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2,711,840

CONTAINERS AND CLOSURES THEREFOR

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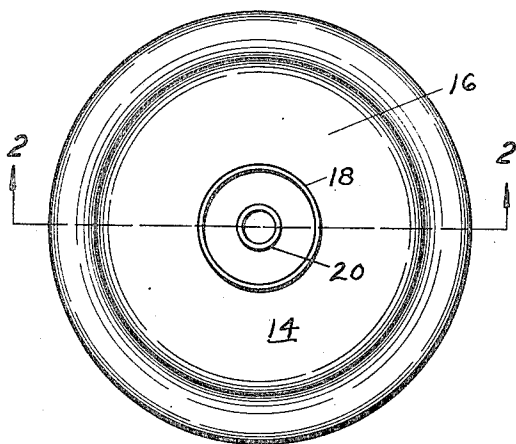


FIG. 1.

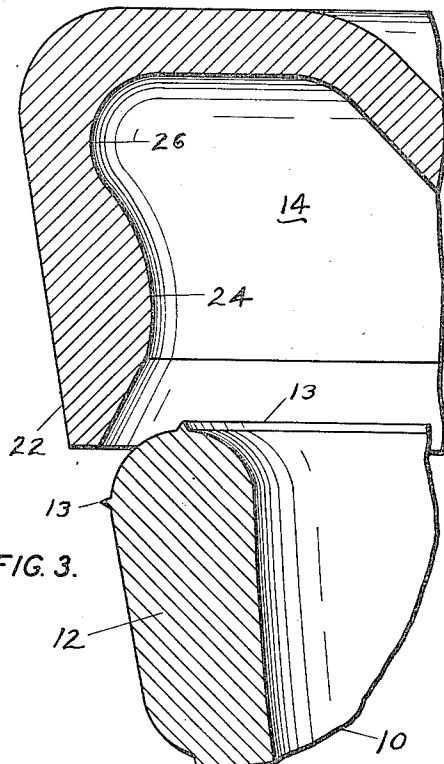


FIG. 3.

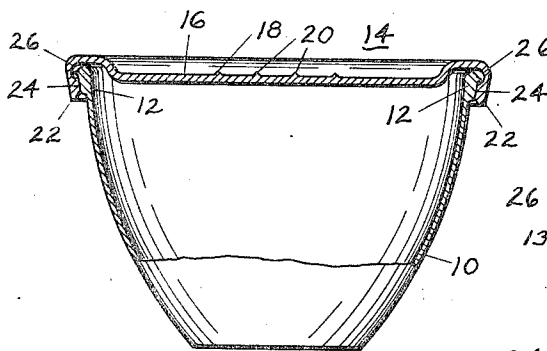


FIG. 2.

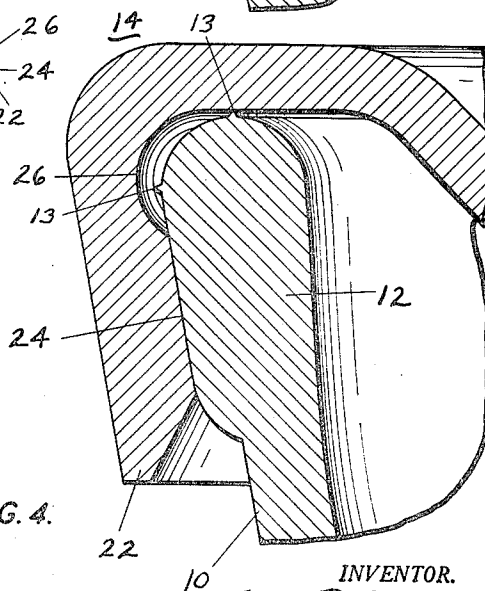


FIG. 4.

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1

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CONTAINERS AND CLOSURES THEREFOR

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1 Claim. (Cl. 220—42)

This invention relates to improvements in open-ended containers and in closures therefor. More particularly this invention relates to improvements in open-ended containers for food products and in closures therefor.

