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(73) Proprietor: **ALUMASC LIMITED**
**Burton Latimer Kettering**
**Northamptonshire NN15 5JP (GB)**

(72) Inventor: **Hyde, Roger John**
**155 London Road**
**Kettering Northamptonshire (GB)**

(74) Representative: **Weston, Robert Dale et al**
**c/o PHILLIPS & LEIGH 7 Staple Inn**
**Holborn London WC1V 7QF (GB)**

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**Description**

This invention relates to valved closures for pressure vessels, such as kegs or casks for beverages dispensed through the valved closure by pressure gas admitted to the keg or cask through the closure.

It is a common arrangement that the vessel has welded to it a tubular neck-like socket into which the valved closure is inserted, the socket and closure having mating screw threads or a bayonet type connection. Such arrangements are generally satisfactory in practice, but have a disadvantage in that it is possible inadvertently to unscrew the closure of disengaged the bayonet connection whilst the vessel is pressurised internally. This dangerous possibility may occur for example when attempting to disengage from the closure a dispense head by which connection is made between the container and a dispense tap.

In another arrangement, the closure is merely retained by a split ring which engages a groove internally of an annular cask fitting and overlies shoulders on the closure body. The split ring is usually readily accesible and can be removed easily using a tool, e.g. a screwdriver. It this is done when the vessel is pressurised internally, the closure will be ejected with great force.

It is known from EP—A—0089727 to provide such valve closures with a security collar (anti-tampering) that is difficult to remove and make unauthorised removal of the valve closure from a pressurised vessel more unlikely. However, this document does not dislcose that the skirt of the anti-tamper ring is shaped to be deformed by a power tool and that the anti-tamper ring is of malleable metal and a part thereof engaging the tubular body is rigid. Moreover the known anti-tamper ring relies on screw threads to retain the valve in the keg neck.

A security closure-fitting unit is also described in EP—A—0102701 (Art. 54(3)EPC) wherein the body and valve means is retained by a top plate of which the marginal edge portions have been deformed to form a clench around the flared top 3 of the housing. The plate further forms an integral constructional part of the valve means.

It is an object of the present invention to provide a security collar separate from any valve component.

According to the present invention, a valve closure for dispensing liquid from a pressure vessel, such as a cask or keg, has a neck, for rigid attachment as a mounting ring to the mouth of a tap body in the vessel, a valve-containing tubular body inserted co-axially in the neck and a rigid anti-tamper ring of malleable metal has an inner periphery shaped to engage the tubular body and a relatively thin outer peripheral skirt, which is to be deformed by a power tool, for conversion into a security collar with an inturned border in fitted engagement about the rim of a given neck, the security collar being separate from any valve component of the tubular body, whereby distortion or removal of the security collar from the neck by a special tool cannot affect the valve contained within the tubular body and only the anti-tamper ring has to be replaced each time the valve closure is removed from the pressure vessel.

Any shape or feature at the rim or about the exterior surface of the neck would suffice provided that the formed security collar (and thus the valved closure) would be prevented from being axially withdrawn.

In one embodiment of the invention, the tubular body and the keg neck have mating external and internal threads, the tubular body also has a radially outwardly extending flange proximate the top thereof and the inner periphery of the security collar is shaped to axially engage the flange.

In a second embodiment of the invention, the security collar provides the sole means for axially retaining the tubular body in the keg neck.

The security collar of the above two embodiments in each case consists of a rigid collar of malleable metal having a thinner skirt to be crimped about a keg neck by a suitable power tool and similarly cut off by the use of a special tool. Such collars are conveniently made of aluminium.

It is an object of a third embodiment of the present invention to provide a valved closure that is especially suitable for valve bodies having large diameter dispenser mounting flanges such as are used with standard stainless steel or insulated stainless steel necked containers.

In a third embodiment of the invention, the security collar comprises two or more part rings, each having an inner periphery shaped to engage with a locking feature on or in the outer surface of the valve tubular body and an outer peripheral skirt to be deformed into said fitting engagement about the rim of a given neck. If used with stainless steel necks, the part rings are made of a deformable stainless steel.

