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(54) **Valved closure for kegs or casks.**

(57) A valved closure for a pressure vessel, such as a cask or keg (18), having a neck (22), for rigid attachment as a mounting ring to the mouth (24) of a tap hole (2) in the vessel, and a valve-containing tubular body (10) inserted co-axially in the neck; has a rigid ring (30) engaging the tubular body and the keg neck, the ring being of malleable metal and having an inner periphery (33) shaped to engage the tubular body and a relatively thin outer peripheral skirt (32) shaped to be deformed, by a power tool, into fitting engagement about the neck rim (34), to provide securing means for preventing unauthorised axial removal of the valved closure, the so formed securing collar being accessible by a tool to cut the collar off the neck to release the valved closure: the securing collar may be split into two or more parts (29 and 31) to enable it to be fitted about a large diameter flange (15) at the top of the tubular body.

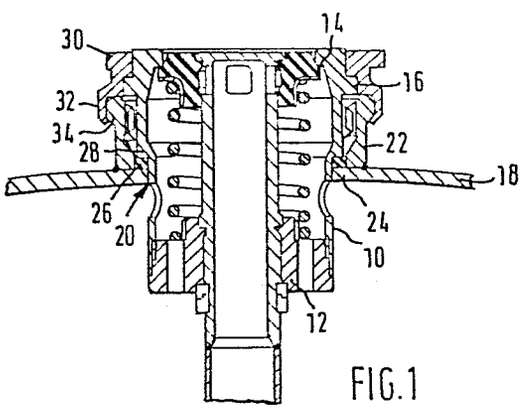

FIG.1

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VALVED CLOSURE FOR KEGS OR CASKS

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 or disengage 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 accessible and can be removed easily using a tool, e.g. a screwdriver. If this is done when the vessel is pressurised internally, the closure will be ejected with great force.

It has previously been proposed to provide a valved closure the unauthorised removal of which, or its components, is rendered difficult by making the manner of removal unobvious and also reducing to a minimum the risk of ejection of the valve closure by the pressure gas and such valve closures are, for example, described in United Kingdom Patent Specification No. 2075476A and European Patent Specification No. 0056295. The security systems described in both these specifications require substantially modified valve body design and, additionally, a special compatible keg neck or, in the case of existing kegs, a neck replacement.

It is an object of the present invention to provide a valved closure whereof the securing mechanism is generally suitable for all types of closure valve and is compatible with existing keg necks.

According to the present invention, a valved closure for a pressure vessel, such as a cask or keg, having a neck for rigid attachment as a mounting ring to the mouth of a tap hole in the vessel and a valve-containing tubular body inserted coaxially in the neck; has securing means for preventing unauthorised removal of the valved closure comprising a rigid ring of malleable metal having an inner periphery shaped to engage the tubular body and

a relatively thin outer peripheral skirt shaped to be deformed, by a power tool, into fitting engagement about the rim of a given neck, to prevent axial withdrawal of the valved closure, the so-formed securing collar being accessible by a tool to cut the collar off the neck to release the valved closure.

Such an invention is in contradistinction to the valve unit for a liquid container described in United Kingdom Patent Specification No.2117071A which discloses the use of a thin, anti-tamper ring 32.

Any shape or feature at the rim or about the exterior surface of the neck would suffice provided that the formed securing 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 and the formed securing collar prevents rotation of the tubular body as well as axial withdrawal.

In a second embodiment of the invention, the tubular body is plain and the keg neck may or may not have an internal thread; the formed securing collar provides the sole means of axially retaining the valve

closure in the neck.

The securing collar of the above two embodiments in each case consists of a rigid collar of malleable metal having a thin or 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 securing means for preventing unauthorised removal of the valved closure comprises two or more part rings of deformable metal 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 shaped 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 the 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 intc the keg neck, using the afore-mentioned 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, provides 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 valve 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 a pressure vessel, such as a cask or keg, having a neck, for rigid attachment as a mounting ring to the mouth of a tap hole in the vessel, a valve-containing tubular body inserted co-axially in the neck and an anti-tamper ring engaging the tubular body and the neck; characterised in that a rigid ring (30 or 29 and 31) of malleable metal has an inner periphery (33) shaped to engage the tubular body (10) and a relatively thin outer peripheral skirt (32 or 37) shaped to be deformed, by a power tool, into fitting engagement about the rim (34) of a given neck (22), to provide securing means for preventing unauthorised axial removal of the valved closure, the so formed securing collar being accessible by a tool to cut the collar off the neck to release the valved closure.

2. A closure as claimed in claim 1, and further 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 having a radially outwardly extending flange (16) proximate the top thereof; the securing collar (30) being shaped to engage the flange periphery.

3. A closure as claimed in claim 1, and further characterised in that the securing collar (30) provides the sole means of axially retaining the valved closure (10) in the keg neck (22).

4. A closure as claimed in claim 3, and further characterised in that the securing collar has an inner axially depending flange (36) to trap the valved closure (10) in the keg neck (22), the collar skirt (32) being shaped to be deformed into said fitting engagement about the rim (34) of the neck.

