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DESCRIPTION

Field of Invention

[0001] The present disclosure generally relates to an exercise device, and more particularly, an elastic resistive exercise device including a series of two or more loops.

Background of the Invention

[0002] Resistive exercising has long been incorporated into athletic training and therapeutic regimens in order to help prevent injury, enhance performance, and rehabilitate muscles after injury or surgery. Conventional isometric or isotonic exercise devices have been used to provide avenues for strength training and muscle therapy without the cost and space required with more complex and bulky equipment. In particular, many types of single loop bands or single strip bands of elastic material in the related art have been developed that allow a user to manually exercise based solely on the resistive action provided by the band. For example, the user may exercise with a single loop band by holding the band toward one end with a hand or a foot and attaching the other end of the band to a stationary object, such as a door, or holding the other end with another hand or foot. Often, in order to obtain and maintain a proper grip on conventional bands, a user must loop the band multiple times around their hand or foot, or tie knots at an appropriate location in the band.

[0003] US2008274863 provides a portable, elastic, and resilient exercising sleeve that can be placed around the torso and the extremities of the body for performing muscle strengthening and conditioning exercises that is generally comprised of a large elastic oblong center section having connected at opposite ends thereof a plurality of smaller elastic positioning sections with the large oblong center section and the smaller positioning sections co-joined to form a one piece multiple muscle exercise device. The exercising sleeve is disposed to receive the extremities of the human body for stretching and strengthening the muscles.

[0004] However, the above methods to provide effective handles at appropriate locations along a conventional band often result in damage to the band and/or a localized pressure on the hand or foot area, i.e., a cutting in of the band, due to a significant narrowing of the band in and around the area of the knot. To avoid this digging-in effect of the knotted band, the user may rely almost entirely on a finger grip, for example, rather than mounting the band over a larger portion of an extremity, such as a wrist or ankle. Some users, such as the elderly or those with extensive damage to the muscles of the hands or feet, for example, may not be able to effectively grip the bands and thus may deviate from a therapeutic regimen prescribed by a physician to strengthen and/or rehabilitate damaged muscles and/or cause additional injury to themselves. To alleviate this discomfort, some users may rely on special handles that have to be separately attached to the exercise device, resulting in additional cost and complexity that

can be discouraging to users.

[0005] Accordingly, there is a need for an exercise device that permits easy and efficient use without the need to reconfigure the device with knots or constricting loops, wherein an isotropic nature of the material used to make the device may allow the device to easily contour to the shapes of surfaces, providing reduced slip when mounting to various objects, for example, while simultaneously being capable of shaping to the contours of a user's anatomy for added comfort. Additionally, there is a need for an exercise device that is easy to manufacture in order to achieve the above benefits with little to no modification on the part of the users.

Summary of the Invention

[0006] In view of at least the above needs, the present invention contemplates an exercise device that is capable of overcoming the disadvantages described above. In one aspect, the present disclosure describes a device for exercising muscles that relies on the resistive properties of a material used to produce a series of flexible loops. The device is formed from preformed loops of elastic material joined to each other in a series or chain.

[0007] In one aspect, an exercise device in accordance with independent claim 1 is provided.

[0008] Prior to explaining the details of various aspects of the present invention, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of embodiments incorporating one or more of the foregoing described aspects and embodiments in addition to those described and of being practiced and carried out in various ways. Furthermore, it is to be understood that the phraseology and terminology employed herein, as well as the abstract, are for the purpose of description and should not be regarded as limiting.

[0009] As such, those skilled in the art will appreciate that the conception upon which this disclosure is based may readily be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention.

Description of the Figures

[0010]

FIG. 1 is a top view of an exercise device in accordance with aspects of the present disclosure.

FIG. 2 is a front perspective view of the exercise device of FIG. 1.

FIG. 3 is an angled perspective view of the exercise device of FIG. 1.

FIG. 4 is a close up perspective view of the exercise device of FIG. 1.

FIG. 5 is a top view of an exercise device, including continuous loops with a constant thickness, in accordance with aspects of the present disclosure

FIG. 6 is a close up perspective of a joining region in accordance with aspects of the present disclosure.

FIG. 7 is a close up perspective of a joining region in accordance with aspects of the present disclosure.

FIG. 8 is a top view of an exercise device in accordance with aspects of the present disclosure.

FIG. 9 illustrates a perspective view of an exercise device in accordance with an aspect of the present disclosure.

FIG. 10 illustrates an enlarged perspective view of an exercise device in accordance with an aspect of the present disclosure.

FIG. 11 illustrates a front view of the exercise device shown in FIG. 10 in accordance with an aspect of the present disclosure.

FIG. 12 illustrates a left side view of the exercise device shown in FIG. 10, in accordance with an aspect of the present disclosure.

Description of the Preferred Embodiments

[0011] The invention will now be described with reference to the drawing figures, in which like reference numerals refer to like parts throughout.

[0012] FIGS. 1-5 show an exercise device 10 in accordance with aspects of the present disclosure. The exercise device 10 may include a plurality of elastic loop portions 20a, 20b, 20c, 20d joined to each other in series. The plurality of elastic loop portions 20a, 20b, 20c, 20d may be made of any suitable dry natural rubber, natural latex, synthetic latex, and/or other synthetic elastomeric materials to impart the material properties discussed herein, such as a thermoplastic elastomeric material that provides a high degree of elasticity, resists tearing, and maintains a desired shape and flexibility when generally at rest even after extensive repetitive stretching.

[0013] In one aspect, as shown in FIGS. 1-3, the elastic loop portions 20a, 20b, 20c, 20d may be joined to each other end-to-end such that the exercise device 10 includes a first end loop 20a, a second end loop 20d, and a plurality of intermediate loops 20b, 20c. In another aspect, the exercise device 10 may include four elastic loop portions 20a, 20b, 20c, 20d. In still another aspect, the exercise device 10 may include at least two end loops 20a, 20d and at least one

intermediate loop 20b, 20c, or just two end loops 20a, 20d. In one aspect, the exercise device 10 may include 2 to 150 intermediate loops joined between the at least two end loops 20a, 20d, and the exercise device 10 may span a length of 304.8 cm to 30480 cm (1 foot to 100 feet) in an unstretched state. In one aspect, the exercise device 10 may include 6, 8, 10, 12, 16, 18, 20, or 24 intermediate loops joined between the at least two end loops. In one aspect, the exercise device 10 may include 6 to 12 intermediate loops joined between the at least two end loops. Other numbers of intermediate loops are of course contemplated. The number of loops may be selected to enable a user to perform a wide range of exercises using the exercise device 10 without substantial excess length.

[0014] In one aspect, the exercise device 10 may be configured as an individual use device and may include 6 to 10 elastic loop portions 20a, 20b, 20c, 20d. The exercise device 10 in the individual use configuration may span a length of 914.4 cm to 2438.4 cm (3 feet to 8 feet) in an unstretched state. In one aspect, the exercise device 10 in the individual use configuration may include eight elastic loop portions 20a, 20b, 20c, 20d, and the exercise device 10 may span a length of 1524 cm (5 feet) in an unstretched state. In another aspect, the exercise device 10 may be formed as a bulk length or roll and may include 100 to 300 elastic loop portions 20a, 20b, 20c, 20d. The exercise device 10 in the bulk length or roll configuration may span a length of 4572 cm to 45720 cm (15 feet to 150 feet). In one aspect, the exercise device 10 in the bulk length or roll configuration may include 150 elastic loop portions 20a, 20b, 20c, 20d, and may span a length of 22860 cm (75 feet). The exercise device 10 in the bulk length or roll configuration may be divided into separate individual use devices by cutting or by other suitable separation methods.

[0015] In one aspect, as shown in FIG. 2, the plurality of elastic loop portions 20a, 20b, 20c, 20d may have the same or substantially the same width (w). In one aspect, the elastic loop portions 20a, 20b, 20c, 20d may have the same or substantially the same circumference or circumferential length. The circumferential length of the elastic loop portions 20a, 20b, 20c, 20d may be defined as a linear distance around an edge or perimeter of each of the individual elastic loop portions 20a, 20b, 20c, 20d. In one aspect, the elastic loop portions 20a, 20b, 20c, 20d may have a circumferential length of 10.16cm to 190.4cm (4 to 75 inches). In another aspect, the elastic loop portions 20a, 20b, 20c, 20d may have a circumferential length of 15.24cm to 60.96cm (6 to 24 inches). In still another aspect, the elastic loop portions 20a, 20b, 20c, 20d may have a circumferential length of approximately 25.4cm to 35.56cm (10 to 14 inches). In one aspect, the elastic loop portions 20a, 20b, 20c, 20d may have a circumferential length of approximately 30.47cm (12 inches). Other circumferential lengths of the elastic loop portions 20a, 20b, 20c, 20d are of course contemplated. While the elastic loop portions 20a, 20b, 20c, 20d shown in FIGS. 1-3 are of the same general dimensions, the elastic loop portions 20a, 20b, 20c, 20d may vary in size individually such that patterns or arrangements of varying sized elastic loop portions 20a, 20b, 20c, 20d may be combined to form the exercise device 10. For example, the elastic loop portions 20a, 20b, 20c, 20d may alternate between two or more predetermined sizes, such as alternating 20.32cm (8-inch) and 30.47cm (12-inch) circumferential loops, or 30.47cm (12-inch) circumferential loops with a 60.96cm (24-inch) center circumferential loop. In one aspect, when at least one of the elastic loop portions 20a,

20b, 20c, 20d is collapsed into a lay-flat orientation, the at least one of the elastic loop portions 20a, 20b, 20c, 20d includes a top portion and a bottom portion with the same or substantially the same length, and that length may be approximately half the circumferential length of the respective elastic loop portion 20a, 20b, 20c, 20d.

