

(12) STANDARD PATENT
(19) AUSTRALIAN PATENT OFFICE

(11) Application No. **AU 2017228308 B2**

(54) Title
Portable roller device

(51) International Patent Classification(s)
A61H 15/00 (2006.01) **A61H 7/00** (2006.01)
A61H 1/00 (2006.01) **A63B 21/00** (2006.01)

(21) Application No: **2017228308** (22) Date of Filing: **2017.02.27**

(87) WIPO No: **WO17/151468**

(30) Priority Data

(31)	Number	(32)	Date	(33)	Country
	62/301,095		2016.02.29		US

(43) Publication Date: **2017.09.08**

(44) Accepted Journal Date: **2019.10.31**

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(56) Related Art
US 20150190304 A1
US 2015/0190304 A1
US 2015/0209220 A1
WO 2016/153551 A1



(51) International Patent Classification:

A61H 15/00 (2006.01) A61H 1/00 (2006.01)
A61H 7/00 (2006.01) A63B 21/00 (2006.01)

(21) International Application Number:

PCT/US2017/019602

(22) International Filing Date:

27 February 2017 (27.02.2017)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/301,095 29 February 2016 (29.02.2016) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

[Continued on next page]

(54) Title: PORTABLE ROLLER DEVICE

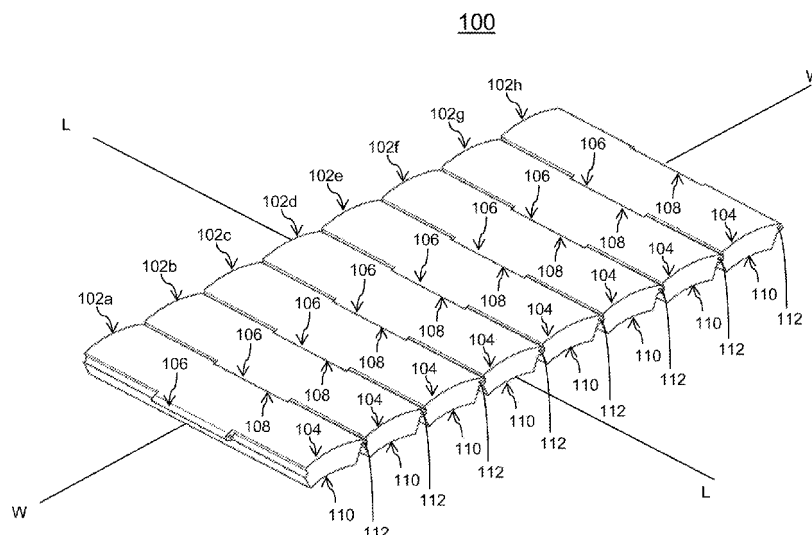


FIG. 1

(57) Abstract: A roller device includes a plurality of segments, wherein the plurality of segments is configured to form a tubular shape. In addition, each of the plurality of segments are coupled to neighboring segments of the plurality of segments and each of the plurality of segments include a first edge and a second edge, wherein the first edge is opposite the second edge. The roller device also includes a coupling mechanism for coupling the first edge of a segment to a second edge of a first neighboring segment and coupling the second edge of the segment to a first edge of a second neighboring segment, wherein the coupling mechanism allows the plurality of segments to convert from a first position to a second position.



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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
- Published:**
- *with international search report (Art. 21(3))*

PORTABLE ROLLER DEVICE

FIELD

[0001] The present disclosure relates generally to exercise and therapy equipment and, more particularly, to a portable roller device.

DEFINITION

[0001A] In the specification the term “comprising” shall be understood to have a broad meaning similar to the term “including” and will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps. This definition also applies to variations on the term “comprising” such as “comprise” and “comprises”.

BACKGROUND

[0002] Roller devices can provide desirable physiological benefits in physical therapy and general fitness activities, such as exercise, and stretching activities. Roller devices enable individuals to target troubled muscle areas using their own body weight to massage away restrictions of their muscles. Additionally, roller devices allow individuals to exercise and perform self-myofascial release therapy without the need to visit a therapist or trainer for each session.

[0003] Roller devices have not only become desirable devices for rehabilitation and training but have also become more known for personal home and office use. Users may be reluctant to purchase roller devices for personal use because of the burden of having to store the equipment if storage space in an office or at home is limited. In addition, individuals undergoing therapy may need to travel for business or may have vacations planned during a period when a therapy session is scheduled. In addition, sometimes athletes travel to various venues to participate in sporting events. While traveling, the availability of space may be taken into consideration whether checking bags with an airline or storing items in the trunk of an automobile. Some roller devices are generally inflexible and take up large amounts of space. The shortcoming of space limitations can be compounded if a team trainer or therapist needs to transport multiple roller devices for training multiple athletes or clients at a remote site. For all of these reasons storage and transportation of the roller devices can become problematic.

SUMMARY OF THE DISCLOSURE

[0004] Applicant has recognized that traveling trainers and clients prefer to have uninterrupted exercise and/or therapy regimens. Applicant has also recognized that those faced with limited storage issues should not be deterred from continuing their exercise or therapy routines due to the inconvenience of storing and/or transporting bulky roller devices. Applicant has recognized it would be beneficial to provide a roller device capable of being conveniently transformed from a storage and transportation configuration to a use configuration for therapy and exercise.

[0005] In accordance with an embodiment, a roller device is provided. The roller device includes a core layer, where the core layer includes an outer surface, an inner surface, a first edge, and a second edge, and a coupling mechanism, where the coupling mechanism being configured to secure the first edge and second edge of the core layer. Suitably, the coupling mechanism is configured to releasably secure the first edge and the second edge of the core layer. The core layer suitably forms a substantially flat shape when released and a substantially tubular shape when secured. Suitably, the substantially tubular shape is a rigid or semi-rigid substantially tubular shape.

[0005A] The roller device may further include the core layer having a plurality of segments, where each segment of the plurality of segments includes a first edge, a second edge, an outer surface and an inner surface, where the first edge is opposite the second edge. The roller device further includes the plurality of segments including first neighboring segment and a second neighboring segment, and a plurality of segment connectors, where each segment connector connects one of the plurality of segments to one or more of the other plurality of the segments.

[0005B] The roller device may comprise a segment coupling mechanism connected to the first neighboring segment and the second neighboring segment.

[0005C] The roller device may comprise a tubular inner cavity formed by the inner surface of the plurality of segments.

[0005D] The plurality of segments may be connected to the first neighboring segment and the second neighboring segment at a distal edge of the plurality of segments.

[0005E] Each of the plurality of segments may comprise a curved portion.

[0005F] The outer surface of the plurality of segments may be cylindrical or polygonal.

[0005G] The outer surface of the plurality of segments may be textured.

[0005H] The roller device may comprise a textured layer reversibly coupled to the outer surface of the plurality of segments.

[0005I] The roller device may comprise a locking pin, a Velcro, a zipper, or a hinge.

[0006] In accordance with another embodiment of the present disclosure, a roller device and a method of converting a roller device are provided. The method includes coupling a plurality of segments of the roller device, wherein the plurality of segments are capable of forming a tubular shape, wherein each of the plurality of segments are coupled to neighboring segments of the plurality of segments, wherein each of the plurality of segments comprise a first edge and a second edge, wherein the first edge is opposite the second edge. Suitably, the method also includes releasably coupling a coupling mechanism for coupling the first edge of a segment to a second edge of a first neighboring segment and coupling the second edge of the segment to a first edge of a second neighboring segment. Suitably, the method includes converting the roller device from a first position to a second position and locking the plurality of segments.

[0006A] Suitably, coupling according to the method of this embodiment is releasable coupling. The method may further comprise releasing the coupling mechanism of at least one of the plurality of segments to convert the roller device, and converting the plurality of segments from the second position to the first position.

