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(54) GOLF PUTTER GRIP

(57) A golf grip defines a body having a length extending between an upper cap end and a lower mouth end, the body including a bore for receiving the shaft of the golf club. The body includes a tapered portion that extends along at least about 75 percent of the length of the body between an upper location and a lower location, the bore extending longitudinally through the tapered portion. The tapered portion includes a front side, a back side, a left side, and a right side, the tapered portion defining a width between the left and right sides and a depth between the front and back sides. The tapered portion has a reverse taper between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location. The tapered portion has a second reverse taper defined between the front and back sides that expands the depth of the tapered portion as the tapered portion extends from the upper location to the lower location.

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Description

Background

[0001] Golf comprises of two main physical swings/-motions, namely, the full swing used when striking the ball from tee to green, and the putting stroke used to roll the ball to the hole on a prepared surface. To complement these activities, a player uses specific clubs with unique specifications designed to match the needs of a specific shot. Relative to putting, the club comprises of a head that can take the form of a blade, mallet, or a variety of others shapes that complement a golfer's unique swing traits. The putter head is connected to a shaft onto which a putter grip is attached on the opposing end.

[0002] The rules of golf allow for putter grips to comprise of complex shapes that are designed to aid a golfer's control and fidelity on and around the green. This is different from a full swing grip that must remain round in form. Typically, a putter grip has taken the form of a front flat (paddle), and a rounded back profile. The geometry typically tapers from the endcap down toward the mouth of the grip. However, there are cases where the putter uses a non-tapered (straight) profile where the diameter remains essentially constant from the endcap to the mouth portion of the grip. In addition to the fore-mentioned profiles, putter grips can sometimes include a feature known as a pistol. A pistol can be best described as a localized protrusion in the upper section of the grip that is intended to aid the golfer's upper hand orientation on the grip, aligning it to the face of the putter head.

[0003] Further improvements in putter grip geometry are desired.

Summary

[0004] The present disclosure relates generally to various embodiments of golf putter grips that comprise unique geometric profiles that have been found to promote consistent hand placement, lower hand pressure, and a more consistent and controlled release of the putter face through impact. The grips discussed herein generally include a reverse taper, which can be described as a geometry that increases in overall grip size (e.g., cross-sectional area, circumference, outer cross-sectional profile size, etc.) from a cap end (upper portion) of the grip to a mouth (lower portion) of the grip.

[0005] According to an example aspect of the disclosure, a golf grip adapted to be mounted on the shaft of a golf club comprises a grip body having a length that extends between an upper cap end and a lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club, and the grip body including a front side, a back side, a left side, and a right side, the grip body defining a width between the left and right sides and a depth between the front and back sides, the grip body having a first reverse taper defined between the left and right sides that expands the width of the grip body as the grip body extends toward the lower mouth end of the grip body, the grip body also having a second reverse taper defined between the front and back sides that expands the depth of the grip body as the grip body extends toward the lower mouth end of the grip body, the first and second reverse tapers having different taper angles and extending along at least 75 percent of the length of the grip body to provide a gradual grip size reverse transition along at least 75 percent of the length of the grip body.

[0006] According to another aspect, the disclosure is directed to a golf grip adapted to be mounted on the shaft of a golf club, the golf grip comprising a grip body having a length that extends between an upper cap end and a lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club, the bore defining a longitudinal bore axis centered with respect to the bore, the grip body including a tapered portion that extends along at least about 75 percent of the length of the grip body longitudinally between an upper location and a lower location of the grip body, the upper location being closer to the upper cap end than the lower mouth end and the lower location being closer to the lower mouth end than the upper cap end, the bore extending longitudinally through the tapered portion, the tapered portion including a front side, a back side, a left side, and a right side, the tapered portion defining a width between the left and right sides and a depth between the front and back sides, the tapered portion having a reverse taper defined between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location, the front side including a front surface that extends from the upper location to the lower location, the front surface having a front surface width that extends between a left transition location where the front side transitions to the left side and a right transition location where the front side transitions to the right side, the tapered portion having a first cross-sectional dimension that extends radially from the bore axis to a centerline of the front surface that is centered between the left and right transition locations, and the tapered portion having a second cross-sectional dimension that extends from the bore axis to the left transition location and a third cross-sectional dimension that extends from the bore axis to the right transition location, the first, second, and third cross-sectional dimensions being measured in an orientation perpendicular to the bore axis, the second and third cross-sectional dimensions being larger than the first cross-sectional dimension.

[0007] According to another aspect, the disclosure is directed to a golf grip adapted to be mounted on the shaft of a golf club, the golf grip comprising a grip body having a length that extends between an upper cap end and a

lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club, the bore defining a longitudinal bore axis centered with respect to the bore, the grip body including a tapered portion that extends along at least about 75 percent of the length of the grip body longitudinally between an upper location and a lower location of the grip body, the upper location being closer to the upper cap end than the lower mouth end and the lower location being closer to the lower mouth end than the upper cap end, the bore extending longitudinally through the tapered portion, and the tapered portion including a front side, a back side, a left side, and a right side, the tapered portion defining a width between the left and right sides and a depth between the front and back sides, the tapered portion having a reverse taper defined between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location, wherein the tapered portion has a second reverse taper defined between the front and back sides that expands the depth of the tapered portion as the tapered portion extends from the upper location to the lower location.

[0008] According to yet another aspect, the disclosure is directed to a golf grip adapted to be mounted on the shaft of a golf club, the golf grip comprising a grip body having a length that extends between an upper cap end and a lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club, the bore defining a longitudinal bore axis centered with respect to the bore, the grip body including a tapered portion that extends along at least about 75 percent of the length of the grip body longitudinally between an upper location and a lower location of the grip body, the upper location being closer to the upper cap end than the lower mouth end and the lower location being closer to the lower mouth end than the upper cap end, the bore extending longitudinally through the tapered portion, the tapered portion including a front side, a back side, a left side, and a right side, the tapered portion defining a width between the left and right sides and a depth between the front and back sides, the tapered portion having a reverse taper defined between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location, and the grip body further including a protrusion generally defined by the back side adjacent the upper location, the protrusion having at least a portion extending along the depth in a direction from the front side toward the back side and having at least a portion extending along a length of the grip body in a direction from the upper location toward the lower location, the portion extending along the length of the grip body being longer than the portion extending along the depth defined by the grip body.

[0009] According to yet another aspect, the disclosure is directed to a golf grip adapted to be mounted on the shaft of a golf club, the golf grip comprising a grip body having a length that extends between an upper cap end and a lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club, the bore defining a longitudinal bore axis centered with respect to the bore, the grip body defining an upper location and a lower location, the upper location being closer to the upper cap end than the lower mouth end and the lower location being closer to the lower mouth end than the upper cap end, the grip body including a front side, a back side, a left side, and a right side, the grip body defining a width between the left and right sides and a depth between the front and back sides, and the grip body further including a protrusion generally defined by the back side adjacent the upper location, the protrusion having at least a portion extending along the depth in a direction from the front side toward the back side and having at least a portion extending along a length of the grip body in a direction from the upper location toward the lower location, the portion extending along the length of the grip body being longer than the portion extending along the depth defined by the grip body, wherein an overall length of the protrusion as measured from the upper cap end to a portion of the grip body that defines a generally constant cross-sectional dimension taken in an orientation perpendicular to the bore axis adjacent the lower location is at least about 40 percent of the overall length of the grip body.

Brief Description of the Drawings

[0010] The accompanying drawings are included to provide a further understanding of the inventive aspects of the present disclosure and are incorporated in and constitute a part of this specification. The drawings illustrate exemplary embodiments of the present disclosure and together with the description serve to further explain the principles of the disclosure. Other aspects of the present disclosure and many of the advantages of the present disclosure will be readily appreciated as the present disclosure becomes better understood by reference to the following Detailed Description Section when considered in connection with the accompanying drawings, and wherein:

FIG. 1 is a perspective view of a putter grip referred to as a round grip herein having features that are examples of inventive aspects in accordance with the present disclosure, the round grip diagrammatically illustrated relative to X and Y axes for orientation purposes.

FIG. 2 is a perspective view of a putter grip referred to as a flat grip herein having features that are exam-

ples of inventive aspects in accordance with the present disclosure, the flat grip diagrammatically illustrated relative to X and Y axes for orientation purposes.

FIG. 3 is a perspective view of a putter grip referred to as a pistol grip herein having features that are examples of inventive aspects in accordance with the present disclosure, the pistol grip diagrammatically illustrated relative to X and Y axes for orientation purposes.

FIG. 4 illustrates the round grip of FIG. 1 from a top view.

FIG. 5 illustrates the round grip of FIG. 1 from a side view.

FIG. 6 diagrammatically illustrates the outer geometry of the round grip of FIG. 1 from a cap end view.

FIG. 7 diagrammatically illustrates the outer geometry of the round grip of FIG. 1 from a mouth end view.

FIG. 8 illustrates another embodiment of a round grip having features similar to those of the round grip of FIG. 1, the round grip of FIG. 8 defining a larger size compared to the round grip of FIG. 1, the round grip illustrated from a top view.

FIG. 9 illustrates the round grip of FIG. 8 from a side view.

FIG. 10 diagrammatically illustrates the outer geometry of the round grip of FIG. 8 from a cap end view.

FIG. 11 diagrammatically illustrates the outer geometry of the round grip of FIG. 8 from a mouth end view.

FIG. 12 illustrates another embodiment of a round grip having features similar to those of the round grip of FIG. 8, the round grip of FIG. 12 defining a larger size compared to the round grip of FIG. 8, the round grip illustrated from a top view.

FIG. 13 illustrates the round grip of FIG. 12 from a side view.

FIG. 14 diagrammatically illustrates the outer geometry of the round grip of FIG. 12 from a cap end view.

FIG. 15 diagrammatically illustrates the outer geometry of the round grip of FIG. 12 at a cross-section taken along line 15-15 of FIG. 13.

FIG. 16 illustrates the flat grip of FIG. 2 from a top view.

FIG. 17 illustrates the flat grip of FIG. 2 from a side view.

FIG. 18 diagrammatically illustrates the outer geometry of the flat grip of FIG. 2 from a cap end view.

FIG. 19 diagrammatically illustrates the outer geometry of the flat grip of FIG. 2 from a mouth end view.

FIG. 20 illustrates another embodiment of a flat grip having features similar to those of the flat grip of FIG. 2, the flat grip of FIG. 20 defining a larger size compared to the flat grip of FIG. 2, the flat grip illustrated from a top view.

FIG. 21 illustrates the flat grip of FIG. 20 from a side view.

FIG. 22 diagrammatically illustrates the outer geometry of the flat grip of FIG. 20 from a cap end view.

FIG. 23 diagrammatically illustrates the outer geometry of the flat grip of FIG. 20 from a mouth end view.

FIG. 24 illustrates another embodiment of a flat grip having features similar to those of the flat grip of FIG. 20, the flat grip of FIG. 24 defining a larger size compared to the flat grip of FIG. 20, the flat grip illustrated from a top view.

FIG. 25 illustrates the flat grip of FIG. 24 from a side view.

FIG. 26 diagrammatically illustrates the outer geometry of the flat grip of FIG. 24 from a cap end view.

FIG. 27 diagrammatically illustrates the outer geometry of the flat grip of FIG. 24 at a cross-section taken along line 27-27 of FIG. 25.

FIG. 28 illustrates the pistol grip of FIG. 3 from a top view.

FIG. 29 illustrates the pistol grip of FIG. 3 from a side view.

FIG. 30 illustrates another side view of the pistol grip of FIG. 3 detailing the geometry of the flat contact patch area of the pistol feature.

FIG. 31 diagrammatically illustrates the outer geometry of the pistol grip of FIG. 3 from a cap end view.

FIG. 32 diagrammatically illustrates the outer geometry of the pistol grip of FIG. 3 from a mouth end view.

FIG. 33 illustrates another embodiment of a pistol grip having features similar to those of the pistol grip of FIG. 3, the pistol grip of FIG. 33 defining a larger size compared to the pistol grip of FIG. 3, the pistol grip illustrated from a top view.

FIG. 34 illustrates the pistol grip of FIG. 33 from a side view.

FIG. 35 illustrates another side view of the pistol grip of FIG. 33 detailing the geometry of the flat contact patch area of the pistol feature.

FIG. 36 diagrammatically illustrates the outer geometry of the pistol grip of FIG. 33 from a cap end view.

FIG. 37 diagrammatically illustrates the outer geometry of the pistol grip of FIG. 33 from a mouth end view.

FIG. 38 illustrates another embodiment of a pistol grip having features similar to those of the pistol grip of FIG. 33, the pistol grip of FIG. 38 defining a larger size compared to the pistol grip of FIG. 33, the pistol grip illustrated from a top view.

FIG. 39 illustrates the pistol grip of FIG. 38 from a side view.

FIG. 40 illustrates another side view of the pistol grip of FIG. 38 detailing the geometry of the flat contact patch area of the pistol feature.

FIG. 41 diagrammatically illustrates the outer geometry of the pistol grip of FIG. 38 from a cap end view.

FIG. 42 diagrammatically illustrates the outer geometry of the pistol grip of FIG. 38 from a mouth end

view.

FIG. 43 illustrates another perspective view of the pistol grip of FIG. 3 showing the placement of a user's palm relative to the pistol feature of the grip.

FIG. 44 illustrates the pistol grip of FIG. 43 with the user's hand fully engaged on the pistol feature of the grip.

Detailed Description

[0011] The present disclosure is directed to various embodiments of golf putter grips that comprise unique geometric profiles that have been found to promote consistent hand placement, lower hand pressure, and a more consistent and controlled release of the putter face through impact.

[0012] Illustrated generally herein are three unique grip geometries. All of the grips discussed herein share one common feature, referred to herein as a reverse taper, which will be described in further detail below.

[0013] According to the present disclosure, a reverse taper can be described as a geometry that increases in overall circumference from a cap end (upper portion) of the grip to a mouth end (lower portion) of the grip. A reverse taper, as will be described herein in further detail, can be symmetrical about the shaft axis or can be provided in just one plane. It should be noted that the term "taper" generally implies a gradual change in the size of a given dimension, rather than an abrupt change. The purpose of the reverse taper provided by the grips of the present disclosure is to maintain a specific hand articulation and grip pressure throughout the putting stroke, aiding timing, swing path, and face angle at impact, which are all primary elements that lead to consistent putting.

[0014] According to the present disclosure, as noted above, three unique grip geometries are discussed. A first embodiment of a putter grip that comprises a reverse taper geometry and that will be described in further detail herein may be referred to as the round grip 100. A second embodiment of a putter grip that comprises a reverse taper geometry and that will be described in further detail herein may be referred to as the flat grip 1100. The flat grip 1100 is similar in geometry to the round grip 100 except for the provision of flatter right and left sides of the grip.

[0015] And, a third embodiment of a putter grip that comprises a reverse taper geometry and that will be described in further detail herein may be referred to as the pistol grip 2100.

[0016] As will be discussed, each design may feature a front flat (or paddle) and also incorporates a reverse taper geometry that tapers (e.g., varies, transitions) in an X axis orientation as the grip extends in a lengthwise orientation of the grip (e.g., along a central longitudinal axis of the grip). The X axis orientation is defined as the dimension extending across a width of the grip from a right side to a left side of the grip, as illustrated in FIGS. 1-3. As will be also discussed, the round and the flat designs may also incorporate a reverse taper geometry that tapers in a Y axis orientation as the grip extends in the lengthwise orientation of the grip. The Y axis orientation is defined as the dimension extending across a depth of the grip from a front side (paddle side) to a back side of the grip, as also illustrated in FIGS. 1-3. It should be noted that in the illustrated embodiments, the pistol grip, specifically, the portion of the grip that does not include the pistol feature, does not incorporate a reverse taper geometry in the Y axis orientation. However, it is contemplated that grips having a pistol feature can also include a reverse taper geometry in the Y axis orientation.

[0017] Now referring to FIGS. 1 and 4-7, one embodiment of the round grip 100 is illustrated. As noted above, in the depicted example, the round grip 100 features a front paddle 132 and is configured to incorporate a reverse taper geometry in both the X axis and the Y axis orientations.

[0018] Still referring to FIGS. 1 and 4-7, the round grip 100, as noted above, is designed as a golf putter grip adapted to be mounted on the shaft of a golf club, specifically the putter.

[0019] The grip 100 comprises a grip body 104 having a length L that extends between an upper cap end 108 and a lower mouth end 110. The grip body 104 includes a bore 112 that extends longitudinally through the grip body 104 between the upper cap end 108 and the lower mouth end 110. The bore 112 is configured to receive the shaft of the golf club. The bore 112 defines a longitudinal bore axis A centered with respect to the bore 112.

[0020] As discussed above, the round grip 100 incorporates a reverse taper geometry in at least the X axis orientation. In the depicted embodiment, as shown in FIGS. 1 and 4-7, the grip body 104 includes a tapered portion 106 that extends along at least 75 percent of the length of the grip body 104 longitudinally between an upper location 118 and a lower location 120 of the grip body 104, wherein the upper location 118 is defined as being closer to the upper cap end 108 than the lower mouth end 110 and the lower location 120 is defined as being closer to the lower mouth end 110 than the upper cap end 108. The bore 112 of the grip body 104 extends longitudinally through the tapered portion 106. In other embodiments, the tapered portion 106 may be provided along at least between 50 to 90 percent of the length of the grip 100. In yet other embodiments, the tapered portion 106 may be provided along at least between 60 to 80 percent of the length of the grip 100.

[0021] It should be noted that in the depicted embodiments, the upper location 118 of the grip body 104 is generally adjacent the cap end 108 of the grip 100. The lower location 120 of the grip body 104, as shown, is generally in the vicinity of the mouth end 110 of the grip 100. However, as shown, a chamfered portion 122 of the grip body 104 is provided directly at the mouth end 110, to provide a transition from the enlarged lower end of the tapered portion 106 to the golf club shaft, and, it will be understood that the reverse taper geometry referred to

herein does not apply to this chamfered area 122 of the grip 100.

[0022] As shown in FIGS. 1 and 4-7 for the round grip 100, the tapered portion 106 of the grip body 104 that extends from the upper location 118 to the lower location 120, as defined, includes a front side 124, a back side 126, a left side 128, and a right side 130. The tapered portion 106 defines a width W between the left and right sides 128, 130 and a depth D between the front and back sides 124, 126. As noted above, the tapered portion 106 has a reverse taper defined between the left and right sides 128, 130 that expands the width W of the tapered portion 106 as the tapered portion 106 extends from the upper location 118 to the lower location 120. As noted above, a reverse taper is defined as a geometry that increases in overall grip size (e.g., cross-sectional area, circumference, outer cross-sectional profile size, etc.) from the upper location 118 of the grip body 104 to the lower location 120 of the grip body 104. It should be noted that the reverse taper may be provided along one or more dimensions of the grip body 104 that affect the overall grip size and need not be provided for all sides of the grip 100 that affect the overall grip size.