The above and other features of the present invention are illustrated, by way of example, in the drawings, wherein:—

Fig. 1 is an axial section through a valved closure secured in a keg neck in accordance with a first embodiment of the invention;

Fig. 2 is a similar section for a second embodiment of the invention; and

Fig. 3 is an axial section of a valved closure secured in a keg neck in accordance with a third embodiment of the invention.

The valved closure shown by Fig. 1 consists of a tubular valve body 10, housing valve components generally indicated by reference 12 and of the kind which are assembled in the body 10 from its inner end, the body including internally a valve seat 14 against which the valve seals and which prevents ejection of the valve. The valve itself does not form part of the present invention and need not be further described.

The body 10 has a small, radially outwardly extending flange 16 near the top thereof and around the periphery of which a number of flats

are provided to enable the body 10 to be rotated.

A keg or cask 18 has a tap hole 20 and a generally cylindrical neck 22 is welded to the keg about the tap hole leaving the hole mouth as a radially inwardly extending flange 24; an O-ring seal 26 being trapped between flange 24 and a complementary shoulder 28 on the valve body 10.

The valve body 10 and the neck 22 have mating respectively external and internal threads; the valve body (and associated valve components 12) being screwed into the keg neck, using the aforementioned flats.

A rigid ring 30 is shaped internally to fit over the valve body 10 and its flange 16 and has an external, downwardly directed, relatively thin skirt 32 that is shaped to overhang an external lip 34 on the keg neck 22. The collar 30, although rigid, is made of a malleable metal such as aluminium so that a suitably designed power tool can crimp the relatively thin skirt 32 around and underneath the neck lip 34 as shown in the Figure. The ring 30, with its skirt 32, thus forms a strong collar that secures the valve body in the keg neck against axial withdrawal and against rotation.

The valve can only be extracted from the keg if the securing collar 30 is removed and this requires the use of a special tool to cut the crimped collar off the keg neck. This securing mechanism will not only guard against accidental removal of the valve or casual interference but will guard against deliberate attempts at valve removal other than with a suitable tool.

The ring collar 30 is the only component that will have to be replaced each time the valve is removed and the keg refilled.

Fig. 2 shows another embodiment of the invention, in this case both open and closed, and like parts having been given the same references. In this embodiment the valve body 10 has no external thread and the keg neck 22, although shown plain, could be a standard keg neck with an internal thread or bayonet socket.

The rigid ring collar 30, with a thinner skirt 32 crimped about an external, rolled lip 34 at the rim of the keg neck, provided the sole means of locating the valve in the keg; the valve body being axially loaded to create the required pressure on the neck seal 26 before the ring skirt 32 is crimped about the keg neck lip. In this embodiment the ring collar 30 has an inner axially depending flange 36 to trap the valve body 10. The inside of the ring collar is also shaped to receive a dispense head.

In either of the above embodiments a specially designed valve body 10, together with an appropriate ring collar 30, enables conventional, non-secured valve components to be fitted and secured in any existing keg neck.

Fig. 3 shows a third embodiment of the invention and like parts have again been given the same references.

As shown the valve body 10 has a radially outwardly extending flange 15 at the top thereof and from the periphery of which depends a short axial skirt 17.

For the primary intended use of this embodiment, the keg or cask 18 is of stainless steel as is the neck 22; in other respects all is as described above.

Two separate U-section stainless steel half collars 29 and 31 retain the closure valve body 10 in the container 18; the inner skirts 33 of the collars being located in a pre-machined groove 35 in the outer surface of the valve body 10 prior to the insertion of the closure valve in the neck. Thereafter the half collars are self-locating within and around the neck and ready for the crimp operation which, with the aid of specially designed hydraulic equipment, crimps the outer skirts 37 of the collars around and underneath the neck lip 34 as shown in the Figure. The half collars 29 and 31, with their skirts 33 thus form a strong collar that secures the valve body in the keg neck against axial withdrawal.

