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BOTTLE AND CLOSURETechnical Field

A modified bottle, a modified preform for the bottle, and a modified closure
5 for closing over the opening of a bottle, are disclosed.

Background Art

WO 2009/067748 (to the present applicant) discloses a closure for a bottle.
The closure has projections that extend out from and around the closure, some or all of
10 which may have apertures extending therethrough (e.g. for clipping a lanyard to the
closure). An ergonomic curvature is provided under the projections to facilitate close
manual gripping of the closure (e.g. when it is attached to a bottle). WO 2009/067748
also discloses similar configurations of the projections but employed on a bottle.

WO 02/36454 discloses a secondary lid (20) for a primary bottle closing lid
15 (9). The secondary lid (20) is not designed for closing over an opening to a bottle, but
instead is mounted to the primary lid (9) to provide it with a deployable handle
function. In this regard, a ring (22) of secondary lid (20) is manually engaged at an
edging (24) to pivot about zone (23), and this causes frangible ribs (25) to break,
allowing the ring (22) to function as a swing handle for the primary lid (9).

20 A reference to the background art does not constitute an admission that the art
forms a part of the common general knowledge of a person of ordinary skill in the art,
in Australia or elsewhere.

Summary of the Disclosure

25 According to a first aspect, there is disclosed a modified bottle, and a modified
preform for the bottle (e.g. that can be blow moulded into a given bottle shape/type).
The bottle/preform comprises a projecting structure that is integrally formed with and
that is located at or adjacent to a neck of the bottle/preform.

In accordance with the first aspect the projecting structure comprises a ring-
30 like element that extends around the neck. The ring-like element is supported therefrom
by a plurality of discrete web formations. In the projecting structure, adjacent web
formations define an aperture therebetween.

An unbroken configuration of the ring-like element together with the web
formations have been observed to work together to provide dimensional integrity to the
35 projecting structure. They enable the projecting structure to meet often stringent
performance criteria for bottles such as impact resistance, so called “drop-test”
requirements, etc. They also enable an item such as a lanyard to be clipped to the bottle,

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via the projecting structure, and for the so-clipped bottle to withstand “rough” handling over a long period (e.g. from swinging, tugging, pulling, etc). When the bottle is fully laden, the unbroken configuration of the ring-like element has been observed to withstand deformation, shearing, twisting, etc.

5 This unbroken configuration of the ring-like element is to be contrasted with the discrete projecting elements employed on the bottle in WO 2009/067748.

 In one embodiment, adjacent web formations can be spaced so as to define in the projecting structure an elongate aperture therebetween. For example, each web formation can be spaced equidistantly from adjacent web formations around the
10 projecting structure.

 In one embodiment, five or six equidistantly spaced web formations can be employed in the projecting structure. In each case, the provision of elongate apertures makes for easy use of the apertures (e.g. when clipping a lanyard to the bottle). In addition, by making the aperture elongate more material is removed from the projecting
15 structure, thus “light-weighting” the structure. In this regard, if an additional structure is to be employed in a bottle (e.g. a plastic commodity-type bottle manufactured in high numbers), it is desirable to reduce the additional weight added by as much as possible, whilst at the same time providing dimensional stability and maintaining structural integrity of the additional structure.

20 In one embodiment, the projecting structure can further comprise a sleeve that is located at or adjacent to the neck to surround the same. Such a sleeve can insulate the ring-like element and web formations from the bottle neck. Such a sleeve can also facilitate moulding of the projecting structure, and can further enhance structural integrity (e.g. to better resist impact, dropping etc). In this regard, the lower portion of
25 the sleeve can be designed to take the place of the existing neck support flange that is employed in existing moulded-type bottles/preforms, which flange facilitates moulding as well as bottle/preform removal from the mould.

 In this embodiment, the plurality of discrete web formations can be integrally formed with and can project out from an outside wall of the sleeve.

30 In one embodiment, the sleeve may itself be spaced from the bottle neck by a plurality of discrete sleeve support webs. Each support web can be integrally formed to extend between the bottle neck and an inside wall of the sleeve. Each support web can also be aligned with the web formations (i.e. where they project out from the outside wall of the sleeve) to further improve structural integrity of the projecting structure. In
35 another embodiment, the height of the sleeve can be reduced such that sleeve support webs are able to be eliminated.

