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(54) **SYSTEMS AND METHODS FOR PROVIDING A RETRACTABLE ARTICLE TETHER**

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(57) **ABSTRACT**

This invention relates generally to mechanics, and more specifically, to systems and methods for providing a retractable article tether. In one embodiment, the retractable article tether includes an elongated tether cord, the elongated tether cord including at least one fastener; a housing, the housing rotatably coupled to a retractable mechanism, the elongated tether cord being coupled to the retractable mechanism, and at least one clamp arm, the at least one clamp arm being movably coupled to the housing, wherein the elongated tether cord is configurable to being removably coupled to an article using the at least one fastener and wherein the at least one clamp arm is configurable to being removably coupled to an anchor object.

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Related U.S. Application Data

(60) **Provisional application No. 60/946,136, filed on Jun. 25, 2007.**

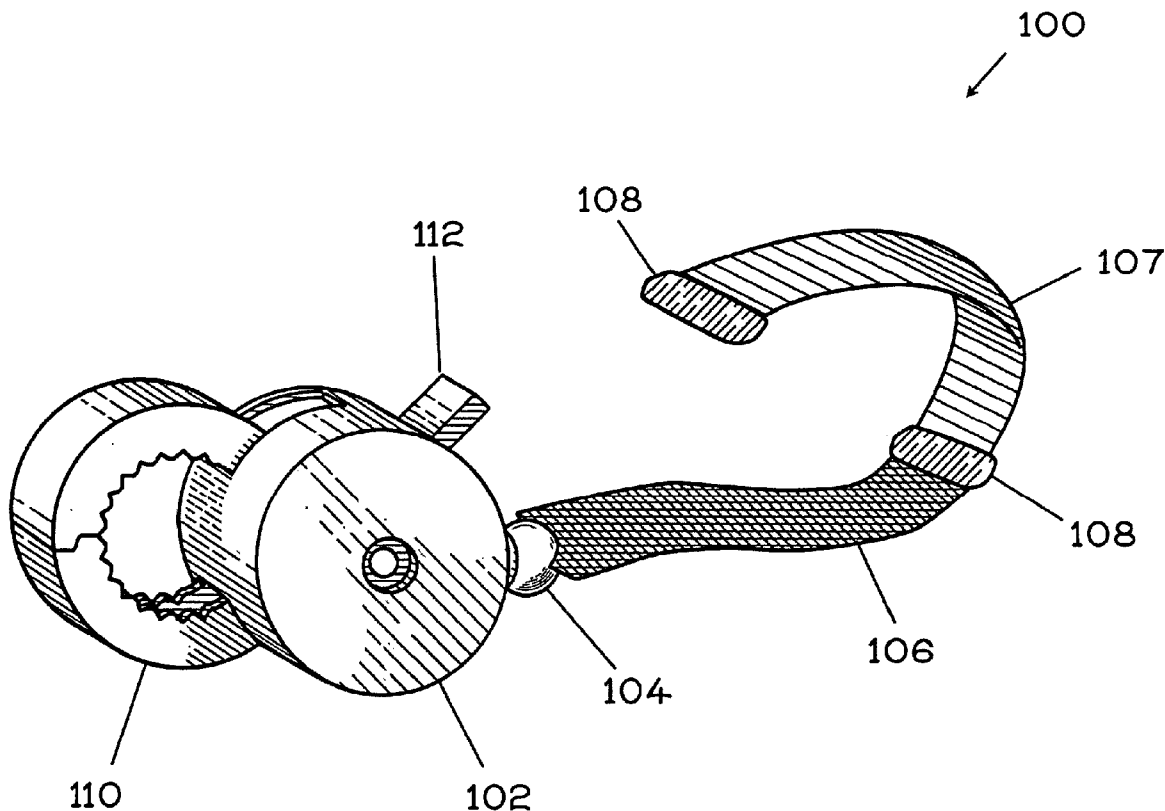
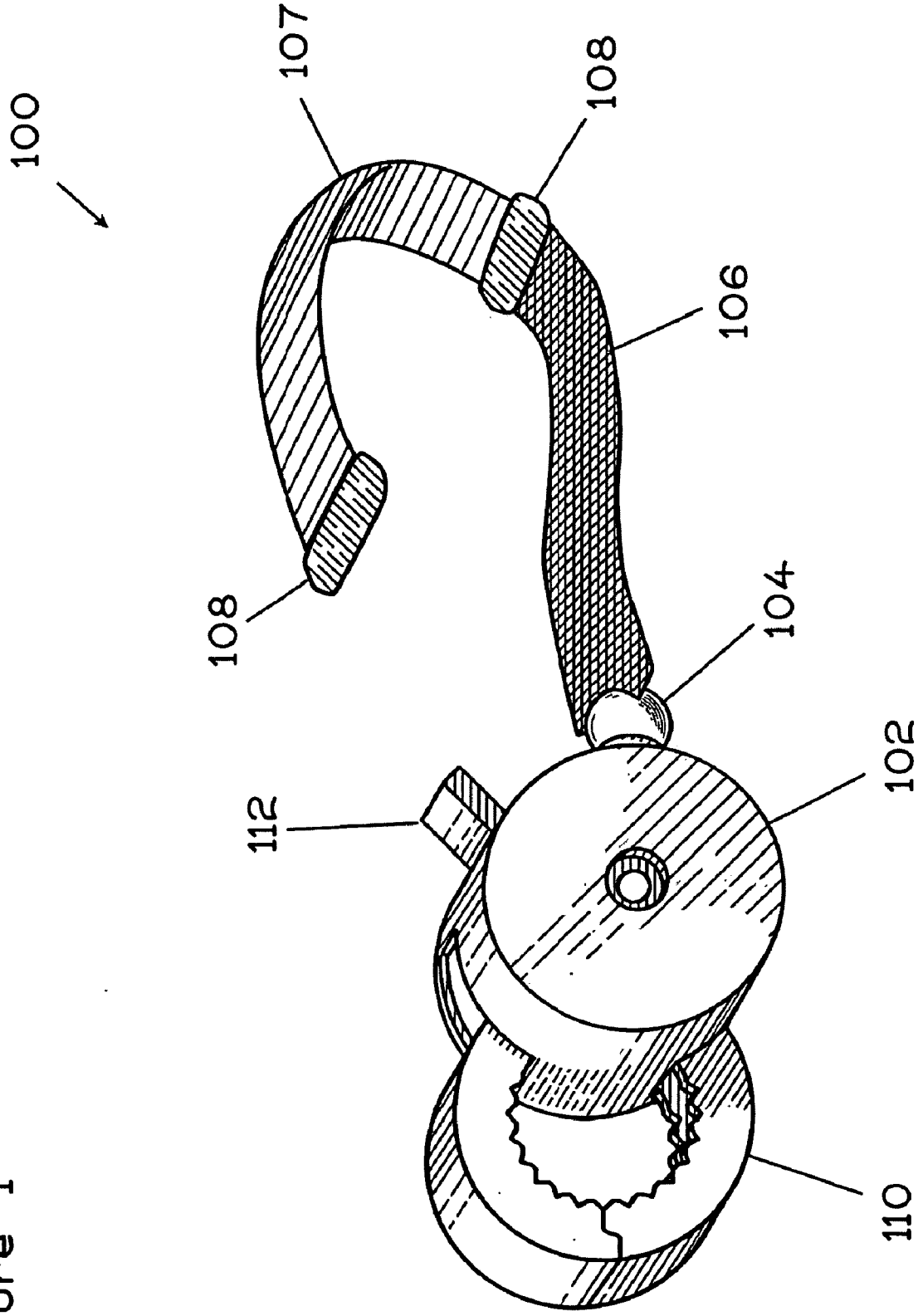


