

CLOSURE DEVICE, APPARATUS AND METHOD

FIELD OF INVENTION

The present invention relates to a closure device, apparatus and associated method. The present invention also relates to a diaphragm, seal or membrane. In particular, but not exclusively, the invention relates to a closure for a container, such as a container for liquid. The invention also relates to a container such as a container or bottle for spirits or liquor, particularly though not exclusively premium spirits or liquor.

BACKGROUND TO INVENTION

Different types of containers are provided for containing different liquids. Environmental pressures may encourage the reuse and/or the recycling of containers. However, it may not always be desirable to reuse a container for liquid. For example, where the safety or authenticity of the contents of the container may deviate from those originally contained in the container, it may be preferable to seek to prevent or obviate against reuse that may otherwise present a misleading impression of the contents of the reused container. For example, alcoholic beverages (e.g. spirits or liquor) presented for sale in an original container may be of substantially guaranteed safety, quality and authenticity. However, if said container is subsequently refilled, such as from a non-original source, there may be no guarantee as to the authenticity, quality or safety of the refilled container; whereas the container may present a misleading representation of authenticity, quality and safety to potential users or consumers of the refilled container. Accordingly, such illicit reuse, e.g. by counterfeiters, may have a negative effect on sales of authentic original beverages and/or on the safety or enjoyment of a consumer or user and/or on the reputation of the authentic brand or source of the original container.

Different containers or closures have been developed to mitigate against reuse of original containers by seeking to prevent or impede refilling of such containers. Such closures may comprise tamper-evidence means such as a tear-strip and/or non-refilling means, such as valve means and/or a convoluting liquid exit passage. For example, there are provided containers with asserted one-way closures intended to allow exit or egress of the liquid contents of a container whilst impeding entry or ingress of liquid into the container, such as to impede refilling of the container or to impede dilution or contamination or mixing of the original contents. Such closure or devices are typically referred to as non-refillable devices or systems or "NR's".

This background serves to set a scene to allow a skilled reader to better appreciate the following description. Therefore, none of the above discussion should necessarily be taken as an acknowledgement that that discussion is part of the state of the art or is common general knowledge.

5 It is an object of at least one embodiment of at least one aspect of the present invention to seek to obviate or at least mitigate one or more problems and/or disadvantages of the prior art.

SUMMARY OF INVENTION

10 According to a first aspect of the present invention there is provided a closure assembly or device configured to be applied to a mouth or neck portion of a container, such as a container for liquid.

15 The assembly or device may comprise a first body portion. The assembly or device may comprise a tamper-evidence member configured to be located in use substantially between the first body portion and the container for liquid. The tamper-evidence member may be configured to maintain a position or space of the first body portion relative to the container and/or relative to a second body portion prior to initial opening of the closure assembly or device.

 By this arrangement the tamper-evidence member may act (prior to removal) as a structural part of the closure assembly or device.

20 The tamper-evidence member may comprise a tear-strip. The tamper-evidence member may be circumferentially extending around at least a portion of the closure assembly or device and/or the container.

25 The tamper-evidence member may be configured to maintain a longitudinal or axial position of the first body portion relative to the container and/or the second body portion.

 The tamper-evidence member may be configured to maintain a circumferential or radial position of the first body portion relative to the container and/or the second body portion.

30 The tamper-evidence member may be configured to maintain a position of the first body portion relative to the container and/or the second body portion when a load, such as an axial load, is applied to the first body portion.

 The tamper-evidence member may be configured to at least partially absorb and/or transfer an impact load applied to the first body portion.

35 The tamper-evidence member may be configured to prevent or seek to prevent movement of the first body portion relative to the container and/or the second body

portion prior to initial opening of the closure assembly or device. For example, the tamper-evidence member may be configured to prevent or seek to prevent movement of the first body portion towards and/or away from the container and/or the second body portion.

5 The first body portion may comprise a first cylindrical member or cap, such as a first sleeve or sleeve portion.

 The second body portion may comprise a second cylindrical member, such as a second sleeve or sleeve portion.

 The tamper-evidence member may comprise a structural member.

10 The tamper-evidence member may comprise a third cylindrical member, such as a third sleeve or sleeve portion.

 The tamper-evidence member may be configured to provide a stiffness, such as an axial or longitudinal stiffness, to the closure assembly or device.

 The tamper-evidence member may comprise a stiffener.

15 The tamper-evidence member may comprise an access tab.

 The tamper-evidence member may comprise a ring member.

 The tamper-evidence member may comprise a spacer.

 The tamper-evidence member may be reconfigurable.

20 The tamper-evidence member may be removable or at least partially removable.

 The tamper-evidence member may be frangible.

25 The tamper-evidence member may be attached, such as frangibly attached, to the first body and/or second body portion/s, such as around or adjacent respective first and/or second circumferential end/s thereof. The tamper-evidence member may be attached, such as frangibly attached, to the container.

 The tamper-evidence member may comprise a substantially stiff member.

30 The tamper-evidence member may comprise a variable strength and/or stiffness and/or cross-sectional area and/or thickness. The tamper-evidence member may comprise a variable strength and/or stiffness and/or cross-sectional area and/or thickness along its length, such as about a circumference of the tamper-evidence member.

 The tamper-evidence member may comprise a single or sole means for positioning or spacing the first body portion relative to the container and/or the second body portion prior to opening.

The closure assembly or device may comprise a biasing means, such as for biasing the first body portion towards a first configuration.

The closure assembly or device may comprise a means for cutting, piercing, penetrating, removing or displacing a diaphragm or seal.

5 The closure assembly or device may comprise means for retaining at least a portion of the closure assembly or device, such as on the mouth or neck portion of a container.

10 According to a second aspect of the present invention there is provided a container, such as a container for liquid, comprising a body or component or member comprising a precious or semi-precious material or collectible.

The precious or semi-precious material or collectible may be configured to provide the container after initial opening or use with a higher recycling value than a reuse value. In this way counterfeiting using an original container may be mitigated against.

15 The precious or semi-precious material or collectible may be attached or fixed to the container such that removal or detachment of the precious or semi-precious material or collectible from the container would substantially prevent reuse of the container.

20 The precious or semi-precious material or collectible may be non-detachably attached or fixed to the container. The precious or semi-precious material or collectible may be substantially permanently adhered to the container. The precious or semi-precious material or collectible may be welded or fused or glued to the container.

The precious or semi-precious material or collectible may comprise a coating or an insert or an attachment of the container and/or closure assembly or device.

25 The container may comprise a neck or mouth portion.

The container may comprise a bottle, such as a glass bottle, such as for an alcoholic beverage. The alcoholic beverage may comprise spirits or liquor (e.g. premium spirit or liquor, such as whiskey or Scotch whisky).

30 The precious or semi-precious material or collectible or member may be provided in or on the mouth or neck portion of the container.

The mouth or neck portion may be cylindrical, e.g. on an inside and/or outside thereof.

The precious or semi-precious material or collectible may comprise an annular member.

The annular member may comprise a substantially circular inner and/or outer periphery, surface, edge or profile. For example, the annular member may comprise a ring.

5 The annular member may comprise a substantially oval inner and/or outer periphery, surface, edge or profile. The annular member may comprise a substantially polygonal inner and/or outer periphery, surface, edge or profile (e.g. square, triangular, octagonal, or the like). The precious or semi-precious material or collectible may be made from a conventional precious or semi precious material such as a precious or semi-precious stone or gem or a precious metal, such as gold, silver, platinum or the
10 like, or alloys, mixtures or other derivatives thereof; and/or a semi-precious metal such as brass, pewter, steel, nickel or the like, or alloys, mixtures or other derivatives thereof.

The precious or semi-precious collectible may be made from a non-conventional precious or semi-precious material, such as a plastic. The precious or
15 semi-precious collectible may derive its value or preciousness from a non-material aspect. For example, the collectible may comprise a limited edition, such as a limited edition form, colour or the like.

The precious or semi-precious material or collectible may represent a substantial value relative to the container or the rest of the container or the other
20 materials of the container.

The precious or semi-precious material or collectible may be made from or comprised in a plastic or polymer (e.g. included as an additive to a master batch, such as for the production of plastic articles or artefacts, for example containers of PET or the like).

25 The precious or semi-precious material or collectible or member may comprise or be attached or operatively associated with a diaphragm, membrane or seal.

The closure assembly or device may be pre-assembled prior to installation or mounting of the closure assembly or device on or to the container. The closure assembly or device may be substantially fully pre-assembled. The pre-assembly may
30 include the semi-precious component or member or collectible and/or the diaphragm or seal.

The closure assembly or device may be installed or mounted in or on or to the container substantially as a single unit. The closure assembly or device may be substantially fully installed or mounted in or on or to the container substantially
35 together. The closure assembly or device may be installed or mounted in or on or to

the container substantially in a single step. The closure assembly or device may be installed or mounted in or on or to the container to seal the container or at least synchronous with at least partially sealing the container.

Alternatively, the closure assembly or device may be assembled subsequent to installation or mounting of at least a portion of the closure assembly or device in or on or to the container. For example, the semi-precious component or member or collectible and/or the diaphragm or seal may be installed or mounted in or on or to the container prior or after the installation or mounting of one or more other portion/s of the closure assembly or device.

According to a third aspect of the present invention there is provided a closure assembly or device configured to be applied to a mouth or neck portion of a container, such as a container for liquid, the assembly or device comprising a precious or semi-precious material or collectible.

The precious or semi-precious material or collectible may be configured to be attached to the container such that removal or detachment of the precious or semi-precious material or collectible from the container would substantially prevent reuse of the container.

The precious or semi-precious material or collectible may be non-detachably attached to the container. The precious or semi-precious material or collectible may be substantially permanently adhered to the container. The precious or semi-precious material or collectible may be welded or fused to the container.

According to a fourth aspect of the present invention there is provided a precious or semi-precious component or member adapted for use in or on the container of the second aspect and/or the closure assembly or device of the first and/or third aspect/s of the present invention.

The precious or semi-precious component or member may be configured to be provided in or on the mouth or neck portion of the container. The precious or semi-precious component or member may be configured to be attached to the container such that the precious or semi-precious component or member is only removable or detachable from the container by damaging the container such that the container becomes substantially non-reusable.

The precious or semi-precious component or member may be configured to be non-detachably attached to the container. The precious or semi-precious component or member may be configured to be substantially permanently adhered to the container.

The precious or semi-precious component or member may be configured to be welded or fused to the container.

The precious or semi-precious component or member may comprise a ring or disc, e.g. provided in or on a neck or mouth portion of a container.

5 The precious or semi-precious component or member may comprise a frangible diaphragm, e.g. configured to be broken on initial opening.

According to a fifth aspect of the present invention there is provided a container, such as a container for liquid, comprising a body or component or member comprising a collectible.

10 The collectible may be configured to provide the container after initial opening or use with a higher recovery or recycling value than a reuse value. In this way counterfeiting using an original container may be mitigated against.

15 The collectible may be attached or fixed to the container such that removal or detachment of the collectible from the container would substantially prevent reuse of the container.

The collectible may be non-detachably attached or fixed to the container. The collectible may be substantially permanently adhered to the container. The collectible may be welded or fused or glued to the container.

The container may comprise a neck or mouth portion.

20 The container may comprise a bottle, such as a glass bottle, such as for spirits or liquor.

The collectible may be provided in or on the mouth or neck portion of the container.

25 The mouth or neck portion may be cylindrical, e.g. on an inside and/or outside thereof.

The collectible may comprise a ring or annular member.

30 The collectible may comprise a precious or semi-precious material. The collectible may be made from a conventional precious or semi precious material such as a precious or semi-precious stone or gem or a precious metal, such as gold, silver, platinum or the like, or alloys, mixtures or other derivatives thereof; and/or a semi-precious metal such as brass, pewter, steel, nickel or the like, or alloys, mixtures or other derivatives thereof.

The collectible may be made from a non-conventional precious or semi-precious material, such as a plastic. For example, the non-conventional precious or

semi-precious material may comprise a substantial relative recycling value and/or re-use value such as when separate/d from the container.

5 The collectible may derive its value or preciousness from a non-material aspect. For example, the collectible may comprise a limited edition, such as a limited edition form, colour or the like.