[0023] According to one example embodiment, the taper provided in the X axis orientation is configured such that a width WL at the end of the lower location 120 is at least 1.1 times or at least 1.2 times as large as a width WU at the end of the upper location 118. In one example, the width WL at the end of the lower location 120 is in the range of 1.1-1.4 times as large as a width WU at the end of the upper location 118. In the depicted example, the reverse taper provided in the X axis orientation is provided by configuring the grip body such that reverse taper angles are provided at both the left and right sides of the grip body. In one example, a reverse taper angle A of at least .5 degrees, or at least .6 degrees or at least .7 degrees is provided at each of the left and right sides. Please see FIG. 4.

[0024] As also noted above, the golf grips of the present disclosure each feature a front flat 132 (or paddle) defined by a front surface 134 of the front side 124 of the grip body 104. The front flat or paddle 132 is designed to aid gripping pressure, thumb placement, feel, and consistency of the putting stroke. The front flat 132 is provided with a width WF with a reverse taper geometry similar to the overall shape of the width W of the grip body 104 in the X axis orientation. As noted above, the reverse taper geometry that affects the overall outer cross-sectional profile size of the grip 100 can be provided at various portions of the grip 100. The reverse taper geometry that is provided in the X axis orientation for the overall width W of the grip might be slightly different in taper rate for the width WF of the front paddle 132 of the grip 100, as will be described below.

[0025] Still referring to FIGS. 1 and 4-7, the front flat 132 is defined by the front surface 134 on the front side 124 of the grip body 104. The grip body 104 defines the front side 124 including the front surface 134 that extends from the upper location 118 to the lower location 120. The front surface 134 has the front surface width WF that extends between a left transition location 136 where the front side 124 transitions to the left side 128 and a right transition location 138 where the front side 124 transitions to the right side 130. As shown in FIGS. 6 and 7, the tapered portion 106 of the grip body 104 has a first cross-sectional dimension D_1 that extends radially from the bore axis A to a centerline C of the front surface 134 that is centered between the left and right transition locations 136, 138. In a preferred example, the first cross-sectional dimension D_1 is constant along the length of the tapered portion 106 such that the front side of the grip is not provided with a taper angle in the depth orientation (e.g., in the Y axis orientation) along the length of the grip. In other examples, the first cross-sectional dimension D_1 can vary along the length of the tapered portion 106 such that the front side of the grip is provided with a taper angle (e.g., a reverse taper angle) in the depth orientation. To the extent the front side of the grip is provided with a taper in the depth orientation as the front side extends along the length of the grip, the taper angle would preferably be less than a corresponding reverse taper in the depth orientation provided at the back side of the grip as the back side extends along the length of the grip. In use, the front side faces away from the golfer and the rear side faces toward the golfer.

[0026] The front flat or paddle 132 is defined such that the tapered portion 106 has a second cross-sectional dimension D_2 that extends from the bore axis A to the left transition location 136 and a third cross-sectional dimension D_3 that extends from the bore axis A to the right transition location 138, the first, second and third cross-sectional dimensions D_1, D_2, D_3 being measured in an orientation perpendicular to the bore axis A. Because the paddle 132 is flat in cross-sectional profile, or at least flatter than the cross-sectional profiles of the left and right sides of the grip which curve about the bore axis, the second and third cross-sectional dimensions D_2, D_3 are larger than the first cross-sectional dimension D_1.

[0027] As also noted above, the round grip 100 shown in FIGS. 1 and 4-7 also incorporates a reverse taper geometry in the Y-axis orientation (i.e., in the depth orientation). As noted above, the tapered portion 106 of the grip body 104 defines a depth D between the front and back sides 124, 126. In the depicted embodiment, the grip body 104 has a reverse taper defined between the front and back sides 124, 126 that expands the depth D of the tapered portion 106 as the tapered portion 106 extends from the upper location 118 to the lower location 120. According to one example embodiment, the taper provided in the Y axis orientation as the grip extends in a lengthwise orientation is configured such that such that a depth DL at the end of the lower location 120 is at least 1.04 times or at least 1.06 times or at least 1.08 times as large as a depth DU at the end of the upper location 118. In one example, the depth DL at the end of the lower location 120 is in the range of 1.02-1.10 times as large as

a depth DU at the end of the upper location 118. In the depicted example, the reverse taper provided in the Y axis orientation is provided by configuring the grip body such that a reverse taper angle is provided only at the back side of the grip body and not the front side. In one example, a reverse taper angle B of at least .2 degrees, or at least .3 degrees or at least .4 degrees is provided at the back side. Please see FIG. 5. In a preferred example, the taper angles A corresponding to the sides of the grip are larger than the taper angle B corresponding to the reverse taper angle provided in the Y axis orientation.

[0028] The taper results in an increase in overall depth D from the depth DU at the upper location 118 that is at the upper end cap 108 in the depicted embodiment to the maximum depth DL defined at the lower location 120 that is adjacent the lower mouth end 110. As shown in FIG. 4, the maximum depth DL at the lower location 120 is at a position that is further up from the lower mouth end 110 of the grip body 104 in the depicted embodiment. Again, as noted above, the term "taper" generally implies a gradual change in the size of a given dimension, rather than an abrupt change.

[0029] According to certain aspects, in the depicted example embodiment of FIGS. 1 and 4-7, the reverse taper in the Y axis orientation is only defined by the back side 126 of the grip body 104. In such an embodiment, the front side 124 of the grip body 104 remains generally parallel to the bore axis A such that the first cross-sectional dimension D_1 stays generally constant from the upper location 118 to the lower location 120. Please see FIGS. 6 and 7.

[0030] According to certain embodiments, the round grip 100 of FIGS. 1 and 4-7 defines an overall taper rate of 0.022-0.028mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. In certain embodiments, the round grip 100 of FIGS. 1 and 4-7 defines about 2.2-2.8 percent change in width per unit length of the grip along the entire tapered portion of the grip.

[0031] According to a preferred embodiment, the round grip 100 of FIGS. 1 and 4-7defines an overall taper rate of 0.026mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0032] And, according to a preferred embodiment, the round grip 100 defines a taper rate for the front flat 132 that is about 0.028mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. And, such a preferred embodiment may define an overall taper rate of 0.008mm change in depth in the Y axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0033] It should be noted that certain taper rates, angles, and percentages specified in the present disclosure may be for specific preferred example embodiments that are designed to be commercial embodiments of the grips, and are not intended to be limiting in any nature. Other taper rates, angles, and percentages that are within the broader ranges specified herein are certainly contemplated for all of the different versions of the grips.

[0034] Each of the noted grips (round, flat, and pistol) may be provided in a plurality of different sizes to accommodate different user preferences.

[0035] FIGS. 8-11 illustrate another example of a round grip 200 having a generally larger size than the grip 100 of FIGS 4-7. It should be noted that the round grip 200 of FIGS. 8-11 may include all of the features relating to the reverse taper geometry that has been discussed above with respect to the first embodiment of the round grip 100. It should also be noted that the taper percentage in the X axis orientation and in the Y axis orientation may vary slightly for the second embodiment of the round grip 200.

[0036] According to certain embodiments, the round grip 200 of FIGS. 8-11 may define an overall taper rate of 0.026-0.030mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. In certain embodiments, the round grip 200 of FIGS. 8-11 defines about 2.6-3.0 percent change in width per unit length of the grip along the entire tapered portion of the grip.

[0037] According to a preferred embodiment, the round grip 200 of FIGS. 8-11 defines an overall taper rate of 0.028mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0038] And, according to a preferred embodiment, the round grip 200 defines a taper rate for the front flat 232 that is about 0.028mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. And, such a preferred embodiment may define an overall taper rate of 0.009mm change in depth in the Y axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0039] A third example of a round grip 300 having even a larger size as compared to the grips 100, 200 of FIGS. 4-7 and 8-11 is illustrated in FIGS. 12-15. It should be noted that the round grip 300 of FIGS. 12-15 may include all of the features relating to the reverse taper geometry that has been discussed above with respect to the first and second embodiments of the round grip 100, 200. It should also be noted that the taper percentage in the X axis orientation and in the Y axis orientation may vary slightly for the third embodiment of the round grip 300.

[0040] According to certain embodiments, the round grip 300 of FIGS. 12-15 may define an overall taper rate of 0.029-0.033mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. In certain embodiments, the round grip 300 of FIGS. 12-15 defines about 2.9-3.3 percent change in width per unit length of the grip along the entire tapered portion of the grip.

[0041] According to a preferred embodiment, the round grip 300 of FIGS. 12-15 defines an overall taper rate of 0.031mm change in width in the X axis orientation

for every mm of length of the grip along the entire tapered portion of the grip.

[0042] And, according to a preferred embodiment, the round grip 300 defines a taper rate for the front flat 332 that is about 0.036mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. And, such a preferred embodiment may define an overall taper rate of 0.010mm change in depth in the Y axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0043] Now referring to FIGS. 2 and 16-19, an example of what may be referred to as the flat grip 1100 is illustrated. The flat grip 1100 generally includes all of the features relating to the reverse taper geometry that has been discussed above with respect to the different embodiments of the round grip 100/200/300 except for slightly flattened right and left sides 1130, 1128 as compared to the embodiments of the round grip 100/200/300. FIGS. 2 and 16-19 illustrate the overall shape of the flat grip 1100.

[0044] As noted above, the flat grip 1100 also features a front flat paddle 1132 and also incorporates a reverse taper geometry in both the X axis orientation and in the Y axis orientation.

[0045] Similar to the round grip 100/200/300, the flat grip 1100 of FIGS. 2 and 16-19 defines a grip body 1104 that includes a tapered portion 1106 that extends along at least 75 percent of the length L of the grip body 1104 longitudinally between the upper location 1118 and the lower location 1120 of the grip body 1104. In other embodiments, the tapered portion 1106 may be provided along at least between 50 to 90 percent of the length L of the grip 1100. In yet other embodiments, the tapered portion may be provided along at least between 60 to 80 percent of the length L of the grip 1100.

[0046] And, similar to the round grip 100/200/300, the tapered portion 1106 of the grip body 1104 of the flat grip 1100 provided in the X axis orientation is configured such that a width WL at the end of the lower location 1120 is at least 1.1 times or at least 1.2 times as large as a width WU at the end of the upper location 1118. In one example, the width WL at the end of the lower location 1120 is in the range of 1.1-1.4 times as large as a width WU at the end of the upper location 1118. In the depicted example, the reverse taper provided in the X axis orientation is provided by configuring the grip body such that reverse taper angles are provided at both the left and right sides of the grip body. In one example, a reverse taper angle A of at least .5 degrees, or at least .6 degrees or at least .7 degrees is provided at each of the left and right sides.

[0047] Regarding the Y axis orientation, the taper provided in the Y axis orientation for the flat grip 1100 is similar to that for the round grip 100/200/300.

[0048] According to one example embodiment, the taper provided in the Y axis orientation as the grip extends in a lengthwise orientation is configured such that such that a depth DL at the end of the lower location 1120 is at least 1.04 times or at least 1.06 times or at least 1.08 times as large as a depth DU at the end of the upper location 1118. In one example, the depth DL at the end of the lower location 1120 is in the range of 1.02-1.10 times as large as a depth DU at the end of the upper location 1118. In the depicted example, the reverse taper provided in the Y axis orientation is provided by configuring the grip body such that a reverse taper angle is provided only at the back side of the grip body and not the front side. In one example, a reverse taper angle B of at least .2 degrees, or at least .3 degrees or at least .4 degrees is provided at the back side. In a preferred example, the taper angles A corresponding to the sides of the grip are larger than the taper angle B corresponding to the reverse taper angle provided in the Y axis orientation.

[0049] As shown for the flat grip 1100 in FIGS. 2 and 16-19, according to certain aspects, the reverse taper along the Y axis may only be defined by the back side 1126 of the grip body 1104, as in the depicted examples of the round grip 100/200/300. In such an embodiment, again, the front side 1124 of the grip body 1104 remains generally parallel to the bore axis A such that the first cross-sectional dimension D_1 stays generally constant from the upper location 1118 to the lower location 1120.

[0050] According to certain embodiments, the flat grip 1100 of FIGS. 2 and 16-19may define an overall taper rate of 0.029-0.033mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. In certain embodiments, the flat grip 1100 of FIGS. 2 and 16-19defines about 2.9-3.3 percent change in width per unit length of the grip along the entire tapered portion of the grip.

[0051] According to a preferred embodiment, the flat grip 1100 of FIGS. 2 and 16-19defines an overall taper rate of 0.031mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0052] And, according to a preferred embodiment, the flat grip 1100 defines a taper rate for the front flat 1132 that is about 0.030mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. And, such a preferred embodiment may define an overall taper rate of 0.006mm change in depth in the Y axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0053] The flat grip, similar to the round grip, may be provided in a plurality of different sizes to accommodate different user preferences.

[0054] FIGS. 20-23 illustrate another example of a flat grip 1200 having a generally larger size than the grip 1100 of FIGS 16-19. It should be noted that the flat grip 1200 of FIGS. 20-23 may include all of the features relating to the reverse taper geometry that has been discussed above with respect to the first embodiment of the flat grip 1100. It should also be noted that the taper percentage in the X axis orientation and in the Y axis orientation may vary slightly for the second embodiment of the flat grip 1200.

[0055] According to certain embodiments, the flat grip 1200 of FIGS. 20-23 may define an overall taper rate of 0.033-0.037mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. In certain embodiments, the flat grip 1200 of FIGS. 20-23 defines about 3.3-3.7 percent change in width per unit length of the grip along the entire tapered portion of the grip.

[0056] According to a preferred embodiment, the flat grip 1200 of FIGS. 20-23 defines an overall taper rate of 0.035mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0057] And, according to a preferred embodiment, the flat grip 1200 defines a taper rate for the front flat 1232 that is about 0.033mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. And, such a preferred embodiment may define an overall taper rate of 0.007mm change in depth in the Y axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0058] A third example of a flat grip 1300 having even a larger size as compared to the grips 1100, 1200 of FIGS. 16-19 and 20-23 is illustrated in FIGS. 24-27. It should be noted that the flat grip 1300 of FIGS. 24-27 may include all of the features relating to the reverse taper geometry that has been discussed above with respect to the first and second embodiments of the flat grip 1100, 1200. It should also be noted that the taper percentage in the X axis orientation and in the Y axis orientation may vary slightly for the third embodiment of the flat grip 1300.

[0059] According to certain embodiments, the flat grip 1300 of FIGS. 24-27 may define an overall taper rate of 0.036-0.040mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. In certain embodiments, the flat grip 1300 of FIGS. 24-27 defines about 3.6-4.0 percent change in width per unit length of the grip along the entire tapered portion of the grip.

[0060] According to a preferred embodiment, the flat grip 1300 of FIGS. 8-11 defines an overall taper rate of 0.038mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0061] And, according to a preferred embodiment, the flat grip 1300 defines a taper rate for the front flat 1332 that is about 0.036mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. And, such a preferred embodiment may define an overall taper rate of 0.008mm change in depth in the Y axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0062] Now referring to FIGS. 3 and 28-32, the grip of the present disclosure referred to as the pistol grip 2100 is illustrated. As noted above, the pistol grip 2100 features a front flat or paddle 2132 similar to the round and flat grips. However, in the depicted embodiment, the pistol grip 2100 is shown as being configured to incorporate a reverse taper geometry only in the X axis orientation.

[0063] The reverse taper provided in the X axis orientation for the pistol grip 2100 is designed to promote light consistent hand pressure while accommodating various gripping styles. The pistol feature 2140 of the pistol grip 2100, which is generally defined as a localized protrusion in the upper section of the grip 2100, incorporates a design that is different to current pistol designs commonly found in the market today. The unique pistol feature 2140 defines a length LP that extends to about 50 percent of the overall length L of the grip 2100 from the cap end 2108 to the mouth end 2110. The pistol feature 2140 also incorporates an angle of attack of 8 degrees, as measured from the bore axis A. The purpose of these noted pistol features is to secure the golfer's upper hand and ensure consistent hand placement, as shown for example in FIGS. 43-44. FIG. 43 illustrates placement of a user's palm relative to the pistol feature 2140 of the grip 2100, and FIG. 44 illustrates the pistol grip 2100 of FIG. 43 with the user's hand fully engaged on the pistol feature 2140 of the grip 2100.

[0064] In a specific preferred embodiment that may be considered a commercial embodiment of the pistol grip 2100, the pistol feature 2140 has a length LP that is 50.3 percent of the overall length L of the grip 2100 from the cap end 2108 to the mouth end 2110. In other embodiments, the pistol feature 2140 may define a length LP that is at least about 30 percent of the overall length L of the grip 2100 from the cap end 2108 to the mouth end 2110. In other embodiments, the pistol feature 2140 may define a length LP that is at least about 40 percent of the overall length L of the grip 2100 from the cap end 2108 to the mouth end 2110. In other embodiments, the pistol feature 2140 may define a length LP that is at least about 50 percent of the overall length L of the grip 2100 from the cap end 2108 to the mouth end 2110. In other embodiments, the pistol feature 2140 may define a length LP that is between about 30 to 60 percent of the overall length L of the grip 2100 from the cap end 2108 to the mouth end 2110. In yet other embodiments, the pistol feature 2140 may define a length LP that is between about 40 to 55 percent of the overall length L of the grip 2100 from the cap end 2108 to the mouth end 2110.

[0065] Further, as shown in FIG. 30 (and also in FIGS. 35 and 40), in the depicted pistol grip 2100, the pistol feature 2140 includes a flat side wall 2142 that is positioned generally parallel to the shaft axis and the putter face once the grip 2100 is installed. The flat side wall feature 2142 engages with the palm of the golfer's upper hand to ensure that the hand orientation is square to the face of the putter, aiding consistency and providing a square putter face at impact. The general shape of the flat side wall feature 2142 is illustrated in FIG. 30 (and also in FIGS. 35 and 40).

[0066] The reverse taper provided along the X axis for the pistol grip 2100 defines a unique taper rate that is

designed to aid gripping pressure, thumb placement, feel, and consistency of stroke. As noted above, the pistol feature 2140 is enlarged compared to existing designs in the market, extending to about 50 percent of the overall grip length L in a preferred embodiment. And, furthermore, the pistol grip 2100 defines the significant flat sidewall 2142 on both the right side and the left side of the pistol feature 2140 that aids upper hand placement and orientation specific to the putter face, as illustrated in FIG. 30. According to one embodiment (a first size of the pistol grip 2100), the surface area of the flat sidewall 2142 of the pistol feature 2140 on each of the right and left sides of the grip 2100 is approximately 17.85cm^2 for a preferred embodiment. FIGS. 3 and 28-32 illustrate the overall shape of the pistol grip 2100 with the pistol feature 2140.

