

Description

This invention relates to container closures.

GB-A-1602746 and US-A-4072244 each disclose a container closure moulded in one piece from a plastics material and comprising a top, a dependent skirt the radially inner surface of which is formed with a screw-thread, a surface which is flared in a direction away from the top being formed on the internal surface of the skirt where it joins the top, and an annular resiliently flexible fin extending downwardly and outwardly from the underside of the top at a position spaced radially inwardly of said flared surface and having a length such as to permit at least its portion adjoining its free edge to lie against said flared surface when the fin is deformed outwardly by the top of the neck of a container to which the closure is to be applied and to extend round the outer corner portion of the neck of a co-operating container.

According to the present invention the free end portion of the fin is thicker than the main body of the fin.

The free end portion may be thus thickened by reason of the provision of a peripheral rib formed locally on either the radially inner surface or the radially outer surface of said free end portion. The thickening of the free end portion serves to reduce the tensile stress in the fin when the closure is applied and in consequence to reduce the degree of extension of the free end portion of the fin so that a greater part of the length of the fin tends to hug the outer corner portion of the neck more closely and thus improves the seal. Where for this purpose a peripheral rib is formed on the radially inner surface of the fin, the rib may itself form with the neck of the container or additional line seal about the neck. Similarly where the rib is on the radially outer surface of the fin, the flared surface may engage the rib and press the free end portion of the fin towards the neck of the container, preferably at a position slightly below the outer corner portion of the neck.

In preferred arrangements said flared surface is conical and is inclined at 45° or less to the central axis of the closure. In one example the angle is 30°. The fin may also be conical and may extend parallel to said flared surface.

The radially inner surface of the fin may have a plurality of annular grooves formed therein, each pair of adjacent grooves defining between them an annular rib of triangular cross-section. The grooves may be triangular and of buttress section, and the buttress face of the groove may face towards or away from the top to form a rib or ribs suitable for use with containers for materials under vacuum or under pressure, or may be of other triangular shape such as isosceles or equilateral triangular shape to form a rib or ribs of other required cross-sectional shape.

Some embodiments of the invention will now be described in more detail with reference to the accompanying drawings in which:

Figures 1 and 2 are fragmentary sectional eleva-

tions illustrating a closure according to the invention in place on a container, and

Figures 3 and 4 are corresponding views of a second form of closure according to the invention.

Referring first to Figures 1 and 2, the closure 10 is moulded in one piece from a resilient plastics material and has a top 11 and a dependent skirt 12 formed with an internal screw-thread 13 and external knurling 14. The corner region 15 at the upper end of the skirt is thickened and has a conically flared internal surface 16 extending at an angle of 30° to the central axis 17 of the closure. Spaced radially inwardly of the surface 16 is a flexible resilient annular fin 18 of uniform thickness which extends from the underside of the top and substantially parallel to the surface 16.

The fin 18 has a main body of uniform thickness but has its free end portion of the fin thickened by reason of the formation of a broad flat-topped rib 30 on the radially inner surface of the end portion.

When the closure is applied to the neck 20 of a container the top 21 of the neck of the container deforms the fin 18 upward and the fin lies across and against at least the radially outer portions of the top 21 of the container neck and has a sufficient length in contact with the surface 16 to be pressed thereby against the outer corner portion 22 of the neck to form a top and corner seal. The axial length of the surface 15 and the length of the fin are also such that this sealing engagement takes place when the diameter of the container neck is on the upper limit of its tolerance as shown in Figure 2 or on the lower limit of its tolerance as shown in Figure 1.

Figure 2 also shows the sealing fin in its unstressed condition extending parallel to the flared surface 16. The rib 30 serves to strengthen the free end portion of the fin so that the diametral strain in that portion, due to the outward flexing of the fin by the top and outer corner parts of the neck, is less than if the rib were absent, and in consequence the end portion of the fin tends to lie closer to the outer corner portion of the neck even when, as in Figure 1, it is not constrained by the surface 16 to do so.

The construction shown in Figures 3 and 4 is similar to that in Figures 1 and 2, but in Figures 3 and 4 the thickening of the free end portion of the fin is achieved by forming a rib 31 having a curved profile on the radially outer surface of the fin 18. Figures 3 and 4 show the closure applied to container necks on the lower and higher limits respectively of the diametral tolerance. As in the construction of Figures 1 and 3 the thickening of the free end portion of the fin strengthens it locally and causes it to be stretched to a lesser extent, but the surface 16 engages the rib 31 and presses the free end portion of the fin radially inward so as further to improve the seal.

The fin may have a thickness of the order of 0.63mm (.25").

The closures shown may additionally have grooves on the radially inner faces of the fins.

The closures may thus be designed for use with either glass or plastic containers which are intended to contain still or carbonated liquids or materials under partial vacuum.

Claims

1. A container closure moulded in one piece from a plastics material and comprising a top (11), a dependent skirt (12) the radially inner surface of which is formed with a screw-thread (13), a surface (16) which is flared in a direction away from the top being formed on the internal surface of the skirt where it joins the top, and an annular resiliently flexible fin (18) extending downwardly and outwardly from the underside of the top at a position spaced radially inwardly of said flared surface and having a length such as to permit at least its portion adjoining its free edge to lie against said flared surface (16) when the fin is deformed outwardly by the top of the neck of a container to which the closure is to be applied and to extend round the outer corner portion of the neck of a co-operating container, characterised in that the free end portion of the fin is thicker than the main body of the fin.