[0006B] Each of the plurality of segments may further comprise an outer surface and an inner surface.

[0006C] The first position may be a substantially flat position and the second position may be a tubular shape.

[0006D] The plurality of segments may be connected to the first neighboring segment and the second neighboring segment at a distal edge of the plurality of segments.

[0006E] Each of the plurality of segments may comprise a curved portion forming a circular inner cavity when converted to the second position or each of the plurality of segments may comprise a polygonal portion forming a polygonal shaped inner cavity when converted to the second position.

[0006F] The outer surface may be cylindrical or polygonal.

[0006G] The outer surface of the each of the plurality of segments may comprise a textured portion.

[0006H] The coupling mechanism of each of the plurality of segments may comprise a locking pin.

[0007] In accordance with yet another embodiment of the present disclosure, a method for relieving muscle tension is provided. The method includes providing a roller device. The roller device includes a plurality of segments, wherein each of the plurality of segments comprise a first edge, a second edge, an outer surface and an inner surface, wherein the first edge is opposite the second edge, the plurality of segments further comprising a first neighboring segment and a second neighboring segment. The device also includes a plurality of segment connectors, each segment connector connecting one of the plurality of segments to one or more of the other plurality of the segments. The device also includes a coupling mechanism connected to the first neighboring segment and the second neighboring segment. The method also includes applying the roller device to an area of a body. The method also includes rolling the device across that area of the body.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The subject matter which is regarded as the disclosure is particularly pointed out and distinctly claimed in the claims at the conclusion of the specification. The foregoing and other features and advantages of the disclosure are apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

[0009] FIG. 1 illustrates an embodiment of a roller device;

[0010] FIG. 2 illustrates an alternate view of the roller device of FIG. 1;

[0011] FIG. 3 illustrates another embodiment of a roller device;

[0012] FIG. 4 illustrates an alternate view of the roller device of FIG. 3;

[0013] FIG. 5 illustrates a flow diagram of a method for converting the roller device;

[0014] FIG. 6 illustrates a diagram of a segment and textured layer of the roller device in accordance with an embodiment;

[0015] FIG. 7 illustrates a diagram of a locking mechanism of the roller device in accordance with an embodiment;

[0016] FIG. 8 illustrates a diagram of a locking mechanism of the roller device in accordance with an embodiment; and

[0017] FIG. 9 illustrates a diagram of a locking mechanism of the roller device in accordance with an embodiment.

DETAILED DESCRIPTION

[0018] In accordance with embodiments of the disclosure, a roller device and a method for converting a roller device are provided. An object of the present disclosure is to provide a roller device that is capable of converting from a first flat position to a second rigid or semi-rigid tubular position. Another object of the disclosure is to improve the storage and portability of the roller device without sacrificing the operability of the device to function as a roller device. The roller device is capable of maintaining its tubular position through rotational forces when being used by a client. The structure of the roller device can be created from a single component or multiple components formed of plastic, metal or other rigid materials. This rigid structure can be the roller in whole or a base structure supporting a layer of material offering a different durometers or ability to be compressed. The rigid structure can also incorporate the hinge or hinge like mechanisms.

[0019] In an embodiment, the roller device includes a single flexible material that is capable of lying flat and converting into a rigid tubular position. In an exemplary embodiment, the roller device comprises a plurality of segments. In some embodiments, each of the plurality of segments can be connected to one or more neighboring segments, such as two neighboring segments. For example, a segment can be connected to a neighboring segment on a first side and connected to a further neighboring segment on a second side, wherein the second side is opposite the first side. In some embodiments, one or more segments can have a defined arc that can allow the plurality of segments to form a tubular shape when connected together, while in other embodiments the plurality of segments can have a flat surface. When connected to one another the plurality of segments being parallel to one another lie in a horizontal plane in a flat position for transport and storage. Additionally, the plurality of segments can be formed into a tubular shape. In some embodiments, the tubular shape is a cylinder. In some embodiments, the tubular shape is a polygon, such as a pentagon, hexagon, heptagon, octagon, nonagon, or decagon. When configured in the tubular position the plurality of segments form an outer surface which provides a surface to treat the user's body during rolling. In some embodiments when the plurality of segments are connected an inner cavity is formed.

[0020] Now referring to FIG. 1, a roller device 100 is shown. The roller device 100 is shown in a first flat position. In the first flat position, the plurality of segments lie connected to one another in a parallel fashion in a horizontal plane. In some embodiments, the roller device is

rectangular in shape when in a first flat position. As a non-limiting example, the rectangle can have a width W of 5 to 40 inches, or 5 to 30 inches, or 10 to 30 inches, or 10 to 20 inches, or 10 to 15 inches, or 14 inches. In some embodiments, the rectangle can have a length L of 5 to 40 inches, or 5 to 30 inches, or 10 to 30 inches, or 10 to 20 inches, or 10 to 15 inches, or 11.5 inches, and a thickness or height of 0.5 to 3 inches, or 1 to 3 inches, or 1 to 2 inches, or 1.7 inches. The first flat position can be convenient for storage and/or transportation of the device. In another embodiment, the roller device can be formed by a single flexible, semi-rigid material. The roller device can include a plurality of segments numbered, 102a, 102b ... 102h forming a core layer or base layer of the device, where each of the plurality of segments has an inner surface 110 and an outer surface 104, and where n represents the total number of segments in the device and is an integer from 1 to 100. In an embodiment, the outer surface 110 can have a flat or curved surface and the inner surface 110 can have a flat or curved surface. In a non-limiting example, FIG. 1 depicts an exemplary roller device 100 having 8 segments. In some embodiments, the roller device has from 5 to 50 segments, such as 5 to 20 segments, or from 5 to 10 segments. Preferably, the device has from 5 to 10 segments. The outer surface 104 of each segment 102 provides a surface that makes contact with a user's muscles or target area during use. In an exemplary embodiment, the outer surface 104 as shown in FIG. 1 can have a smooth surface. In another embodiment, the outer surface 104 can have a textured/patterned surface. Additionally, the outer surface 104 may have various densities which may be selected according to a selected level of treatment, comfort, or therapy. The plurality of segments 102 can be composed of a low density material, medium density material, high density material or any combination thereof offering various resistances to the user. The low density materials can provide a softer surface for the user and the high density materials can provide a firmer surface. The medium density material can be a compromise between the low and high density options. Non-limiting examples of foam materials include EVA (ethylene vinyl acetate) foam, urethane foam, polyurethane foam, EPS (expanded polystyrene) foam, polyethylene foam, neoprene foam, and the like. Additionally, the foam materials can comprise open cell and closed cell configurations.

[0021] Each of the plurality of segments 102 include a first edge 106 and a second edge 108 where the first edge 106 is located opposite the second edge 108. FIG. 1 depicts the first edge 106 of segment 102b can be coupled to a second edge 108 of a first neighboring segment 102a and the second edge of 102b can be coupled to a first edge 106 of a second neighboring segment 102c. Similarly, the first edge 106 and second edge 108 of segment 102d can be coupled to the second edge

108 of segment 102c and the first edge 106 of segment 102e respectively. In some embodiments, the first edge of a segment can complement the second edge of a neighboring segment allowing the plurality of segments to be coupled to one another and form the roller device. Complementary edges of neighboring segments are configured to be inserted into one another, such as a female receiving component and a male extension component complement one another.

[0022] FIG. 1 further depicts the plurality of segments 102a-102h is coupled to neighboring segments where each of the plurality of segments 102a- 102h are coupled to the neighboring segments at a distal edge 114, where the distal edge 114 is located on the outer surface 104. A coupling mechanism can be any mechanism that joins the neighboring segments in a manner that allows the segments to move relative to one another. In an exemplary embodiment the coupling mechanism 112 is a hinge device secured by a structural pin. The coupling mechanism can allow the plurality of segments to maintain their ability to pivot around the coupling mechanism and convert between a first flat position and a second tubular position.

