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(19) **United States**(12) **Patent Application Publication**
LEOPOLD(10) **Pub. No.: US 2017/0066575 A1**(43) **Pub. Date: Mar. 9, 2017**(54) **CLOSURE FOR A VESSEL AND VESSEL**
COMPRISING SUCH A CLOSURE*B65D 43/22* (2006.01)*B65D 43/02* (2006.01)(71) Applicant: **fischer automotive systems GmbH &**
Co. KG, Horb a.N. (DE)(52) **U.S. Cl.**CPC *B65D 51/18* (2013.01); *B65D 43/0225*(2013.01); *B65D 43/16* (2013.01); *B65D**43/22* (2013.01); *B65D 2251/0021* (2013.01);*B65D 2251/0028* (2013.01); *B65D 2251/0081*(2013.01); *B65D 2251/009* (2013.01)(72) Inventor: **Gunter LEOPOLD, Baiersbronn (DE)**(21) Appl. No.: **15/246,727**(22) Filed: **Aug. 25, 2016**(30) **Foreign Application Priority Data**

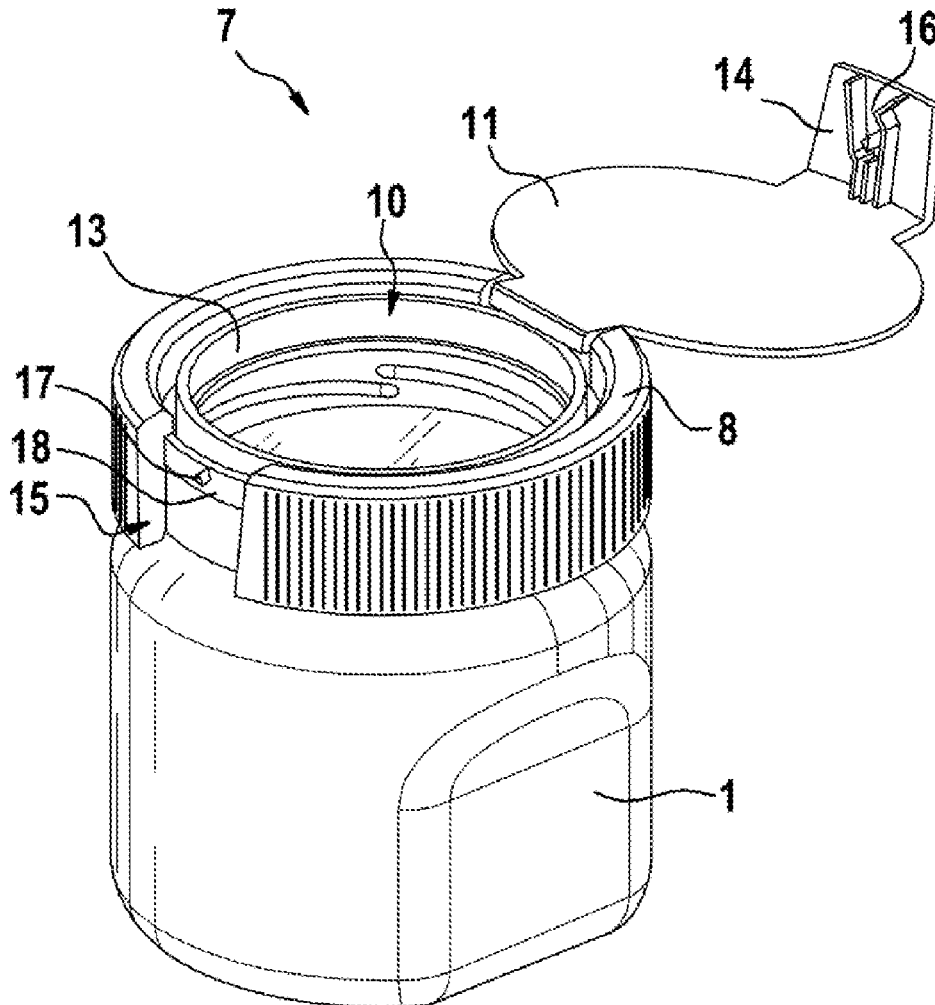
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ABSTRACT

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A closure for a vessel is provided, including a first closure part to which a cover is pivotably attached, which can be kept closed by way of a push-push locking mechanism. The invention enables a large-surface-area cover, which does not impair filling and emptying of the vessel. The closure covers a seal of the vessel.