The valve can only be extracted from the keg if the half collars 29 and 31 are removed and this requires the use of a special tool to cut the crimped collars off the keg neck. This securing mechanism will not only guard against accidental removal of the valve or casual interference but will guard against deliberate attempts at valve removal other than with a suitable tool. Spacing washer 39, shown to be located between the half collars 29 and 31 and the valved body flange 15, is for assembly purposes only.

The ring collars 29 and 31 are the only components that will have to be replaced each time the valve is decrimped and removed and refitted to the keg.

Another advantage of this embodiment, especially when used with large flanged valves, is that the crimp is well "hidden" by the depending skirt, thus reducing the likelihood of abuse.

In the previous two embodiments, the valve body design is such that a single ring can pass over the valve body and still secure the valve body and keg neck together, whereas it is the diameter of the valve body flange 15 in the third embodiment that necessitates the use of split ring collars. Thus, depending upon the valve body design, either aluminium split ring collars or a stainless steel single ring collar could be used.

**Claims**

1. A valved closure for dispensing liquid from a pressure vessel (18), such as a cask or keg, having a neck (22), for rigid attachment as a mounting ring to the mouth of a tap hole (20) in the vessel, a valve-containing tubular body (10) inserted coaxially in the neck and a rigid anti-tamper ring (30 or 29 and 31) of malleable metal having an inner periphery (36 or 33) shaped to engage the tubular body and a relatively thin outer peripheral skirt (32 or 37), which is to be deformed by a power tool, for conversion into a security collar with an inturned border in fitting engagement about the rim (34) of a given neck, the security collar being separate from any valve component (12) of the tubular body, whereby distortion or removal of

the security collar from the neck by a special tool cannot affect the valve contained within the tubular body and only the anti-tamper ring has to be replaced each time the valved closure unit is removed from the pressure vessel.

2. A closure as claimed in Claim 1, characterised in that the tubular body (10) has an external thread to engage an internal thread in the keg neck (22), the tubular body also has a radially outwardly extending flange (16) proximate the top thereof and the inner periphery (33) of the security collar (30) is shaped to axially engage the flange (16).

3. A closure as claimed in Claim 2, characterised in that the security collar (30) provides the sole means for axially retaining the tubular body (10) in the keg neck (22).

4. A closure as claimed in Claim 3, characterised in that the security collar (30) has an inner, axially depending flange (36) to axially trap the tubular body (10) in the keg neck.

5. A closure as claimed in Claim 1, characterised in that the security collar comprises two or more part rings (29 and 31), each having an inner periphery shaped to axially engage a locking feature (35) on or in the outer surface of the valve tubular body (10) and an outer peripheral skirt (37) to be deformed into said fitting engagement about the rim (34) of a given neck (22).

**Patentansprüche**

1. Ventilverschlußeinheit zum Ausschenken von Flüssigkeit aus einem Druckbehälter (18), z.B. einem Faß oder Transportfaß, der einen Hals (22) zur starren Befestigung als Montagering an der Mündung eines Zapflochs (20) im Behälter aufweist, umfassend einen ein Ventil enthaltenden Rohrkörper (10), der koaxial in den Hals eingesetzt ist, und einen formsteifen Eingriffssicherungsring (30 oder 29 und 31) aus umformbaren Metall mit einer Innenfläche (36 oder 33), die zur Anlage an dem rohrkörper geformt ist, und einem relativ dünnen Außenrand (32 oder 37), der von einem Elektrowerkzeug verformbar und zu einem Sicherheitsbund mit einem einwärts gebogenen Rand, der mit dem Rand (34) eines gegebenen Halses diesen umgebend engpassend verbunden ist, umformbar ist, wobei der Sicherheitsbund von einem etwaigen Ventilelement (12) des Rohrkörpers getrennt ist, so daß eine Verwindung oder ein Lösen des Sicherheitsbundes von dem Hals mit einem Spezialwerkzeug das im Rohrkörper befindliche Ventil nicht beeinflussen kann und bei jedem Entfernen der Ventilverschlußeinheit von dem Druckbehälter nur der Eingriffssicherungsring auszuwechseln ist.