[0067] Still referring to FIGS. 3 and 28-32, as discussed, the pistol grip 2100 may include all of the features relating to the reverse taper geometry in the X axis orientation that have been discussed above with respect to the different embodiments of the round and flat grips.

[0068] Similar to the round and flat grips, the pistol grip 2100 of FIGS. 3 and 28-32 defines a grip body 2104 that includes a tapered portion 2106 that extends along at least 75 percent of the length L of the grip body 2104 longitudinally between the upper location 2118 and the lower location 2120 of the grip body 2104. In other embodiments, the tapered portion 2106 may be provided along at least between 50 to 90 percent of the length L of the grip 2100. In yet other embodiments, the tapered portion 2106 may be provided along at least between 60 to 80 percent of the length L of the grip 2100.

[0069] And, similar to the round and flat grips, the tapered portion 2106 of the grip body 2104 of the pistol grip 2100 provided in the X axis orientation is configured such that a width WL at the end of the lower location 2120 is at least 1.1 times or at least 1.2 times as large as a width WU at the end of the upper location 2118. In one example, the width WL at the end of the lower location 2120 is in the range of 1.1-1.4 times as large as a width WU at the end of the upper location 2118. In the depicted example, the reverse taper provided in the X axis orientation is provided by configuring the grip body such that reverse taper angles are provided at both the left and right sides of the grip body. In one example, a reverse taper angle A of at least .5 degrees, or at least .6 degrees or at least .7 degrees is provided at each of the left and right sides.

[0070] According to certain embodiments, the pistol grip 2100 of FIGS. 3 and 28-32 may define an overall taper rate of 0.029-0.033mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. In certain embodiments, the pistol grip 2100 of FIGS. 3 and 28-32 defines about 2.9-3.3 percent change in width per unit length of the grip along the entire tapered portion of the grip.

[0071] According to a preferred embodiment, the pistol grip 2100 of FIGS. 3 and 28-32 defines an overall taper rate of 0.031 mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0072] And, according to a preferred embodiment, the pistol grip 2100 defines a taper rate for the front flat 2132 that is about 0.027mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. In such an example, the ratio of the length LP of the piston feature 2140 may be about 50.3% of the overall length L of the grip body 2104 for a preferred embodiment, as discussed above.

[0073] The pistol grip, similar to the round and flat grips, may be provided in a plurality of different sizes to accommodate different user preferences.

[0074] FIGS. 33-37 illustrate another example of a pistol grip 2200 having a generally larger size than the grip 2100 of FIGS 28-32. It should be noted that the pistol grip 2200 of FIGS. 33-37 may include all of the features relating to the reverse taper geometry that has been discussed above with respect to the first embodiment of the pistol grip 2100. It should also be noted that the taper percentage in the X axis orientation may vary slightly for the second embodiment of the pistol grip 2200.

[0075] According to certain embodiments, the pistol grip 2200 of FIGS. 33-37 may define an overall taper rate of 0.031-0.035mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. In certain embodiments, the pistol grip 2200 of FIGS. 33-37 defines about 3.1-3.5 percent change in width per unit length of the grip along the entire tapered portion of the grip.

[0076] According to a preferred embodiment, the pistol grip 2200 of FIGS. 33-37 defines an overall taper rate of 0.033 mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0077] And, according to a preferred embodiment, the pistol grip 2200 defines a taper rate for the front flat 2232 that is about 0.019mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0078] In such an example, the ratio of the length LP of the piston feature 2240 may be about 50.3% of the overall length L of the grip body 2204 for a preferred embodiment. And, according to such an example, the surface area of the flat sidewall 2242 of the pistol feature 2240 on each of the right and left sides of the grip 2200 may be approximately 20.18cm^2 for a preferred embodiment.

[0079] A third example of a pistol grip 2300 having even a larger size as compared to the grips 2100, 2200 of FIGS. 28-32-19 and 33-37 is illustrated in FIGS. 38-42. It should be noted that the pistol grip 2300 of FIGS. 38-42 may include all of the features relating to the reverse taper geometry that has been discussed above with respect to the first and second embodiments of the pistol grip. It should also be noted that the taper percentage in the X axis orientation may vary slightly for the third embodiment of the pistol grip 2300.

[0080] According to certain embodiments, the pistol grip 2300 of FIGS. 38-42 may define an overall taper

rate of 0.034-0.038mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip. In certain embodiments, the pistol grip 2300 of FIGS. 38-42 defines about 3.4-3.8 percent change in width per unit length of the grip along the entire tapered portion of the grip.

[0081] According to a preferred embodiment, the pistol grip 2300 of FIGS. 38-42 defines an overall taper rate of 0.036 mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0082] And, according to a preferred embodiment, the pistol grip 2300 defines a taper rate for the front flat 2332 that is about 0.021mm change in width in the X axis orientation for every mm of length of the grip along the entire tapered portion of the grip.

[0083] In such an example, the ratio of the length LP of the piston feature 2340 may be about 50.3% of the overall length L of the grip body 2304 for a preferred embodiment. And, according to such an example, the surface area of the flat sidewall 2342 of the pistol feature 2340 on each of the right and left sides of the grip 2300 may be approximately 28.85cm^2 for a preferred embodiment.

Aspects of the Disclosure

Aspect 1:

[0084] A golf grip adapted to be mounted on the shaft of a golf club, the golf grip comprising:

a grip body having a length that extends between an upper cap end and a lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club; and

the grip body including a front side, a back side, a left side, and a right side, the grip body defining a width between the left and right sides and a depth between the front and back sides, the grip body having a first reverse taper defined between the left and right sides that expands the width of the grip body as the grip body extends toward the lower mouth end of the grip body, the grip body also having a second reverse taper defined between the front and back sides that expands the depth of the grip body as the grip body extends toward the lower mouth end of the grip body, the first and second reverse tapers having different taper angles and extending along at least 75 percent of the length of the grip body to provide a gradual grip size reverse transition along at least 75 percent of the length of the grip body.

Aspect 2:

[0085] A golf grip according to aspect 1, wherein the front side has a cross-sectional profile that is generally flatter than the cross-sectional profiles of the left and right sides of the grip.

Aspect 3:

[0086] A golf grip according to aspect 2, wherein the width defined by the front side that has a cross-sectional profile that is generally flatter than the cross-sectional profiles of the left and right sides of the grip expands as the front side extends toward the lower mouth end of the grip body.

Aspect 4:

[0087] A golf grip according to aspect 1, wherein the first reverse taper defined between the left and right sides has a taper rate of at least about 0.025mm change in width for every mm of length of the grip for the entire tapered portion of the grip body.

Aspect 5:

[0088] A golf grip according to aspect 1, wherein the second reverse taper defined between the front and back sides has a taper rate of at least about 0.006mm change in depth for every mm of length of the grip for the entire tapered portion of the grip body.

Aspect 6:

[0089] A golf grip adapted to be mounted on the shaft of a golf club, the golf grip comprising:

a grip body having a length that extends between an upper cap end and a lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club, the bore defining a longitudinal bore axis centered with respect to the bore, the grip body including a tapered portion that extends along at least about 75 percent of the length of the grip body longitudinally between an upper location and a lower location of the grip body, the upper location being closer to the upper cap end than the lower mouth end and the lower location being closer to the lower mouth end than the upper cap end, the bore extending longitudinally through the tapered portion;

the tapered portion including a front side, a back side, a left side, and a right side, the tapered portion defining a width between the left and right sides and a depth between the front and back sides, the tapered portion having a reverse taper defined between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location;

the front side including a front surface that extends

from the upper location to the lower location, the front surface having a front surface width that extends between a left transition location where the front side transitions to the left side and a right transition location where the front side transitions to the right side, the tapered portion having a first cross-sectional dimension that extends radially from the bore axis to a centerline of the front surface that is centered between the left and right transition locations; and

the tapered portion having a second cross-sectional dimension that extends from the bore axis to the left transition location and a third cross-sectional dimension that extends from the bore axis to the right transition location, the first, second, and third cross-sectional dimensions being measured in an orientation perpendicular to the bore axis, the second and third cross-sectional dimensions being larger than the first cross-sectional dimension.

Aspect 7:

[0090] A golf grip according to aspect 6, wherein the tapered portion has a second reverse taper defined between the front and back sides that expands the depth of the tapered portion as the tapered portion extends from the upper location to the lower location.

Aspect 8:

[0091] A golf grip according to aspect 7, wherein the second reverse taper that expands the depth of the tapered portion is defined only by the back side, and the first cross-sectional dimension stays generally constant from the upper location to the lower location.

Aspect 9:

[0092] A golf grip according to aspect 6, wherein the front surface has a front surface width that gradually increases as the tapered portion extends in a direction toward the lower mouth end of the grip body.

Aspect 10:

[0093] A golf grip according to aspect 7, wherein the first and second reverse tapers have different taper angles.

Aspect 11:

[0094] A golf grip adapted to be mounted on the shaft of a golf club, the golf grip comprising:

a grip body having a length that extends between an upper cap end and a lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club, the bore defining a longitudinal bore axis centered with respect to the bore, the grip body including a tapered portion that extends along at least about 75 percent of the length of the grip body longitudinally between an upper location and a lower location of the grip body, the upper location being closer to the upper cap end than the lower mouth end and the lower location being closer to the lower mouth end than the upper cap end, the bore extending longitudinally through the tapered portion; and

the tapered portion including a front side, a back side, a left side, and a right side, the tapered portion defining a width between the left and right sides and a depth between the front and back sides, the tapered portion having a reverse taper defined between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location, wherein the tapered portion has a second reverse taper defined between the front and back sides that expands the depth of the tapered portion as the tapered portion extends from the upper location to the lower location.

Aspect 12:

[0095] A golf grip according to aspect 11, wherein the front side includes a front surface that extends from the upper location to the lower location, the front surface having a front surface width that extends between a left transition location where the front side transitions to the left side and a right transition location where the front side transitions to the right side, the tapered portion having a first cross-sectional dimension that extends radially from the bore axis to a centerline of the front surface that is centered between the left and right transition locations, and wherein the tapered portion has a second cross-sectional dimension that extends from the bore axis to the left transition location and a third cross-sectional dimension that extends from the bore axis to the right transition location, the first, second, and third cross-sectional dimensions being measured in an orientation perpendicular to the bore axis, the second and third cross-sectional dimensions being larger than the first cross-sectional dimension.

Aspect 13:

[0096] A golf grip according to aspect 12, wherein the front side including the front surface that extends from the upper location to the lower location and that extends between the left transition location where the front side transitions to the left side and the right transition location where the front side transitions to the right side defines at least a portion of the tapered portion that has a reverse taper defined between the left and right sides, wherein the reverse taper defined by the front side has a taper rate

of at least about 0.019mm change in width for every mm of length of the grip on the tapered portion.

Aspect 14:

[0097] A golf grip according to aspect 12, wherein the tapered portion that has a reverse taper defined between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location has an overall taper rate of at least about 0.025mm change in width for every mm of length of the grip on the tapered portion.

Aspect 15:

[0098] A golf grip according to aspect 12, wherein the tapered portion that has a reverse taper defined between the front and back sides that expands the depth of the tapered portion as the tapered portion extends from the upper location to the lower location has an overall taper rate of at least about 0.006mm change in depth for every mm of length of the grip on the tapered portion.

Aspect 16:

[0099] A golf grip adapted to be mounted on the shaft of a golf club, the golf grip comprising:

a grip body having a length that extends between an upper cap end and a lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club, the bore defining a longitudinal bore axis centered with respect to the bore, the grip body including a tapered portion that extends along at least about 75 percent of the length of the grip body longitudinally between an upper location and a lower location of the grip body, the upper location being closer to the upper cap end than the lower mouth end and the lower location being closer to the lower mouth end than the upper cap end, the bore extending longitudinally through the tapered portion;

the tapered portion including a front side, a back side, a left side, and a right side, the tapered portion defining a width between the left and right sides and a depth between the front and back sides, the tapered portion having a reverse taper defined between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location; and

the grip body further including a protrusion generally defined by the back side adjacent the upper location, the protrusion having at least a portion extending along the depth in a direction from the front side toward the back side and having at least a portion extending along a length of the grip body in a direction from the upper location toward the lower location, the portion extending along the length of the grip body being longer than the portion extending along the depth defined by the grip body.

Aspect 17:

[0100] A golf grip according to aspect 16, wherein the front side includes a front surface that extends from the upper location to the lower location, the front surface having a front surface width that extends between a left transition location where the front side transitions to the left side and a right transition location where the front side transitions to the right side, the tapered portion having a first cross-sectional dimension that extends radially from the bore axis to a centerline of the front surface that is centered between the left and right transition locations, and wherein the tapered portion has a second cross-sectional dimension that extends from the bore axis to the left transition location and a third cross-sectional dimension that extends from the bore axis to the right transition location, the first, second, and third cross-sectional dimensions being measured in an orientation perpendicular to the bore axis, the second and third cross-sectional dimensions being larger than the first cross-sectional dimension.

Aspect 18:

[0101] A golf grip according to aspect 17, wherein the front side including the front surface that extends from the upper location to the lower location and that extends between the left transition location where the front side transitions to the left side and the right transition location where the front side transitions to the right side defines at least a portion of the tapered portion that has a reverse taper defined between the left and right sides, wherein the reverse taper defined by the front side has a taper rate of at least about 0.019mm change in width for every mm of length of the grip on the tapered portion.

Aspect 19:

[0102] A golf grip according to aspect 16, wherein the tapered portion that has a reverse taper defined between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location has an overall taper rate of at least about 0.025mm change in width for every mm of length of the grip on the tapered portion.

Aspect 20:

[0103] A golf grip according to aspect 16, wherein the protrusion defines a generally flat sidewall on both the right side and the left side of the grip body, wherein a surface area of each flat sidewall is at least about 17cm^2.

Aspect 21:

[0104] A golf grip adapted to be mounted on the shaft of a golf club, the golf grip comprising:

a grip body having a length that extends between an upper cap end and a lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club, the bore defining a longitudinal bore axis centered with respect to the bore, the grip body defining an upper location and a lower location, the upper location being closer to the upper cap end than the lower mouth end and the lower location being closer to the lower mouth end than the upper cap end, the grip body including a front side, a back side, a left side, and a right side, the grip body defining a width between the left and right sides and a depth between the front and back sides; and

the grip body further including a protrusion generally defined by the back side adjacent the upper location, the protrusion having at least a portion extending along the depth in a direction from the front side toward the back side and having at least a portion extending along a length of the grip body in a direction from the upper location toward the lower location, the portion extending along the length of the grip body being longer than the portion extending along the depth defined by the grip body, wherein an overall length of the protrusion as measured from the upper cap end to a portion of the grip body that defines a generally constant cross-sectional dimension taken in an orientation perpendicular to the bore axis adjacent the lower location is at least about 40 percent of the overall length of the grip body.

Aspect 22:

[0105] A golf grip according to aspect 21, wherein the overall length of the protrusion, as measured from the upper cap end to the portion of the grip body that defines a generally constant cross-sectional dimension taken in an orientation perpendicular to the bore axis adjacent the lower location, is at least about 50 percent of the overall length of the grip body.

Aspect 23:

[0106] A golf grip according to aspect 21, wherein the protrusion defines a generally flat sidewall on both the right side and the left side of the grip body, wherein a surface area of each flat sidewall is at least about $17cm^2$.

[0107] The above specification, examples provide a complete description of the manufacture and use of the disclosure. Many embodiments of the disclosure can be made without departing from the spirit and scope of the above inventive aspects.

Claims

1. A golf grip adapted to be mounted on the shaft of a golf club, the golf grip comprising:

   a grip body having a length that extends between an upper cap end and a lower mouth end, the grip body including a bore that extends longitudinally through the grip body between the upper cap end and the lower mouth end, the bore being configured to receive the shaft of the golf club, the bore defining a longitudinal bore axis centered with respect to the bore, the grip body including a tapered portion that extends along at least about 75 percent of the length of the grip body longitudinally between an upper location and a lower location of the grip body, the upper location being closer to the upper cap end than the lower mouth end and the lower location being closer to the lower mouth end than the upper cap end, the bore extending longitudinally through the tapered portion;

   the tapered portion including a front side, a back side, a left side, and a right side, the tapered portion defining a width between the left and right sides and a depth between the front and back sides, the tapered portion having a reverse taper defined between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location;

   the front side including a front surface that extends from the upper location to the lower location, the front surface having a front surface width that extends between a left transition location where the front side transitions to the left side and a right transition location where the front side transitions to the right side, the tapered portion having a first cross-sectional dimension that extends radially from the bore axis to a centerline of the front surface that is centered between the left and right transition locations; and

   the tapered portion having a second cross-sectional dimension that extends from the bore axis to the left transition location and a third cross-sectional dimension that extends from the bore axis to the right transition location, the first, second, and third cross-sectional dimensions being measured in an orientation perpendicular to the bore axis, the second and third cross-sectional dimensions being larger than the first cross-sectional dimension.

2. A golf grip according to claim 1, wherein the tapered

portion has a second reverse taper defined between the front and back sides that expands the depth of the tapered portion as the tapered portion extends from the upper location to the lower location.

3. A golf grip according to claim 2, wherein the second reverse taper that expands the depth of the tapered portion is defined only by the back side, and the first cross-sectional dimension stays generally constant from the upper location to the lower location.

4. A golf grip according to claim 1, wherein the front surface has a front surface width that gradually increases as the tapered portion extends in a direction toward the lower mouth end of the grip body.

5. A golf grip according to claim 2, wherein the first and second reverse tapers have different taper angles.

6. A golf grip according to claim 1, wherein the front side including the front surface that extends from the upper location to the lower location and that extends between the left transition location where the front side transitions to the left side and the right transition location where the front side transitions to the right side defines at least a portion of the tapered portion that has the reverse taper defined between the left and right sides, wherein the reverse taper defined by the front side has a taper rate of at least about 0.019 mm change in width for every mm of length of the grip on the tapered portion.

7. A golf grip according to claim 1, wherein the tapered portion that has the reverse taper defined between the left and right sides that expands the width of the tapered portion as the tapered portion extends from the upper location to the lower location has an overall taper rate of at least about 0.025mm change in width for every mm of length of the grip on the tapered portion.

8. A golf grip according to claim 2, wherein the tapered portion that has the second reverse taper defined between the front and back sides that expands the depth of the tapered portion as the tapered portion extends from the upper location to the lower location has an overall taper rate of at least about 0.006 mm change in depth for every mm of length of the grip on the tapered portion.

9. A golf grip according to claim 1, wherein the grip body further includes a protrusion generally defined by the back side adjacent the upper location, the protrusion having at least a portion extending along the depth in a direction from the front side toward the back side and having at least a portion extending along a length of the grip body in a direction from the upper location toward the lower location, the portion extending along the length of the grip body being longer than the portion extending along the depth defined by the grip body.