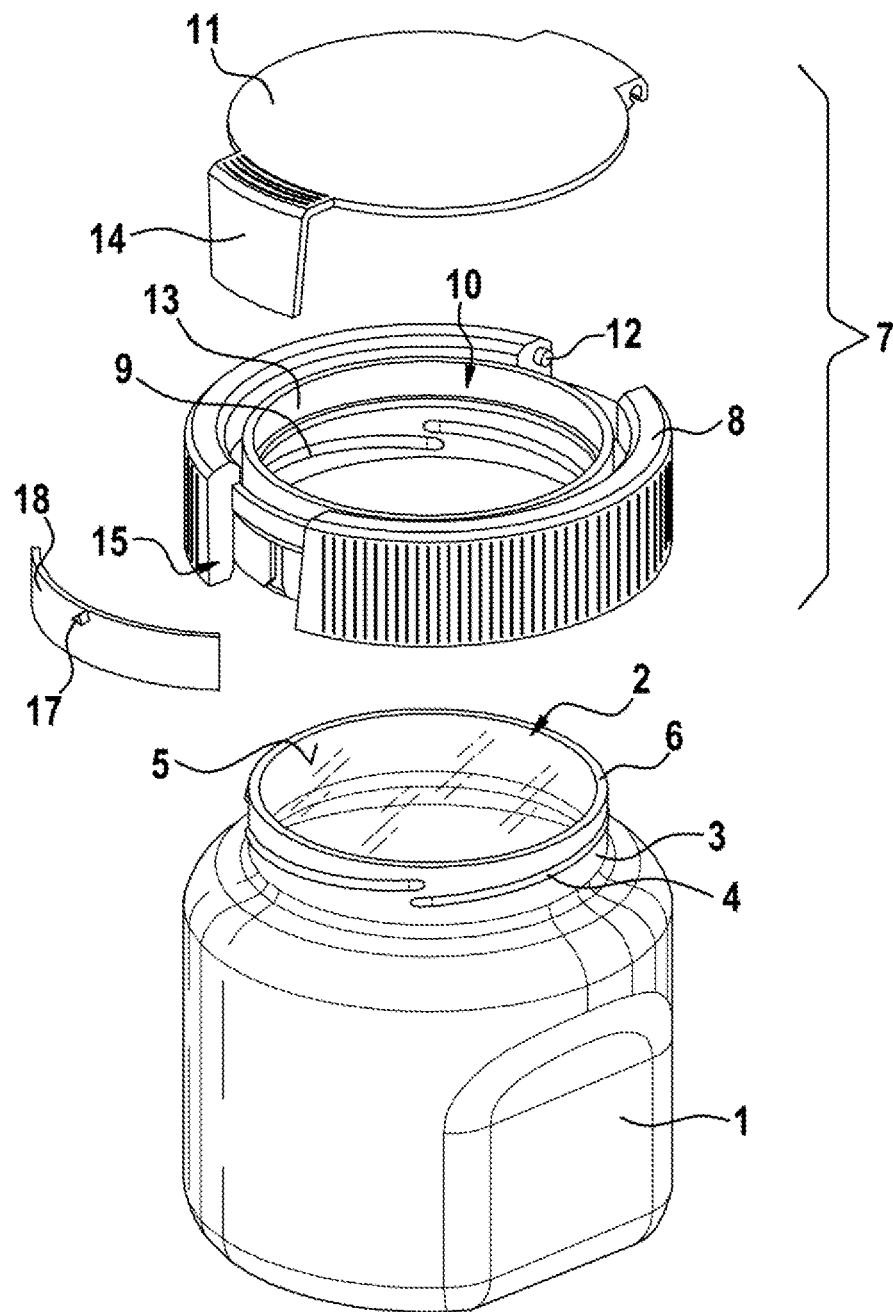


FIG. 1

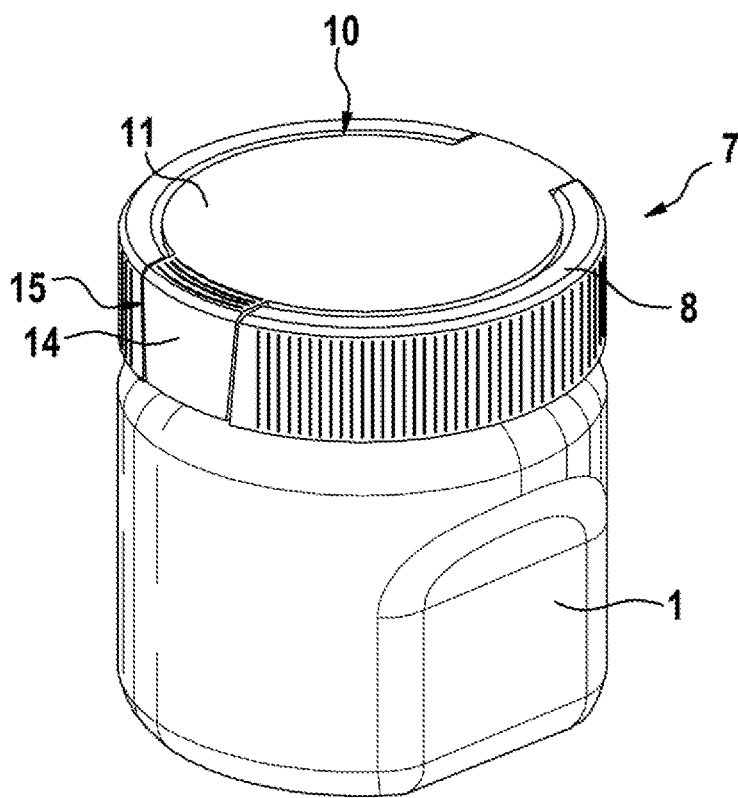


FIG. 2

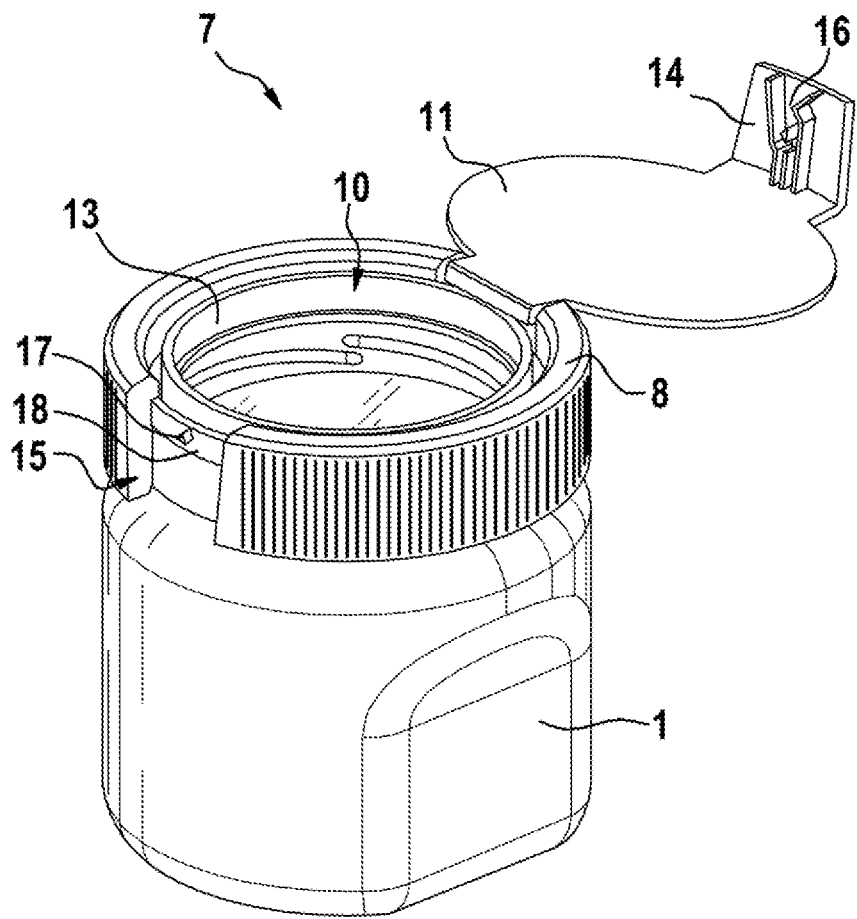


FIG. 3

CLOSURE FOR A VESSEL AND VESSEL COMPRISING SUCH A CLOSURE

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application claims priority under 35 USC §119 to German Patent Application No. 10 2015 114 788.2 filed on Sep. 4, 2015, the entire disclosure of which is incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to a closure for a vessel and to a vessel comprising such a closure having the features described herein.

