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(54) A COLLAR TO BE MOUNTED ON A CYLINDER OF A GAS BOTTLE

(57) The invention provides a collar adapted to be mounted on a cylinder of a gas bottle by a flap bridge, wherein said collar further comprises: a dual coupling hook for embracing the flap bridge of the liner and comprising: an inner coupling adapted to engage the flap bridge of the liner, and an outer threaded coupling comprising a stopper point; and a handle-set comprising: a coupling ledge, and a spring lock-in system; wherein the outer threaded coupling of the dual coupling hook is configured to engage the coupling ledge of the handle-set, and wherein the spring lock-in system of the handle-set is configured to lock-in the coupling ledge of the handle-set with the outer threaded coupling of the dual coupling hook by a rotary slide-in movement once the stopper point of the outer threaded coupling is reached.

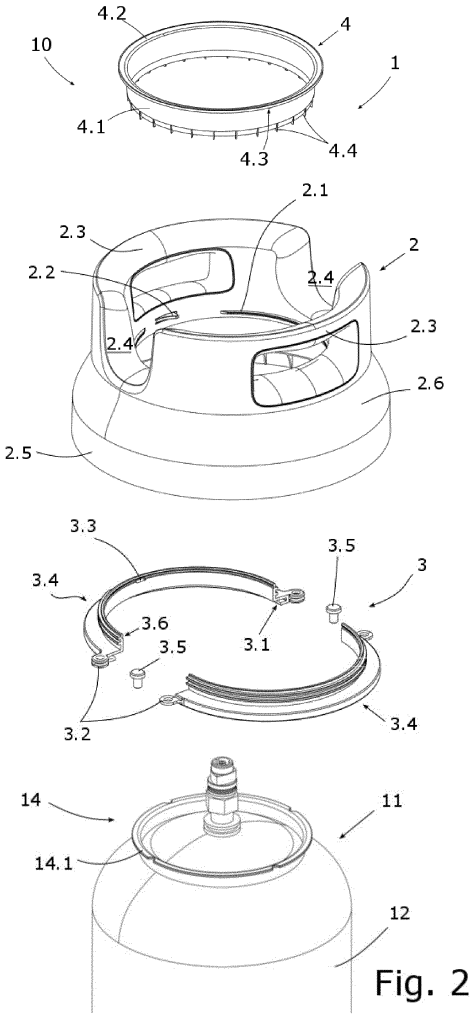

Fig. 2

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Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention belongs to the field of gas bottles, particularly to a fully replaceable handles-set or collar for cylinders or canisters.

[0002] More specifically, the invention is of special application in the lifting or moving of gas cylinders during transportation. Also, the invention sets forth a solution for minimizing or avoiding neglected operation or vandalizing acts in regard of collars or gas bottles themselves.

BACKGROUND OF THE INVENTION

[0003] A gas bottle contains a pressure vessel used to store gas at above atmospheric pressure allowing its distribution to end-users. A gas bottle may be conventionally designed for allowing cooking, heating and lighting both in indoors and outdoors use, for domestic or industrial purposes, camping, boating, leisure applications, or the same.

[0004] The gas bottle further comprises a cylinder with a replaceable collar attached to its top end. The cylinder, or the *so-called* canister, is the pressurized vessel in turn with a liner for containing LPG (Liquefied Petroleum Gas), such as butane or propane liquid petroleum gases.

[0005] The cylinder conventionally comprises an uninterrupted vertically inverted L-shaped flap bridge on the top hemisphere of the liner for transporting it by being handheld from the collar or handle-set engaged herein.

[0006] Thus, the collar of the gas bottle is conventionally used as a handling-set for allowing the transportation by the end-user or consumer.

[0007] Nevertheless, as the end-user should be any person either with a domestic or industrial purpose, the cylinder may be subject to an improper use, or even vandal acts, which would try to improperly manipulate the collar or gas bottle itself.

[0008] This abovementioned misused poses some problems as, for example, the risk of gas leakage or unintentionally disassemble of the collar, which may lead to unintentionally fall or drop of the gas bottle. Moreover, the possible gas leakage might be inadvertently produced which may in turn lead to a disregarded gas accumulation. Then, collateral drawbacks may arise.

SUMMARY OF THE INVENTION

[0009] The present invention provides a solution for the aforementioned problems, by a collar according to claim 1, a gas bottle according to claim 11, a method for mounting a collar on a cylinder of the gas bottle according to claim 12, and a method for un-mounting the collar according to claim 14. In dependent claims, preferred embodiments of the invention are defined.

[0010] In a first inventive aspect, the invention provides a collar adapted to be mounted on a cylinder of a gas bottle, wherein the cylinder comprises a liner with a flap bridge for transporting such liner by being handheld from a handle-set of the collar, wherein said collar further comprises:

- a dual coupling hook configured to embrace the flap bridge of the liner, the dual coupling hook comprising:
    - ◦ an inner coupling adapted to engage the flap bridge of the liner,
    - ◦ an outer threaded coupling comprising a stopper point; and
- a handle-set comprising:
    - ◦ a coupling ledge, and
    - ◦ a spring lock-in system;

wherein the outer threaded coupling of the dual coupling hook is configured to engage the coupling ledge of the handle-set, and

wherein the spring lock-in system of the handle-set is configured to lock-in the coupling ledge of the handle-set with the outer threaded coupling of the dual coupling hook by a rotary slide-in movement once the stopper point of the outer threaded coupling is reached.

[0011] It is to be noted that the dual coupling hook acts as a linking device securely connecting the handle-set to the liner on the gas bottle. There is no need of further elements to achieve a secure engaging between them.