Figure 1



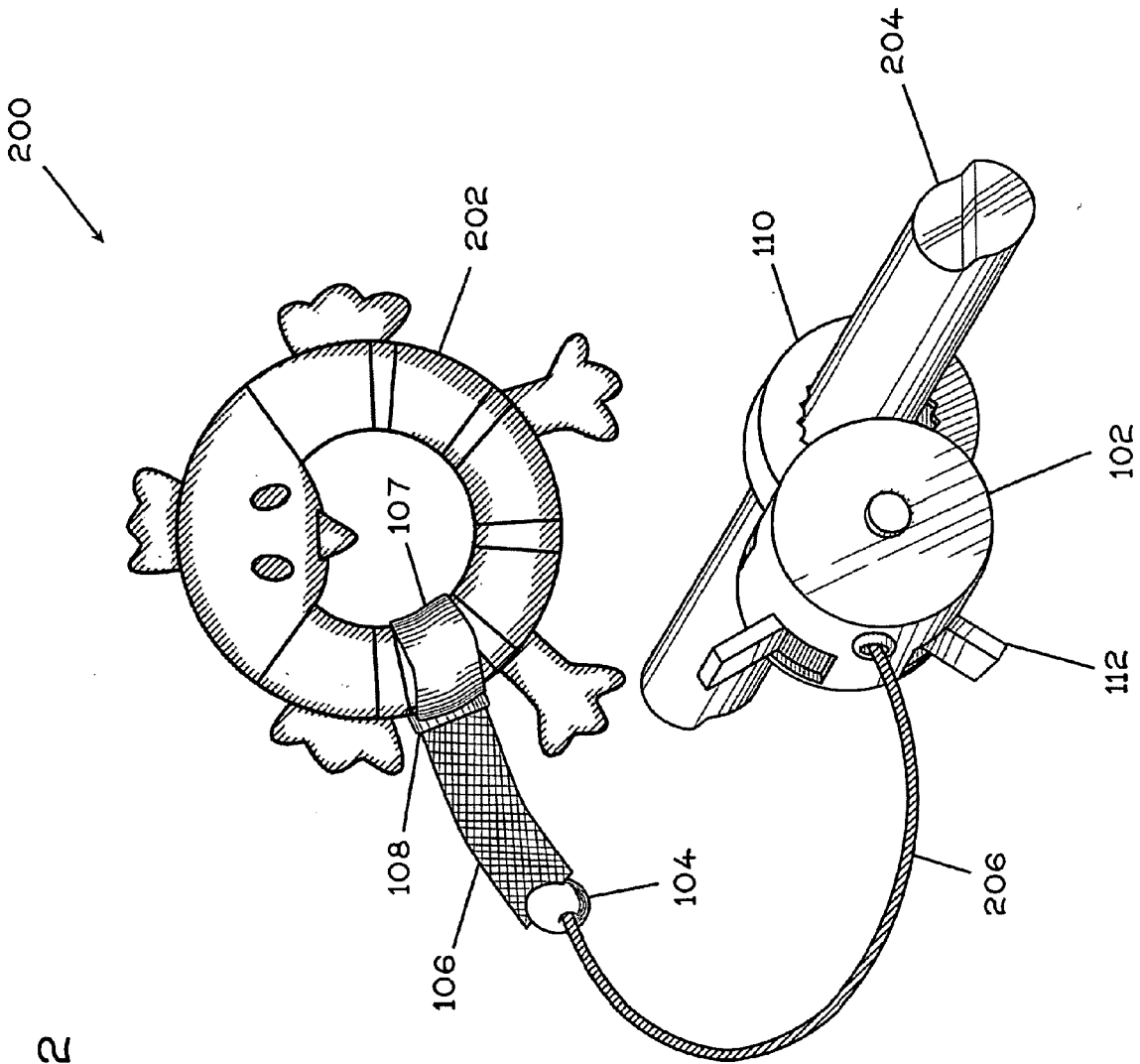
