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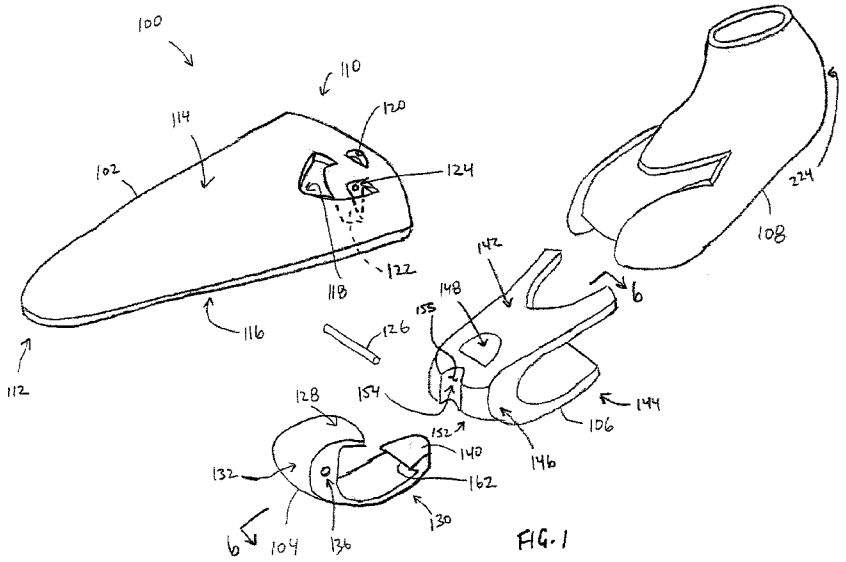

FIG. 1

(57) Abstract: A method of coupling a boot toe body to a fin apparatus is disclosed. The fin apparatus includes a fin body coupled to a boot coupling body. The method involves connecting a first boot connector on a first end of the boot coupling body to a first complementary boot connector on a top side of the boot toe body, and connecting a second boot connector on a second end of the boot coupling body to a second complementary boot connector on a bottom side of the boot toe body. Boot toe bodies, fin apparatuses, and systems including the boot toe bodies and fin apparatuses are also disclosed.

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COUPLEABLE FIN APPARATUSES AND BOOT TOE BODIES

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of United States provisional patent application no. 62/281,890 filed January 22, 2016 and United States provisional patent application no. 62/412,603 filed October 25, 2016. Further, in the United States of America, this application is a continuation-in-part of PCT international application no. PCT/CA2015/051278 filed December 4, 2015, which: claims the benefit of United States provisional patent application no. 62/088,387 filed December 5, 2014; is a continuation-in-part of United States patent application no. 14/171,288 filed February 3, 2014, which is a continuation of United States patent application no. 13/639,446 (now United States patent no. 8,641,464) filed October 4, 2012, which is a national stage entry of PCT international application no. PCT/CA2011/000395 filed April 7, 2011, which claims the benefit of United States provisional patent application no. 61/322,104 filed April 8, 2010; and is a continuation-in-part of United States patent application no. 14/435,084 (now United States patent no. 9,440,114) filed April 10, 2015, which is a national stage entry of PCT international application no. PCT/CA2012/000946 filed October 12, 2012. Further, in the United States of America, this application is a continuation-in-part of United States patent application no. 14/171,288, which is a continuation of United States patent application no. 13/639,446, which is a national stage entry of PCT international application no. PCT/CA2011/000395, which claims the benefit of United States provisional patent application no. 61/322,104.

The entire contents of United States provisional patent application no. 61/322,104, of PCT international application no. PCT/CA2011/000395, of United States patent application no. 13/639,446, of PCT international application no. PCT/CA2012/000946, of United States patent application no. 14/171,288, of United States provisional patent application no. 62/088,387, of United States patent application no. 14/435,084, of PCT international application no. PCT/CA2015/051278, of United States provisional patent application no. 62/281,890, of United States provisional patent application no. 62/412,603, and of PCT international application no. PCT/CA2015/051278 are incorporated by reference herein in their entireties.

FIELD

This disclosure relates generally to fins, and more particularly to fin apparatuses coupleable to boot toe bodies, boot toe bodies coupleable to fin apparatuses, systems including coupleable fin apparatuses and boot toe bodies, and methods of coupling fin apparatuses and boot toe bodies.

RELATED ART

A user can couple a known fin to each foot of the user. When the user kicks in water, for example, the fins can facilitate generating propulsion in the water.

Many known fins have foot pockets for receiving a foot of a user, but such foot pockets are generally integral to the fin and available only in a small number of standard sizes because, for example, costs to manufacture and distribute entire fins with a large variety of foot sizes and shapes would be very high. Therefore, when a user selects such a fin, the user must also select a single foot pocket size of the fin, often from among a small number of available sizes. Therefore, such foot pockets often do not comfortably fit a foot of a user, and space between the foot and an inside wall of the foot pocket can receive water, disadvantageously adding to drag of the fin in water and limiting the control of the user over the fin. Other known fins include alternatives to foot pockets, but such known alternatives may still require a user to choose from small number of standard sizes because, for example, of potentially high manufacturing and distribution costs for a large variety of foot sizes.

SUMMARY

According to one embodiment, there is disclosed a method of coupling a boot toe body to a fin apparatus comprising a fin body coupled to a boot coupling body, the method comprising: connecting a first boot connector on a first end of the boot coupling body to a first complementary boot connector on a top side of the boot toe body; and connecting a second boot connector on a second end of the boot coupling body to a second complementary boot connector on a bottom side of the boot toe body.

According to another embodiment, there is disclosed a fin apparatus coupleable to a boot toe body, the apparatus comprising: a fin body; and a boot coupling body coupleable to the fin body. The boot coupling body comprises: first and second ends; a first boot connecting

means on the first end of the boot coupling body for connecting with a first complementary boot connecting means on a top side of the boot toe body; and a second boot connecting means on the second end of the boot coupling body for connecting with a second complementary boot connecting means on a bottom side of the boot toe body.

According to another embodiment, there is disclosed a boot toe body coupleable to a fin apparatus comprising a fin body coupleable to a boot coupling body comprising first and second ends, the boot toe body comprising: a first boot connecting means on a top side of the boot toe body for connecting with a first complementary boot connecting means on the first end of the boot coupling body; and a second boot connecting means on a bottom side of the boot toe body for connecting with a second complementary boot connecting means on the second end of the boot coupling body.

According to another embodiment, there is disclosed a fin system comprising the apparatus and the boot toe body.

According to another embodiment, there is disclosed a fin apparatus coupleable to a boot toe body, the apparatus comprising: a fin body; and a boot coupling body coupleable to the fin body. The boot coupling body comprises: first and second ends; a first boot connector on the first end of the boot coupling body for connecting with a first complementary boot connector on a top side of the boot toe body; and a second boot connector on the second end of the boot coupling body for connecting with a second complementary boot connector on a bottom side of the boot toe body.

According to another embodiment, there is disclosed a boot toe body coupleable to a fin apparatus coupleable to a boot coupling body comprising first and second ends, the boot toe body comprising: a first boot connector on a top side of the boot toe body for connecting with a first complementary boot connector on the first end of the boot coupling body; and a second boot connector on a bottom side of the boot toe body for connecting with a second complementary boot connector on the second end of the boot coupling body.

According to another embodiment, there is disclosed a fin system comprising the apparatus and the boot toe body.

Other aspects and features will become apparent to those ordinarily skilled in the art upon review of the following description of illustrative embodiments in conjunction with the accompanying figures.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded top perspective view of a fin system according to an embodiment.

FIG. **2** is an exploded bottom perspective view of a fin apparatus including a fin body, a boot coupling body, and a fastener of the fin system of FIG. **1**.

FIG. **3** is a top perspective view of the fin apparatus of FIG. **2**.

FIG. **4** is a side view of the fin apparatus of FIG. **2**.

FIG. **5** is an exploded bottom perspective view of the fin system of FIG. **1**.

FIG. **6** is a partial side cross-sectional view of the boot coupling body and of a boot toe body of the fin system of FIG. **1**, taken along the line **6–6** shown in FIG. **1**.

FIG. **7** is a partial side cross-sectional view of the boot coupling body and the boot toe body of FIG. **1** in a first stage of coupling the boot coupling body to the boot toe body.

FIG. **8** is a partial side cross-sectional view of the boot coupling body and the boot toe body of FIG. **1** in a second stage of coupling the boot coupling body to the boot toe body.

FIG. **9** is a partial side cross-sectional view of the boot coupling body of FIG. **1** coupled to the boot toe body of FIG. **1**.

FIG. **10** is a partial side cross-sectional view of a boot coupling body and a boot toe body according to another embodiment.

FIG. **11** is a side view of a boot system according to another embodiment.

FIG. **12** is a side view of a boot system according to another embodiment.

FIG. **13** is a bottom view of a boot toe body according to another embodiment.

FIG. **14** is an exploded bottom perspective view of a fin system according to another embodiment.

FIG. **15** is a partial side view of a fin system according to another embodiment.

FIG. **16** is top views of fin apparatuses according to other embodiments.

FIG. **17** is a bottom view of a boot coupling body and part of a fin body according to another embodiment.

FIG. **18** is a bottom view of a boot coupling body and part of a fin body according to another embodiment.

FIG. **19** is a bottom view of a boot coupling body and part of a fin body according to another embodiment.

FIG. **20** is a bottom view of a boot coupling body and part of a fin body according to another embodiment.

FIG. **21** is a bottom view of a boot coupling body and a fin body according to another embodiment.

FIG. **22** is a side cross-sectional view of a boot coupling body according to another embodiment.

FIG. **23** is a side cross-sectional view of a boot toe body according to the embodiment of FIG. **22**.

FIG. **24** is a partial top view of the boot coupling body and the boot toe body of FIGS. **22** and **23**, with a clasp of the boot coupling body in a coupling position.

FIG. **25** is a partial top view of the boot coupling body and the boot toe body of FIGS. **22** and **23**, with the clasp of the boot coupling body in a decoupling position.

FIG. **26** is a bottom view of a fin apparatus including the boot coupling body of FIG. **22**, with a heel coupling body of the boot coupling body in a stowed position.

FIG. **27** is a side view of the fin system of FIG. **1**.

FIG. **28** is a side view of a clasp according to another embodiment.

FIG. **29** is another exploded top perspective view of the fin system of FIG. **1**.

FIG. **30** is another exploded top perspective view of the fin system of FIG. **1**.

FIG. **31** is a top perspective view of the fin apparatus and the boot toe body of the fin system of FIG. **1**.

FIG. **32** is a proximal end view of the fin apparatus of the fin system of FIG. **1**.

FIG. **33** is a distal end view of the fin apparatus of the fin system of FIG. **1**.

FIG. **34** is a top view of the fin apparatus and the boot toe body of the fin system of FIG. **1**.

FIG. **35** is a bottom view of a boot coupling body and a fin body according to another embodiment.

FIG. **36** is a bottom view of a boot coupling body and a fin body according to another embodiment.

FIG. **37** is a bottom view of a boot coupling body according to another embodiment.

FIG. **38** is a bottom view of a boot coupling body and part of a fin body according to another embodiment.

FIG. **39** is a bottom view of part of a boot coupling body according to another embodiment.

FIG. **40** is a bottom view of a boot coupling body according to another embodiment.

FIG. **41** is a bottom view of a boot, a boot coupling body, and part of a fin body according to another embodiment.

FIG. **42** is a bottom view of a boot coupling body and a fin body according to another embodiment.

FIG. **43** is an exploded top perspective view of a fin system according to another embodiment.

FIG. **44** is a side cross-sectional view of a fin frame of the fin system of FIG. **43**, taken along the line **44**–**44** shown in FIG. **43**.

FIG. **45** is an exploded bottom perspective view of a coupling body of the fin system of FIG. **43**.

FIG. **46** is a cross-sectional view of a boot coupling body including the fin frame and the coupling body of the fin system of FIG. **43**.

FIG. **47** is an exploded bottom perspective view of a coupling body according to another embodiment.

FIG. **48** is a side cross-sectional view of the coupling body of FIG. **47** and a boot toe body according to the embodiment of FIG. **47**.

FIG. **49** is a side cross-sectional view of a boot and a heel coupling portion of a boot coupling body according to another embodiment.

FIG. **50** is a side partial-cross-sectional view of a fin system according to another embodiment.

FIG. **51** is a side schematic illustration of a boot coupling body according to another embodiment.

FIG. **52** is a side schematic illustration of a boot coupling body of FIG. **51** with a boot toe body being coupled to the boot coupling body.

FIG. **53** is a side schematic illustration of the boot coupling body of FIG. **51** with the boot toe body of FIG. **52** coupled to the boot coupling body.

FIG. **54** is a side schematic illustration of the boot toe body of FIG. **52** being ejected from the boot coupling body of FIG. **51**.

FIG. **55** is a side schematic illustration of a boot coupling body according to another embodiment.

FIG. **56** is a side view of a boot toe body according to another embodiment.

FIG. **57** is a side view of a boot shell that may be coupled to the boot toe body of FIG. **56**.

FIG. **58** is a side view of a boot toe body and a boot coupling body according to another embodiment.

FIG. **59** is a side view of the boot toe body of FIG. **58** and a boot coupling body according to another embodiment.

FIG. **60** is a side view of a boot toe body and a boot coupling body according to another embodiment.

FIG. **61** is a side view of a boot toe body, a boot coupling body, and a boot shell according to another embodiment.

FIG. **62** is a side view of a boot and a boot toe body according to another embodiment.