[0012] In particular, the inner coupling is intended to be positioned in the lower end of the dual coupling hook in order to engage to the flap bridge of the liner. Therefore, the outer threaded coupling is positioned at the opposite end; this is, at the upper end of the dual coupling hook. Nevertheless, a person skilled in the art might recognize that the inner and outer ends can be exchanged depending on the location and shape of the flap bridge of the liner.

[0013] Advantageously, this collar provides a vandal-proof solution which extends security and safety handling of the liner. Additionally, the collar according to the invention improves maintenance capabilities carried out by professional staff (repairing and painting parts, plastic parts replacement, etc.).

[0014] Also, the pair spring lock-in system and stopper point provides a built-in safety and security system to avoid its misusing or un-mounting by non-authorized end-users or customers.

[0015] Furthermore, as the dual coupling hook is an intermediate linkage between the handle-set and the gas container liner itself, this allows the handle-set to be refittable and retrofittable to any liner type simply changing the dimensions or shape of the dual coupling hook. A collateral advantage of the replaceable characteristic of the collar is that it makes the collar simpler and more economic throughout different liner types.

[0016] Therefore, un-mounting the collar from the liner does not change its shape, geometry or size.

[0017] In a particular embodiment, the outer threaded coupling of the dual coupling hook is configured to firmly mating the coupling ledge of the handle-set along the full perimeter robustly. Advantageously, this provides a secured manner of engaging.

[0018] In a preferred embodiment, the outer threaded coupling of the dual coupling hook is configured to engage the coupling ledge of the handle-set by a rotary slide-in movement.

[0019] In a preferred embodiment, the rotary slide-in movement in the engaging is performed contra-clockwise to oppose the common screw-in and screw-out motion, aiming to obstruct or delay unwanted or unauthorized disassembling of the collar from the liner as a first vandal-proof barrier.

[0020] In a preferred embodiment, the lock-in between the coupling ledge and the outer threaded coupling once the stopper point is reached is configured to produce a distinctive sound confirming the correct positioning of the handle-set.

[0021] Advantageously, this aims to obstruct or delay unwanted or unauthorized disassembling of the collar from the liner as a second vandal-proof barrier

[0022] In a particular embodiment, the stopper point is a through hole featured on the outer threaded coupling, and the spring lock-in system is a retractile fin-shaped flange configured to be inserted in the through hole once reached in the rotary slide-in movement.

[0023] Advantageously, this allows an accurate lock-in in one rotary movement and avoids an unlocking in the contrary rotary movement.

[0024] In a particular embodiment, the inner coupling of the dual coupling hook is a slot adapted to engage a flat stage of the flap bridge of the liner.

[0025] Advantageously, the simple design of a slot to engage the flat stage of the flap bridge allows securely fixing the entire collar to the liner without the need for any additional elements in a secured manner.

[0026] Particularly, the flat stage of the flap bridge is the most common means for connecting the collar. Therefore, the design of the slot assures retrofittability of the same.

[0027] In a particular embodiment, the dual coupling hook is formed by two semicircular halves attached to each other at their ends by connecting pins.

[0028] Advantageously, this allows the dual coupling hook to be flexible, simple, easy to replace or retrofit, and cost effective to manufacture. It enables the dual coupling hook to be better adaptable to different liner types. Furthermore, allowing an easy disengaging by the detachable connecting pins, the dual coupling hook may be reusable.

[0029] Also, the professional staff may carry out maintenance operations in a quicker manner.

[0030] Optionally, the dual coupling hook is formed by a higher number of circular segments attached to each other at their ends by connecting pins.

[0031] In a particular embodiment, such collar further comprises a cover rim configured to engage with the dual coupling hook in order to conceal the same and avoid its operation.

[0032] The cover rim is configured to conceal the stopper point on the dual coupling hook, and to block the access to the spring lock-in system on the handle-set. Therefore, by concealing the stopper point on the dual coupling hook, the cover rim prevents or delays vandal actions attempts to separate the collar from the liner.

[0033] In a preferred embodiment, the cover rim is configured to snap-on with the dual coupling hook. The cover rim is configured to present enough stiffness so as to be engaged by itself, and enough flexibility so as to ensure easiness on removal.

[0034] Advantageously, removing the cover rim should be difficult enough to discourage vandal acts, but simple and quick so as to carry out maintenance operations by professional staff.

[0035] In a particular embodiment, the cover rim comprises,

- a conical protrusion configured to be inserted into the dual coupling hook, and
- an upper peripheral projection for concealing and sealing the dual platform hook.

[0036] Advantageously, the cover rim aligns and fits inside the dual coupling hook, therefore enhancing the concealing function.

[0037] In a particular embodiment, the cover rim further comprises at least one snap-on dent configured to snap onto a groove on the dual coupling hook.

[0038] Therefore, the dual coupling hook further comprises a groove configured to receive at least one snap-on dent of the cover rim.

[0039] In a particular embodiment, the cover rim comprises at least one downward-vertical rib spacer adapted to rest onto the liner surface in order to leave a venting gap.

[0040] Advantageously, this ensures a venting gap between the bottom of the cover rim and the top of the liner for safety reasons.

[0041] In a particular embodiment, the handle-set further comprises at least one built-in handle and at least one U-shaped gas lines way.

[0042] Advantageously, this provides optimal ergonomics, with a strong grip and a solid feel on the end-user's hands.

[0043] In a particular embodiment, such collar is made of polymer; preferably at least the handle-set is a polymer single body manufactured using an injection molding technology. More preferably, the collar is made of polypropylene (PP).