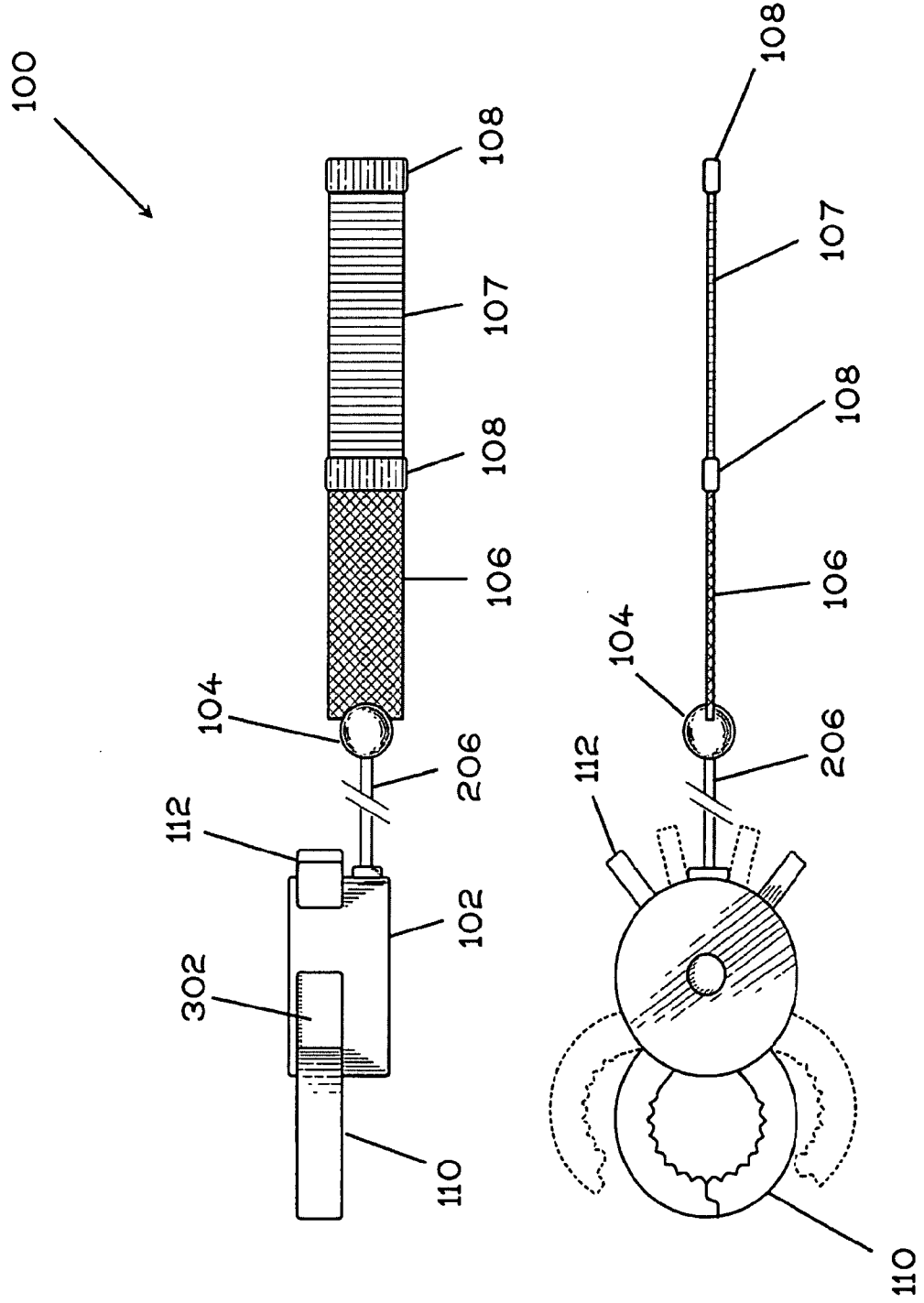