 In one embodiment, each of the web formations can comprise a pair of closely

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spaced, opposing webs for supporting the ring-like element. These individual webs can further “light-weight” the projecting structure whilst, at the same time, providing dimensional stability and maintaining structural integrity of the projecting structure. In this form, each element support web can define a concave lateral surface facing into the aperture, with this curvature contributing to the structural integrity of each web.

In an alternative embodiment, each of the web formations may comprise a single wall. Each such single wall may be provided with a width that is comparable to (e.g. that approaches or that is the same as) a width of the sleeve.

In one embodiment, an in-use underside surface of each of the web formations can define (i.e. can be provided with) an ergonomic curvature. The curvature can be such that a user’s finger can be closely received against the underside surface in use. This can enhance manual carrying of the bottle by a user (e.g. the bottle neck may sit more comfortably between a user’s fingers).

Further, in one form, the projecting structure can be formed to project out sufficiently from the neck to allow for a sufficient proportion of a user’s finger to engage the underside of the projecting structure, again so that the bottle can be more easily carried between and by a user’s fingers.

In a second aspect there is disclosed a closure for closing over the opening of a bottle. The closure of the second aspect may (or may not) be employed with a bottle having a projecting structure as defined for the first aspect.

In accordance with the second aspect, the closure comprises a body attachable to the bottle to surround and close the opening. A projecting structure is integrally formed with the body and comprises a ring-like element that extends around the body and that is supported therefrom by a plurality of discrete web formations. Adjacent web formations define in the projecting structure an elongate aperture therebetween.

The provision of elongate apertures allows for ease of attachment of a hook-like device (such as a lanyard) to the closure. The elongate apertures also help to “light-weight” the closure. Further, the elongate apertures give a pronounced appearance to, and highlight the unbroken circumference of, the ring-like element. This is to be contrasted with the projecting elements employed on the closures in WO 2009/067748.

When employed on a closure, the ring-like element and the web formations together again provide dimensional integrity to the projecting structure, enabling the projecting structure to meet stringent performance criteria in use on a bottle such as impact resistance, and “drop-test” requirements, etc. They together also enable an “as-clipped” projecting structure to withstand “rough” handling over a long period (e.g. from swinging, tugging, pulling, etc).

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In one embodiment of the closure, each web formation projects either up and away, or laterally, from an outside side wall of the body. In the case where the projection of the web is solely or essentially lateral, even more material can be removed from the web formation, to further light-weight the closure. However, an increased
5 thickness and shaping of the web formation may be required to preserve the strength of the projecting structure.

To facilitate ease of carrying (e.g. when the closure is mounted to a bottle), and in the case where the web formation projects up and away from the body wall, an in-use underside surface of each of the web formations can be provided with an ergonomic
10 curvature. This curvature enables a user's fingers to be closely received against the underside surface in use.

To also facilitate ease of carrying (e.g. when the closure is mounted to a bottle), the projecting structure can be formed to project out sufficiently from the body of the closure to allow for a sufficient proportion of a user's finger to engage the
15 underside of the projecting structure.

In one embodiment of the closure, each of the web formations can comprise a discrete web. In one form of the closure each web formation can be spaced equidistantly from adjacent web formations around the projecting structure.

In one embodiment of the closure, when the closure is in an upright in-use
20 orientation and when it is viewed in side elevation, the projecting structure can generally be aligned with a top wall of the body.

In one embodiment, the closure body can comprise a tamper band. In this embodiment, and as an alternative to forming the projecting structure on the closure body, the projecting structure can be integrally formed to project out from the tamper
25 band. Thus, in the case where the tamper band is of a type that is retained on the bottle, and when the closure is removed, the projecting structure can be retained at the bottle.

In an alternative embodiment, the closure can be connected via a tether to a band (e.g. a tamper band) that remains behind on a bottle when the closure is removed therefrom.