[0044] Advantageously, this allows reaching a reasonable and acceptable manufacturing cost. In addition, complex tooling processes are avoided, thus the cost are

kept on a reasonable level.

[0045] In a preferred embodiment, the dual coupling hook is made of composite including a reinforcement, such as glass fiber, to increase its tensile properties.

[0046] In a second inventive aspect, the invention provides a gas bottle comprising a cylinder with a gas container liner, the gas container liner in turn comprising a flap bridge for transporting such liner by being handheld from a handle-set of a collar according to any of the embodiments of the first inventive aspect mounted thereon.

[0047] In an embodiment, the collar comprises an external contour with no-edges, *i.e.* comprises a soft surface on the shoulder curve. In addition, the collar comprises a smooth diameter transition from the top of the liner.

[0048] Advantageously, a dominantly soft and smooth no-edges outer surface of the collar enhances ergonomics and provides an easy and distinctly identification thereof.

[0049] In a preferred embodiment, the cylinder is a lightweight carbon steel metal alloy cylinder.

[0050] In a third inventive aspect, the invention provides a method for mounting a collar on a cylinder of a gas bottle, wherein the method comprises the steps of:

a) providing a gas bottle comprising a cylinder with a gas container liner, the gas container liner in turn comprising a flap bridge for transporting such liner by being handheld,
b) providing a collar according to any of the embodiments of the first inventive aspect,
c) engaging the inner coupling of the dual coupling hook with the flap bridge of the liner, and
d) engaging the coupling ledge of the handle-set with the outer threaded coupling of the dual coupling hook by a rotary slide-in movement up to the spring lock-in system of the handle-set reaches the stopper point of the outer threaded coupling, locking-in thereby the coupling ledge with the outer threaded coupling.

[0051] In a particular embodiment, the method further comprises after step d) the step of: engaging the cover rim with the dual coupling hook in order to conceal the same.

[0052] In a fourth inventive aspect, the invention provides a method for un-mounting a collar from a cylinder of a gas bottle, wherein the method comprises the steps of:

a) providing a gas bottle comprising a cylinder with a gas container liner, the liner in turn comprising a flap bridge and a collar according to any of the embodiments of the first inventive aspect mounted thereon, or a gas bottle according to the second inventive aspect,
b) providing a releasing tool adapted to release the spring lock-in system,
c) releasing the spring lock-in system in order to disable it from the stopper point on the outer threaded coupling of the dual coupling hook by the releasing tool,
d) disengaging the coupling ledge of the handle-set from the outer threaded coupling of the dual coupling hook by a turn back rotary slide-out movement, and
e) disengaging the inner coupling of the dual coupling hook from the flap bridge of the liner.

[0053] In a particular embodiment, the method further comprises between steps b) and c) the step of: disengaging a cover rim from the dual coupling hook in order to allow the access to the spring lock-in system.

[0054] All the features described in this specification (including the claims, description and drawings) and/or all the steps of the described method can be combined in any combination, with the exception of combinations of such mutually exclusive features and/or steps.

DESCRIPTION OF THE DRAWINGS

[0055] These and other characteristics and advantages of the invention will become clearly understood in view of the detailed description of the invention which becomes apparent from a preferred embodiment of the invention, given just as an example and not being limited thereto, with reference to the drawings.

Figure 1 This figure shows a gas bottle comprising a cylinder with a gas container liner according to the invention.

Figure 2 This figure shows an exploded view of a collar adapted to be mounted on a cylinder of a gas bottle according to the invention.

Figure 3 This figure shows a schematic flowchart of the method for mounting a collar on a cylinder according to the invention.

Figure 4 This figure shows a schematic flowchart of the method for un-mounting a collar from a cylinder according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

Gas bottle (10) comprising a cylinder (11) and a collar

[0056] The invention defines a gas bottle (10) comprising a cylinder (11) with a gas container liner (12). The gas container liner (12) in turn comprises a flap bridge (14) for transporting such liner (12) by being handheld from a handle-set (2) of a collar (1) mounted thereon.

[0057] Figure 1 shows a gas bottle (10) comprising a cylinder (11) and a collar (1) mounted thereon. In turn, the cylinder (11) comprises a base ring (13) and a gas container liner (12). The gas container liner (12) comprises a top hemisphere with a flap bridge (14) with a flat

stage (14.1) and a bottom hemisphere resting and attached to the base ring (13).

[0058] The flap bridge (14) with the flat stage (14.1) (not shown in Figure 1) is the *so-called* vertically inverted L-shaped flap bridge placed on the top hemisphere of the gas container liner (12).

[0059] In a preferred embodiment, the cylinder (11) is a lightweight carbon steel metal alloy cylinder.

[0060] The base ring (13) of the gas container liner (12) is a large foot ring and provides a stable coupling for the entire gas bottle when stands up, as well as a full diameter extra handle in the bottom end of the gas bottle (10) to ease manual transportation.

[0061] In addition, the base ring (13) is conductive, therefore guarantying a conductive path to the ground. Accordingly, the gas bottle (10) does not attach any extra non-conductive or conductive parts or components to provide such electrical function.

[0062] The connection between the base ring (13) and the gas container liner (12) is welded in a conventional manner. Additionally, the connection between the flap bridge (14) and the liner (12) is also welded in a conventional manner.

A collar (1) adapted to be mounted on a cylinder (11) of a gas bottle (10)

[0063] The invention also defines a collar (1) adapted to be mounted on a cylinder (11).

