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CLOSURE AND BOTTLE

Technical Field

5 A closure for closing over the opening of a bottle is disclosed, as is a modified bottle.

Background Art

10 Bottles generally all require closures to close over their openings. Typically, the closures are in the form of screw or flip top caps or lids. The closures may be integrally formed with the bottles, such as in the case of the flip top caps, however, generally they are separable from the bottles.

15 In their most common form, the closures are generally cylindrical elements having an open end and a closed end. The closures have a screw thread formed inside which is shaped to mate and engage with a screw thread formed around the outside of the bottle's opening (ie. the spout) so that the closure can be screwed on and off the bottle. Corrugations are sometimes provided around the cylindrical closure to assist a person in gripping the closure when placing it on or taking it off the bottle.

20 WO 00/12397 discloses a bottle carrying apparatus including planar projections that extend out from a cap. US 5,462,185 discloses a dispenser that includes opposing arms through which a carrying strap can be fed. US 2,307,390 discloses a bottle with a curved integral handle.

Summary of the Disclosure

25 According to a first aspect, there is provided a closure for closing over the opening of a bottle, the closure comprising a body attachable to the bottle and at least one projection that projects out from the body, characterised in that an in-use underside surface of the projection has an ergonomic curvature whereby a user's finger can be closely received against the underside surface in use.

30 The provision of an ergonomic curvature at the projection underside provides for maximum comfort, ease of use, safety of the closure and enhanced aesthetics. In this regard, the ergonomic curvature allows the closure (when attached to a bottle) to comfortably and securingly rest between adjacent fingers of a user to enable a so-called swing-carrying of the bottle. The ergonomic curvature can also provide for an easy and non-slip "grab" of a bottle, making bottle carrying less awkward. The comfort it provides can also allow a single user's hand to carry multiple bottles.

35 Whilst the at least one projection ideally projects from the closure, as described hereafter it can be formed to protrude from a bottle neck (eg. at a location that is

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adjacent to a lower edge of the closure when fitted to the bottle neck), or it can form part of a component that is, separate to the closure, mounted to the bottle in use.

In an embodiment the at least one projection can project out sufficiently from the closure body to allow for a sufficient proportion of a user's finger to engage the projection underside surface so that a bottle to which the closure is attached can be carried. For example, the at least one projection can project out from the closure body by at least 10% the width of the closure body. In another embodiment, the at least one projection can have a width which is at least 20% - 25%. When the closure body is cylindrical the width of the closure body can be its diameter.

Whilst the at least one projection can be solid, in an embodiment, a single projection can project out from and around the perimeter of the closure body. In another embodiment the closure can comprise two projections that e.g. extend from opposing sides of the body. When the closure comprises more than two projections they can be spaced around and project out from the perimeter of the closure body as a series of adjacent projections (e.g. equidistantly spaced).

In an embodiment at least one of the projections can have at least one aperture therethrough. For example, when more than one projection projects out from the closure body, each projection may be provided with one aperture therethrough. In another example, when only a single projection extends from the closure body, that projection may have more than one aperture therethrough. Further, the single projection can extend right around the closure body, and multiple apertures can be spaced equidistantly from one another around the projection.

In a further alternative, the closure may comprise a single discrete projection having the ergonomic curvature at its underside, with the single discrete projection optionally having an aperture therethrough for connecting to a connection device (as described hereafter).

The aperture(s) enables the bottle to be carried by the at least one projection when the body is attached to the bottle, by receipt through the aperture of a connection device. This can allow for the hands-free, easy and portable carrying of a bottle to which the closure is attached. This also means the bottle can be kept in the possession of a user and is not therefore left unattended or unsecured. Maintaining possession of a bottle can also promote regular/frequent drinking (eg. of water) throughout the day.

The apertures also reduce the weight and volume of material required to form the projections, thus reducing manufacturing cost.

The closure can also be interchangeable with other bottles, whereby the closure can become a kind of personal possession (e.g. kept with the user via the connection device).

In one embodiment, the apertures are circular. In another embodiment, the apertures are oval. However, the apertures may be of any shape desired such as square, triangle, or other polygon for example, or may even have a stylised shape (eg. tear-drop, petal, flower etc). In another embodiment, each aperture can have generally the same shape as its respective projection, to enhance the aesthetics.