2. Ventilverschluß nach Anspruch 1, dadurch gekennzeichnet, daß der Rohrkörper (10) ein Außengewinde zur Verbindung mit einem Innengewinde im Hals (22) des Fasses aufweist und daß der Rohrkörper ferner einen nach radial außen verlaufenden Flansch (16) an seinem Oberende hat und die Innenfläche (33) des Sicherheitsbundes (30) so geformt ist, daß sie axial an dem Flansch (16) anliegt.

3. Ventilverschluß nach Anspruch 2, dadurch gekennzeichnet, daß der Sicherheitsbund (30) das einzige Mittel ist, um den Rohrkörper (10) in Axialrichtung in dem Hals (22) des Fasses festzulegen.

4. Ventilverschluß nach Anspruch 3, dadurch gekennzeichnet, daß der Sicherheitsbund (30) einen inneren, in Axialrichtung abwärts verlaufenden Flansch (36) zur axialen Festlegung des Rohrkörpers (10) in dem Hals des Fasses aufweist.

5. Ventilverschluß nach Anspruch 1, dadurch gekennzeichnet, daß der Sicherheitsbund zwei oder mehr Teilringe (29 und 31), die jeweils ein Innenfläche solcher Form haben, daß sie axial in einer Arretierausbildung (35) an oder in der Außenfläche des Rohrkörpers (10) anliegt, und einen Außenumfangsrand (37) aufweist, der in die engpassende Anlage um den Rand (34) eines gegebenen Halses (22) verformbar ist.

**Revendications**

1. Fermeture à soupape destinée à débiter du liquide d'un récipient à pression (18), comme un fût ou un tonnelet, comportant un col (22) destiné à être attaché rigidement à titre d'anneau de montage, à l'embouchure d'une bonde (20) s'ouvrant dans le récipient, un corps tubulaire (10) contenant une soupape introduit coaxialement dans le col, et une bague rigide de protection contre les fraudes (30 ou 29 et 31) en métal malléable comportant une périphérie interne (36 ou 33) façonnée pour attaquer le corps tubulaire, et une jupe périphérique externe relativement mince (32, 37) qui doit être déformée par un outil à moteur, en vue d'une conversion en une virole de sécurité comportant un rebord replié vers l'intérieure en contact étroitement ajusté autour du rebord (34) d'un col donné, la virole de sécurité étant séparée de tous les éléments de la soupape (12) du corps tubulaire, de sorte que la déformation ou l'enlèvement de la virole du sécurité du col par un outil spécial ne peut pas affecter la soupape contenue dans le corps tubulaire et seule la bague de protection contre les fraudes doit être remplacée chaque fois que l'unité de fermeture à soupape est enlevée du récipient à pression.

2. Fermeture suivant la revendication 1, caractérisée en ce que le corps tubulaire (10) présente un pas de vis extérieur qui se visse dans un pas de vis intérieur du col (22) du tonnelet, le corps tubulaire comportant également une bride (16) qui s'étend vers l'extérieur à proximité de son extrémité supérieure et la périphérie interne (33) de la virole de sécurité (30) étant façonnée de mainère à attaquer axialement la bride (16).

3. Fermeture suivant la revendication 2, caractérisé en ce que la virole de sécurité (30) constitue le seul moyen permettant de retenir axialement le corps tubulaire (10) dans le col (22) du tonnelet.

4. Fermeture suivant la revendication 3, caractérisé en ce que la virole de sécurité (30) comporte une jupette interne (36) qui s'étend axialement vers le bas pour immobiliser le corps tubulaire (10) dans le col du tonnelet.