Figure 2

Figure 3



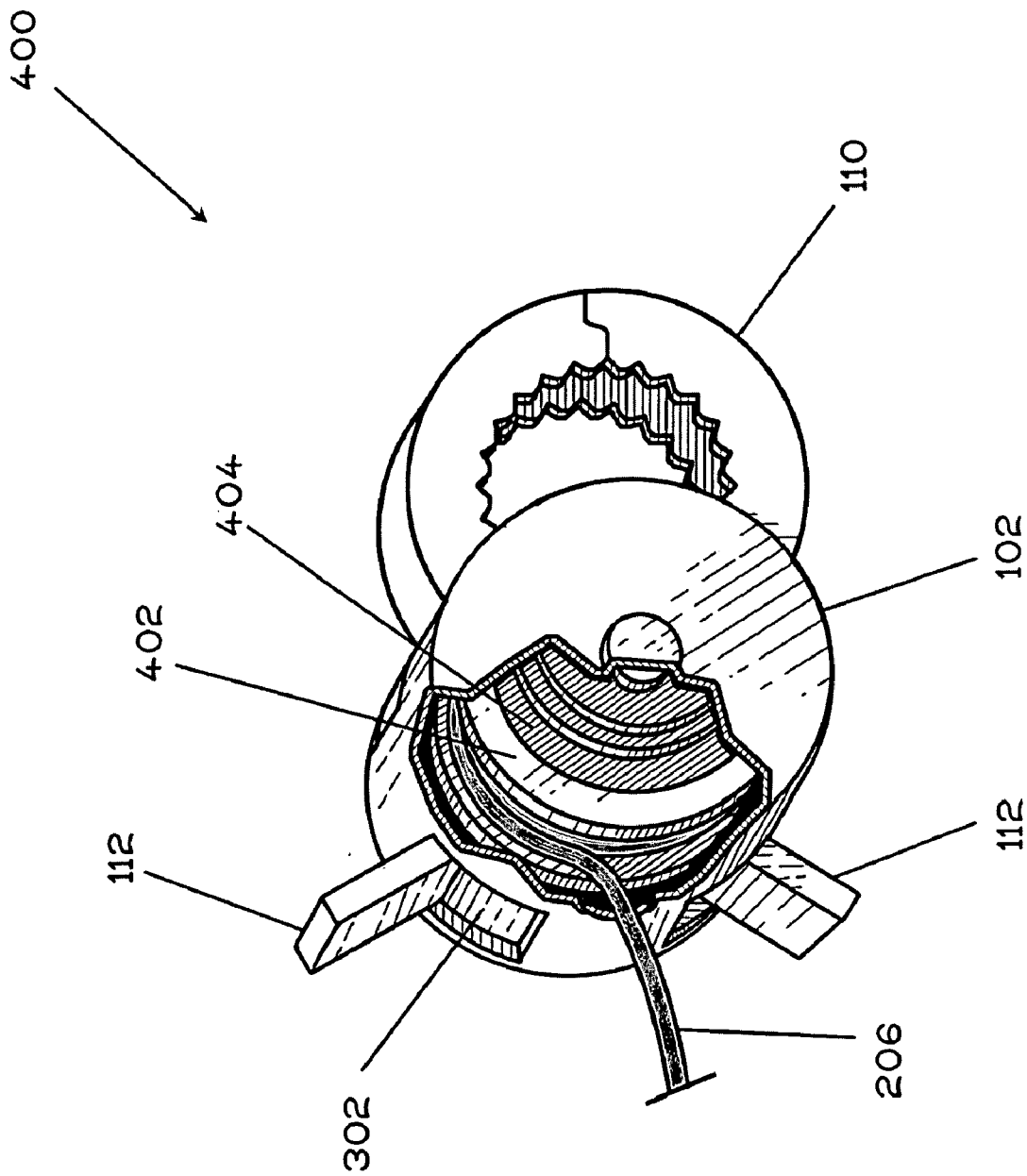
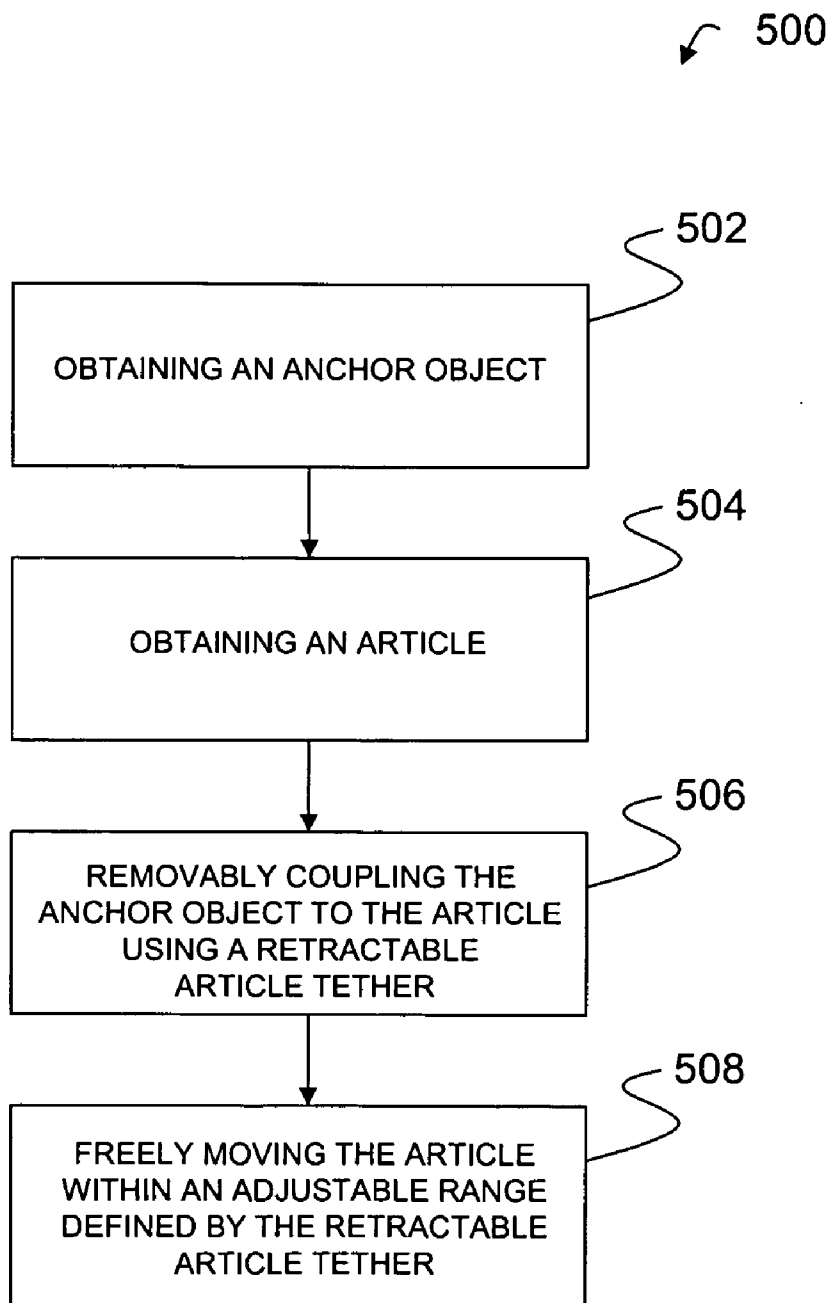