It is therefore an object of the present invention to provide an improved open-ended container for food products and a closure therefor.

It has been found desirable to enclose food products in containers which are equipped with closures that can protect those food products against excessive contact with air and against contact with odors adjacent those containers. Such protection is particularly important where the food products are stored preparatory to use, as where the food products are stored in household refrigerators or ice boxes; it being desirable to limit the amount of air which can contact the food products and to keep the odors of other food products from affecting the taste and aroma of the food products in the containers.

Various kinds of containers and closures have been proposed to isolate food products from the air and odors exteriorly of the containers. For example, thin, readily flexible sheets of plastic have been equipped with elastic bands to draw the thin sheets of plastic down around the tops of glass or plastic containers. However, these thin, readily flexible sheets of plastic do not wear well, they are difficult to clean, and the stitching which secures the elastic bands to the plastic sheets renders those sheets previous to air. Other types of closures have been provided with screw threads which can be held by screw threads on the containers; but the screw threads do not provide an air-resistant seal, and the screw threads are difficult to clean. It has been found that bacteria and small particles of dirt can lodge in the screw threads of the containers and closures and resist attempts to remove them. Still other containers have been provided with closures that could be pressed onto the containers; but such containers and closures do not provide a full surface-to-surface seal. Instead, they provide only point-to-point contact seals or line-to-line contact seals; and such seals are not fully satisfactory. For these various reasons, prior containers for food products and closures therefor are objectionable. The present invention obviates these objections by providing a container for food products and a closure therefor which provide a surface-to-surface seal when assembled. Such a seal strongly resists influx and efflux of air and odors. It is therefore an object of the present invention to provide a container for food products and a closure therefor which provide a surface-to-surface seal.

The closure provided by the present invention has a downwardly depending flange which has an arcuate inner surface that is yieldable and flattenable. This surface ordinarily is convex, but it flattens out when it engages a stiff annular ring on the container. In flattening out, the convex surface on the flange of the closure forms a surface-to-surface seal with the ring on the container. It is therefore an object of the present invention to provide a closure for containers that has a downwardly depending

2

flange with an arcuate, inner surface that can flatten out to provide a surface-to-surface seal with a stiff annular ring on a container.

The yieldable and flattenable surface on the flange of the closure provided by the present invention is spaced downwardly from the top of that closure. As a result, the surface-to-surface seal which is created between the closure and the container is spaced downwardly from the open, upper end of the container. This is important because most open ended containers that are molded are found to have residual fins or flash from the molding operation, and the fins or flash are at the open end of the containers. The cost of removing such flash or fins is high, and the removal of flash or fins is never completely perfect. Accordingly, normal closures which mate with the open ends of molded containers cannot provide a full sealing action. With the closure of the present invention, however, the presence of fins or flash at the open end of the container will not interfere with full sealing of the closure and container, because the sealing action occurs on a surface which is spaced from the fins or flash found on the container. It is therefore an object of the present invention to space the mating surfaces of containers and closures away from the open ends of the containers.

The closure provided by the present invention has a groove disposed above the convex yieldable and flattenable surface on the flange of the closure. This groove enables the convex surface to be the innermost portion of the flange of the closure and facilitates full flattening of that surface. It is therefore an object of the present invention to provide a groove above the convex surface on the flange on the closure for a container.

Other and further objects and advantages of the present invention should become apparent from examination of the drawing and accompanying description.

In the drawing and accompanying description a preferred embodiment of the present invention is shown and described but it is to be understood that the drawing and accompanying description are for the purpose of illustration only and do not limit the invention and that the invention will be defined by the appended claim.

In the drawing Fig. 1 is a plan view of a closure that is made in accordance with the principles and teachings of the present invention,

Fig. 2 is a cross-sectional side view of the closure of Fig. 1 and a container with which it is assembled,

Fig. 3 is an enlarged cross-sectional side view of a portion of the container enclosure of Fig. 2 and it shows the closure closely adjacent the container, and

Fig. 4 is an enlarged view of the portions of the closure and container shown in Fig. 3, and it shows those portions in sealing engagement.