[0064] Figure 2 shows an exploded view of an embodiment of the collar (1) adapted to be mounted on a cylinder (11) of a gas bottle (10). The cylinder (11) comprises a gas container liner (12) with a flap bridge (14) for transporting such liner by being handheld from a handle-set (2) of the collar (1), wherein said collar (1) further comprises:

- a dual coupling hook (3) configured to embrace the flap bridge (14) of the liner (12), the dual coupling hook (3) comprising:
    - ◦ an inner coupling (3.1) adapted to engage the flap bridge (14) of the liner (12),
    - ◦ an outer threaded coupling (3.2) comprising a stopper point (3.3); and
- a handle-set (2) comprising:
    - ◦ a coupling ledge (2.1), and
    - ◦ a spring lock-in system (2.2);

wherein the outer threaded coupling (3.2) of the dual coupling hook (3) is configured to engage the coupling ledge (2.1) of the handle-set (2), and
wherein the spring lock-in system (2.2) of the handle-set (2) is configured to lock-in the coupling ledge (2.1) of the handle-set (2) with the outer threaded coupling (3.2) of the dual coupling hook (3) by a rotary slide-in movement once the stopper point (3.3) of the outer threaded coupling (3.2) is reached.

[0065] Figure 2 also shows a detailed view of the components of the collar (1). In short, the collar (1) comprises a dual coupling hook (3) and a handle-set (2). Additionally, the collar (1) may comprise a cover rim (4), preferably a snap-on hook cover rim.

[0066] As can be seen in Figure 2, the stopper point (3.3) is featured or built-in on a portion of the outer threaded coupling (3.2) in the form of a through hole. In particular, the stopper point (3.3) is featured on the upper edge of one of the semicircular halves of the dual coupling hook.

[0067] The integrated security and safety spring lock-in system (2.2) is a retractile fin-shaped flange with a perimeter suitable to be inserted in such through hole (3.3) once reached by the rotary slide-in movement. Accordingly, the through hole (3.3) is substantially elongated.

[0068] The handle-set (2) shown in Figure 2 comprises at least one built-in handle (2.3), preferably two symmetrical handles (2.3) for a comfortable usage. Also, the handle-set (2) comprises at least one U-shaped gas lines way (2.4), preferably two U-shaped gas lines ways or openings (2.4) for gas line clearance.

[0069] Furthermore, the handle-set (2) defines a soft surface on the shoulder curve (2.5), enhancing the smooth diameter transition (2.6) from the metal liner (12) to the handle-set (2).

[0070] Figure 2 also shows a detailed view of the dual coupling hook (3), which defines a full perimeter ring-shaped element. As mentioned, the dual coupling hook (3) is formed by two semicircular halves (3.4) attached to each other at their ends by connecting pins (3.5).

[0071] The dual coupling hook (3) is named "dual" because it comprises two couplings acting therefore as an intermediate linkage between the handle-set and the gas container liner. One of such couplings is the inner coupling (3.1) in the form of a slot with a cross-section substantially similar to the stage (14.1) of the flap bridge (14) of the liner (12) to be engage thereto.

[0072] The other coupling of the dual coupling hook (3) is the outer threaded coupling (3.2) comprising a stopper point (3.3) intended to engage with the coupling ledge (2.1) of the handle-set (2). The engaging is produced by a rotary slide-in movement, preferably performed contra-clockwise as opposed to the common screw-in and screw-out motion.

[0073] As a result, the stopper point (3.3) restrains the contra-clockwise rotary slide-in movement of the spring lock-in system (2.2) on the handle-set (2), thus locking it to the dual coupling hook (3).

[0074] Furthermore, the connecting pins (3.5) attached at the ends of the two semicircular halves (3.4) allow joining them (3.4) by a rotational side union. Thus, it provides flexibility to embrace and engage, within its entire perimeter, the flap stage (14.1) on the liner (12).

[0075] Having attached one connecting pin (3.5), it pro-

vides a hinge for allowing the rotational side union. Once engaged with the metal flap bridge (14), the insertion of the other connecting pin (3.5) locks-in the dual coupling hook (3) in a strong and safe full perimeter union.

[0076] Removing at least one connecting pin (3.5) allows to un-mount and even to replace either the dual coupling hook (3) or the handle-set (2) at any time. The use of removable connecting pins (3.5) provides an indefinitely capability to mount and un-mount the dual coupling hook (3) from the liner (12).

[0077] The dual coupling hook (3) further comprises a groove (3.6) along its inner wall (3.7). Preferably, the groove (3.6) is continuous along the whole perimeter of the inner wall (3.7) positioned close to the top edge of the dual coupling hook (3). In other words, the groove (3.6) is substantially parallel to the inner coupling (3.1) on the opposite edge of the inner wall (3.7).

[0078] Such groove (3.6) is configured to house at least one snap-on dent (4.3) of the cover rim (4).

[0079] The cover rim (4) acts as a top lid protecting and concealing the dual coupling hook (3) in order to avoid its manipulation by an unauthorized person.

[0080] The at least one snap-on dent (4.3) is preferably a set of snap-on dents (4.3) homogenously distributed and placed under an upper peripheral projection (4.2). By this way, a set of snap-on dents (4.3) are sheltered by the upper peripheral projection (4.2). The snap-on dents (4.3) are configured to, by means of stroke force, snap-on into the groove (3.6) of the dual coupling hook (3).

[0081] Furthermore, the cover rim (4) comprises a conical protrusion (4.1) configured to be inserted into the dual coupling hook (3). Once inserted, the outer wall of the conical protrusion (4.1) should be entirely in contact with the inner wall (3.7) of the dual coupling hook (3).