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Brief Description of the Drawings

Notwithstanding any other forms which may fall within the scope of the bottle, preform and closure as set forth in the Summary, specific embodiments of a preform, and of bottles and closures, will now be described, by way of example only, with
35 reference to the accompanying drawings, in which:

Figures 1A to 1D show plan, side, underside plan and sectional views of an embodiment of a preform for a bottle, with Figures 1E to 1G providing three different

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perspective views of the preform;

Figures 2A to 2D show plan, side, perspective and sectional views of an embodiment of a bottle that has been blow moulded from the preform of Figure 1, with Figures 2E and 2F providing two different detail views of the neck of the bottle;

5 Figure 3A shows a side view of another embodiment of a bottle that has been blow moulded from a preform modified over that of Figure 1, with Figures 3B and 3C providing two different detail views of the neck of the bottle of Figure 3A;

Figure 4A shows a side view of yet another embodiment of a bottle that has been blow moulded from a preform modified over that of Figure 1, with Figures 4B and
10 4C providing two different detail views of the neck of the bottle of Figure 4A;

Figures 5A to 5C show side, underside perspective and topside perspective views of a closure embodiment for closing over the opening of a bottle;

Figures 6A to 6C show side, underside perspective and topside perspective views of another closure embodiment for closing over the opening of a bottle;

15 Figures 7A to 7C show side, underside perspective and topside perspective views of yet another closure embodiment for closing over the opening of a bottle;

Figures 8A to 8F show side, plan, alternate side, underside plan, top perspective and underside perspective views of another embodiment of an upper detail of a bottle neck or of a neck for a preform for a bottle, with Figures 8G and 8H showing
20 two different sectional views taken on the lines B-B and A-A respectively of Figure 8B; and

Figure 9 shows a side view of the bottle of Figure 2 with a lanyard attached thereto and with a user's finger schematically positioned thereat.

25 Detailed Description of Specific Embodiments

Figures 1 and 2 show a modified preform 10 (Fig. 1) and a modified bottle 20 (Fig. 2), the bottle 20 having been blow moulded from the preform 10. The bottle/preform comprises a projecting structure in the form of a neck adaptation 30 that is integrally formed with and that is located at (or adjacent to) an externally threaded
30 neck 32 of the bottle/preform. The neck adaptation 30 is formed to project out sufficiently from the neck 32 to allow for a sufficient proportion of a user's finger F to engage its underside (see Figure 9) so that a laden bottle can be easily carried between and by a user's fingers. Also, the neck adaptation 30 is formed to make it easy to attach a hook-like device thereto (e.g. a hook H of a lanyard L – see Figure 9). This makes for
35 ease of bottle handling in use, including portability (such as personal portability – on or about the user).

The neck adaptation 30 comprises a ring formation 34 that extends around the

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neck 32. The ring formation 34 is unbroken (continuous) and is supported from the neck by a plurality of discrete web formations in the form of five equidistantly spaced discrete web structures 40. Five such structures have been found to provide sufficient structural integrity to the neck adaptation 30, whilst not adding significantly to the overall weight of the adaptation 30. Adjacent web structures 40 define an elongate aperture 42 therebetween, with each aperture having rounded ends. Each aperture 42 is formed to curve in accordance with the curvature of the ring formation 34, though other orientations may be employed for e.g. different aesthetic and functional effects.

As best shown in Figures 2E and 2F, each web structure 40 comprises a pair of closely spaced, opposing support walls 44. Each wall defines a concave lateral surface 45 facing into the aperture 42, with this curvature rounding off the ends of the aperture 42, and also contributing to the structural integrity of each wall. Further, the thickness of walls 44 is reduced as much as possible so as to “light-weight” the neck adaptation 30 whilst, at the same time, providing dimensional stability and structural integrity to the neck adaptation.

In the embodiment of Figures 1 and 2 (and as best shown in Figures 1D, 2D and 2E) an underside surface 46 of each of the walls 44 is provided with an ergonomic curvature. The curvature is formed such that a user’s finger F can be closely received against the underside surface in use (see Figure 9). This can enhance manual carrying of a laden bottle by a user, in that the bottle neck can sit more comfortably between a user’s fingers.

The ring formation 34 and the web structures 40 together function to provide dimensional integrity and strength to the neck adaptation 30. In this regard, they allow the neck adaptation to meet stringent performance criteria prescribed for bottles such as impact resistance, “drop-test” requirements, dimensional stability, wear-and-tear resistance over time, etc. They also allow for manual (finger) carrying of the bottle. The structure and configuration is such that a so-clipped and so-hung or carried bottle can withstand “rough” handling over a long period (e.g. from swinging, tugging, pulling, etc).