The connection device may be a pin, bolt, clip, caribina, lanyard, string, cord, chain, cable tie, keyring, split ring or any other suitable connection device.

The connection device may connect the closure and/or the bottle to any suitable article such as a bag, belt loop, back pack, door knob, or person for example.

In an embodiment the outside surface of the closure body has a number of discrete grooves formed thereon, with each groove extending parallel to a longitudinal axis of the closure body. Each groove can also align with a respective aperture in the at least one projection.

In an embodiment the (or each) projection can extend laterally from a side wall of the closure body.

In an embodiment the at least one projection can comprise at least one indentation in its outer edge to aid in gripping and removal/attachment of the closure to a bottle.

In an embodiment the closure body can comprise a tamper band, wherein the at least one projection can project out from the tamper band. The tamper band can be retained on the bottle when the closure is removed, whereby the projections are retained at the bottle.

The closure body may be temporarily attached to the bottle or may be attached to the bottle by integral formation with the bottle. In a variation the closure may be separately connected by a tying mechanism to the bottle so as not to be lost from the bottle when removed therefrom. For example, the closure may be connected via an additional connector (e.g. a tie, tether or band) to a tamper band that remains behind on the bottle when the closure is removed. The connection to this additional connecting band can be such as to still allow screwing of the closure off or onto a bottle.

In an embodiment, the closure body comprises a cylinder. The cylindrical body can be open at one (eg. in-use lower) end and closed at another (eg. in-use upper) end. The open end of the cylinder can be arranged to receive therein a portion (eg. a neck/spout) of the bottle, so as to close the bottle opening.

In one embodiment the inside surface of the cylinder has a screw thread formed thereon for engagement with the screw thread on an outer surface of the bottle.

In another embodiment, the inside surface of the cylinder can be provided with

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eg. jaws or ribs formed thereon for a snap-, interference- or friction-fit engagement with an outer surface of the bottle.

In an embodiment, the closed end has a pop-up mouth piece formed thereon through which fluid may exit the bottle. In another embodiment, the closed end has a nozzle formed thereon through which fluid may exit the bottle. In this embodiment, the closure may also comprise an overcap for closing over the nozzle. The nozzle may also be of a type that incorporates a self-closing valve or membrane. The overcap may be completely detachable from the body or may be permanently attached to the body by a hinge.

10 In another embodiment, the cylindrical body is open at first (eg. lower) and second (eg. upper) ends.

In an embodiment, the first open end is arranged to receive therein a portion (eg. a neck/spout) of the bottle, so as to close the bottle opening. Alternatively, the first open end of the closure can be integrally formed with the bottle opening.

15 In an embodiment, the closure further comprises a lid for closing over the second open end of the cylindrical body. In other words, this lid can provide an additional way of opening the bottle. Further, the outer surface of the cylindrical body and the inner surface of the lid can have screw threads formed thereon for inter-engagement with one another. Alternatively, the lid can be hingedly attached to the body.

In a second aspect there is provided a closure for closing over the opening of a bottle, the closure comprising a body attachable to the bottle and one or more projections that extend around the periphery of and project out from the closure body, characterised in that a plurality of discrete apertures extend through the one or more of the projections and are located around the closure.

The provision of multiple discrete apertures formed in one or more projections, with both the projection(s) and the apertures extending right around the periphery of the closure (or bottle neck), provides multiple attachment points right around the closure/bottle neck. The peripheral projection(s) can also assist with closure removal and refastening. The arrangement also provides an enhanced aesthetic appearance to the closure/bottle neck, which can draw consumer attention to the bottle.

30 The projections can also allow the closure to be inserted so as to sit flat on a surface (eg. when the closure is mounted to a bottle). This can allow the bottle to stand and be uniquely displayed in an inverted orientation. Some bottles (e.g. for liquid soaps, shampoos, washes etc) are also used from an inverted orientation, so the closure becomes suited to such bottles.

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When the closure of the second aspect comprises a plurality of projections, each projection can have an aperture therethrough. Otherwise, the closure of the second aspect can be as defined for the first aspect.