5. Fermeture suivant la revendication 1, caracté-

risé en ce que la virole de sécurité comprend deux ou plus de deux parties d'anneaux (29 et 31) présentant chacune une périphérie interne qui est façonnée de manière à attaquer axialement un moyen de blocage (35) prévu sur ou dans la surface externe du corps tubulaire de soupape (10) et une jupe périphérique externe (37) destinée à être déformée en contact étroitement ajusté autour du rebord (34) d'un col donné (22).

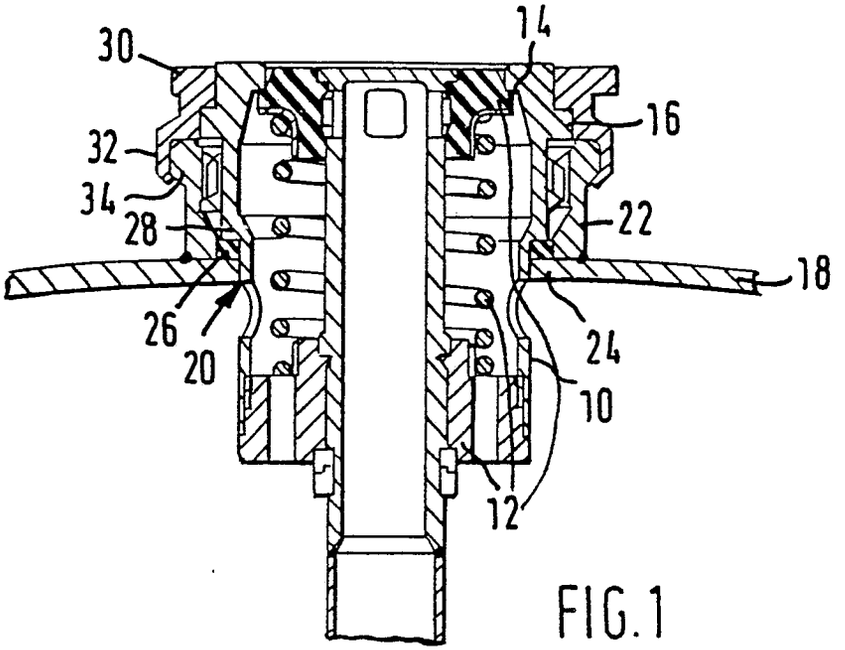

30
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18
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24
10
12