10. A golf grip according to claim 9, wherein the protrusion defines a generally flat sidewall on both the right side and the left side of the grip body, wherein a surface area of each flat sidewall is at least about $17cm^2$.

11. A golf grip according to claim 9, wherein an overall length of the protrusion as measured from the upper cap end to a portion of the grip body that defines a generally constant cross-sectional dimension taken in an orientation perpendicular to the bore axis adjacent the lower location is at least about 40 percent of the overall length of the grip body.

12. A golf grip according to claim 11, wherein the overall length of the protrusion, as measured from the upper cap end to the portion of the grip body that defines a generally constant cross-sectional dimension taken in an orientation perpendicular to the bore axis adjacent the lower location, is at least about 50 percent of the overall length of the grip body.

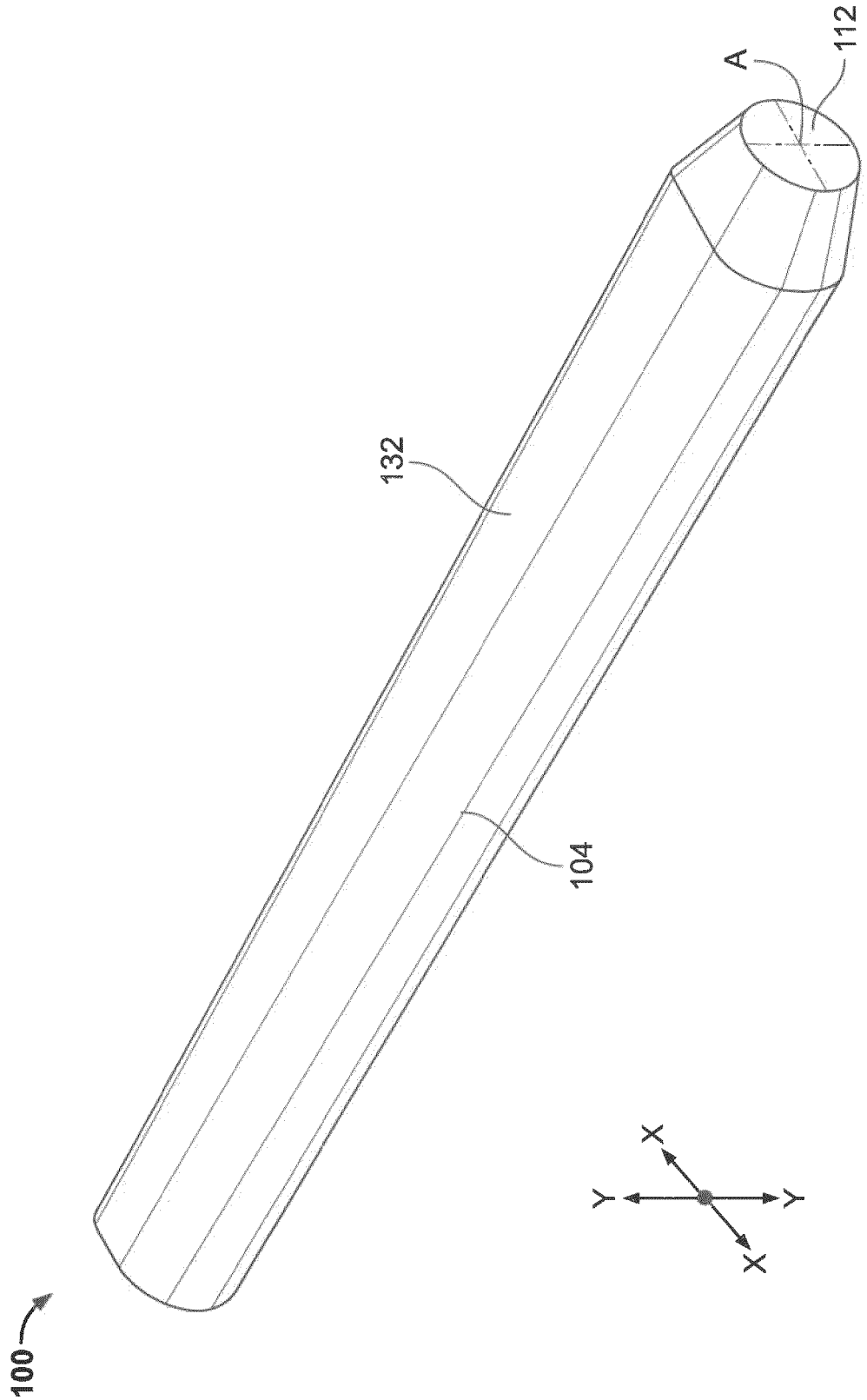

FIG. 1

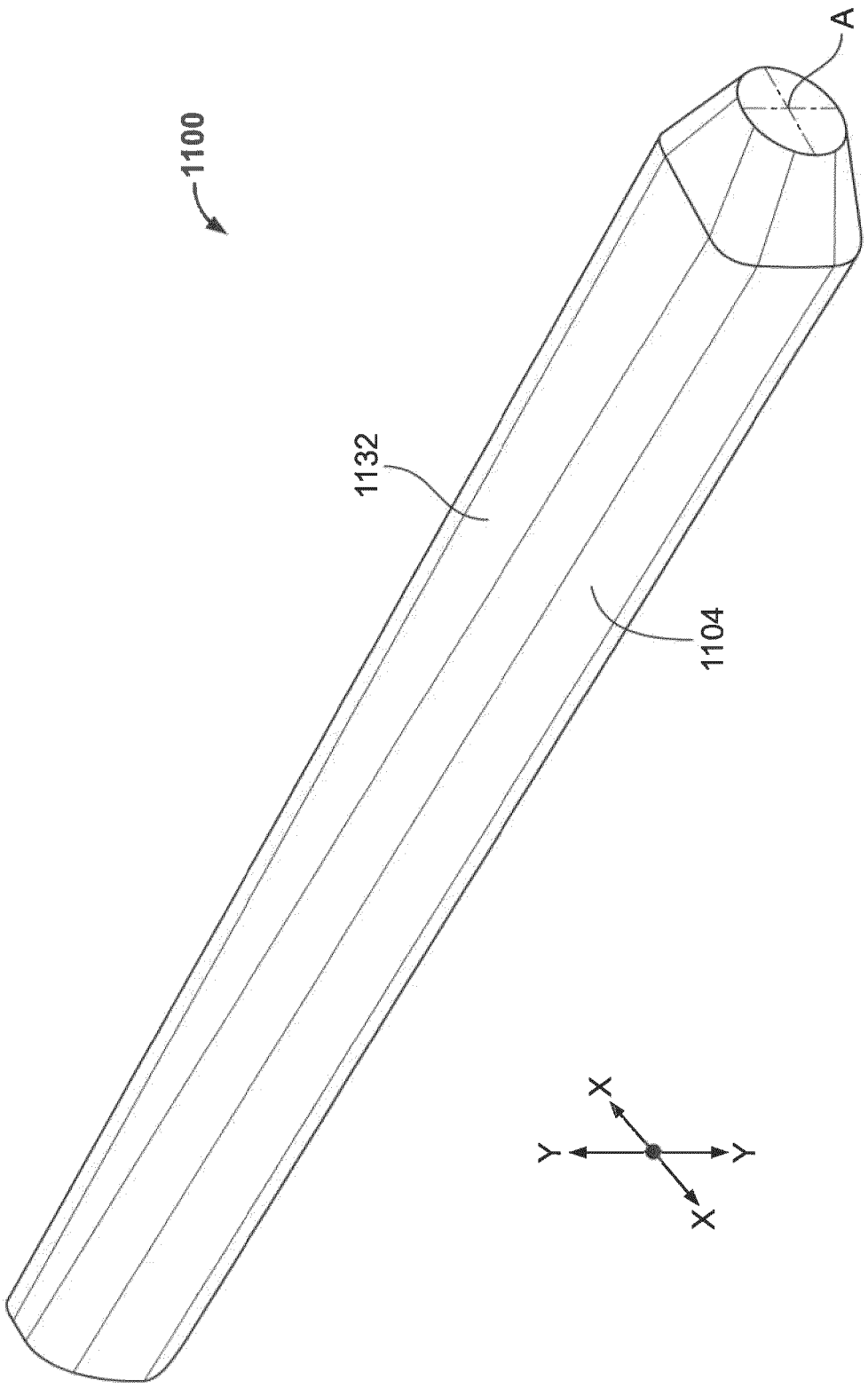

FIG. 2

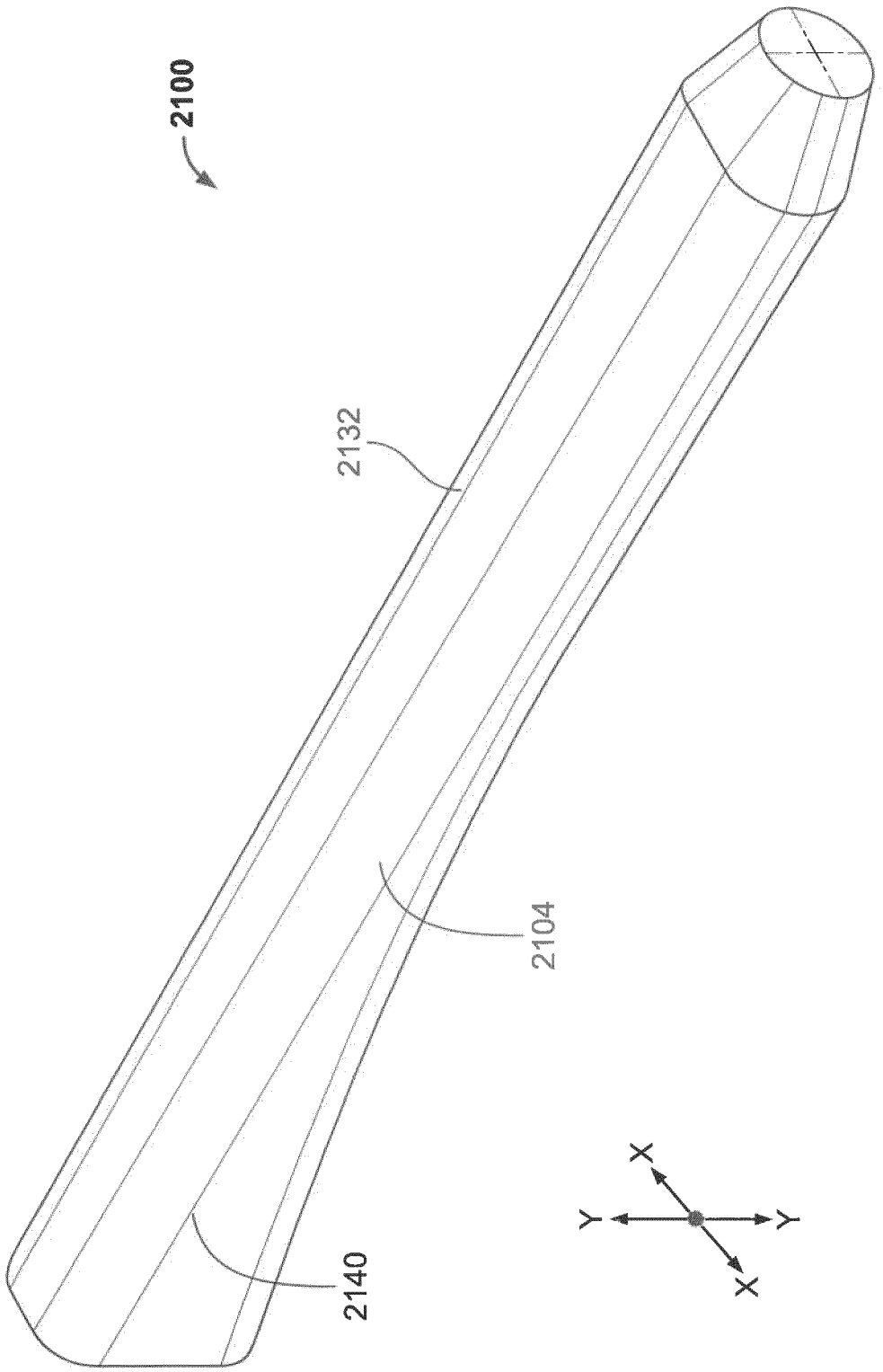

FIG. 3

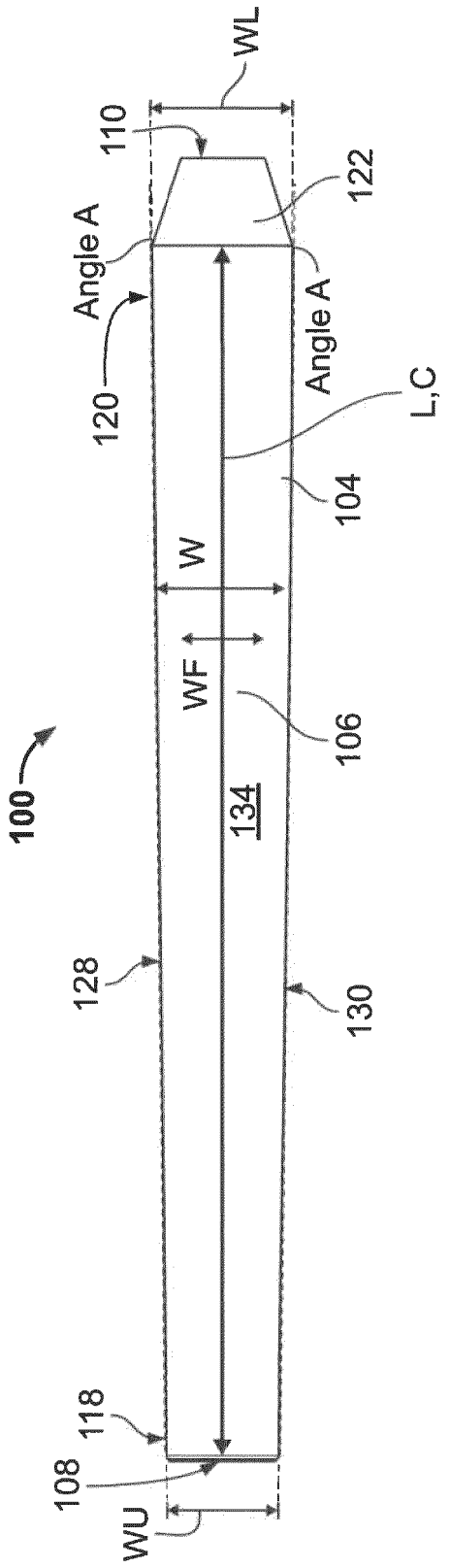
WL
110
122
Angle A
Angle A
120
L,C
104
W
WF
106
100
134
128
130
118
108
WU