The collectible may represent a substantial value relative to the container or the rest of the container or the other materials of the container.

10 The collectible may comprise or consist of or be made from a substantially non-valuable or non-precious material. The collectible may be made from or comprised in a plastic or polymer (e.g. included as an additive to a master batch, such as for the production of plastic articles or artefacts, for example containers of PET or the like).

The collectible may comprise or be attached or operatively associated with a diaphragm or seal.

15 According to a sixth aspect of the present invention there is provided a closure assembly or device configured to be applied to a mouth or neck portion of a container, such as a container for liquid, the assembly or device comprising a collectible.

The collectible may be configured to be attached to the container such that removal or detachment of the collectible from the container would substantially prevent reuse of the container.

20 The collectible may be non-detachably attached to the container. The collectible may be substantially permanently adhered to the container. The collectible may be welded or fused to the container.

25 According to a seventh aspect of the present invention there is provided a collectible adapted for use in or on the container of the second and/or fifth aspect and/or closure assembly or device of the first and/or third and/or sixth aspect of the present invention.

30 The collectible may be configured to be provided in or on the mouth or neck portion of the container. The collectible may be configured to be attached to and/or comprised in the container such that the collectible is only detachable from the container by damaging the container such that the container becomes substantially non-reusable.

35 The collectible may be configured to be non-detachably attached to the container. The collectible may be configured to be substantially permanently adhered to the container. The collectible may be configured to be welded or fused to the container.

The collectible may comprise a ring or disc, e.g. provided in or on a neck or mouth portion of a container.

The collectible may comprise a frangible diaphragm, e.g. configured to be broken on initial opening.

5 The collectible may comprise a precious or semi-precious material.

According to an eighth aspect of the present invention there is provided a closure assembly or device configured to be applied to a mouth or neck portion of a container, such as a container for liquid.

10 The assembly or device comprising a first body portion may be configured to rotate or be rotatable in a first direction during an initial or first phase or step of opening and to rotate or be rotatable in a second or opposite direction during a subsequent or second phase or step of opening.

The opening may comprise an initial or first opening of the container.

15 The first body portion may be axially movable relative to a second body portion and/or the container for initial opening of the closure assembly or device or container.

The initial or first phase or step and/or the subsequent or second phase or step of opening may comprise axial movement of the first body portion relative to the container and/or the second body portion for initially opening the container or device or closure assembly. The initial or first phase or step of opening may comprise a first axial
20 movement. The subsequent or second phase or step of opening may comprise a second or further axial movement.

The subsequent or second phase or step may comprise axial movement and/or rotational movement of the first body portion and the second body portion relative to the container, such as a linked, combined, unitary or synchronous axial and/or
25 rotational movement of the first and second body portions.

The axial movement/s of the first body portion relative to the container and/or the second body portion for initially opening the assembly or device or container may be in a same first axial direction. The axial movement/s of the first body portion relative to the container and/or the second body portion for initially opening the assembly or
30 device or container may be towards the container.

The second body portion may be axially closer to the container, in use, than the first body portion. The container may define a first axial direction from the mouth or neck portion towards a base or main body or chamber of the container. The container may define a second axial direction from the base or main body or chamber of the
35 container towards the mouth or neck portion. The second body portion may be axially

closer to the base or main body or chamber of the container, in use, than the first body portion.

5 The closure assembly or device may be configured for removal or at least partial removal from the mouth or neck portion of a container following the second phase or step of opening. The first and/or second body portion/s may be removable from the mouth or neck portion of the container in the second axial direction following the second phase or step of opening. The second axial direction may be substantially opposite to the first axial direction.

10 The closure assembly or device may comprise a separable connection for at least partially separating at least a portion or a substantial portion of the closure assembly or device from the container. The separable connection may comprise a frangible connection portion. The separable connection may be internally located, disposed or positioned. For example, the separable connection may be shielded, protected or obscured from access, view or contact, such as shielded, protected or obscured by a portion of the closure assembly or device and/or a portion of the container. The separable connection may be located in an intended passage or flowpath of a content of the container. The separable connection may be located in or within the neck or mouth portion of the container and/or in or within an adjacent neck or mouth portion of the closure assembly or device. The closure assembly or device may be configured to separate the separable connection during the subsequent or second phase or step of initially opening the container.

According to a ninth aspect of the present invention there is provided a method of opening a container, such as a container for liquid.

The method may comprise:

25 applying a force to a first body portion of a closure assembly or device axially towards the container and/or a second body portion and rotating the first body portion in a first direction relative to the container and/or the second body portion to advance the first body portion towards the container and/or the second body portion; and

30 applying a force to the first body portion of the closure assembly or device axially towards the container and/or the second body portion and rotating the first body portion in a second direction relative to the container and/or the second body portion to advance the first body portion towards the container and/or the second body portion.

The method may comprise advancing the first body portion axially towards the container and/or the second body portion.

The method may comprise rotating the first body portion in the first direction during a first or initial phase or step of opening. The method may comprise rotating the first body portion in the second direction during a subsequent or second phase or step of opening.

5 The method may comprise at least partially removing at least a portion of the first body portion from the mouth or neck portion of the container. The method may comprise at least partially removing at least a portion of the first body portion axially from the mouth or neck portion of the container. The method may comprise at least partially removing at least a portion of the first body portion axially away from the mouth
10 or neck portion of the container, such as in a substantially opposite direction to the advancement during the first or initial phase or step and/or the subsequent or second phase or step of opening.

 The method may comprise reclosing the container with a substantially new or different closure assembly or device, or at least with a substantially different or new first
15 body portion.

 According to a tenth aspect of the present invention there is provided a closure assembly or device configured to be applied to a mouth or neck portion of a container, such as a container for liquid.

 The assembly or device may be reconfigurable from a first configuration
20 corresponding to a closed container configuration to a second configuration corresponding to an open container configuration; and wherein the assembly or device is not reconfigurable from the second configuration to the first configuration.

 The closure assembly or device may be unsuitable for reclosure. Reclosure may comprise resealing.

25 At least a portion of the closure assembly or device may be configured to be applied in or within the mouth or neck portion of the container.

 The assembly or device may be configured to be removed or at least partially removed from the mouth or neck portion of the container substantially without the aid of a tool. The assembly or device may be configured to be manually opened or removed
30 or at least partially removed from the mouth or neck portion of the container.

 The second configuration may comprise a predetermined configuration or form or arrangement.

 The assembly or device may be configured to be at least partially removed but not re-applied or re-inserted, such as not fixably and/or sealingly re-inserted or re-
35 applied.

The first configuration may comprise an extended configuration or longitudinally extended configuration.

The second configuration may comprise a shortened or compressed configuration or longitudinally compressed configuration.

5 The first configuration may correspond to a substantially open assembly or device configuration.

The second configuration may correspond to a substantially closed assembly or device configuration.

10 The assembly or device may comprise at least two relatively movable portions, elements or members. The relatively movable portions may comprise the first and/or second body portions.

15 The assembly or device may comprise a locking member or means to prevent reconfiguration from the second configuration to the first configuration. The locking member or means may comprise at least one of: a dog; and/or a latch; and/or an inter-engaging coupling arrangement such as a bayonet fitting; and/or a key such as a brough key; or the like.

20 The assembly or device may be configured to prevent reuse of a screwthread in the second configuration. The screwthread may be configured to at least assist in reconfiguring the assembly or device from the first configuration to the second configuration.

There may be a plurality of screwthreads. For example, there may be a plurality of left-hand and/or right-hand screwthreads.

25 The assembly or device may be reconfigurable from the first configuration to the second configuration by moving a first body portion from a first position relative to the container and/or a second body portion to a second position relative to the container and/or a second body portion. The assembly or device may be configured to be axially translated and/or rotated in a first and optionally a second rotational direction to move from the first position to the second position.

30 The assembly or device may be configured to be rotated in a first rotational direction and axially translated in a first axial direction during an initial or first phase or stage of opening such that a first distance or space or separation is substantially reduced. The assembly or device may be configured to be rotated in a second rotational direction and axially translated in the first axial direction during a subsequent or second phase or stage of opening such that a second distance or space or separation is substantially reduced.

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The assembly or device may comprise a first screwthread or a first engagement element for engaging a first screwthread for screwing in the first rotational direction such as during the initial or first phase or stage of opening. The assembly or device may comprise a second screwthread or a second engagement element for engaging a second screwthread for screwing in the second rotational direction or during the subsequent or second phase or stage of opening. The first and/or second engagement element/s may comprise one or more projection/s and/or recesses (e.g. a pin/s and/or slot/s). The first engagement element may comprise the second engagement element. For example, the one or more projection/s and/or recesses may be suitable for and/or configured to engage the first and second screwthreads.

The assembly or device may comprise the screwthread/s and/or the engagement element/s. The screwthread/s and/or the engagement element/s may be removable or at least partially removable with the assembly or device.

The first and/or second distance or space or separation may comprise at least a portion of a separation or distance or space between the first body portion and the container and/or the second body portion.

The first and/or second distance or space or separation may comprise at least a portion of a separation or distance or space between the second body portion and the container and/or the first body portion.

The first and/or second distance or space or separation may comprise at least a portion of a separation or distance or space defined by the tamper-evidence member, such as defined by the tamper-evidence member prior to tampering and/or at least partial removal of the tamper-evidence member.

According to an eleventh aspect of the present invention there is provided a container comprising a closure assembly or device and/or precious or semi-precious component or member and/or collectible of any other aspect.

Preferably there is provided a further closure means. For example, there may be provided a stopper, lid or top (e.g. a cork) for subsequent closure of the container, following initial opening of the container. The further closure means may be provided for use after removal of the closure assembly or device (e.g. following initial opening with the closure assembly or device). Reconfiguration of the closure assembly or device and/or container from a first or initial configuration (e.g. prior to initial opening) to a second or subsequent configuration (e.g. during or subsequent to initial opening) may render the closure assembly or device unsuitable for reclosure and/or the container unsuitable for reclosure by the closure assembly or device.

According to a twelfth aspect of the present invention there is provided a method of installing or mounting a closure assembly or device in or on or to a container, such as a container for liquid.

5 The method may comprise pre-assembling the closure assembly or device prior to installation or mounting of the closure assembly or device in or on or to the container.

10 The method may comprise mounting or installing a first portion of the closure assembly to the container in order to seal the container, such as after the container has been filled. It will be appreciated that filling the container may comprise partially filling the container in so far as the entire volume of the container may not necessarily be occupied subsequent to filling (e.g. where the container is filled with a liquid, a portion of the container may be left unoccupied by liquid, such as to allow a gas portion to accommodate some pressure variation in the liquid and/or filling tolerances without wastage. The container may be filled (e.g. with a liquid) and then sealed closed with
15 the first portion of the closure assembly. The mounting or installation of the first portion of the closure assembly may comprise a first mounting or installation method. The first mounting or installation method may comprise a method compatible with the contents of the container. For example, where the container is filled with a foodstuff, the mounting or installation method of the first portion of the closure assembly may
20 comprise an approved method, such as with a food grade bonding adhesive or the like.

The method may comprise substantially fully pre-assembling the closure assembly or device. Substantially pre-assembling the closure assembly or device may include assembling a semi-precious component or member or collectible and/or a diaphragm or seal in or on or to the closure assembly or device.

25 The method may comprise installing or mounting the closure assembly or device in or on or to the container substantially as a single unit. The method may comprise substantially fully installing or mounting the closure assembly or device in or on or to the container substantially together. The method may comprise installing or mounting the closure assembly or device in or on or to the container substantially in a
30 single step. The method may comprise installing or mounting the closure assembly or device in or on or to the container to seal the container or at least synchronous with at least partially sealing the container.

Alternatively, the method may comprise assembling, such as fully assembling, the closure assembly or device subsequent to installation or mounting of at least a
35 portion of the closure assembly or device in or on or to the container. For example, the

method may comprise installing or mounting the semi-precious component or member or collectible and/or the diaphragm or seal in or on or to the container prior to or after the installation or mounting of one or more other portion/s of the closure assembly or device in or on or to the container.