[0016] In one aspect, as shown in FIG. 5, each loop of the elastic loop portions 20a, 20b, 20c, 20d may be preformed as a continuous loop prior to being joined together in the exercise device 10, and the preformed continuous loops may be either seamed or seamless. The preformed loops may have a substantially constant thickness along its entire circumference. In one aspect, the elastic loop portions 20a, 20b, 20c, 20d may be extruded as a tubing material and subsequently cut at a predetermined width (w), perpendicular or substantially perpendicular to the extrusion direction, to form individual elastic loop portions 20a, 20b, 20c, 20d. The elastic loop portions 20a, 20b, 20c, 20d formed using an extrusion process may yield a seamless loop. In one aspect the predetermined width (w) of the elastic loop portions 20a, 20b, 20c, 20d may be between 2.54cm and 10.16cm (1 to 4 inches). Other predetermined widths the elastic loop portions 20a, 20b, 20c, 20d are of course contemplated. In one aspect the predetermined width (w) of the elastic loop portions 20a, 20b, 20c, 20d may vary from loop to loop, or may alternate between two or more predetermined widths. In other aspects, the predetermined width (w) may be wider that the circumferential length or less wide than the circumferential length.

[0017] In one aspect, a piece of sheeting material may be folded over such that two ends of the sheeting material overlap and the two ends are then bonded together at a bonding zone, as will be described in greater detail below with reference to FIG. 6. After the ends of the sheeting material are bonded together, a continuous loop may be formed and the sheeting material with bonded ends may be cut at a predetermined width (w) to form individual elastic loop portions. The resulting individual elastic loop portions may yield seamed loops. In one aspect, a flat narrow band material with a predetermined width (w) may be folded over such that two ends of the flat narrow band overlap and the two ends are bonded together at a bonding zone to form an individual elastic loop portion. The bonding process for the ends of the sheeting material and/or the ends of the flat narrow band material may include one or more of heat bonding, chemical bonding, adhesives, radio frequency, latex dipping, and/or ultrasonic welding. Of course, other bonding or attachment processes are contemplated.

[0018] In one aspect, each of the elastic loop portions 20a, 20b, 20c, 20d may include an inner surface 22 and an outer surface 24 that is opposite of the inner surface 22. The inner surface 22 may be an inner circumferential surface, and the outer surface 24 may be an outer circumferential surface. In one aspect, each of the elastic loop portions 20a, 20b, 20c, 20d may have a constant thickness along an entire circumference, the thickness being a distance between the inner surface 22 and the outer surface 24, as shown in FIG. 5. In one aspect, where the elastic loop portions 20a, 20b, 20c, 20d are formed using sheeting material or flat narrow band material with bonded ends, each of the elastic loop portions 20a, 20b, 20c, 20d may have a first thickness along a majority of the circumference, and a second thickness along the bonding zone where the ends are bonded together. In one aspect, the second thickness at

the bonding zone may be twice as thick as the first thickness along the majority of the circumference, as shown in FIG. 4.

[0019] The process of making the exercise device 10 may include joining the plurality of elastic loop portions 20a, 20b, 20c, 20d end-to-end to form a series or chain of continuous loops, as shown in FIGS. 1-3. In one aspect, the intermediate loops 20b, 20c may each be joined by at least two joining regions 26a, 26b, 26c. For example, intermediate loop 20b may be attached to two adjacent loops 20a, 20c, via joining regions 26a, 26b, respectively. In one aspect, the joining regions 26a, 26b, 26c may span an entire width (w) of the elastic loop portions 20a, 20b, 20c, 20d. Alternatively, in one aspect, the joining regions 26a, 26b, 26c may span a fraction of the entire width (w) and may help reduce or eliminate potential concentration of stresses at lateral edges of the plurality of elastic loop portions 20a, 20b, 20c, 20d. In anotheraspect, the joining regions 26a, 26b, 26c may span 25% to 99% of the entire width (w). In one aspect, the joining regions 26a, 26b, 26c may span 80% to 95% of the entire width (w).

[0020] In one aspect, as shown in FIG. 6, the joining region 126 may span a predetermined circumferential segment or distance (d) along an outer surface 124a of a first elastic loop portion 120a and an outer surface 124b of a second elastic loop portion 120b. In one aspect, the distance (d) together with a width of the joining region 126 may define a boundary or attachment footprint 128 of the joining region 126, and the attachment footprint 128 may be rectangularly-shaped. In one aspect, the distance (d) and/or width of the joining region 126 need not be uniform across the entire joining region 126. For example, other shapes for the attachment footprint 128 are contemplated, and may include one or more of circles, ovals, polygons, polygons with rounded corners, and/or other patterns. In one aspect, multiple attachment footprints 128 may be used together to form the joining region 126 and may include, for example, two circular attachment footprints.

[0021] The outer surface 124a of the first of elastic loop portion 120a and the outer surface 124b of the second elastic loop portion 120b may be attached to each other at the joining regions 126 by one or more of heat bonding, chemical bonding, adhesives, radio frequency, latex dipping, or ultrasonic welding and the like. In one aspect, the attachment at the joining regions 126 between the first elastic loop portion 120a and the second elastic loop portion 120b may be a direct attachment or alternatively the first elastic loop portion 120a and the second elastic loop portion 120b may each be attached to another elastomeric material or strip . In accordance with yet other aspects of the present disclosure, any suitable tool or device may be used for forming the joining regions 126, including fasteners such as crimps, bands, or ties, for example, which may allow the joining regions 126 to enable a homogeneous elongation substantially similar to the elongation properties of the other portions of the exercise device 10. Of course, other bonding or attachment processes are contemplated.

[0022] In one aspect, the joining regions 126 may span a length of at least 1.59mm (1/16 inch), and may include a length of between 1.59mm to 127mm (1/16 inch to 5) inches. In another aspect, the joining regions 126 may span a length of 6.35mm and 76.2mm (¼ inch to 3 inches). In one aspect, the joining regions 126 may span a length of 12.7mm and 28.1mm

(½ inch to 1½ inches). Other lengths for the joining regions 126 are of course contemplated. In one aspect, the joining regions 126 may include a plurality of spaced apart sub-joining regions.

[0023] In one aspect, as shown in FIG. 7, where one or more of the plurality of elastic loop portions 20a, 20b, 20c, 20d are formed by bonding overlapping ends 221a, 222a of a sheeting material at the bonding zone 223a, the joining regions 226a may span a predetermined circumferential length along an outer surface 224a of a first elastic loop portion 220a, which has the bonding zone 223a, and an outer surface 224b of a second elastic loop portion 220b, which does not have a bonding zone. In another aspect, the joining regions may span a predetermined circumferential length along an outer surface of a bonding zone of a first elastic loop portion and an outer surface of a bonding zone of a second elastic loop portion. It is contemplated that the exercise device 10 may be formed using one or more of the joining regions 26a, 26b, 26c, 126, 226a, 226b, as discussed above. In still another aspect, the overlapping end 221a of the first elastic loop portion 220a may be joined to a non-overlapping section of the second elastic loop portion 220b. In one aspect, the overlapping ends of the first and last elastic loops may be disposed on the distal ends of the exercise device such that the first and last elastic loops are joined to a respective adjacent loop via a non-overlapping section of the first and last elastic loops. Of course, other types or combinations of joining regions are contemplated.

[0024] Referring back to FIGS. 2 and 3, the exercise device 10 may include elastic loop portions 20a, 20b, 20c, 20d that are arranged and joined in a linear manner. For example, the end elastic loop portion 20a may be joined to the intermediate elastic loop portion 20b at a 9 o'clock location of the intermediate elastic loop portion 20b, while the intermediate elastic loop portion 20c may be joined to the intermediate elastic loop portion 20b at a 3 o'clock location of the intermediate elastic loop portion 20b. In one aspect, the 3 o'clock and 9 o'clock joining arrangement may be repeated for each of the remaining intermediate elastic loop portions 20b, 20c.

[0025] In one aspect, the intermediate elastic loop portions 20b, 20c may be arranged and joined in a non-linear manner. For example, the end elastic loop portion 20a may be joined to the remaining intermediate elastic loop portion 20b at a 10 o'clock location of the intermediate elastic loop portion 20b, while the intermediate elastic loop portion 20c may be joined to the intermediate elastic loop portion 20b at a 2 o'clock location of the intermediate elastic loop portion 20b. In one aspect, the 2 o'clock and 10 o'clock joining arrangement may be repeated for each of the intermediate elastic loop portions 20b, 20c. Of course, other combinations of positions and/or joining arrangements are contemplated. By performing a non-linear joining or attachment of intermediate elastic loop portions 20b, 20c, an exercise device 10 with different contours, curves, or configurations may be formed, thereby providing particular arrangements that may be more suitable for specific exercises.In accordance with one aspect, a plurality of loop portions, including the intermediate elastic loop portions 20b, 20c, may be arranged such that the exercise device defines an X-shape configuration, a Y-shape configuration, a V-shaped configuration, a T-shaped configuration, a C-shaped configuration, or an O-shaped configuration. Other shapes, configurations, and arrangements will be appreciated by one

skilled in the art in view of the present disclosure.

[0026] Turning to FIG. 8, another aspect of the exercise device 300 will now be described. In one aspect, exercise device 300 may include at least two tubular portions 310a, 310b, each having an outer surface 320a, 320b, and an inner surface 330a, 330b. The at least two tubular portions 310a, 310b may be made of any suitable dry natural rubber, natural latex, synthetic latex, and/or other synthetic elastomeric materials to impart the material properties discussed herein, such as a thermoplastic elastomeric material that provides a high degree of elasticity, resists tearing, and maintains a desired shape and flexibility when generally at rest even after extensive repetitive stretching. In one aspect, the at least two tubular portions 310a, 310b may have a solid cross-section, and may be in the form of a solid elastic cord. In one aspect, the at least two tubular portions 310a, 310b may have a circular or elliptical cross-section, a triangular cross-section, a rectangular cross-section, or a cross-section of any other polygon, shape, or pattern.

[0027] In one aspect, the outer surfaces 320a, 320b and the inner surface 330a, 330b may extend along a central axis of the respective tubular portions 310a, 310b. In one aspect, the outer surfaces 320a, 320b of the tubular portions 310a, 310b may be attached to each other via a plurality of joining regions 335, the plurality of joining regions 335 being spaced apart from one another. In one aspect, the plurality of joining regions 335 may be spaced at predetermined intervals, and the intervals may be equal to one another. The segments of tubular portions 310a, 310b bounded by the joining regions 335 may define loops 340 therebetween. In one aspect, each loop of the plurality of loops 340 may be formed with at least two joining regions 335.