DESCRIPTION OF THE RELATED ART

[0003] A closure for a vessel is known from U.S. Pat. No. 5,265,777, which includes two cup-shaped closure parts, one of which surrounds the other, which are axially movable in relation to each other. In one area of a circumference, the known closure includes a releasable detent device having two cooperating catch lugs on an outer circumference of the one closure part and on an inner circumference of the other closure part, which engage with each other when the two closure parts are pressed together. Against the force of elastic spring elements, the detent device holds the two closure parts in the pushed-together position, in which an outlet in a center of the closure is open. So as to release the detent device, the two closure parts are pressed together in a circumferential area located opposite the detent device, whereby the catch lugs become disengaged and the spring elements press the two closure parts apart, thereby closing the outlet. The closure can be screwed or snapped onto a vessel, for example, so that it covers an opening of the vessel.

SUMMARY

[0004] The present invention relates to an alternative closure for a vessel having an opening for filling and/or emptying the vessel.

[0005] According to the invention, this object is achieved by the features described herein. The closure according to an aspect of the invention for a vessel comprises a first closure part and a cover. The first closure part can be attached to the vessel, in particular in the region of an opening of the vessel. The first closure part itself has an opening for filling and/or emptying the vessel, which can be closed by way of the cover. The cover is connected to the first closure part either directly or indirectly via further elements of the closure, or it may be connected, for closing, directly or indirectly to the first closure part. The connection can, in particular, be configured such that the cover is pivotably connected to the first closure part. The first closure part of the closure is attached to a vessel having an opening for filling and/or emptying, such that the opening of the closure part and the opening of the vessel communicate with each other, and in particular are congruent, so that the vessel can be filled and/or emptied when the cover is open, and the opening of the vessel is closed when the cover is closed. While, in principle, a hermetically sealed closure is provided for the opening of the vessel, the invention also covers unsealed or pervious closures.

[0006] So as to keep the cover closed, the closure according to an aspect of the invention includes a push-push locking mechanism, which due to a typical shape of a control cam used for locking is also referred to as a cardioid control element or mechanism. The push-push locking mechanism provides locking in a closing direction by a movement and is triggered by being moved out of a locked position a short distance further in the closing direction, whereby two locking parts are disengaged, so that the locking mechanism is released. Such push-push locking mechanisms are known and will not be described in greater detail here. It is not essential for the invention for the locking mechanism to have a cardioid. The invention allows the push-push locking mechanism to be produced inexpensively and easily, since a portion of the locking mechanism, and in particular a control cam, can be implemented on the cover, so that no separate part is necessary for this, and thus assembly work is eliminated.

[0007] One refinement of the invention provides for the cover to comprise a pivot axis close to the edge, by way of which the cover is pivotably connected to the first closure part. "Close to the edge," shall mean that the pivot axis is located close to the outer circumference of the cover, and in particular such that the pivot axis is located outside the opening of the first closure part and/or of the vessel. The pivot axis can also be located outside the first closure part.

[0008] In a further refinement of the invention, the opening of the first closure part has a large-surface-area design. "Large-surface-area" shall signify at least approximately 50%, and preferably approximately 70% or more, of an area surrounded by a circumference of the closure, or of the opening of the vessel. The opening of the first closure part is preferably approximately the same size as the opening of the vessel, which is to say this does not constrict the opening of the vessel, or in any case does not significantly constrict it, and therefore does not impair filling or emptying of the vessel.

[0009] Both the pivot axis of the cover, close to the edge, and the large-surface-area opening of the first closure part enable easy filling and/or emptying of the vessel when the cover is open. The pivot axis of the cover, close to the edge, and the large-surface-area opening of the first closure part can each be implemented individually, or together.

