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### JEWELRY LINK WITH SPRING CLOSURE

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#### Abstract

A jewelry link with spring closure is described herein, the jewelry link having a link body and a barrel structure housing a spring, the spring configured to exert a force on the barrel structure to keep the jewelry link in a closed passive state. The link body having two ends that meet with, and couple to, a top and bottom of the barrel structure, respectively. One of the two ends of the link body may comprise a piston structure configured to move up and down an internal shaft within the barrel structure, at least partly due to a force exerted by the spring. The barrel structure may include a mating structure configured to couple to another of the two ends of the link body.

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#### Background/Summary

## BACKGROUND OF INVENTION

[0001] Conventional locking jewelry and jewelry holders often are locked using clasps, screws, snaps, or other mechanisms that remain in an open position when unlocked and require manual manipulation to close securely and lock in place. This sometimes creates difficulty in securing jewelry, charms, chains, links, trinkets, etc., either being worn or secured in a jewelry holder, when the locking mechanism is not manually closed securely or locked. Such jewelry and jewelry-related items may fall off or out easily.

[0002] Therefore, it is desirable to have jewelry and jewelry holders with a spring closure configured to automatically return to a closed position without manual manipulation.

## BRIEF SUMMARY

[0003] The present disclosure provides for a jewelry link with spring closure. A jewelry link with spring closure may include: a link body comprising two ends; a barrel structure comprising a smaller diameter shaft configured to receive a first of the two ends and a larger diameter shaft configured to receive a second of the two ends; and a spring housed at least partially within a groove in the second of the two ends, the spring configured to exert a force on the barrel structure in the direction of the first of the two ends, thereby closing the jewelry link, wherein the second of the two ends comprises a piston structure configured to move up and down the larger diameter shaft. In some examples, an external surface of the barrel structure comprises a hexagonal cylinder. In some examples, an external surface of the barrel structure comprises a round cylinder. In some examples, the link body comprises one, or a combination, of a circular loop, an oval loop, a square loop, a rectangular loop, a square loop with rounded edges, a rectangular loop with rounded edges, a hexagonal loop, an octagonal loop, a partially rounded loop, and an oblong loop. In some examples, the first of the two ends comprises a male coupling structure complementary to a female coupling structure on the smaller diameter shaft, or vice versa. In some examples, the first of the two ends comprises a screw groove. In some examples, the smaller diameter shaft comprises a complementary groove configured to mate with the screw groove of the first of the two ends. In some examples, the jewelry link with spring closure comprises a ring, in whole or in part. In some examples, the jewelry link with spring closure comprises a bracelet, in whole or in part. In some examples, the jewelry link with spring closure comprises a necklace, in whole or in part.

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## Description

### BRIEF DESCRIPTION OF THE DRAWINGS

[0004] Various non-limiting and non-exhaustive aspects and features of the present disclosure are described hereinbelow with references to the drawings, wherein:

[0005] FIG. 1 is a left perspective view of an embodiment of a jewelry link with spring closure in accordance with the present invention.

[0006] FIG. 2 is a left perspective view of the jewelry link with spring closure in FIG. 1 in an open position.

[0007] FIG. 3 is a right side view of the jewelry link with spring closure in FIG. 1.

[0008] FIG. 4 is a left side view of the jewelry link with spring closure in FIG. 1.

[0009] FIG. 5 is a front view of the jewelry link with spring closure in FIG. 1.

[0010] FIG. 6 is a back view of the jewelry link with spring closure in FIG. 1.

[0011] FIG. 7 is a top view of the jewelry link with spring closure in FIG. 1.

[0012] FIG. 8 is a bottom view of the jewelry link with spring closure in FIG. 1.

[0013] FIG. 9 is a left perspective view of another embodiment of a jewelry link with spring closure in accordance with the present invention.

[0014] FIG. 10 is a left perspective view of the jewelry link with spring closure in FIG. 9 in an

open position.

[0015] FIG. **11** is a front view of the jewelry link with spring closure in FIG. **9**.

[0016] FIG. **12** is a back view of the jewelry link with spring closure in FIG. **9**.

[0017] FIG. **13** is a left side view of the jewelry link with spring closure in FIG. **9**.

[0018] FIG. **14** is a right side view of the jewelry link with spring closure in FIG. **9**.

[0019] FIG. **15** is a top view of the jewelry link with spring closure in FIG. **9**.

[0020] FIG. **16** is a bottom view of the jewelry link with spring closure in FIG. **9**.

[0021] FIG. **17** is a cross-section view of the jewelry link with spring closure in FIGS. **1** and **9** in a closed position.

[0022] FIG. **18** is a cross-section view of the jewelry link with spring closure in FIGS. **1** and **9** in an open position.

[0023] FIG. **19** is an exploded view of the jewelry spring lock in FIG. **1**.