5 In a third aspect there is provided a bottle that comprises at least one projection extending laterally right out from the bottle to a free end, the at least one projection being located adjacent to where a closure for closing over the opening of a bottle is attached to the bottle, wherein an in-use underside surface of the projection has an ergonomic curvature whereby a user's finger can be closely received against the
10 underside surface in use, as defined with the closure of the first aspect.

The lateral extension out to the free end enables the so-called swing-carrying of the bottle.

15 In a fourth aspect there is provided a bottle that comprises one or more projections extending therefrom at a location adjacent to where a closure for closing over the opening of a bottle is attached to the bottle, wherein the one or more projections extend around the periphery of and project out from the bottle, and wherein a plurality of discrete apertures extend through the one or more projections and are located around the bottle.

20 In the bottle of the fourth aspect, when the closure is attached to the bottle neck, it can sit in close facing relationship to the one or more projections.

Again, the one or more projections can enable the bottle to be carried by the at least one projection, for example, once the closure body has been attached to the bottle.

25 Again, the one or more projections can be of sufficient width to allow for a sufficient proportion of a user's finger to engage the projection underside surface. The term "width" is used herein to indicate the projection length in a lateral direction.

30 In the bottle of the fourth aspect each projection can have an aperture therethrough. Otherwise, the projections of the bottle of the fourth aspect can be as defined for the first aspect.

35 In a fifth aspect there is provided a projection that is adapted for use with a closure that closes over the opening of a bottle, or that is adapted for use with the bottle, the closure comprising a body attachable to the bottle, wherein the projection extends from the closure body, or extends from the bottle adjacent to where the closure body is attached thereto, and wherein an in-use underside surface of the projection has an ergonomic curvature whereby a user's finger can be closely received against the underside surface in use, as defined in the first aspect.

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The projection of the fifth aspect can be separate from either the closure or the bottle, and can in this regard form part of a component that is separately mounted to the bottle.

5 In a sixth aspect there is provided one or more projections that are adapted for use with a closure that closes over the opening of a bottle, or that are adapted for use with the bottle, the closure comprising a body attachable to the bottle, wherein the one or more projections extend from the closure body, or extend from the bottle adjacent to where the closure body is attached thereto, and wherein the one or more projections
10 extend around the periphery of and project out from the closure body, with a plurality of discrete apertures extending through one or more projections, the apertures being located around the closure.

Again, the projection of the sixth aspect can be separate from either the closure or the bottle, and can again form part of a component that is separately mounted to the
15 bottle.

Each of the one or more projections can have an aperture therethrough. Otherwise, the one or more projections of the sixth aspect can be as defined for the first aspect.

20 Brief Description of the Drawings

Specific embodiments of a closure and bottle will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 provides top, perspective, side and end views of a closure for closing over the opening of a bottle according to an embodiment of the closure, as well as
25 perspective views of the closure attached to a bottle;

Figure 2A is a perspective view of a person's fingers engaging projections of the closure of Figure 1 to thereby carry the bottle, with Figure 2B showing a schematic detail of Figure 2A; and

Figures 3 to 16 provide top, perspective, side and end views of closures for
30 closing over the opening of a bottle according to other embodiments of the closure, as well as perspective views of the closures attached to a bottle and unique bottle embodiments.

Detailed Description of Specific Embodiments

35 Referring firstly to Figures 1 and 2 a closure is shown in the form of a cap 10 for closing over the opening of a bottle 11. The cap 10 comprises a body 12 attachable to the bottle 11 and a number of projections 13 extending from the body 12. The cap 10

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of Figures 1 and 2 comprises five projections. However, in other embodiments as shown in some of Figures 3 to 12 and described further on in the specification, the cap may have more or less projections. The five projections 13 are spaced equidistantly around the perimeter of the body 12.

5 The projections 13 are arranged to enable the bottle 11 to be carried by one or more of the projections 13 when the body 12 is attached to the bottle 11. Figure 2 shows one way in which the bottle 11 can be carried by the projections 13. In Figure 2, the bottle 11 is carried by a person engaging two fingers with at least some of the projections 13, on opposing sides of the body 12. With the person's fingers engaged in
10 this way, the bottle 11 extends below the person's fingers. Advantageously, carrying the bottle 11 this way using the cap 10, means that the person's hand does not need to contact the bottle 11. As a result, any chilled content of the bottle is not heated by the person's body heat. Furthermore, the person's hand does not become cold, wet or clammy because it is not contacting a cold bottle.