[0023] In an exemplary embodiment, a locking segment (“not shown”) may be used to allow the device to secure the roller device into position and maintain the rigid tubular position for when ready for use. In an exemplary embodiment, the locking segment may have the same structure as the coupling mechanism of the other plurality of segments. In other embodiments, the locking segment may have a different mechanism for securing and releasing the roller device. These mechanisms can include a hinge mechanism, and further include hook and loop fasteners, such as VELCRO®, zippers, magnets, push-buttons, compression couplings, dovetail joints, and the like. In an exemplary embodiment, the locking mechanism may be located on the side of the roller device or may further be actuated by a push button or other release mechanism.

[0024] In an exemplary embodiment, the exercise roller device 100, as shown in FIG. 1 includes the coupling mechanism 112 having a structural pin in combination with a first edge of a segment coupled to a second edge of a neighboring segment, where the structural pin is threaded through a portion of the first edge and a portion of the second edge. This exemplary configuration can allow the plurality of segments to be secured to one another during compressive force or pivot and separate with an outward radial force when the coupling mechanism 112 is released.

[0025] Other coupling mechanisms can be used, including a configuration that does not require structural pins to secure the plurality of segments, while maintaining each segment’s mobility. In some embodiments, a plurality of segments may be able to snap into position and

maintain its mobility while forming the rigid tubular shape. For example, the first edge of a segment can snap into a second complimentary edge of a neighboring segment. In other embodiments the coupling mechanisms include Velcro attachments, zipper attachments, button attachments, magnetic attachments, hook type attachments, and the like.

[0026] In some embodiments, the roller device includes only one flexible, semi-rigid segment having a coupling mechanism for forming and maintaining the roller device. For example, a single continuous material capable of lying flat in a horizontal plane and converting into a tubular shape is within the scope of the disclosure.

[0027] FIG. 2 illustrates a second configuration of the roller device 200 of FIG. 1, where the plurality of segments 102a-102h can be connected to form a tubular shape. Each of the plurality of segments 102a-102h can be secured by the coupling mechanisms 112 joining the first edge 106 of a segment to a second edge of a neighboring segment. The second configuration is formed when the plurality of segments 102a-102h is coupled and the first segment 102a and last segment 102h of the plurality of segments are connected forming a rigid tubular structure. The plurality of segments 102a-102h form an inner cavity 114 when in the second configuration. In a different embodiment, a single flexible, semi-rigid material having a coupling mechanism can be converted into the second configuration and form an inner cavity. In an exemplary embodiment, the inner cavity 114 can be tubular, cylindrical, or polygonal in shape. The coupling mechanism can allow each of the plurality of segments to pivot around the coupling mechanism 112 to convert from a first flat position shown in FIG. 1 to the second tubular shape position as shown in FIG. 2. When the exercise or therapy session is completed at least one of the plurality of segments 102a-102h can be disconnected and the roller device is returned to the first position shown in FIG. 1 for storage/transport. In an exemplary embodiment, the user can engage and disengage the coupling mechanism to convert the roller device from a first configuration for storage to the second configuration for use. For example, the user may actuate a locking segment (“not shown”) to release the roller device from the second configuration. In an exemplary embodiment, the coupling mechanism can utilize springs to keep the structural pins engaged in the locked second position.

[0028] In an exemplary embodiment, the roller device is approximately a foot in length and six inches in diameter when locked in the second position. In some embodiments, a roller device can range from 1 to 3 feet in length. In some embodiments, the roller device is greater than or equal

to 6 inches in diameter when in the second position. In one or more embodiments, the roller device can range from 2 inches to 5 feet.

[0029] Now referring to FIG. 3, another exemplary embodiment of the roller device 300 is shown. The roller device 300 includes a plurality of segments 302a-302h in a first flat position. FIG. 3 illustrates each segment comprises a first edge 306 and a second edge 308 and further illustrates a coupling mechanism 312 for connecting the plurality of segments. Each segment 302 further includes an outer surface 304 and an inner surface 310. FIG. 3 further depicts a textured layer 320 that is applied to the outer surface 304. In an exemplary embodiment, the textured layer 320 exhibits a plurality of peaks, mounds, ridges, grooves, and the like. In an exemplary embodiment, the textured layer 320 as shown in FIG. 3 has two different shapes including peaks 322 and mounds 324. Each segment as shown as two rows of peaks 322 having six peaks per row and a row of mounds 324 between the two rows of peaks having seven mounds in the row. It would be known to one of ordinary skill in the art that any number of shapes and patterns can be applied to the textured layer 320 and various heights and densities of the features of the textured layer 320 can be selected based on the comfort level of the user. In addition various spacing between the features can be selected.

[0030] FIG. 4 illustrates a roller device of FIG. 3 in a second tubular position 400. The plurality of segments 302a-302h form a core or base layer of the roller device 300 is coupled by the coupling mechanism 312 and is positioned in a second tubular position. The inner surface 310 of each of the plurality of segments form an inner cavity 314. In an exemplary embodiment, the inner cavity is circular in shape. In some embodiments, the inner cavity can be other shapes, including but not limited to a tubular, cylindrical, or polygonal shape. FIG. 4 further depicts a textured layer 320 being attached to outer surface 304. In addition, the firmness of the outer surface 304 and textured layer 320 of the roller device 300 is dependent upon the material used for each of the plurality of segments 302 and textured layer 320. The plurality of segments 302 of the roller device may be composed of the same material or different materials may be used simultaneously that can provide various/alternating levels of comfort based on an individual's needs. Non-limiting examples of foam materials include EVA (ethylene vinyl acetate) foam, urethane foam, poly-urethane foam, EPS (expanded polystyrene) foam, polyethylene foam, neoprene foam, and the like. Additionally, the foam materials can comprise open cell and closed cell configurations. In an exemplary embodiment, the roller device may be used in conjunction with a cover where the cover may slide over the device. Similarly, the cover may be comprised of different textures/patterns and may have varying levels of

firmness. A number of different types of materials can be used to provide the desired density. In some embodiments, a cover can allow the user to have one rolling device but have a plurality of different textures/firmness for added variety.

[0031] In an exemplary embodiment, the outer surface 304 of each of the plurality of segments can have an textured layer 320 affixed to the core layer formed by one segment or a plurality of segments 302, for example, that can provide different levels of treatment for the user. The affixed textured layer 320 may be attached to the core layer by an adhesive, slide on to the segment, or snap into position on the outer surface 304 of each segment. In an exemplary embodiment, the textured layer 320 is interchangeable.

[0032] Now referring to FIG. 5, the method 500 depicts a technique for converting a portable roller device. As shown in block 502, the method 500 includes coupling a plurality of segment of the roller device. In an exemplary embodiment, the coupling of the plurality of segments can be accomplished by the coupling mechanisms including a hinge mechanism, Velcro attachments, zipper attachments, magnetic attachments, push-buttons, and the like. Block 504 shows converting the plurality of segments from a first position to a second position. In an exemplary embodiment the first position is a flat position where the plurality of segments lie parallel to one another in a horizontal plane and the second position is a tubular position. Block 506 provides locking the plurality of segments to secure and maintain the second position. As shown in block 508, the method 500 includes releasing the coupling mechanism of at least one of the plurality of segments. Block 510 provides converting the plurality of segments from the second position to the first position.

[0033] The roller device of the disclosure can be used for multiple purposes. In one embodiment, the roller device is used for exercise. In another embodiment, the roller device is used for correcting muscle imbalances. In other embodiments, the roller device is used for relieving muscle soreness and joint stress. An exemplary embodiment includes using the roller device to increase extensibility of musculotendinous junction. In another embodiment, the roller device is used to maintain normal function muscular length. In a further embodiment, the roller device is used for improving neuromuscular efficiency. In another embodiment, the roller device is used for home use for massage.