FIG. **63** is a side view of a boot shell, a liner, and a boot toe body according to another embodiment.

FIG. **64** is a side schematic illustration of a boot coupling body according to another embodiment.

FIG. **65** is an exploded top view of a boot and a heel coupling portion of a boot coupling body according to another embodiment.

FIG. **66** is a cross-sectional side view of the boot and heel coupling portion in an uncoupled state according to the embodiment of FIG. **65**.

FIG. **67** is a cross-sectional side view of the boot and heel coupling portion in a coupled state according to the embodiment of FIG. **65**.

FIG. **68** is an exploded top perspective view of a fin system according to another embodiment.

FIG. **69** is a cross-sectional side view of the fin system of FIG. **68**.

FIG. **70** is a top view of the fin system of FIG. **68**.

FIG. **71** is a side view of a boot coupling body and heel coupling body according to another embodiment.

FIG. **72** is an unassembled side view of boot and heel coupling bodies according to another embodiment.

FIG. **73** is an assembled side view of the boot and heel coupling bodies of the embodiment of FIG. **72**.

FIG. **74** is a perspective view of a boot coupling body and heel coupling body according to another embodiment.

FIG. **75** is a perspective view of a boot according to another embodiment.

FIG. **76** is a perspective view of a fin according to another embodiment.

FIG. **77** is a side view of a boot and a boot toe body according to another embodiment.

DETAILED DESCRIPTION

Referring to FIG. **1**, a fin system according to an embodiment is shown generally at **100** and includes a fin body **102**, a boot coupling body **104**, a boot toe body **106**, and a boot **108**.

The fin body **102** has a proximal end shown generally at **110** and configured to be coupled to the boot coupling body **104** and the boot toe body **106** as described below. The fin body **102** also has a distal end shown generally at **112** opposite the proximal end **110**. The fin body **102** has a top side shown generally at **114** and a bottom side shown generally at **116**.

When a user wearing the fin body **102** walks on a surface, the bottom side **116** generally faces downward and therefore generally contacts the surface. In general, the "bottom" side herein refers to a side that faces downward and generally contacts a surface when a user walks on the surface. However, when using the fin body **102** in water, a user may face downward, so a "bottom" side of a fin herein refers to a surface that generally faces upward when in use by a swimmer facing downward. Further, a "bottom view" herein generally refers to a view of such a "bottom" side, so in the case of a fin in use, a "bottom view" herein generally refers to a view from above. Conversely, a "top" side of a fin herein refers to a surface that generally faces

downward when in use by a swimmer facing downward, and a "top view" herein generally refers to a view of such a "top" side, so in the case of a fin in use, a "top view" herein generally refers to a view from below.

The fin body **102** also defines a first through-opening shown generally at **118** and extending between the top side **114** and the bottom side **116**, and a second through-opening shown generally at **120** and extending between the top side **114** and the bottom side **116**. The fin body **102** includes a retainer **122** positioned in the through-opening **118** and extending out of the bottom side **116**. The retainer **122** defines a generally transverse through-opening shown generally at **124** to receive a fastener **126** as described below. The retainer **122** may be made from a relatively rigid thermoplastic material, for example, and the fastener **126** may be a metallic rivet, for example.

Herein, a "relatively rigid thermoplastic material" may refer to a thermoplastic material having a modulus of elasticity of about 100 megapascals (MPa) to about 500 MPa, for example. The parts described herein may be made from various materials including thermoplastic materials such as thermoplastic polyurethane, polypropylene, polyamides, thermoplastic elastomers, styrene-butadiene-styrene, styrene-ethylene-butadiene-styrene, ethylene, polyolefine, acetal resin, polyoxymethylene plastic such as DELRIN™ or DELRIN 107™, and/or combinations of two or more thereof, for example. These thermoplastic materials may also be fiber-infused, and/or include composite matrix materials including glass and/or carbon fibers, for example.

Referring to FIGS. **1** and **2**, the boot coupling body **104** is curved in a generally-semi-circular shape having a top portion shown generally at **128**, a bottom portion shown generally at **130**, and an intermediate portion shown generally at **132** and extending between the top portion **128** and the bottom portion **130**.

The intermediate portion **132** defines a receptacle shown generally at **134** open to a space between the top portion **128** and the bottom portion **130**. The receptacle **134** is sized to receive a portion of the retainer **122** as shown in FIGS. **3** and **4**. As shown in FIG. **5**, a distal side of the retainer **122** has two spaced-apart lobes, so the receptacle **134** includes two spaced-apart recesses (as shown in FIG. **2**) to receive respective lobes of the retainer **122**. The

intermediate portion **132** also defines a generally transverse through-opening shown generally at **136** and sized to receive the fastener **126**.

Still referring to FIGS. **1** and **2**, the top portion **128** defines a holder (or a holding body) **138** extending into the space between the top portion **128** and the bottom portion **130**, and the bottom portion **130** defines a clasp (or boot clasp) **140** extending into the space between the top portion **128** and the bottom portion **130**. The boot coupling body **104** is thus a unitary body having the holder **138** and the clasp **140**.

Referring to FIGS. **1**-**4**, the through-opening **118** is sized to receive a portion of the intermediate portion **132** with the top portion **128** on the top side **114** of the fin body **102**, and with the bottom portion **130** on the bottom side **116** of the fin body **102**. As shown in FIGS. **3** and **4**, the boot coupling body **104** may be positioned with the intermediate portion **132** in the through-opening **118** such that the through-opening **124** is transversely aligned with the through-opening **136** such that the fastener **126** may be received in the through-opening **124** and in the through-opening **136**. In that position, the holder **138** extends through the through-opening **120** and extends out of the bottom side **116** of the fin body **102**. The fastener **126** may couple the fin body **102** to the boot coupling body **104**, but in alternative embodiments, such a fastener may be omitted if such a fin body and boot coupling body may interlock or otherwise be coupled without such a fastener. Herein, a "fin apparatus" may refer to the assembly of the fin body **102** and the boot coupling body **104** as shown in FIGS. **3** and **4**. In other embodiments, a fin apparatus may include more or fewer parts, and may be integrally formed as a single unitary body.

Referring to FIGS. **1** and **5**, the boot toe body **106** is curved and has a top portion shown generally at **142**, a bottom portion shown generally at **144**, and an intermediate portion shown generally at **146** between the top portion **142** and the bottom portion **144**. The top portion **142** defines a receptacle shown generally at **148** and open to a top side of the boot toe body **106**, and the bottom portion **144** defines a receptacle shown generally at **150** and open to a bottom side of the boot toe body **106**. On a front end shown generally at **152**, the intermediate portion **146** defines a recess shown generally at **154** and extending between the top and bottom sides of the boot toe body **106**. The recess **154** defines a front surface **155** that is complementary to a

retaining surface **156** on the retainer **122** so that the recess **154** may receive a portion of the retainer **122** when the retaining surface **156** contacts the front surface **155**.

Referring to FIG. **6**, the holder **138** defines a retaining surface **158** complementary to a retaining surface **160** in the receptacle **148**. Further, the clasp **140** defines a retaining surface **162** complementary to a retaining surface **164** in the receptacle **150**. Absent any external forces, the intermediate portion **132** is curved such that a curved inner surface of the intermediate portion **132** (facing into the space between the top portion **128** and the bottom portion **130**) has a curvature that is greater than a curvature of a complementary outer surface on the front end **152** of the boot toe body **106**. However, the boot coupling body **104** is resiliently deformable, and as described below, coupling the boot toe body **106** involves resiliently deforming the boot coupling body **104** such that the curvature of the curved inner surface of the intermediate portion **132** decreases to a curvature closer to the curvature of the complementary outer surface on the front end **152** of the boot toe body **106**, and such that a separation distance between the holder **138** and the clasp **140** increases.

Referring to FIG. **7**, the front end **152** of the boot toe body **106** may be received in the space between the top portion **128** and the bottom portion **130** with the holder **138** received in the receptacle **148** such that the retaining surface **158** contacts the retaining surface **160**. When the retaining surface **158** contacts the retaining surface **160**, the boot toe body **106** is pivotable relative to the boot coupling body **104**, and the boot coupling body **104** is pivotable relative to the boot toe body **106**, about a generally transverse axis defined by the point of contact of the retaining surface **158** on the retaining surface **160**. If the boot toe body **106** is pivoted about that axis of rotation in the direction of the arrow **166**, or if the boot coupling body **104** is rotated about that axis of rotation in the direction of the arrow **168**, or both, then the clasp **140** and the retaining surface **162** approach the receptacle **150** by moving in the direction of the arrow **170**.

FIG. **8** illustrates the clasp **140** closer to the receptacle **150**, having moved in the direction of the arrow **170** relative to the position shown in FIG. **7**. The boot coupling body **104** is more resiliently deformable than the boot toe body **106**. Therefore, as the clasp **140** moves from the position shown in FIG. **7** closer to the receptacle **150** as shown in FIG. **8**, the boot coupling body **104** is resiliently deformed such that the curvature of the curved inner surface of the intermediate portion **132** decreases to a curvature closer to the curvature of the

complementary outer surface on the front end **152** of the boot toe body **106**, and such that the separation distance between the holder **138** and the clasp **140** increases.

Because the boot coupling body **104** has been resiliently deformed to increase the separation distance between the holder **138** and the clasp **140**, the boot coupling body **104** resiliently urges the clasp **140** in a direction generally towards the holder **138**. Therefore, as shown in FIG. **9**, when the retaining surface **162** moves in the direction of the arrow **170** past the retaining surface **164**, the receptacle **150** receives the clasp **140** with the retaining surface **162** in contact with the retaining surface **164**. The retaining surfaces **158**, **160**, **162**, and **164** are positioned to retain the holder **138** and the clasp **140** against movement in a direction towards the fin body **102**, and the clasp **140** is thus connected to the boot toe body **106** at the receptacle **150**, while simultaneously the holder **138** is connected to the boot toe body **106** at the receptacle **148** with the retaining surface **158** in contact with the retaining surface **160**. In various embodiments, a "receptacle" need not be a recess, but may include other structures that define at least one retaining surface to function as a connector.

The holder **138**, the clasp **140**, the receptacle **148**, and the receptacle **150** thus function as connectors (or as boot connectors). The holder **138** and the receptacle **148** are first complementary connectors (or boot connectors), and the clasp **140** and the receptacle **150** are second complementary connectors (or boot connectors). When the holder **138** is connected to the boot toe body **106** at the receptacle **148** and when the clasp **140** is connected to the boot toe body **106** at the receptacle **150**, the front surface **155** in the recess **154** contacts the retaining surface **156** of the retainer **122**, and the holder **138** and the clasp **140** are positioned to position the front surface **155** against the retaining surface **156**. Although the boot toe body **106** resiliently deforms the boot coupling body **104**, the retainer **122** is more rigid and is not significantly resiliently deformed by the boot toe body **106**, so the boot toe body **106** may be firmly retained against the retainer **122**. The holder **138**, the clasp **140**, and the retainer **122** thus cooperate to retain the boot toe body **106** against moving relative to the boot coupling body **104** to couple the boot toe body **106** to the boot coupling body **104**. Further, because the front surface **155** is complementary to the retaining surface **156**, the retainer cooperates with the front end **152** of the boot toe body **106** to align the boot toe body **106** to the boot coupling body **104** and inhibit lateral and rotational movement of the boot toe body **106** relative to the boot

coupling body **104**. In summary, the boot coupling body **104** and the boot toe body **106** may cooperate to align the boot toe body **106** automatically to the boot coupling body **104**, which may facilitate coupling the boot toe body **106** to the boot coupling body **104**.

The embodiment shown in FIGS. **1-9** may facilitate a simple and intuitive method of coupling and decoupling a fin apparatus to a boot because a user may couple a fin apparatus to a boot by "stepping in" to the boot coupling body **104** of a fin apparatus with one hand or no hands at all.

In some embodiments, the boot coupling body may be permanently coupled to the boot toe body as shown in FIG. **9**. However, in other embodiments, the boot coupling body may be decoupleable from the boot toe body.

Referring to FIG. **10**, a fin system according to another embodiment is shown generally at **172** and includes a fin body **174**, a boot coupling body **176**, and a boot toe body **178**. The fin body **174** is substantially the same as the fin body **102**, and the boot toe body **178** is substantially the same as the boot toe body **106**. The boot coupling body **176** is substantially the same as the boot coupling body **104**, and includes a clasp (or boot clasp) **180** that is substantially the same as the clasp **140**, except that the boot coupling body **176** includes a rigid lever **182** coupled to the clasp **180** and extending posterior to the clasp **180**. Moving the lever **182** in the direction **184** away from the boot toe body **178** transfers a force from the lever **182** to the clasp **180** to release or decouple the boot coupling body **176** (and thus the fin body **174** coupled to the boot coupling body **176**) from the boot toe body **178** because a portion of the boot coupling body **176** anterior of the clasp **180** is flexible enough to allow the clasp **180** to exit from a receptacle or connector of the boot toe body **178** in response to the force from the lever **182** away from the boot toe body **178**. The lever **182** may include a safety lock (not shown) to prevent accidental release. For example, FIG. **41** illustrates a rigid lever **292** including a safety lock **294**. Also, FIG. **42** illustrates a rigid lever **296** according to another embodiment, in which the lever **296** includes a heel coupling body as described below.

As shown in FIG. **5**, the boot toe body **106** may be coupled to the boot **108**. For example, the boot toe body **106** may be formed by injection molding, and the boot **108** may be made of a material such as neoprene and sewn, adhered, or otherwise fastened to the boot toe body **106**. Alternatively, the boot toe body **106** and the boot **108** may be integrally formed by

multi-stage injection molding, for example. In some embodiments, a boot toe body may extend to locations well beyond a toe region (as shown in FIG. **13**, for example) and may include, for example, some or all of an entire boot.

