamina of substantially the same diameter as

said other lamina bonded thereto composed of a sheet of non-absorbent, acid resisting, gas impervious material, whereby the escape of volatile constituents from the contents of the container is prevented, the inner seal disc may be cemented to the mouth of the container by an odorless adhesive, and contact of the contents of the container with the bonding medium between the lamina presented toward the contents of the container and the backing lamina is prevented; and in such other novel features of construction and combination of parts 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 view partly broken away of the upper portion of a container having a closure embodying the invention applied thereto;

Fig. 2 is a bottom plan view upon an enlarged scale of the inner sealing disc broken away on parallel planes; and

Fig. 3 is a section on the line 3—3 of Fig. 2.

Like numerals refer to like parts throughout the several views.

In the accompanying drawing, the invention is illustrated in connection with its use with a reseal cap.

As shown in Fig. 1 of the drawing, the container is illustrated at 10, this container having a neck 11 provided with exterior screws threads 12 or other means co-operating with the skirt of the shell of a closure for retaining the closure upon the container. Said shell, indicated generally by the reference numeral 13, has a top 14 and a skirt 15 adapted to be engaged with the screw threads or other devices 12 about the neck of the container.

Within the shell 13 there is a cushion disc 17 which ordinarily is composed of pulp board, although other material may be used since the material in this disc is immaterial to the invention.

Within the shell 13 there is an inner seal disc adapted to be cemented to the top of the neck of a container, this disc being of a nature and being so cemented to the neck of the container as to prevent the seepage of an oily constituent of the commodity being packaged through or about this disc in a manner to permit its exposure to the atmosphere and fermentation of the oil resulting in rancidity of the product.

The utility of the present invention resides in the construction of this inner seal disc, since it is old in the art to use different forms of inner seal discs which, like the inner seal disc above referred to, were separable from the cushion disc and adapted to be cemented to the neck of a container.

While, as stated, various materials have been used in such inner seal discs, such materials have varied according to the character of the product being packaged by means of the closure, and a disc of one material, which is suitable for packaging one commodity, is not suitable for packaging another commodity.

The inner seal of the present application is for use in the packaging of food products of an oily nature such as a vegetable oil, alone or admixed with other ingredients including one containing an acid, for example, mayonnaise or salad dressings. The packaging of such commodities has heretofore presented serious problems because of the inability to provide an inner seal which would prevent the oxidation of the oil or other ingredients of the commodity causing fermentation to be set up with a resultant rapid development of rancidity in the commodity.

In a container embodying the invention, I employ a thin laminated inner seal disc comprising a lamina to be presented toward the neck of a container and to be cemented thereto, which consists of a highly condensed fibrous material having a high glossy finish. I have found that glassine paper of a thickness of approximately .002 of an inch gives highly satisfactory results.

This outer lamina is indicated at 18 in the accompanying drawings, and is provided with a backing lamina 19 composed of a sheet of non-absorbent, acid resisting, gas impervious material. Chlorinated rubber in this backing lamina has been found to give highly satisfactory results.

The lamina 19 is bonded to the lamina 18 by means of a cement, preferably one containing toluol, which may be readily used to bond glassine paper to rubber in a manner to effectively close any pores in the lamina 18 and form a flexible bond between these laminae. This backing lamina is very thin, a thickness of .0015 of an inch having been found to be highly effective.

Glassine paper, combined with chlorinted rubber in the manner described, has a tendency to curl, probably due to the fact that the paper and the rubber have different co-efficients of expansion with varying atmospheric conditions. Glassine paper alone has a tendency to curl.

Since the inner seal disc is loosely mounted in the shell 13, it is obvious that curling of the paper after the assembly of the completed cap, may result in the inner seal disc falling from the shell, or opposite edges thereof being displaced in relation to the skirt of the cap to an extent to interfere with the formation of an effective seal about the mouth of the container when cementing the inner seal disc thereto.

To prevent curling of the glassine paper, I provide a third lamina 20 of glassine paper bonded to the rubber lamina 19 by means of the adhesive above referred to, so that the tendency of the one glassine lamina to curl in one direction is counteracted by the tendency of the other lamina of glassine paper to curl in the opposite direction. In this manner the disc may be kept flat and thus permit the rapid handling of the closures in applying machines, and at the same time ensure the formation of a proper seal about the neck of the container when cementing the disc thereto.