[0034] The roller device of the disclosure can have different types of coupling/interlocking mechanisms between the plurality of segments. Also the roller device can be composed of different materials types and include different sizes. The type of coupling mechanisms

used can ensure the integrity and mobility of the roller device to facilitate portability. The type of material may be based on the firmness required by the user and the weight of the material to maximize portability.

[0035] Preferably, the materials used for the roller device can include a light weight material that is durable enough to withstand the force applied in massage or therapeutic applications. Various size roller devices may be selected based on the muscle groups the user intends to target during an exercise session.

[0036] In some embodiments, the disclosure provides a method for relieving muscle tension. The method includes applying the roller device of the disclosure to an area of a body and rolling the device across that area of the body. In some embodiments, the area of the body includes a leg. In some embodiments, the area of the body includes an arm. In other embodiments, the area of the body includes different muscle groups such the latissimus dorsi, hip flexors, trapezius, hamstrings, quadriceps, and the like.

[0037] Now referring to FIG. 6, a diagram 600 provides cross-sectional view of a segment 102 and related textured layer 320 of the foam roller device in accordance with an embodiment. The textured layer 320 is similar to that shown in FIG. 3. The textured layer 320 can be affixed to the outer surface 104 of the segment 102. In one or more embodiments, the textured layer 320 can snap or slide into position on the outer surface 104 of the segment 102. The textured layer 320 includes a bottom structure 614. The bottom structure 614 can snap into the structure 616 on the outer surface 104 of segment 102. As shown, the textured layer 320 can have a plurality of peaks 322 and mounds 324. The pattern of the textured layer 320 depicted in FIG. 6 is a non-limiting example of patterns included in embodiments of the disclosure. In other embodiments, different patterns and configurations can be used are within the scope of the textured layer 320. Any pattern that can relieve muscle tension can be used. The segment 102 includes a female edge 108 and male edge 106 which can be coupled to their complementary edges (male and female, respectively) in neighboring segments 102. The textured layer 320 can include a textured layer male edge 606 and textured layer female edge 608. In some embodiments, the textured layer male edge 606 is positioned directly above male edge 106 and textured layer female edge 608 is positioned directly above female edge 108.

[0038] In some embodiments, as noted previously a roller device can include a locking mechanism 706. FIG. 7 illustrates a cross-sectional side view of an exemplary locking segment 702

and locking mechanism 706 of a roller device in accordance with an embodiment. In one or more embodiments, the locking segment 702 includes an outer surface 704 having a textured layer 320 affixed to the outer surface 704. In one or more embodiments, the textured layer 320 is similar to the textured layer references above. The textured layer 320 includes a textured layer male edge 606 and textured layer female edge 608 to complement the outer surface 704. As shown in FIG. 7, the textured layer 320 can include a plurality of peaks 322 and mounds 324. In one or more embodiments, the outer surface 704 and the locking segment 702 can be secured together by a fastener or adhesive, such as a plurality of screws 710. The screws 710 can be screwed through the screw holes 720 of the locking segment 702 and the screw holes 722 of the outer surface 704. In a different embodiment, the outer surface 704 and locking segment 702 can be secured to one another by snapping or sliding into position. In other embodiments, these components can be held together by an adhesive or other known mechanism. The locking segment 702 can also include one or more locking mechanisms 706. The locking mechanism 706 as shown in FIG. 7 includes one or more locking pins 728. The locking pin 728 of locking segment 702 can secure adjacent segments 102 to one another by threading the locking pin 728 through the holes 112 of the locking segment 702. The locking mechanism 706 can be a bi-stable locking mechanism. A bi-stable locking mechanism is a locking mechanism that can be configured to be stable in either a locked or unlocked position where the locking mechanism can rest in one of the locked or unlocked positions due to the spring forces maintaining the positions. For example, in some embodiments, the locking mechanism 706 can be activated individually or in combination via other coupling techniques. The locking mechanism can be operated independently or with a coupling mechanism such as but not limited to a gear, belt or linkage system that can be used to synchronize the function of the locking mechanism together. In one or more embodiments, when one component of the locking mechanism is activated the other component can be activated directly without user intervention. A non-limiting set of examples of coupling means that allow combined activation includes gears, linkages, cables, and belt mechanisms. The locking mechanism 706 can be activated/released by the activate/release feature 708. Examples of the activate/release feature 708 include a sliding switch, push button, tab, latch mechanism, and the like. The activate/release feature 708 when assembled can be accessed through an opening 724 to allow a user to activate/release the locking segment 702 of the roller device. The side opening 736 of the locking segment 702 allows the locking mechanism 706 to slide in/out of the locking segment 702 when being activated/released.

[0039] In an example wherein the locking mechanism 706 includes a sliding mechanism, the sliding mechanism can be positioned in a fully locked position such that the roller device is held in a cylindrical configuration. The sliding mechanism can also be positioned in a fully unlocked position, such that the roller device can be converted from a cylindrical configuration to a configuration suitable for travel. The internal structure of locking segment 702 can include a sliding component or track component. In some embodiments, a sliding component or track component can include a spring. For example, a spring feature can be used as part of the locking mechanism 706 to revert the locking mechanism to a default locked or unlocked position. In an embodiment, a sliding component or track component can include an integral spring feature such as a spring composed of the same material or a spring molded as part of the sliding component or track component of the internal structure. In one or more embodiments, a spring feature can be used to bias the sliding component to either the lock position or the unlock position to manipulate the configuration of the roller device. The spring feature being coupled to the locking mechanism 706 can be compressed/decompressed to configure the bias position of the spring feature.

[0040] Now referring to FIG. 8, a diagram 800 illustrating an internal view of the locking segment 702 and locking mechanism 706 of the roller device according to one or more embodiments of the present disclosure is shown. As shown, the locking mechanism 706 positioned within the locking segment 702 can be visible in some embodiments. The locking mechanism 706 can include a locking pin 728 that can be configured to be threaded through the locking segment hole 812 on the side of the locking segment 702 adjacent the locking segment female edge 808. In some embodiments, the locking pins 728 that are threaded through the holes 812 can be configured to be threaded through a neighboring segment's complementary locking segment male edge 806 to secure adjacent segments 102 together. As shown, the locking pins 728 can be affixed to the locking mechanism 706 by a connection 814. The locking segment 702 can include a plurality of screw holes 720 for attaching the bottom of locking segment 702 to an outer surface 704 (shown in FIG. 7). In one or more embodiments, different techniques can be used to attach the bottom portion of the locking segment 702 to the outer surface 704 such as adhesive or complimentary snap fit features.

[0041] Now referring to FIG. 9, a diagram 900 illustrating a top view of a locking segment 702 and locking mechanism 706 of the portable roller device is provided. The locking mechanism 706 is shown positioned within the locking segment 702. The locking segment 702 can include a locking segment male edge 806 and a locking segment female edge 808 for coupling the

locking segment 702 to neighboring segments (not shown in FIG. 9) forming the portable roller device. The locking segment 702 can include locking segment holes 812 for securing locking pins (not shown) used for coupling adjacent segments of the portable roller device. FIG. 9 also demonstrates the plurality of screws 710 can be located within the plurality of screw holes 720 to connect the locking segment 702 to the outer 704 surface (not shown). As previously described other techniques can be used to attach the locking segment 702 with the outer surface 704. The opening 724 of locking segment 702 provides access to an activate/release feature 708 of the locking mechanism 706 to activate/release the portable roller device. As previously described example activate/release features 708 can include a sliding switch, push button, tab, latch mechanism, and the like. As shown in FIG. 8, the side opening 736 of the locking segment 702 allows the locking mechanism 706 to slide in or out of the locking segment 702 when being activated or released.