FIG. 4

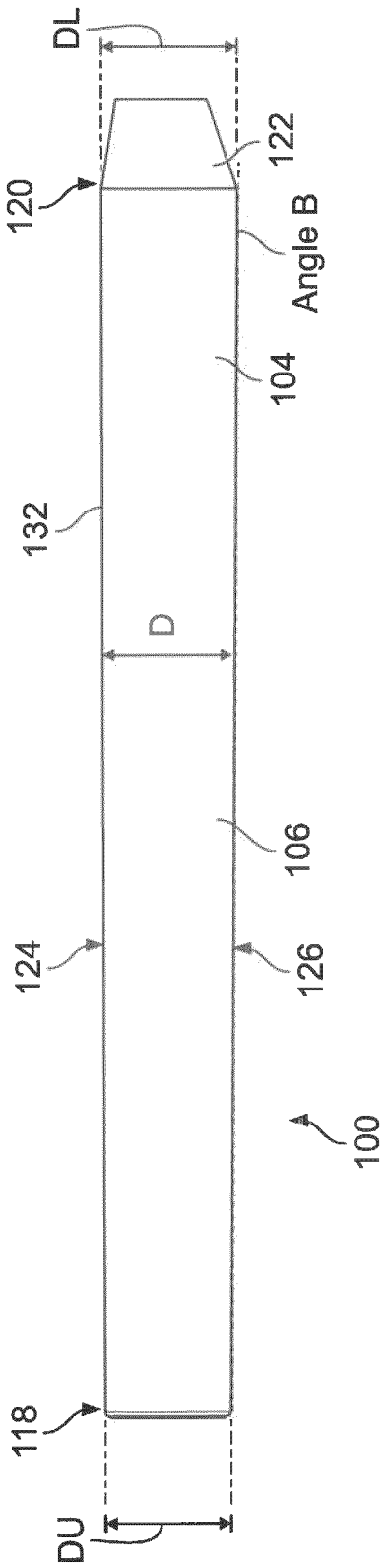

FIG. 5

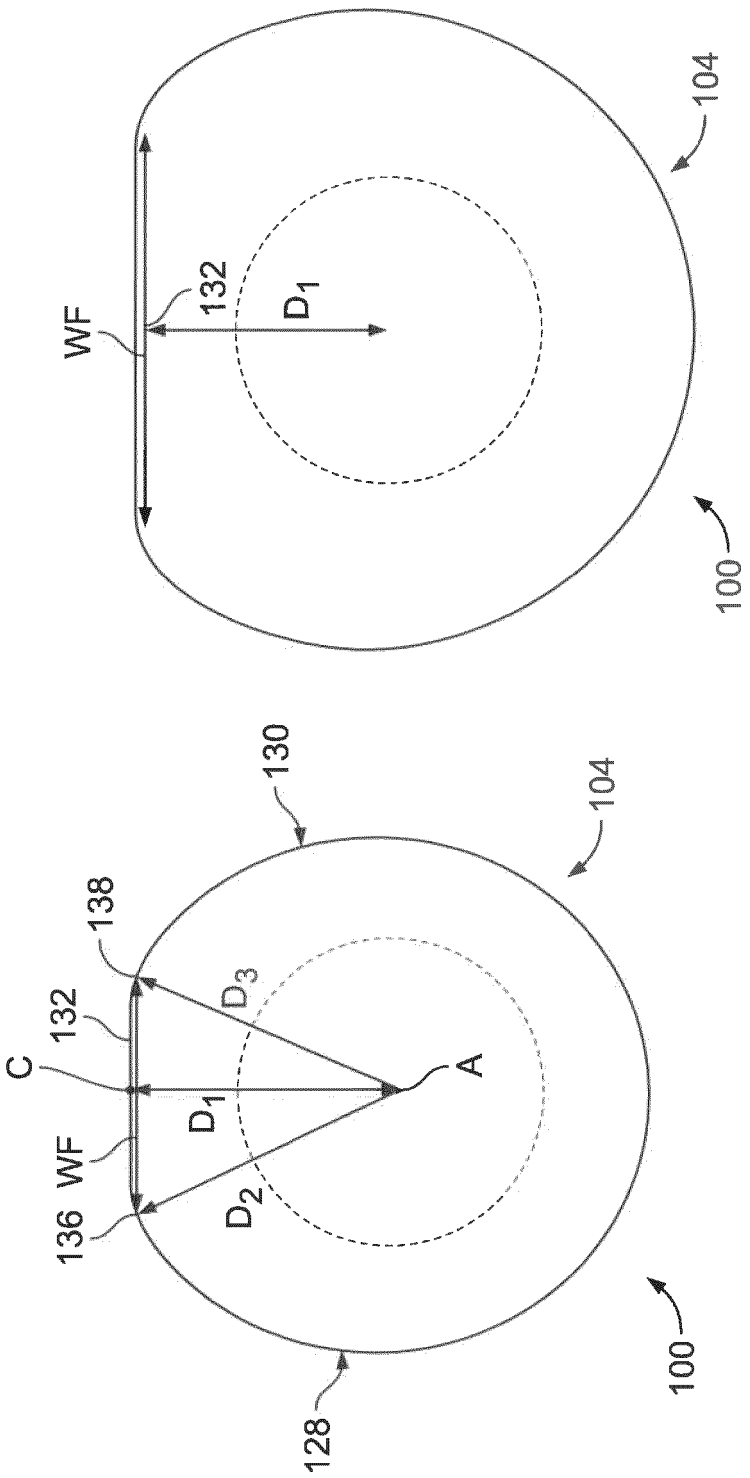

FIG. 6

FIG. 7

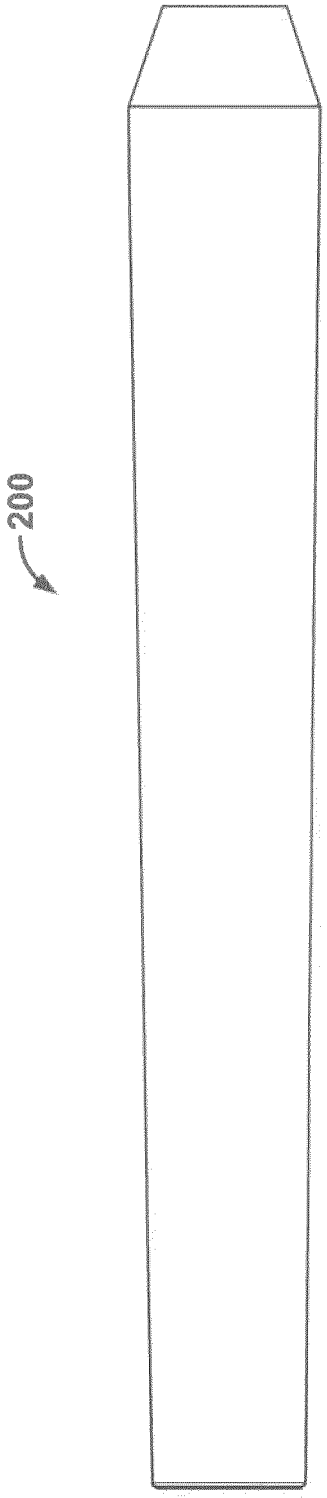

FIG. 8

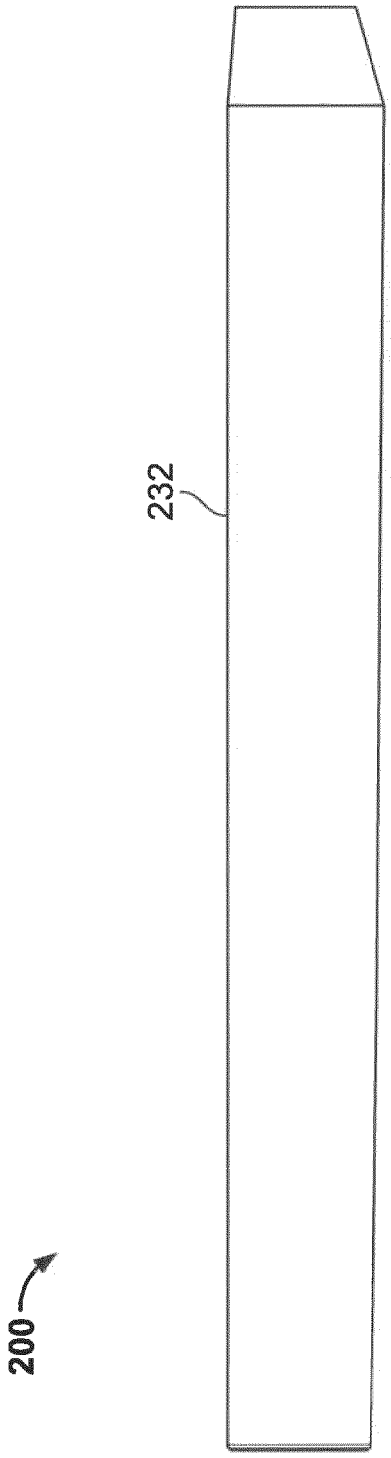

FIG. 9

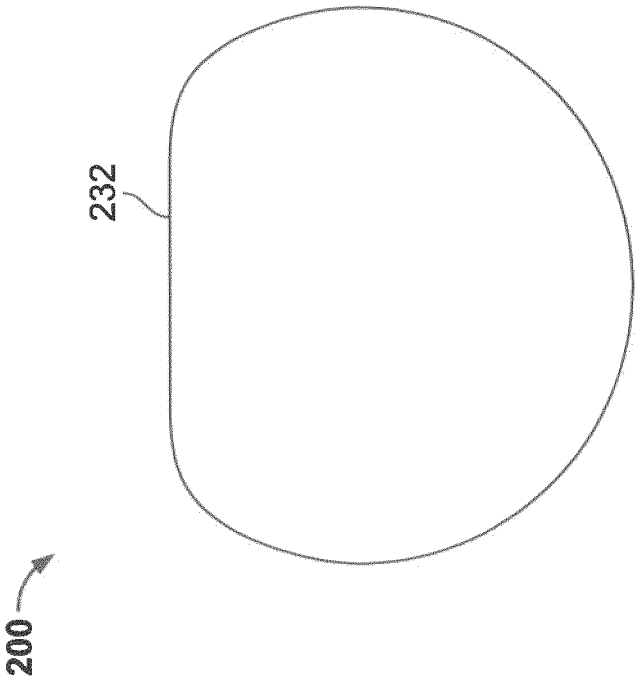

FIG. 11

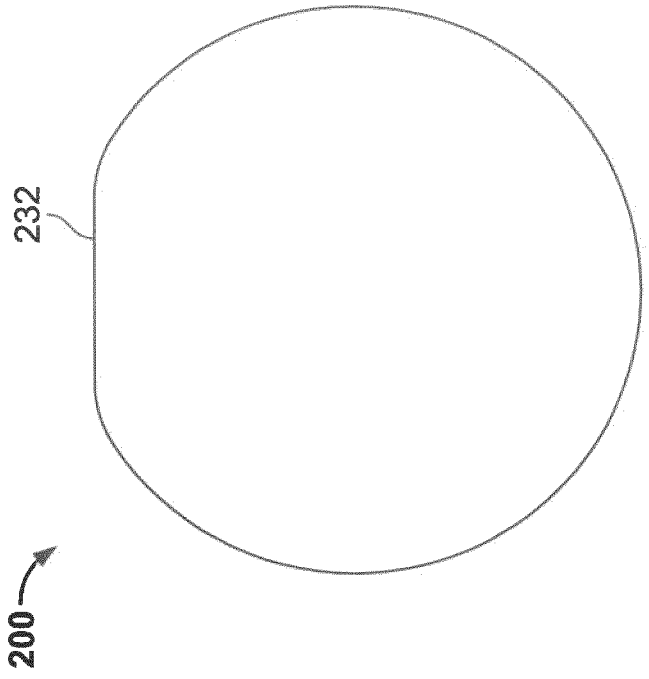

FIG. 10

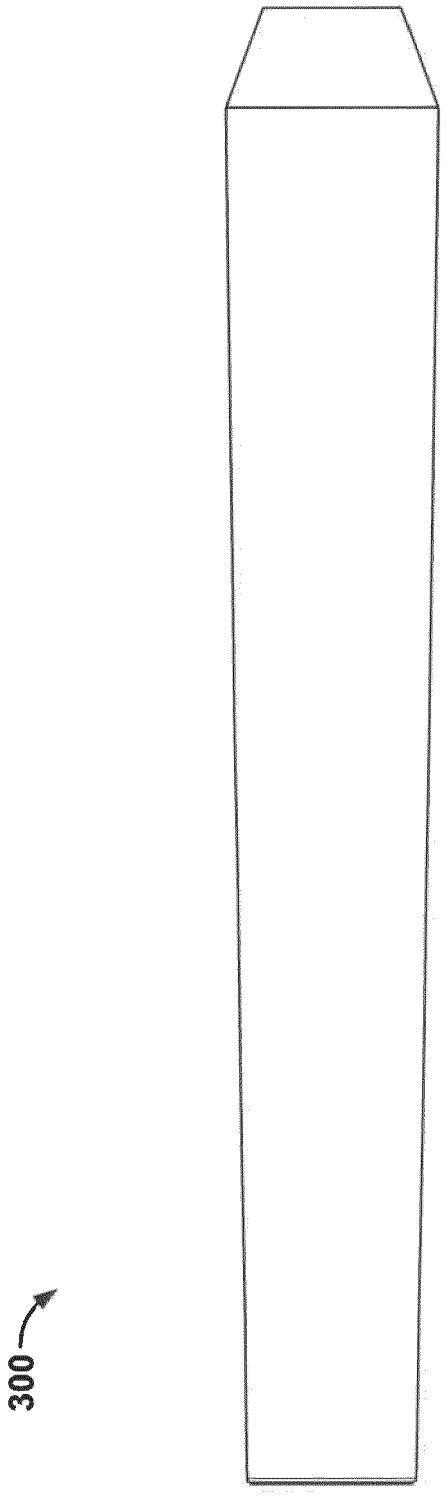

FIG. 12

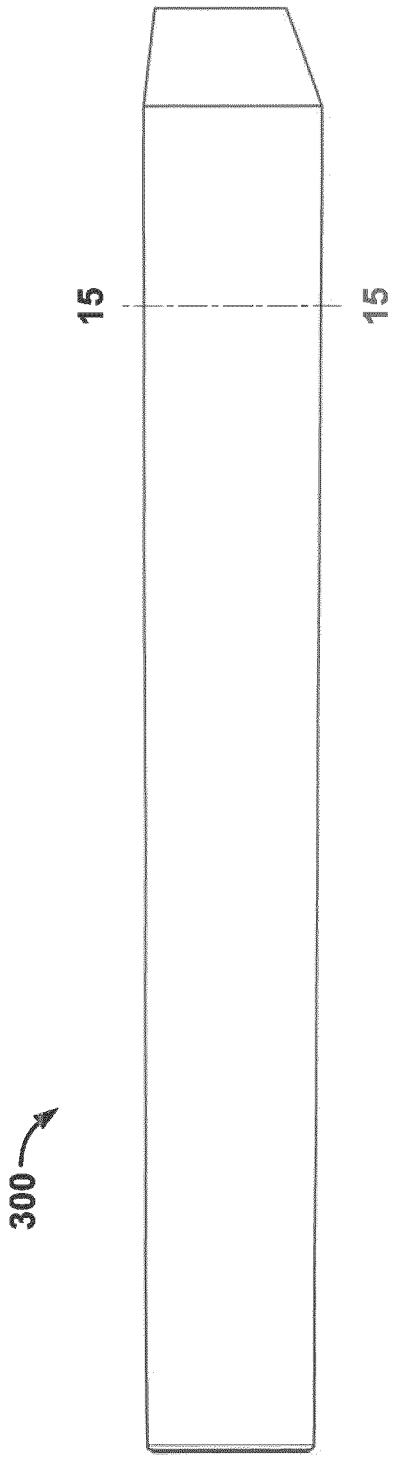

FIG. 13

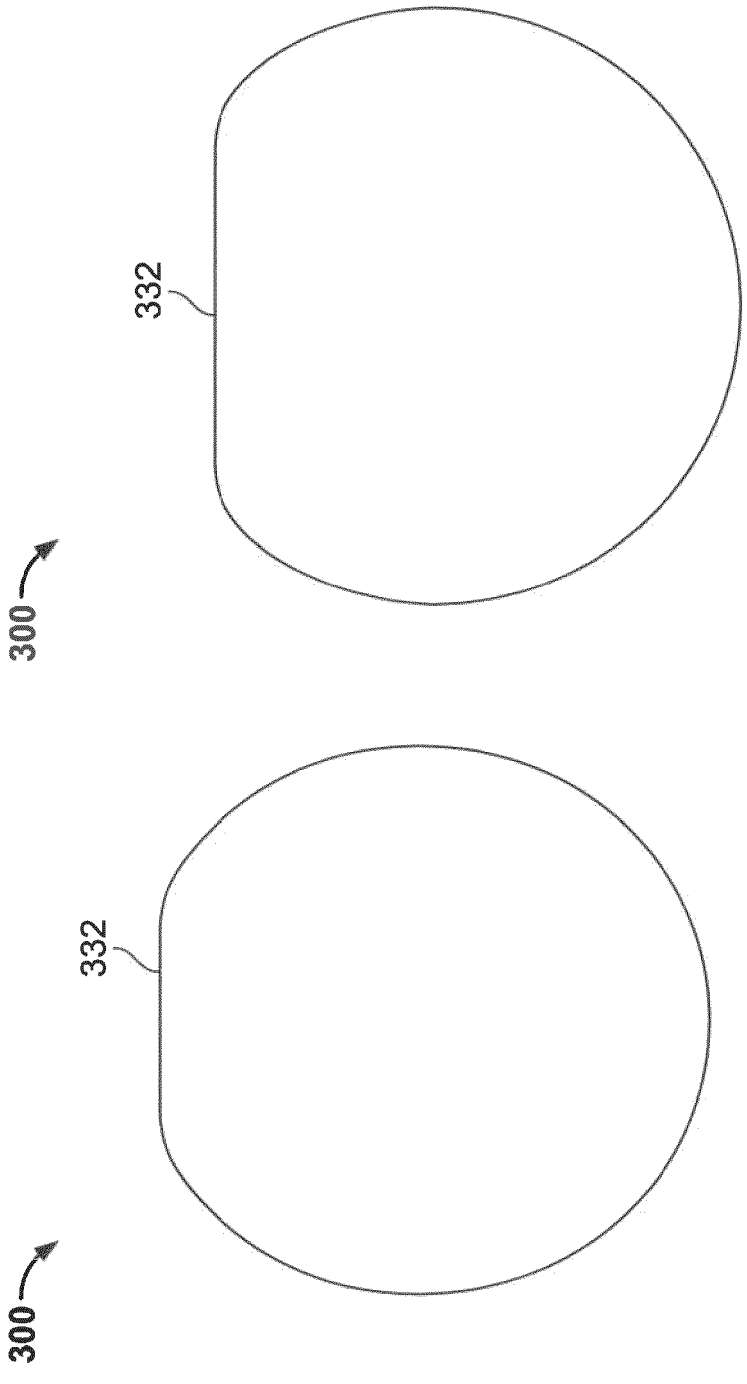

FIG. 14

FIG. 15

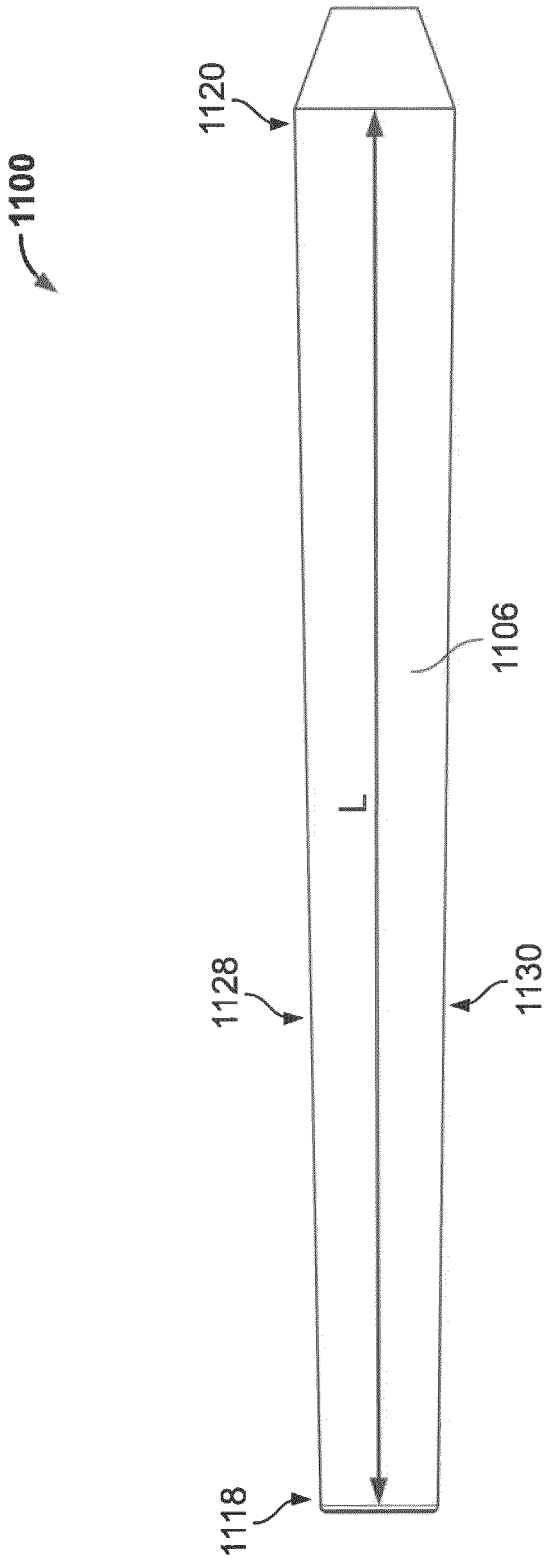

FIG. 16

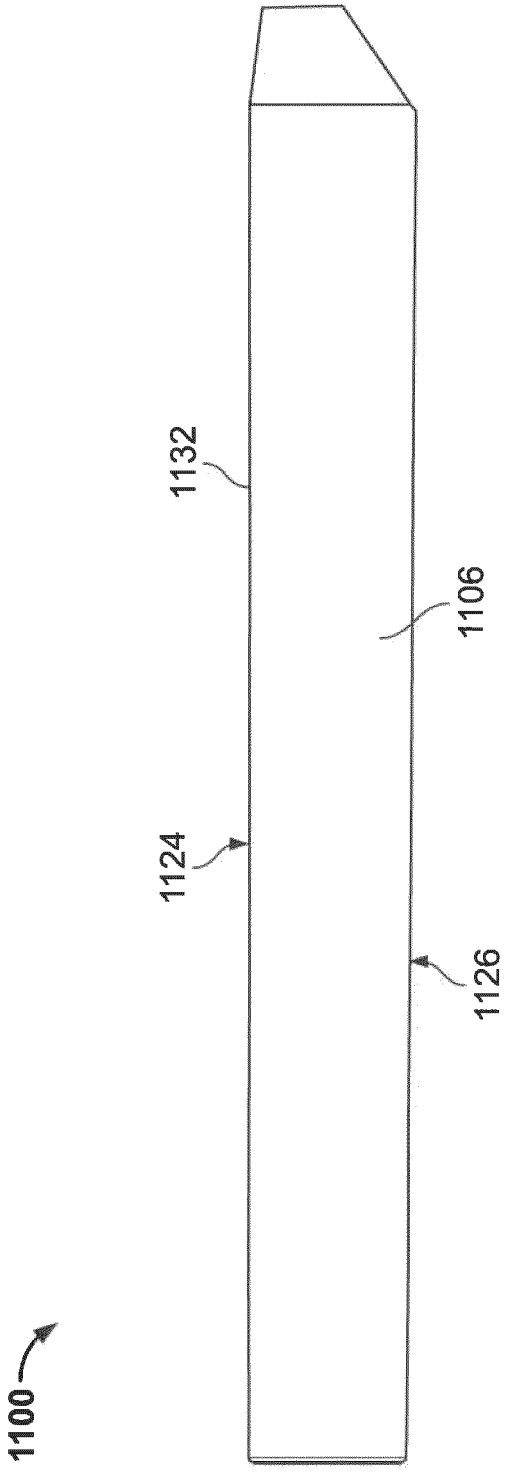

FIG. 17

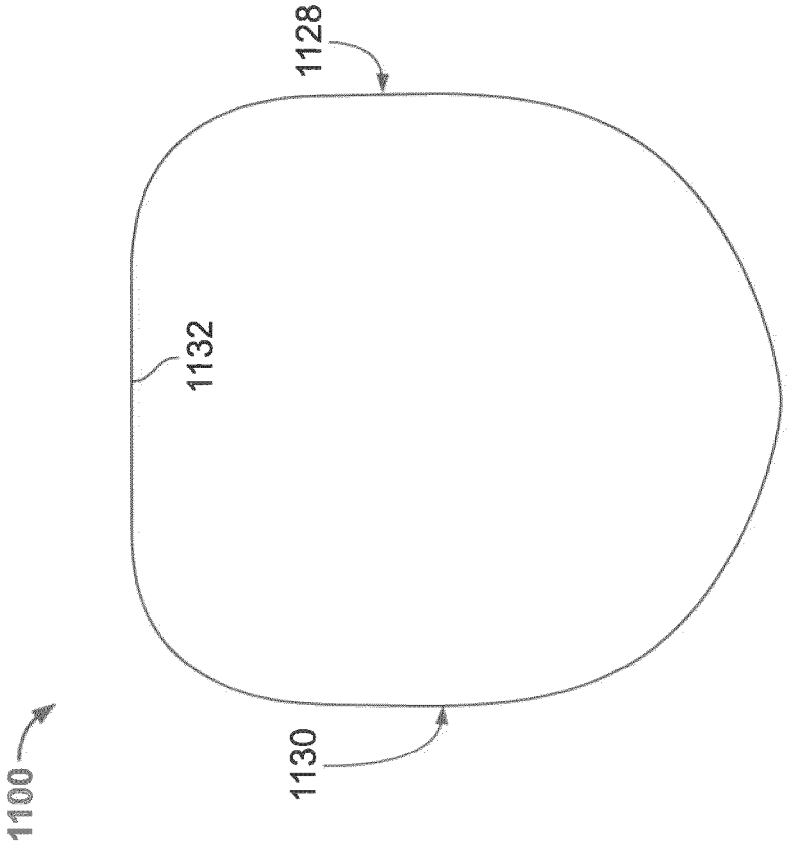

FIG. 19

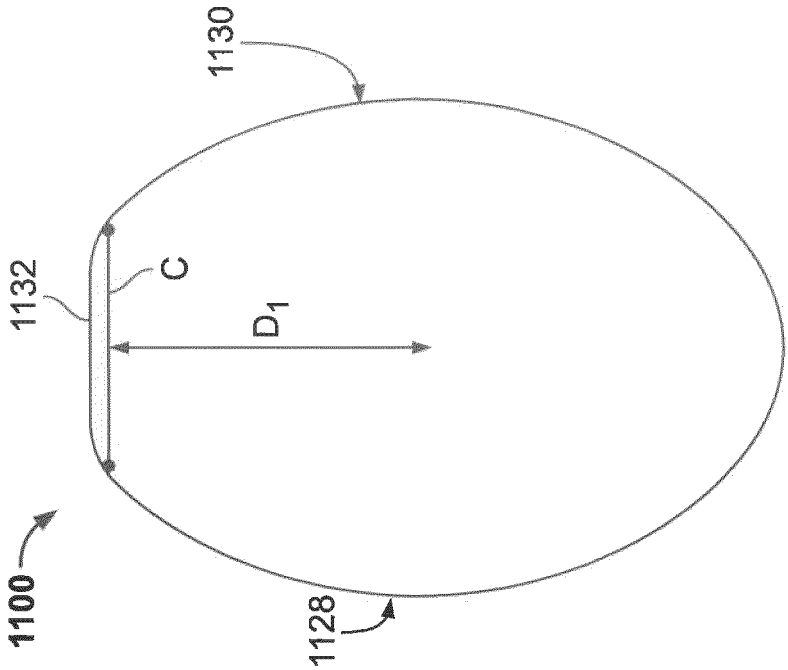

FIG. 18

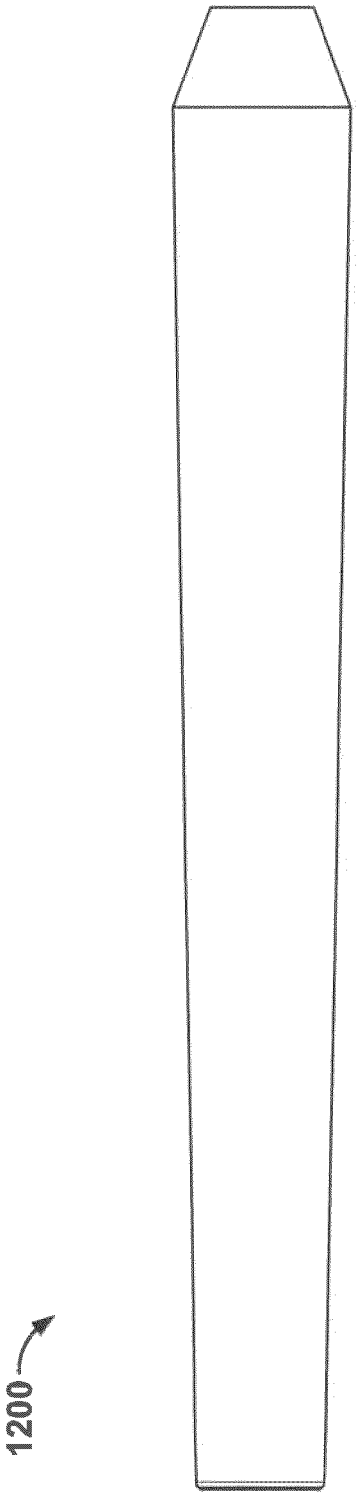

FIG. 20

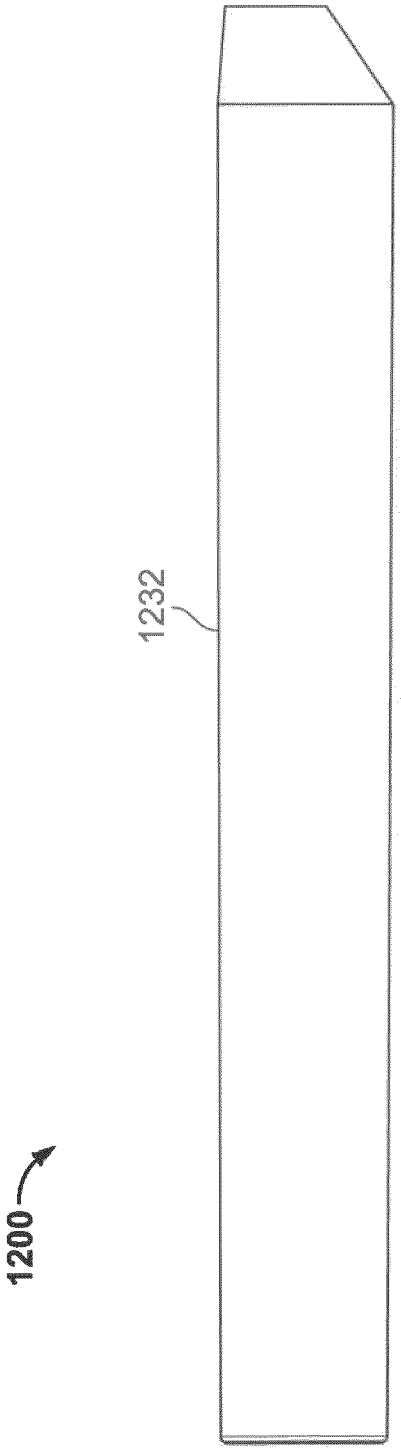