In general, boot toe bodies described herein may be molded into or otherwise formed in one or a small number of sizes, and then coupled to boots of varying sizes and materials. Therefore, one or a small number of sizes of boot toe bodies may be manufactured to facilitate coupling to fin apparatuses such as the fin apparatuses described herein. Manufacturing boot toe bodies in one or a small number of sizes may reduce manufacturing costs when compared to other boot binding systems because the one or small number of sizes of boot toe bodies may be coupled to a large variety of different boots. For example, boots may be manufactured by a number of manufacturers in a large number of varieties that may vary by foot size and shape, by material, by ankle support, and in many other ways without requiring separate tools or injection molds to manufacture different toe boot bodies for each variety of boot. For example, the boot toe body **106** may be coupled to a low-ankle boot **188** as shown in FIG. **11**, or to a high-ankle boot **190** as shown in FIG. **12**. Further, referring to FIG. **14**, the boot toe body **106** may be coupled to a boot shell **192**, and the boot shell **192** may be configured to receive and couple to a boot **194**.

Further, boots described herein may, for example, be similar to boots that were described and illustrated in United States provisional patent application no. 61/322,104 filed on April 8, 2010, or that were described and illustrated in United States patent application no. 13/639,446.

Referring to FIG. **15**, another embodiment includes a boot toe body **196** that is similar to the boot toe body **106**, except that the boot toe body **196** is configured to be attachably and detachably coupled to a boot **198**. For example, the boot toe body **196** may include a height adjustment mechanism **200** to adjust a height of a receptacle of the boot toe body **196** to fit a particular boot **198**. The boot toe body **196** may also include a heel coupling body **202** having a third connector (or third boot connector) configured to be coupled to a heel region shown generally at **204** of the boot **198**. The heel coupling body **202** may be adjustable in length to accommodate different lengths and sizes of the boot **198**, thus adjusting a separation distance

between the first and second connectors and the third connector. The boot toe body **196** may facilitate coupling a fin apparatus to a dry suit or to a user's preferred boot, for example.

Further, boots and boot toe bodies as described herein may include sole bodies such as the sole bodies described and illustrated in PCT international application no. PCT/CA2012/000946. Further, "boot" herein is not limited to any particular footwear, and may include shoes and other footwear, and also prosthetic limbs for example. FIG. **40** illustrates a boot toe body according to another embodiment, in which a hinge **290** permits greater flexibility between a toe portion and a heel portion of the boot toe body.

Further, fin apparatuses may vary in many ways, such as in length, in width, in shape, in material, and in flexibility, for example. Fin apparatuses described herein may, for example, be similar to fin apparatuses (or "flippers") that were described and illustrated in United States provisional patent application no. 61/322,104, or that were described and illustrated in United States patent application no. 13/639,446. FIG. **16** illustrates fin apparatuses **206**, **208**, **210**, **212**, and **214** according to other embodiments.

Referring to FIG. **17**, another embodiment includes a boot coupling body **216** that is similar to the boot coupling bodies described herein, but includes a heel coupling body **218**. The heel coupling body **218** includes lateral posts **220** and **222**, which are configured to be attached to a coil spring strap (not shown) for extending between the lateral posts **220** and **222** and behind a heel region of a boot, such as the heel region **204** of the boot **198** or a heel region shown generally at **224** of the boot **108**.

Referring to FIG. **18**, another embodiment includes a boot coupling body **226**, which is similar to the boot coupling bodies described herein, but includes a heel coupling body **228**. The heel coupling body **228** has a loop shape with a posterior portion shown generally at **230**. At the posterior portion **230**, the heel coupling body **228** includes a connector (or boot connector) **232** that can be received in a receptacle on a heel end of a boot, such as the receptacle **1050** shown in FIG. **37** of PCT international application no. PCT/CA2011/000395 for example. The loop of the heel coupling body **228** may be resiliently deformable to stretch the posterior portion **230** around a heel portion of a boot, and the loop portion of the heel coupling body **228** may be adjustable in length.

FIGS. **19** to **21** and **35** to **39** illustrate length adjustment in other embodiments. FIG. **19** illustrates a boot coupling body having a resiliently extendable heel coupling body **236**. FIGS. **35** to **39** also illustrate boot coupling bodies having resiliently extendable heel coupling bodies. FIG. **20** illustrates a boot coupling body **238** having a heel coupling body **240** that is adjustable in length by positioning a connector **242** in different holes **244**, **246**, and **248** of the boot coupling body **238**. FIGS. **35**, **36**, **37**, and **39** also illustrate boot coupling bodies having heel coupling bodies that are adjustable in length. FIG. **21** illustrates an exchangeable semi-rigid heel coupling body **250**.

Referring to FIG. **22**, a boot coupling body according to another embodiment is shown generally at **252** and is similar to the boot coupling bodies described above. The boot coupling body **252** has a top side shown generally at **254** and a bottom side shown generally at **256**. The boot coupling body **252** also has a clasp (or boot clasp) **258** that is coupled to the boot coupling body **252** by a generally cylindrical fastener **260** that is coupled to the boot coupling body **252** to rotate around an axis of rotation **262** extending between the top side **254** and the bottom side **256** of the boot coupling body **252**. The clasp **258** is thus coupled to the boot coupling body **252** for rotation around the axis of rotation **262**. The boot coupling body **252** also includes a heel coupling body **264** including a connector (or boot connector) **266** connectable to a heel end of a boot. The heel coupling body **264** is also coupled to the fastener **260** for rotation about the axis of rotation **262**. Therefore, rotation of the heel coupling body **264** about the axis of rotation **262** transfers a torque to the fastener **260** and to the clasp **258**, thereby rotating the clasp **258** about the axis of rotation **262** in response to rotation of the heel coupling body **264** around the axis of rotation **262**. The clasp **258** defines a retainer **268** having a retaining surface **270** facing towards the bottom side **256** of the boot coupling body **252**.

Referring to FIG. **23**, a boot toe body **272** according to the embodiment of FIG. **22** is similar to the boot toe bodies described above and has a top side shown generally at **274** and a bottom side shown generally at **276**. On the bottom side **276**, the boot toe body **272** defines a receptacle **278** defining a retaining surface **280** facing the top side **274** of the boot toe body **272**.

Referring to FIGS. **24** and **25**, when the clasp **258** is rotated about the axis of rotation **262** such that the retainer **268** is above the retaining surface **280**, the retaining surface **270** contacts the retaining surface **280** to retain the clasp **258** in the receptacle **278**, and the clasp

258 thus functions as a connector (or as a boot connector) to connect the boot coupling body **252** to the boot toe body **272**, and the clasp **258** and the receptacle **278** are thus complementary connectors (or boot connectors). However, when the clasp **258** is rotated about the axis of rotation **262** such that the retainer **268** is no longer positioned over the retaining surface **280**, then the clasp **258** no longer connects the boot coupling body **252** to the boot toe body **272** at the receptacle **278**, and the boot coupling body **252** is thus decoupled from the boot toe body **272**.

In some embodiments, the clasp **258** may be made of a material such as polytetrafluoroetheylene (or TEFLON™), or may include an insert of such material, to reduce friction and facilitate sliding on the retaining surface **280**. FIG. **28** illustrates a clasp (or boot clasp) shown generally at **286** according to another embodiment. The clasp **286** includes a roller (or reel) **288** to facilitate snapping over the retaining surface **280**. The roller **288** may also be made of a material such as polytetrafluoroetheylene (or TEFLON™), or may include an insert of such material, to reduce friction and facilitate sliding on the retaining surface **280**. The roller **288** may also have an elliptical cross-sectional shape to facilitate snapping over the retaining surface **280**, for example to facilitate snapping a fin apparatus into a boot toe body when the clasp **286** is in a coupling position (similar to the position shown in FIG. **24**) or a partial coupling position (between positions similar to the positions shown in FIGS. **24** and **25**), for example for snapping in when in use in water. Referring to FIG. **26**, the heel coupling body **264** may be rotated into a stowed position towards a distal end of the fin to facilitate storing or transporting the fin apparatus. FIGS. **35** to **39** illustrate other embodiments including rotatable clasps coupled to heel coupling bodies.

The embodiment of FIGS. **22**-**26** may facilitate a simple and intuitive method of coupling and decoupling a fin apparatus to a boot because a user may couple a fin apparatus to a boot, with only one hand and in a single action, by rotating the heel coupling body **264** to a position where the heel coupling body **264** is connected to a heel portion of the boot, and the user may decouple the fin apparatus from the boot, again with only one hand and in a single action, by rotating the heel coupling body **264** to a position where the heel coupling body **264** is disconnected to a heel portion of the boot. The heel coupling body **264** may include a safety lock (not shown) to prevent accidental release.

Referring to FIG. **27**, the fin system of FIG. **1** is shown assembled, and a top surface **282** of the fin body **102** is generally coplanar with a top surface **284** of the boot toe body **106**. As indicated above, a swimmer using fin systems, such as the fin systems described above, often faces downward when swimming, so that the top surface **282** and the top surface **284** face generally downward when in use. Also, a swimmer's strongest kick is often a downward kick, so a swimmer's propulsion often depends largely on forceful downward kicks. During downward kicks, water flows over the top surface **284** and the top surface **282**, and in some embodiments, positioning the top surface **282** generally coplanar with the top surface **284** may enable more laminar and efficient flow of water from the top surface **284** to the top surface **282** during such downward kicks. Therefore, positioning the fin body **102** with the top surface **282** generally coplanar with the top surface **284**, as shown in the embodiments described above, may permit more efficient fluid flow than when compared to other fin systems.

Referring to FIG. **43**, a fin system according to another embodiment is shown generally at **300** and includes a boot coupling body shown generally at **302**. The boot coupling body **302** includes a coupling body **304** and a fin frame **306**. The fin system **300** also includes a boot toe body **308** attachable to a boot (not shown). The fin frame **306** may be integrally, permanently, detachably, or non-detachably coupled to a fin body **307**, and when the fin frame **306** is coupled to the fin body **307**, the fin frame **306** and the fin body **307** may together function substantially the same as other fin bodies described above, such as the fin body **102** or the fin bodies shown in FIGS. **16**, **21**, **26**, **35**, **36**, and **42** for example. Still further, other fin bodies described above, such as the fin body **102** or the fin bodies shown in FIGS. **16**, **21**, **26**, **35**, **36**, and **42** for example, may be understood to include a fin frame (similar to the fin frame **306**, for example) detachably or non-detachably coupled to a fin body (similar to the fin body **307**, for example), and boot coupling bodies such as those described herein may be detachably coupled to such fin frames.

The fin frame **306** has a top side shown generally at **312**, a bottom side shown generally at **314**, a proximal end shown generally at **316**, distal ends shown generally at **318** and **320**, and a retaining member (or fin retaining member) **322** extending longitudinally away from the proximal end **316** and laterally centered between the two distal ends **318** and **320**. The retaining member **322** also rises out from the top side **312** of the fin frame before curving in a generally

semi-circular shape towards the proximal end **316**. The retaining member **322** includes a top portion **324** and an intermediate portion **326**. The top portion **324** of the retaining member **322** defines a retaining surface (or fin retaining surface) **328**. The retaining member **322** is resiliently deformable such that exerting a downward force on the top portion **324** will reduce the space between the top portion **324** and the top side **312** of the fin frame **306**.

Referring to FIGS. **43** and **44**, the fin frame **306** also includes a holder (or a holding body) **330** extending downward into a space from the bottom side **314** of the proximal end **316** of the fin frame **306**. The holder **330** defines a retaining surface **332** complementary to a retaining surface **334** defined on the boot toe body **308**. The fin frame **306** also defines an adjustable retaining surface **336** sized to be received in a corresponding recess **337** on the boot toe body **308**. A position of the adjustable retaining surface **336** can be adjusted so as to adjust an amount by which the adjustable retaining surface **336** extends away from the remainder of the fin frame **306**. In the embodiment shown, the position of the adjustable retaining surface **336** is adjusted using adjustment means including a threaded member **338** running through the center of the fin frame **306**. Around the adjustable retaining surface **336** and below the holder **330**, the fin frame **306** defines tapered surfaces so that when the boot toe body **308** approaches the fin frame **306**, the fin frame **306** may automatically be centered or aligned relative to the boot toe body **308**, which may facilitate coupling the boot toe body **308** to the boot coupling body **302** in a hands-free motion by "stepping in" as described below.

The coupling body **304** is similar to the boot coupling body **252** shown in FIG. **22**, being curved in a generally-semi-circular shape having a top portion **340**, a bottom portion **342**, and an intermediate portion **344** extending between the top portion **340** and the bottom portion **342**, and a clasp (or boot clasp) **346** on the bottom portion. The intermediate portion **344** defines a through-hole **348** sized to receive the retaining member **322** of the fin frame **306**. The through-hole **348** defines a retaining surface (or fin retaining surface) **350** complementary to the retaining surface **328** of the retaining member **322** such that when the retaining member **322** is received in the through-hole **348** of the coupling body **304**, the retaining surfaces **350** and **328** act as connectors (or as boot connectors) to couple the fin frame **306** to the coupling body **304**. Further, the retaining surfaces **350** and **328** may be separated from each other to allow the retaining member **322** to be removed from the through-hole **348** to detach the fin frame **306**

from the coupling body **304**. The boot coupling body **302** of the embodiment shown may thus include the fin frame **306** coupled (or detachably couplable) to the coupling body **304**.