[0082] In addition, the cover rim (4) further comprises at least one downward-vertical rib spacer (4.4) configured to rest onto the top hemisphere of the liner (12) surface in order to leave a venting gap. Preferably, the at least one downward-vertical rib spacer (4.4) is an array of downward-vertical rib spacer (4.4) further outspreading from the bottom end of the conical protrusion (4.1), therefore ensuring a venting gap between the cover rim (4) and the liner (12).

Method for mounting and un-mounting a collar (1) on a cylinder (11)

[0083] Figure 3 shows schematically a flowchart with the sequence for mounting a collar (1) on a cylinder (11) of a gas bottle (10). The sequence comprising the steps of:

a) providing a gas container liner (12) comprising a flap bridge (14) for transporting such liner by being handheld,
b) providing the collar (1) of figure 2,
c)engaging the inner coupling (3.1) of the dual coupling hook (3) with the flap bridge (14) of the liner (12),
d) engaging the coupling ledge (2.1) of the handle-set (2) with the outer threaded coupling (3.2) of the dual coupling hook (3) by a rotary slide-in movement up to the spring lock-in system (2.2) of the handle-set (2) reaches the stopper point (3.3) of the outer threaded coupling (3.2), locking-in thereby the coupling ledge (2.1) with the outer threaded coupling (3.2), and
e) engaging the cover rim (4) with the dual coupling hook (3) in order to conceal the same.

[0084] In step c) of the above method, the flap bridge (14) of the gas container liner (12) is inserted in the inner coupling (3.1) of the dual coupling hook (3). If the dual coupling hook (3) is formed by two semicircular halves (3.4), the connecting pins (3.5) are connected sequentially to allow a pivoting union and ease embracing the entire perimeter of the flap bridge (14).

[0085] Once engaged with the flap bridge (14), the second connecting pin (3.5) is inserted therefore locking-in the dual coupling hook (3) within the flap bridge (14) in a strong and safe full perimeter union.

[0086] Furthermore, the engaging in step d) is produced by a rotary slide-in movement, preferably performed contra-clockwise as opposed to the common screw-in and screw-out motion.

[0087] As a result, the stopper point (3.3) restrains the contra-clockwise rotary slide-in movement of the spring lock-in system (2.2) on the handle-set (2), thus locking it to the dual coupling hook (3).

[0088] In step e) of the above method, the cover rim (4) aligns with the dual coupling hook (3) and snaps-on to it by means of a stroke force. In particular, at least one snap-on dent (4.3) of the cover rim (4) snaps-on into a groove (3.6) of the dual coupling hook (3) by means of such stroke force. During the insertion, an outer wall of the conical protrusion (4.1) becomes in contact with an inner wall (3.7) of the dual coupling hook (3) being all sheltered by an upper peripheral projection (4.2).

[0089] Figure 4 shows schematically a flowchart with the sequence for un-mounting a collar (1) from a cylinder (11) of a gas bottle (10). The sequence comprising the steps of:

a) providing a gas bottle (10) comprising a cylinder (11) with a gas container liner (12), the liner in turn comprising a flap bridge (14), and a collar (1) of figure 2 mounted thereon, or a gas bottle (10) of figure 1,
b) providing a special tool (5) adapted to release the spring lock-in system (2.2),
c) disengaging a cover rim (4) from the dual coupling hook (3) in order to allow the access to the spring lock-in system (2.2).
d) releasing the spring lock-in system (2.2) in order to disable it from the stopper point (3.3) on the outer threaded coupling (3.2) of the dual coupling hook (3) by the releasing tool,

e) disengaging the coupling ledge (2.1) of the handle-set (2) from the outer threaded coupling (3.2) of the dual coupling hook (3) by a turn back rotary slide-out movement, and
f) disengaging the inner coupling (3.1) of the dual coupling hook (3) from the flap bridge (14) of the liner (12).

[0090] In particular, in order to un-mount the collar (1) from the liner (12), in step d) of the above method it is required to release the spring lock-in system by pushing it inwards with a special tool (5) and free it from the stopper point (3.3) on the dual coupling hook (3).
[0091] Hence, this allows a clockwise turn back rotary slide-out movement for unscrew the coupling ledge (2.1) of the handle-set (2) from the outer threaded coupling (3.2) of the dual coupling hook (3).
[0092] It is to be noted that the releasing tool is configured to push inwards the spring lock-in system, preferably the retractile fin-shaped flange. In a preferred example, this tool would be only accessible to authorized professional staff in order not to damage any of the components during un-mounting as a vandal-proof barrier.
[0093] Also, in the event the dual coupling hook (3) is formed by two semicircular halves (3.4) during the later un-mounting method, it is further required to detach the connecting pins (3.5) either sequentially or at the same time.

Claims

1. A collar (1) adapted to be mounted on a cylinder (11) of a gas bottle (10), wherein the cylinder (11) comprises a liner (12) with a flap bridge (14) for transporting such liner by being handheld from a handle-set (2) of the collar (1), wherein said collar (1) further comprises:

- a dual coupling hook (3) configured to embrace the flap bridge (14) of the liner (12), the dual coupling hook (3) comprising:
  - an inner coupling (3.1) adapted to engage the flap bridge (14) of the liner (12),
  - an outer threaded coupling (3.2) comprising a stopper point (3.3); and
- a handle-set (2) comprising:
  - a coupling ledge (2.1), and
  - a spring lock-in system (2.2);

wherein the outer threaded coupling (3.2) of the dual coupling hook (3) is configured to engage the coupling ledge (2.1) of the handle-set (2), and wherein the spring lock-in system (2.2) of the handle-set (2) is configured to lock-in the coupling ledge (2.1) of the handle-set (2) with the outer threaded coupling (3.2) of the dual coupling hook (3) by a rotary slide-in movement once the stopper point (3.3) of the outer threaded coupling (3.2) is reached.