5. A closure as claimed in claim 1, and further characterised in that the securing means comprises two or more part rings (29 and 31) of deformable metal each having an inner periphery (33) shaped to engage with a locking feature (35) on or in the outer surface of the valve tubular body (10) and an outer peripheral skirt (37) shaped to be deformed into said fitting engagement about the rim (34) of a given neck (22).

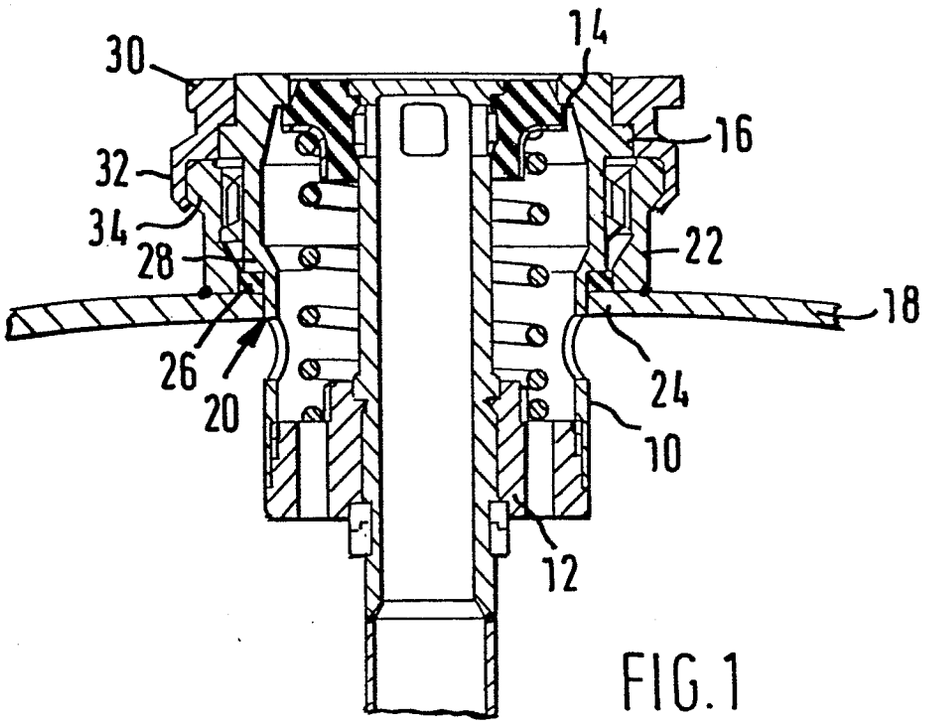
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FIG.1

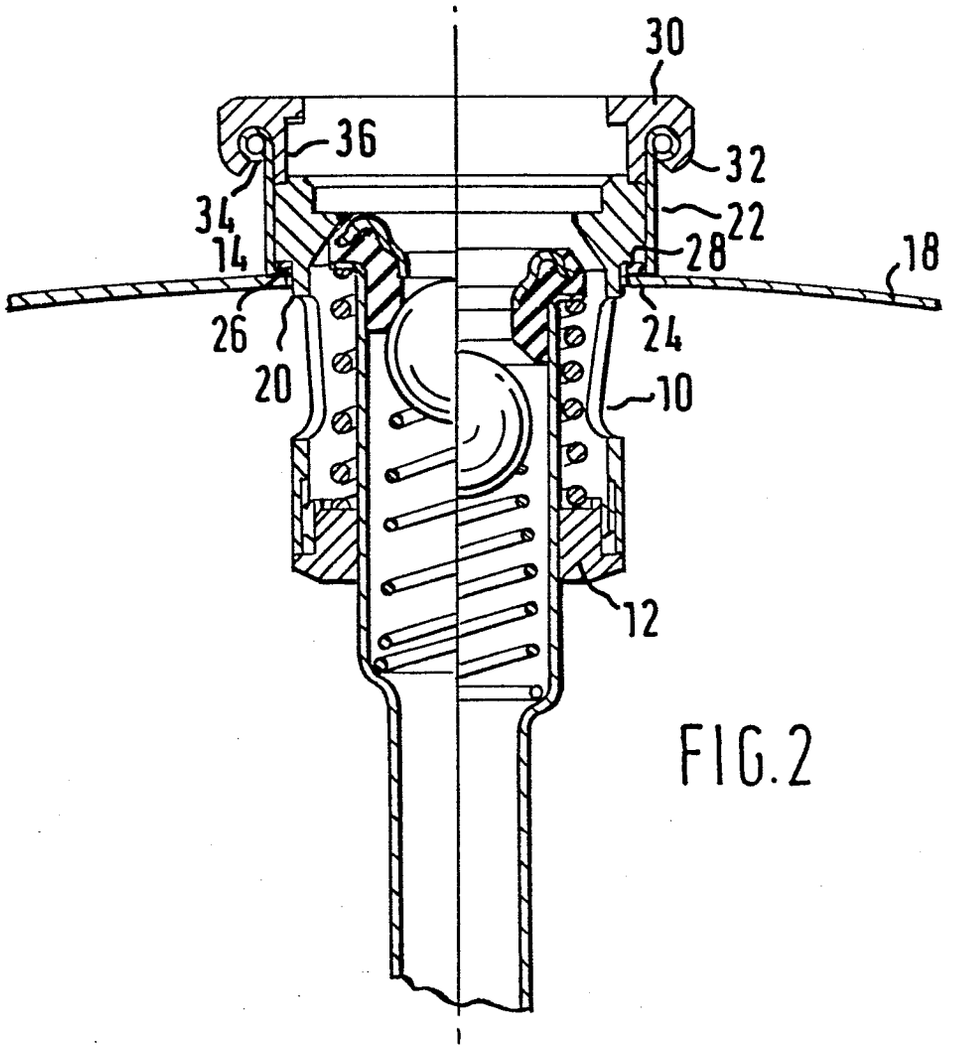
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FIG.2