5 According to a thirteenth aspect of the present invention there is provided a diaphragm, seal or membrane and/or a diaphragm support member for a diaphragm, seal or membrane for mounting in on or on a container, such as a container for liquid.

10 The diaphragm, seal or membrane and/or the diaphragm support member for a diaphragm, seal or membrane may be configured for mounting in or on a mouth or neck portion of a container. For example, the diaphragm, seal or membrane and/or the diaphragm support member for a diaphragm, seal or membrane may be configured to be mounted within a neck or mouth portion of a container.

 The diaphragm, seal or membrane may comprise a frangible diaphragm, such as configured to be broken on initial opening.

15 The diaphragm support may comprise a precious or semi-precious material or collectible.

 The diaphragm support may comprise an annular member, such as a ring, ovular annular or rectangular annular member.

20 The diaphragm support member and/or the diaphragm, membrane or seal may be configured to be spaced from an opening or outlet of the container and/or the closure. The diaphragm support member and/or the diaphragm, membrane or seal may comprise an insert/s positionable at least partially inserted into a mouth or neck portion of a container.

25 The diaphragm support member and/or the diaphragm, seal or membrane may be configured to be mounted within a fluid passage or throughbore of a container neck or mouth portion. The diaphragm support member and the diaphragm, seal or membrane may be configured to be mounted flush within a fluid passage or throughbore of a container neck or mouth portion. The diaphragm support member and the diaphragm, seal or membrane may be configured to be mounted within a recess in
30 the passage or throughbore of a container neck or mouth portion. The diaphragm support member and the diaphragm, seal or membrane may be configured to be mounted upstream of a fluid outlet or exit from the container and/or a closure. The diaphragm support member and the diaphragm, seal or membrane may be configured to be mounted axially displaced from a container outlet or exit from the container and/or

a closure. The axial displacement may be towards a base or main body or chamber of the container, such as a fluid-containing body.

5 The diaphragm support member and/or the diaphragm, seal or membrane may be substantially non-detachably attached to or adhered to or integrated into the container.

10 The diaphragm support member and the diaphragm, seal or membrane may be pre-assembled prior to mounting in or on the container. The diaphragm support member and the diaphragm, seal or membrane may be configured to be mounted together in or on the container substantially as an integral unit, device. The diaphragm support member and the diaphragm, seal or membrane may be configured to be mounted together in or on the container to seal the container.

15 According to a fourteenth aspect of the present invention there is provided a container, such as a glass container for fluid. The container may comprise a main body or chamber for containing fluid. The container may comprise a mouth or opening for inserting and/or removing fluid to and/or from the main body or chamber of the container. The container may comprise a neck portion between the mouth or opening and the main body or chamber.

20 The container may comprise a diaphragm, seal or membrane mounted in the neck portion. The diaphragm, seal or membrane may be located at a position between, such as intermediate, the mouth or opening and the main body or chamber of the container. The diaphragm, seal or membrane may be mounted at an intermediate or mid section of the neck portion. The diaphragm, seal or membrane may be mounted spaced from the mouth or opening. The diaphragm, seal or membrane may be mounted distal to the mouth or opening. The diaphragm, seal or membrane may be mounted with a clearance between the diaphragm, seal or membrane and the mouth or opening. The diaphragm, seal or membrane may form part of a closure assembly.

25 The diaphragm, seal or membrane may be separated or spaced from the mouth or opening so as to provide a portion of the neck intermediate the mouth or opening and the diaphragm, seal or membrane for receiving a further closure means. For example, the further closure means may comprise a stopper, lid or top (e.g. a cork) for subsequent closure or sealing of the container, following initial opening of the container by breaking the diaphragm, seal or membrane. Spacing the diaphragm, seal or membrane from the mouth or opening may allow the further closure means to be located at on or in the mouth or opening of the container, such as allowing positioning without a possibility of contacting or interfering with the diaphragm, seal or membrane.

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The further closure means may form an additional sealing or closure prior to initial opening. The further closure means may be at least partially positioned or positionable at, on or in the mouth or opening prior to opening or breaking the diaphragm, seal or membrane.

5 The diaphragm, seal or membrane may be separated or spaced from the mouth or opening so as to impede access to the diaphragm, seal or membrane. For example, spacing the diaphragm, seal or membrane from the mouth or opening may impede removal and/or replacement of the diaphragm, seal or membrane such as for or during tampering or other undesired activity.

10 The diaphragm, seal or membrane may be mounted spaced from the mouth or opening so as to impede access to the diaphragm, seal or membrane. The mouth or opening may define a restriction or limited aperture, such that finger access to the diaphragm, seal or membrane may be impeded.

 The diaphragm, seal or membrane may be separated or spaced from the mouth
15 or opening such that the diaphragm, seal or membrane is visible through an unobscured portion of the container, such as visible laterally through a transparent or opaque portion of the container. The diaphragm, seal or membrane may be separated or spaced from the mouth or opening such that the diaphragm, seal or membrane may be visible through a neck portion that is at least partially transparent or translucent. The
20 diaphragm, seal or membrane may be separated or spaced from the mouth or opening such that the diaphragm, seal or membrane may be visible below or adjacent a portion of the container that is not transparent or translucent (e.g. another neck portion) or a portion of the container (e.g. another neck portion) that is at least partially concealed or obscured from view. For example, the spacing may allow visibility of the diaphragm,
25 seal or membrane where the mouth or opening comprises a covering, such as a further closure means and/or additional components of a closure assembly, such as a shrink-wrap, plastic wrapping, wax, metal (e.g. tin or lead) capsule or the like. The neck may comprise upper and lower opaque or obscured portions, spaced by a transparent or translucent portion or window and at least the seal, membrane or diaphragm and/or the
30 support member may be provided in the transparent or translucent portion or window.

 The diaphragm, seal or membrane may be separated or spaced from the mouth or opening of the container so as to provide an apparently floating diaphragm, seal or membrane.

 The diaphragm, seal or membrane and/or the support member for a/the
35 diaphragm, seal or membrane may comprise a precious or semi-precious material or

collectible and/or a metallic material, such as a food grade metallic material. For example, the support member may comprise a food grade stainless steel. The diaphragm, seal or membrane may comprise a food grade plastic and/or metallic material. For example, the diaphragm, seal or membrane may comprise a polyethylene, such as a polyethylene coated substrate (e.g. a foil, sheet or the like).

The diaphragm, seal or membrane may be non-removably mounted in the neck portion.

The neck portion may comprise a section of reduced thickness along a length of the neck between the opening or mouth and the main body or chamber. The section of reduced thickness may be located at an intermediate position along the length of the neck portion between the opening or mouth and the main body or chamber. The section of reduced thickness may correspond to the mounting position of the diaphragm, seal or membrane.

The section of reduced thickness may comprise a step change in thickness from the adjacent section of the neck portion. The section of reduced thickness may comprise a step change in reduced thickness from two adjacent sections of the neck portion (i.e. an adjacent section of the neck portion on each side of the reduced thickness portion, one side being axially closer to the body of the container than the other side).

The section of reduced thickness may be defined by a recess. The recess may comprise an annular recess. The recess may comprise an internal recess. The recess may comprise an external recess. The recess may comprise a groove.

The recess may be configured to receive a member. The member received in the recess may comprise a substantially rigid member. The member may comprise a rigid member. The member may be mounted in the recess such that it is not removable from the neck portion. The member may comprise a ring or disc. The member may comprise a tamper-evidence member and/or a collectible and/or a precious or semi-precious material.

The member may comprise an internal member, such as an internally-mounted member. The internally-mounted member may comprise a greater outer profile than a container inner profile of the container. The outer profile of the member may be greater in that it defines a cross-sectional dimension greater than a cross-sectional dimension of the container, the cross-sections being perpendicular to a longitudinal axis of the neck portion of the container. The outer profile of the member may comprise an outer diameter. The inner profile of the container may comprise an inner diameter. The inner

profile of the container may be defined by an adjacent section of the neck portion. The container may comprise a plurality of inner profiles that define a lesser profile than the member. The member may comprise an external member, such as an externally-mounted member. The member may comprise a collar or sleeve.

5 Providing such a neck portion may allow the inclusion of a substantially rigid or rigid member that may otherwise not be possible or at least difficult to mount, particularly in a rigid or substantially rigid container, such as a glass container. For example, it may not otherwise be possible to insert a rigid member of greater profile into or through a mouth or opening or neck portion of lesser profile in order to locate
10 the rigid member at an intermediate portion of the neck. Likewise, where a neck portion or a mouth or opening comprises a greater external profile, such as an outwardly-extending flange, it may not otherwise be possible to mount a rigid member of lesser profile over a mouth or opening or neck portion of greater profile in order to locate the rigid member at an intermediate portion of the neck.

15 The member may be mounted prior to the formation or mounting or attachment of a portion of the container, the portion of the container to be mounted or attached at least partially defining the mouth or opening. The member may comprise or be comprised in a first portion of the closure assembly or device. The portion of the container to be mounted or attached may comprise or be comprised in a second
20 portion of the closure assembly or device. At least a part of the member may be sandwiched between two portions of the container. At least a part of the member may be axially sandwiched between two portions of the container, such as two adjacent wall portions of a glass container

 The internally-mounted member may comprise a support member for a/the
25 diaphragm, seal or membrane. The support member for a/the diaphragm, seal or membrane may comprise a grommet, eyelet, ring or the like.

 The support member for a/the diaphragm, seal or membrane may comprise an upper aperture or opening configured to be more distal to the body of the container than a lower aperture or opening that is configured to be more proximal to the body of
30 the container. The upper aperture may be smaller than the lower aperture, such as of smaller diameter. The upper aperture may be defined by an upper annular portion of the support member for a/the diaphragm, seal or membrane. The seal, membrane or diaphragm may be mounted to an underside of the upper annular portion of the support member for a/the diaphragm, seal or membrane. The seal, membrane or diaphragm
35 may be mounted, attached or formed with the support member for a/the diaphragm,

seal or membrane such that the seal, membrane or diaphragm is non-removable from the support for the seal, membrane or diaphragm when mounted in the container.

5 The support for the seal, membrane or diaphragm may be mounted to the container such that the seal or diaphragm is visible at least beneath the support member for a/the diaphragm, seal or membrane when mounted in the container. For example, where the support member for a/the diaphragm, seal or membrane is not transparent or opaque, the support member for a/the diaphragm, seal or membrane may be dimensioned so as to allow a portion of the seal or diaphragm to be visible adjacent the support member for a/the diaphragm, seal or membrane in the direction of
10 the body of the container. Accordingly, the seal or diaphragm may be visible at least when opened, ruptured or broken such as to allow an indication of previous opening or tampering. Positioning the seal or diaphragm on the body side of the support member for a/the diaphragm, seal or membrane may impede the removal of the seal or diaphragm through the mouth or opening of the container and/or impede the
15 replacement of the seal or diaphragm with a replacement or counterfeit seal or diaphragm inserted through the mouth or opening of the container.

The container may comprise a plurality of members. The container may comprise an internally-mounted member and an externally-mounted member. The container may comprise a plurality of internally-mounted members. The container may
20 comprise a plurality of externally-mounted members.

According to a fifteenth aspect of the present invention there is provided a method of sealing a container, such as a glass container (e.g. a glass bottle for an alcoholic beverage, such as premium spirit, liquor, whiskey or Scotch whisky or the like).

25 The method may comprise locating the diaphragm, seal or membrane at a position between, such as intermediate, the mouth or opening and the main body or chamber of the container. The method may comprise mounting a seal or diaphragm at an intermediate position in a neck portion of the container.

The method may comprise mounting or installing a first portion of the closure
30 assembly to the container in order to seal the container, such as after the container has been filled. It will be appreciated that filling the container may comprise partially filling the container in so far as the entire volume of the container may not necessarily be occupied subsequent to filling (e.g. where the container is filled with a liquid, a portion of the container may be left unoccupied by liquid, such as to allow a gas portion to
35 accommodate some pressure variation in the liquid and/or filling tolerances without

wastage. The first portion of the closure assembly may comprise the seal or diaphragm for sealing the container. The first portion of the container may comprise a support member for a/the diaphragm, seal or membrane. The container may be filled (e.g. with a liquid) and then sealed closed with the first portion of the closure assembly. The mounting or installation of the first portion of the closure assembly may comprise a first mounting or installation method. The first mounting or installation method may comprise a method compatible with the contents of the container. For example, where the container is filled with a foodstuff, the mounting or installation method of the first portion of the closure assembly may comprise an approved method, such as with a food grade bonding adhesive or the like.