2. The collar (1) according to claim 1, wherein the stopper point (3.3) is a through hole featured on the outer threaded coupling (3.2), and the spring lock-in system (2.2) is a retractile fin-shaped flange configured to be inserted in the through hole once reached in the rotary slide-in movement.

3. The collar (1) according to any of claims 1 or 2, wherein the inner coupling (3.1) of the dual coupling hook (3) is a slot adapted to engage a flat stage (14.1) of the flap bridge (14) of the liner (12).

4. The collar (1) according to any of the preceding claims, wherein the dual coupling hook (3) is formed by two semicircular halves (3.4) attached to each other at their ends by connecting pins (3.5).

5. The collar (1) according to any of the preceding claims, wherein such collar (1) further comprises a cover rim (4) configured to be engaged with the dual coupling hook (3) in order to conceal the same and avoid its manipulation.

6. The collar (1) according to the preceding claim, wherein the cover rim (4) comprises

- a conical protrusion (4.1) configured to be inserted into the dual coupling hook (3), and
- an outer peripheral projection (4.2) for concealing and sealing the dual coupling hook (3).

7. The collar (1) according to any of claims 5 or 6, wherein the cover rim (4) further comprises at least one snap-on dent (4.3) configured to snap onto a groove (3.6) on the dual coupling hook (3).

8. The collar (1) according to any of claims 5 to 7, wherein the cover rim (4) comprises at least one downward-vertical rib spacer (4.4) configured to rest onto the liner (12) surface in order to leave a venting gap.

9. The collar (1) according to any of the preceding claims, wherein the handle-set (2) further comprises at least one built-in handle (2.3) and at least one U-shaped gas lines way (2.4).

10. The collar (1) according to any of the preceding claims, wherein such collar (1) is made of polymer, preferably at least the handle-set (2) is a polymer single body manufactured using an injection molding technology.

11. A gas bottle (10) comprising a cylinder (11) with a gas container liner (12), the gas container liner (12) in turn comprising a flap bridge (14) for transporting such liner (12) by being handheld from a handle-set (2) of a collar (1) according to any of claims 1 to 10 mounted thereon.

12. A method for mounting a collar (1) on a cylinder (11) of a gas bottle (10), wherein the method comprises the steps of:

f) providing a gas bottle (10) comprising a cylinder (11) with a gas container liner (12), the gas container liner (12) in turn comprising a flap bridge (14) for transporting such liner by being handheld,
g) providing a collar (1) according to any of claims 1 to 10,
h) engaging the inner coupling (3.1) of the dual coupling hook (3) with the flap bridge (14) of the liner (12), and
i) engaging the coupling ledge (2.1) of the handle-set (2) with the outer threaded coupling (3.2) of the dual coupling hook (3) by a rotary slide-in movement up to the spring lock-in system (2.2) of the handle-set (2) reaches the stopper point (3.3) of the outer threaded coupling (3.2), locking-in thereby the coupling ledge (2.1) with the outer threaded coupling (3.2).

13. The method for mounting a collar (1) on a cylinder (11) of a gas bottle (10) according to the previous claims, wherein the collar (1) is provided according to any of claims 5 to 10, and wherein the method further comprises after step d) the step of:

j) engaging the cover rim (4) with the dual coupling hook (3) in order to conceal the same.

14. A method for un-mounting a collar (1) from a cylinder (11) of a gas bottle (10), wherein the method comprises the steps of:

g) providing a gas bottle (10) comprising a cylinder (11) with a gas container liner (12), the liner in turn comprising a flap bridge (14) and a collar (1) according to any of claims 1 to 10 mounted thereon, or a gas bottle (10) according to claim 11,
h) providing a special tool (5) adapted to release the spring lock-in system (2.2),
i) releasing the spring lock-in system (2.2) in order to disable it from the stopper point (3.3) on the outer threaded coupling (3.2) of the dual coupling hook (3) by the special tool (5),
j) disengaging the coupling ledge (2.1) of the handle-set (2) from the outer threaded coupling (3.2) of the dual coupling hook (3) by a turn back rotary slide-out movement, and
k)disengaging the inner coupling (3.1) of the dual coupling hook (3) from the flap bridge (14) of the liner (12).

15. The method for mounting a collar (1) on a cylinder (11) of a gas bottle (10) according to the previous claims, wherein the collar (1) is provided according to any of claims 5 to 10, and wherein the method further comprises between steps b) and c) the step of: disengaging a cover rim (4) from the dual coupling hook (3) in order to allow the access to the spring lock-in system (2.2).