[0028] In one aspect, as shown in FIG. 8, the joining regions 335 may be formed by tying sections of the outer surfaces 320a, 320b together to form a plurality of separate joining regions 335 at spaced intervals. Additionally, or alternatively, the sections of the outer surfaces 320a, 320b may be joined to each other by one or more of heat bonding, chemical bonding, adhesives, radio frequency, latex dipping, or ultrasonic welding and the like. In accordance with yet other aspects of the present disclosure, any suitable tool or device may be used for forming the joining regions 335, including fasteners such as crimps, bands, or ties, for example, which may allow the joining regions 335 to enable a homogeneous elongation substantially similar to the elongation properties of the other portions of the exercise device 10. Of course, other bonding or attachment processes are contemplated.

[0029] In one aspect, the exercise device 300 may be formed using a single tubular portion having an outer surface, and an inner surface. The outer surface and the inner surface may extend concentrically along a central axis of the tubular portion. In one aspect, the single tubular portion may first be folded and divided to have two tubular sub-portions. The tubular sub-portions may then be joined to each other at spaced intervals via a plurality of joining regions 335, as similarly described above with reference to FIG. 8. In one aspect, the exercise device 300 formed using the single tubular portion may include a first end loop bounded by only a single joining region, and a second end loop bounded by a plurality of joining regions. In

one aspect, each loop, except for the first end loop, may be formed with at least two joining regions 335, with a loop being 340 being defined between each adjacent pair of the joining regions 330. In one aspect, each loop may be formed with at least two joining regions 335.

[0030] The plurality of elastic loop portions 20a, 20b, 20c, 20d of the exercise device 10, and the plurality of loops 340 of the exercise device 300 may allow for quick positioning of the respective exercise device 10, 300 when mounting the device to an object, for example. Rather than having to tie the exercise device 10, 300 around an object, one end of the exercise device 10, 300 may be quickly wrapped around a suitable mounting portion of the object and routed through one of the elastic loop portions 20a, 20b, 20c, 20d, or loops 340, preferably near the other end of the exercise device 10, 300. Continued pulling on the first end of the exercise device 10, 300 may then simply cinch a portion of the exercise device 10, 300 closed around the mounting portion of the stationary object. To quickly remove the exercise device 10, 300, the user may simply release the active end of the exercise device 10, 300 and pull on the elastic loop portion 20a, 20b, 20c, 20d, or loop 340 through which the exercise device 10, 300 was originally threaded. The threaded elastic loop portion 20a, 20b, 20c, 20d, or loop 340 may eventually disengage the active end and releases the active end to freely dismount the exercise device 10, 300 from the object.

[0031] A user may generally rely on the resistive nature of the material used to construct the elastic loop portions 20a, 20b, 20c, 20d of the exercise device 10, or the material used to construct the tubular portion(s) 310a, 310b of the exercise device 300. In this manner, the exercise device 10, 300 may include elastic loop portions 20a, 20b, 20c, 20d, or loops 340 having a certain thickness and/or that is dimensioned to impart a particular range of resistance to a user exercising with the exercise device 10, 300. In this manner, an identification system may be used to indicate a series of exercise devices having progressive levels of resistance. For example, a system of numbers, colors, letters, symbols, patterns, or any other appropriate marking may be used to indicate a system of exercise devices having progressive levels of resistance. Other types of markings or indicators are of course contemplated.
In accordance with other aspects of the present disclosure, the elastic material used to construct the elastic loop portions 20a, 20b, 20c, 20d of the exercise device 10, or tubular portion(s) 310a, 310b of the exercise device 300 may be an isotropic material capable of stretching similarly in any direction. The isotropic nature of the material may allow the material to easily contour to the shapes of surfaces, providing better grip when mounting to various objects, for example, while simultaneously being capable of shaping to the contours of a user's anatomy. In one aspect, the isotropic material may be capable of at least 400% elongation along a longitudinal length of the exercise device 300 without reaching an elastic limit. In one aspect, the isotropic material may be capable of 700% elongation or more along a longitudinal length of the exercise device 300 without reaching an elastic limit. The isotropic material may thus provide a more effective and comfortable resistive type exercise apparatus, and allow a greater range of exercises to be performed using the device.

[0032] FIG. 9 illustrates a perspective view of an exercise device 500, in accordance with aspects of the present disclosure. The device 500 may include a base portion 512 and a top

portion 514. The base portion 512 and top portion 514 may be formed from any suitable natural rubber or synthetic material to impart the material properties discussed herein, such as a thermoplastic elastomeric material that provides a high degree of elasticity, resists tearing, and maintains a desired shape and flexibility when generally at rest even after extensive repetitive stretching.

[0033] FIG. 9 also illustrates that the base portion 512 and the top portion 514 may be connected at joining regions 518 along their length, such that a plurality of loops 516 are formed between the base portion 512 and the top portion 514. The loops 516 may be formed by connecting the base portion 512 and the top portion 514 in any suitable fashion, such as, for example, by one or more of heat bonding, chemical bonding, adhesives, radio frequency, latex dipping, or ultrasonic welding and the like. In accordance with yet other aspects of the present disclosure, any suitable tool or device may be used for forming a joining region 518, including brackets, for example, that allows the joining region to have a homogeneous elongation substantially similar to the elongation properties of the other portions of the exercise device 500. As illustrated in the exemplary device 500 in FIG. 9, there are eight loops 516 formed periodically along the length of the device 500, each individual loop 516 being separated by a joining region 518. In accordance with aspects of the present disclosure, there may be between 6 and 12 loops along the length of an exercise device, with each loop 516 being about 15.24cm (6 inches) in length when unexpanded, but any suitable number of loops 516 can be used. In one aspect, it is contemplated that the exercise device may have 9 loops or 11 loops total. Additionally, although the loops 516 shown in FIG. 9 are of the same general dimensions, the loops 516 may vary in size individually such that various patterns of varying sized loops 516 may be combined to form an exercise device 500. For example, alternating 10.16cm (4-inch) and 15.24cm (6-inch) loops 516 or 15.24cm (6-inch) loops with a 30.48cm (12-inch) center loop may be used.

[0034] Referring to FIGS. 10-12, various views of an enlarged portion of the exercise device 500 is illustrated to show general concepts that may apply to the device 500 as a whole. In one aspect, the joining region 518 of the exercise device 500 may extend continuously between each of the loops 516. Alternatively, as shown in FIGS. 10-12, each joining region 518 defined between two loops 516 may include one or more joining gaps 530 where the base portion 512 and the top portion 514 are not bonded together. The joining gaps 530 may be used to help identify a cutting zone for reducing a size of the exercise device 500 without affecting the integrity of the joining region 518 where the base portion 512 and the top portion 514 are actually bonded or joined together.

[0035] In one aspect, each joining gap 530 may divide a joining region 518 into a first joining region segment 518a and a second joining region segment 518b. The joining gap 530 may span less than 25.4mm (1 inch) in length between the first joining region segment 518a and the second joining region segment 518b. In one aspect, a length of the joining gap 530 is between 6.35mm and 12.7mm (0.25 and 0.5 inches). The joining gap 530 may form a micro-loop 535 when the first joining region segment 518a and the second joining region segment 518b are forced towards each other. At rest, or while the first joining region segment 518a and

the second joining region segment 518b are forced apart, the micro-loop 535 may lie flat or substantially flat.

[0036] Although the loops 516 of FIG. 9 are shown as open loops, FIGS. 10 and 12 illustrate that the loops 516 may lie flat when, for example, the exercise device 500 is in a general state of rest or, in particular, when the exercise device 500 is in a state of use, under tension, and the particular loop 516 is not being used as a loop or handle. Accordingly, when in the closed state, a loop 516 is actually a two-layered feature that provides a compact design, and which provides a plurality of loops 516 for a multitude of grip options for the user.

[0037] As shown in FIG. 10, in general, the base portion 512 can be formed from a longitudinal length of elastic material having a first end 520 and a second end 522, and the top portion 514 can also be formed from a second longitudinal length of material having a first end 524 and a second end 526. For example, the process of making the device 500 may include linearly laying material for the top portion 514 over the material for base portion 512. The material may be a sheeting material, for example, or a tubing material that is fed longitudinally from the spools. The material used for the base portion 512 and the top portion 514 may be the same material, however, each portion 512 and 514 may use material having different material characteristics. A bonding process, such as heat sealing or application of an adhesive, may be performed to connect the base portion 512 and the top portion 514 at predetermined intervals, and defining the joining regions 518 of the exercise device 500, which may be spaced at equal intervals or intervals of varied length.

[0038] The joining regions 518, which may appear ridged as in FIGS. 10 and 11, may be formed to have any desired appearance in accordance with the configuration of the machining tools. In one aspect, the ridges or other desired appearance may appear on just the first joining region segment 518a and a second joining region segment 518b, just the joining gap 530 of the joining region 518, or both the joining gap 530 and the first and second joining region segments 518a, 518b. The ridges may serve to provide visual guidance for cutting or separating the bonded elastic layers devices at one of the joining regions, permitting customization of an exercise device or separation of one exercise device from an assembly of multiple exercises devices.

[0039] In accordance with other aspects of the present disclosure, rather than a ridged crimping tool, a crimping tool may be used that provides for any suitable smooth, textured, and/or embossed surface appearance. The material of the base portion 512 and the top portion 514 may be configured to have a smooth, textured, and/or embossed surface appearance.

[0040] In accordance with yet other aspects of the present disclosure, large spools, rolls or folded stacks, for example, of a series of connected exercise devices 500 may be provided, whereupon a practitioner may individually remove and form an individual exercise device 500 from the assembly by taking an end of the series of connected exercise devices 500, cutting through at least one of the loops 516 or joining gaps 530 to form an exercise device 500 with a

desired length and/or number of loops 516. The practitioner may thus control the individual length of each exercise device 500 to suit a particular user's needs while maintaining a compact arrangement for storage. Alternately, the spool length of connected exercise devices 10 may be scored along joining regions 518 at particular lengths to enable easy and efficient removal of an individual exercise device 500 from the larger collection of spooled exercise devices.

[0041] The consecutive loops 516 on the exercise device 500 allow for quick positioning of the device 500 when mounting the device to an object, for example. Rather than having to tie the device 500 around an object, one end of the device 500 may be quickly wrapped around a suitable mounting portion of the object and routed through one of the loops 516, preferably near the other end of the device 500. Continued pulling on the first end of the device 500 may then simply cinch a portion of the device 500 closed around the mounting portion of the stationary object. To quickly remove the exercise device 500, the user simply releases the active end of the device 500 and pulls on the loop 16 through which the exercise device 500 was originally threaded. The threaded loop 516 eventually disengages the active end and releases the active end to freely dismount the exercise device 500 from the object.