2. A closure as claimed in claim 1 characterised in that the free end portion is thickened by reason of the provision of a peripheral rib (31) formed locally on the radially outer surface of said free end portion.

3. A closure as claimed in claim 1, characterised in that the free end portion is thickened by reason of the provision of a peripheral rib (30) formed locally on the radially inner surface of said free end portion.

Patentansprüche

1. Behälterverschluss, der aus Kunststoff in einem Stück geformt ist und einen Oberteil (11), einen nach unten ragenden Mantel (12), dessen radial innere Fläche mit einem Schraubgewinde (13) versehen ist, eine Fläche (16), die in Richtung weg vom Oberteil sich erweitert und an der inneren Fläche des Mantels ausgebildet ist, wo sie auf den Oberteil trifft, und eine ringförmige, elastisch flexible Wand (18) aufweist, die sich von der Unterseite des Oberteiles an einer radial nach innen zu von der sich erweiternden Fläche einen Abstand aufweisenden Stelle nach unten und außen erstreckt und eine Länge hat, so daß wenigstens der Teil an der freien Kante an der sich erweiternden Fläche (16) anliegt, wenn die Wand durch den Oberteil des Behälterhalses nach

außen verformt wird, auf den der Verschluss aufgebracht werden soll, und sich um den äußeren Eckbereich des Halses eines zusammenwirkenden Behälters erstreckt, dadurch gekennzeichnet, daß der freie Endabschnitt der Wand dicker ist als der Hauptkörper der Wand.

2. Verschluss nach Anspruch 1, dadurch gekennzeichnet, daß der freie Endabschnitt mit Hilfe einer Umfangsrippe (31) verdickt ist, die örtlich an der radial äußeren Fläche des freien Endabschnittes ausgebildet ist.

3. Verschluss nach Anspruch 1, dadurch gekennzeichnet, daß der freie Endabschnitt mit Hilfe einer Umfangsrippe (30) verdickt ist, die örtlich an der radial inneren Fläche des freien Endabschnittes ausgebildet ist.

Revendications

1. Fermeture de récipient moulée en une seule pièce en une matière plastique et comprenant une paroi supérieure (11), une jupe pendante (12), dont la surface radialement intérieure est munie d'un filetage (13), une surface (16) qui s'évase dans le sens qui s'éloigne de la paroi supérieure étant formée sur la surface intérieure de la jupe à l'endroit où celle-ci rejoint la paroi supérieure, et une nervure annulaire (8) élastiquement flexible, qui part vers le bas et vers l'extérieur de la face inférieure de la paroi supérieure, dans une position espacée radialement vers l'intérieur par rapport à ladite surface évasée, et qui possède une longueur propre à permettre au moins à sa partie qui est adjacente à son bord libre de s'appuyer contre ladite surface évasée (16) lorsque la nervure est déformée vers l'extérieur par la surface supérieure du goulot d'un récipient sur lequel la fermeture est destinée à être montée, et pour envelopper la portion d'angle supérieure du goulot d'un récipient correspondant, caractérisée en ce que la portion d'extrémité libre de la nervure est plus épaisse que le corps principal de cette nervure.

2. Fermeture selon la revendication 1, caractérisée en ce que la portion d'extrémité libre est épaissie sous l'effet de la présence d'un bourrelet périphérique (31) formé localement sur la surface radialement extérieure de ladite portion d'extrémité libre.

3. Fermeture selon la revendication 1, caractérisée en ce que la portion d'extrémité libre est épaissie sous l'effet de la présence d'un bourrelet périphérique (30) formé localement sur la surface radialement intérieure de ladite portion d'extrémité libre.

The closures may thus be designed for use with either glass or plastic containers which are intended to contain still or carbonated liquids or materials under partial vacuum.

Claims

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2. A closure as claimed in claim 1 characterised in that the free end portion is thickened by reason of the provision of a peripheral rib (31) formed locally on the radially outer surface of said free end portion.

3. A closure as claimed in claim 1, characterised in that the free end portion is thickened by reason of the provision of a peripheral rib (30) formed locally on the radially inner surface of said free end portion.

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außen verformt wird, auf den der Verschluß aufgebracht werden soll, und sich um den äußeren Eckbereich des Halses eines zusammenwirkenden Behälters erstreckt, dadurch gekennzeichnet, daß der freie Endabschnitt der Wand dicker ist als der Hauptkörper der Wand.

2. Verschluß nach Anspruch 1, dadurch gekennzeichnet, daß der freie Endabschnitt mit Hilfe einer Umfangsrippe (31) verdickt ist, die örtlich an der radial äußeren Fläche des freien Endabschnittes ausgebildet ist.

3. Verschluß nach Anspruch 1, dadurch gekennzeichnet, daß der freie Endabschnitt mit Hilfe einer Umfangsrippe (30) verdickt ist, die örtlich an der radial inneren Fläche des freien Endabschnittes ausgebildet ist.

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2. Fermeture selon la revendication 1, caractérisée en ce que la portion d'extrémité libre est épaissie sous l'effet de la présence d'un bourrelet périphérique (31) formé localement sur la surface radialement extérieure de ladite portion d'extrémité libre.

3. Fermeture selon la revendication 1, caractérisée en ce que la portion d'extrémité libre est épaissie sous l'effet de la présence d'un bourrelet périphérique (30) formé localement sur la surface radialement intérieure de ladite portion d'extrémité libre.