15 The lower surfaces 14 of the projections 13 are curved in an ergonomic shape. Each ergonomically curved surface 14 enables a finger F of a person to snugly and comfortably engage the underside of the projections 13 (as best shown in Figure 2B). The top surfaces 15 of the projections 13, which oppose the ergonomically shaped lower surfaces 14, are approximately parallel to their respective ergonomically shaped
20 lower surfaces 14. Thus, the projections 13 are of approximately constant thickness. Because of the comfortable engagement of the person's finger or fingers with the projections 13 it is easier for the person to "grab" and then carry the bottle 11 by engaging the projections. In addition, a bottle can be comfortably carried for longer periods, as opposed to the person having to use their entire hand to grip around the
25 bottle 11.

 Another advantage for a person being able to carry the bottle 11 by engaging their fingers with the cap 10 is that it 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 person can carry an additional bottle by engaging projections of an additional cap
30 attached to the additional bottle in the same or different fingers of the same hand. Thus, multiple bottles can be carried between each of adjacent fingers (ie. by one hand).

 The projections 13 are of sufficient width (ie. length of lateral projection) to enable the fingers of the person to engage the projections 13 and thereby carry the bottle 11 to which the cap 10 is attached. More particularly, the projections 13 have a width
35 which is at least 10% the width (diameter) of the body 12, preferably at least 20%, more preferably at least 25%.

 It will also be seen that each of the projections 13 has an aperture 16

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therethrough, although it should be noted that in other embodiments only one or some of the projections may have apertures therethrough. In a further variation, one, some or all of the projections have more than one aperture therethrough. The apertures 16 shown in Figures 1 and 2 are oval in shape. However, the apertures may be of any shape
5 desired such as circular, ovoid, square, triangle, pentagonal, hexagonal, octagonal etc. The apertures may alternatively have a stylised shape such as a flower, a petal, a tear-drop or other symbol.

As shown in Figure 1, the apertures 16 also enable the bottle 11 to be carried by the projections 13 when the body 12 is attached to the bottle 11, by receipt through
10 one of the apertures 16 of a connection device 17. The connection device 17 shown in Figure 1 is a lanyard, but in other embodiments may be a pin, bolt, clip, caribina, string, cord, chain, cable tie, keyring, split ring or any other suitable connection device. Advantageously, the connection device 17 enables the cap, as well as the bottle to which the cap is attached, to be readily connected to any suitable article such as a bag,
15 belt loop, back pack, door knob, or person for example. In one particular application, a person such as a backpacker or hiker etc may connect a drink bottle to a ring or loop on their bag by connecting the connection device 17 to the ring or loop and also to one of the apertures 16 of the cap 10 which can in turn be attached to the drink bottle. Alternatively, the connection device 17 can be connected to a cord which is worn
20 around the backpacker or hiker's neck. In both instances, the drink bottle is readily available for use by the person, whilst remaining securely attached to their bag or themselves. The connection device can also allow heavier bottles to be carried.

The body 12 of the cap 10 may be temporarily attached to the bottle 11, or a part of the cap 10 may be attached to the bottle to remain fastened thereto after removal
25 of a remainder of the cap. The body 12 comprises a cylinder which in the embodiment shown in Figures 1 and 2 comprises a detachable (frangibly connected) tamper band 20 located at the in-use lower open end of the cap as shown in Figures 1 and 2. A second in-use upper end 21 of the cap is closed. The projections 13 are located on the cap so as not to interfere with the tamper band 20.

30 In use, the lower open end of the cylindrical body 12 receives a neck (spout) portion of the bottle 11 therein to thereby close the bottle opening. When the cap 10 has been securely attached to the bottle 11 the tamper band 20 sits in close facing arrangement to a flange 22 of the bottle that projects laterally out from and around the bottle neck portion. This close facing arrangement mitigates against tampering.