[0042] It is apparent from the description above that the present embodiments provide a new and improved roller device which increases the portability of the device. While the present disclosure has been described in detail in connection with only a limited number of embodiments, it should be readily understood that the present disclosure is not limited to such disclosed embodiments. Rather, the present disclosure can be modified to incorporate any number of variations, alterations, substitutions or equivalent arrangements not heretofore described, but which are commensurate with the spirit and scope of the present disclosure. Additionally, while various embodiments of the present disclosure have been described, it is to be understood that aspects of the present disclosure may include only some of the described embodiments. Accordingly, the present disclosure is not to be seen as limited by the foregoing description.

CLAIMS:

1. A roller device, comprising:
 - a core layer, the core layer having an outer surface, an inner surface, a first edge, and a second edge; and
 - a coupling mechanism, the coupling mechanism being configured to releasably secure the first edge and second edge of the core layer, wherein the core layer forms a substantially flat shape when released and wherein the core layer forms a rigid or semi-rigid, substantially tubular shape when secured; and
 - wherein the core layer further comprises a plurality of neighboring segments.
2. The roller device of claim 1, wherein each segment of the plurality of segments comprises a first edge, a second edge, an outer surface and an inner surface, wherein the first edge is opposite the second edge, the plurality of segments further comprising a first neighboring segment and a second neighboring segment; and
 - wherein the core layer further comprises a plurality of segment connectors, each segment connector connecting one of the plurality of segments to one or more of the other plurality of the segments.
3. The roller device of claim 2, comprising a segment coupling mechanism connected to the first neighboring segment and the second neighboring segment.
4. The roller device of claim 2 or claim 3, comprising a tubular inner cavity formed by the inner surface of the plurality of segments.
5. The roller device of any one of claims 2 to 4, wherein the plurality of segments are connected to the first neighboring segment and the second neighboring segment at a distal edge of the plurality of segments.
6. The roller device of any one of claims 2 to 5, wherein each of the plurality of segments comprises a curved portion.
7. The roller device of any one of claims 2 to 6, wherein the outer surface of the plurality of segments is cylindrical or polygonal.

8. The roller device of any one of claims 2 to 7, wherein the outer surface of the plurality of segments is textured.
9. The roller device of any one of claims 2 to 8, comprising a textured layer reversibly coupled to the outer surface of the plurality of segments.
10. The roller device of any one of claims 2 to 9, comprising a locking pin, a Velcro, a zipper, or a hinge.
11. A method of converting a roller device, the method comprising:
 - coupling a plurality of segments of a core layer of the roller device, wherein each of the plurality of segments are coupled to neighboring segments of the plurality of segments, wherein each of the plurality of segments comprise a first edge and a second edge, wherein the first edge is opposite the second edge;
 - releasably coupling a coupling mechanism for coupling the first edge of a segment to a second edge of a first neighboring segment and coupling the second edge of the segment to a first edge of a second neighboring segment;
 - converting the roller device from a first position wherein the core layer forms a substantially flat shape to a second position wherein the core layer forms a rigid or semi-rigid, substantially tubular shape; and
 - locking the plurality of segments.
12. The method of claim 11, further comprising:
 - releasing the coupling mechanism of at least one of the plurality of segments to convert the roller device; and
 - converting the plurality of segments from the second position to the first position.
13. The method of claim 11 or claim 12, wherein each of the plurality of segments further comprises an outer surface and an inner surface.

14. The method of any one of claims 11 to 13, wherein the plurality of segments are connected to the first neighboring segment and the second neighboring segment at a distal edge of the plurality of segments.
15. The method of any one of claims 11 to 14, wherein each of the plurality of segments comprises a curved portion forming a circular inner cavity when converted to the second position or each of the plurality of segments comprise a polygonal portion forming a polygonal shaped inner cavity when converted to the second position.
16. The method of claim 13, wherein the outer surface is cylindrical or polygonal.
17. The method of claim 13 or claim 16, wherein the outer surface of the each of the plurality of segments comprises a textured portion.
18. The method of any one of claims 11 to 17, wherein the coupling mechanism of each of the plurality of segments comprises a locking pin.
19. A method for relieving muscle tension, the method comprising:
providing a roller device, the roller device comprising:
a core layer comprising a plurality of segments, wherein each of the plurality of segments comprise a first edge, a second edge, an outer surface and an inner surface, wherein the first edge is opposite the second edge, the plurality of segments further comprising a first neighboring segment and a second neighboring segment;
a plurality of segment connectors, each segment connector connecting one of the plurality of segments to one or more of the other plurality of the segments of the core layer; and
a coupling mechanism releasably connected to the first neighboring segment and the second neighboring segment wherein the core layer is convertible from a substantially flat shape when the coupling mechanism is released to a rigid or semi-rigid, substantially tubular shape when the coupling mechanism is secured;
applying the roller device to an area of a body; and
rolling the roller device across that area of the body.

20. A method for relieving muscle tension in a user, the method comprising:
applying a roller device as claimed in any one of claims 1 to 10 to an area of a body of
the user, and

rolling the roller device across the area of the body.