Referring to FIG. **45**, the clasp **346** of the coupling body **304** is coupled to a support body **354** with a cylindrical fastener **353** to permit the clasp **346** to rotate relative to the support body **354**. The support body **354** is coupled to the bottom portion **342** and to the coupling body **304** with a fastener **352** such that the bottom portion **342**, and thus the support body **354** and the clasp **346**, can rotate about an axis of rotation **355** defined by the fastener **352**. The support body **354** is resiliently deformable to allow the clasp **346** to move resiliently away from a resting position in a downward direction. The boot coupling body **302** is thus resiliently deformable (at least by resilient deformation of the support body **354**, which also functions as a spring) to vary a separation distance between the holder **330** and the clasp **346**. Clasp **346** is sized to be received by the retaining surface **356** of the boot toe body **308**.

The coupling body **304** also has an aligning member shown generally at **358**, which is rotationally coupled to the support body **354** such that rotation of the aligning member **358** around the axis of rotation **355** causes similar rotation of the support body **354** around the axis of rotation **355**. The aligning member **358** therefore facilitates causing rotation of the clasp **346** around the axis of rotation **355**. The aligning member **358** also defines a curved retaining surface **360** and which extends longitudinally beyond the clasp **346** and is sized to be received by a longitudinal recess in the sole of a boot or a boot toe body such as boot toe body **308** (as shown in FIG. **13**, for example). In some embodiments, the aligning member **358** may be replaced by rigid lever **182** in FIG. **10** or a heel coupling body such as heel coupling body **202** in FIG. **15** or any of the heel coupling bodies shown in FIGS. **17**-**22**. In embodiments including a heel coupling body, the heel coupling body may also be rotatably coupled to the clasp **346** for rotation around the axis of rotation **355**, and thus when the heel coupling body is coupled to a connector (or boot connector) on a heel of a boot, the heel coupling body may prevent movement of the clasp **346**, which may prevent release of the clasp **346** from the retaining surface **356** and thus prevent release of the boot coupling body **302** from the boot toe body **308**.

When the boot coupling body **302** is assembled with the fin frame **306** coupled to the coupling body **304** with the retaining member **322** received in the through-hole **348** as shown in FIG. **46**, a user, wearing a boot including or coupled to the boot toe body **308**, can connect a

connector or boot connector (the retaining surface **332**) to a complementary connector or complementary boot connector (the retaining surface **334** shown in FIG. **43**) and then exert a force downward onto the clasp **346**, causing resilient deformation of the support body **354** as the clasp **346** moves resiliently downward until the clasp **346** rolls over the edge of retaining surface **356** and "snaps" into place against the clasp **346** as the support body **354** resiliently urges the clasp **346** upward again, thereby connecting the clasp **346** to the retaining surface **356**. The clasp **346** is thus a roller, and the boot toe body **308** may thus be coupled to the boot coupling body **302** in a hands-free motion by "stepping in" to the boot coupling body **302**.

Alternatively, the user, wearing a boot including or coupled to the boot toe body **308**, can connect a connector or boot connector (the retaining surface **332**) to a complementary connector or complementary boot connector (the retaining surface **334** shown in FIG. **43**) when the clasp **346** is rotated about the axis of rotation **355** into a position in which the clasp **346** can approach the retaining surface **356** without contacting the retaining surface **356**, and then the clasp **346** may be rotated about the axis of rotation **355** into a position in which the clasp **346** is connected to the retaining surface **356**. As shown in FIG. **46**, the axis of rotation **355** has an angle that is inclined on the top side away from the fin frame **306** and on the bottom side towards the fin frame **306**, and such an angle causes the clasp **346** to move downward (and thus in a direction away from a top side and into contact with the retaining surface **356**) when the clasp **346** is rotated about the axis of rotation **355** in a direction that causes the clasp **346** to be connected to the retaining surface **356**.

Either way, once the clasp **346** is connected to the retaining surface **356**, the boot toe body **308** is coupled to the boot coupling body **302**, and the adjustable retaining surface **336** will be received against a retaining surface in the recess **337**, the retaining surface **332** of holder **330** will be received against the retaining surface **334**, and the clasp **346** will be received against retaining the surface **356**, effectively locking the boot toe body **308** to the boot coupling body **302**. Further, the curved retaining surface **360** may be received by a longitudinal recess in the sole of a boot or a boot toe body such as boot toe body **308** (as shown in FIG. **13**, for example) when the clasp **346** has "snapped" into place against retaining surface **356**.

The embodiment of FIGS. **43-46** may facilitate a simple and intuitive method of coupling and decoupling a fin apparatus to a boot because a user may couple a fin apparatus to

a boot including or coupled to a boot toe body by engaging the holder against the retaining surface of the boot toe body, aligning the boot with the boot coupling body by rotating the aligning member such that the boot coupling body is aligned centrally with the boot toe body, and then pivoting the boot toe body relative to the boot coupling body about the generally transverse axis of rotation to cause the clasp and coupling to resiliently deform in the downward direction, causing it to approach the corresponding retaining surface of the boot toe body, until it "snaps" into position against the corresponding retaining surface of the boot toe body. Alternatively, the user may engage the holder against the retaining member **322** of the boot toe body when the clasp is rotated into a position in which the clasp can approach the retaining surface **356** without contacting the retaining surface **356**, and then the clasp may be rotated into a position in which the clasp is connected to the retaining surface **356**. Either way, the fin apparatus may be coupled to the boot until the clasp is rotated into a position in which the clasp may be separated from the retaining surface **356** to decouple the boot toe body **308** from the boot coupling body **302**. As shown in FIG. **46**, the axis of rotation **355** has an angle that is inclined on the top side away from the fin frame **306** and on the bottom side towards the fin frame **306**, and such an angle causes the clasp **346** to move upward (and thus in a direction towards a top side and out of contact with the retaining surface **356**) when the clasp **346** is rotated about the axis of rotation **355** in a direction that causes the clasp **346** to be separated from the retaining surface **356**.

Referring to FIGS. **47** and **48**, a fin apparatus **400** according to another embodiment includes a boot coupling body shown generally at **402**. The fin apparatus **400** also includes a boot toe body **404** integral to or permanently coupled to the boot **406**. In alternative embodiments, the boot toe body **404** may be removably coupled to the boot **406**. The boot coupling body **402** includes a coupling body **408** and a fin frame **410**. In some embodiments, a fin body (not shown) can be integrally or permanently coupled to the fin frame **410**. In other embodiments, a fin body can be removably coupled to the fin frame **410**.

In the embodiment shown, the fin frame **410** may be removably coupled to the coupling body **408** to form the boot coupling body **402**. In some embodiments, the fin frame **410** may be removably coupled to coupling body **408** using two corresponding retaining surfaces on each of

the fin frame **410** and coupling body **408**, such as the method described in reference to FIGS. **43-46**.

Fin frame **410** defines a holder (or a holding body) **430** defining a retaining surface **431**, which may be sized to be received against a retaining surface **432** when the boot coupling body **402** is coupled to boot toe body **404**.

The coupling body **408** is similar to the boot coupling body **252** described in FIG. **22**, being curved in a generally semi-circular shape having a top portion shown generally at **412**, a bottom portion **414**, and an intermediate portion **416** extending between the top portion **412** and the bottom portion **414**, and a clasp (or boot clasp) **418** affixed to the bottom portion **414** with a fastener **420**. Fastener **420** affixes the clasp **418** by extending laterally through slot **436** and permits rotation of the clasp **418** relative to the bottom portion **414**, so the clasp **418** is also a roller. Slot **436** is elongated in a generally vertical orientation, thereby allowing the fastener **420** (and therefore the clasp **418**) to move vertically up and down within the slot **436**. Clasp **418** can be similar to the clasp **286** shown in FIG. **28**.

The bottom portion **414** of the coupling body **408** may extend longitudinally away from the front of the boot **406**, and may include a rigid lever such as rigid lever **182** in FIG. **10** or a heel coupling body such as heel coupling body **202** in FIG. **15** or any of the heel coupling bodies recited in FIGS. **17-22**. The bottom portion **414** of boot coupling body **408** may be sized to be received in a longitudinal recess, which may be in the sole of boot **406** or on the bottom side of boot toe body **404** (not shown).

The intermediate portion **416** of the coupling body **408** defines a rotational interface **424** about which either the top portion **412** or bottom portion **414** of coupling body **408** may rotate. Fastener **426** acts as a rotational pivot about which such rotation takes place, and also couples together the top portion **412** and bottom portion **414** of the coupling body **408**. Rotation of the coupling body **408** when coupled to the fin frame **410** may provide an advantage in storage and protection for the fin apparatus **400** while in transit or while not in use because the bottom portion **414** of coupling body **408** can rotate around so as to be parallel with fin frame **410**, thereby reducing the size of the overall apparatus and protecting the bottom portion **414** (which may include a long longitudinal extension such as a heel coupling body or rigid lever).

In the embodiment shown, the clasp **418** is positioned above but not attached to a spring **422**, which is made of a resiliently deformable material. Spring **422** is fixed within the bottom portion **414** of the coupling body **408** using fasteners **426** and **428**. Clasp **418** will move downward against spring **422** when a downward force is applied to clasp **418**. Because spring **422** is resiliently deformable, clasp **418** will return to its original position upon removal of any downward force acting upon it. The boot coupling body **402** is thus resiliently deformable (at least by resilient deformation of the spring **422**) to vary a separation distance between the holder **430** and the clasp **418**.

The boot toe body **404** defines a retaining surface **432** sized to receive the holder **430**. The boot toe body **404** also defines a retaining surface **434** on the bottom side of the boot toe body. The retaining surface **434** is sized to receive the clasp **418** of the coupling body **408** upon coupling the boot coupling body **402** to boot toe body **404**.

The embodiment shown may facilitate a simple and intuitive method of coupling and decoupling a fin apparatus including at least boot coupling body **402** and boot toe body **404**. A user may couple boot coupling body **402** to a boot including a boot toe body **404** by engaging the holder **430** against the retaining surface **432** of the boot toe body **404**, aligning the boot toe body **404** with the boot coupling body **402** by rotating the bottom portion **414** around the axis of rotation defined by fastener **426** such that the clasp **418** is aligned with retaining surface **434** of the boot toe body **404**, and then pivoting the boot toe body **404** relative to the boot coupling body **402** about a generally transverse axis of rotation formed between the top portion **412** and bottom portion **414** of the coupling body **408** so as to cause the boot toe body **404** to exert a downward force on clasp. The downward force on clasp **418** causes it to move in the downward direction due to the corresponding resilient deformation of spring **422**. As the boot toe body **404** further deforms the spring **422**, clasp **418** approaches the corresponding retaining surface **434** of the boot toe body **404** until it "snaps" into position against the corresponding retaining surface **434**. Alternatively, the user may engage the holder against the retaining surface **432** of the boot toe body when the clasp is rotated into a position in which the clasp can approach the retaining surface **434** without contacting the retaining surface **434**, and then the clasp may be rotated into a position in which the clasp is connected to the retaining surface **434**. Either way,

the fin apparatus may be coupled to the boot until the clasp is rotated into a position in which the clasp may be separated from the retaining surface **434**.

FIG. **64** illustrates a boot coupling body according to another embodiment. The boot coupling body of FIG. **64** is similar to the boot coupling body **402** shown in FIGS. **47** and **48**, and includes a clasp, boot clasp, or roller **722** that is detached from and can move relative to a spring **724** in a recessed region defined by the spring **724**. Springs such as the spring **724** may be thermoplastic leaf springs or other types of springs that may be made from other materials.

Referring to FIG. **49**, another embodiment of a boot coupling body **600** is similar to the boot coupling body **402** shown in FIGS. **47** and **48**. Boot coupling body **600** includes a coupling body shown generally at **602** and a fin frame **604**. In some embodiments, a fin body (not shown) can be integrally or permanently coupled to the fin frame **604**. In other embodiments, a fin body can be removably coupled to the fin frame **604**.

In the embodiment shown, the fin frame **604** may be removably coupled to the coupling body **602** to form boot coupling body **600**. In some embodiments the fin frame **604** may be removably coupled to coupling body **602** using two corresponding retaining surfaces on each of the fin frame **604** and coupling body **602**, such as the method described in reference to FIGS. **43-46**.

Fin frame **604** defines a holder (or a holding body) **606** including a retaining surface **608**, which may be sized to be received against a corresponding retaining surface on a boot toe body in a way similar to that described in reference to FIGS. **47** and **48**.

The coupling body **602** is similar to coupling body **408** shown in FIGS. **47** and **48**, being curved in a generally-semi-circular shape having a top portion shown generally at **610**, a bottom portion shown generally at **612**, and an intermediate portion shown generally at **614** extending between the top portion **610** and the bottom portion **612**.

The bottom portion **612** of the coupling body **602** may extend longitudinally away from the front of the fin frame **604**, and may include a rigid lever such as the rigid lever **182** in FIG. **10** or a heel coupling body such as the heel coupling body **202** in FIG. **15** or any of the heel coupling bodies recited in FIGS. **17-22**.

The intermediate portion **614** of coupling body **602** defines a rotational interface **616** about which either the top portion **610** or bottom portion **612** of coupling body **602** may rotate.

Fastener **618** acts as a rotational pivot about which said rotation takes place, and also couples together the top portion **610** and bottom portion **612**. Rotation of the coupling body **602** when coupled to the fin frame **604** may provide the same advantage to a fin apparatus including this embodiment as the advantage described in reference to FIGS. **47** and **48**.