[0024] Like reference numbers and designations in the various drawings indicate like elements. Skilled artisans will appreciate that elements in the Figures are illustrated for simplicity and clarity, and have not necessarily been drawn to scale, for example, with the dimensions of some of the elements in the figures exaggerated relative to other elements to help to improve understanding of various embodiments. Common, well-understood elements that are useful or necessary in a commercially feasible embodiment are often not depicted in order to facilitate a less obstructed view of these various embodiments.

#### DETAILED DESCRIPTION

[0025] The invention is directed to a jewelry link with spring closure. In an embodiment, a jewelry link with spring closure may be configured to secure two ends of the jewelry link, which may be a jewelry item or jewelry holder, in part or in whole, in the form a ring or ring-like structure. Said ring or ring-like structure (hereinafter “jewelry link”) that may be closed and/or locked using a jewelry link with spring closure, as described herein, may comprise any shape (e.g., circular loop, oval loop, square or rectangular loop, square or rectangular loop with rounded edges, hexagonal loop, octagonal loop, partially rounded loop, oblong loop, etc.).

[0026] In some embodiments, the jewelry link with spring closure may be worn as, formed as part of, or coupled to, a ring, a bracelet, a necklace, and other ring-like or chained jewelry and jewelry holder in order to close, lock, and/or otherwise secure two ends together. The jewelry link with spring closure may be opened when a barrel structure is unscrewed and pushed away from a first of two ends of a jewelry link using a manual force (e.g., by a user's hand, directly or indirectly), thereby creating a separation between the first of two ends and the barrel structure. When the manual force is released, the jewelry link with spring closure may automatically close, wherein the barrel returns to a closed position, by a force from an internal spring. In some examples, said closed position may comprise contact between the barrel structure and the first of two ends. In other examples, said closed position may comprise a minimal spacing between the barrel structure and the first of two ends, such that the width or thickness of another jewelry structure (e.g., another link, a charm, a chain, a ring, any other jewelry structure that may be looped through this jewelry link) cannot pass through. In still other examples, said closed position may comprise an overlapping between the barrel structure and the first of two ends. For example, said spring force may be sufficient to push the barrel structure past an end portion of the first of two ends. In another example, said spring force may be configured to both push and turn the barrel structure such that it partially or wholly screws onto the first of two ends.

[0027] In some examples, a second of two ends of the jewelry link may comprise a piston structure configured to move within a central shaft of the barrel structure. The piston structure may have a larger (e.g., wider) diameter than the first of two ends. The central shaft may terminate part way in the barrel structure where a smaller (e.g., narrower) diameter opening is provided for receiving the first of two ends. The piston structure may comprise a groove wherein a spring (i.e., the internal spring) may be placed or otherwise provided, the spring being in a compressed state (e.g., manually

compressed) when the barrel structure is pushed down over the piston structure and returning to an uncompressed state when the barrel structure is released to a passive state.

[0028] FIGS. **1-8** are views of an embodiment of a jewelry link with spring closure in accordance with the present invention. In particular, FIG. **1** is a left perspective view of an embodiment of a jewelry link with spring closure in accordance with the present invention. FIG. **2** is a left perspective view of the jewelry link with spring closure in FIG. **1** in an unlocked position. FIG. **3** is a right side view of the jewelry link with spring closure in FIG. **1**. FIG. **4** is a left side view of the jewelry link with spring closure in FIG. **1**. FIG. **5** is a front view of the jewelry link with spring closure in FIG. **1**. FIG. **6** is a back view of the jewelry link with spring closure in FIG. **1**. FIG. **7** is a top view of the jewelry link with spring closure in FIG. **1**. FIG. **8** is a bottom perspective view of the jewelry link with spring closure in FIG. **1**. In some examples, this embodiment of the jewelry link with spring closure comprises a barrel structure **102** and a first of two ends **104** of a jewelry link **106**, the jewelry link **106** comprising a link body **106** and a second of two ends **108**. As described herein, link body **106** may comprise any link shape (e.g., circular loop, oval loop, square or rectangular loop, square or rectangular loop with rounded edges, hexagonal loop, octagonal loop, partially rounded loop, oblong loop, etc.), terminating in the first of two ends **104** and the second of two ends **108**.

[0029] As shown, barrel structure **102** may comprise a hexagonal cylinder (e.g., an external surface with a hexagonal cylindrical shape) with an internal shaft (e.g., internal shaft **107** in FIGS. **17-18**) that opens out one end (e.g., a bottom end) of barrel structure **102** and terminates part way into barrel structure **102**. The internal shaft may terminate at, or narrow to, a smaller diameter shaft **103**, which opens out the other end (e.g., a top end) of barrel structure **102**, the smaller diameter shaft **103** provided to receive the first of two ends **104** in a fitted manner to achieve a secure closure.