Referring to the drawing in detail, the numeral 10 generally denotes an open ended container which can readily be molded of plastic material. This container has a flat bottom and has outwardly and upwardly extending arcuate sides. An annular ring 12 of considerable thickness is formed at the open end of the container.

During the molding of the container 10, flash or fins 13 will be formed at the open end of the container. These fins or flash will be formed adjacent the separable sections of the mold in which the container is formed. The cost of removing such flash or fins is high, and it has been found extremely difficult to remove all of the flash or fins adequately.

The numeral 14 denotes a closure which has a generally flat central portion 16 and a plurality of concentric ridges 18 and 20 adjacent the center of the flat portion. The closure 14 also has a downwardly depending flange 22 at its outer periphery, and that flange has a normally convex surface 24 at the inner face thereof. This convex surface is yieldable and flattenable when it

is compressed. The normal diameter of the convex surface 24 is smaller than the diameter of the ring 12 on the container 10. As a result, the surface 24 will be subjected to compression when the closure 14 is telescoped down over the open end of the container 10.

A groove 26 is provided at the inner face of the flange 22 and that groove is intermediate the surface 24 and the top of the closure 14. The groove is recessed into the flange 22 and thus facilitates full flattening of the convex surface 24 on the flange 22.

To place the closure 14 in sealing engagement with the container 10, the flange 22 must be telescoped downwardly over the annular ring 12 on the container. Since the diameter of the convex portion 24 of the flange 22 is smaller than the diameter of the annular ring 12, the telescoping of the closure 14 over the ring 12 necessitates the flattening of the convex surface 24. This flattening is illustrated in Fig. 4 and it provides a surface-to-surface seal with the ring 12. The surface-to-surface seal will extend around the periphery of the container 10 and it is quite wide. Accordingly, this seal is strongly resistant to the influx and efflux of air.

It will be noted that the groove 26 in the flange 22 receives and accommodates the flash or fins on the ring 12 of the container 10. Moreover, it will be noted that the convex surface 24 is spaced below the top of the closure 14 and thus provides a seal which is spaced away from the flash or fin. As a result, there is a mating engagement between two mold-smooth surfaces on the closure and container which are free of flash or fins. In this way, the present invention assures full sealing engagement between the closure and container irrespective of the presence of flash or fins.

To remove the closure 14 from the container, it is only necessary to pull up on the closure and the yieldable nature of the convex surface 24 will permit the closure 14 to telescope out of engagement with the annular ring 12 on the container 10. The yieldable convex surface 24 will restore itself to the convex configuration shown in Fig. 3 whenever the closure is freed from its engagement with the container 10.

Whereas the drawing and accompanying description have shown and described one form of the present invention, it should be apparent to those skilled in the art that various changes may be made in the form of the invention without affecting the scope thereof.

What I claim is:

The combination of an open top container for food products and a flexible cover therefor that comprises a container of plastic material with a stiffening ring adjacent the open end thereof and a flexible cover of plastic material that has a central surface and has a downwardly depending flange which telescopes over said open end and said ring of said container, said ring of said container being thicker than the side walls of said container and being on the exterior of said container and being integral with said container and being of frusto-conical configuration throughout a major portion of the length thereof, said ring of said container having a rounded upper end and having the largest diameter of said frusto-conical portion thereof adjacent the said upper end thereof, said flange being stiff but having an inner peripheral groove having a diameter greater than the top portion of the ring whereby said groove will be in spaced relation with the ring in operative position, said flange further having a gently rounded lower inner convex surface merging with the groove which latter surface is of less diameter than the frusto-conical surface of the ring and in operative position is flattened against said frusto-conical surface of the ring to provide a wide surface to surface seal with the ring, said flange having its inner surface flared outwardly at the free end thereof permitting easy application to said container, and the outer surface of said flange being frusto-conical and having a smooth surface, whereby, in operative position, the thickened convex portion of said flange engages said ring throughout a major portion of said ring below the top of said container.

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