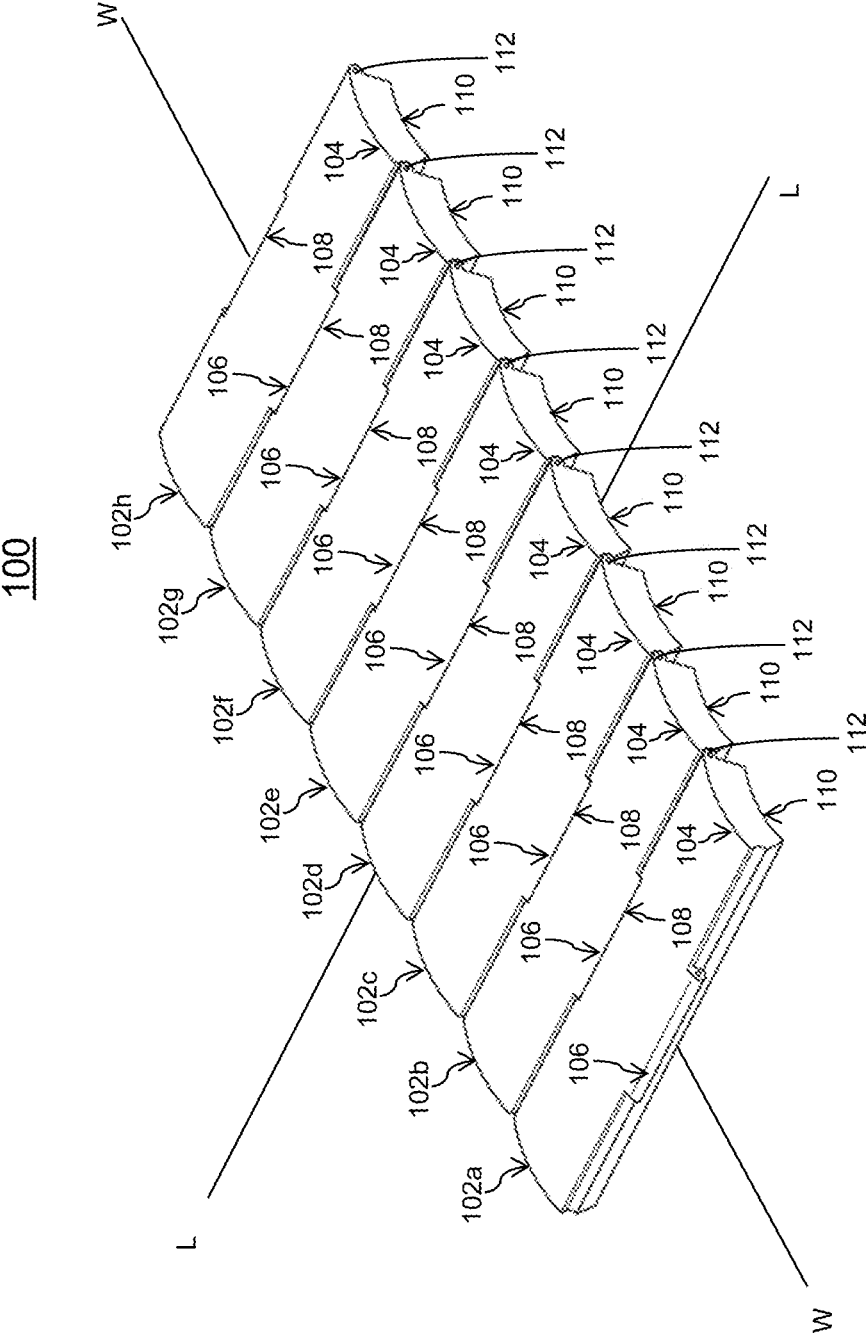


FIG. 1

200

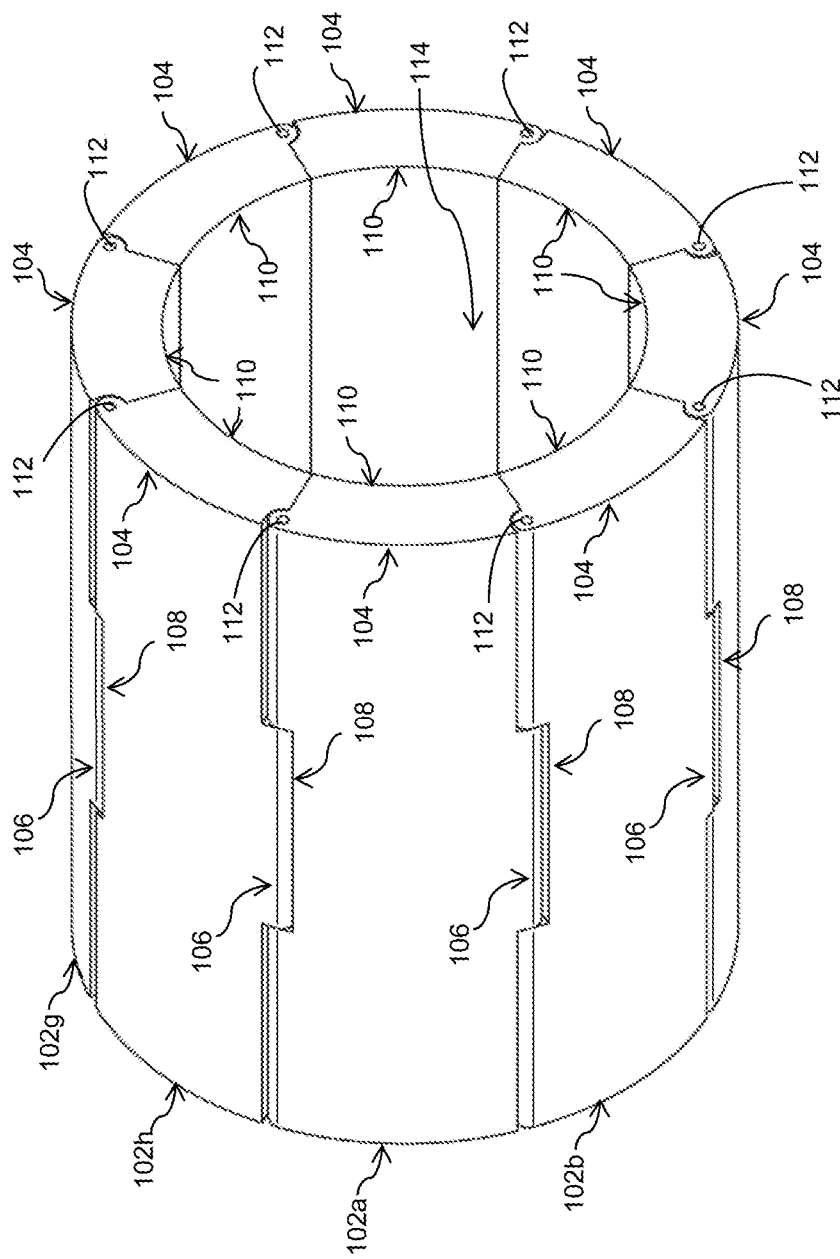


FIG. 2

300

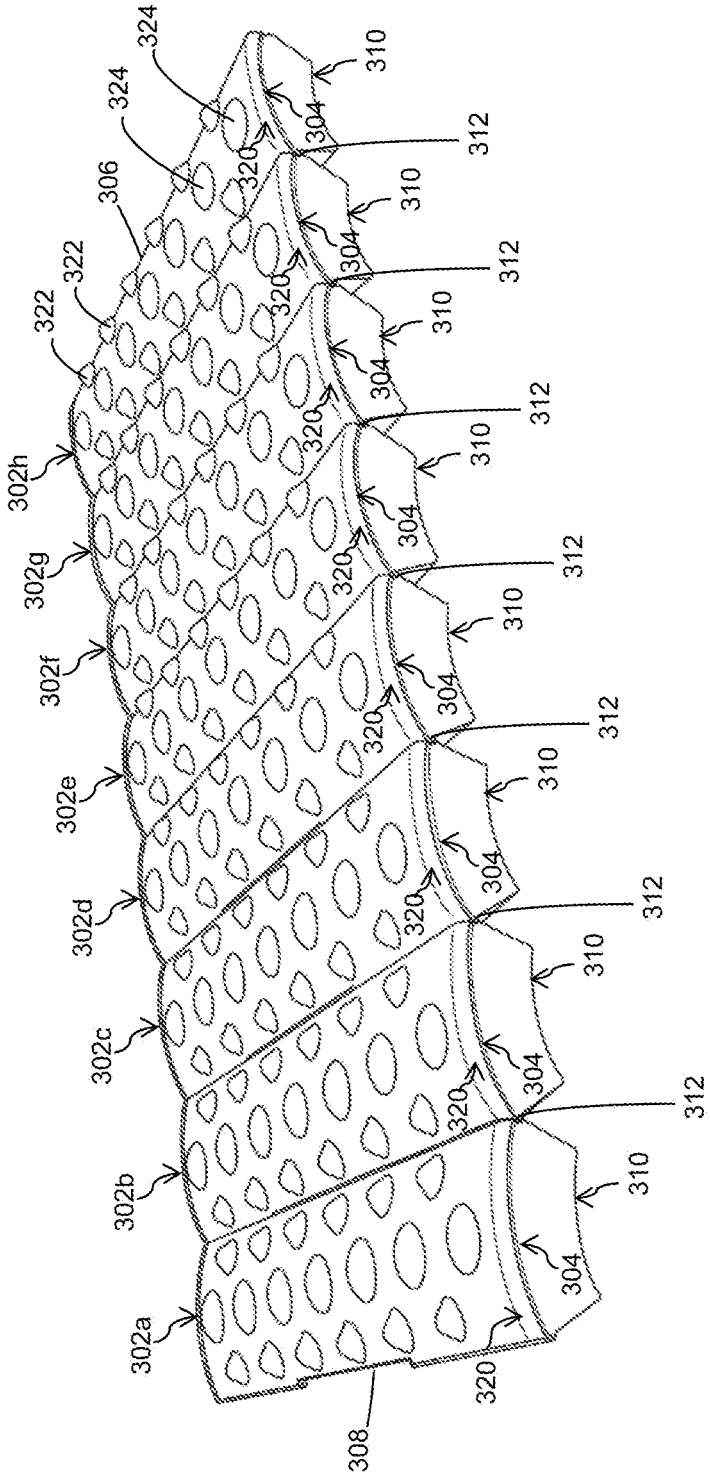