The elongate configuration of the apertures 42 makes for easy clipping of a lanyard (or other releasable type hook) to the bottle. In addition, by elongating the aperture, more material is “removed” during moulding from the resultant neck adaptation 30, thus “light-weighting” the structure. In this regard, when a structure such as that illustrated is employed e.g. with a plastic commodity-type bottle (i.e. that is manufactured in high numbers), it is desirable to reduce the additional weight added to the bottle as much as possible, whilst at the same time providing dimensional stability and maintaining structural integrity. By designing the neck adaptation 30 with a

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minimal number of web structures 40, with a minimal thickness of walls and ring formation 34, and with a maximum aperture length, the competing objectives of dimensional stability and structural integrity versus light-weighting can be met.

To further enhance moulding processes, and to provide further dimensional
5 stability and structural integrity to the neck adaptation 30 (e.g. such that it better resists impact, dropping etc), the neck adaptation 30 comprises a sleeve 47 that is moulded to the neck 32 to surround the same. The sleeve also separates the adaptation 30 from the neck 32, which has insulation benefits.

The web structures 40 are integrally formed with and project out from outside
10 wall 48 of the sleeve 47. The sleeve is integrally formed with but spaced from the neck 32 by sleeve support webs 50. The support webs 50 extend between the bottle neck and an inside wall of the sleeve and are aligned with the web structures 40. Again, this alignment further improves impact and drop resistance, etc in that impact forces on the ring formation 34 can be translated right through to the neck. The arrangement at the
15 lower portion of the sleeve 47 is also designed to replace an existing neck support flange that is employed in existing moulded-type bottles/preforms. Such a flange facilitates moulding as well as bottle/preform removal from the mould. The sleeve is able to "replace" this functionality, including facilitating the use of sliding cores which are employed in the mould to form the webs, apertures, etc.

20 A standard bottle cap can be separately screwed onto and off the threaded upper end of the bottle neck 32. Alternatively, the various caps 100, 200 and 300 of Figures 5 to 7 can be screw-mounted to the bottle 20.

Referring now to Figures 3A to 3C, where like reference numerals are used to denote similar or like parts, a bottle 20' is shown that has been blow moulded from a
25 preform that is slightly modified over that shown in Figures 1 and 2.

In this embodiment (and as best shown in Figures 3B and 3C) the ergonomic curvature at the underside surface of each of the walls 44 is removed and is replaced by a straight edge 60. This provides slightly more material in the wall 44, thus increasing its strength, though making the wall underside surface less ergonomic. In other respects,
30 the neck adaptation 30 is configured and functions in essentially the same way as that previously described for Figures 1 and 2.

Referring now to Figures 4A to 4C, where like reference numerals are again used to denote similar or like parts, a bottle 20'' is shown that has been blow moulded from a preform that is again slightly modified over that shown in Figures 1 and 2.

35 In this embodiment (and as best shown in Figures 4B and 4C) the walls 44 are removed and replaced by a different type of web formation 70. Formation 70 comprises a single bridge 72 that projects from a split base 74. This considerably reduces the

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material in the web structure 40, again contributing to light-weighting, though decreasing strength to some extent. In addition, no ergonomic curvature C is employed in the formation 70. In other respects, the neck adaptation 30 is configured and functions in essentially the same way as that previously described for Figures 1 and 2.

5 Referring now to Figures 5A to 5C a closure is shown in the form of a cap 100 for closing over the opening of a bottle (e.g. a conventional bottle or a modified bottle such as one of the bottles 20, 20', 20"). The cap 100 comprises a body 102 that can be screw-mounted to the bottle via internal threads 104 formed on an inside of cap sidewall 106. When screw-mounted to the bottle, the sidewall 106 surrounds and
10 secures to a correspondingly externally threaded bottle neck (e.g. neck 32), with a cap top wall 108 closing over and sealing the bottle opening (e.g. an inside seal 109 bears down on and seals against a rim of the bottle neck).

