Title: SCREW TOP CLOSURES

Abstract: A screw top closure for a two litre bottle containing carbonated drink comprises a conventional hard plastic main member with a resilient ring therearound. The ring provides a purcflush to enable the closure to be tightly closed on to the neck of the bottle.
SCREW TOP CLOSURES

[0001] This invention relates to screw top closures.

[0002] The invention is concerned with screw top closures intended for use with containers (hereinafter called "bottles") for drinks especially carbonated drinks and in particular, such bottles containing large quantities (say one and two litres) of the carbonated drink.

[0003] Presently a conventional two litre bottle for carbonated drinks is a plastics moulding formed with a dispensing neck having a threads on its exterior surface. The bottle is provided with a removable screw topped closure made of a hard plastics material and comprising (i) a cylindrical body on the inside of which are screw members that in use engage the threads on the neck of the bottle and (ii) an end face which seals against the end of neck of the bottle to seal the bottle. The cylindrical body is normally approximately 3.0 to 3.5 centimetres in diameter. In practice it is often difficult to obtain a sufficient purchase on the outside surface of the body to apply adequate torque to it when attempting to reseal the bottle. This results in the re-sealing of the bottle being inadequate and the carbonated drink very soon goes flat. Consequently the drink stored in a resealed bottle is not as palatable as desired and purchasing the drink in such a bottle loses its attractiveness.

[0004] In an attempt to increase the friction that will take place between the surface and the fingers of a person attempting to re-apply the closure member to the bottle, the outside surface of the body has been knurled or provided with axially extending fine triangular section grooves. Whilst such shaping of the surface assists
matters, it is still extremely difficult for most adults to obtain the necessary purchase to cause adequate sealing.

[0005] According to one aspect of the invention there is provided a screw top closure consisting of a main portion formed of hard plastics material and a resilient member attached to the main portion and projecting therefrom so that a person endeavouring to reseal bottle with the closure can engage the resilient member and obtain an adequate purchase to apply the necessary torque to the closure to cause it to form a good seal with the bottle. The resilient member preferably comprises a rubber or rubber-like material.

[0006] The resilient member may be moulded integrally with the main portion. Preferably, it is moulded into a slight peripheral recess in the main portion to stand proud of the main portion. Alternatively, it may be moulded on the inside of the main portion and have projections, such as dimples, projecting through the body of the main portion.

[0007] The resilient member may, however, be formed separately from the main portion, and conveniently be in the form of a ring, which is be applied to the exterior surface of the main portion by being stretched and when released will firmly grip the main portion because of its resilience. However, or in addition, the member may be secured to the body, by, for example, a bonding medium.

[0008] The exterior surface of the resilient member may plain. Alternatively it may be provided with projections for improved grippability. These projections may be in the form of dimples, or raised elongated parallelograms or rectangles which preferably
are axially extending. Alternatively the projections may comprise fins which are conveniently arranged helically about the outside surface of the member. The ends of these fins are preferably quite soft and are capable of being compressed when gripped by the fingers of an adult.

[0009] Embodiments of the invention will now be described by way of example with reference to the drawings.

In the drawings:

Figure 1 is a side view of a screw top closure of the invention applied to the neck of a two litre moulded plastic bottle for carbonated drinks,

Figure 2 is a plan of the closure,

Figure 3 shows the closure arrangement in exploded form,

Figure 4 is a section through the gripping member, the section being taken on line 4 - 4 of Figure 2,

Figure 5 is a view similar to Figure 1 partially in section on line 5 - 5 of Figure 1,

Figures 6, 7, 8 and 9 show other rings for application to the main portion, and

Figure 10 is a detail plan of the ring of Figure 9.

[0010] Referring now to Figures 1 to 5, there is shown a screw top closure 10 applied to the neck 12 of a two litre moulded plastics bottle 14 for carbonated drinks.

[0011] The closure 10 comprises a main portion 16 formed of a hard plastics material, such as nylon. The main portion 16 consists of a cylindrical body 18 having a closed disc-like end 20. The outside surface 22 of the body 20 is knurled with narrow triangular section longitudinal extending grooves. The inside of the body 18 is provided with thread members 24 (shown only in Figure 5), which are arranged in use to engage
the threads 26 formed at the neck 12 of the bottle 14. The main portion 16 as described above is identical to a conventional screw top closure.

[0012] The closure 10 of the invention further comprises a gripping ring 28. The ring 28 is of annular section. It is formed of a resilient plastics material which is softer than the nylon. The resilient material is preferably rubber like in feel. Its surface is such that there will be good friction between the fingers of a person engaging the ring 28. Longitudinally extending rectangular projections 30 having substantially arcuate convex outer faces 32 are provided on the outside surface of the ring 28. The diameter of the ring 28 of such that, when at rest, the inside surface would be an interference fit with the body 18 of the main portion 16.