35 Also, during attachment of the cap 10 to the bottle 11, the tamper band deforms outwardly around and rides over a ridge located on the bottle neck above the flange 22. This locks the tamper band to the bottle so that it becomes detached from the cap

remainder and is left behind when the cap is removed from the bottle.

Although not shown in Figures 1 and 2, the inside surface of the cylindrical body 12 typically has a screw thread formed thereon for engagement with a corresponding screw thread on an outer surface the bottle neck (ie. so that the cap can be screwed onto and off the bottle neck). In a variation, the inside surface of the cylindrical body can be sized or configured (eg. having jaws or ribs formed thereon) for snap, friction or interference fit engagement with an outer surface of the bottle neck.

Referring now to Figure 3, a closure in the form of a cap 110 is shown for closing over the opening of a bottle 111 according to another embodiment. The cap 110 is similar to the cap 10 shown in Figures 1 and 2, except that it has only four projections 113. These four projections 113 are spaced equidistantly around the perimeter of the body 112 of the cap 110.

Referring now to Figure 4, a closure in the form of a cap 210 is shown for closing over the opening of a bottle 211 according to another embodiment. The cap 210 is similar to the cap 10 of Figures 1 and 2, except that it has only a single, unitary, projection 213 that extends from and around the perimeter of the body 212 of the cap 210. The projection 213 has multiple apertures 216 therethrough. The multiple apertures 216 are circular in shape and are spaced equidistantly from another around the projection 213. The single projection may alternatively be discrete (ie. not extending right around the cap).

Referring now to Figure 5, a closure in the form of a cap 310 is shown for closing over the opening of a bottle 311 according to another embodiment. The cap 310 is similar to the cap 210 of Figure 4, except that the outside surface of the cylindrical body 312 has grooves 322 formed thereon. The grooves 322 extend parallel to the longitudinal extent or axis of the body 312 and align with the apertures 316 in the projection 313 and can reduce the overall weight of the cap and hence cap cost. They can also enhance the aesthetics of the cap. The grooves 322 can also provide an additional gripping effect to the cap external surface.

Referring now to Figure 6, a closure in the form of a cap 410 is shown for closing over the opening of a bottle 411 according to another embodiment. The cap 410 is similar to the cap 310 of Figure 5, except that the projection 413 comprises one or more (in this case a series of) indentations 423 in its outer edge 424. Again, whilst the indentations can enhance the aesthetics of the cap they can also provide an additional gripping effect at the outer edge 424. They can also reduce the cap weight and volume and hence manufacturing and selling cost.

Referring now to Figure 7, a closure in the form of a cap 510 is shown for closing over the opening of a bottle 511 according to another embodiment. The cap 510

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is similar to the cap 310 of Figure 5, except that the projection 513 is substantially planar and projects orthogonally out from the body 512. Thus the lower surface 514 of the projection 513 is not curved in an ergonomic shape.

Referring now to Figure 8, a closure in the form of a cap 810 is shown for closing over the opening of a bottle 811 according to another embodiment. The cap 810 is somewhat similar to the cap 10 of Figures 1 and 2, except that the closed in-use upper end 821 of the body 812 incorporates a pop-up mouth piece 830 (sometimes referred to as a "sports" mouth piece) through which fluid may selectively exit the bottle 811 (ie. when the mouth piece is deployed).

To deploy the mouth piece (ie. for liquid flow therethrough) the mouth piece 830 can pop-up relative to the upper end 821. However, for child safety reasons, the whole body 812 (ie. incorporating the mouth piece 830) can pop-up relative to a second body part 831, on which the body 812 slidably moves (shown at in-step 832). The tamper band 820 is then frangibly mounted to the in-use lower end of second body part 831.

Referring now to Figure 9, a closure in the form of a cap 910 is shown for closing over the opening of a bottle 911 according to another embodiment. The cap 910 is again somewhat similar to the cap 10 of Figures 1 and 2, except in this case the closed in-use upper end 921 of the body 912 has a nozzle 931 formed thereon through which fluid may exit the bottle 911. The nozzle may be of a free-flow type, or it may incorporate a valve which release fluid once a predetermined pressure is reached thereat (eg. by bottle squeezing and/or user suction). The cap 910 also comprises a flip-top lid 932 for closing over the nozzle 931 and upper end 921. The lid 932 is hingedly attached to the body 912 by a hinge 933. However, in another embodiment, the lid 932 may be completely detachable from the body 912.