FIG. 21

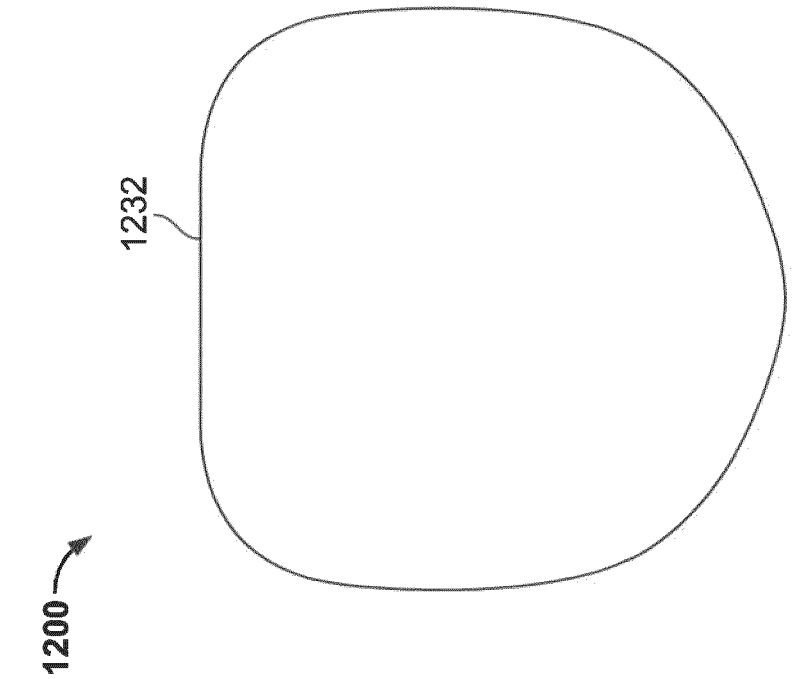

FIG. 23

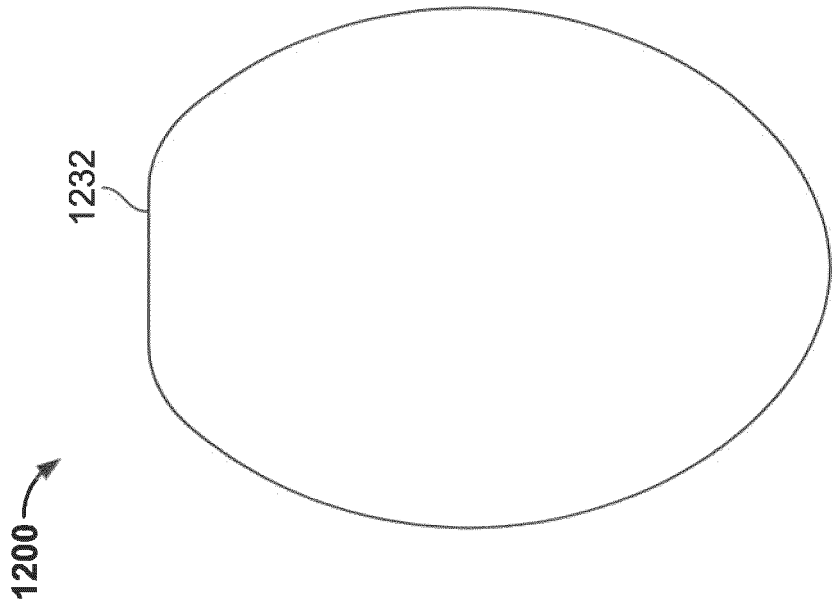

FIG. 22

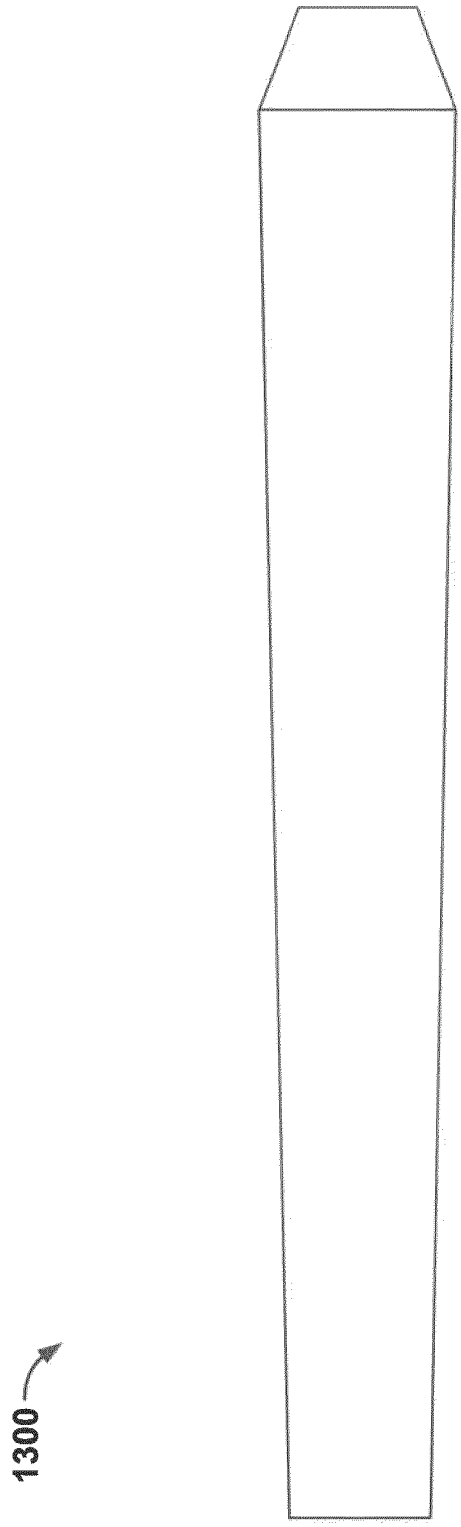

FIG. 24

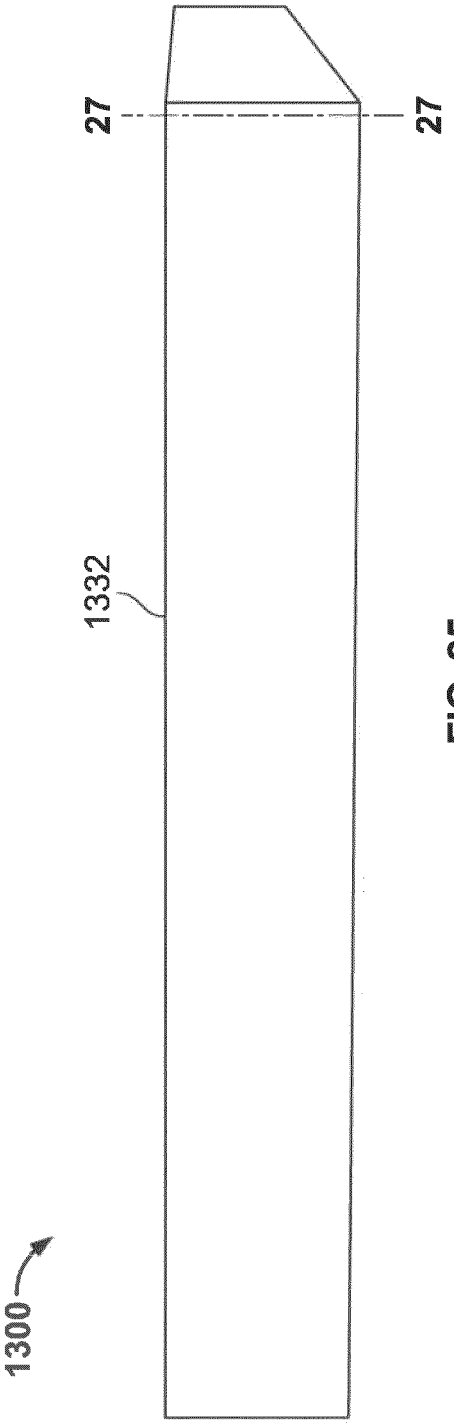

FIG. 25

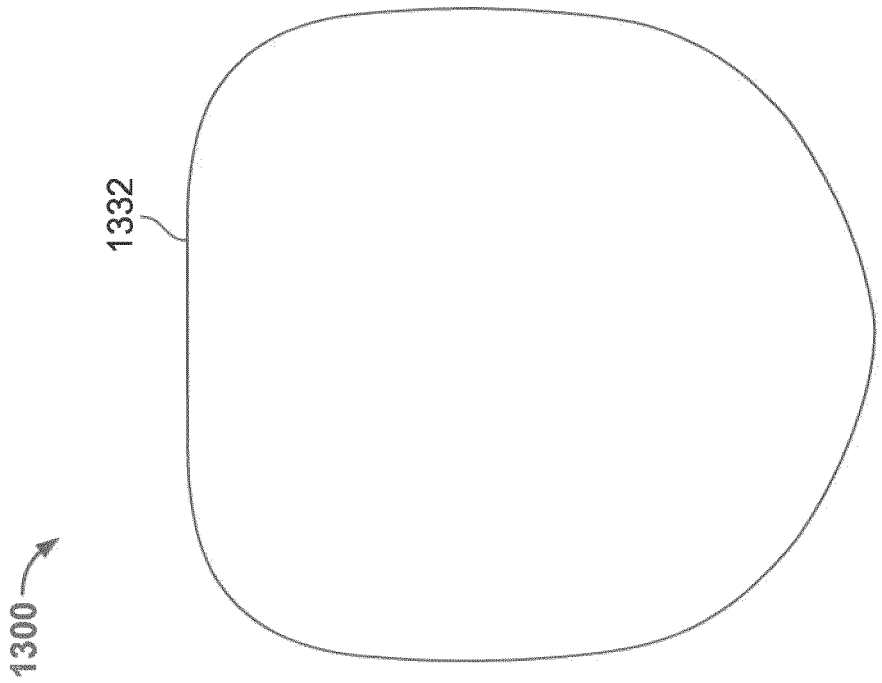

FIG. 27

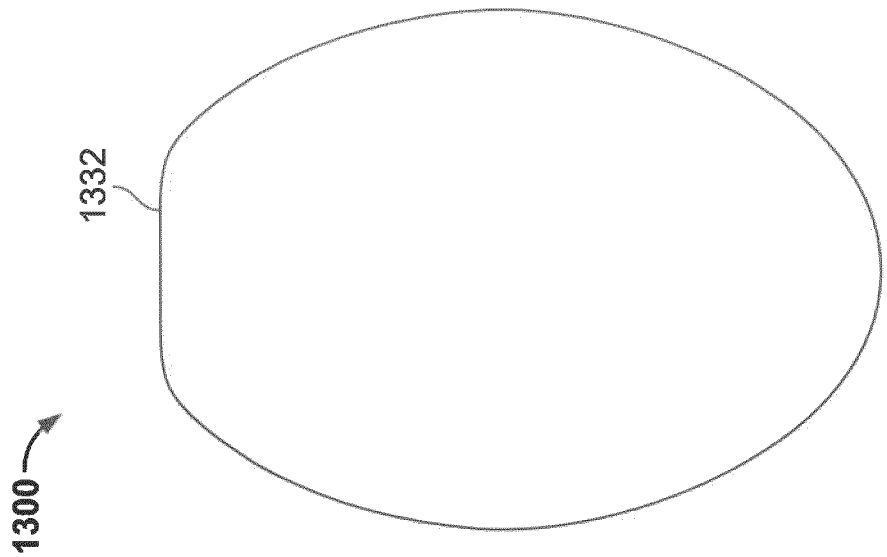

FIG. 26

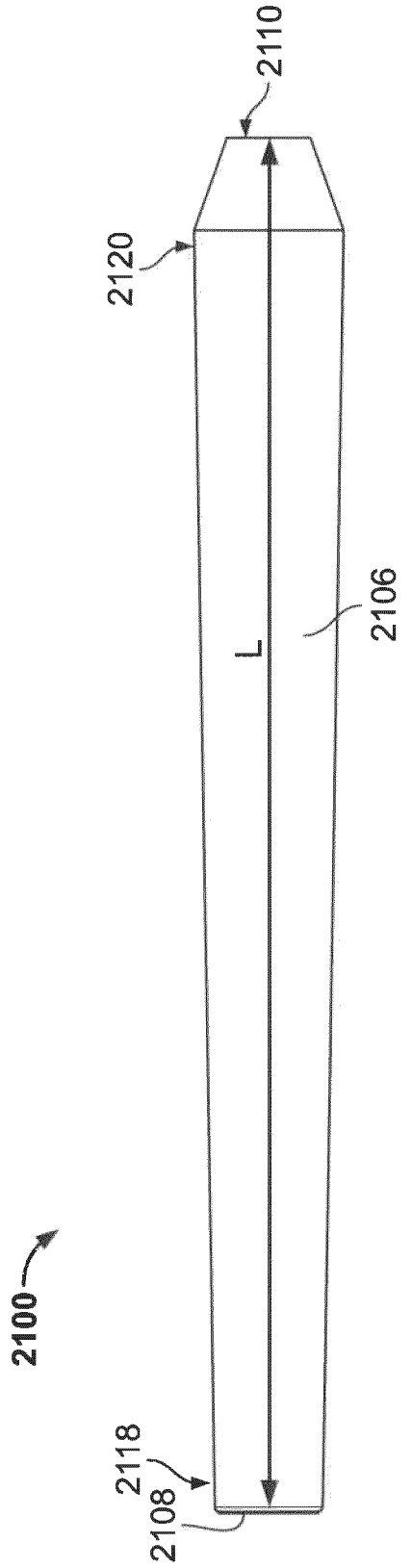

FIG. 28

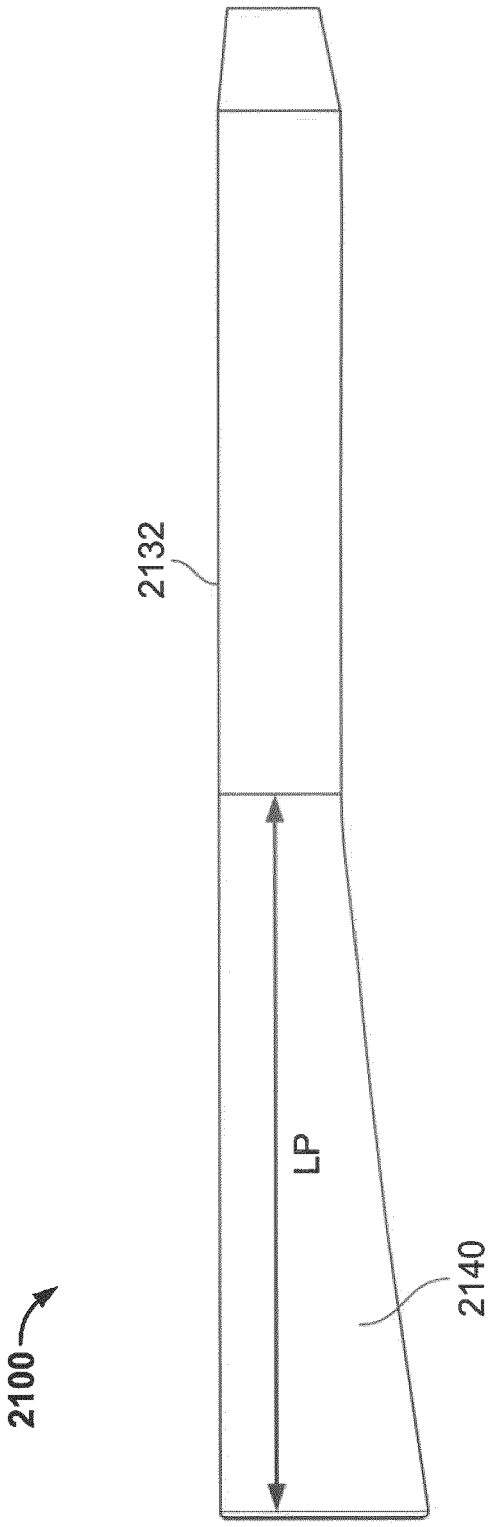

FIG. 29

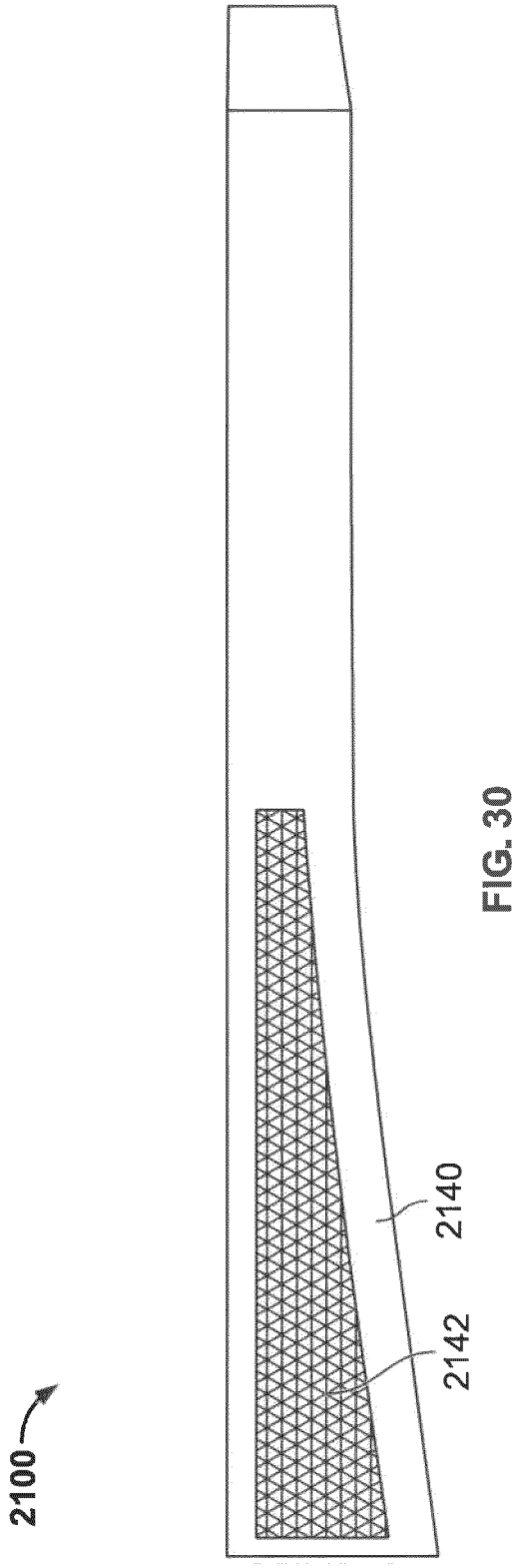

FIG. 30

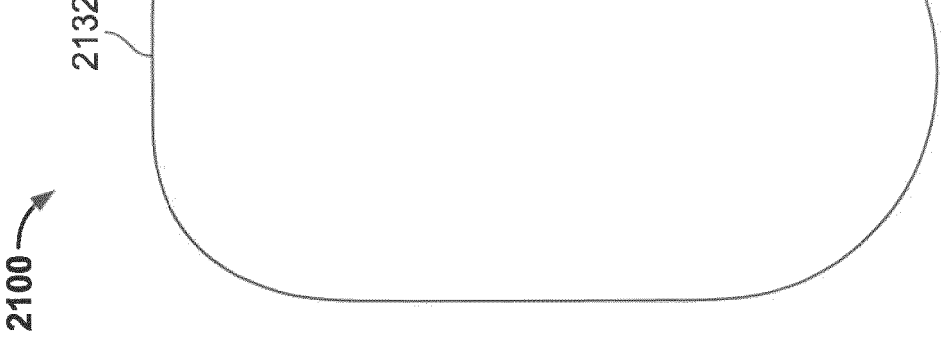

FIG. 31

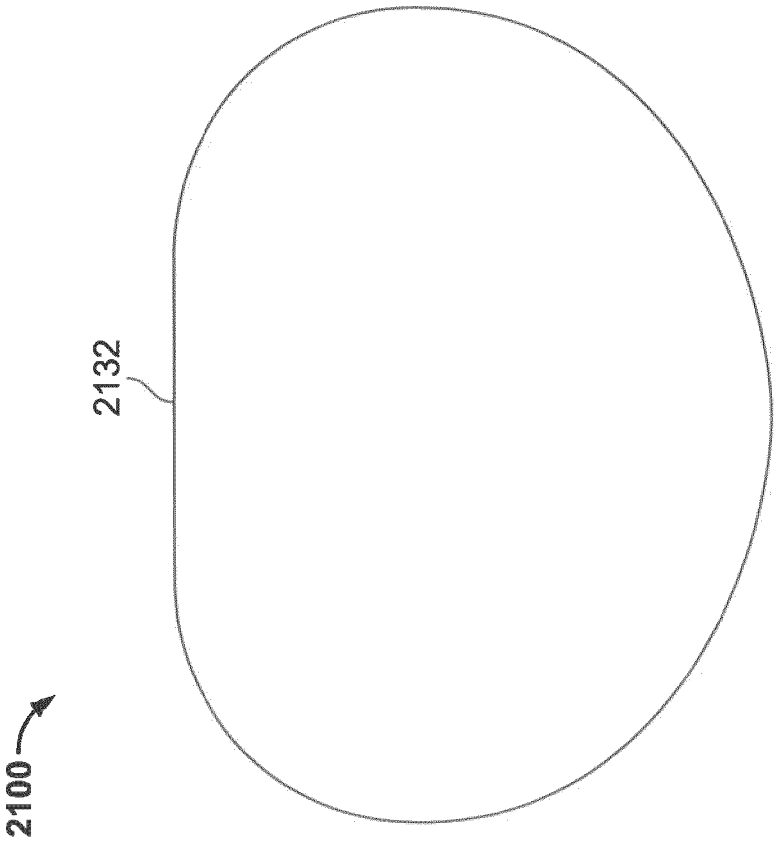

FIG. 32

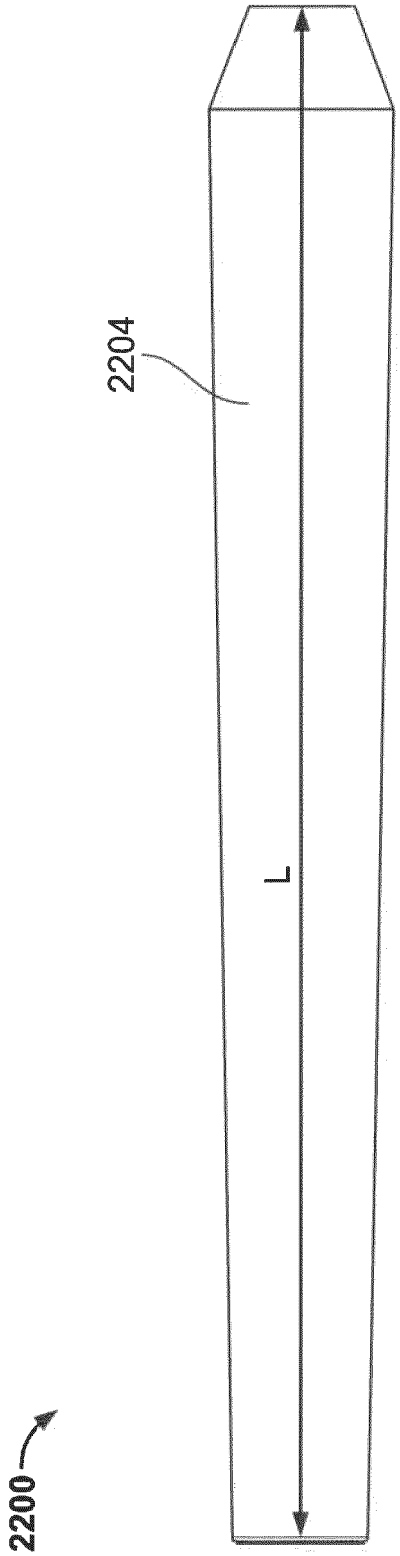

FIG. 33

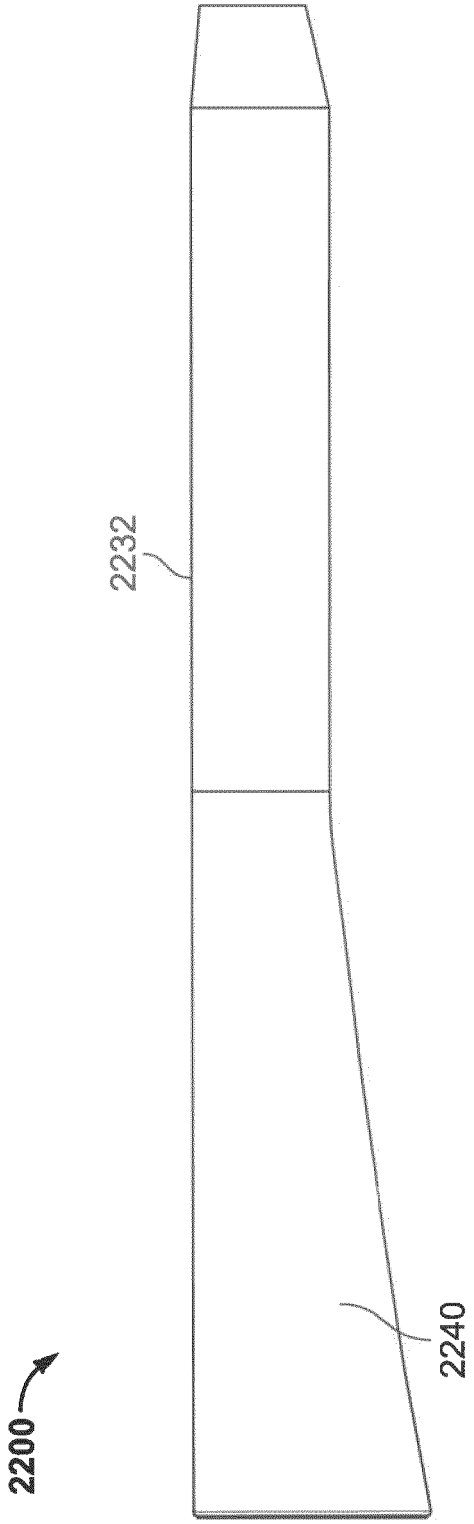

FIG. 34

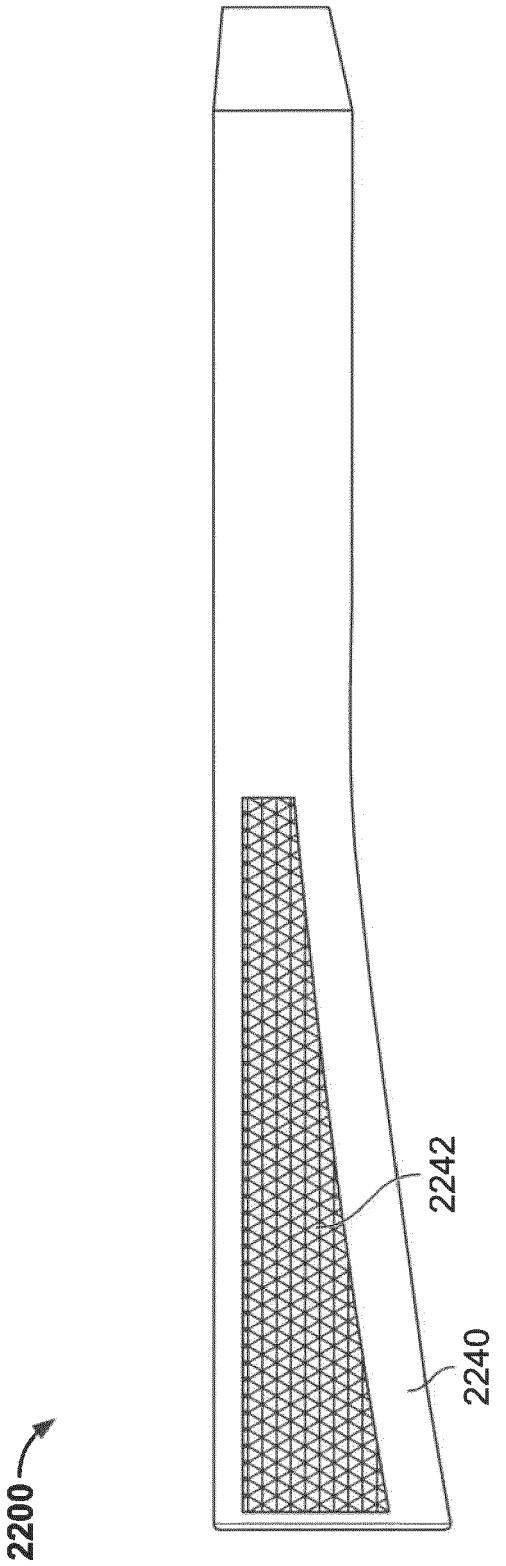

FIG. 35

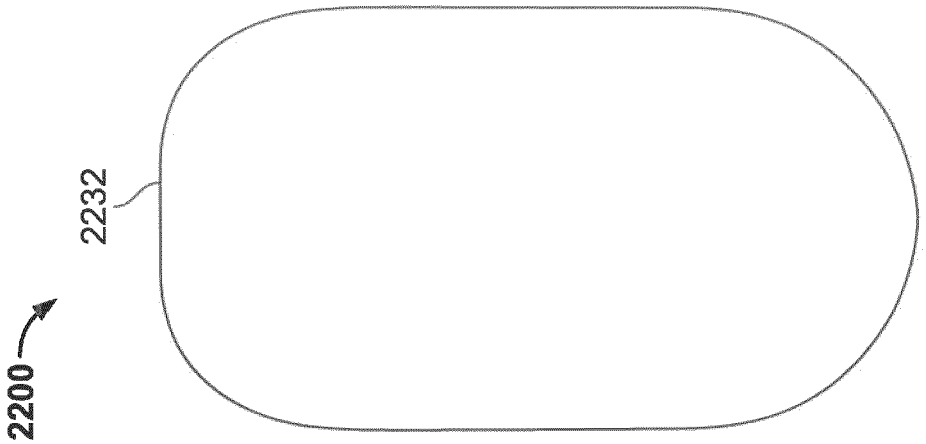

FIG. 36