In the embodiment shown, the spring **620** is fixed within the bottom portion **612** of the coupling body **602** with fasteners **618** and **622**. Spring **620** is similar to spring **422** shown in FIGS. **47** and **48**, being made of a resiliently deformable material. However, in the embodiment shown, the spring **620** defines an integral hook (or clasp or boot clasp) **624** consisting of or comprising the same resiliently deformable material as the spring **620**. In the embodiment shown, the hook **624** and the spring **620** are part of a single body, which may be produced as a single piece using injection molding techniques, for example. Hook **624** may function in substantially the same way as clasp **418** shown in FIGS. **47** and **48**, in that it may resiliently deform in a downward direction along with spring **620** when a downward force is applied to the top of hook **624**. Because both spring **620** and hook **624** are resiliently deformable, hook **624** may return to its original position upon removal of any downward force acting upon it.

The embodiment shown may facilitate an equivalently simple and intuitive method of coupling and decoupling a fin apparatus including at least boot coupling body **600** to a boot toe body (not shown) similar to the method described in reference to FIGS. **47** and **48**. Substituting clasp **418** with the integral hook **624** may provide an advantage to both durability and longevity of coupling body **600**. The embodiment shown may also provide an advantage during production and manufacturing of coupling body **602**.

Referring to FIG. **50**, an embodiment of a heel coupling body **502** is shown. Heel coupling body **502** can be an extension of the bottom portion **504** of a boot coupling body described in previous embodiments (not shown), and is designed to couple detachably to a heel portion **506** of boot **508**. The boot **508** is not necessarily a complete boot, but may in various embodiments be an open-heel body for receiving a boot or for receiving a foot or prosthetic limb, for example. Heel coupling body **502** includes a retaining surface **509** sized to be received against a corresponding retaining surface **510**.

Heel coupling body **502** also defines a lever mechanism shown generally at **512** and including a lever **514**, a wedge **516** and an actuator **518**. When the retaining surface **509** is

received against the corresponding retaining surface **510**, the actuator **518** contacts a surface **524** of the boot **508**, which causes rotation of the lever mechanism **512** about a fastener **522** in a direction that urges the wedge **516** into a position against a lock **520** that urges the retaining surface **509** against the retaining surface **510** such that the heel coupling body **502** is essentially "locked" in place against the heel portion **506** of boot **508**. A user operating the embodiment shown can "unlock" the heel coupling body **502** from the boot **508** by rotating the lever **514** around the fastener **522** in a generally rearwards direction. In doing so, the wedge **516** is removed from contact with the lock **520** and ceases to urge the retaining surface **509** against the retaining surface **510**, and the actuator **518** exerts a force against the surface **524**, which urges the retaining surface **509** rearwardly away from the retaining surface **510** to move the heel coupling body **502** backwards and out of the "locked" position against the heel portion **506** of the boot **508**.

Referring to FIG. **51**, a boot coupling body according to another embodiment is shown generally at **628** and includes a toe coupling region shown generally at **630** and substantially the same as the coupling body **408** and the fin frame **410** shown in FIGS. **47** and **48**. The boot coupling body **628** also includes a heel coupling body shown generally at **632** that is similar to the heel coupling body **502** shown in FIG. **50**, except that the heel coupling body **632** defines recesses shown generally at **634**, **636**, and **638** to receive a wedge **640** in three positions defined by each of the recesses **634**, **636**, and **638**. A lever **642** and actuator **644** may move the wedge **640** in substantially the same way as the lever **514** and the actuator **518** respectively as described above with reference to FIG. **50**, but the wedge **640** is resiliently urged into the recesses **634**, **636**, and **638**, so the wedge more-naturally rests in one of the three positions defined by the recesses **634**, **636**, and **638**.

As shown in FIG. **52**, the lever **642** may be moved to position the wedge **640** in the recess **634** to move the wedge **640** into a position to be coupled to a heel region of a boot toe body **646**. Then, as shown in FIG. **53**, a user may step into the boot coupling body **628** and in doing so transfer a force from a bottom surface of the boot toe body **646** to the actuator **644**, which (as described above with reference to FIG. **50**) may urge the wedge into the position defined by the recess **638** and lock the heel coupling body **632** to a heel region of the boot toe body **646**. Therefore, in various embodiments such as those described herein, connections to a

heel region are not necessarily on a boot itself, but may be in on a boot toe body **646** or on any other body that is or that may be coupled to a boot. As shown in FIG. **54**, the lever **642** may be pulled away from the heel region of the boot toe body **646** to eject the boot toe body **646** from the boot coupling body **628**.

Referring to FIG. **55**, a boot coupling body according to another embodiment is shown generally at **648** and includes a toe coupling region shown generally at **650** that is similar to the coupling body **408** and the fin frame **410** as shown in FIG. **47** and **48**. The boot coupling body **648** also includes a heel coupling body shown generally at **652** that is substantially the same as the heel coupling body **632** shown in FIGS. **51**-**54**. The toe coupling region **650** includes a clasp (or boot clasp) **654** that is substantially the same as the clasp **418** as shown in FIG. **47** and **48**, but the clasp **654** is coupled or integral to a spring **656** that is held in position by fasteners **658** and **660**. The spring **656** is resiliently deformable as shown in FIG. **55** to permit resilient movement of the clasp **654** as shown in FIG. **55** and generally as described above.

Referring FIGS. **56** and **57**, a boot toe body according to another embodiment is shown generally at **662** and is configured to be coupled detachably at a toe region of the boot toe body **662** to a toe coupling region of a boot coupling body shown generally at **664**, which is substantially the same as the coupling body **408** and the fin frame **410** shown in FIGS. **47** and **48**. The boot toe body **662** is also configured to be coupled detachably to a boot shell **666**, which may be temporarily, detachably, non-detachably, permanently, or integrally coupled to a dry suit, to a user's preferred boot, to a liner, or to an innerboot, for example. Referring to FIG. **58**, the boot toe body **662** may be configured to be coupled detachably to a boot coupling body **668** also having a heel coupling body shown generally at **670** that is substantially the same as the heel coupling body **502** shown in FIG. **50**. FIG. **61** illustrates an embodiment including a boot toe body shown generally at **682** (which is similar to the boot toe body **662**) that is detachably coupled to a toe coupling region of a boot coupling body shown generally at **684** (which is also similar to the coupling body **408** and the fin frame **410** shown in FIGS. **47** and **48**) and that is detachably coupled to a boot shell shown generally at **686** (which is similar to the boot shell **666**) of a boot.

Referring FIG. **59**, a boot toe body according to another embodiment is shown generally at **672** and is configured to be coupled detachably at a toe region of the boot toe body **672** to a

toe coupling region of a boot coupling body shown generally at **674** (which is substantially the same as the coupling body **408** and the fin frame **410** shown in FIGS. **47** and **48**) and is also configured to be coupled detachably at a heel region of the boot toe body **672** to a heel coupling body shown generally at **676** (which is substantially the same as the heel coupling body **502** shown in FIG. **50**) of the boot coupling body **674**. The boot toe body **662** is also configured to be coupled detachably to a dry suit or to a user's preferred boot, for example, either of which may be received in sandal-like structures of the boot coupling body **674**. FIG. **60** illustrates an embodiment including a boot shown generally at **678** that may be coupled detachably to a sandal-like boot toe body shown generally at **680**.

Referring to FIG. **62**, a boot assembly according to another embodiment is shown generally at **688** and includes a boot **690**, which may be a unitary boot or may be a boot liner or innerboot combined with a boot shell, for example. The boot assembly **688** also includes a boot toe body **692**, which may be connected at a toe region or also at a heel region to a boot coupling body generally as described herein. The boot **690** includes a connector shown generally at **694** on an upper side of a toe region of the boot **690**, and connecting surfaces of the connector **694** are complementary to connecting surfaces of a connector shown generally at **696** on an upper side of a toe region of the boot toe body **692**. The boot **690** also includes a connector shown generally at **698** on a heel region of the boot **690**, and connecting surfaces of the connector **698** are complementary to connecting surfaces of a connector shown generally at **700** on a heel region of the boot toe body **692**. The connectors **694**, **696**, **698**, and **700** may thus facilitate detachably attaching the boot **690** to the boot toe body **692**.

Referring to FIG. **63**, a boot assembly according to another embodiment is shown generally at **702** and includes a boot shell **704** that may be may be temporarily, detachably, non-detachably, permanently, or integrally coupled (for example by snapping, gluing, sewing, or other techniques of shoe fabrication) to a neoprene sock or boot liner **706**. The combination of the boot shell **704** and the boot liner **706** may form a relatively very light boot that may be desirable for some embodiments. The boot assembly **702** also includes a boot toe body **708**, which may be connected at a toe region or also at a heel region to a boot coupling body generally as described herein. The liner **706** includes connectors shown generally at **710** and **712** (which are sewn-in flexible hooks or other liner elements in the embodiment shown) on an

upper side of a toe region of the liner **706**, and connecting surfaces of the connectors **710** and **712** are complementary to connecting surfaces of connector shown generally at **714** and **716** respectively on an upper side of a toe region of the boot toe body **708**. The liner **706** also includes a connector shown generally at **718** on a heel region of the liner **706**, and connecting surfaces of the connector **718** are complementary to connecting surfaces of a connector shown generally at **720** on a heel region of the boot toe body **708**. The connectors **710**, **712**, **714**, **716**, **718**, and **720** may thus facilitate detachably attaching the liner **706** to the boot toe body **708**. More generally, "boot" herein may in some embodiments include a combination of a shell and a permanently coupled or replaceable liner. Further, the shell **704** may transfer forces from a fin (not shown) coupled to a toe region of the shell **704** to other regions of a foot of a user in the liner **706**, and in various other embodiments, such shells or other similar structures may transfer forces from a fin coupled to a toe region of the shell to other regions of a foot of a user.

Referring to FIG. **65**, another embodiment of a heel coupling body is shown generally at **802**. Heel coupling body **802** can be an extension of a bottom portion **804** of a boot coupling body such as those described above for example, and is designed to couple detachably to a boot **808**. Boot **808** is not necessarily a complete boot, but may in various embodiments be an open-heel body for receiving a boot or for receiving a foot or prosthetic limb, for example.

Heel coupling body **802** includes a retaining mechanism **810**. Retaining mechanism **810** has a first end shown generally at **816** and a second end shown generally at **820**, and a resiliently deformable portion **814** between the first end **816** and the second end **820** to allow a separation distance between the first end **816** and the second end **820** to be resiliently varied. The resiliently deformable portion **814** includes a retaining surface **834** facing towards the second end **820** of the retaining mechanism **810**.

The first end **816** of retaining mechanism **810** is connected to the boot coupling body by a hinge **818**, which in the embodiment shown is a fastener that acts as a rotational pivot, but which may be other hinges in other embodiments. The second end **820** of retaining mechanism **810** is connected to one end of a connector **822** by a hinge **824**, which in the embodiment shown is a fastener that acts as a rotational pivot, but which may be other hinges in other embodiments. The other end of connector **822** is connected to the boot coupling body by a hinge **826**, which in the embodiment shown is a fastener that acts as a rotational pivot, but

which may be other hinges in other embodiments. The first end **816** of retaining mechanism **810** comprises a retaining lever **812**. A lever extension **828** is connected to the end of retaining lever **812**.

Boot **808** further comprises a heel portion **806**, which includes a retaining channel **836** sized to receive the retaining surface **834** of the resiliently deformable portion **814** of retaining mechanism **810**.

FIGS. **66** and **67** show the coupling action of heel coupling body **802**. Referring to FIG. **66**, heel coupling body **802** is shown before the boot **808** is coupled to the boot coupling body. In this uncoupled position, retaining lever **812** is angled away backwards from the boot coupling body, and the resiliently deformable portion **814** of retaining mechanism **810** is in a relatively expanded state.

FIG. **67** shows heel coupling body **802** in a coupled state with the boot **808**. As boot **808** rotates downward after coupling to the toe coupling body (not shown), the heel portion **806** of the boot **808** exerts a downward force on the second end **820** of the retaining mechanism **810**. The downward force exerted on the second end **820** causes connector **822** to rotate about hinge **826** in a rearward direction away from the heel portion **806** of boot **808**. The rotation of connector **822** about hinge **826** causes the retaining mechanism **810** to rotate about hinge **818** such that the second end **820** of retaining mechanism **810** moves rearwardly away from the heel portion **806** of boot **808**. The connector **822** maintains a generally constant separation distance between the hinges **824** and **826**, so rearward movement of the second end **820** of the retaining mechanism **810** causes the resiliently deformable portion **814** of retaining mechanism **810** to compress resiliently such that the separation distance between the first end **816** and the second end **820** (and thus a separation distance between the hinge **818** and the hinge **824**) becomes shorter. The heel coupling body **802** is thus configured to vary the separation distance between the hinges **818** and **824** in response to the movement of the retaining mechanism **810** around the hinge **818** by causing the connector **822** to move around the hinge **826**, which is on the boot **808** and spaced apart from the hinge **818**.

When the hinge **824** passes an imaginary plane formed between hinge **818** and hinge **826**, the resiliently deformable portion **814** is able to expand, and the resilient expanding force of the resiliently deformable portion **814** of retaining mechanism **810** urges the retaining

surface **834** on the resiliently deformable portion **814** against and into contact with a retaining surface in the retaining channel **836** on the heel portion **806** of boot **808**, holding the heel portion **806** of boot **808** against the boot coupling body **802**. Therefore, a resilient force caused by resilient deformation of the resiliently deformable portion **814** retains the retaining surface **834** against the retaining surface in the retaining channel **836** on the heel portion **806** of boot **808**, and the resiliently deformable portion **814** (and thus more generally the retaining mechanism **810**) are thus configured to be resiliently deformed in response to positioning the retaining surface **834** against the retaining surface in the retaining channel **836** by varying the separation distance between the hinge **818** and the hinge **824** in response to movement of the retaining mechanism **810** around the hinge **818**.