Figures 10 and 11 show a variation on the cap 910 of Figure 9, and some like parts have been designated with like reference numerals. In these drawings a cap 950 is shown for closing over the opening of a bottle 952. Again, in this cap the closed in-use upper end 954 of the body 956 has a nozzle 960 formed thereon through which fluid may exit the bottle 952. The nozzle may be open to free flow or can incorporate a valve or membrane 962 which releases fluid once a predetermined pressure is reached thereat (eg. by bottle squeezing and/or or user suction). The cap 950 again comprises a flip-top lid 970 for closing over the nozzle 960 and upper end 954. The lid 970 is hingedly attached to the body 956 by a hinge 972. However, in another embodiment, the lid 970 may be completely detachable from the body 956.

Referring now to Figure 12, a closure in the form of a cap 1010 is shown for closing over the opening of a bottle 1011 according to another embodiment. The cap

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1010 is again somewhat similar to the cap 10 of Figures 1 and 2, except that the cylindrical body 1012 now has openings at both its in-use lower and upper ends. Again, the lower end is adapted to receive therein a neck of the bottle to mount the cap over the bottle opening. The body 1012 can, for example, be defined by a tamper band or ring or
5 it can be freely disposed with respect to an over cap 1040.

In addition, by way of further differentiation, the cap 1010 further comprises an overcap 1040 for closing the open upper end of the cylindrical body 1012. In this regard, an outer surface of the cylindrical body 1012 and an inner surface of the cap 1040 can have screw threads formed thereon for mating engagement with each other,
10 whereby the overcap 1040 can be separately screwed onto and off the cap 1010. In a variation, the overcap 1040 may be hingedly attached to the body 1012 (such as with the lid 932 in Figure 11). The overcap may be specially designed or, more simply, can be an existing cap of known dimensions (ie. as supplied by any number of cap suppliers).

15 In a further addition, in the cap 1010, the projections 1013 can be integrally formed with a tamper band that is frangibly connected to the in-use lower open end of the cap body 1012.

Referring now to Figure 13, a quite distinctly different embodiment is shown, wherein the projections 1113 are now integrally formed with and into the bottle neck
20 1150. The overcap 1140 can then be separately screwed onto and off an upper end 1152 of the bottle neck, which neck is externally threaded at 1154. Figure 13A shows the tamper ring 1120 of overcap 1140 remaining at the bottle neck. In this embodiment the connection device 1117 can now be directly connected to the bottle 1111 via the projections 1113.

25 Referring now to Figure 14, a variation to the cap 1010 of Figure 12 is depicted; in this case - a closure in the form of a cap 1210 is shown for closing over the opening of a bottle 1211. In this embodiment the overcap 1240 is connected to the cylindrical body 1212 via a connecting band 1260 so as not to be lost. Again, the body 1212 can be a tamper band. The connection point 1262 of the band 1260 to the overcap
30 1240 allows for rotation (free-wheeling) of the overcap relative to the band so that the overcap can be separately screwed off the cap 1210 (Figure 14A) or screwed back onto the cap 1210 (Figure 14B).

Again, with the embodiment of Figure 14 the connection device 1217 can now be connected, independently of the overcap, to the bottle 1211 via the projections 1213
35 as shown in Figure 16A.

Referring now to Figure 15, a variation to the cap 10 of Figures 1 and 2 is depicted; in this case - a closure in the form of a cap 1310 is shown for closing over the

opening of a bottle 1311. In this variation the cap 1310 is connected to the tamper band 1320 via a connecting band 1360 so as not to be lost when unscrewed from the bottle (ie. because, like Figures 1 and 2, the tamper band is retained on the bottle neck when the cap is detached therefrom).

5 Again, the connection point 1362 of the connecting band 1360 to the cap 1310 allows for rotation (free-wheeling) of the cap relative to the connecting band so that the cap can be separately screwed off the bottle (Figure 15A) or screwed back onto the bottle (Figure 15B).