Figure 4

FIGURE 5



SYSTEMS AND METHODS FOR PROVIDING A RETRACTABLE ARTICLE TETHER

PRIORITY CLAIM

[0001] This application claims the benefit of U.S. Provisional Application No. 60/946,136 filed Jun. 25, 2007. The foregoing application is incorporated by reference in its entirety as if fully set forth herein.

FIELD OF THE INVENTION

[0002] This invention relates generally to mechanics, and more specifically, to systems and methods for providing a retractable article tether.

BACKGROUND

[0003] Children receive great enjoyment through playing with various articles such as construction toys, dolls, action figures, stuffed animals, drawing toys, educational toys, mechanical toys, mechanical puzzles, miniaturized items, models, physical dexterity toys, and many others. In addition to providing entertainment, these articles simultaneously play an important role for children in learning about cause and effect, discovering personal identity, and understanding relationships. Perhaps these reasons best explain the overwhelming selections of articles and their permutations that are available for children and their parents to select from.

[0004] Children play with these articles in various venues such as while traveling in an automobile, while consuming sustenance in a high-chair, while taking in the scenery in a stroller, or even while in settings such as a doctor's office waiting room, a restaurant, a grocery cart, or a bus. Ongoing playing in various locations provides for continued entertainment and educational experiences; however, one significant problem with mobile article playing is the potential for articles to be dropped, lost, or broken. Not only is this an inconvenience for parents who are tasked with locating articles, replacing articles, and tolerating increased noise, it is also confusing and distressing for children who experience anxiety from losing articles.

[0005] One solution to this problem is to constrict the movement of articles using tethers or similar apparatuses. McCook (U.S. Pat. No. 3,087,277) teaches one such tether for retaining articles proximate to a child using a fixed-length loop around a child's neck. Olsen et al. (U.S. Design Pat. No. D337,133) discloses another somewhat safer fixed-length tether for retaining articles using a tied strap. Slight variations of these tethers are taught in Cohen (U.S. Pat. No. 5,150,504); Choi (U.S. Design Pat. D506,709); Scanlan et al. (U.S. Patent Publication No 2003/0121944); Behn et al. (U.S. Patent Publication No 2005/0217084); Rhodes et al. (U.S. Patent Publication No 2006/0163301); McQuarrie (U.S. Patent Publication No 2007/0067964); and Kaplan (U.S. Patent Publication No 2006/0289713). Despite the relatively large number of references cited, each of them operates in much the same way: a fixed-length tether is coupled on one end to a child or other device and on the other end to an article. Although these tethers improve the problem of lost, dropped, and broken articles, they suffer from being overly restrictive with their fixed-lengths, being limited to use in certain venues, being limited to use with specific articles, being limited to attachment at specific locations on a baby or anchor object, and from being difficult to use with cumbersome ties or buckles.