A user may decouple boot **808** from the boot coupling body by moving the lever extension **828** backwards away from boot **808**, which causes the retaining lever **812** to move in the same direction, thereby rotating retaining mechanism **810** about hinge **818**. As retaining mechanism **810** rotates around hinge **818**, the second end **820** will approach the heel portion **806** of boot **808.** The resiliently deformable portion **814** will consequently compress, thereby decreasing the separation distance between the first end **816** and the second end **820** of retaining mechanism **810** and causing the resiliently deformable portion **814** to exit the retaining channel **836**. Connector **822** will rotate forwards toward the heel portion **806** of boot **808** about hinge **826**; when connector **822** passes the imaginary plane formed between hinges **818** and **826**, the resiliently deformable portion **814** is again able to expand, and the resilient expanding force of the resiliently deformable portion **814** urges the retaining surface **834** out of the retaining channel **836** and urges the second end **820** of retaining mechanism **810** upward against the heel portion **806** of boot **808**, pushing boot **808** upwards and away from the boot coupling body **802**.

Referring to FIGS. **68** and **69**, a fin system according to another embodiment is shown generally at **900** and includes a boot coupling body shown generally at **902** and a fin frame shown generally at **904**. The fin system **900** also includes a boot toe body integrally coupled to a boot and shown generally at **906**. On a top portion, the boot toe body **906** includes a receptacle **901**, which functions as a connector (or as a boot connector) similar to the receptacle **148** as described above, for example. Also, on a bottom portion, the boot toe body **906** includes

a receptacle **903**, which functions as a connector (or as a boot connector) similar to the receptacle **150** as described above, for example.

The fin frame **904** may be integrally, permanently, detachably, or non-detachably coupled to a fin body such as fin body **307** as shown in FIG. **43** or other fin bodies described herein for example, and when the fin frame **904** is coupled to such a fin body, the fin frame **904** and the fin body may together function substantially the same as other fin bodies described above, such as the fin body **102** or the fin bodies shown in FIGS. **16**, **21**, **26**, **35**, **36**, and **42** for example. Still further, other fin bodies described above, such as the fin body **102** or the fin bodies shown in FIGS. **16**, **21**, **26**, **35**, **36**, and **42** for example, may be understood to include a fin frame (similar to the fin frame **904**, for example) detachably or non-detachably coupled to a fin body (similar to the fin body **307**, for example), and boot coupling bodies such as those described herein may be detachably coupled to such fin frames. The fin frame **904** has a top side shown generally at **907**, a bottom side shown generally at **908**, a proximal end shown generally at **910**, distal ends shown generally at **912** and **914**, and a central portion shown generally at **913**.

The fin frame **904** also includes a first fin connector **916** located at the central portion **913** of the fin frame **904** between distal ends **912** and **914** and projecting outward from fin frame **904** in a direction away from the proximal end **910** of the fin frame **904**. In this embodiment, first fin connector **916** is cylindrical in shape. In other embodiments, first fin connector **916** may be shaped differently. The first fin connector **916** defines a first fin retaining surface **917**. The fin frame **904** also includes a second fin connector **922** located on the central portion **913** of the fin frame **904** and extending away from the fin frame **904** from the proximal end **910** of the fin frame **904.** Second fin connector **922** defines a second fin retaining surface **923**.

Referring to FIGS. **68** and **70**, in the current embodiment, the fin frame **904** also includes first and second projections **936** and **938** extending away from laterally opposite sides of the fin frame **904** in a direction away from the first fin connector **916** and towards corresponding laterally opposite sides of the boot toe body **906**. As the boot toe body **906** is coupled to a fin including the boot coupling body **902** and the fin frame **904**, the first and second projections **936** and **938** approach or contact the corresponding laterally opposite sides

of the boot toe body **906**. In some embodiments, one or both of the first and second projections **936** and **938** may be resiliently deformable so that, as the boot toe body **906** is coupled to a fin including the boot coupling body **902** and the fin frame **904**, the first and second projections **936** and **938** may be resiliently urged into contact with the corresponding laterally opposite sides of the boot toe body **906**. The first and second projections **936** and **938** may thus fill gaps or spaces that may otherwise be between the boot toe body **906** and the fin. Filling such gaps or spaces may reduce hydrodynamic drag or may reduce or avoid any likelihood of entanglement with objects such as fishing line.

Referring to FIGS. **68**, **69**, and **70**, the boot coupling body **902** is similar to the boot coupling body **104** shown in FIG. **1**, being curved in a generally-semi-circular shape having a top portion **928**, a bottom portion **930**, and an intermediate portion **932** extending between the top portion **928** and the bottom portion **930**. The top portion **928** includes a holder (or a holding body) **929** that is complementary to the receptacle **901** and that functions as a connector (or as a boot connector) similar to the holder **138**, the holder **330**, the holder **430**, or the holder **606** as described above, for example. The intermediate portion **932** includes a recess **918** which defines a first complementary fin retaining surface **920** sized to contact the first fin retaining surface **917** on the first fin connector **916** of the fin frame **904** when the recess **918** receives the first fin connector **916**. The bottom portion **930** includes a clasp (or boot clasp) **931** that is complementary to the receptacle **903** and that functions as a connector (or as a boot connector) similar to the clasp **140**, the clasp **258**, the clasp **286**, the clasp **346**, the clasp **418**, or the clasp **624** as described above, for example.

The boot coupling body **902** includes curved members **933** and **935** that may affect how much force is required to vary a separation distance between the holder **929** and the clasp **931**, which may thereby vary how easily the boot coupling body **902** may be coupled to or decoupled from the boot toe body **906**. For example, relatively firm curved members **933** and **935** may cause the boot coupling body **902** to couple relatively securely to the boot toe body **906**, and relatively flexible curved members **933** and **935** may cause the boot coupling body **902** to decouple relatively easily from the boot toe body **906**. The curved members **933** and **935** may be integrally formed in the boot coupling body **902**, or may be removable and replaceable too allow adjustability of how much force is required to vary a separation distance between the

holder **929** and the clasp **931**. Alternative embodiments may omit the curved members **933** and **935**, or may include only one or more than two such curved members. Further, boot coupling bodies according to other embodiments (such as other boot coupling bodies described herein, for example) may include one, two, or more than two such curved members, or may omit such curved members.

The bottom portion **930** also includes a fin clasp **924** which defines a second complementary fin retaining surface **926**. FIG. **69** illustrates the fin clasp **924** in a retaining position in which the second complementary fin retaining surface **926** is positioned to contact the second fin retaining surface **923** on the second fin connector **922** on the fin frame **904** when the recess **918** receives the first fin connector **916** as shown in FIG. **69**.

In the current embodiment, the fin clasp **924** is resiliently moveable from the retaining position in a substantially downward direction relative to the remainder of the boot coupling body **902** such that fin clasp **924** can alternate between the retaining position and a releasing position in which the second complementary fin retaining surface **926** is separated from the second fin retaining surface **923** to allow the fin frame **904** to be released from the boot coupling body **902**.

In the current embodiment, the fin frame **904** may be coupled to boot coupling body **902** (which forms a fin including the boot coupling body **902** and the fin frame **904**) prior to coupling the boot coupling body **902** to boot toe body **906**. Initially, in one embodiment, the first fin connector **916** on the fin frame **904** is received in the recess **918** such that first fin retaining surface **917** contacts first complementary fin retaining surface **920**. Further, the fin frame **904** may apply a downward force on the fin clasp **924**, thereby causing fin clasp **924** to move in a substantially downward direction relative to the remainder of the boot coupling body **902** from the retaining position to the releasing position. The second fin connector **922** may then move beyond the fin clasp **924**, allowing the fin clasp **924** to move resiliently from the releasing position back to the retaining position in a substantially upwards direction relative to the remainder of the boot coupling body **902**, thereby causing second complementary fin retaining surface **926** contact second fin retaining surface **923**. Fin frame **904** may thereby be detachably coupled to the boot coupling body **902** due to retaining surfaces **920** and **926** restricting movement of the fin frame **904** relative to the boot coupling body **902**.

To decouple the fin frame **904** from boot coupling body **902**, fin clasp **924** may be moved into the releasing position, thereby causing second complementary fin retaining surface **926** to lose contact with second fin retaining surface **923** and allowing fin frame **904** to move in a direction away from the recess **918** on boot coupling body **902**, thereby causing first fin retaining surface **917** to lose contact with first complementary fin retaining surface **920**.

The fin system **900** thus allows the fin frame **904** (which may be integrally, permanently, detachably, or non-detachably coupled to a fin body such as fin body **307** as shown in FIG. **43** or other fin bodies described herein for example) to be attached to and detached from the boot coupling body **902**, for example by snapping the fin frame **904** into or out of the boot coupling body **902**. In general, connections and disconnections as described herein may be audible, tactile, or both audible and tactile, which may provide a user with confirmation that a connection or disconnection is complete.

Other embodiments such as those described herein may include similar connectors to couple a fin frame (or a fin) to a boot coupling body. For example, in one embodiment, the fin frame **306** (shown in FIG. **43**) may be coupled to the coupling body **304** (also shown in FIG. **43**) with connectors (or fin connectors) similar to the first fin connector **916**, the second fin connector **922**, the recess **918**, and the fin clasp **924** as described above, instead of with the retaining member **322** as described above. As another example, in one embodiment, the fin frame **904** may be coupled to the coupling body **902** with a connector similar to the retaining member **322** (shown in FIG. **43**) as described above. More generally, such connectors and components of the embodiments described herein may be varied or interchanged in alternative embodiments.

The boot toe body **906** is similar to the boot toe body **106** as shown in FIG. **1**, **6**, and **7**. Accordingly, coupling the boot coupling body **902** to boot toe body **906** may be done in substantially the same manner as described with reference to FIGS. **6** and **7**.

The fin system **900** also includes a resiliently compressible dampening member **934** that may be coupled to the boot coupling body **902** or to the boot toe body **906** (for example on a boot tread) and positioned such that, when the boot coupling body **902** is coupled to the boot toe body **906**, the dampening member **934** is positioned between the boot coupling body **902** and the toe body **906** to dampen movement of the boot toe body **906** relative to the fin

including the boot coupling body **902** and the fin frame **904**. Alternative embodiments may omit the dampening member **934** or may include more than one such dampening member. Further, other embodiments such as those described herein may also include one or more dampening members, which may be coupled to a boot toe body, to a fin frame, or to a boot coupling body, for example.

Referring to FIG. **71**, a boot coupling body according to another embodiment is shown generally at **1000** and includes a first boot connector **1002**, a second boot connector **1004**, a heel coupling body **1005**, and a strap **1010**, which may be semi-rigid in some embodiments. The first boot connector **1002** may be similar to the holder **138**, the holder **330**, the holder **430**, the holder **606**, or the holder **929** as described above, for example, and the second boot connector **1004** may be similar to the clasp **140**, the clasp **258**, the clasp **286**, the clasp **346**, the clasp **418**, the clasp **624**, or the clasp **931** as described above, for example. Heel coupling body **1005** includes a third boot connector **1006** and a fastener **1009**, which may for example be a threaded fastener that may tightened onto the strap **1010** by rotation of fastener **1009**, or which may be one or more different fasteners. The third boot connector **1006** may be similar to the connector **266**, the heel coupling body **502**, the heel coupling body **632**, the heel coupling body **652**, or the heel coupling body **802** as described above, for example, all of which may function as a connector (or boot connector) as described herein.

Strap **1010** extends between first and second boot connectors **1002** and **1004** and third boot connector **1006**. Heel coupling body **1005** is slidably attachable to strap **1010** such that a user can adjust a distance between first and second boot connectors **1002** and **1004** and third boot connector **1006** by slidably moving the heel coupling body **1005** along the strap **1010** to a desired position. The fastener **1009** can be tightened onto the strap **1010** to fasten the heel coupling body **1005** to the strap **1010** in the desired position. A distance separating the first and second boot connectors **1002** and **1004** from the third boot connector **1006** is thus adjustable, and if desired any excess length of the strap **1010** may be removed and discarded. In some embodiments, multiple fasteners may be employed to fasten heel coupling body **1005** to strap **1010**. In some embodiments, at least one of said fasteners may be included on strap **1010**, heel coupling body **1005**, or on both. Other embodiments such as those described herein may be similarly adjustable. For example, the connector **266** may be on a heel coupling body that is

slidable along a strap, and such a heel coupling body may have a fastener that can fasten the heel coupling body to such a strap in a desired position. Also, other heel coupling bodies such as the heel coupling body **502**, the heel coupling body **632**, the heel coupling body **652**, or the heel coupling body **802** for example may be slidable along a strap and may have a fastener that can fasten the heel coupling body to such a strap in a desired position.

Referring to FIGS. **72** and **73**, another embodiment of a heel coupling body is shown generally at **1100**. Heel coupling body **1100** can be an extension of a bottom portion of a boot coupling body (like the connector **266**, the heel coupling body **502**, the heel coupling body **632**, the heel coupling body **652**, or the heel coupling body **802** as described above, for example), or can be slidably attached to a strap as shown in FIG. **71**, for example. Heel coupling body **1100** defines a boot connector (or third boot connector) **1102** having a boot retaining surface **1103**. Boot connector **1102** may be similar to the third boot connector **1006** as described above, for example. Heel coupling body **1100** also includes a boot connector (or fourth boot connector) **1104** which defines a boot retaining surface **1105**.