[0030] In some examples, the first of two ends **104** comprises a screw groove to secure the first of two ends **104** with the smaller diameter shaft **103**, which may comprise a complementary groove. In other examples, the first of two ends **104** and smaller diameter shaft may be configured to have other types of complementary (e.g., male-to-female) coupling structures configured to close, lock, or otherwise secure the first of two ends **104** to smaller diameter shaft **103**. In still other examples, the first of two ends **104** may comprise a simple shaft configured to fit within smaller diameter shaft **103**. In alternative embodiments, the first of two ends **104** may comprise a shaft (not shown) configured to receive a post, extension, or other portion (not shown) of barrel structure **102** in order to close or lock the jewelry link. As shown, the first of two ends **104** and smaller diameter shaft **103** may comprise a circular or roughly circular circumference. In other examples, the first of two ends **104** and smaller diameter shaft **103** may comprise other shapes and forms (e.g., oval, square, rectangular, square with rounded edges, rectangular with rounded edges, oblong, etc.).

[0031] In some examples, the second of two ends **108** may comprise a piston structure configured to move up and down internal shaft **107**. In some examples, the second of two ends **108** may comprise a narrowed portion atop which the piston structure sits, as shown, the narrowed portion contiguous with jewelry link **106**. In other examples, the second of two ends **108** may comprise only the piston structure (without narrowing), wherein jewelry link **106** may widen to contiguously meet the second of two ends **108** (not shown), or otherwise couple to the second of two ends **108**. In some examples, said piston structure of the second of two ends may comprise groove **105** (e.g., a trench, an indentation, or the like, as shown in FIGS. **17-19**) configured to house at least a portion of spring **120**. When barrel structure **102** is pushed open (e.g., away from the first of two ends **104**), said piston structure may move up internal shaft **107** thereby causing spring **120** to become compressed into groove **105**. When barrel structure **102** is released, spring **120** may exert a force on a surface (e.g., top surface) of shaft **107** to push barrel structure **102** back towards the first of two ends **104**, thereby closing off any opening or space between barrel structure **102** and the first of two ends **104**. In some examples, the force exerted by spring **120** may be sufficient to result in physical contact and/or overlap between the smaller diameter shaft **103** of barrel structure **102** and the first

of two ends **104**. In other examples, the force exerted by spring **120** may bring barrel structure **102** close enough to the first of two ends to prevent any other jewelry, charm, and the like, to pass through (e.g., fall out or unlink from) jewelry link **106**.

[0032] FIGS. **9-16** are views of another embodiment of a jewelry link with spring closure in accordance with the present invention. In particular, FIG. **9** is a left perspective view of another embodiment of a jewelry link with spring closure in accordance with the present invention. FIG. **10** is a left perspective view of the jewelry link with spring closure in FIG. **9** in an unlocked position. FIG. **11** is a front view of the jewelry link with spring closure in FIG. **9**. FIG. **12** is a back view of the jewelry link with spring closure in FIG. **9**. FIG. **13** is a left side view of the jewelry link with spring closure in FIG. **9**. FIG. **14** is a right side view of the jewelry link with spring closure in FIG. **9**. FIG. **15** is a top view of the jewelry link with spring closure in FIG. **9**. FIG. **16** is a bottom perspective view of the jewelry link with spring closure in FIG. **9**. All like-numbered or like-named elements are the same or similar to their corresponding elements in other figures described herein. In some examples, this embodiment of the jewelry link with spring closure comprises a barrel structure **112** and a first of two ends **114** of a jewelry link **116**, the jewelry link **116** comprising a link body **116** and a second of two ends **118**. As described herein, link body **116** may comprise any link shape (e.g., circular loop, oval loop, square or rectangular loop, square or rectangular loop with rounded edges, hexagonal loop, octagonal loop, partially rounded loop, oblong loop, etc.), terminating in the first of two ends **114** and the second of two ends **118**.

[0033] As shown, barrel structure **112** may comprise a round cylinder (e.g., an external surface with a round cylindrical shape) with an internal shaft (e.g., internal shaft **107** in FIGS. **17-18**) that opens out one end (e.g., a bottom end) of barrel structure **112** and terminates part way into barrel structure **112**. The internal shaft may terminate at, or narrow to, a smaller diameter shaft **113**, which opens out the other end (e.g., a top end) of barrel structure **112**, the smaller diameter shaft **103** provided to receive the first of two ends **114** in a fitted manner to achieve a secure closure.