[0042] A user generally relies on the resistive nature of the material used to construct the base portion 512 and top portion 514 of the exercise device 500. In this manner, the base portion 512 and/or top portion 514 may be composed of an elastic material having a certain thickness and/or that is dimensioned to impart a particular range of resistance to a user exercising with the device. In this manner, an identification system may be used to indicate a series of exercise devices having progressive levels of resistance. For example, a system of numbers, colors, letters, symbols, patterns, or any other appropriate marking may be used to indicate a system of exercise devices having progressive levels of resistance.

[0043] In accordance with other aspects of the present disclosure, the elastic material used to construct the base portion 512 and top portion 514 of the exercise device 500 may be an isotropic material capable of stretching similarly in any direction. The isotropic nature of the material allows the material to easily contour to the shapes of surfaces, providing better grip when mounting to various objects, for example, while simultaneously being capable of shaping to the contours of a user's anatomy. In one aspect, the isotropic material may be capable of at least 400% elongation along a longitudinal length of the exercise device 500 without reaching an elastic limit. In one aspect, the isotropic material may be capable of 700% elongation or more along a longitudinal length of the exercise device 500 without reaching an elastic limit.The isotropic material may thus provide a more effective and comfortable resistive type exercise apparatus, and allow a greater range of exercises to be performed using the device.

[0044] In one aspect, the elastic nature of the material used in the exercise devices of the present disclosure may provide for a homogeneous stretch and recovery of loaded portions of the exercise device, the material stretching similarly under an applied load across the loops to provide a consistent progression for the user without a bottoming out or abrupt stop that is often experienced when using a conventional exercise device. For example, conventional

exercise devices comprising a fabric component in combination with elastic webbing experience a specific endpoint limitation due to the inelastic nature of the fabric material, causing the abrupt stop or bottoming out sensation that can be uncomfortable to a user and limiting the range of exercises that can be performed using the device. During recovery, the nature of the elastic material of the present disclosure may provide a consistent elongation across the joining regions and the loops, which may allow for a smooth and consistent recovery of the exercise device back toward the rest state. Furthermore, exercise devices based on a fabric component are subject to an increased wear of the fabric material, which can change the intended level of resistance and the consistency of elongation over time with respect to the exercise device. In addition, fabric based devices are often much more slippery making mounting the device on an object in accordance with the methods disclosed herein less effective for performing a broader range of exercises.

[0045] Although the exercise device 10, 300 may be mounted to a stationary object, such as a door handle, for example, the exercise device 10, 300 may also be cinched in the manner described above around a user's torso, for example, or various portions of the legs and arms. In this manner, a user may be free to quickly and efficiently use the exercise device 10, 300 in a wide variety of ways to perform a wide variety of resistance type exercises. In addition, by providing a series of consecutive elastic loop portions 20a, 20b, 20c, 20d of the exercise device 10, or series of loops 340 of the exercise device 300, provides multiple positions for gripping the exercise device 10, 300, reducing the need for a wide variety of exercise device 10, 300 lengths to accommodate the many different anatomical dimensions for a wide array of users. In addition, the smaller radius of curvature of the consecutive elastic loop portions 20a, 20b, 20c, 20d of the exercise device 10, or series of loops 340 of the exercise device 300, provided on the exercise device, when compared to a traditional single loop band, for example, provides a generally more secure grip when the loop is used during any range of exercises.

[0046] Other advantages of the exercise device 10, 300 may include use of the loops of the exercise device 10, 300 that are more intuitive to an unfamiliar user when compared to an endless open band, for example. Moreover, a user may more easily use the loops to appropriately grip the exercise device 10, 300 without having to tie knots in the device, knots that can apply substantial digging pressure due to the applied pressure of a narrowed band material against a user's body. The user may rely on the open sides of a loop to more naturally and ergonomically mount the exercise device 10, 300 on a hand, foot, wrist, ankle, or any other suitable portion of a user's body, and to use the exercise device 10, 300 comfortably and efficiently and in accordance with instructions. The ease of use and efficiencies realized through use of the exercise device 10, 300 may permit users to more quickly move through a series of exercises or routines, which may result in increased user compliance and higher sustained heart rate.

[0047] The present description is for illustrative purposes only, and should not be construed to narrow the breadth of the present disclosure in any way. Other aspects, features and advantages will be apparent upon an examination of the attached drawings and appended claims.

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US2008274863A [0003]

TRÆNINGSANORDNING

PATENTKRAV

1. Træningsanordning (10) med en første elastisk sløjfedel (20a, 120a, 220a) og en anden elastisk sløjfedel (20b, 120b, 220b), hvor den første elastiske sløjfedel (20a, 120a, 220a) definerer en første forformet, kontinuerlig sløjfe, hvor den første elastiske sløjfedel (20a, 120a, 220a) har en indvendig overflade og en udvendig overflade, modsat den indvendige overflade;

den anden elastiske sløjfedel (20b, 120b, 220b) definerer en anden forformet, kontinuerlig sløjfe, hvor den anden elastiske sløjfedel (20b, 120b, 220b) har en indvendig overflade og en udvendig overflade, modsat den indvendige overflade; og

et første samlingsområde (26a, 126, 226), hvor den udvendige overflade af den første elastiske sløjfedel er fastgjort til den udvendige overflade af den anden elastiske sløjfedel, hvor det første samlingsområde (26a, 126, 226) er i stand til at blive samtidigt strakt i flere retninger, når det udsættes for eller frigøres af en påført belastning, kendetegnet ved, at

en bredde af den første elastiske sløjfedel (20a, 120a, 200a) er mellem 2,54 cm til 10,16 cm (1 til 4 tommer), og en bredde af den anden elastiske sløjfedel (20b, 120b, 220b) er mellem 2,54 cm til 10,16 cm (1 til 4 tommer); og

hvor bredden af den første elastiske sløjfedel (20a, 120a, 220a) er udvalgt fra en første forudbestemt bredde, og bredden af den anden elastiske sløjfedel (20b, 120b, 220b) er udvalgt fra en anden forudbestemt bredde, og

hvor den første forudbestemte bredde ikke er lig med den anden forudbestemte bredde.

2. Træningsanordning ifølge krav 1, hvor en periferisk længde af den første elastiske sløjfedel (20a, 120a, 220a) er 25,4 cm til 35,5 cm (10 til 14 tommer).

3. Træningsanordning ifølge krav 1, hvor det første samlingsområde (26a, 126, 226) er dannet ved hjælp af én eller flere af varmebinding, kemisk binding, klæbestoffer, radiofrekvens, latexneddypning og ultralydssvejsning.

4. Træningsanordning ifølge krav 1, der endvidere omfatter:

en tredje elastisk sløjfedel (20c), der definerer en tredje forformet, kontinuerlig sløjfe, hvor den tredje elastiske sløjfedel (20c) har en indvendig overflade og en udvendig overflade, modsat den indvendige overflade; og

et andet samlingsområde (26b), hvor den udvendige overflade af den anden elastiske sløjfedel (20b) er fastgjort til den udvendige overflade af den tredje elastiske sløjfedel (20c), og hvor det andet samlingsområde (26b) er i stand til at blive samtidigt strakt i flere retninger, når det udsættes for eller frigøres af en påført belastning.