[0006] There is other art that provides variable length tethers for unrelated purposes such as Alberti (U.S. Pat. No. 5,595,143); Baumgarten (U.S. Pat. No. 6,929,209); and Salentine et al. (U.S. Pat. No. 5,697,572). However, these references similarly suffer from being limited to use in certain venues, being limited to use with certain articles, being unable to removably attach to variable locations on a baby or device, and from being difficult to use with cumbersome buckles and clasps.

[0007] In short, although desirable results have been achieved in the art, there exists much room for improvement. What is needed then are systems and methods for providing a retractable article tether that solves the aforementioned problems and many others.

SUMMARY

[0008] This invention relates generally to mechanics, and more specifically, to systems and methods for providing a retractable article tether. In one embodiment, the retractable article tether includes an elongated tether cord, the elongated tether cord including at least one fastener; a housing, the housing rotatably coupled to a retractable mechanism, the elongated tether cord being coupled to the retractable mechanism, and at least one clamp arm, the at least one clamp arm being movably coupled to the housing, wherein the elongated tether cord is configurable to being removably coupled to an article using the at least one fastener and wherein the at least one clamp arm is configurable to being removably coupled to an anchor object.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Embodiments of the present invention are described in detail below with reference to the following drawings:

[0010] FIG. 1 is a perspective view of a retractable article tether, in accordance with an embodiment of the invention;

[0011] FIG. 2 is a perspective view of a retractable article tether coupling an article to an anchor object, in accordance with an embodiment of the invention;

[0012] FIG. 3 is top plan view and an elevational view of a retractable article tether, in accordance with an embodiment of the invention;

[0013] FIG. 4 is a perspective view of a retractable article tether with a partial cutaway, in accordance with an embodiment of the invention; and

[0014] FIG. 5 is a flow diagram of a method for coupling an article to an anchor object using a retractable article tether, in accordance with an embodiment of the invention.

DETAILED DESCRIPTION

[0015] This invention relates generally to mechanics, and more specifically, to systems and methods for providing a retractable article tether. Specific details of certain embodiments of the invention are set forth in the following description and in FIGS. 1-5 to provide a thorough understanding of such embodiments. The present invention may have additional embodiments, may be practiced without one or more of the details described for any particular described embodiment, or may have any detail described for one particular embodiment practiced with any other detail described for another embodiment.

[0016] FIG. 1 is a perspective view of a retractable article tether, in accordance with an embodiment of the invention. In one embodiment, the retractable article tether includes a

housing 102, a coupler 104, a flexible membrane 106, an elastic portion 107, fasteners 108, clamp arms 110, and levers 112. The housing 102 is coupled to an elongated tether cord 206 (FIG. 2), which is coupled to the flexible membrane 106 via the coupler 104. The flexible membrane includes the elastic portion 107 defined by the fasteners 108 disposed along its length. The elongated tether cord 206 is tension biased to a retracted position within the housing 102. The housing 102 is coupled to the clamp arms 110, which are mechanically controllable using the levers 112. The clamp arms 110 are configurable to removably grip an anchor object (not illustrated) while the elastic portion 107 of the flexible membrane 106 is configurable to removably circumscribe an article (not illustrated) and couple thereto using the fasteners 108.

[0017] In one embodiment, the housing 102 is constructed from durable plastic and is cylindrical in shape. The clamp arms 110 and the levers 112 are disposed on one half of the housing 102 and the elongated tether cord 206 is configurable to being retractably disposed within the other half of the housing 102. The clamping arms 110 and the levers 112 are similarly constructed from durable plastic. The clamping arms 110 are tension biased to meet at their distal ends to define a closed loop having an internal cavity, the wall of the internal cavity including gripping teeth. The clamping arms 110 extend through the housing 102 and are defined on their opposing ends by the levers 112. The levers 112 provide a surface for receiving force to oppose the tension bias and open the clamping arms 110. The elongated tether cord 206 is a cable constructed from flexible and resilient material that is retractably extendable from the housing 102. The coupler 104 is a bulbous member constructed from durable plastic that serves to couple the elongated tether cord 206 to the flexible membrane 106 and to limit retraction of the elongated tether cord 206 within the housing 102. The flexible membrane 106 is relatively short fixed-length buffer region between the elongated tether cord 206 and the elastic portion 107 that is constructed from a soft durable material. The elastic portion 107 is constructed from a durable and stretchable material suitable for adapting to different lengths for comfortably circumscribing various articles (not illustrated). The fasteners 108 include male and female button components for removably coupling the distal ends of the elastic portion 107 to one another thereby securing any article contained therein.