A projecting structure in the form of a cap adaptation 110 is integrally formed with the body 102 and comprises a ring-like element in the form of ring 112 that
15 extends around the body 102. The ring 112 is supported from the body by a number of web formations in the form of arms 114. Each arm is spaced equidistantly from adjacent arms around the cap adaptation 110. Five such arms are shown and have been found to provide sufficient structural integrity to the cap in use. As also shown in Figure 5A, the ring 112 is generally aligned with the top wall 108 of the body. Thus, when the
20 cap is inverted, the ring can provide an additional "base".

The cap adaptation 110 is designed to project out sufficiently from the body 102 to allow for a sufficient proportion of a user's finger to engage the underside of the cap adaptation 110. This facilitates ease of carrying via the cap (e.g. when the cap is mounted to a bottle).

25 In the cap adaptation 110 adjacent arms 114 define an elongate aperture 116 therebetween that curves in the same way as ring 112. The formation of elongate apertures further helps to "light-weight" the closure. They also provide an elegant, aesthetic and minimalist look to the cap adaptation.

The ring 112 and the arms 114 are together designed to provide dimensional
30 and structural integrity to the cap adaptation 110, enabling it to meet stringent performance criteria when used on a bottle. These criteria include impact resistance, ability to meet "drop-test" requirements, wear-and-tear resistance etc. The elongate aperture 116 enables an item such as a lanyard to be easily clipped to the cap. When a lanyard L is clipped thereto over a long period, the cap adaptation 110 has been
35 configured such that it is able to withstand "rough" handling (e.g. swinging, tugging, pulling, etc).

In the cap embodiment of Figure 5, each arm 114 projects up and away from

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the sidewall 106 of the body. An in-use underside surface 120 of each of the arms is provided with an ergonomic curvature. Each such curved surface 120 enables a user's fingers to be closely received thereagainst in use, again making cap (and thus bottle) carrying easier and more comfortable.

5 Optionally, a tamper band 122 is frangibly connected to a lower open end of the cap body 102 (i.e. to the lower edge of sidewall 106). In a variation, and as an alternative to integrally forming the cap adaptation 110 with the body 102, the tamper band 122 can be re-sized, and the cap adaptation 110 can be integrally formed to project out from the band. Thus, in the case where the tamper band is of a type that is retained
10 behind on the bottle when the cap is removed, the cap adaptation 110 can remain at the bottle at all times.

 In a further variation, the cap can be connected via an integrally formed tether to a tamper band that remains behind on a bottle when the cap is removed therefrom (i.e. so that the cap is not lost). The connection of the tether to the cap can be such as to
15 allow for rotation (free-wheeling) of the cap relative to the tether, so that the cap can be separately and easily screwed onto and off the bottle.

 In use, the cap 100 is screwed onto the bottle at the threaded neck, with the lower open end of the body 102 receiving the neck therein to thereby close the bottle opening. During attachment of the cap 100 to the bottle, the tamper band 122 deforms
20 outwardly around and rides over a ridge R (see Figure 9). The ridge R is usually located on the bottle neck above a standard flange arrangement that projects laterally out from and around the bottle neck portion. Once the cap has been secured to the bottle, the tamper band 122 sits in close facing arrangement to standard flange. This close facing arrangement mitigates against tampering. The ridge thus locks the tamper band to the
25 bottle, whereby it becomes detached from the cap body and is left behind when the cap is removed (unscrewed) from the bottle in use. Thus, the cap 100 is suitable for use with an existing or modified bottle.

 In a variation to screw-mounting the cap, the inside surface of the cap body 102 can be sized or configured (e.g. by having jaws or ribs formed thereon) for snap,
30 friction or interference fit engagement with a suitably modified outer surface of the bottle neck.

 Referring now to Figures 6A to 6C, where like reference numerals are used to denote similar or like parts, another closure embodiment is shown in the form of a cap 200. A number of the features of cap 200 are similar to those of cap 100, and hence will
35 not be re-described.

 Cap 200 differs from cap 100 in that each arm 114' does not comprise an underside surface 120' that has an ergonomic curvature. Rather, each arm defines a

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generally flat, planar surface 120'. Again, each arm 114' projects up and away from the sidewall 106 of the body, and arms 114' comprise more material (i.e. have a greater thickness) than arms 114, to increase arm strength, and thus to increase overall strength and performance of the cap adaptation 110.