The method may comprise joining similar materials. For example, the second portion of the closure assembly may comprise a similar material to the container. For example, where the container is a glass container, the second portion may comprise a glass portion. The second portion may comprise a portion that is integrated with or mounted or installed to the container so as to form a substantially continuous or homogenous container.

The second portion may be for protecting or reinforcing the first portion. The second portion may substantially prevent access to and optionally prevent removal of the first portion from the container.

The method may comprise assembling an external member onto the container prior to integrating, mounting or installing the second portion of the closure assembly onto the container. The closure assembly may comprise the external member, such as a sleeve or collar or decorative member, for concealing the join or seam between the container and the second portion of the closure assembly. The external member may be assembled such that the external member is not removable from the container following the integration, mounting or installation of the second portion of the closure assembly. The second portion of the closure assembly may comprise a greater outer profile section, such as a widening, external protrusion or flange such that the external member is not removable and/or insertable onto the neck portion following the integration, mounting or installation of the second portion of the closure assembly. For example, it may only be possible to assemble the external member onto the container prior to the integration, mounting or installation of the second portion of the closure assembly.

The method may comprise axially translating, such as sliding, the external member along the neck portion following integration, mounting or installation of the

second portion of the closure assembly to the container. The external member may be axially translated along the neck portion to cover at least a portion of the join or seam between the second portion of the closure assembly and the container.

5 The method may comprise fixing the external member to the neck portion following translation of the external member to conceal or cover the at least a portion of the join or seam between the second portion of the closure assembly and the container.

10 The method may comprise assembling a plurality of external members prior to the integration, mounting or installation of the second portion of the closure assembly to the container. For example, upper and lower external collars may be assembled, such as for covering or concealing upper and lower seams or joins. For example, the second portion of the closure assembly may be formed with a join or seam, of which it is also desirable to conceal.

15 The method may comprise integrating, mounting or installing the second portion of the closure assembly to the container such that the second portion of the closure assembly is not removable from the container. The method may comprise bonding, adhering or welding the second portion of the closure assembly to the container. The container may be sealed by the first portion of the closure assembly such that the second portion of the closure assembly may be integrated, mounted or installed with an
20 alternative method to the first portion of the closure assembly. For example, where the container is filled with a foodstuff and the container is sealed by an approved foodgrade method of attaching the first portion of the closure assembly, the second portion of the closure assembly may be integrated, mounted or installed using a non-approved method. The method may comprise ultraviolet bonding a glass second portion of the
25 closure assembly to a glass container.

The method may comprise providing an annular bond or join between the second portion of the closure assembly and the container over an axial length of the neck portion. The second portion of the closure assembly may comprise an outer sleeve portion for mounting over a neck portion of the container of smaller diameter to
30 which the first portion of the closure assembly has been mounted.

According to a sixteenth aspect of the present invention, there is provided a method of opening a container, such as a container for liquid.

The method may comprise opening a glass container, such as a glass bottle for premium spirit, such as Scotch whisky.

The method may comprise breaking, rupturing or perforating a diaphragm, seal or membrane located at a position between, such as intermediate, a mouth or opening of the container and a main body or chamber of the container. The method may comprise breaking, rupturing or perforating the diaphragm, seal or membrane at an intermediate position in a neck portion of the container.

The method may comprise the non-removal of the diaphragm, seal or membrane from the neck portion.

The method may comprise breaking, rupturing or perforating the diaphragm, seal or membrane with an elongate member. The elongate member may be disparate from the container, such as separately supplied and/or packaged. The elongate member may comprise a handle and a blade. The elongate member may comprise a ceremonial elongate member, such as a sgian dubh, knife, dagger or the like. The elongate member may comprise a collectible or precious or semi-precious material. The method may further comprise a preceding step of removing a further closure means, such as a cork or stopper, from the mouth or opening of the container prior to the breaking, rupturing or perforating of the diaphragm, seal or membrane with the elongate member.

The method may further comprise a succeeding step of applying a/the further closure means, such as a cork or stopper, to the mouth or opening after the breaking, rupturing or perforating of the diaphragm, seal or membrane with the elongate member, such as to re-close or re-seal the container.

According to a seventeenth aspect of the present invention there is provided a kit comprising a container and a closure assembly and/or a seal, diaphragm or membrane and/or a semi-precious, precious or collectible member according to any other aspect and an elongate member for breaking the seal, diaphragm or membrane to open the container.

The elongate member may be provided in the kit disparate from the container. The elongate member may be disconnected from the container.

The kit may comprise a further closure means, the further closure means being in addition to the seal. The further closure means may be at least partially located within the mouth or opening of the container, such as in the kit prior to breaking the seal. The further closure means may be fully located within the mouth or opening of the container, such as in the kit prior to breaking the seal. Alternatively, the additional seal means may be located in the kit separately from the container.

The kit may comprise packaging. The packaging may comprise a box, such as a presentation box. The kit may be housed in the packaging, such as for storage and/or transportation and/or display and/or sale.

According to an eighteenth aspect of the present invention there is provided a
5 closure assembly for sealing a glass container, such as a glass bottle for an alcoholic beverage (e.g. comprising spirits or liquor, such as premium spirit, liquor, whiskey or Scotch whisky or the like). The closure assembly may comprise a first portion for sealing the container closed. The closure assembly may comprise a second portion for protecting or reinforcing the first portion. The second portion may substantially prevent
10 access to and optionally prevent removal of the first portion from the container. The second portion may comprise a glass portion that is integrated with or mounted or installed to the glass container so as to form a substantially continuous or homogenous glass container. The second portion of the closure assembly may comprise an outer sleeve portion for mounting over a neck portion of the container of smaller diameter to
15 which the first portion of the closure assembly has been mounted.

The second portion of the closure assembly may define a part of the glass neck of the container. The second portion of the closure assembly may define the glass mouth or opening of the container.

The closure assembly may comprise a sleeve or collar or decorative member
20 for concealing the join between the glass container and the second portion of the closure assembly.

According to a twentieth aspect of the present invention there is provided a method of manufacturing a glass container, such as a glass bottle for an alcoholic beverage (e.g. comprising spirits or liquor, such as premium spirit, liquor, whiskey or
25 Scotch whisky or the like). The method may comprise providing a recessed portion of a neck, mouth or opening of the glass container. The recessed portion may be provided at an intermediate section of a neck portion of the container. The recessed portion may comprise a portion of reduced thickness of glass. The recessed portion may comprise a reduced thickness of glass such that an external surface of the container remains
30 substantially flush. For example, the recessed portion may comprise an internal groove.

The method may comprise mounting a glass sleeve to form a part of a neck portion and mouth or opening of the glass container. The glass sleeve may comprise a step change in inner diameter such that the method may comprise mounting the glass
35 sleeve to define an inner annular recess in the neck portion between the part of the

glass container to which the glass sleeve is attached and the glass sleeve. A lower portion of the glass sleeve may be of greater inner diameter relative to an upper portion of the glass sleeve to define the step change in inner diameter. The method may comprise mounting the lower portion of the glass sleeve over a part of the container with an outer diameter less than the diameter of the lower portion. The method may comprise inserting the lower portion over said part of the container axially for a defined length of translation, the defined length of translation being less than the physical length of the lower portion. Accordingly, the method may comprise the step change in inner diameter between the upper and lower portions of the glass sleeve abutting such that the annular recess is defined between said part of the container and the upper portion of the glass sleeve.

The method may comprise providing the container with a neck portion and mouth or opening by the insertion of the glass sleeve. The glass sleeve to be mounted may comprise a flange, such as an externally-protruding lip or the like. The flange may comprise an upper portion of the sleeve, such as distally-located from the main body of the container. The flange may comprise or constitute a reinforcement of an inner sleeve portion of the container.

The method may comprise a UV bonding the glass sleeve to the container. The method may comprise lap-joining. The method may comprise butt-joining.

The method may comprise predimensioning said part of the container for receiving the sleeve. For example, the method may comprise cutting or milling or grinding a neck part of the container, such as to define a lower inner sleeve portion of the neck of the container, the lower inner sleeve of the neck of the container for receiving the glass sleeve to define the remainder of the neck portion.

The method may comprise mounting, positioning or installing a member in or at the recessed portion prior to the installation or mounting of the sleeve portion.

The invention includes one or more corresponding aspects, embodiments or features in isolation or in various combinations whether or not specifically stated (including claimed) in that combination or in isolation. For example, it will readily be appreciated that features recited as optional with respect to the first aspect may be additionally applicable with respect to the other aspects without the need to explicitly and unnecessarily list those various combinations and permutations here.

In addition, corresponding means for performing one or more of the discussed functions are also within the present disclosure.

It will be appreciated that one or more embodiments/aspects may be useful in sealing or opening a closure or container.

The above summary is intended to be merely exemplary and non-limiting.

As used herein, the term “comprise” is intended to include at least: “consist of”; “consist essentially of”; “include”; and “be”. For example, it will be appreciated that where the device may “comprise a first body portion”, the device may “include a first body portion” (and optionally other element/s); the device “may be a first body portion”; or the device may “consist of a first body portion”; etc. For brevity and clarity not all of the permutations of each recitation of “comprise” have been specifically stated.

BRIEF DESCRIPTION OF DRAWINGS

These and other aspects of the present invention will now be described, by way of example only, and with reference to the accompanying drawings, which are:

- 15 **Figure 1** a cross-sectional side view of a closure assembly or device according to a first embodiment of the invention in an initial, first or closed configuration in use on a container;
- Figure 2** an exploded side view of the closure assembly or device of Figure 1;
- Figure 3** a cross-sectional side view of the closure assembly or device of Figure 1 with a first body portion in a first intermediate position;
- 20 **Figure 4** a cross-sectional side view of the closure assembly or device of Figure 1 with the first body portion in a second intermediate position; and
- Figure 5** a cross-sectional side view of the closure assembly or device of Figure 1 with the first body portion in a third intermediate position;
- 25 **Figure 6** a cross-sectional side view of the closure assembly or device of Figure 1 with the closure assembly or device in a second or open configuration, with the closure assembly or device substantially removed;
- Figure 7** a cross-sectional side view of the closure assembly or device of Figure 1 prior to installation or mounting of the closure assembly or device on or to the container;
- 30 **Figure 8** an arrangement of parts shown in cross-sectional side view for forming a container with a closure assembly or device according to a second embodiment of the invention;
- Figure 9** a cross-sectional exploded assembly of a container with a closure assembly with selected parts of the embodiment of Figure 8;
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- Figure 10** the container and closure assembly of Figure 9, shown with the container filled and a first portion of the closure assembly assembled prior to mounting;
- 5 **Figure 11** the container and closure assembly of Figure 9, shown with the container filled, the first portion of the closure assembly mounted to a part of the container to seal the contents in the container and a second portion of the closure assembly assembled prior to mounting;
- 10 **Figure 12** the container and closure assembly of Figure 9, shown with the container filled and the second portion of the closure assembly mounted to the part of the container so as to form the container with the first portion of the closure assembly integrated therein;
- Figure 13** a second cross-sectional exploded assembly of the container with a closure assembly with selected parts of the embodiment of Figure 8;
- 15 **Figure 14** a cross-sectional view of the container and closure assembly of Figure 13, shown with the container filled and a first portion of the closure assembly mounted to a part of the container to seal the contents in the container and a second portion of the closure assembly and two external collars assembled prior to mounting;
- 20 **Figure 15** a cross-sectional view of the container and closure assembly of Figure 13, shown with the container filled, the first portion of the closure assembly mounted to the part of the container to seal the contents in the container and the second portion of the closure assembly mounted to the part of the container so as to form the container with the first portion of the closure assembly integrated therein and the two collars assembled on a neck portion of the container;
- 25 **Figure 16** a cross-sectional view of the container and closure assembly of Figure 13, shown with the container filled and the second portion of the closure assembly mounted to the container so as to form the container with the first portion of the closure assembly integrated therein and a lower one of the two collars translated down the neck portion for concealing a seam or join between the second portion of the closure assembly and the part of the container;
- 30 **Figure 17** a side view of the container of Figure 16 with a further closure means and the container inverted to show the sealing of the first portion of the closure assembly;
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Figure 18 a detail side view of the closure assembly of Figure 17;

Figure 19 a side view a kit comprising the container of Figure 16 and a further closure means and an elongate member for opening the container housed in a packaging;

5 **Figure 20** a side view of the container of Figure 19 with the elongate member inserted into the mouth to initially open the container;

Figure 21 a cross-sectional view of the opened container of Figure 20 tilted to pour the contents of the container;

10 **Figure 22** a side view of the opened container of Figure 20 shown upright with the further closure means inserted; and

Figure 23 a detail side view of the closure assembly of the container of Figure 22, showing a broken seal or diaphragm of the closure assembly.