[0018] In alternative embodiments, the system 100 can include additional or fewer components. For instance, the system 100 can be limited to the retractable tether cord 206 and the clamp arms 110. Alternatively, the system 100 can include a plurality of retractable tether cords or clamp arms 110. In yet other embodiments, the components of the system 100 can be alternatively configured. For example, clamp arms 110 can be disposed in a separate housing from the elongated tether cord 206; the separate housings can be permanently or removably coupled together thereby permitting customization. Additionally, the clamp arms 110 or the elongated tether cord 206 can be disposed on an exterior surface of the housing 102. Alternatively, the clamp arms 110 can be retractably extendable while the elongated tether cord 206 can be fixed in length. Furthermore, both the clamp arms 110 and the elongated tether cord 206 can be retractable, non-retractable, extendable, non-extendable, or replaceable.

[0019] In some embodiments, the housing 102 is constructed from different material or defines a different regular or irregular shape. Such materials can include metal, wood,

rubber, fabric, glass, synthetic, composite, or any other material or combination thereof. Similarly, the clamping arms 110 or the levers 112 can be constructed from a different material and can define alternative regular or irregular shapes such as a single clamp arm. In one particular embodiment, the clamping arms 110 are substituted with a system similar to the elastic portion 107 and the fasteners 108 or any other coupling system such as a carabiner. In yet another embodiment, the clamping arms 110 are electro-mechanically controllable using a user interface such as a button. In another embodiment, the elongated tether cord 206 is constructed from fabric, rope, leather, rubber, metal, plastic, composite, synthetic, or other material or combination thereof. The elongated tether cord 206 can be alternatively shaped such as similar to the flexible membrane 106 and can include one or more cords, flexible membranes, or elastic portions. In yet another embodiment, the coupler 104 is omitted, alternatively shaped, alternatively disposed, or constructed from different material. In a further embodiment, the flexible membrane 106 and the elastic portion 107 are omitted, combined, alternatively shaped, or constructed from different material. In one particular embodiment, the fasteners 108 are substituted or complemented with Velcro, snaps, clasps, clips, buckles, magnets, ties, or other similar coupling mechanisms such as one similar to the clamp arms 110. In one particular embodiment, the fasteners 108 or the clamp arms 110 can be securably locked into position. In yet another embodiment, the fasteners 108 or the clamp arms 110 are customizable or interchangeable.

[0020] FIG. 2 is a perspective view of a retractable article tether coupling an article to an anchor object, in accordance with an embodiment of the invention. In one embodiment, the retractable article tether includes the housing 102, the coupler 104, the flexible membrane 106, the fasteners 108, the elastic portion 107, the clamp arms 110, the levers 112, and the elongated tether cord 206. As described more fully in reference to FIG. 1, the housing 102 is coupled to an elongated tether cord 206, which is coupled to the flexible membrane 106 via the coupler 104. The flexible membrane includes the elastic portion 107 defined by the fasteners 108 disposed along its length. The elongated tether cord 206 is tension biased to extendably retract within the housing 102; although, the elongated tether cord 206 can be locked at a given length. The housing 102 is coupled to the clamp arms 110, which are mechanically controllable using the levers 112. The elastic portion 107 is configurable to comfortably circumscribe and removably secure an article 202 using the fasteners 108 while the clamp arms 110 are configurable to removably grip an anchor object 204. Accordingly, the retractable article tether permits the article 202 to be flexibly positioned within a given range relative to the anchor object 204 for free-handling of the article 202 and also prevents the article 202 from being willfully or inadvertently dropped, lost, or otherwise disposed. The clamp arms 110 can be easily removed from the anchor object 204 and coupled to another anchor object; similarly, the elastic portion 107 can be easily removed from the article 202 and coupled to another article. While not in use, the elongated tether cord 206 is retractable within the housing 102 for convenient storage.

[0021] The retractable article tether is usable in many environments for various applications. For instance, the retractable article tether can be used in the context of toy-playing whereby a child is permitted to freely play with a toy while it is simultaneously prevented from being thrown from his or her reach. Thus, in this context the article 202 can be a game,

puzzle, stuffed animal, cup, doll, food plate, building block, or any other tangible article and the anchor object **204** can be a stroller arm, a high chair frame, a car seat strap, a crib frame, clothing, a sling, a rocker strap, or any other tangible object. Alternatively, the retractable article tether can be used in the context of boating, biking, hiking, walking, traveling, lounging, kayaking, scuba diving, working, swimming, running, rock climbing, exercising, driving, motor-biking, hang gliding, flying, and many other contexts where it is desirable to freely use an article without a risk of it being inadvertently lost, dropped, or otherwise disposed. For instance, the article **202** can be a watch, a compass, a GPS system, keys, a drink, a flash-light, a mobile-phone, a tool, a wallet, a personal computer, a personal digital assistant, a writing instrument, or any other tangible article and the anchor object **204** can be a handle, a frame, a backpack strap, a belt loop, or any other tangible object. Additionally, the retractable article tether can be transferred between different contexts and used with various articles and objects without limit.

[0022] FIG. 3 is top plan view and an elevational view of a retractable article tether, in accordance with an embodiment of the invention. In one embodiment, the retractable article tether includes the housing **102** having guide channels **302**, the coupler **104**, the flexible membrane **106**, the fasteners **108**, the elastic portion **107**, the clamp arms **110**, the levers **112**, and the elongated tether cord **206** as described more fully in reference to FIGS. 1 and 2.