5 Referring now to Figures 7A to 7C, where like reference numerals are used to denote similar or like parts, yet another closure embodiment is shown in the form of a cap 300. Again, a number of the features of cap 300 are similar to those of cap 100, and hence will not be re-described.

10 Cap 300 differs from cap 100 in that each arm 114'' does not project up and away from the sidewall 106 of the body, but rather projects laterally out from the sidewall 106, adjacent to the top wall 108. In cap 300, even more material has been removed from the arms 114'', which can result in some decrease in strength, but significantly increases light-weighting of the cap adaptation 110 and thus of the cap 300.

15 In each of the bottle embodiments of Figures 2, 3 and 4, and in the cap embodiments of Figures 5, 6 and 7, the adaptations 30, 110 allow a bottle to be carried whereby a user's hand does not need to contact a body of the bottle. As a result, any chilled content of the bottle is not heated by the user's body heat, and any warm/hot content of the bottle does not get transferred to the user. Furthermore, the user's hand
20 does not become cold, hot, wet or clammy etc, because it is not contacting the bottle or moisture condensation thereon.

The ergonomically shaped surfaces (46 in bottle 20 and 120 in cap 100) provide for comfortable engagement of the user's finger or fingers, making it easier for the user to "grab" and then carry the bottle. In addition, a bottle can be comfortably
25 carried for longer periods, as opposed to a user having to use their entire hand to grip around the bottle.

By engaging the adaptations 30, 110 a user is able to carry a bottle in such a way that leaves the palm of their hand free to carry another object or objects such as keys, mobile phone, wallet or food, for example. Furthermore, the user can carry an
30 additional bottle by engaging the adaptations 30, 110 of the additional bottle between the same or different fingers of the same hand. Thus, multiple bottles can be carried between each of adjacent fingers (i.e. by one hand).

The adaptations 30, 110 are provided with sufficient width (i.e. degree, extent or length of lateral projection) to enable a sufficient proportion of a user's fingers to
35 engage the adaptations. For example, the extent or length of lateral projection can be at least 10-25% of the width (diameter) of the cap body (e.g. ~ 21% in the caps shown in the Figures 5 to 7).

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Referring now to Figures 8A to 8H, the reference numeral series “500” will be employed, where e.g. the reference numeral 530 denotes a similar or like part to the reference numeral 30 employed in Figures 1 and 2.

Figure 8 shows another embodiment for the neck 500 of a bottle or bottle
5 preform. In this embodiment the neck adaptation 530 is again formed to project out sufficiently from the neck 532 to allow for ease of carrying between and by a user’s fingers and to make it easy to attach a hook H of a lanyard (Figure 9).

In Figure 8, the neck adaptation 530 again comprises a ring formation 534 that
10 extends around the neck 532 but, in this embodiment, the ring formation 34 is supported from the neck by six equidistantly spaced discrete web structures 540. The six web structures 540 have been found to increase the structural integrity and stability of the neck adaptation 530, improving its impact resistance, drop-test performance, and wear-and-tear resistance, without adding significantly to its overall weight.

Again, adjacent web structures 540 define an elongate aperture 542
15 therebetween. However, in this embodiment, each web structure 540 comprises a single, relatively wider support wall 544 for increased structural integrity and strength. In this regard, the width of support wall 544 can be comparable to (e.g. can approach or be the same as) the width of the sleeve (see Figures 8D and 8G).

Again, an underside surface 546 of each of the walls 544 is provided with an
20 ergonomic curvature such that a user’s finger can be closely received thereagainst in use (Figure 9) to enhance manual carrying of a laden bottle by a user. The wider underside surface has also been observed to provide increased comfort and handling.

Again, each web structure 540 is integrally formed with to project out from the
outside wall 548 of sleeve 547. Again, the sleeve is integrally formed with but spaced
25 from the neck 532. However, in this embodiment, the height of the sleeve has been reduced so that the support webs (item 50 in Figure 2F) are able to be eliminated. This has been observed to make the neck formation easier and simpler to mould, without compromising strength, structural integrity, dimensional stability, etc. In addition, the neck adaptation 530 has a reduced overall size, and thus consumes less plastic, has a
30 more elegant appearance, etc.