10 With the embodiment of Figure 15 the connection device 1317 is connected to the bottle 1311 via the projections 1313 as shown in Figure 16B, but stays indirectly connected to the bottle even with the cap removed because of the connecting band 1360.

15 In another variation, the projections (with or without apertures) 13, 113, etc can be integrally formed as part of a ring that is mounted to the bottle neck separately to the cap, which ring can rotate on the bottle neck independently of the cap. In this regard, the cap may then be of a known (eg. commercially available) configuration. This other variation can provide both novelty and aesthetic values.

20 In yet a further variation, the projections (with or without apertures) 13, 113, etc can be integrally formed as part of a ring that is mounted to rotate (free-wheel) around the cap. In this regard, the cap may then be modified to provide an external groove/channel into which the ring can be snap fitted for retention on the cap. This further variation can again provide both novelty and aesthetic values.

25 The caps shown in Figures 1 to 16 that accord to various embodiments of the present closure provide a number of further advantages to those described above. One such advantage is that the projection(s) enable a person to get greater purchase on a cap during its closing or opening. This is particularly advantageous for people with small, weak or arthritic hands and/or fingers, making it easier for such people 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
30 conventional closures (the corrugations on some conventional closures can cause pain through finger burn during opening and/or closing, especially at initial opening).

35 In the caps shown in Figures 1 to 16 the projections are shown with at least one aperture therethrough, however, at least some or indeed all of the projections can be unapertured or solid (eg. when the projections merely provide for carrying ease and not for attachment of a connection device). The projections allow for heavier bottles to be carried by a user (eg. by a child or elderly person). The provision of apertures in the projections allows for the use of a connection device, again whereby heavier bottles

may now be carried by a user (eg. child or elderly person).

In the caps shown in Figures 1 to 16 the one or more projections can be separated from the cap and bottle, to be separately attached (eg. via a cylindrical band such as in Figure 12) to the bottle. In this regard, the projections can act independently of the cap.

The projections allow a user to also carry multiple bottles in one hand (ie. with one or more bottles being able to be held in the space between adjacent fingers).

The location of the projections in Figures 1 to 3 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 closure as its base.

An additional advantage of the caps and bottles as shown in any of Figures 1 to 16 is their marketing potential. The embodiments of the present closure and bottles have a unique visual appeal, thus enabling bottles to which such closures are attached to readily "stand out" from bottles having conventional closures. This visual appeal can be further enhanced when symmetry (or asymmetry) is employed in the caps. The different cap and bottle styles can also become collectable (eg. users may strive to collect all caps in series).

In addition, because the bottles to which caps according to the present closure are attached can be carried by the caps (or by projection(s) on the bottles), any logos, labels, or other markings on the bottles are at full display even when the bottles are being carried. Thus, marketing material placed on the bottles is given greater exposure as compared to when bottles are provided with conventional caps (which then require the bottle to be carried in a person's hand).

The provision of projections on the caps as shown in Figures 1 to 16 is such as to provide the cap with resistance to roll-away should the cap be dropped.

The various embodiments of the present closure can each be sized for use with a variety of standard bottle spout sizes, such as 28, 35, 42 mm etc. Also, the closures can incorporate known substance dispensing mechanisms therein to release material from the closure and into bottle liquid contents.

The various embodiments of the present closure 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.

In both the claims and 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, ie. to specify the presence of the stated features but not to preclude the presence or addition of further features in various embodiments of the projections, closure and bottle.