DRAWINGS

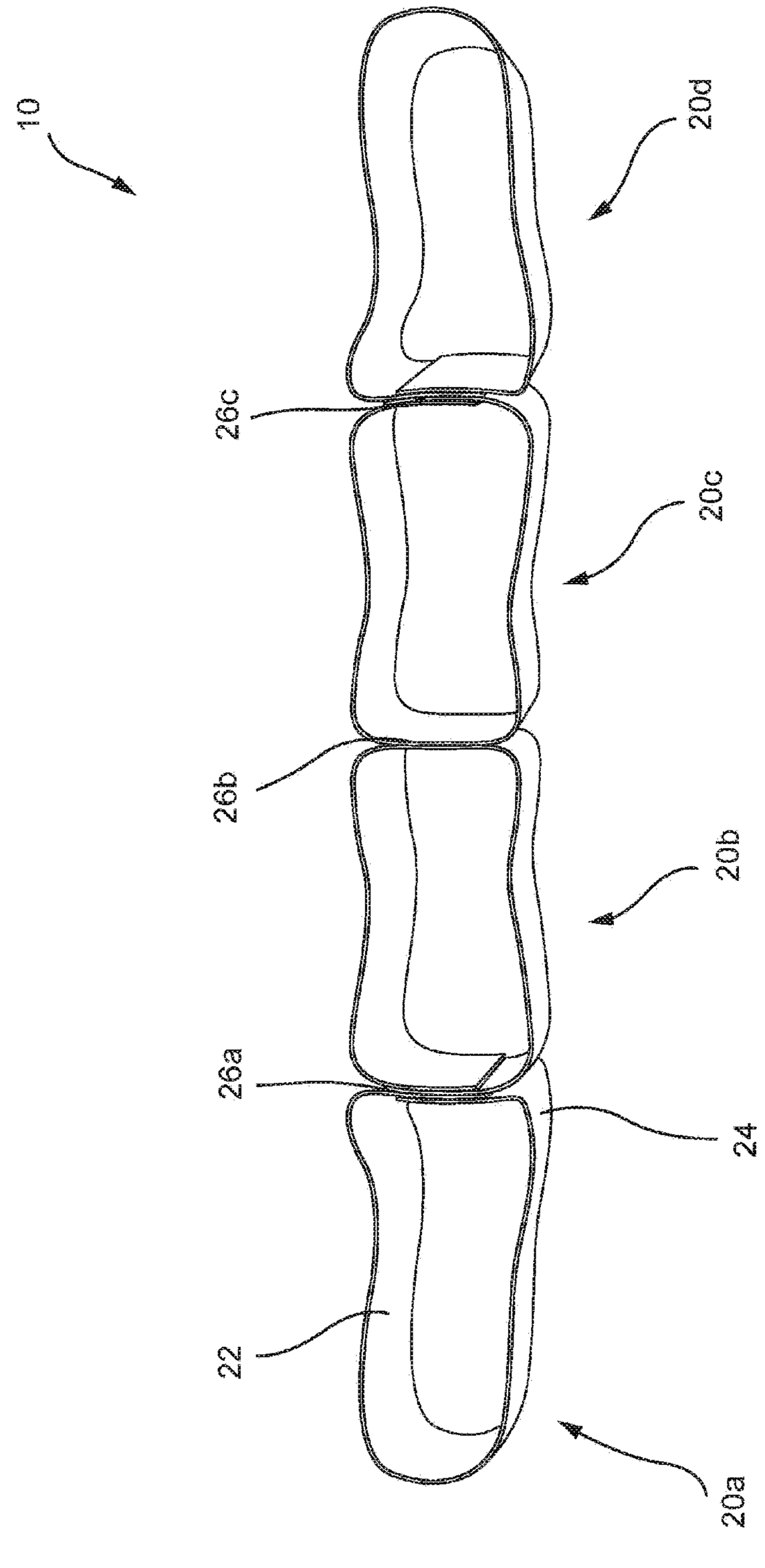

FIG. 1

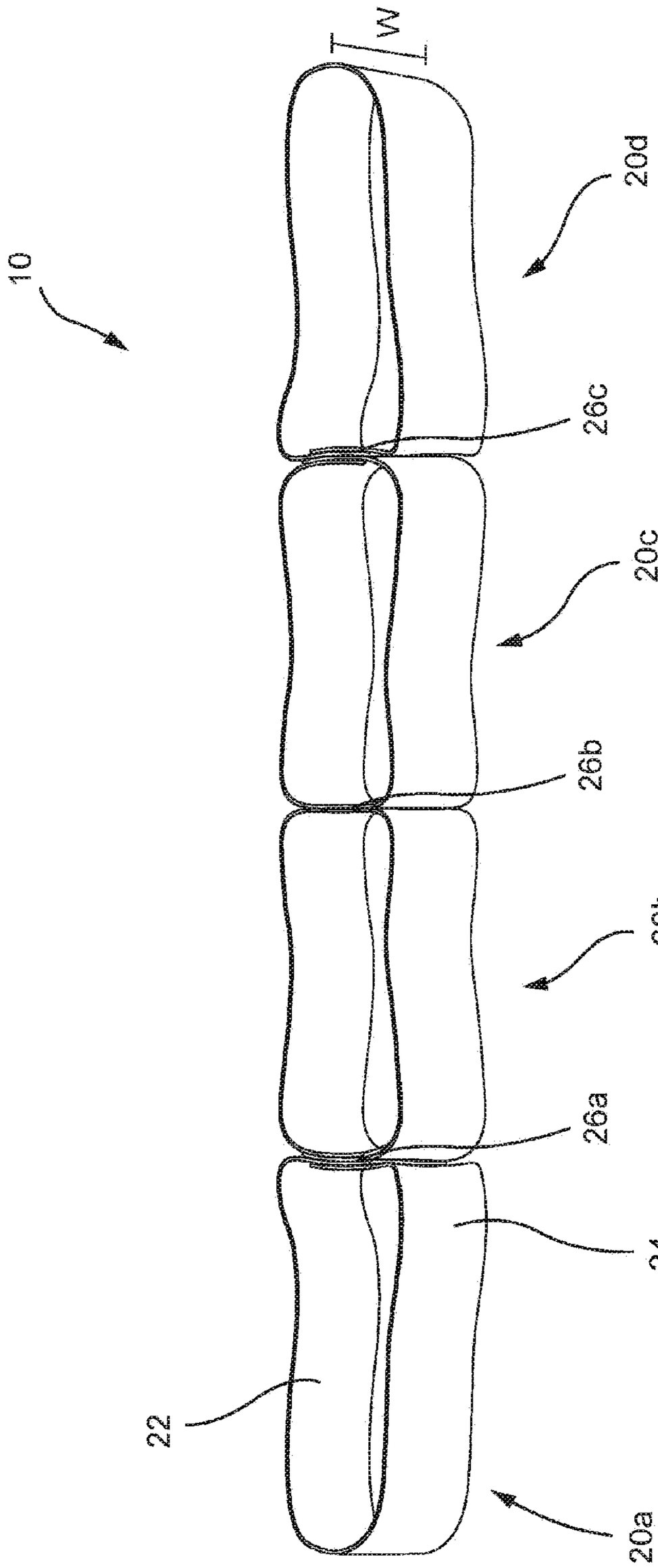

FIG. 2

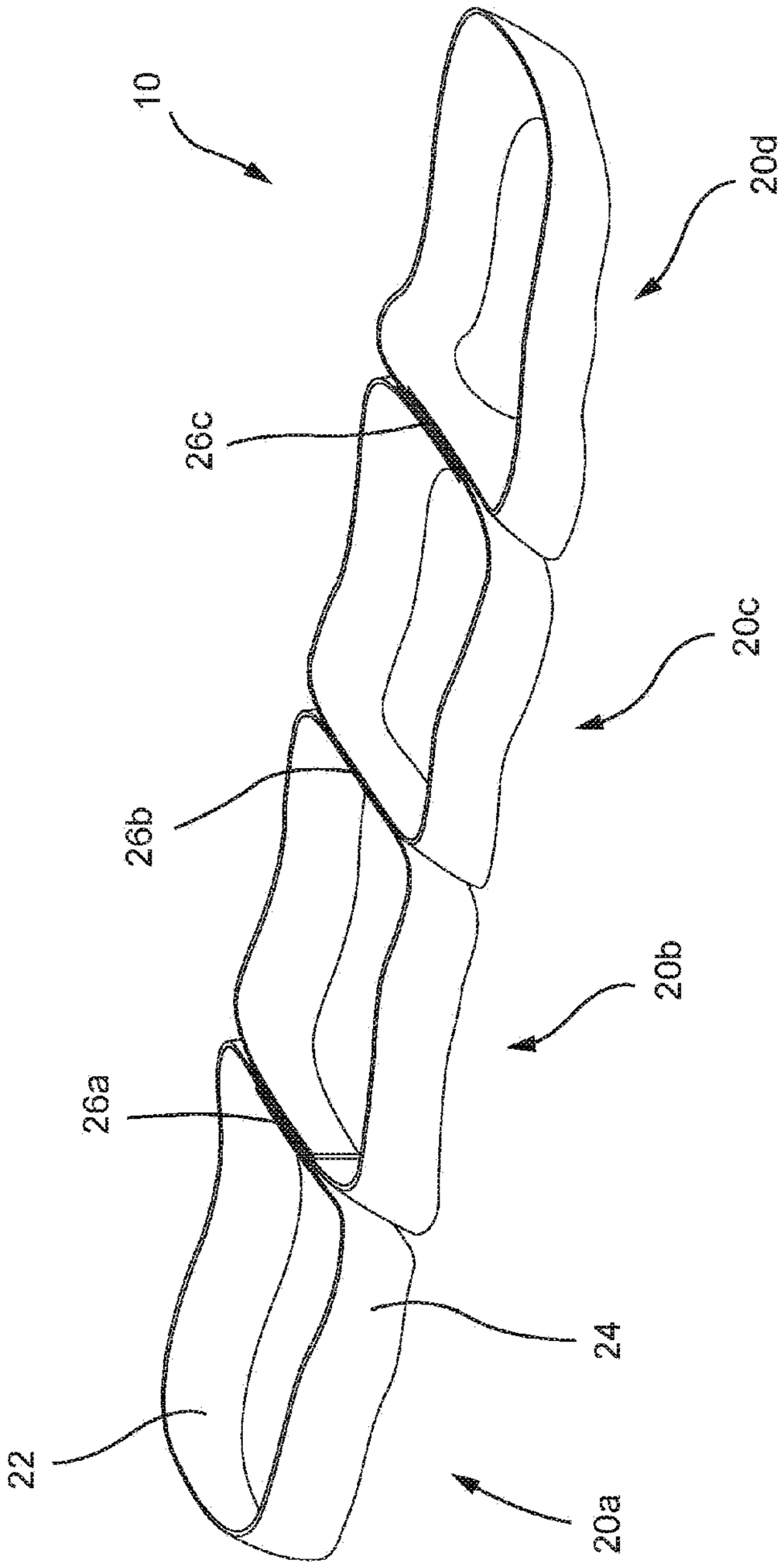