The neck adaptation 530 of Figure 8 is otherwise generally as described for previous embodiments.

As shown in Figure 9, the apertures 42, 116 (i.e. in either of the adaptations 30,
110) enable a bottle to be carried by a connection device. The connection device shown
35 in Figure 9 is a lanyard, but in other embodiments may be a pin, bolt, clip, caribina, string, cord, chain, cable tie, key-ring, split ring or any other suitable connection device. Such a connection device can enable the cap or bottle to be readily connected to any

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suitable article such as a bag, belt loop, back pack, door or other knob, hook, mounting at a point-of-sale location, or directly to a user for example. The apertures 42, 116 can also allow for hanging/mounting storage.

In one particular application, a user (such as a backpacker or hiker etc) may
5 connect a drink bottle to a ring or loop on their bag by connecting such a connection device to the ring or loop and also to one of the apertures of the cap/bottle. Alternatively, the connection device can be connected to a cord which is worn around the backpacker or hiker's neck. In both instances, the drink bottle is readily available to the user, whilst remaining securely attached to their bag or their personage. The
10 connection device can also allow heavier bottles to be carried, hung or hooked-up.

The caps 100, 200, 300 can be modified to incorporate a pop-up mouth piece (sometimes referred to as a "sports" mouth piece), dispensing projections, etc through which fluid may selectively exit the bottle (i.e. when the mouth piece is deployed). The caps may also comprise a flip-top, overcap or detachable lid for closing over a nozzle of
15 the pop-up mouth piece.

The caps shown in Figures 5 to 7 provide a number of further advantages to those described above. One such advantage is that the adaptation 110 enables a user to get greater purchase on a cap during its closing or opening. This is particularly advantageous for users with small, weak or arthritic hands and/or fingers, making it
20 easier for such users to open and close bottles. Furthermore, this greater purchase reduces or eliminates the need for corrugations, knurlings etc on the cap body, which need to be provided on some conventional closures (i.e. the corrugations on some conventional closures can cause pain through finger burn during opening and/or closing, especially at initial opening).

The adaptations 30, 110 allow for heavier bottles to be carried by a user (e.g. by a child or elderly person) through the use of a connection device. The adaptations 30, 110 also allow such users to carry multiple bottles in one hand (i.e. with one or more bottles being able to be held in the space between adjacent fingers). The adaptations 30, 110 also allow multiple bottles to be carried by e.g. respective multiple
30 lanyards and carried by one hand, freeing up the other hand

The location of the adaptation 110 in the caps of Figures 5 to 7 is such as to provide a base-like structure at the in-use upper end of the bottle/closure. In this regard, this can allow the bottle to be inverted so that it can then stand with the cap as its base.

An additional advantage of the caps and bottles as shown in any of Figures 1 to
35 8 is their marketing potential. The caps and bottles have a unique visual appeal, thus enabling the caps and bottles to readily "stand out" from conventional bottles and/or conventional closures. This visual appeal can be further enhanced when symmetry (or

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asymmetry) is employed in the adaptations 30, 110. The different cap and bottle styles can also become collectable (e.g. users may strive to collect all caps and bottles in a series).

5 In addition, because the bottles and caps can be carried by the caps at the neck, any logos, labels, or other markings on the bottles are at full display when the bottles are being carried. Thus, marketing material placed on the bottles is given greater exposure as compared to conventional bottles provided with conventional caps (which require the bottle body to be carried in a user's hand).

10 The adaptation 110 on the caps as shown in Figures 5 to 7 is also such as to provide the cap with better resistance to roll-away should the cap be dropped.

The caps can be sized for use with a variety of standard bottle spout sizes, such as 26, 28, 35, 42 mm etc. Each such bottle neck can also carry the neck adaptation 30. Also, the caps can incorporate substance dispensing mechanisms therein to release material from within the cap and into bottle liquid contents.

15 Whilst projecting structures with five web formations have been shown, a greater or lesser number of web formations can be employed as appropriate.

The bottle can be any size and can comprise a variety of types (e.g. of polymers such as PET, so-called "Eco-PET", glass, aluminium, plastic-lined paper etc).