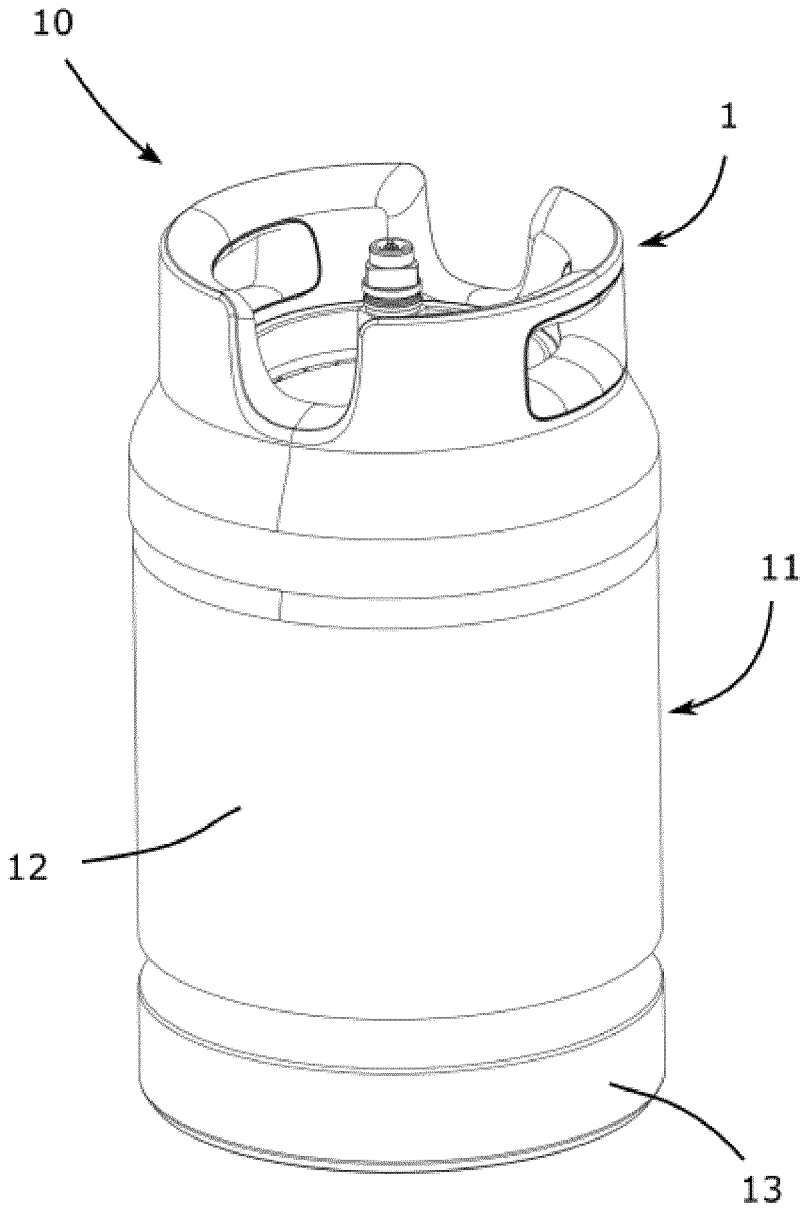

Fig. 1

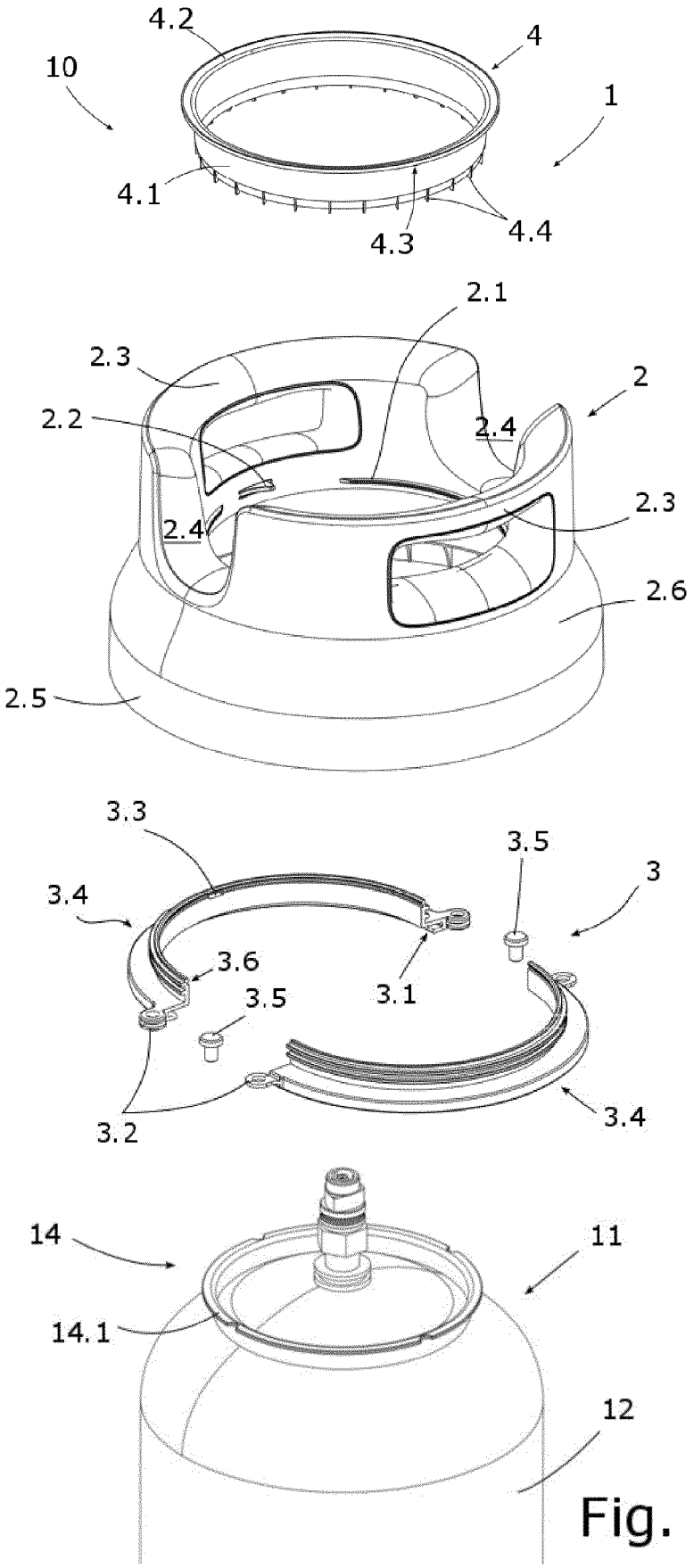
4.2
4
10
1
4.1
4.3
4.4
2.1
2.3
2
2.2
2.4
2.4
2.3
2.6
2.5
3.3
3.5
3
3.4
3.6
3.1
3.5
3.2
3.4
14
11
14.1
12