Heel coupling body **1100** may be coupled to boot shown generally at **1108**. The boot **1108** is not necessarily a complete boot, but may in various embodiments be an open-heel body for receiving a boot or for receiving a foot or prosthetic limb, for example. Boot **1108** includes a heel portion **1106** and a bottom portion **1114**. Heel portion **1106** of the boot **1108** includes a receptacle **1110** which defines a heel retaining surface **1111** complementary to the retaining surface **1103** on the boot connector **1102**. Boot **1108** also includes a receptacle **1112** defining a heel retaining surface **1113** complementary to the boot retaining surface **1105**.

To couple the boot **1108** to the heel coupling body **1100**, the retaining surface **1103** on the boot connector **1102** may be positioned against corresponding heel retaining surface **1111** of receptacle **1110**. Further, as an additional connection, boot connector **1104** may be urged into receptacle **1112**, causing boot retaining surface **1105** to contact corresponding heel retaining surface **1113**, further coupling heel coupling body **1100** to the boot **1108**. Thus, boot connectors **1102** and **1104** thereby interact with receptacles **1110** and **1112** to restrict movement of boot **1108** relative to the heel coupling body **1100**, and the boot connector **1104** may thus function as an additional or "safety" connector to reduce or avoid any likelihood of accidental decoupling of the heel coupling body **1100** from the boot **1108**. Other embodiments such as those described

herein may also include an additional or "safety" connector such as the boot connector **1104** and a complementary boot connector such as the receptacle **1112**.

FIGS. **74**, **75**, and **76** are illustrations of other embodiments. For example, FIG. **74** illustrates a boot coupling body according to one embodiment, and FIG. **75** illustrates a boot including a boot-sole inlay according to one embodiment. Such a boot-sole inlay, and other bodies such as those described herein for example, may function as a boot sole reinforcement and may also function as a boot toe body, as a heel coupling body, or as both a boot toe body and a heel coupling body as described herein, for example. Such a boot-sole inlay, and other bodies such as those described herein for example, may be formed in different sizes (such as nine different lengths for different shoe sizes, for example). Alternatively, separate inlays for toe and sole regions of a boot may be placed into a mould for a particular shoe size and separated by a distance according to the particular shoe size, so that such separate inlays may reduce tooling costs that would be involved in producing different sizes of single-piece boot-sole inlays for different shoe sizes. Still other embodiments may include only a toe portion and omit any heel portion, which may also reduce tooling costs. Embodiments such as those described herein may be sized to balance interests such as one or more of handling, function, ergonomics, appearance, and producibility for example, and may provide an interface between a human foot and a fin that may provide enough support to attach and use the fin, that may allow agility of the ankle joint under water, and that may protect the foot walking on rough and sharp surfaces. The boot of FIG. **75** is a body for receiving a boot and includes an additional or "safety" connector (similar to the boot connector **1104**) identified at **3** in FIG. **75**. FIG. **76** illustrates a fin according to one embodiment.

In some embodiments, boots or boot inlays, such as the boot inlay shown in FIG. **75** or other boots or boot inlays such as those described herein for example, may include one or more (such as four, for example) cleat or stud bodies positioned on a bottom side to contact a surface (such as ground, for example) when a user wearing the boot walks on such a surface. Such cleat or stud bodies may prevent other surfaces on the boot or boot inlay from damage or wear when the user walks on such a surface, which may preserve retaining surfaces or other surfaces or structures such as those described herein for example, which may, for example, preserve functionality as described herein and prolong usability of such boots or boot inlays. Further,

such cleat or stud bodies may be detachable and replaceable, for example when such cleat or stud bodies become worn from contact with a surface when a user walks on the surface, so that replacing such cleat or stud bodies may further prolong usability of boots or boot inlays such as those described herein for example.

As another example, referring to FIG. **77**, a boot assembly according to another embodiment is shown generally at **1120** and includes a boot inlay **1122**. A front profile **1124** is attachable to the boot inlay **1122** using fasteners **1126** and **1128**, and a rear profile **1130** is attachable to the boot inlay **1122** using fasteners **1132** and **1134**. For example, in some embodiments, the fasteners **1126**, **1128**, **1132**, and **1134** may be stainless steel screws or bolts that may be connectable to metal inserts **1136**, **1138**, **1140**, and **1142** respectively. As with the cleat or stud bodies described above, the front profile **1124** and the rear profile **1130** may be positioned on a bottom side to contact a surface (such as ground, for example) when a user wearing the boot assembly **1120** walks on such a surface to prevent other surfaces on the boot assembly **1120** from damage or wear when the user walks on such a surface, which may preserve retaining surfaces or other surfaces or structures such as those described herein for example, which may, for example, preserve functionality as described herein and prolong usability of the boot assembly **1120**. Further, the front profile **1124** and the rear profile **1130** may be detachable and replaceable, for example when the front profile **1124** and the rear profile **1130** become worn from contact with a surface when a user walks on a surface, so that replacing the front profile **1124** and the rear profile **1130** may further prolong usability of the boot assembly **1120**. Alternative embodiments may include more or fewer replaceable profiles, different replaceable profiles, or no replaceable profiles at all, and more, fewer, or different fasteners, on various different embodiments of boots, boot toe bodies, boot inlays, or other shoes or footwear such as those described herein, for example.

In general, the boot toe bodies such as those described herein for example may be molded into or otherwise temporarily or permanently coupled to boots (including other footwear or prosthetic limbs) to form boots that are connectable to fin apparatuses such as those described herein for example. Such boot toe bodies may be standardized and manufactured in one or in a small number of sizes, thereby possibly reducing manufacturing costs when compared to other boot binding systems, while boots such as the boots described herein may be

manufactured by a number of manufactures in a large number of varieties that may vary by foot size and shape, by material, by ankle support, and in many other ways. Further, fin apparatuses such those described herein may also vary in many ways, such as in length, in width, in shape, in material, and in flexibility, for example. Nevertheless, such various boots and various fin apparatuses may be interchangeable where the boots include standardized boot toe bodies (such as the boot toe bodies described herein for example) and where the fin apparatuses are connectable to such boot toe bodies. Therefore, a user may interchange a variety of boots and/or a variety of fin apparatuses to form combinations of particular boots and particular fin apparatuses to suit particular purposes (for example, a boot suitable for cold water combined with a fin apparatus suitable for spear fishing, or a boot suitable for warm water combined with a fin apparatus suitable for snorkeling) without requiring entire fin systems to embody the desired features of both the boot and the fin apparatus. Further, as boots or fin apparatuses are improved over time, a user may upgrade only an improved boot or an improved fin apparatus, without requiring an entire fin apparatus to benefit from the upgrade. The boot toe bodies may thus function as interfaces between a human foot and a wide variety of fin apparatuses.

Various components of the embodiments described above may be varied or interchanged in alternative embodiments. For example, some or all of boot toe bodies of embodiments such as those described herein may, in alternative embodiments, be combined with some or all of fin bodies such as those described herein or with some or all of boot coupling bodies such as those described herein. As another example, connectors from some embodiments may, in alternative embodiments, be interchanged with connectors from other embodiments. For example, a toe connector from one embodiment may be combined with a heel connector from another embodiment. As another example, boots, other footgear, bodies coupled to boots, bodies coupled to other footgear, bodies configured to be coupled to boots, bodies configured to be coupled to other footgear, bodies configured to hold or be coupled directly or indirectly to a foot or to a prosthetic limb, for example all may, in alternative embodiments, be interchanged with each other. As such, where connection is shown to a boot, for example, similar connection in an alternative embodiment may be to other footgear, to a body coupled to a boot, to a body coupled to other footgear, to a body configured to be coupled to a boot, to a body configured to be coupled to other footgear, or to a body configured to hold

or be coupled directly or indirectly to a foot or to a prosthetic limb. As still another example, various different fin apparatuses, fin frames, and fin bodies such as those described herein may, in alternative embodiments, be substituted for each other. Therefore, although specific embodiments have been described and illustrated, such embodiments should be considered illustrative only and not as limiting the invention as construed according to the accompanying claims.

CLAIMS

1. A method of coupling a boot toe body to a fin apparatus comprising a fin body coupled to a boot coupling body, the method comprising:

connecting a first boot connector on a first end of the boot coupling body to a first complementary boot connector on a top side of the boot toe body; and

connecting a second boot connector on a second end of the boot coupling body to a second complementary boot connector on a bottom side of the boot toe body.

2. The method of claim **1** wherein the boot coupling body is detachably coupled to a fin frame detachably coupled to the fin body.

3. The method of claim **1** wherein the boot coupling body is detachably coupled to a fin frame non-detachably coupled to the fin body.

4. The method of claim **1**, **2**, or **3** wherein the boot coupling body comprises a unitary body having the first and second boot connectors.

5. The method of claim **2** or **3**, or of claim **4** when dependent from claim **2** or **3**, further comprising coupling the fin frame to the boot coupling body.

6. The method of claim **5** wherein coupling the fin frame to the boot coupling body comprises, when a resiliently deformable fin frame retaining member of the fin frame is received in a through-hole of the boot coupling body, positioning a fin frame retaining surface of the fin frame retaining member against a complementary fin frame retaining surface of the boot coupling body.

7. The method of claim **5** wherein coupling the fin frame to the boot coupling body comprises:

connecting a first fin connector on the boot coupling body to a first complementary fin connector on the fin frame; and

connecting a second fin connector on the boot coupling body to a second complementary fin connector on the fin frame.

8. The method of claim **1** wherein the boot coupling body comprises two or more bodies detachably coupled together.

9. The method of claim **1** or **8** wherein the boot coupling body comprises a fin frame detachably coupled to the fin body.

10. The method of claim **1** or **8** wherein the boot coupling body comprises a fin frame non-detachably coupled to the fin body.

11. The method of claim **9** or **10** wherein the first boot connector is on the fin frame.

12. The method of claim **9**, **10**, or **11** wherein the second boot connector is on a coupling body detachably coupled to the fin frame.

13. The method of claim **12** further comprising coupling the fin frame to the coupling body.

14. The method of claim **13** wherein coupling the fin frame to the coupling body comprises, when a resiliently deformable fin frame retaining member of the fin frame is received in a through-hole of the coupling body, positioning a fin frame retaining surface of the fin frame retaining member against a complementary fin frame retaining surface of the coupling body.

15. The method of claim **13** wherein coupling the fin frame to the coupling body comprises:

connecting a first fin connector on the coupling body to a first complementary fin connector on the fin frame; and

connecting a second fin connector on the coupling body to a second complementary fin connector on the fin frame.

16. The method of claim **7** or **15** wherein connecting the first fin connector to the first complementary fin connector comprises receiving the first complementary fin connector in a fin receptacle of the first fin connector.

17. The method of claim **16** wherein the fin receptacle defines at least one fin retaining surface positioned to restrict movement of the fin frame relative to the first fin connector when the first complementary fin connector is received in the fin receptacle.

18. The method of claim **7**, **15**, **16**, or **17** wherein connecting the second fin connector to the second complementary fin connector comprises positioning the second complementary fin connector against a fin clasp of the second fin connector.

19. The method of claim **18** wherein the fin clasp comprises at least one fin retaining surface positioned to restrict movement of the fin frame relative to the second fin connector when the second complementary fin connector is positioned against the fin clasp and when the fin clasp is in a retaining position.

20. The method of claim **18** or **19** further comprising moving the fin clasp into a releasing position to allow movement of the fin frame relative to the second fin connector.

21. The method of any one of claims **1** to **20** wherein:

connecting the first boot connector to the first complementary boot connector comprises positioning a holder on the first end of the boot coupling body against a first retaining surface on the top side of the boot toe body; and

connecting the second boot connector to the second complementary boot connector comprises positioning a boot clasp on the second end of the boot coupling body against a second retaining surface on the bottom side of the boot toe body.

22. The method of claim **21** wherein the first retaining surface is positioned to retain the holder against movement in a direction towards the fin body when the holder is positioned against the first retaining surface.

23. The method of claim **21** or **22** wherein the second retaining surface is positioned to retain the boot clasp against movement in a direction towards the fin body when the boot clasp is positioned against the second retaining surface.

24. The method of claim **21**, **22**, or **23** wherein positioning the boot clasp against the second retaining surface comprises rolling a roller on the second retaining surface.

25. The method of any one of claims **21** to **24** wherein:

positioning the holder against the first retaining surface comprises receiving the holder in a first receptacle on the top side of the boot toe body; and

positioning the boot clasp against the second retaining surface comprises receiving the boot clasp in a second receptacle on the bottom side of the boot toe body.

26. The method of any one of claims **1** to **25** wherein connecting the second boot connector to the second complementary boot connector comprises, after connecting the first boot connector to the first complementary boot connector, pivoting the boot toe body relative to the boot coupling body about a generally transverse axis of rotation to cause the second boot connector to approach the second complementary boot connector.

27. The method of any one of claims **1** to **25** wherein connecting the second boot connector to the second complementary boot connector comprises, after connecting the first boot connector to the first complementary boot connector, pivoting the boot coupling body relative to the boot toe body about a generally transverse axis of rotation to cause the second complementary boot connector to approach the second boot connector.

28. The method of claim **27** wherein connecting the second boot connector to the second complementary boot connector further comprises, after connecting the first boot connector to the first complementary boot connector, pivoting the boot toe body relative to the boot coupling body about the generally transverse axis of rotation to cause the second boot connector to approach the second complementary boot connector.

29. The method of any one of claims **21** to **25** wherein connecting the second boot connector to the second complementary boot connector comprises rotating the boot clasp about an axis of rotation extending between the top and bottom sides of the boot toe body.