[0023] In one embodiment, the clamp arms **110** extend through the housing **102** and are defined on their opposing ends by the levers **112**. The clamp arms **110** are tension biased against each other and force applied to the levers **112** is operable to move the clamp arms **110** along their respective guide channels **302** to an open position (broken lines) for receiving an anchor object (not illustrated). Removal of the force from the levers **112** permits the clamp arms **110** to return along their respective guide channels **302** toward a closed position for removably securing an anchor object. Accordingly, the clamp arms **110** are configurable to removably grip anchor objects of various sizes and shapes. The flexible membrane **106**, the fasteners **108**, and the elastic portion **107** define an unobtrusive medium adequate to removably secure an article (not illustrated) without interfering with the use and enjoyment of the article.

[0024] In other embodiments, the clamp arms **110** include fewer or greater arms. In yet other embodiments, the clamp arms **110** or levers **112** are alternatively disposed relative to the housing **102** or include fewer or greater mechanical components. In one particular embodiment, the clamp arms **110** are removable or replaceable with an alternative coupling means. In a further embodiment, the flexible membrane **106**, the elastic portion **107**, and the fasteners **108** are alternatively shaped, disposed, or constructed, include fewer or additional components, or are removable or replaceable with an alternative coupling means.

[0025] FIG. 4 is a perspective view of a retractable article tether having a partial cutaway, in accordance with an embodiment of the invention. In one embodiment, the retractable article tether includes the housing **102** having guide channels **302**, a reel **402**, a cord retracting mechanism **404**, the clamp arms **110**, the levers **112**, and the elongated tether cord **206**. The reel **402** is rotatably disposed within the housing **102** and defines a channel or surface about its perimeter for rollably receiving the elongated tether cord **206**. The cord retracting mechanism **404** uses a spring, magnets, or other

system to provide tension bias to the reel **402** for automatically retracting the elongated tether cord **206** within the housing **102**. Force applied to the elongated tether cord **206** opposing the tension bias is configurable to pay out the elongated tether cord **206** from the housing **102**. Thus, removal of force from the elongated tether cord **206** permits the tension bias to retract the elongated tether cord **206** to within the housing **102**. In certain embodiments, the tension bias strength is adjustable or removable.

[0026] FIG. 5 is a flow diagram of a method for coupling an article to an anchor object using a retractable article tether, in accordance with an embodiment of the invention. In one embodiment, method **500** includes obtaining an anchor object at block **502**, obtaining an article **504**, removably coupling the anchor object to the article using a retractable article tether at block **506**, and freely moving the article within an adjustable range defined by the retractable article tether at block **508**. The obtained anchor object at block **502** can be any tangible object as discussed herein. The obtained article at block **504** can be any tangible article desired to be freely used without a risk of being inadvertently lost, dropped, or otherwise disposed. The removably coupling the anchor object to the article using a retractable article tether at block **506** includes using a retractable article tether as described herein whereby clamp arms grip the anchor object and an elastic portion comfortably circumscribes the article. Other coupling means are employable as also described herein. The freely moving the article within an adjustable range defined by the retractable article tether at block **508** includes adjustably paying out an elongated tether cord to desirably extend a length of the retractable article tether. Method **500** can be implemented in a wide array of contexts as also discussed herein.

[0027] While preferred and alternate embodiments of the invention have been illustrated and described, as noted above, many changes can be made without departing from the spirit and scope of the invention. Accordingly, the scope of the invention is not limited by the disclosure of these preferred and alternate embodiments. Instead, the invention should be determined entirely by reference to the claims that follow.

What is claimed is:

1. A retractable article tether for adjustably coupling an article to an object, the retractable article tether comprising:
 - an elongated tether cord, the elongated tether cord comprising at least one fastener;
 - a housing, the housing rotatably coupled to a retractable mechanism, the elongated tether cord being coupled to the retractable mechanism, and
 - at least one clamp arm, the at least one clamp arm being movably coupled to the housing,
 wherein the elongated tether cord is configurable to being removably coupled to an article using the at least one fastener and wherein the at least one clamp arm is configurable to being removably coupled to an anchor object.
2. The retractable article tether of claim 1 wherein the elongated tether cord comprises an elastic portion for comfortably circumscribing the article and wherein the at least one fastener includes male and female components disposed on opposing ends of the elastic portion for removably coupling the article.
3. The retractable article tether of claim 2 wherein the elongated tether cord comprises a flexible membrane for providing a buffer region before the elastic portion.

4. The retractable article tether of claim 1 wherein the retractable mechanism is a reel disposed within the housing, the reel defining a surface about its perimeter for rollably receiving the elongated tether cord through an orifice in the housing, and wherein the reel is tension biased to automatically retract the elongated tether cord.

5. The retractable article tether of claim 4 wherein the tension bias strength is adjustable.

6. The retractable article tether of claim 1 wherein the at least one clamp arm comprises two opposing clamp arms, the two opposing clamp arms being tension biased for gripping the anchor object, and wherein the two opposing clamp arms extend through the housing to at least one lever for moving the two opposing clamp arms.

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