FIG.1

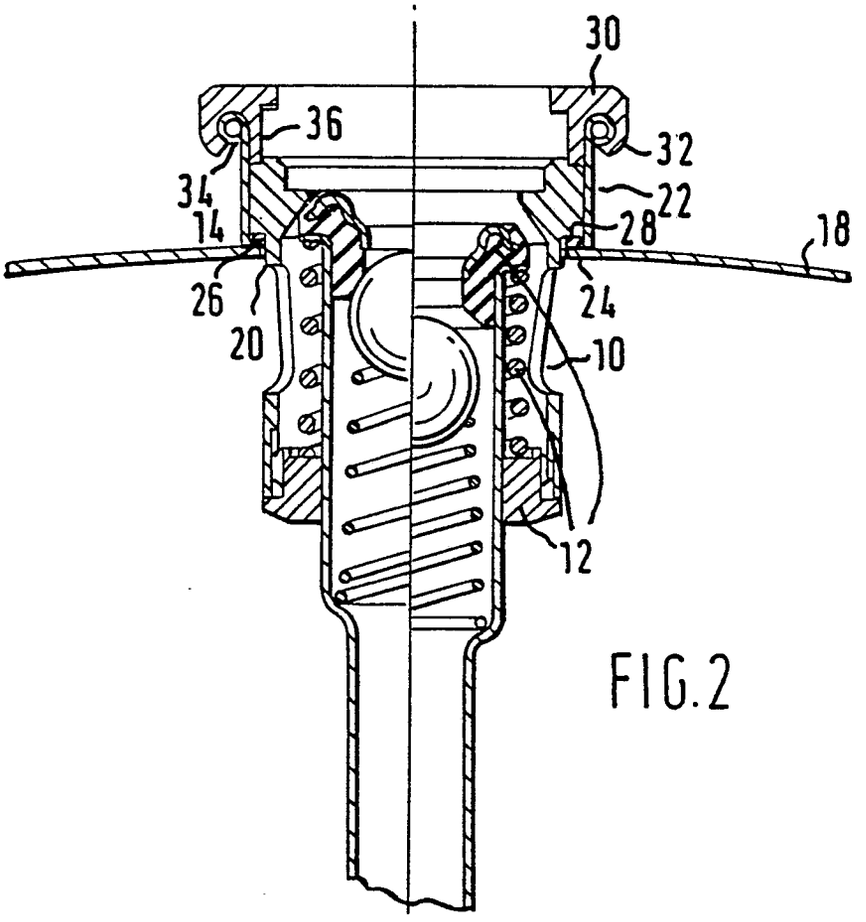

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12

FIG.2

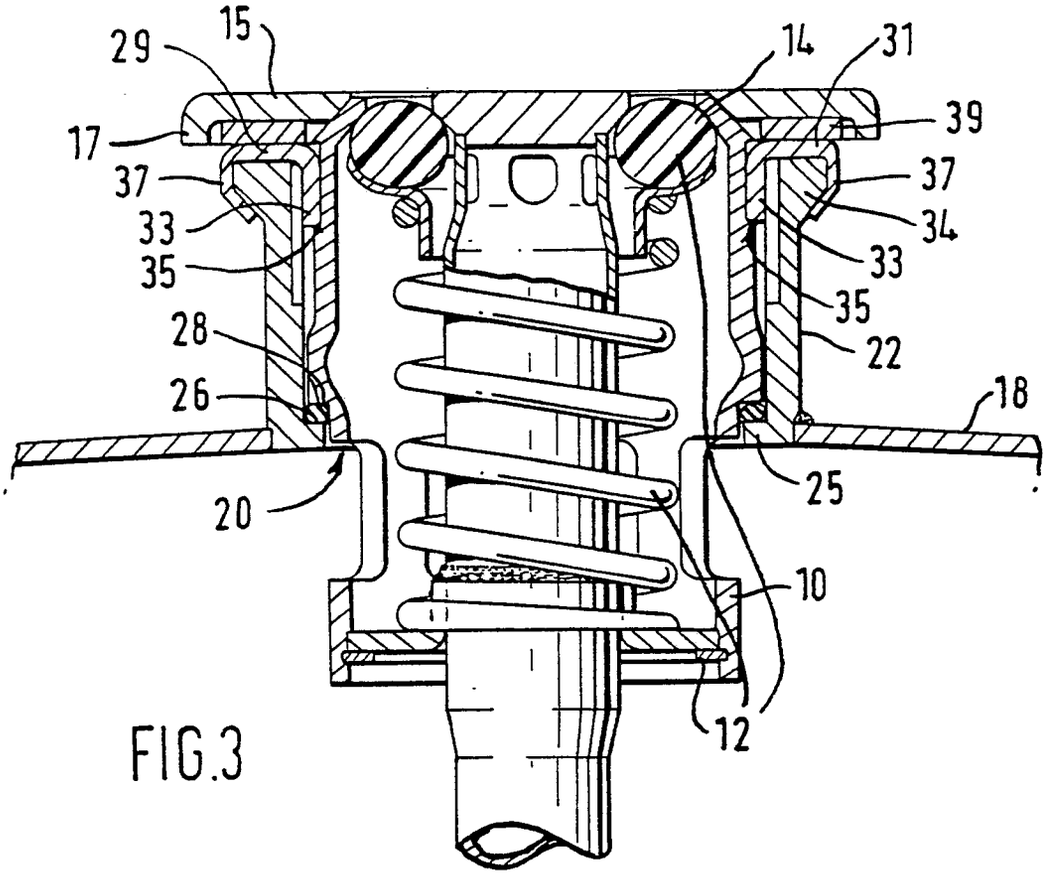



FIG.3