FIG. 3

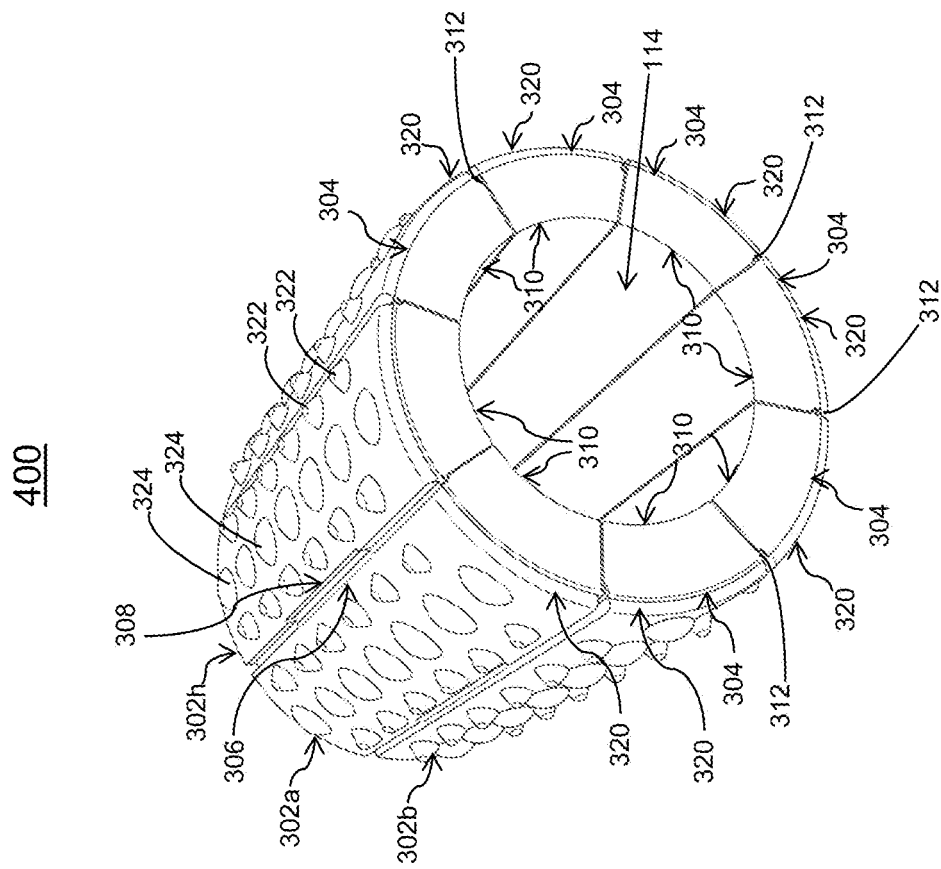


FIG. 4

5/9

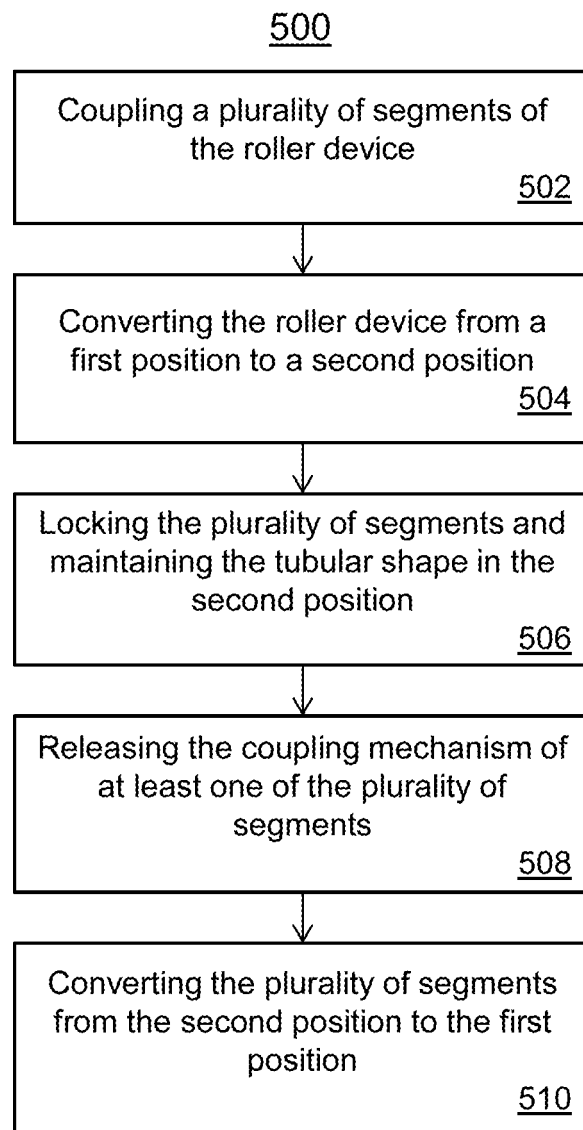


FIG. 5

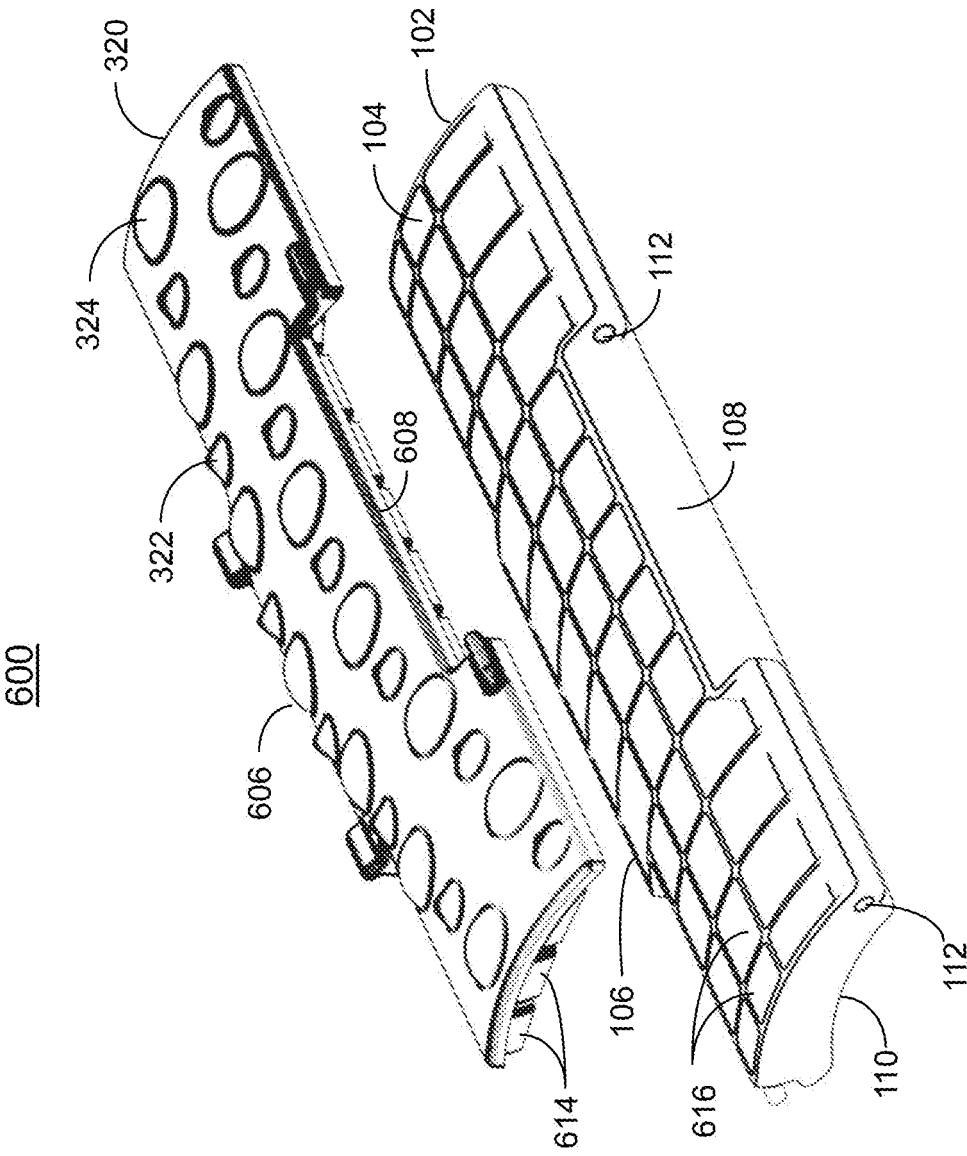