20 The preforms disclosed herein can be employed in both single-stage and two-stage blow moulding processes.

The various cap and bottle embodiments can also be used with a wide variety of liquids and beverages, including carbonated and non-carbonated beverages, and including still and sparkling waters and mineral waters, teas, juices, milk and milk drinks, health and energy drinks, etc.

25 In both the claims and the preceding description, except where the context requires otherwise due to express language or necessary implication, the word "comprise" or variations such as "comprises" or "comprising" is used in an inclusive sense (i.e. to specify the presence of the stated features but not to preclude the presence or addition of further features in various embodiments of the bottle and closure).

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Claims

1. A bottle or bottle preform that comprises a projecting structure that is integrally formed with and located at or adjacent to a neck of the bottle/preform, the projecting structure comprising a ring-like element that extends around the neck and is supported therefrom by a plurality of discrete web formations, with adjacent web formations defining in the projecting structure an aperture therebetween.
2. A bottle or bottle preform as claimed in claim 1 wherein the adjacent web formations define in the projecting structure an elongate aperture therebetween.
3. A bottle or bottle preform as claimed in claim 1 or 2 wherein the projecting structure further comprises a sleeve that is located at or adjacent to the neck to surround the same, with the plurality of discrete web formations being integrally formed with and to project out from an outside wall of the sleeve.
4. A bottle or bottle preform as claimed in any one of the preceding claims, wherein each of the web formations comprises:
 - (i) a pair of closely spaced, opposing webs for supporting the ring-like element;
 - (ii) a single wall having a width comparable to a width of the sleeve.
5. A bottle or bottle preform as claimed in claim 4, wherein in (i) each element support web defines a concave lateral surface facing into the aperture.
6. A bottle or bottle preform as claimed in any one of the preceding claims, wherein an in-use underside surface of each of the web formations defines an ergonomic curvature whereat a user's finger can be closely received against the underside surface in use.
7. A bottle or bottle preform as claimed in any one of the preceding claims, wherein the projecting structure projects out sufficiently from the neck to allow for a sufficient proportion of a user's finger to engage the underside of the projecting structure so that the bottle can be carried.
8. A bottle or bottle preform as claimed in any one of the preceding claims, wherein each web formation is spaced equidistantly from adjacent web formations around the projecting structure.

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9. A closure for closing over the opening of a bottle, the closure comprising a body attachable to the bottle to surround and close the opening, and a projecting structure that is integrally formed with the body, the projecting structure comprising a
5 ring-like element that extends around the body and that is supported therefrom by a plurality of discrete web formations, with adjacent web formations defining in the projecting structure an elongate aperture therebetween.

10. A closure as claimed in claim 9, wherein each web formation projects either up
10 and away, or laterally, from an outside side wall of the body.

11. A closure as claimed in claim 9 or 10, wherein, when the web formation projects up and away from the body outside side wall, an in-use underside surface of each of the web formations defines an ergonomic curvature whereat a user's finger can
15 be closely received against the underside surface in use.

12. A closure as claimed in any one of claims 9 to 11, wherein the projecting structure projects out sufficiently from the body to allow for a sufficient proportion of a user's finger to engage the underside of the projecting structure to enable a bottle to
20 which the closure is attached to be carried.

13. A closure as claimed in any one of claims 9 to 12, wherein each of the web formations comprises a discrete web.

25 14. A closure as claimed in any one of claims 9 to 13, wherein, when the closure is in an upright in-use orientation and when it is viewed in side elevation, the projecting structure is generally aligned with a top wall of the body.

15. A closure as claimed in any one of claims 9 to 14, wherein each web formation
30 is spaced equidistantly from adjacent web formations around the projecting structure.

16. A closure as claimed in any one of claims 9 to 15, wherein the closure body comprises a tamper band, and wherein the projecting structure is integrally formed to project out from the tamper band.
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17. A closure as claimed in claim 16, wherein the tamper band is retained on the bottle when the closure is removed, whereby the projecting structure is retained at the

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bottle.

18. A closure as claimed in any one of claims 9 to 17 that is connected via a tether to a band that remains behind on a bottle when the closure is removed therefrom.