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Claims

1. A closure for closing over the opening of a bottle, the closure comprising a body attachable to the bottle and at least one projection that projects out from the body, characterised in that an in-use underside surface of the projection has an ergonomic curvature whereby a user's finger can be closely received against the underside surface in use.
2. A closure as claimed in claim 1, wherein the at least one projection projects out sufficiently from the closure body to allow for a sufficient proportion of a user's finger to engage the projection underside surface so that a bottle to which the closure is attached can be carried.
3. A closure as claimed in claim 2, wherein the at least one projection projects out from the closure body by at least 10% the width of the closure body.
4. A closure as claimed in any one of the preceding claims, wherein more than one projection projects out from the closure body.
5. A closure as claimed in claim 4, wherein a series of adjacent projections extend around the periphery of and project out from the closure body.
6. A closure as claimed in any one of the preceding claims, wherein at least one of the projections has at least one aperture therethrough.
7. A closure as claimed in any one of the preceding claims wherein, when more than one projection projects out from the closure body, each projection has one aperture therethrough.
8. A closure as claimed in any one of claims 1 to 6 wherein, when only a single projection extends from the closure body, the projection has more than one aperture therethrough.
9. A closure as claimed in claim 8, wherein the single projection extends right around the closure body and multiple apertures are spaced equidistantly from one another around the projection.
10. A closure as claimed in any one of claims 6 to 9, wherein the at least one

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aperture enables the bottle to be carried by the at least one projection when the body is attached to the bottle, by receipt through the aperture of a connection device.

11. A closure as claimed in any one of the preceding claims, wherein the outside
5 surface of the closure body has a number of discrete grooves formed thereon, with each groove extending parallel to a longitudinal axis of the closure body.

12. A closure as claimed in claim 11, wherein each groove aligns with a respective
aperture in the at least one projection.

10

13. A closure as claimed in any one of the preceding claims, wherein the (or each)
projection extends laterally from a side wall of the closure body.

14. A closure as claimed in any one of the preceding claims, wherein the at least
15 one projection comprises at least one indentation in its outer edge.

15. A closure as claimed in any one of the preceding claims, wherein the closure
body comprises a tamper band, and wherein the at least one projection projects out from
the tamper band.

20

16. A closure as claimed in claim 15, wherein the tamper band is retained on the
bottle when the closure is removed, whereby the projections are retained at the bottle.

17. A closure as claimed in any one of the preceding claims, that is connected via
25 an additional connector to a band that remains behind on a bottle when the closure is removed therefrom.

18. A closure for closing over the opening of a bottle, the closure comprising a
body attachable to the bottle and one or more projections that extend around the
30 periphery of and project out from the closure body, characterised in that a plurality of discrete apertures extend through the one or more of the projections and are located around the closure.

19. A closure as claimed in claim 18, comprising a plurality of projections, with
35 each projection having an aperture therethrough.

20. A closure as claimed in claim 18 or 19, that is otherwise as defined in any one

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of claims 1 to 17.

21. A bottle that comprises at least one projection extending laterally right out from the bottle to a free end, the at least one projection being located adjacent to where
5 a closure for closing over the opening of a bottle is attached to the bottle, wherein an in-use underside surface of the projection has an ergonomic curvature whereby a user's finger can be closely received against the underside surface in use.

22. A bottle that comprises one or more projections extending therefrom at a
10 location adjacent to where a closure for closing over the opening of a bottle is attached to the bottle, wherein the one or more projections extend around the periphery of and project out from the bottle, and wherein a plurality of discrete apertures extend through the one or more projections and are located around the bottle.

23. A bottle as claimed in claim 22, wherein each projection has an aperture
15 therethrough.

24. A bottle as claimed in claim 21 or 22, wherein the projections are otherwise as
20 defined in any one of claims 1 to 17.

25. A projection that is adapted for use with a closure that closes over the opening of a bottle, or that is adapted for use with the bottle, the closure comprising a body attachable to the bottle, wherein the projection extends from the closure body, or extends from the bottle adjacent to where the closure body is attached thereto, and
25 wherein an in-use underside surface of the projection has an ergonomic curvature whereby a user's finger can be closely received against the underside surface in use.

26. One or more projections that are adapted for use with a closure that closes over the opening of a bottle, or that are adapted for use with the bottle, the closure
30 comprising a body attachable to the bottle, wherein the one or more projections extend from the closure body, or extend from the bottle adjacent to where the closure body is attached thereto, and wherein the one or more projections extend around the periphery of and project out from the closure body, with a plurality of discrete apertures extending through one or more projections, the apertures being located around the closure.

27. The one or more projections as claimed in claim 26, wherein each projection
35 has an aperture therethrough.

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28. The one or more projections as claimed in claim 25 or 26, that are otherwise as defined in any one of claims 1 to 17.