FIG. 3

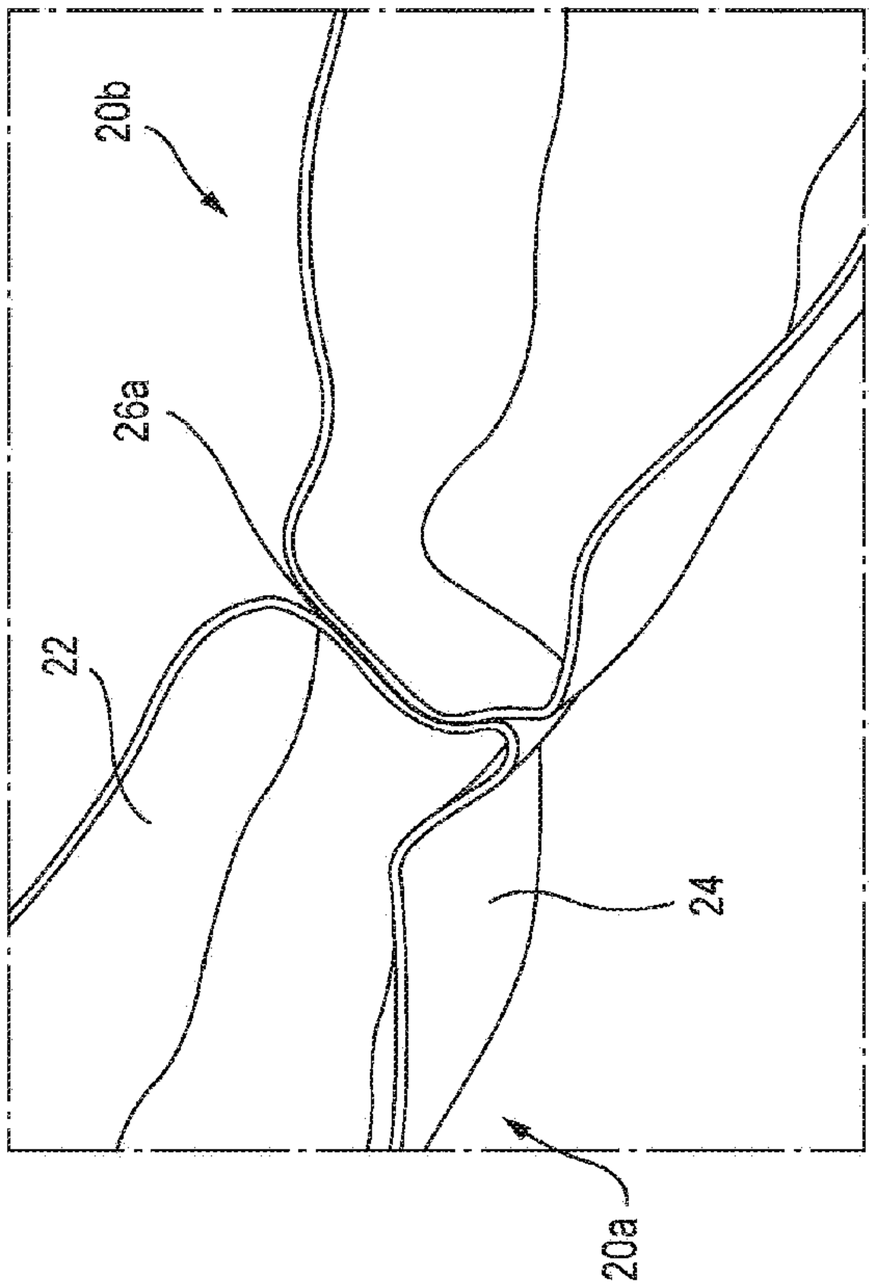

FIG. 4

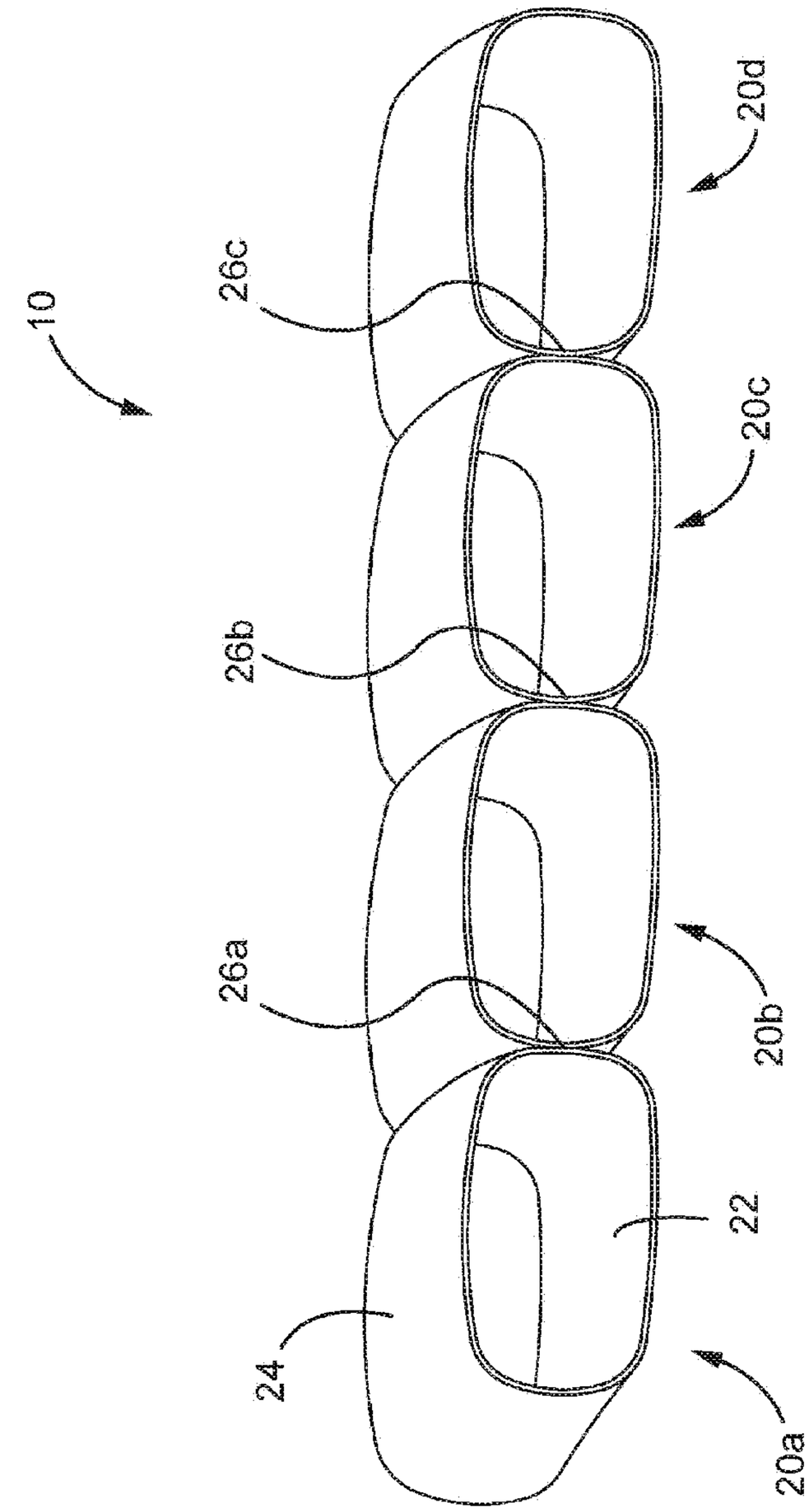

FIG. 5

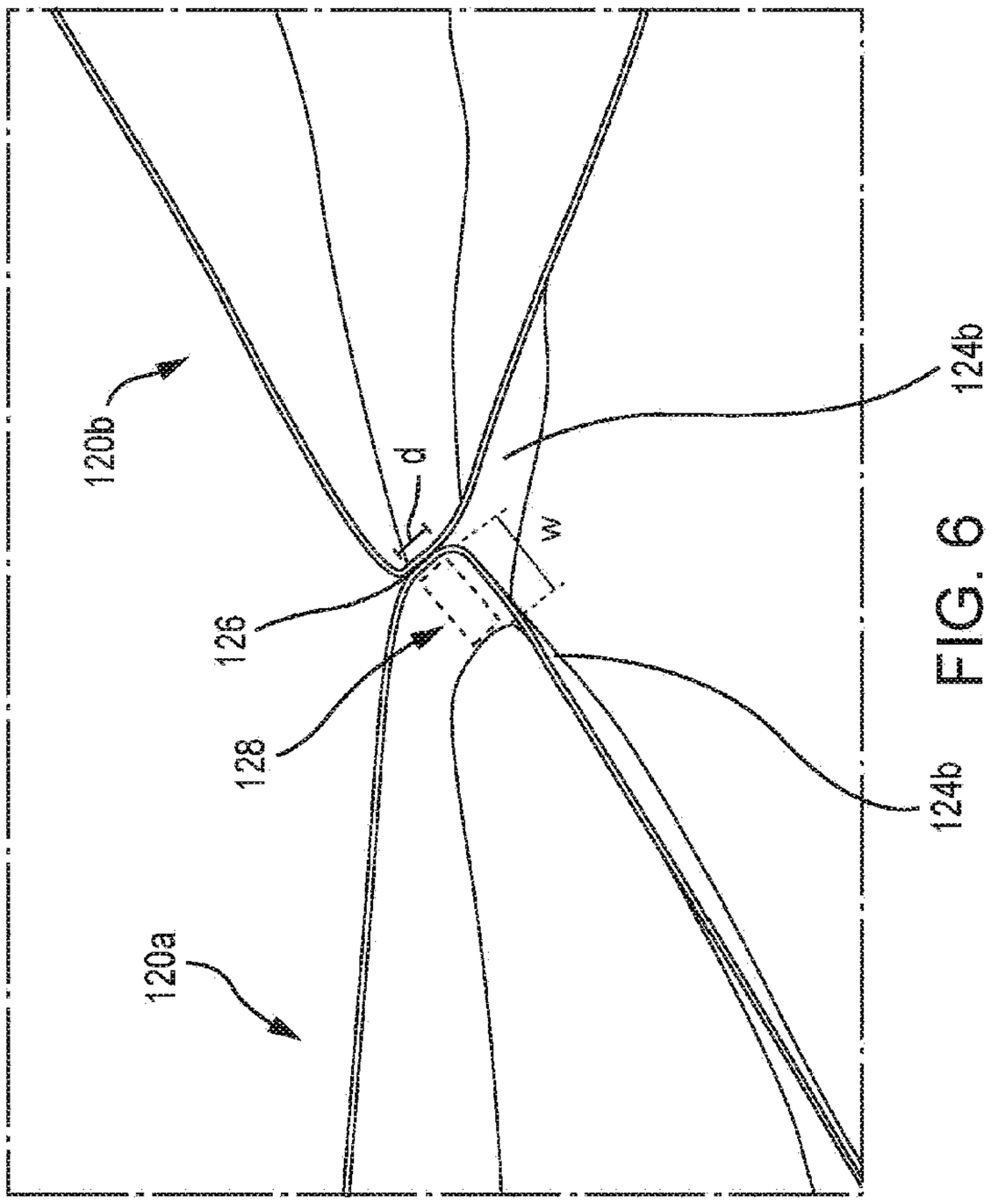