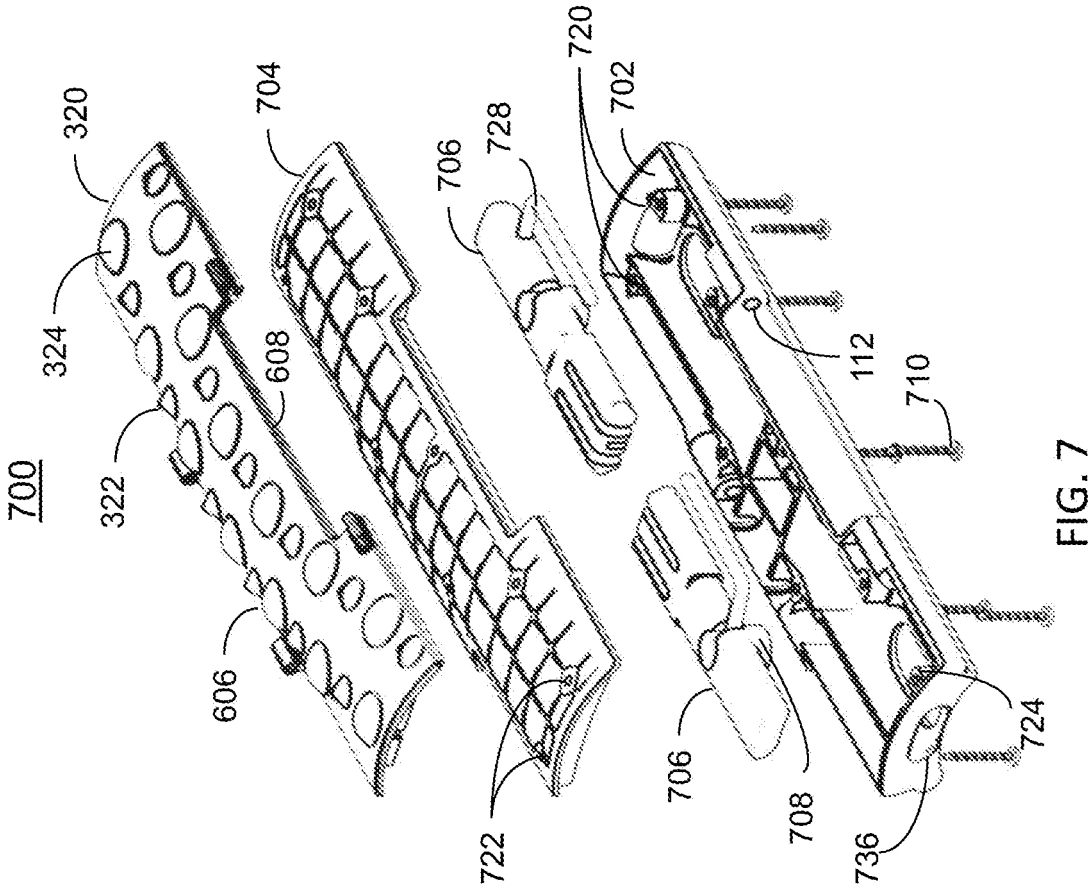


FIG. 6



800

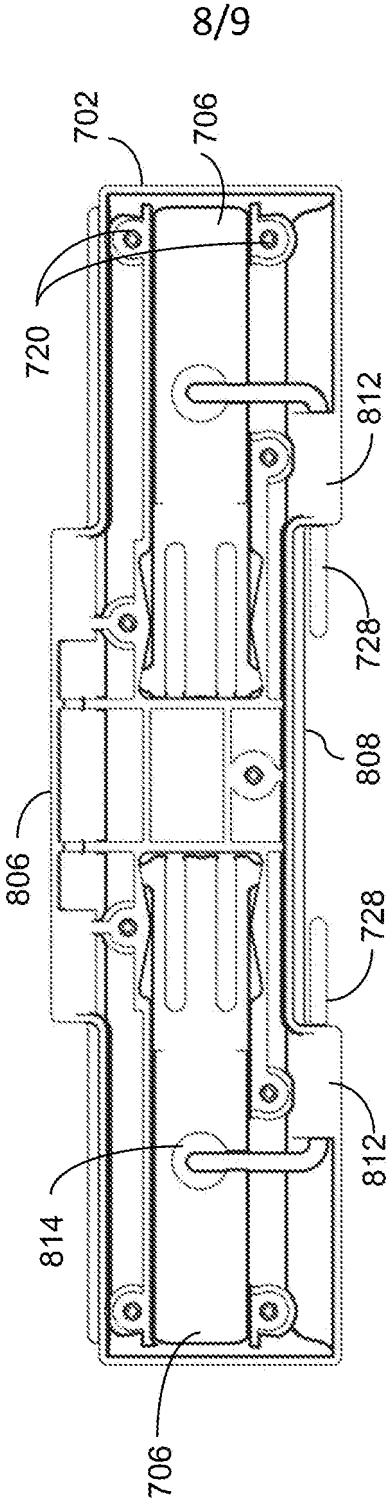


FIG. 8

900

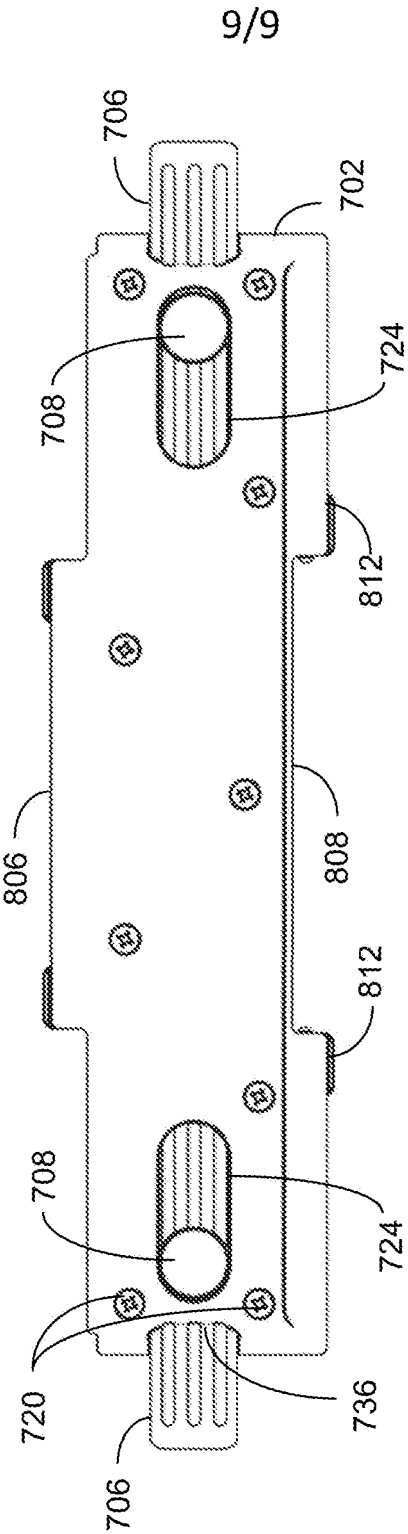


FIG. 9