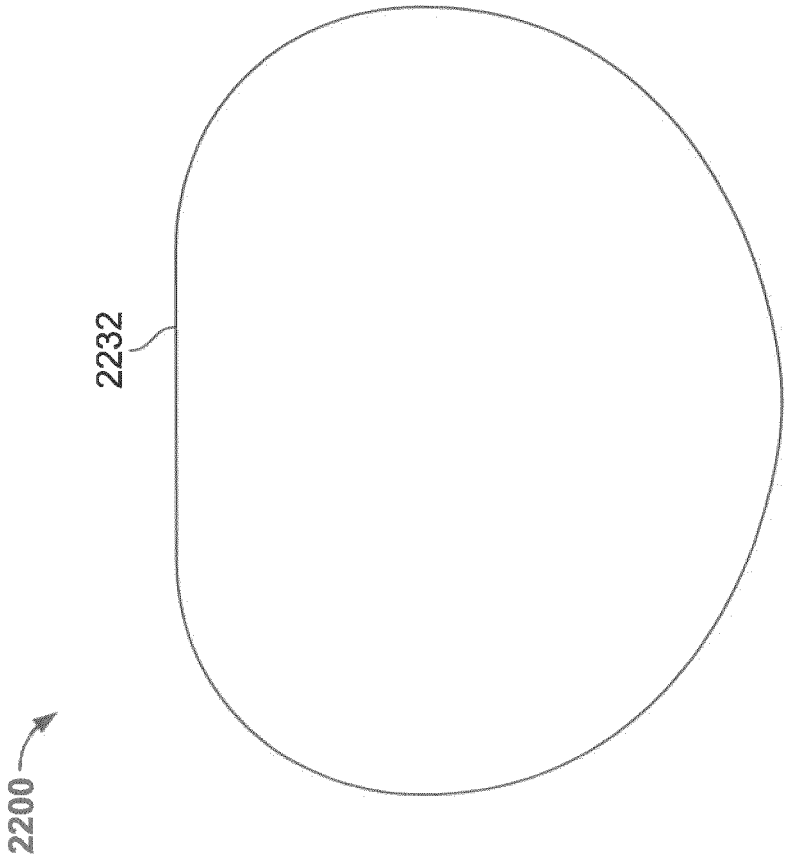

FIG. 37

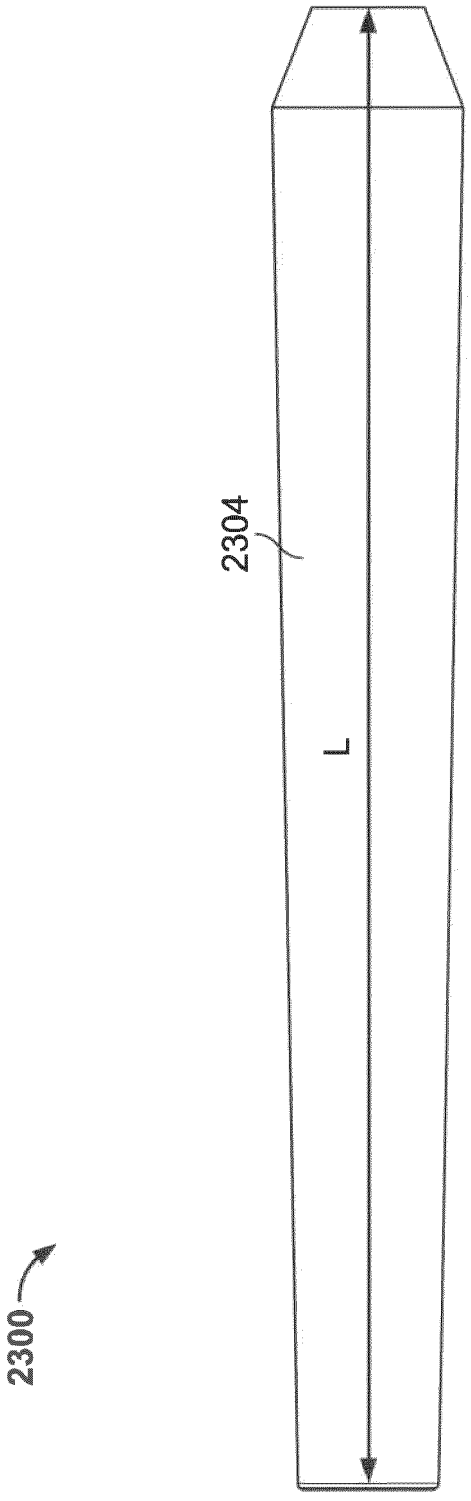

FIG. 38

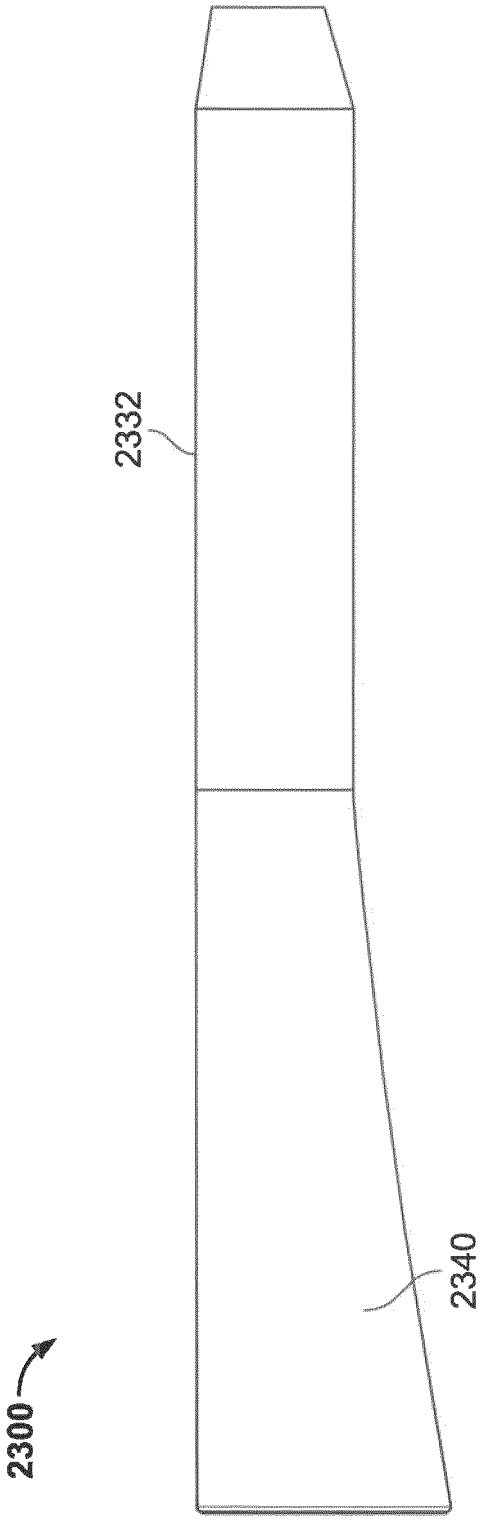

FIG. 39

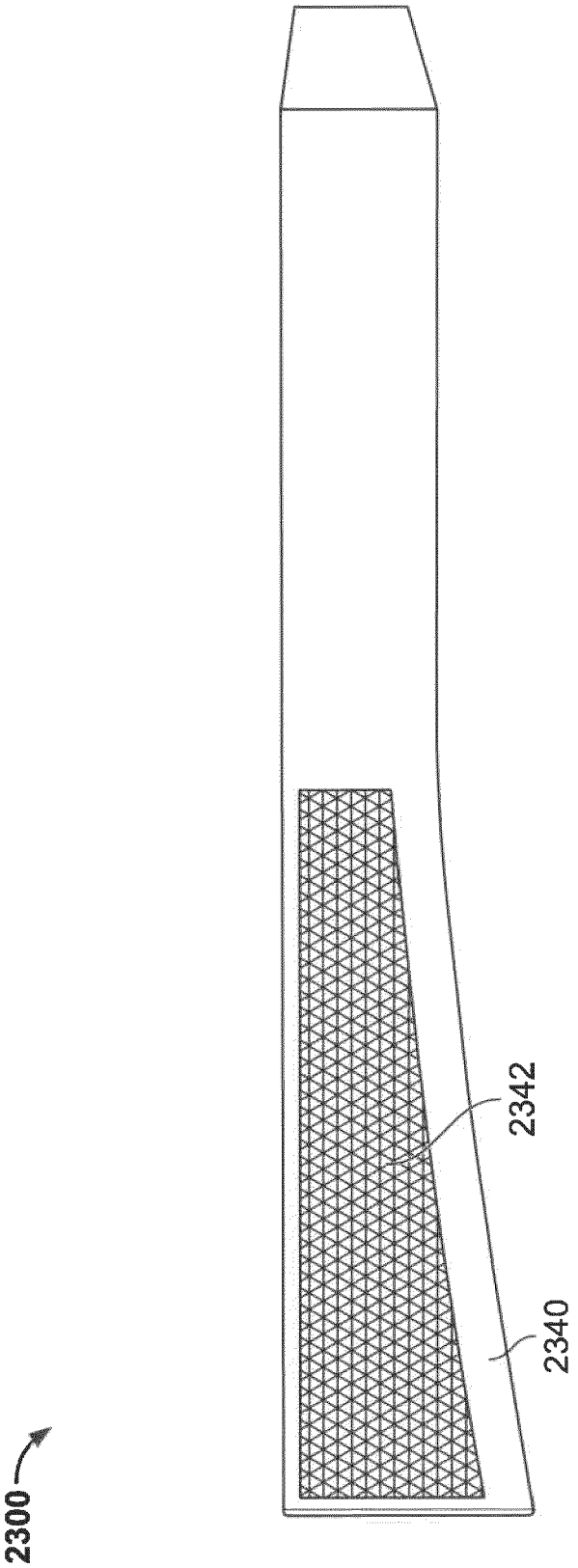

FIG. 40

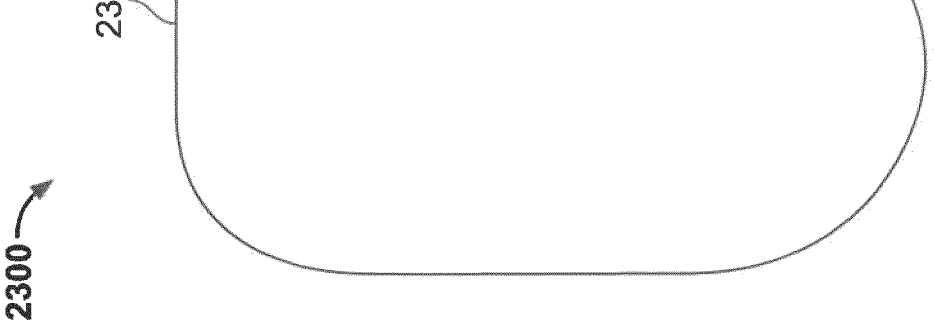

FIG. 41

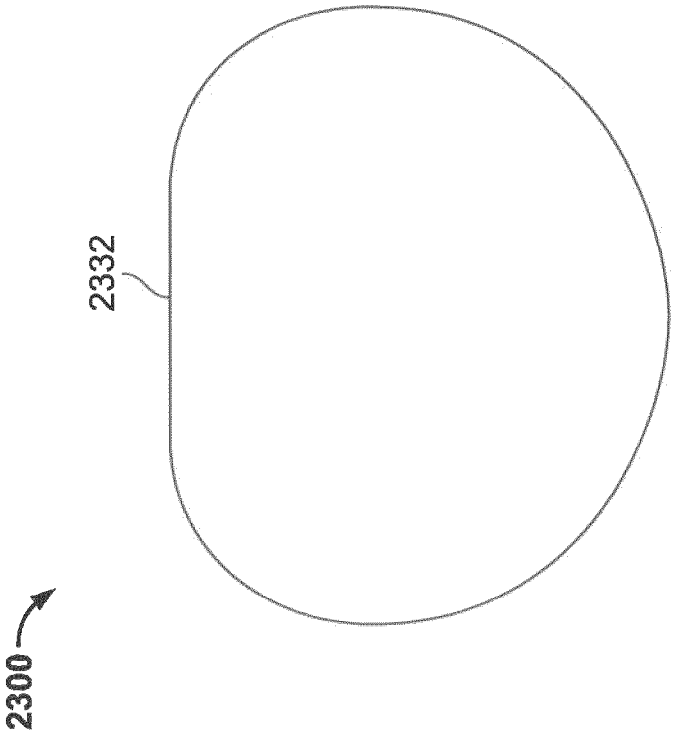

FIG. 42

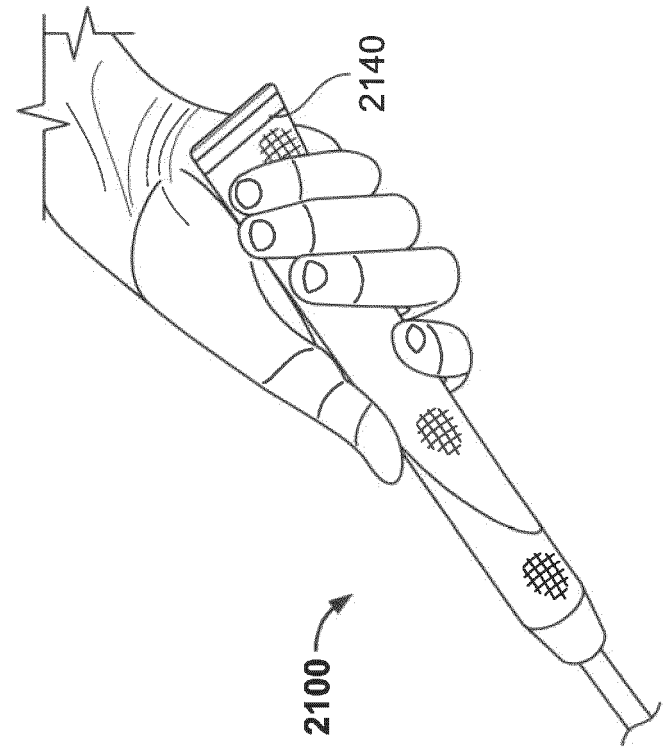

FIG. 44

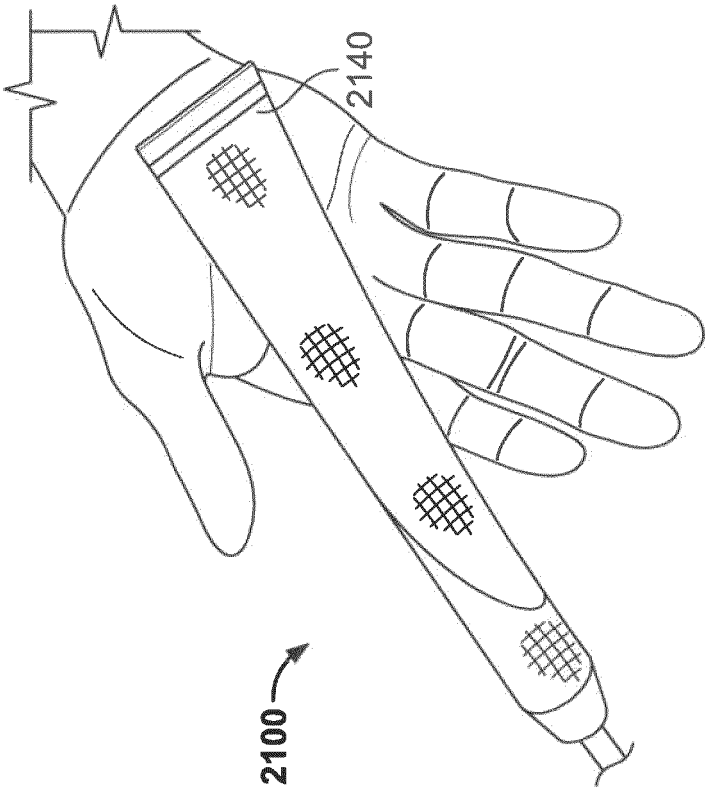

FIG. 43

Europäisches Patentamt
European Patent Office
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EUROPEAN SEARCH REPORT

Application Number
EP 24 19 1041

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	US 2015/196813 A1 (CHU HONG-SUNG [US] ET AL) 16 July 2015 (2015-07-16) * paragraphs [0058], [0072], [0079]; figures 4-15 *	1-8 9-12	INV. A63B53/00 A63B53/14 A63B60/10 A63B60/12
Y A	US 10 500 455 B1 (CAVILL GREGORY WILLIAM [US] ET AL) 10 December 2019 (2019-12-10) * figures 1-3 *	9-12 1-8	
A	GB 2 541 211 A (KEVIN GAMMELL [IE]) 15 February 2017 (2017-02-15) * the whole document *	1-12	
A	US 3 837 647 A (JACQUES E) 24 September 1974 (1974-09-24) * the whole document *	1-12	

TECHNICAL FIELDS SEARCHED (IPC)

A63B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	28 November 2024	Lundblad, Hampus

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 24 19 1041

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-11-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2015196813 A1	16-07-2015	NONE	
US 10500455 B1	10-12-2019	GB 2576107 A	05-02-2020
		JP 7546348 B2	06-09-2024
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