[0013] When applied to the main portion 16, the ring 28 is stretched to fit over the body 18. The ring is then released and contracts tightly gripping the body 18. The ring 28 is firmly held to the body 18 and cannot rotate relative thereto. When the closure 10 is gripped to tighten it on to the neck 12 of the bottle 14, the resilient material will be compressed by the fingers of an adult of ordinary strength to provide adequate purchase to enable the fingers to apply sufficient torque to the ring 28 and through the ring 28 to the main portion 16 so that of the latter can be tightly screwed on to the bottle 14 to seal the bottle 14. Furthermore the friction between the resilient material and the fingers, and also the form of the projections, assists for this purpose.

[0014] A modified ring 34 of the invention may have a plain outside surface 36 as shown in Figure 6. This surface may be cylindrical or slightly convex.
[0015] A further modified ring 38 of the invention as shown in Figure 7 has a series of part helical fins 40 running around its surface. The fins 40 are of triangular section and are quite narrow. They are spaced apart by a distance which is three or four times their width at their base. When gripped by the fingers, the ends of the fins 40 collapse resiliently to provide excellent purchase for the fingers. The fins 40 spring back to their original condition after release.

[0016] Yet another modified ring 42 as shown in Figure 8 has a series of projections in the form of hemi-spherical dimples 44.

[0017] Yet a further modified ring 46 as shown in Figures 9 and 10 has a series of projections in the form of cones 48. The upper ends 50 of the cones 48 are inclined sideways (as best shown in Figure 10) to improve friction.

[0018] If desired, the resilient material can be moulded on to the main portion. As shown in Figure 5, the resilient material of the ring 34 passes through openings (not shown) in the bottle body. The material lines the inside of the end 20 and serves as a better seal for the closure on to the end of the bottle.

[0019] I have found that the provision of the resilient material makes it possible to obtain sufficient purchase on the body of the closure to apply sufficient torque to a screw top closure to reseal a conventional two litre bottle containing carbonated drinks sufficiently well for the drinks to remain almost as gassy as when originally supplied.

[0020] It will be seen that the arrangements above described provide a resilient gripping arrangement that is always available when opening and closing the bottle...
without the necessity of having a separate device for this purpose which would normally be stored remote from the bottle and would often be inconveniently located when needed to open and in particular to tighten the closure on to the bottle.

[0021] The invention is not limited to the precise construction of the details hereinbefore described and illustrated in the drawings. A bonding agent may be interposed between the ring and the body of main portion.

[0022] The closure may of an appropriate size to be used with other bottles, tubes or containers which contain non-carbonated drinks or any other matter and in particular matter which deteriorates if the air can enter into it. The closure may further be used with bottles, tubes or containers (including jam jars) which contain material that if it moves to around the neck of the container will cause the closure to adhere tightly to it making opening difficult. Typical of such items are bottles containing non-gas liquids, jar tops, nail varnish bottles and various tubes such as tubes for fine art oil, tape, glue tubes and the like.

[0023] The closure may also be used for tubes containing non-fluid material such as creams etc.

[0024] Part of the surface of the main portion may be slightly recessed and the resilient material is moulded thereon so that a part thereof is contained within the recess.

[0025] The fins may lie in planes that are parallel to the axis of the ring or radial thereto.
CLAIMS

1. A screw top closure consisting of a main portion formed of hard plastics material and a resilient member attached to the main portion and projecting therefrom so that a person endeavouring to reseal bottle with the closure can engage the resilient member and obtain an adequate purchase to apply the necessary torque to the closure to cause it to form a good seal with the bottle.

2. A closure as claimed in claim 1 wherein the resilient member comprises a material that is softer than the said hard plastic member.

3. A closure member as claimed in claim 1 or 2 wherein the resilient member comprises a material that is rubber like in feel.

4. A closure as claimed in claim 1, 2 or 3 wherein the resilient member is formed separately from the main portion and is secured to the main portion.

5. A closure as claimed in claim 4 wherein the resilient member is in the form of a ring which is applied to the exterior surface of the main portion by being stretched and when released will firmly grip the main portion because of its resilience.

6. A closure as claimed in claim 4 or 5 wherein the resilient member is in the form of a ring which may be applied to the exterior surface of the main portion and wherein a bonding medium is provided between the ring and the said exterior surface.
7 A closure as claimed in any one of the preceding claims wherein the exterior surface of the resilient member is provided with projections for improved grippability.

8 A closure as claimed in claim 7 wherein the projections are in the form of dimples.

9 A closure as claimed in claim 8 wherein the dimples are generally conical in shape.

10 A closure as claimed in claim 7 wherein the projections comprise raised elongated, preferably axially extending, parallelograms or rectangles.

11 A closure as claimed in claim 7 wherein the projections are formed by helical fins wound around the said exterior surface.

12 A screw top closure having parts arranged substantially as hereinbefore described and illustrated in Figures 1 to 5 or 8 of the accompanying drawings.

13 A screw top closure having parts arranged substantially as hereinbefore described and illustrated in Figures 6 or 7 or 9 and 10 of the accompanying drawings.
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