Fig. 2

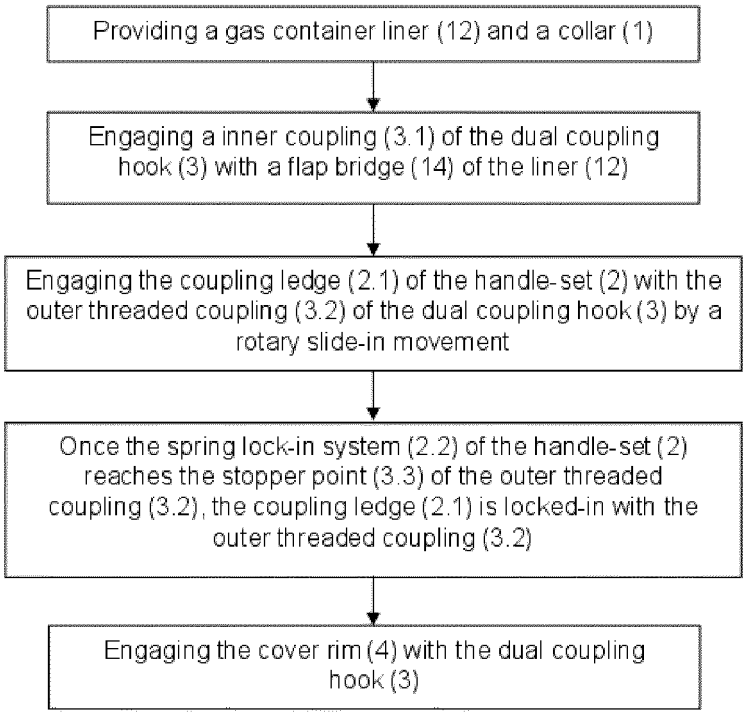
Providing a gas container liner (12) and a collar (1)
Engaging a inner coupling (3.1) of the dual coupling hook (3) with a flap bridge (14) of the liner (12)
Engaging the coupling ledge (2.1) of the handle-set (2) with the outer threaded coupling (3.2) of the dual coupling hook (3) by a rotary slide-in movement
Once the spring lock-in system (2.2) of the handle-set (2) reaches the stopper point (3.3) of the outer threaded coupling (3.2), the coupling ledge (2.1) is locked-in with the outer threaded coupling (3.2)
Engaging the cover rim (4) with the dual coupling hook (3)

Fig. 3

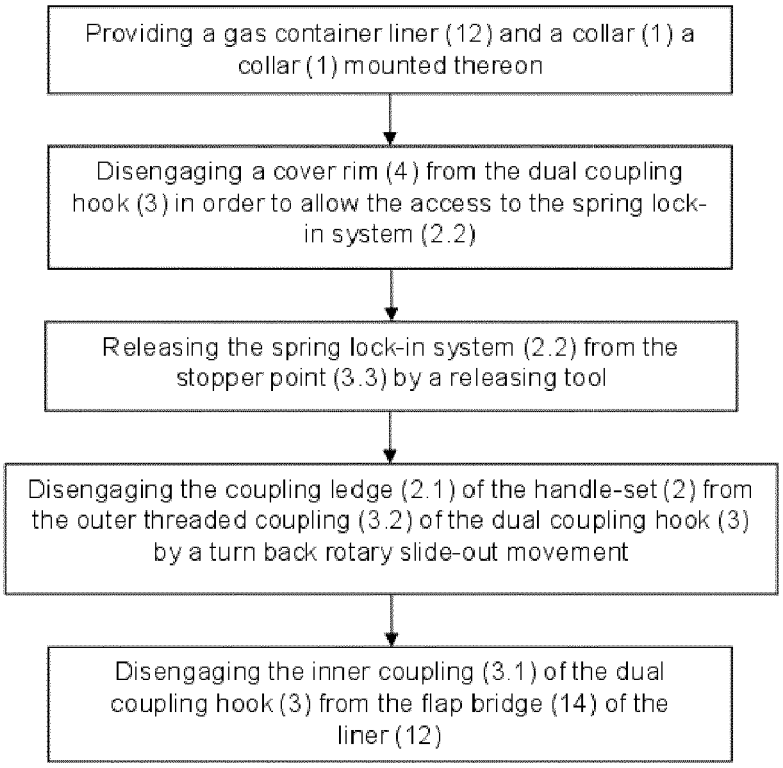
Providing a gas container liner (12) and a collar (1) a collar (1) mounted thereon
Disengaging a cover rim (4) from the dual coupling hook (3) in order to allow the access to the spring lock-in system (2.2)
Releasing the spring lock-in system (2.2) from the stopper point (3.3) by a releasing tool
Disengaging the coupling ledge (2.1) of the handle-set (2) from the outer threaded coupling (3.2) of the dual coupling hook (3) by a turn back rotary slide-out movement
Disengaging the inner coupling (3.1) of the dual coupling hook (3) from the flap bridge (14) of the liner (12)

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 18 38 2521

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	16 January 2019	Papagiannis, Michail

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L : document cited for other reasons

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