DETAILED DESCRIPTION OF DRAWINGS

Referring initially to Figures 1 and 2, there is shown a closure assembly or device 10 according to a first embodiment of the invention. The closure assembly or device 10 is configured to be applied to a mouth or neck portion 12 of a container 14 (partially shown), such as a container 14 for liquid. The assembly or device 10 comprises a first body portion 16. The assembly or device 10 comprises a tamper-evidence member 18 configured to be located in use substantially between the first body portion 16 and the container 14 for liquid. The tamper-evidence member 18 is configured to maintain a position or space of the first body portion 16 relative to the container 14 and/or relative to a second body portion 20 prior to initial opening of the closure assembly or device 10.

By this arrangement the tamper-evidence member 18 acts (prior to removal) as a structural part of the closure assembly or device 10.

The tamper-evidence member 18 comprises a tear-strip. The tamper-evidence member 18 circumferentially extends around at least a portion of the closure assembly or device 10 and the container 14.

In the embodiment shown, the tamper-evidence member 18 is configured to maintain a longitudinal or axial position of the first body portion 16, such as relative to the container 14 and/or the second body portion 20 when a load, such as an axial load, is applied to the first body portion 16.

The tamper-evidence member 18 is configured to at least partially absorb and/or transfer an impact load applied to the first body portion 16. The tamper-evidence member 18 is configured to prevent or seek to prevent movement of the first body

portion 16 relative to the container 14 and/or the second body portion 20 prior to initial opening of the closure assembly or device 10. For example, the tamper-evidence member 18 is configured to prevent or seek to prevent movement of the first body portion 16 towards and/or away from the container 14 and/or the second body portion 20.

The first body portion 16 comprises a first cylindrical member or cap with a first sleeve portion. The second body portion 20 comprises a second cylindrical member or second sleeve portion. The tamper-evidence member 18 comprises a structural member. The tamper-evidence member 18 comprises a substantially stiff member and is configured to provide a stiffness, such as an axial or longitudinal stiffness, to the closure assembly or device 10. The tamper-evidence member 18 comprises an access tab. In the embodiment shown, the tamper-evidence member 18 comprises a ring member spacer; which is frangible and removable in a second configuration in the embodiment shown. In other embodiments the tamper-evidence member may be partially removable in a second configuration (e.g. remain at least partially attached to the closure assembly device and/or container).

The tamper-evidence member 18 is attached to the first and second body portions 16, 20. In the embodiment shown, the tamper evidence member 18 is attached to both the first and second body portions 16, 20 around respective first and second circumferential ends thereof.

In the embodiment shown, the tamper-evidence member 18 comprises a variable strength, variable stiffness, variable cross-sectional area and variable thickness. The tamper-evidence member 18 comprises a variable strength, variable stiffness, variable cross-sectional area and variable thickness along its length (e.g. along a circumferential length), such as about a circumference of the tamper-evidence member 18. In the embodiment shown, the tamper evidence member 18 comprises a thick portion 22 and a thin portion 24.

The tamper-evidence member 18 comprises a single or sole means for positioning or spacing the first body portion 16 relative to the container 12 and/or the second body portion 20 prior to opening.

The closure assembly or device 10 comprises a biasing means 26, such as for biasing the first body portion 16 towards a first configuration. In the embodiment shown, the biasing means 26 comprises a helical or coil spring.

The closure assembly or device 10 comprises a means 28 for cutting, piercing, penetrating, removing or displacing a diaphragm or seal 30.

In the embodiment shown, the closure assembly or device 10 comprises a precious or semi-precious component or member or collectible 32. The precious or semi-precious component or member or collectible 32 is operatively associated with the diaphragm, seal or membrane 30 so as to provide a seal assembly 27.

5 The precious or semi-precious component or member or collectible 32 is configured to provide the container 14 after initial opening or use with a higher recycling value than a reuse value. In this way counterfeiting using an original container 14 is mitigated against.

10 The precious or semi-precious component or member or collectible 32 is configured to be attached to the container 14 such that removal or detachment of the precious or semi-precious component or member or collectible 32 from the container 14 would substantially prevent reuse of the container 14. The precious or semi-precious component or member or collectible 32 is non-detachably attached to the container 14. The precious or semi-precious component or member or collectible 32 is substantially permanently adhered to the container 14. The precious or semi-precious component or member or collectible 32 is welded or fused to the container 14. In other embodiments the precious or semi-precious component or member or collectible 32 is glued to the container 14; or comprises a coating or an insert or an attachment of the container 14 and/or the closure assembly or device 10.

20 The precious or semi-precious component or member or collectible 32 is configured to provide the container 14 after initial opening or use with a higher recycling value than a reuse value. The precious or semi-precious member or component or collectible 32 represents a substantial value relative to the container 14 or the rest of the container 14 or the other materials of the container 14.

25 The precious or semi-precious component or member or collectible 32 is attached to the container 14 such that removal or detachment of the precious or semi-precious component or member or collectible 32 from the container 14 would substantially prevent reuse of the container 14.

30 In the embodiment shown, the container 14 comprises a bottle, which is a glass bottle, such as for an alcoholic beverage (e.g. comprising spirits or liquor, such as premium spirit, liquor, whiskey or Scotch whisky or the like). The precious or semi-precious component or member or collectible 32 is provided in or on the mouth or neck portion 12 of the container 14. The mouth or neck portion 12 is cylindrical, e.g. on an inside and/or outside thereof.

The precious or semi-precious component or member or collectible 32 comprises a ring, disc or annular member. In the embodiment shown, the precious component or member or collectible 32 comprises a gold ring. In other embodiments, the precious or semi-precious component or member or collectible 32 is made from
5 another conventional precious or semi precious material such as a precious or semi-precious stone or gem or a precious metal, such as silver, platinum or the like, or alloys, mixtures or other derivatives thereof; and/or a semi-precious metal such as brass, pewter, steel, nickel or the like, or alloys, mixtures or other derivatives thereof.

In yet other embodiments, the precious or semi-precious component or member
10 or collectible 32 is made from a non-conventional precious or semi-precious material, such as a plastic, such that the precious or semi-precious member or component or collectible 32 derives at least a portion of its value or preciousness from a non-material aspect. For example, the collectible may comprise a limited edition, such as a limited edition form, colour or the like. In some embodiments, the precious or semi-precious
15 member or component or collectible 32 is made from or comprised in a plastic or polymer (e.g. included as an additive to a master batch, such as for the production of plastic articles or artefacts like containers of PET or the like).

In the embodiment shown, the precious or semi-precious component or member or collectible 32 comprises a diaphragm support member. The precious or
20 semi-precious component or member or collectible 32 and the diaphragm or seal 30 are configured to be spaced from an opening or outlet of the container and the closure. The precious or semi-precious component or member or collectible 32 and the diaphragm or seal 30 comprise an insert positionable at least partially inserted into the mouth or neck portion 12 of the container 14; configured to be mounted flush within a
25 fluid passage or throughbore of the container neck or mouth portion 12. The precious or semi-precious component or member or collectible 32 and the diaphragm or seal 30 are configured to be mounted downstream of a fluid outlet or exit from the container 14, axially displaced from the container outlet or exit from the container 14 towards a base or main body or chamber of the container 14.

30 The precious or semi-precious component or member or collectible 32 is attached to the container 14 such that the precious or semi-precious component or member or collectible 32 is only detachable or removable from the container 14 by damaging the container 14 such that the container 14 becomes substantially non-reusable.

The precious or semi-precious component or member or collectible 32 comprises the frangible diaphragm or seal 30, which is configured to be broken on initial opening.

5 The first body portion 16 is configured to rotate or be rotatable in a first direction (e.g. clockwise) during an initial or first phase or step of opening and to rotate or be rotatable in a second or opposite direction (e.g. counter-clockwise) during a subsequent or second phase or step of opening. The opening comprises an initial or first opening of the container 14.

10 The first body portion 16 is axially movable relative to the second body portion 20 and/or the container 14 for initial opening of the closure assembly or device 10 or container 14. The initial or first phase or step and/or the subsequent or second phase or step of opening comprises axial movement of the first body portion 16 relative to the container 14 and/or the second body portion 20 for initially opening the container 14 or device or closure assembly 10. The initial or first phase or step of opening comprises a 15 first axial movement. The subsequent or second phase or step of opening comprises a second or further axial movement.

The axial movement/s of the first body portion 16 relative to the container 14 and/or the second body portion 20 for initially opening the assembly or device 10 or container 14 is in a same first axial direction. The axial movement/s of the first body 20 portion 16 relative to the container 14 and/or the second body portion 20 for initially opening the assembly or device 10 or container 14 is towards the container 14.

The second body portion 20 is axially closer to the container 14, in use, than the first body portion 16. The container 14 defines a first axial direction from the mouth or neck portion 12 towards a base or main body or chamber (not shown) of the container 25 14. The container 14 defines a second axial direction from the base or main body or chamber of the container 14 towards the mouth or neck portion 12. The second body portion 20 is axially closer to the base or main body or chamber of the container 14, in use, than the first body portion 16.

30 In use, the container is opened by applying a force to the first body portion 16 of the closure assembly or device 10 axially towards the container 14 and/or the second body portion 20 and rotating the first body portion 16 in a first direction relative to the container 14 and/or the second body portion 20 to advance the first body portion 16 towards the container 14 and/or the second body portion 20, as shown in the progression from Figure 1 to Figures 3 and 4. Thereafter a force is applied to the first 35 body portion 16 of the closure assembly or device 10 axially towards the container 14

and/or the second body portion 20 and the first body portion 16 is rotated in a second direction relative to the container 14 and/or the second body portion 20 to advance the first body portion 16 towards the container 14 and/or the second body portion 20. Accordingly the first body portion 16 advances axially towards the container 14 and/or the second body portion 20, as shown in the progression from Figure 4 to Figure 5. It should be understood that the biasing means 26 has been omitted from Figures 3 to 6 for clarity (but is present in the embodiment).

The assembly or device 10 comprises at least two relatively movable portions, elements or members, which comprise the first and second body portions 16, 20 in the embodiment shown.

The assembly or device 10 is configured to prevent reuse of a screwthread in the second configuration. The screwthread is configured to at least assist in reconfiguring the assembly or device 10 from the first configuration to the second configuration. In the embodiment shown, the assembly or device 10 comprises the screwthread. In the embodiment shown, the assembly or device 10 comprises a first screwthread and a first engagement element for engaging the first screwthread for screwing in the first rotational direction such as during the initial or first phase or stage of opening. The assembly or device comprises a second screwthread and a second engagement element for engaging the second screwthread for screwing in the second rotational direction, such as during the subsequent or second phase or stage of opening. The first and second engagement elements comprise projections. The screwthreads are removable or at least partially removable with the assembly or device 10.

The assembly or device 10 is reconfigurable from the first configuration to the second configuration by moving the first body portion 16 from a first position relative to the container 14 and the second body portion 20 to a second position relative to the container 14 and the second body portion 20. The assembly or device 10 is configured to be axially translated and rotated in a first rotational direction and then axially translated and rotated in the second rotational direction to move from the first position to the second position.