FIG. 6

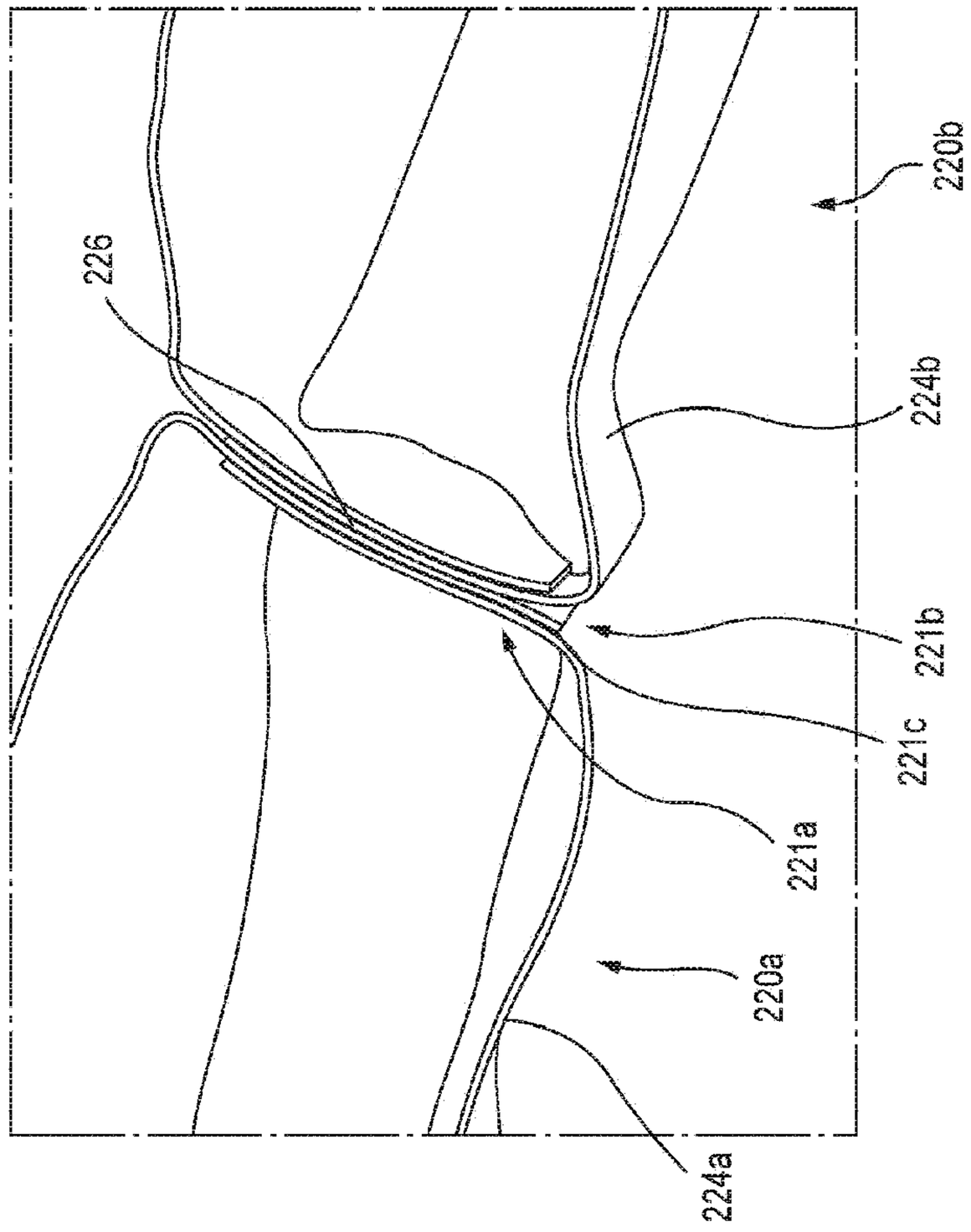

FIG. 7

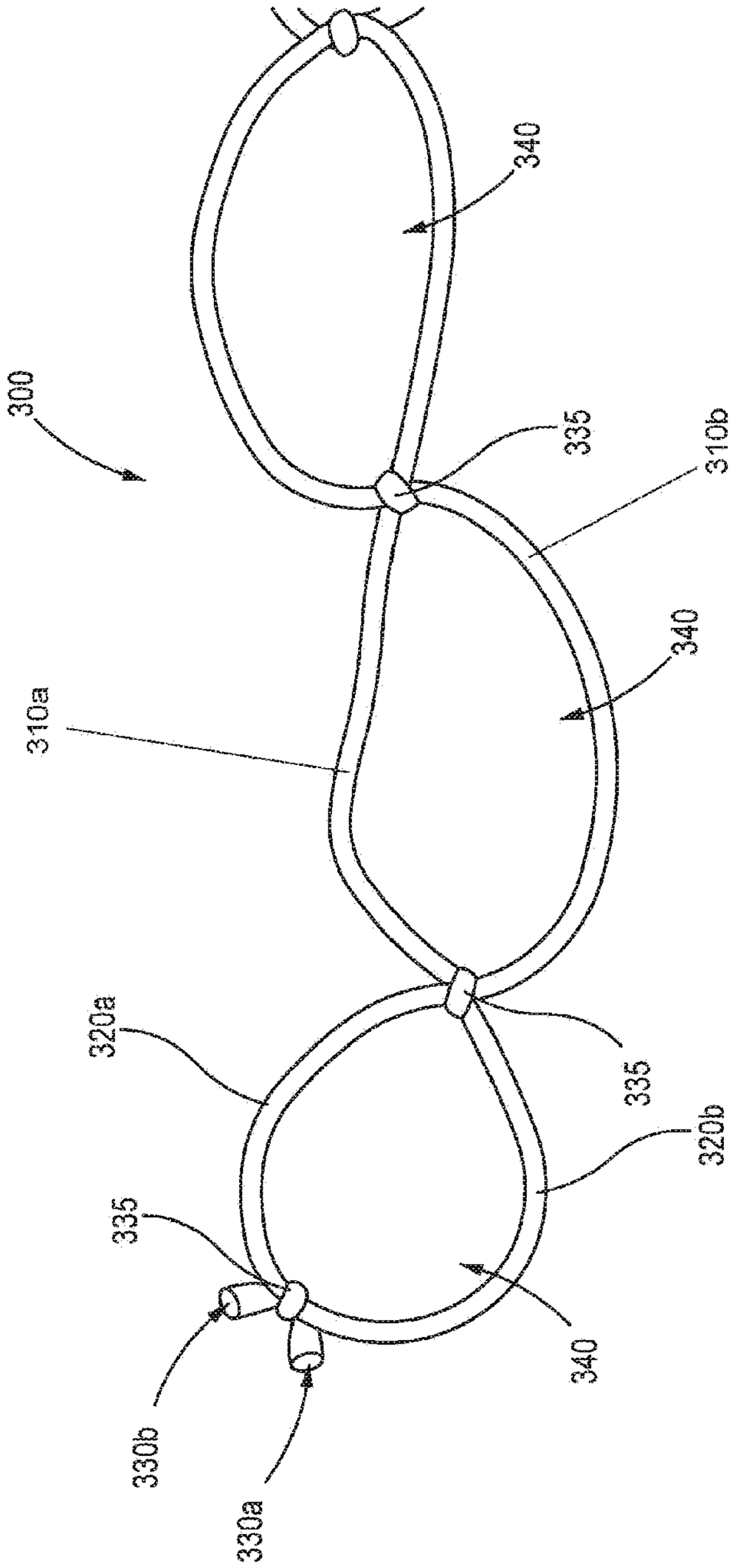

FIG. 8

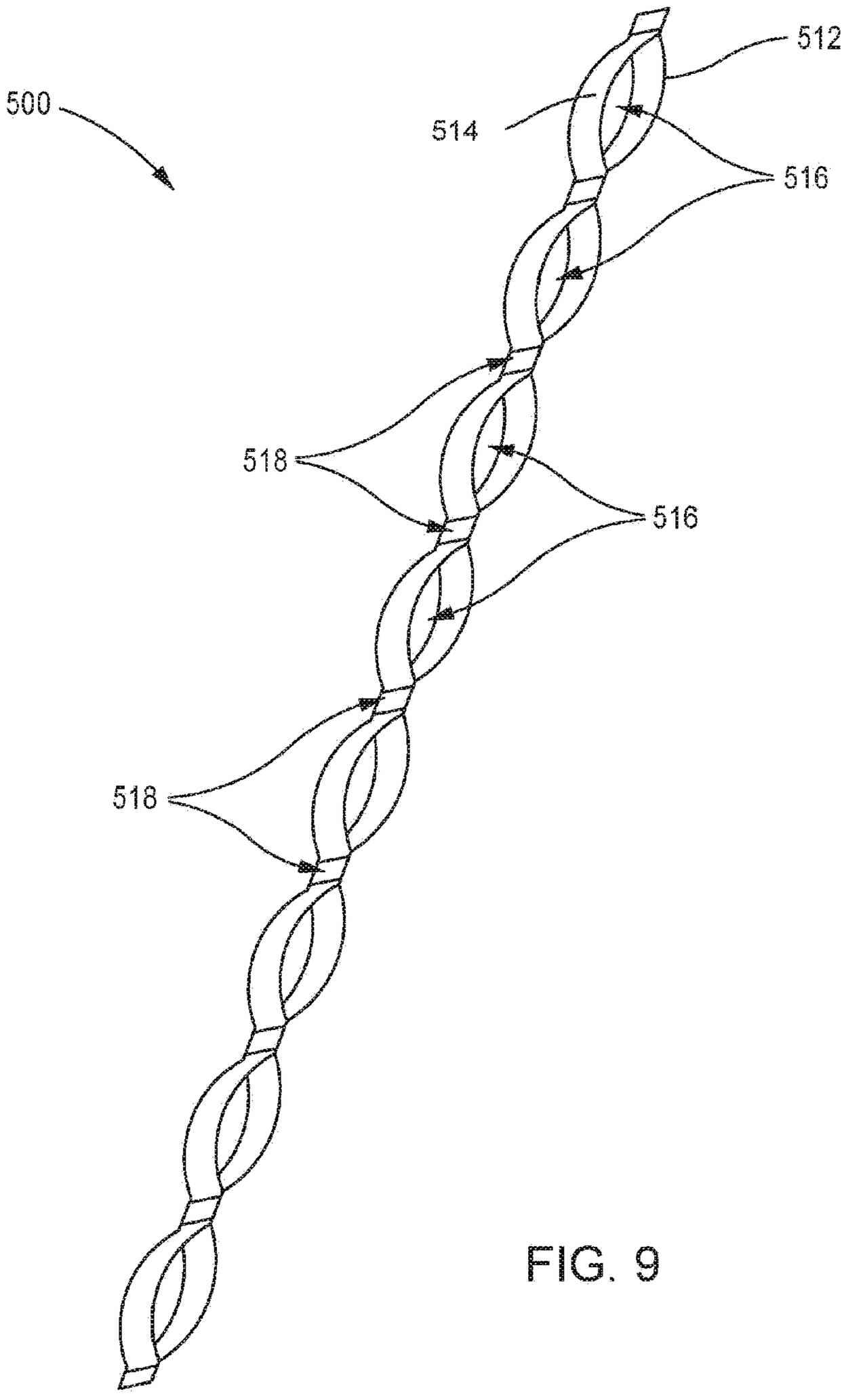

FIG. 9