In the packaging of products containing oils, it is essential to use materials, the characteristic flavors of which will not be taken up by the oil. It is well known that oils readily absorb characteristic flavors of surrounding matter even though they may not actually contact with them. Consequently, in the use of a closure embodying the invention, the cementing of the inner seal disc to the neck of the container must be by an adhesive which is substantially odorless, and the lamina 18 must be of a character which, in addition to its other properties herein referred to, will afford a proper anchorage for such an adhesive. Such adhesives cannot be used with metal foils or nitro-cellulose products.

I have found, in actual practice, that a suitable adhesive is a dextrine adhesive containing sodium chloride and calcium chloride.

In the production of closures embodying the invention, the shell 13 and cushion disc 17 are formed and assembled in the usual manner. The strips of glassine paper forming the laminae 18 and 20 and the strip of chlorinated rubber forming the intermediate lamina 19, are combined in

strip form and discs are cut therefrom and deposited in the metal shell 13. With a three-ply laminated disc it is immaterial whether the lamina 18 or 20 is positioned adjacent the cushion disc 17, so that no care is required in assembling the inner seal disc in the shell.

It will be noted that the high gloss of the calendered surface of the glassine paper will avoid the development of frictional resistance between the inner seal disc and the cushion disc when applying or removing a closure from a container, such as would be developed if a rubber lamina were in contact with said cushion disc.

In applying a closure to the container, adhesive is applied to the top of the neck of the container and the closure is applied to the container in the usual manner, pressure being developed to form a continuous bond extending about the mouth of the container which will effectively exclude air from the container and prevent the escape of volatile constituents of the product being packaged from the container.

The high glaze of glassine paper makes it repellent to oil, and the density of such paper makes it highly non-absorbent. It has been found, however, that if this paper be used alone, it does not prevent contact of atmospheric air with oil within a container. While fermentation resulting in the development of free fatty acids, and resultant rancidity, may be slightly delayed, such delay is not sufficiently great to be advantageous. I attribute the spoilage of mayonnaise and other salad dressings to the escape of the volatile preservative used and the seepage of air into the container, by reason of the porosity of the glassine paper. The acetic acid fumes of the vinegar, I am convinced, readily penetrate glassine paper. I have found, however, that by using a backing of chlorinated rubber bonded to the facing of glassine paper, the pores of this paper are so completely closed that there is no escape of volatile constituents from a container, and that atmospheric air does not pass to within the container through the inner seal disc. Consequently, a closure embodying the invention is highly effective in preventing spoilage of foodstuffs consisting of or containing vegetable oils, and is not subject to deterioration over long periods of time.

By bonding the backing lamina to the facing lamina in the manner described, not only are the laminae secured firmly together, but the adhesive and the chlorinated rubber completely close any pores in the glassine paper.

The inner seal disc, in its entirety, is less than .006 of an inch in thickness, and may be readily removed from a container either by rupturing the disc or by destroying the bond between it and the neck of the container.

It is not my intention to limit the invention to the precise details of construction shown and described, it being obvious that such are subject to variation without departing from the spirit and scope of the invention.

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 adapted to be engaged with co-operating means about the neck of a container, a cushion disc within said shell, and a thin laminated inner seal disc of substantially the same diameter as said cushion disc within said shell but separable from said cushion disc comprising a lamina presented toward the neck of the container consisting of a highly condensed oil or grease repellent fibrous material having a high glossy finish, and a backing lamina of substantially the same diameter as said other lamina bonded thereto composed of a sheet of non-absorbent, acid resisting, gas impervious material, whereby the escape of volatile constituents from the contents of the container is prevented, the inner seal disc may be cemented to the mouth of the container by an odorless adhesive, and contact of the contents of the container with the bonding medium between the lamina presented toward the contents of the container and the backing lamina is prevented.