The assembly or device 10 is configured to be rotated in the first rotational direction and axially translated in the first axial direction during the initial or first phase or stage of opening such that a first distance or space or separation is substantially reduced. The assembly or device 10 is configured to be rotated in the second rotational direction and axially translated in the first axial direction during the subsequent or

second phase or stage of opening such that a second distance or space or separation is substantially reduced. The first distance or space or separation comprises at least a portion of a separation or distance or space between the first body portion 16 and the second body portion 20.

5 The second distance or space or separation comprises at least a portion of a separation or distance or space between the second body portion 20 and the container 14.

10 The first distance or space or separation comprises at least a portion of a separation or distance or space defined by the tamper-evidence member 18, such as defined by the tamper-evidence member 18 prior to tampering and/or at least partial removal of the tamper-evidence member 18.

15 The assembly or device 10 is reconfigurable between a first configuration corresponding to a closed configuration as shown in Figure 1 and a second configuration corresponding to an open configuration, as shown in Figure 6. The assembly or device 10 is not reconfigurable from the second configuration to the first configuration. The closure assembly or device 10 is unsuitable for reclosure. The closure assembly or device 10 is configured for removal or at least partial removal from the mouth or neck portion 12 of the container 14 following the second phase or step of opening. The first and second body portions are removable from the mouth or neck
20 portion 12 of the container 14 in the second axial direction following the second phase or step of opening. The second axial direction is substantially opposite to the first axial direction.

25 The first configuration comprises an extended configuration or longitudinally extended configuration. The second configuration comprises a compressed configuration or longitudinally extended configuration. The first configuration corresponds to a substantially open assembly or device 10 configuration. The second configuration corresponds to a substantially closed assembly or device 10 configuration.

30 The assembly or device 10 comprises a locking member or means 34 to prevent reconfiguration from the second configuration to the first configuration. In the embodiment shown, the locking member or means 32 comprises an inter-engaging coupling arrangement such as a bayonet fitting; brough keys; and a left-hand screwthread. The screwthread is configured to at least assist in reconfiguring the assembly or device 10 from the first configuration to the second configuration. However
35 the assembly or device 10 is configured to prevent reuse of the screwthread in the

second configuration. In the embodiment shown, the assembly or device comprises the screwthread (provided on the second body portion 20 and the locking member or means 32). The screwthread is entirely removable with the closure assembly or device 20.

5 The closure assembly or device 10 comprises a separable connection 35 for at least partially separating at least a portion or a substantial portion of the closure assembly or device 10 from the container 14. The separable connection 35 comprises a frangible connection portion. The separable connection 35 is internally located, disposed or positioned. In the embodiment shown, the separable connection 35 is
10 shielded, protected or obscured from access, view or contact by a portion of the container 14. Accordingly, the separable connection 35 is shielded, protected or obscured from accidental separation, damage (e.g. transit damage) or unintended access (e.g. tampering). The separable connection 35 is located in an intended flowpath of a content of the container 14. The separable connection 35 is located in or
15 within the neck or mouth portion of the container 14. The closure assembly or device 10 is configured to separate the separable connection 35 during the subsequent or second phase or step of initially opening the container 14.

 There is provided a further closure means 36 for reclosing the container 14, following opening as shown in Figure 6. For example, a stopper, lid or top (e.g. a cork)
20 is used for subsequent closure of the container 14, following initial opening of the container 14. The further closure means 34 is provided for use after removal of the closure assembly or device 10 (e.g. following initial opening with the closure assembly or device 10). Reconfiguration of the closure assembly or device 10 and/or container 14 from the first or initial configuration (e.g. prior to initial opening) to the second or
25 subsequent configuration (e.g. during or subsequent to initial opening) renders the closure assembly or device 10 unsuitable for reclosure of the container 14. In other embodiments, such reconfiguration additionally or alternatively renders the container unsuitable for reclosure by the closure assembly or device 10. In other embodiments the closure assembly or device comprises means for retaining at least a portion of the
30 closure assembly or device, such as on the mouth or neck portion of the container.

 Figure 7 shows the closure assembly or device 10 prior to installation or mounting of the closure assembly or device 10 on or to the container 14. In the embodiment shown, the closure assembly or device 10 is substantially fully pre-assembled. The pre-assembly includes the semi-precious component or member or
35 collectible 32 and the diaphragm or seal 30 in the embodiment shown. Accordingly,

installation of substantially the entire closure assembly or device 10 can be used to seal the container 14. In alternative embodiments, the closure assembly or device may be assembled subsequent to installation or mounting of at least a portion of the closure assembly or device in or on or to the container. For example, the semi-precious component or member or collectible and/or the diaphragm or seal may be installed or mounted in or on or to the container prior to the installation or mounting of the remainder of the closure assembly or device.

Reference is now made to Figure 8, which shows an arrangement of parts in cross-sectional side view for forming a container 114 with a closure assembly or device 110 according to a second embodiment of the invention. The container 114 and closure assembly of Figure 8 are generally similar to that shown in Figure 1, with similar features denoted by similar reference numerals incremented by 100. Accordingly, the container 114 comprises a neck portion 112 and the closure assembly or device 110 of Figure 8 comprises a diaphragm or seal 130.

In the embodiment shown, the container 114 is exemplified as a glass container for fluid, such as an alcoholic beverage (e.g. premium spirit or liquor, such as whiskey or Scotch whisky). The container 114 comprises a main body or chamber 113 for containing fluid.

The closure assembly or device 110 comprises a first portion with the seal or diaphragm 130 and a support member 132 for the seal, membrane or diaphragm 130 in the form of a grommet for supporting the seal or diaphragm 130. It will be appreciated that, here the first portion is shown in both plan and cross-sectional views for clarity; although it will be appreciated that only a single first portion may be present. Here, the support member 132 for the seal, membrane or diaphragm 130 comprises a material, such as a semi-precious material in the form of food-grade stainless steel. Here, the seal, membrane or diaphragm 130 comprises a food grade seal, in the form of a food grade polyethylene-coated foil or sheet substrate.

The support member 132 for the seal, membrane or diaphragm 130 comprises an upper aperture or opening 131 configured to be more distal to the body or chamber 113 of the container 114 than a lower aperture or opening 133 that is configured to be more proximal to the body or chamber 113 of the container 114. The upper aperture 131 is of smaller diameter than the lower aperture 133. The upper aperture 131 is defined by an upper annular portion of the support member 132 for the seal, membrane or diaphragm 130. The seal or diaphragm 130 is mounted to an underside of the upper annular portion of the support member 132 for the seal, membrane or diaphragm 130,

as can be seen in Figure 10 so as to provide a seal assembly 133. As will be appreciated, particularly from Figure 12, the support member 132 for the seal, membrane or diaphragm 130 constitutes an internally-mounted member in the embodiment shown.

5 The closure assembly or device 110 further comprises a second portion, shown here in the form of two tubular portions 140, 142 of a sleeve to form a part of the neck portion 112 and define a mouth or opening 115 of the container 114.

10 The arrangement shown in Figure 8 also comprises two external members 150, 152 in the form of two ring-shaped collars for mounting externally. The particular external members 150, 152 shown include collectibles in the form of silver or silver-plated rings, with optional engraving or decoration. In addition, a further closure means 160 is illustrated in the form of a cork or stopper.

15 Referring now to Figure 9, which shows a cross-sectional exploded assembly of a container 114 with a closure assembly or device 110 with selected parts of the embodiment of Figure 8, it can be seen that the container 114 has been predimensioned by removing an original mouth or opening 115 of the container 114. In addition, it will be appreciated that material has been removed from an outer surface of the remaining neck portion 112 to provide a reduced thickness and a reduced outer diameter of the remaining neck portion 112. Accordingly a lower inner sleeve portion 20 112I of the neck portion 112 of the container 114 is defined for receiving the second portion of the closure assembly or device 110 to define the remainder of the neck portion 112. An outer shoulder 144 is also thus created in the direction of the body or chamber 113 of the container 114.

25 Reference is now made to Figure 10, which shows the container and closure assembly of Figure 9, shown with the container 114 filled with liquid 117 and the first portion of the closure assembly or device 110 assembled prior to mounting. It will be appreciated that filling the container 114 comprises partially filling the container 114 in so far as the entire volume of the container 114 is not necessarily occupied subsequent to filling (e.g. a portion of the container 114 is left unoccupied by liquid, such as to allow a gas portion to accommodate some pressure variation in the liquid and/or filling 30 tolerances without wastage). To seal the liquid 117 in the body or chamber 113 of the container 114, the support member 132 for the seal, membrane or diaphragm 130 is bonded to the apparent or interim mouth of the container, as shown in Figure 11. In the embodiment shown, this is achieved with food-grade adhesive suitable for prolonged 35 contact with alcoholic beverages, similar to the underside of the seal or diaphragm 130

and the support member 132 for the seal, membrane or diaphragm 130. Accordingly, the container 114 is filled and then sealed closed with the first portion of the closure assembly or device 110.

5 Figure 11 also shows the second portion 143 of the closure assembly assembled from the two tubular portions 140, 142 prior to mounting to the inner sleeve portion 112I of the container 114 to form the neck portion 112. Here, the two tubular portions 140, 142 are glass and have been UV bonded together to form a substantially homogenous sleeve with an upper external flange 145 and a lower end of reduced thickness.

10 The different respective diameters and lengths of the tubular portions 140, 142 results in a step change in inner diameter. In particular the outer tubular portion 140 defines a lower portion of the sleeve 143 that is of greater inner diameter relative to an upper portion of the sleeve 143 defined by the inner tubular portion 142. Accordingly, when the second portion 143 is mounted over the inner sleeve portion 112I, as shown
15 in Figure 12, the first portion 129 of the closure assembly or device 110 is axially sandwiched between the inner sleeve portion 112I of the container 114 and the second portion 143 of the closure assembly or device 110. In particular, an inner annular recess 147 is formed in the neck portion 112 between the inner lower sleeve portion 112I of the container 114 and the inner tubular portion 142 of the second portion 143 of
20 the closure assembly or device 110.

The second portion 143 of the closure assembly or device 110 is mounted over the lower sleeve 112I axially for a length of translation defined by an abutment of the outer tubular portion 140 with the shoulder 144. The length of translation, corresponding to the length of the lower neck portion 112I, is less than the length of the
25 reduced thickness portion (corresponding to lower part of the second portion 143 where no inner tubular portion 142 is present) such that the recess 147 is formed.

The container 114 is sealed by the first portion 129 of the closure assembly or device 110 such that the second portion 143 of the closure assembly or device 110 may be integrated, mounted or installed with an alternative method to the first portion
30 129 of the closure assembly or device 110. Here, where the container 114 is filled with a foodstuff and the container 114 is sealed by an approved foodgrade method of attaching the first portion 129 of the closure assembly or device 110, the second portion 143 of the closure assembly or device 110 may be integrated, mounted or installed using a non-approved method.

The second portion 143 overlaps the lower sleeve portion 112I and is UV bonded with an annular lap join to so as to form the container 114 with the first portion 129 of the closure assembly 110 integrated therein. Accordingly the container 114 is substantially homogenous and continuous, with a mouth or opening 115 for removing
5 the liquid 117 from the main body or chamber 113 of the container 114 provided, and the neck portion 112 extending between the mouth or opening 115 and the main body or chamber 113.

The second portion 143 of the closure assembly or device 110 is integrated into the container 114 such that the second portion 143 of the closure assembly or device
10 110 forms an integral part and is not removable from the container 114. The second portion 143 protects or reinforces the first portion 129. The second portion 143 substantially prevents access to and removal of the first portion 129 from the container 114.

As can be seen from the assembled container 114 in Figure 12, the container
15 114 comprises the seal or diaphragm 130 mounted at an intermediate section 165 of the neck portion 112. The seal or diaphragm 130 is mounted spaced from the mouth or opening 115, with a clearance between the seal or diaphragm 130 and the mouth or opening 115. The seal or diaphragm 130 is separated or spaced from the mouth or opening so as to impede access to the seal or diaphragm 130. For example, spacing
20 the seal or diaphragm 130 from the mouth or opening may impede removal and/or replacement of the seal or diaphragm 130 such as for or during tampering or other undesired activity.