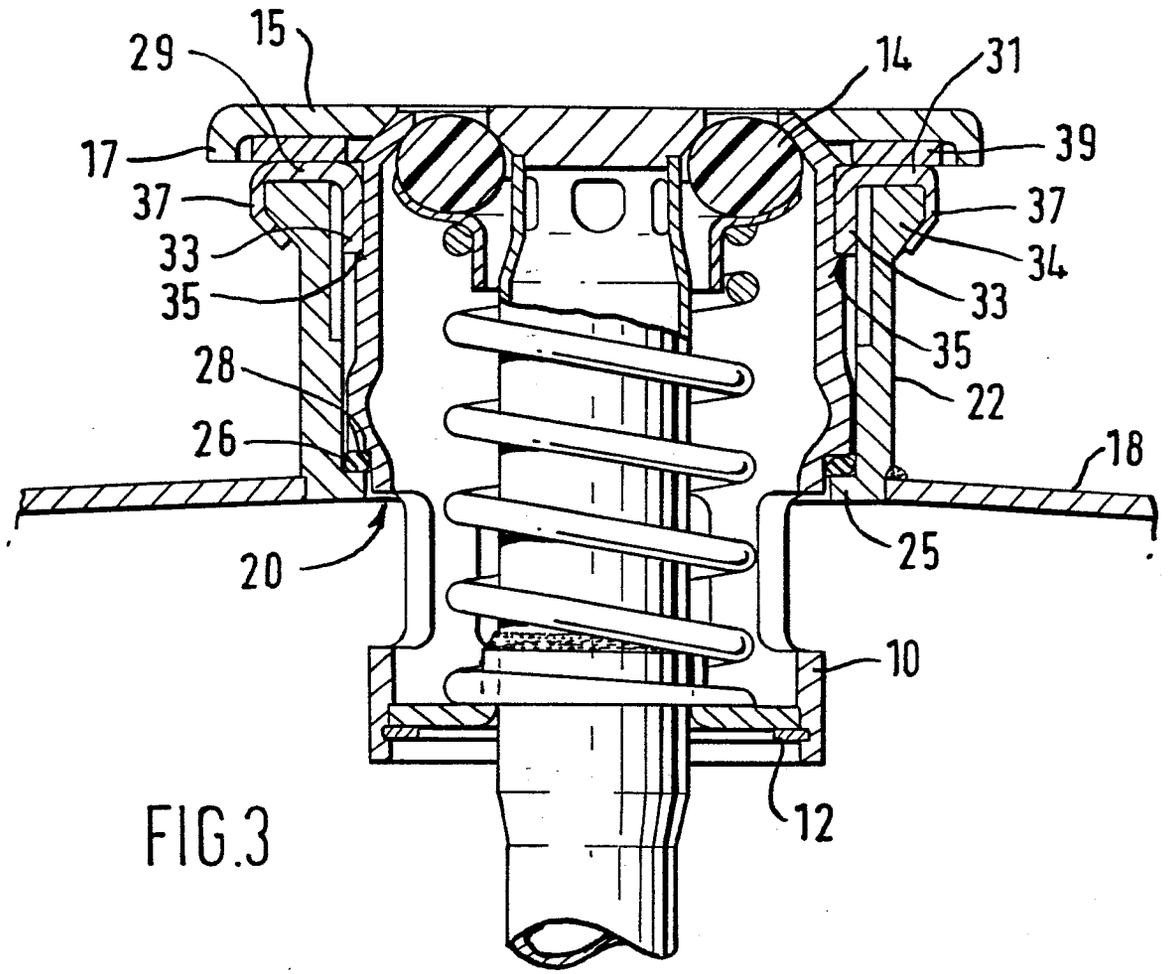

FIG.3

European Patent Office

0142966

Application number

EP 84 30 7773

EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	DE-A-1 775 676 (BALTZER) * Figures 2,6,7; page 8, line 9 - page 9; claims 5,6,11,14,15 *	1,3,4	B 67 D 1/08 B 65 D 25/38
Y	---	2	
Y	GB-A-1 214 953 (G. DOWNIE) * Figure 1; page 1, lines 58-66 *	2	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

B 67 D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	01-02-1985	DEUTSCH J.P.M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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