[0010] One embodiment of the invention provides for a vessel having an opening and comprising a closure of the type described above, which is disposed on the opening of the vessel, so that the cover of the closure can be used to close the opening of the vessel. For example, the cover is screwed onto the vessel by way of a threaded connection, or snapped onto the vessel in the manner of a snap fastener by way of a detent connection, and connected to the vessel in this way.

[0011] The opening of the vessel can preferably include a seal, which is to say a paper, a cardboard or a film, for example, which seals the opening, preferably hermetically. So as to open the vessel, the seal must be destroyed or removed.

[0012] One refinement of the invention provides for the first closure part of the closure to cover the seal of the opening of the vessel on an edge of the opening of the vessel. The first closure part can in particular be designed such that the closure must first be removed from the vessel in order to be able to remove the seal. This precludes inadvertent removal of the seal.

[0013] One embodiment of the invention provides for a gasket, which provides sealing between the cover and the first closure part when the cover is closed, wherein the gasket in particular is directly seated against the cover and/or against the first closure part. This embodiment of the invention enables a hermetically sealed closure. The gasket can moreover provide sealing between the first closure and the vessel.

[0014] One refinement provides for the gasket to act on the cover in an opening direction, and in particular elastically, so that the gasket acts in the manner of a spring element. The gasket cooperates with the push-push locking mechanism and holds the push-push locking mechanism in the locked position; for unlocking, the cover must first be moved a short distance further in the closing direction against the action provided by the gasket, whereby the locking mechanism is released, and the cover is opened at least a certain distance by the gasket.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The invention will be described hereafter in greater detail based on one exemplary embodiment shown in the drawings. In the drawings:

[0016] FIG. 1 shows an exploded view of a vessel comprising a closure according to the invention;

[0017] FIG. 2 shows the vessel comprising the closure from FIG. 1 having a closed cover; and

[0018] FIG. 3 shows the vessel comprising the closure from FIGS. 1 and 2 having an open cover.

DETAILED DESCRIPTION OF THE INVENTION

[0019] The vessel 1 shown in the drawing is used, for example, to store foods having a pasty consistency, for example. This has a large, circular opening 2 for filling and for emptying, which is surrounded by a cylindrical collar 3 comprising a thread 4. After initial filling, the opening 2 can be hermetically sealed by way of a seal 5 in the form of a film or the like, which is glued to an edge 6 of the opening 2. A closure 7 is screwed onto the opening 2 of the vessel 1, wherein the closure 7 may also be attached to or on the opening 2 of the vessel 1 in a manner other than screwing on; for example, the closure 7 may be snapped on (not shown). The closure 7 comprises a first closure part 8 in the form of a threaded ring having an internal thread 9 matching the thread 4 on the collar 6 of the opening 2 of the vessel 1. In the case of a detent connection, for example, the first closure part 8 comprises a peripheral bead or catch lugs or the like, for example, for snapping onto the collar 3, which comprises corresponding detent elements (not shown). As a result of the ring shape, the first closure part 8 has a large-surface-area opening 10, which is no smaller than, or only little smaller than, the opening 2 of the vessel 1. When the closure 7 is disposed on the vessel 1, the two openings 2, 10 cover each other, so that the vessel 1 can be filled and emptied equally well when the closure 7 is attached on or to the opening 2 of the vessel 1 as without the closure 7.

[0020] The first closure part 8 covers the edge 6 surrounding the opening 2 of the vessel 1 when the closure is attached to the vessel 1, so that the seal 5 cannot be pulled off the edge 6 when the first closure part 8 is attached to the vessel 1. The closure 8 must be removed from the vessel 1, or the seal 5 must be destroyed, to pull off the seal 5. After the seal 5 has

been pulled off, the closure 7 can be disposed on the opening 2 of the vessel 1 again, or in the exemplary embodiment this can be screwed onto the collar 3 comprising the thread 4.

[0021] A cover 11 is pivotably attached to the closure part 8 by way of two tenons 12 and directly connected to the closure part 8. The tenons 12 are provided on the cover 11 close to the edge and define a pivot axis. As a result of the arrangement close to the edge, the cover 11 completely exposes the openings 2, 10 when opened, as can be seen in FIG. 3. The opened cover 11 does not protrude into an axial projection of the openings 2, 10.