The seal or diaphragm 130 is mounted spaced from the mouth or opening 115 so as to impede access to the seal or diaphragm 130. The mouth or opening 115
25 defines a restriction or limited aperture, such that finger access to the seal or diaphragm 130 is impeded.

The seal or diaphragm 130 is separated or spaced from the mouth or opening 115 such that the seal or diaphragm 130 is visible through the neck portion 112, which is at least partially transparent or translucent above and below the seal, membrane or
30 diaphragm 130 . Here, the seal, membrane or diaphragm 130 is visible through a transparent window in the neck portion extending above and below the seal, membrane or diaphragm 130. The seal, membrane or diaphragm 130 is visible in the window when sealing and when open, broken or ruptured. The seal or diaphragm 130 is separated or spaced from the mouth or opening 115 of the container so as to provide
35 an apparently floating seal, membrane or diaphragm 130.

The neck portion 112 comprises a section of reduced thickness along a length of the neck portion 112 between the opening or mouth 115 and the main body or chamber 113. The section of reduced thickness is located at the intermediate section 165 along the length of the neck portion 112 between the opening or mouth 115 and the main body or chamber 113. The section of reduced thickness corresponds to the internal recess 147 and the mounting position of the first portion 129 of the closure assembly or device 110 with the seal or diaphragm 130 and the support member 132 for the seal, membrane or diaphragm 130.

The section of reduced thickness comprises a step change in reduced thickness from the two adjacent sections of the neck portion 112 (i.e. the adjacent sections of the neck portion 112 on each side of the reduced thickness portion, one side being axially closer to the body or chamber 113 of the container 114 than the other side).

Here, the support member 132 for the seal, membrane or diaphragm 130 comprises a rigid member. The support member 132 for the seal, membrane or diaphragm 130 is mounted in the recess 147 such that it is not removable from the neck portion 112. Here, the support member 132 for the seal, membrane or diaphragm 130 comprises a greater outer profile than an inner profile of the container 114 defined here by the two adjacent sections of the neck portion 112. The outer profile of the support member 132 for the seal, membrane or diaphragm 130 is greater in that it defines a cross-sectional dimension greater than a cross-sectional dimension of the container 114, the cross-sections being perpendicular to a longitudinal axis of the neck portion 112 of the container 114. The outer profile of the support member 132 for the seal, membrane or diaphragm 130 here is an outer diameter and the inner profiles of the container 114 are defined by the inner diameters of the adjacent sections of the neck portion 112.

Such assembly of the neck portion 112 allows the inclusion of the rigid support member 132 for the seal, membrane or diaphragm 130 that may otherwise not be possible or at least difficult to mount at the intermediate section 165 of the neck portion 112, particularly as the container 114 and container neck portion 112 are also rigid here. For example, it may not otherwise be possible to insert any rigid member of greater profile into or through such a mouth or opening 115 or neck portion 112 of lesser profile in order to locate the rigid member at the intermediate section 165 of the neck.

The seal or diaphragm 130 is mounted, attached or formed with the support member for the diaphragm, seal or membrane such that the seal or diaphragm 130 is non-removable from the support member 132 for the seal, membrane or diaphragm 130 when mounted in the container 114.

5 It will be appreciated that the particular embodiment shown in Figures 9 through 12 does not include the externally mounted members 150, 152.

Reference is now made to Figures 13 through 18, which show a container 214 and closure assembly or device 210 that are generally similar to that shown in Figure 8, with similar features denoted by similar reference numerals incremented by 100. Accordingly, the container 214 comprises a neck portion 212 and the closure assembly or device 210 of Figure 13 comprises a diaphragm or seal 230.

Figures 13 and 14 are generally similar to Figures 9 and 11 respectively. Accordingly, it will be appreciated that the container 214 is filled and sealed with a first portion of the closure assembly or device 210 in a similar step to that previously shown in Figure 10, but omitted here for brevity. The seal, membrane or diaphragm 230 and the support member 232 provide a seal assembly 233.

In addition to the mounting or integration of the first portion 229 of the closure assembly or device 210 prior to the mounting or integration of the second portion 243 of the closure assembly or device 210, the two external members or sleeves 250, 252 are assembled prior to the mounting or integration of the second portion 243 of the closure assembly or device 210.

Here the upper external member 250 is fixed to an external surface of the outer tubular portion 240 when the second portion 243 of the closure assembly or device 210 is pre-assembled by the joining of the outer and inner tubular portions 240, 242. It will be appreciated that here the outer and inner tubular portions 240, 242 are glass and joined by UV bonding. The rigid upper external member 250 can be slid upwards onto the external surface of the outer tubular portion 240 and fixed in position with adhesive. Accordingly the upper external member 250 can conceal an upper seam or portion of the seam between the outer and inner tubular portions 240, 242.

30 Reference is now made to Figures 15 and 16, which show the second portion 243 mounted or integrated with the container 214 subsequent to the first portion 229 (Figure 14). In Figure 15 the second portion 243 of the closure assembly or device 210 is mounted or integrated with the container 214 with the lower external member 250 loosely positioned around the neck portion 212 in an upper position. With the lower external member 250 in this position, the second portion 243 of the closure assembly

or device 210 can be UV bonded to the lower neck portion 212I so as to form the container 214 with the first portion 229 of the closure assembly or device 210 integrated therein, and with the two external members 250, 252 assembled on the neck portion 212 of the container 214.

5 Figure 16 shows the lower external member 250 translated down the neck portion 212 for concealing the seam or join between the second portion 243 of the closure assembly or device 210 and the neck portion 212I of the container 214, particularly at the shoulder 244. The lower external member 250 is fixed to the neck portion 212 in this position with adhesive.

10 The external members 250, 252 are assembled such that the external members 250, 252 are not removable from the container 214 following the integration, mounting or installation of the second portion 243 of the closure assembly or device 210. Here, the flange 245 defines a greater outer profile section such that the external members 250, 252 are not removable (or insertable) onto the neck portion 212 following the
15 integration, mounting or installation of the second portion 243 of the closure assembly or device 210 onto the container 214, which also has a body or chamber 213 of greater outer profile than the inner profiles of the external members 250, 252. It is only possible to assemble the rigid external members 250, 252 onto the container 214 prior to the integration, mounting or installation of the second portion 243 of the closure assembly
20 or device 210. In particular, the greater external profile of the outwardly-extending flange 245 means that it may not otherwise be possible to mount a rigid external member of lesser profile over the mouth or opening 215 or the neck portion 212 of greater profile in order to locate the rigid external member at any intermediate sections of the neck portion 212.

25 Reference is now made to Figures 17 and 18, which respectively show a side view and a detail side view of the assembled container 214 of Figure 16 with a further closure means 260 and the container inverted to show the sealing function of the first portion 229 of the closure assembly or device 210.

30 The seal or diaphragm 230 is separated or spaced from the mouth or opening 215 such that the seal or diaphragm 230 is visible adjacent portions of the container that are not transparent or opaque in the form of the external members 250, 252 in the embodiment shown. The seal or diaphragm 230 is separated or spaced from the mouth or opening 215 so as to provide a space in the neck portion 212 between the mouth or opening 215 and the seal or diaphragm for receiving the further closure means 260.
35 Here, the further closure means 260 is embodied as a cork or stopper for subsequent

closure or sealing of the container 214, following initial opening of the container by breaking the seal or diaphragm 230. Spacing the seal or diaphragm 230 from the mouth or opening 215 allows the further closure means to be located at on or in the mouth or opening 215 of the container, such as allowing positioning without a possibility of contacting or interfering with the seal or diaphragm 230. As shown in Figures 17 and 18, the further closure means 260 may form an additional sealing or closure prior to initial opening. The further closure means 260 here is at least partially positionable at, on or in the mouth or opening 215 prior to opening or breaking the seal or diaphragm 230.

Reference is now made to Figure 19, which shows a side view of a kit 280 comprising the container 210 and further closure means 260 of Figure 17 and an elongate member 290 for opening the container 214, all housed in a packaging 295. The packaging 295 shown is a presentation box with the container 210, further closure means 260 and elongate member discretely housed in the packaging 295.

As shown in Figure 20, the elongate member 290, embodied here as a ceremonial sgian-dubh, is inserted into the mouth or opening 215 to initially open the container 210 by breaking or rupturing the seal or diaphragm 230.

The support member 232 for the seal, membrane or diaphragm 230 is mounted to the container 214 such that the seal or diaphragm 230 is visible beneath the support member 232 for the seal, membrane or diaphragm 230 when mounted in the container 214, at least when the seal or diaphragm 230 is broken or ruptured. Here, where the support member 232 for the seal, membrane or diaphragm 230 is not transparent or opaque, the support member 232 for the seal, membrane or diaphragm 230 is dimensioned so as to allow a ruptured or broken portion of the seal or diaphragm 230 to be visible adjacent the support member 232 for the seal, membrane or diaphragm 230 in the direction of the body or chamber 213 of the container 210. Accordingly, the seal or diaphragm 230 is visible at least when opened, ruptured or broken such as to allow an indication of previous opening or tampering. Positioning the seal or diaphragm 230 on the body side of the support member 232 for the seal, membrane or diaphragm 230 impedes the removal of the seal or diaphragm 230 through the mouth or opening 215 of the container and impedes the replacement of the seal or diaphragm 230 with a replacement or counterfeit seal or diaphragm inserted through the mouth or opening 215 of the container. This is particularly enhanced by the upper aperture 231 of the support member 232 for the seal, membrane or diaphragm 230 being of smaller

diameter than the lower aperture 233; and the seal or diaphragm 230 being of greater diameter than the upper aperture 231.

Figure 21 shows a cross-sectional view of the opened container of Figure 20 tilted to pour the liquid 217 of the container 210 into a glass 296. Flow through the broken or ruptured seal or diaphragm 230 at the intermediate section 265 and then through the remainder of the neck portion 212 to exit the container 214 at the mouth or opening 215 is clearly shown. Subsequent to initial opening, the further closure means 260 can be inserted into the neck portion 212 via the mouth or opening 215, as shown in Figures 22 and 23.

Figure 23 in particular shows the visibility of the seal or diaphragm 230 when opened, ruptured or broken such as to allow an indication of previous opening or tampering. It will be appreciated that upon opening of the container 214, the container as such will retain an intrinsic value, such as even when the contents are fully depleted. At least by virtue of any or all of the support member 232 for the seal, membrane or diaphragm 230 and/or the external members 250, 252, the container will retain a sufficient value to encourage the retention of the container, thereby reducing a likelihood of the container passing to counterfeiters. The container 214 will retain a collectible value and/or an intrinsic material value.

It will be appreciated that any of the aforementioned apparatus may have other functions in addition to the mentioned functions, and that these functions may be performed by the same apparatus.

The Applicant hereby discloses in isolation each individual feature described herein and any combination of two or more such features, to the extent that such features or combinations are capable of being carried out based on the present specification as a whole in the light of the common general knowledge of a person skilled in the art, irrespective of whether such features or combinations of features solve any problems disclosed herein, and without limitation to the scope of the claims. The applicant indicates that aspects of the present invention may consist of any such individual feature or combination of features. It should be understood that the embodiments described herein are merely exemplary and that various modifications may be made thereto without departing from the scope of the invention.

CLAIMS

1. A diaphragm, seal or membrane and/or a support member for a/the diaphragm, seal or membrane for mounting in or on a container, such as a container for liquid, wherein the diaphragm, seal or membrane and/or the diaphragm support member for a/the diaphragm, seal or membrane is/are configured for mounting within a neck portion of a container.
2. The diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane of claim 1, wherein the diaphragm, seal or membrane comprises a frangible diaphragm, such as configured to be broken on initial opening.
3. The diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane of claim 1 or 2, wherein the diaphragm, seal or membrane and/or the support member comprise/s a precious or semi-precious material or collectible and/or a metallic material, such as a food grade metallic material, such as food grade stainless steel and/or optionally a metallic and/or polymeric film, foil or sheet material and/or food grade material.
4. The diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane of any of claims 1 to 3, wherein the support member for a/the diaphragm, seal or membrane and/or the diaphragm, membrane or seal is configured to be spaced from an opening or outlet of a container and/or a closure.
5. The diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane of claims 1 to 4, wherein the support member for a/the diaphragm, seal or membrane and/or the diaphragm, membrane or seal comprise/s an insert/s positionable at least partially within or inserted into a mouth or neck portion of a container.
6. The diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane of any of claims 1 to 5, wherein the support member for a/the diaphragm, seal or membrane and/or the diaphragm, seal or membrane is/are configured to be mounted within a fluid passage or throughbore of a container neck or mouth portion.