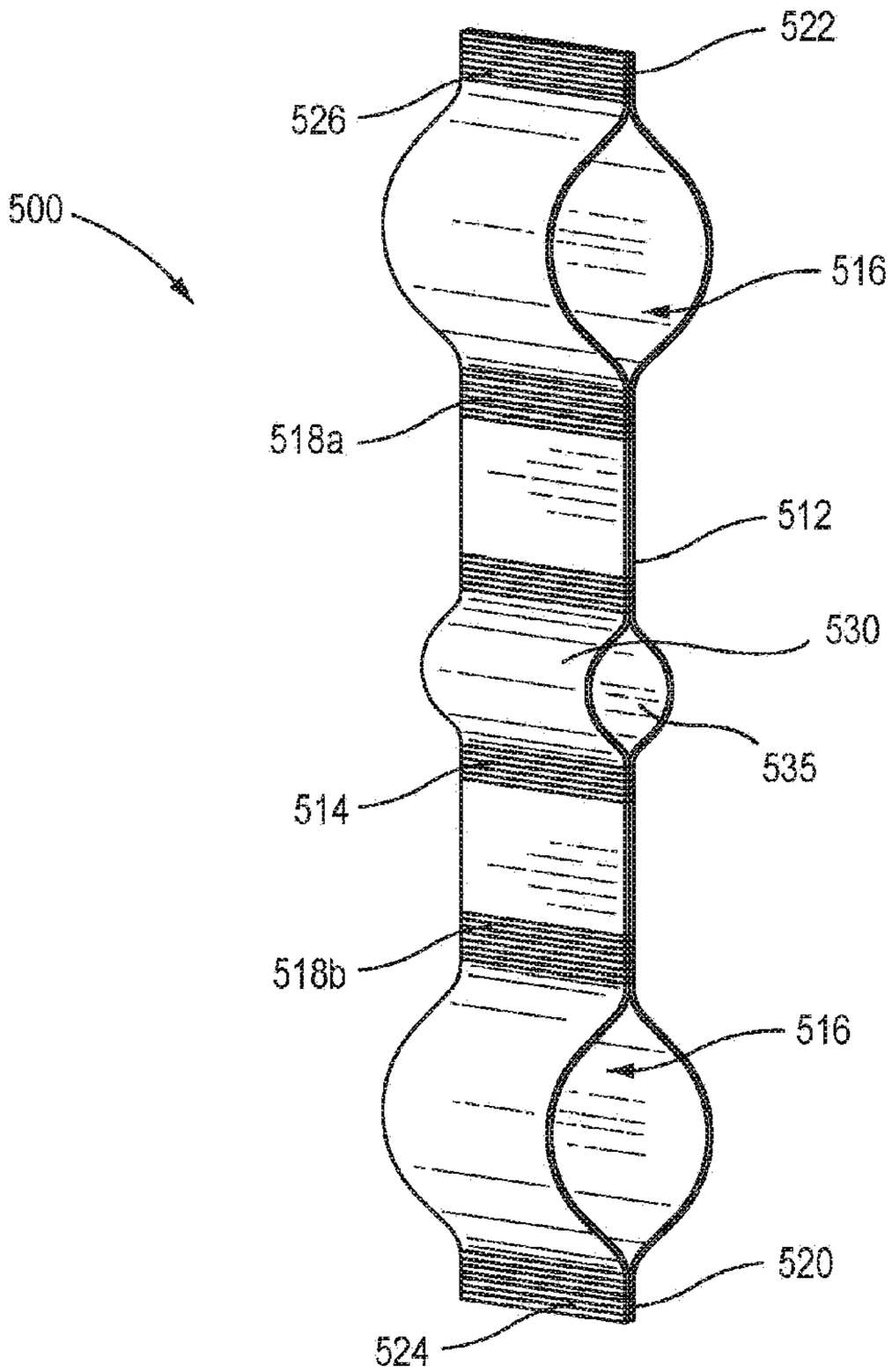

FIG. 10

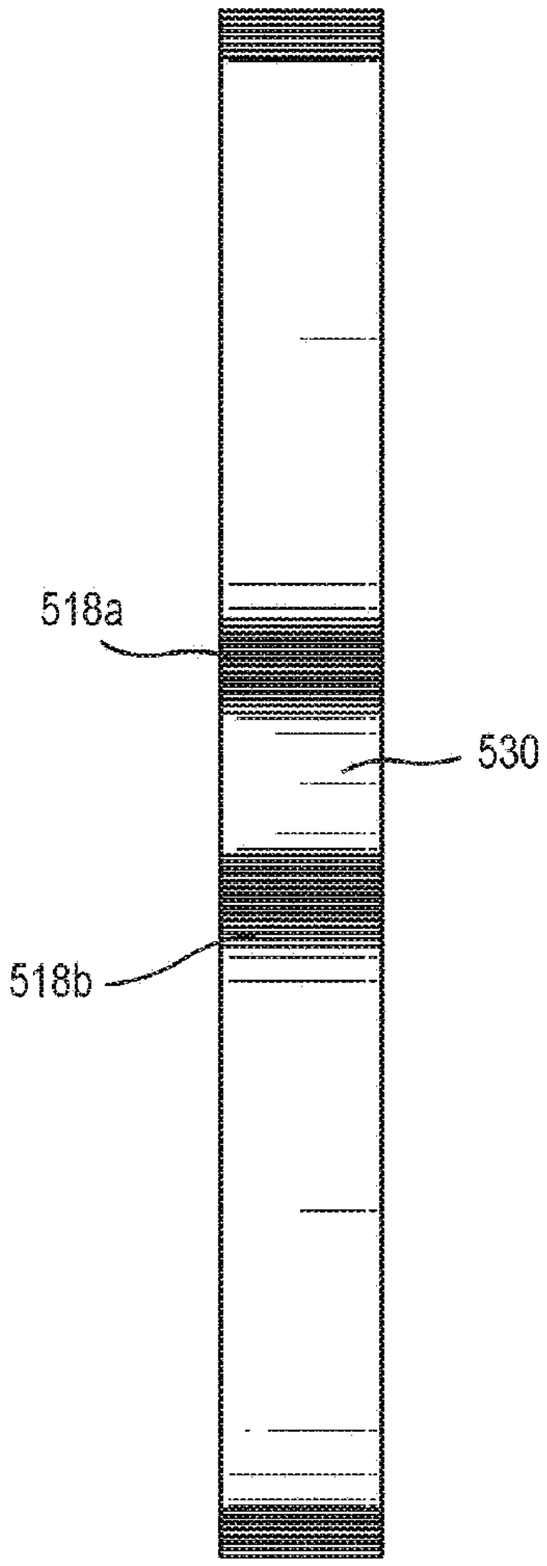

FIG. 11

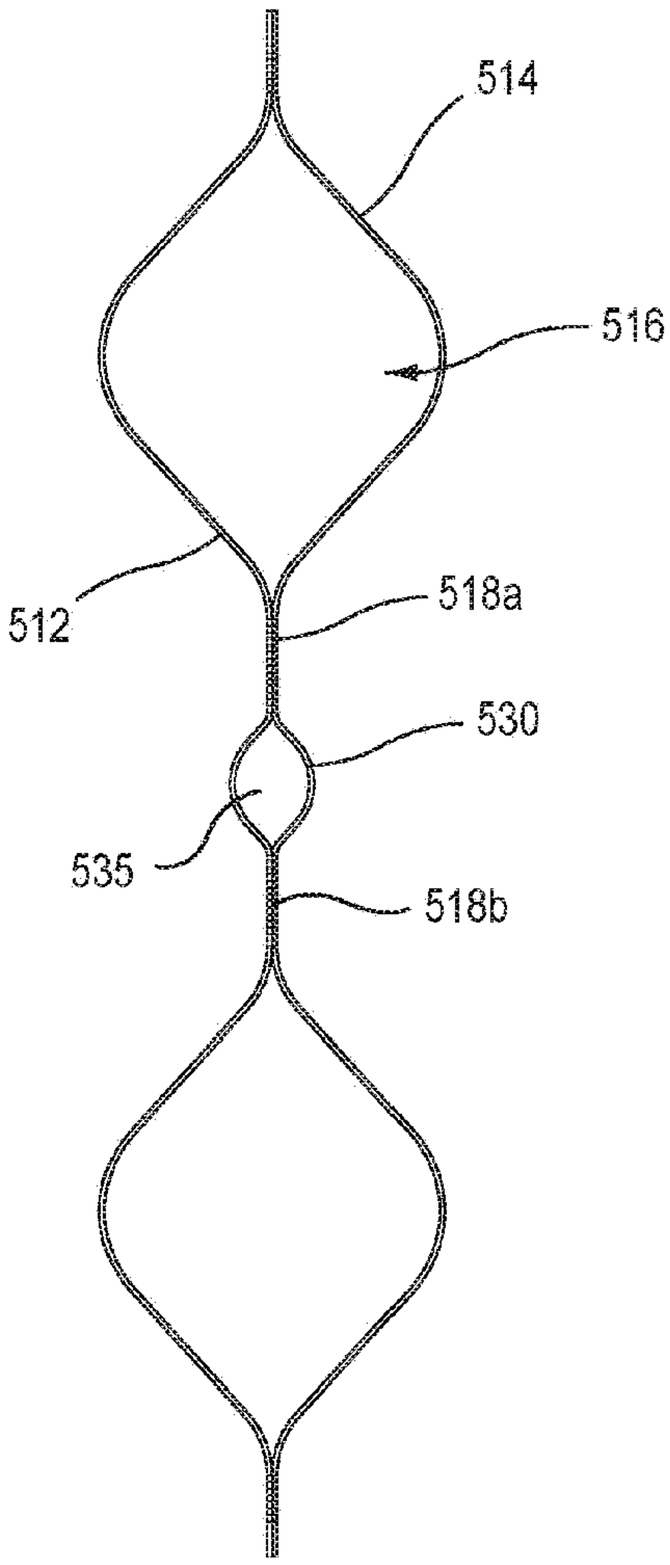

FIG. 12