2. A container closure embodying therein a shell having a skirt adapted to be engaged with co-operating means about the neck of a container, a cushion disc within said shell, and a thin laminated inner seal disc within said shell but separable from said cushion disc comprising a lamina presented toward the neck of the container consisting of glassine paper, and a backing lamina bonded thereto composed of a sheet of non-absorbent, acid resisting, gas impervious material, whereby the escape of volatile constituents from the contents of the container is prevented, the inner seal disc may be cemented to the mouth of the container by an odorless adhesive, and contact of the contents of the container with the bonding medium between the glassine paper and the backing lamina is prevented.

3. A container closure embodying therein a shell having a skirt adapted to be engaged with co-operating means about the neck of a container, a cushion disc within said shell, and a thin laminated inner seal disc of substantially the same diameter as said cushion disc within said shell but separable from said cushion disc comprising a lamina presented toward the neck of the container consisting of a highly condensed oil or grease repellent fibrous material having a high glossy finish, and a backing lamina bonded of substantially the same diameter as said other lamina thereto composed of a sheet of chlorinated rubber, whereby the escape of volatile constituents from the contents of the container is prevented, the inner seal disc may be cemented to the mouth of the container by an odorless adhesive, and contact of the contents of the container with the bonding medium between the lamina presented toward the contents of the container and the sheet of chlorinated rubber is prevented.

4. A container closure embodying therein a shell having a skirt adapted to be engaged with co-operating means about the neck of a container, a cushion disc within said shell, and a thin laminated inner seal disc within said shell but separable from said cushion disc comprising a lamina presented toward the neck of the container consisting of glassine paper, and a backing lamina bonded thereto composed of a sheet of chlorinated rubber, whereby the escape of volatile constituents from the contents of the container is prevented, the inner seal disc may be cemented to the mouth of the container by an odorless adhesive, and contact of the contents of the container with the bonding medium between the glassine paper and the sheet of chlorinated rubber is prevented.

5. A container closure embodying therein a shell having a skirt adapted to be engaged with co-operating means about the neck of a container, a cushion disc within said shell, and a thin laminated inner seal disc within said shell but separable from said cushion disc comprising a lamina presented toward the neck of the con-

tainer consisting of glassine paper, a backing lamina bonded thereto composed of a sheet of non-absorbent, acid resisting gas impervious material, whereby the escape of volatile constituents from the contents of the container is prevented, the inner seal disc may be cemented to the mouth of the container by an odorless adhesive, and contact of the contents of the container with the bonding medium between the glassine paper and the backing lamina is prevented, and a lamina of a material having substantially the same co-efficient of expansion as said glassine paper bonded to the opposite face of said backing lamina, whereby curling of said inner seal disc is prevented.

6. A container closure embodying therein a shell having a skirt adapted to be engaged with co-operating means about the neck of a container, a cushion disc within said shell, and a thin laminated inner seal disc of substantially the same diameter as said cushion disc within said shell but separable from said cushion disc comprising a lamina presented toward the neck of the container consisting of a highly condensed oil or grease repellent fibrous material having a high glossy finish, a backing lamina of substantially the same diameter as said other lamina bonded thereto composed of a sheet of chlorinated rubber, whereby the escape of volatile constituents from the contents of the container is prevented, the inner seal disc may be cemented to the mouth of the container by an odorless adhesive, and contact of the contents of the container with the bonding medium between the lamina presented toward the contents of the container and the sheet of chlorinated rubber is prevented, and a lamina of a material having substantially the same co-efficient of expansion as said fibrous material bonded to the opposite face of said backing lamina, whereby curling of said inner seal disc is prevented.

7. A container closure embodying therein a shell having a skirt adapted to be engaged with co-operating means about the neck of a container, a cushion disc within said shell, and a thin laminated inner seal disc within said shell but separable from said cushion disc comprising a lamina presented toward the neck of the container consisting of glassine paper, a backing lamina bonded thereto composed of a sheet of chlorinated rubber, whereby the escape of volatile constituents from the contents of the container is prevented, the inner seal disc may be cemented to the mouth of the container by an odorless adhesive, and contact of the contents of the container with the bonding medium between the glassine paper and the sheet of chlorinated rubber is prevented, and a lamina of glassine paper bonded to the opposite face of said sheet of chlorinated rubber, whereby curling of said inner seal disc is prevented.

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