7. The diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane of any of claims 1 to 6, wherein the support member for a/the diaphragm, seal or membrane and the diaphragm, seal or membrane is/are
5 configured to be mounted upstream of a fluid outlet or exit from the container and/or a closure.

8. The diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane of any of claims 1 to 7, wherein the support member for
10 a/the diaphragm, seal or membrane and/or the diaphragm, seal or membrane is/are substantially non-detachably attached to or adhered to or integrated into the container.

9. The diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane of any of claims 1 to 8, wherein the support member for
15 a/the diaphragm, seal or membrane and/or the diaphragm, membrane or seal is configured to be located at a position between the mouth or opening and the main body or chamber of the container.

10. The diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane of any of claims 1 to 9, wherein the support member for
20 a/the diaphragm, seal or membrane is a rigid, member, such as a rigid annular member.

11. The diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane of any of claims 1 to 10, wherein the support member for
25 a/the diaphragm, seal or membrane comprises an upper aperture or opening configured to be more distal to a body of the container than a lower aperture or opening that is configured to be more proximal to a body of the container, and wherein the upper aperture is smaller than the lower aperture, the seal, membrane or diaphragm
30 being mounted to an underside of the upper annular portion of the support member for a/the diaphragm, seal or membrane.

12. A seal or closure assembly comprising the diaphragm, seal or membrane and/or the support member for a/the diaphragm, seal or membrane as claimed in any of
35 claims 1 to 11, the seal or closure assembly optionally being adapted for mounting in or

on a neck portion of a container, such as a container for liquid, such as a bottle or glass bottle.

5 13. A container, such as a glass container for liquid, the container comprising the diaphragm, membrane or seal of any of claims 1 to 11 and/or the support member for a/the diaphragm, membrane or seal of any of claims 1 to 11; and/or the closure assembly of claim 12.

10 14. The container of claim 13, the container comprising:
a main body or chamber for containing fluid;
a mouth or opening for inserting and/or removing fluid to and/or from the main body or chamber of the container;
a neck portion between the mouth or opening and the main body or chamber;
wherein the container comprises the diaphragm, seal or membrane and/or the
15 support member mounted in the neck portion.

20 15. The container of either of claims 13 or 14, wherein the diaphragm, seal or membrane and/or the support member is/are located at a position in the neck portion distal to the mouth or opening.

16. The container of any of claims 13 to 15, wherein the diaphragm, seal or membrane and/or the support member is/are mounted in an intermediate or mid section of the neck portion.

25 17. The container of any of claims 13 to 16, wherein the diaphragm, seal or membrane and/or the support member is/are separated or spaced from the mouth or opening such that the diaphragm, seal or membrane and/or the support member is/are visible through an unobscured portion of the container, such as visible laterally through a transparent or translucent portion of the container that is not covered or concealed.

30 18. The container of any of claims 13 to 17, wherein the diaphragm, seal or membrane and/or the diaphragm support member is/are separated or spaced from the mouth or opening so as to provide a portion of the neck between the mouth or opening and the diaphragm, seal or membrane and/or the diaphragm support member for
35 receiving a further closure means, such as a stopper, lid or top for additional closure or

sealing prior to initial opening and/or subsequent closure or sealing of the container, such as following initial opening of the container by breaking the diaphragm, seal or membrane.

5 19. The container of any of claims 13 to 18, wherein the diaphragm, seal or membrane and/or the support member is/are separated or spaced from the mouth or opening so as to impede access to the diaphragm, seal or membrane and/or the support member to impede removal and/or replacement of the diaphragm, seal or membrane and/or the support member.

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20. The container of any of claims 13 to 19, wherein the diaphragm, seal or membrane and/or the support member is/are separated or spaced from the mouth or opening of the container, for example, so as to provide an apparently floating or suspended diaphragm, seal or membrane.

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21. The container of any of claims 13 to 20, wherein the diaphragm, seal or membrane and/or the diaphragm support member for a/the diaphragm, membrane or seal is/are non-removably mounted in the neck portion.

20 22. The container of any of claims 13 to 21, wherein the neck portion comprises a portion or section of reduced thickness along a length of the neck portion between the opening or mouth and the main body or chamber, the portion or section of reduced thickness being located at an intermediate position along the length of the neck portion between the opening or mouth and the main body or chamber, the intermediate
25 position corresponding to the mounting position of the diaphragm, seal or membrane and/or the support member.

23. The container of claim 22, wherein the section of reduced thickness is defined by an internal recess for receiving the diaphragm, seal or membrane and/or the support
30 member for a diaphragm, membrane or seal.

24. The container of any of claims 13 to 23, wherein the diaphragm, seal or membrane and/or the diaphragm support member form/s a first portion of a closure assembly, the first portion of the closure assembly being mounted to the container prior
35 to the formation or mounting or attachment of a portion of the container, the portion of

the container to be mounted or attached at least partially defining the mouth or opening.

5 25. The container of any of claims 13 to 24, wherein the diaphragm support member is mounted to the container such that the diaphragm, seal or membrane is visible at least beneath the diaphragm support member when mounted in the container at least when the diaphragm, seal or membrane is opened, ruptured or broken, the broken or ruptured membrane being visible such as to allow an indication of previous opening or tampering.

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26. A method of sealing a container, such as a glass container for an alcoholic beverage, the method comprising locating a diaphragm, seal or membrane and/or a support member for a/the diaphragm, seal or membrane at a position between a mouth or opening of a container and a main body or chamber of a container, such as at an intermediate position in a neck portion of the container.

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27. The method of claim 26, wherein the method comprises:

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mounting or installing a first portion of a closure assembly with a first installation method to the container in order to seal the container after the container has been filled, the first portion of the closure assembly comprising the support member and/or the diaphragm, seal or membrane for sealing the container; and

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mounting a second portion of the closure assembly to the container with a second installation method;

wherein the first installation method comprises an approved foodgrade installation method.

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28. The method of claim 27, wherein the second installation method comprises a glass joining technique, such as UV bonding, of the second portion of the closure assembly so as to form a substantially continuous or homogenous glass container with a glass neck and mouth portion.

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29. The method of either of claims 27 or 28, further comprising a step of providing a further closure means, such as by inserting or applying a cork or stopper or the like.

30. A container, such as a container for liquid, comprising a body or component or member comprising a precious or semi-precious material and/or collectible.

5 31. The container of claim 30, wherein the precious or semi-precious material or collectible is attached or fixed to the container such that removal or detachment of the precious or semi-precious material or and/or collectible from the container substantially prevents reuse of the container.

10 32. The container of either of claims 30 or 31, wherein the precious or semi-precious material and/or collectible is non-detachably attached or fixed to the container.

15 33. The container of any of claims 30 to 32, wherein the precious or semi-precious material and/or collectible comprises a coating or an insert or an attachment of the container and/or closure assembly or device.

34. The container of any of claims 30 to 33, wherein the container comprises a bottle, such as a glass bottle, such as for an alcoholic beverage.

20 35. 35, wherein the container comprises a neck or mouth portion and the precious or semi-precious material and/or collectible or member is provided in or on the mouth or neck portion of the container.

25 36. The container of any of claims 30 to 35, wherein the precious or semi-precious material and/or collectible comprises a ring or annular member, such as within the neck portion.

30 37. The container of any of claims 30 to 35, wherein the precious or semi-precious material and/or collectible comprises an annular or cylindrical member or sleeve on the neck portion, such as mounted on an exterior of the neck portion.

38. The container of any of claims 30 to 36, wherein the precious or semi-precious material and/or collectible is made from a conventional precious or semi precious material such as a precious or semi-precious stone or gem or a precious metal, such as gold, silver, platinum or the like, or alloys, mixtures or other derivatives thereof;

and/or a semi-precious metal such as brass, pewter, steel, nickel or the like, or alloys, mixtures or other derivatives thereof.

5 39. The container of any of claims 30 to 36, wherein the container and/or the precious or semi-precious material and/or collectible is made from a food grade material.

10 40. The container of any of claims 30 to 39, wherein the precious or semi-precious material and/or collectible represents a substantial value relative to the container or the rest of the container or the other materials of the container.

15 41. The container of any of claims 30 to 40, wherein the precious or semi-precious material or collectible is made from or comprised in a plastic or polymer, such as included as an additive to a master batch.

42. The container of any of claims 30 to 41, wherein the precious or semi-precious material or collectible or member comprises or is attached or operatively associated with a diaphragm, seal or membrane.

20 43. A closure assembly or device configured to be applied to a mouth or neck portion of a container, such as a container for liquid, the assembly or device comprising a precious or semi-precious material and/or collectible.

25 44. The closure assembly or device of claim 43, wherein the precious or semi-precious material or collectible is configured to be attached to the container such that removal or detachment of the precious or semi-precious material or collectible from the container substantially prevents reuse of the container.

30 45. The closure assembly or device of claim 43, wherein the precious or semi-precious material or collectible is non-detachably attached to the container.

35 46. A precious or semi-precious component or member adapted for use in or on the container of any of claims 13 to 25 and/or claims 30 to 42 and/or the closure assembly or device of any of claims 43 to 45.

47. The precious or semi-precious component or member of claim 46, wherein the precious or semi-precious component or member is configured to be provided in or on the mouth or neck portion of the container.

5 48. The precious or semi-precious component or member of claim 46 or 47, wherein the precious or semi-precious component or member is configured to be attached to or comprised in the container such that the precious or semi-precious component or member is only detachable or removable from the container by damaging the container such that the container becomes substantially non-reusable.

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49. The precious or semi-precious component or member of claim 46 or 47, wherein the precious or semi-precious component or member is configured to be non-detachably attached to the container, such as integration, adhesion, welding or the like.

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50. The precious or semi-precious component or member of any of claims 46 to 49, wherein the precious or semi-precious component or member comprises at least one of:

a ring or disc or sleeve, and/or
a frangible diaphragm.

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51. A kit comprising:

a container, such as a glass container for liquid, the container comprising a diaphragm, seal or membrane;

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and an elongate member for breaking or opening or puncturing the diaphragm, seal or membrane to open the container.

52. The kit of claim 51, wherein the container comprises the diaphragm, membrane or seal of any of claims 1 to 11 and/or the support member for a/the diaphragm, membrane or seal of any of claims 1 to 11; and/or the container comprises the container according to any of claims 13 to 25 or 30 to 42.

30

53. The kit of claim 51 or 52, wherein the elongate member comprises a handle and a blade, such as a sgian dubh, dagger, knife or the like.

54. The kit of any of claims 51 to 53, wherein the kit comprises a further closure means, the further closure means being in addition to the diaphragm, membrane or seal.

5 55. The kit of any of claims 51 to 54, wherein the kit is provided in a box, such as a presentation box.

10 56. A method of opening a container, such as a container according to any of claims 13 to 25 or 30 to 42, the method comprising breaking, rupturing or perforating a diaphragm, seal or membrane located at a position between, such as intermediate, a mouth or opening of the container and a main body or chamber of the container, wherein the method comprises breaking, rupturing or perforating the diaphragm, seal or membrane with an elongate member, such as a sgian dubh or other ceremonial dagger.

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57. The method of claim 56, further comprising a preceding step of removing a further closure means, such as a cork or stopper, from the mouth or opening of the container prior to the breaking, rupturing or perforating of the diaphragm, seal or membrane with the elongate member.

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58. The method of claim 56 or 57, further comprising a succeeding step of applying a/the further closure means, such as a cork or stopper, to the mouth or opening after the breaking, rupturing or perforating of the diaphragm, seal or membrane with the elongate member, such as to re-close or re-seal the container.

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