[0022] The first closure part 8 comprises a lip sealing ring 13, which surrounds the opening 10, the cover 11 being seated against the lip sealing ring 13, when closed. FIG. 2 shows the vessel 1 having a closed cover 11. In the exemplary embodiment, the lip sealing ring 13, which is made of a rubber-elastic plastic material, is attached to the first closure part 8 by way of two-component injection molding. However, the lip sealing ring 13, or another sealing ring, can also be attached to the first closure part 8, or to the cover 11, in another manner; for example, it may be mounted in a groove (not shown).

[0023] Opposite the tenon 12 of the pivot mounting, the cover 11 comprises a tab 14 formed integral therewith, which projects from the cover 11 at an angle of 90 degrees. When the cover 11 is closed, the tab 14 is seated in a cut-out 15 in the circumference of the first closure part 8 of the closure 7, as can be seen in FIG. 2. On an inner side facing the first closure part 8, the tab 14 comprises a control cam 16, which cooperates with a control tenon 17 projecting outward from a slide 18. The slide 18 is curved cylindrically in keeping with a radius of the circular first closure part 8 and is seated, displaceably in the circumferential direction, in the region of the cut-out 15 in the first closure part 8 within the tab 14 of the closed cover 11. When the cover 11 is being closed, the control tenon 17 engages the control cam 16 and reaches a locking position there, in which it holds the cover 11 in the closed position. The cover 11 is seated against the lip sealing ring 13, which elastically acts on the cover 11 in an opening direction and thereby holds the control tenon 17 in the locked position in the control cam 16, so that the cover 11 remains closed, and the vessel 1 remains hermetically sealed, even if the seal 5 has been destroyed or removed. For opening, the closed cover 11 is moved a short distance further in a closing direction, whereby the control tenon 17 is released from the locking position in the control cam 16. The rubber-elastic lip sealing ring 13 acts on the cover 17 in an opening direction and pivots the same a short distance beyond the closed position, in which, as can be seen in FIG. 2, it is seated flush in the first closure part 8, so that the cover 11 can be gripped and opened without difficulty. The tab 14 on the cover 11 comprising the control cam 16 on the inside, and the slide 18 comprising the control tenon 17, which cooperates with the control cam 16 in the described manner, form what is known as a push-push locking mechanism 16, 17, 18 so as to keep the cover 11 closed.

[0024] Although the device has been shown and described with respect to certain embodiments, it is obvious that equivalents and modifications will occur to others skilled in the art upon the reading and understanding of the specification. The device includes all such equivalents and modifications, and is limited only by the scope of the following claims.

LIST OF REFERENCE NUMERALS

[0025] 1 vessel
2 opening of vessel 1
3 flange
4 thread
5 seal
6 edge
7 closure
8 first closure part
9 internal thread
10 opening of first closure part 8
11 cover
12 tenon
13 lip sealing ring
14 tab
15 cut-out
16 control cam
17 control tenon
18 slide

1. A closure for a vessel, comprising a first closure part, which can be attached to the vessel and has an opening for filling and/or emptying the vessel, wherein the closure comprises a cover for closing the opening, which is connected to the first closure part, or can be connected to the

first closure part for closing the opening, and the closure comprises a push-push locking mechanism so as to keep the cover closed.

2. The closure according to claim 1, wherein the cover comprises a pivot axis close to the edge, by way of which the cover is pivotably connected to the first closure part.

3. The closure according to claim 1, wherein the opening of the first closure part has a large-surface-area design.

4. A closure according to claim 1, wherein the closure comprises a gasket, which provides sealing between the first closure part and the cover when the cover is closed.

5. The closure according to claim 4, wherein the gasket acts on the cover in an opening direction.

6. A vessel having an opening and comprising a closure according to claim 1, wherein the closure is disposed on the opening of the vessel so that the cover of the closure can be used to close the opening of the vessel.

7. The vessel according to claim 6, wherein the opening of the vessel comprises a seal.

8. The vessel according to claim 7, wherein, on an edge of the opening of the vessel, the seal is covered by the first closure part of the closure.

9. A vessel according to claim 1, wherein the closure is connected to the vessel by way of a threaded connection and/or by way of a detent connection.

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