[0034] In some examples, the first of two ends **114** comprises a screw groove to secure the first of two ends **114** with the smaller diameter shaft **113**, which may comprise a complementary groove. In other examples, the first of two ends **114** and smaller diameter shaft may be configured to have other types of complementary (e.g., male-to-female) coupling structures configured to close, lock, or otherwise secure the first of two ends **114** to smaller diameter shaft **113**. In still other examples, the first of two ends **114** may comprise a simple shaft configured to fit within smaller diameter shaft **113**. In alternative embodiments, the first of two ends **114** may comprise a shaft (not shown) configured to receive a post, extension, or other portion (not shown) of barrel structure **112** in order to close or lock the jewelry link. As shown, the first of two ends **114** and smaller diameter shaft **113** may comprise a circular or roughly circular circumference. In other examples, the first of two ends **114** and smaller diameter shaft **113** may comprise other shapes and forms (e.g., oval, square, rectangular, square with rounded edges, rectangular with rounded edges, oblong, etc.).

[0035] In some examples, the second of two ends **118** may comprise a piston structure configured to move up and down internal shaft **107**. In some examples, said piston structure may comprise groove **105** (as shown in FIGS. **17-19**) configured to house at least a portion of spring **120**. When barrel structure **112** is pushed open (e.g., away from the first of two ends **114**), said piston structure may move up internal shaft **107** thereby causing spring **120** to become compressed into groove **105**. When barrel structure **112** is released, spring **120** may exert a force on a surface (e.g., top surface) of shaft **107** to push barrel structure **112** back towards the first of two ends **114**, thereby closing off any opening or space between barrel structure **112** and the first of two ends **114**. In some examples, the force exerted by spring **120** may be sufficient to result in physical contact and/or overlap between the smaller diameter shaft **113** of barrel structure **112** and the first of two ends **114**. In other examples, the force exerted by spring **120** may bring barrel structure **112** close enough to the first of two ends to prevent any other jewelry, charm, and the like, to pass through (e.g., fall out or unlink from) jewelry link **116**.

[0036] FIG. 17 is a cross-section view of the jewelry link with spring closure in FIGS. 1 and 9 in a closed position. FIG. 18 is a cross-section view of the jewelry link with spring closure in FIGS. 1 and 9 in an open position. FIG. 19 is an exploded view of the jewelry spring lock in FIG. 1. All like-numbered or like-named elements are the same or similar to their corresponding elements in other figures described herein.

[0037] Those skilled in the art will understand that the structures and components described herein may comprise various materials suitable for jewelry (e.g., stainless steel, precious metals, metal alloys, other metals, plastic material, composite material, beads, crystal, natural and synthetic rubber material, gemstones, etc.), and that additional decorative patterns and materials may be etched, carved, attached, coupled, or otherwise added to the described structures and components.

[0038] Those skilled in the art will understand that the number, placement, shape, and surface texture of elements described herein may be varied and are not limited to the number(s), placement(s), shape(s), and texture(s) shown and described herein.

[0039] The foregoing describes various embodiments and those skilled in the art will appreciate that these embodiments may be used in combination with one or another as well as individually. Although the present disclosure has been illustrated and described herein with respect to a number of embodiments and examples, it will be readily apparent to those of ordinary skill in the art that other embodiments and examples may perform similar functions and/or achieve like results. All such equivalent embodiments and examples are within the spirit and scope of the present disclosure and are intended to be covered by the following claims.

## Claims

1. A jewelry link with spring closure comprising: a link body comprising two ends; a barrel structure comprising a smaller diameter shaft configured to receive a first of the two ends and a larger diameter shaft configured to receive a second of the two ends; and a spring housed at least partially within a groove in the second of the two ends, the spring configured to exert a force on the barrel structure in the direction of the first of the two ends, thereby closing the jewelry link, wherein the second of the two ends comprises a piston structure configured to move up and down the larger diameter shaft.
  2. The jewelry link of claim 1, wherein an external surface of the barrel structure comprises a hexagonal cylinder.
  3. The jewelry link of claim 1, wherein an external surface of the barrel structure comprises a round cylinder.
  4. The jewelry link of claim 1, wherein the link body comprises one, or a combination, of a circular loop, an oval loop, a square loop, a rectangular loop, a square loop with rounded edges, a rectangular loop with rounded edges, a hexagonal loop, an octagonal loop, a partially rounded loop, and an oblong loop.
  5. The jewelry link of claim 1, wherein the first of the two ends comprises a male coupling structure complementary to a female coupling structure on the smaller diameter shaft, or vice versa.
  6. The jewelry link of claim 1, wherein the first of the two ends comprises a screw groove.
  7. The jewelry link of claim 5, wherein the smaller diameter shaft comprises a complementary groove configured to mate with the screw groove of the first of the two ends.
  8. The jewelry link of claim 1, wherein the jewelry link with spring closure comprises a ring, in whole or in part.
  9. The jewelry link of claim 1, wherein the jewelry link with spring closure comprises a bracelet, in whole or in part.
  10. The jewelry link of claim 1, wherein the jewelry link with spring closure comprises a necklace, in whole or in part.
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