30. The method of claim **29** wherein connecting the second boot connector to the second complementary boot connector further comprises moving the boot clasp in a direction away from the top side of the boot toe body.

31. The method of any one of claims **1** to **30** wherein connecting the second boot connector to the second complementary boot connector comprises resiliently deforming the boot coupling body to increase a separation distance between the first and second boot connectors.

32. The method of claim **31** wherein resiliently deforming the boot coupling body comprises resiliently deforming a resilient body unattached to the second boot connector.

33. The method of claim **31** wherein resiliently deforming the boot coupling body comprises resiliently deforming the second boot connector to increase the separation distance between the first and second boot connectors.

34. The method of claim **33** wherein resiliently deforming the second boot connector comprises resiliently deforming a spring having the second boot connector.

35. The method of any one of claims **1** to **34** further comprising decoupling the boot toe body from the fin apparatus.

36. The method of claim **35**, when directly or indirectly dependent from claim **25**, wherein decoupling the boot toe body from the fin apparatus comprises causing the boot clasp to exit the second receptacle.

37. The method of claim **36**, when ultimately dependent from claim **29**, wherein causing the boot clasp to exit the second receptacle comprises rotating the boot clasp about the axis of rotation.

38. The method of claim **36** wherein causing the boot clasp to exit the second receptacle comprises causing a lever to transfer a force from the lever to the second end of the boot coupling body in a direction away from the second receptacle.

39. The method of claim **35**, when directly or indirectly dependent from claim **21**, wherein decoupling the boot toe body from the fin apparatus comprises causing the boot clasp to lose contact with the second retaining surface.

40. The method of claim **39**, when ultimately dependent from claim **29**, wherein decoupling the boot toe body from the fin apparatus comprises rotating the boot clasp about the axis of rotation.

41. The method of claim **40** wherein decoupling the boot toe body from the fin apparatus further comprises moving the boot clasp in a direction towards the top side of the boot toe body.

42. The method of any one of claims **1** to **41** further comprising coupling the boot coupling body to the fin body.

43. The method of any one of claims **1** to **42** further comprising positioning a front surface of the boot toe body against a boot retaining surface of the fin apparatus such that when the fin apparatus is coupled to the boot toe body, the first and second boot connectors and the boot retaining surface retain the boot toe body against movement relative to the fin apparatus.

44. The method of claim **43** further comprising adjusting a retentive force holding the boot retaining surface of the fin apparatus against the front surface of the boot toe body.

45. The method of claim **44** wherein adjusting the retentive force holding comprises adjusting a position of a boot retaining member of the fin apparatus having the boot retaining surface.

46. The method of any one of claims **1** to **45** wherein the boot toe body is coupled to a boot.

47. The method of claim **46** wherein the boot toe body is integrally coupled to the boot.

48. The method of claim **46** or **47** further comprising connecting a third boot connector on the boot coupling body to a third complementary boot connector on a heel end of the boot opposite a front end of the boot toe body.

49. The method of claim **48** further comprising adjusting a distance separating the third boot connector from the first and second boot connectors.

50. The method of claim **49** wherein adjusting the distance separating the third boot connector from the first and second boot connectors comprises:

moving a heel connector body comprising the third boot connector along a strap; and

fastening the heel connector body to the strap at a desired distance from the first and second boot connectors.

51. The method of claim **48**, **49**, or **50** wherein connecting the third boot connector to the third complementary boot connector comprises positioning a third retaining surface on the third boot connector against a third retaining surface on the heel end of the boot.

52. The method of claim **51** wherein positioning the third retaining surface on the third boot connector against the third retaining surface comprises receiving a holder having the third boot connector in a third receptacle on the heel end of the boot.

53. The method of claim **52** further comprising wedging a wedge in the third receptacle to urge the third boot connector against the third retaining surface.

54. The method of claim **51**, **52**, or **53** wherein positioning the third retaining surface on the third boot connector against the retaining surface on the heel end of the boot comprises resiliently deforming the third boot connector.

55. The method of claim **54** wherein resiliently deforming the third boot connector comprises varying a separation distance between first and second hinges on the third boot connector in response to movement of the third boot connector around the first hinge.

56. The method of claim **55** wherein varying the separation distance between the first and second hinges on the third boot connector in response to the movement of the third boot connector around the first hinge comprises causing a connector connected to the second hinge to move around a third hinge on the boot and spaced apart from the first hinge.

57. The method of claim **54**, **55**, or **56** wherein resiliently deforming the third boot connector comprises causing a resilient force caused by resilient deformation of the third

connector to retain the third retaining surface on the third connector against the retaining surface on the heel end of the boot.

58. The method of any one of claims **48** to **57** further comprising connecting a fourth boot connector on the boot coupling body to a fourth complementary boot connector on the heel end of the boot.

59. The method of any one of claims **58** wherein connecting the fourth boot connector on the boot coupling body to the fourth complementary boot connector comprises receiving a retaining surface on the fourth boot connector in a receptacle of the fourth complementary boot connector.

60. The method of claim **59** wherein the receptacle of the fourth complementary boot connector defines at least one retaining surface positioned to restrict movement of the fourth boot connector relative to the boot when the retaining surface on the fourth boot connector is received in the receptacle on the fourth complementary boot connector.

61. The method of any one of claims **48** to **60**, when ultimately dependent from claim **29**, wherein the third connector is rotatably coupled to the second connector for rotation about the axis of rotation.

62. The method of any one of claims **1** to **61** wherein the boot toe body is coupleable to a boot.

63. The method of any one of claims **1** to **62** wherein coupling the boot toe body to the fin apparatus comprises positioning first and second projections between respective laterally opposite sides of the fin apparatus and respective corresponding laterally opposite sides of the boot toe body.

64. The method of claim **63** wherein the first and second projections are coupled to the fin apparatus.

65. The method of claim **63** or **64** wherein positioning the first and second projections between the respective laterally opposite sides of the fin apparatus and the respective

corresponding laterally opposite sides of the boot toe body comprises resiliently deforming the first and second projections.

66. The method of any one of claims **1** to **65** wherein coupling the boot toe body to the fin apparatus comprises positioning at least one resiliently compressible dampening member between the boot toe body and the fin apparatus to dampen movement of the boot toe body relative to the fin apparatus.

67. The method of claim **66** wherein the at least one resiliently compressible dampening member comprises at least one resiliently compressible dampening member coupled to the boot toe body.

68. The method of claim **66** or **67** wherein the at least one resiliently compressible dampening member comprises at least one resiliently compressible dampening member coupled to the boot coupling body.

69. The method of claim **66**, **67**, or **68** wherein the at least one resiliently compressible dampening member comprises at least one resiliently compressible dampening member coupled to the fin apparatus.

70. A fin apparatus coupleable to a boot toe body, the apparatus comprising:

a fin body; and

a boot coupling body coupleable to the fin body, the boot coupling body comprising:

first and second ends;

a first boot connecting means on the first end of the boot coupling body for connecting with a first complementary boot connecting means on a top side of the boot toe body; and

a second boot connecting means on the second end of the boot coupling body for connecting with a second complementary boot connecting means on a bottom side of the boot toe body.

71. The apparatus of claim **70** wherein the boot coupling body is detachably coupleable to a fin frame detachably coupleable to the fin body.

72. The apparatus of claim **70** wherein the boot coupling body is detachably coupleable to a fin frame non-detachably coupled to the fin body.

73. The apparatus of claim **70**, **71**, or **72** wherein the boot coupling body comprises a unitary body having the first and second boot connecting means.

74. The apparatus of claim **71** or **72**, or of claim **73** when dependent from claim **71** or **72**, further comprising a means for coupling the fin frame to the boot coupling body.

75. The apparatus of claim **70** wherein the boot coupling body comprises two or more bodies detachably coupleable together.

76. The apparatus of claim **70** or **75** wherein the boot coupling body comprises a fin frame detachably coupleable to the fin body.

77. The apparatus of claim **70** or **75** wherein the boot coupling body comprises a fin frame non-detachably coupled to the fin body.

78. The apparatus of claim **76** or **77** wherein the first boot connecting means is on the fin frame.

79. The apparatus of claim **76**, **77**, or **78** wherein the second boot connecting means is on a coupling body detachably coupled to the fin frame.

80. The apparatus of claim **79** further comprising a means for coupling the fin frame to the coupling body.

81. The apparatus of any one of claims **70** to **80** wherein:

the first boot connecting means comprises a holder on the first end of the boot coupling body positionable against a first retaining surface on the top side of the boot toe body; and

the second boot connecting means comprises a boot clasp on the second end of the boot coupling body positionable against a second retaining surface on the bottom side of the boot toe body.

82. The apparatus of claim **81** wherein the holder is configured to be retained against movement in a direction towards the fin body when the holder is positioned against the first retaining surface.

83. The apparatus of claim **81** or **82** wherein the boot clasp is configured to be retained against movement in a direction towards the fin body when the boot clasp is positioned against the second retaining surface.

84. The apparatus of claim **81**, **82**, or **83** wherein the boot clasp comprises a roller positionable against the second retaining surface.

85. The apparatus of any one of claims **81** to **84** wherein the boot clasp is rotatable about an axis of rotation extending between the top and bottom sides of the boot toe body to connect the second boot connecting means to the second complementary boot connecting means.

86. The apparatus of claim **85** wherein the axis of rotation is angled to cause the boot clasp to move in a direction away from the top side of the boot toe body when the boot clasp is rotated about the axis of rotation to connect the second boot connecting means to the second complementary boot connecting means.

87. The apparatus of any one of claims **81** to **86** wherein:

the holder is receivable in a first receptacle on the top side of the boot toe body when the holder is positioned against the first retaining surface; and

the boot clasp is receivable in a second receptacle on the bottom side of the boot toe body when the boot clasp is positioned against the second retaining surface.

88. The apparatus of any one of claims **70** to **87** wherein the boot coupling body is resiliently deformable to increase a separation distance between the first and second boot connecting means.

89. The apparatus of claim **88** wherein the boot coupling body comprises a resilient body unattached to the second boot connecting means and resiliently deformable to increase the separation distance between the first and second boot connecting means.

90. The apparatus of claim **88** wherein the second boot connecting means is resiliently deformable to increase the separation distance between the first and second boot connecting means.

91. The apparatus of claim **90** wherein the boot coupling body comprises a resiliently deformable spring having the second boot connecting means.

92. The apparatus of any one of claims **70** to **91** further comprising a means for decoupling the boot toe body from the fin apparatus.

93. The apparatus of claim **92**, when directly or indirectly dependent from claim **87**, wherein the means for decoupling the boot toe body from the fin apparatus comprises a means for causing the boot clasp to exit the second receptacle.

94. The apparatus of claim **93**, when ultimately dependent from claim **85**, wherein the means for causing the boot clasp to exit the second receptacle comprises a means for rotating the boot clasp about the axis of rotation.

95. The apparatus of claim **93** wherein the means for causing the boot clasp to exit the second receptacle comprises a means for transferring a force to the second end of the boot coupling body in a direction away from the second receptacle.

96. The apparatus of claim **92**, when directly or indirectly dependent from claim **81**, wherein the means for decoupling the boot toe body from the fin apparatus comprises a means for causing the boot clasp to lose contact with the second retaining surface.

97. The apparatus of claim **96**, when ultimately dependent from claim **85**, wherein the means decoupling the boot toe body from the fin apparatus comprises a means for rotating the boot clasp about the axis of rotation.

98. The apparatus of claim **97** wherein the axis of rotation is angled to cause the boot clasp to move in a direction towards from the top side of the boot toe body when the boot clasp is rotated about the axis of rotation to decouple the boot toe body from the fin apparatus.

99. The apparatus of any one of claims **70** to **98** further comprising a means for coupling the boot coupling body to the fin body.

100. The apparatus of any one of claims **70** to **99** further comprising a third boot connecting means for connecting with a third complementary boot connecting means on a heel end of a boot coupled to the boot toe body.

101. The apparatus of claim **100** further comprising a means for adjusting a distance separating the third boot connecting means from the first and second boot connecting means.

102. The apparatus of claim **100** or **101** wherein the third boot connecting means comprises a holder receivable in a third receptacle on the heel end of the boot.

103. The apparatus of claim **102** further comprising a wedge positionable to be wedged in the third receptacle to urge the third boot connecting means against the third retaining surface.

104. The apparatus of any one of claims **100** to **103** wherein the third boot connecting means comprises a retaining surface positionable on a corresponding retaining surface on the heel end of the boot.

105. The apparatus of claim **104** further comprising a means for resiliently deforming the third boot connecting means when the retaining surface on the third boot connecting means is positioned against the retaining surface on the heel end of the boot.

106. The apparatus of claim **105** wherein the means for resiliently deforming the third boot connecting means comprises a means for varying a separation distance between first and second hinges on the third boot connecting means in response to movement of the third boot connecting means around the first hinge.

107. The apparatus of claim **106** wherein the means for varying the separation distance between the first and second hinges on the third boot connecting means in response to the movement of the third boot connecting means around the first hinge comprises a means for causing a connector connected to the second hinge to move around a third hinge on the boot and spaced apart from the first hinge.

108. The apparatus of claim **105**, **106**, or **107** wherein the means for resiliently deforming the third boot connecting means comprises a means for causing a resilient force caused by resilient deformation of the third boot connecting means to retain the third retaining surface on the third boot connecting means against the retaining surface on the heel end of the boot.

109. The apparatus of any one of claims **100** to **108** further comprising a fourth boot connecting means on the boot coupling body for connecting with a fourth complementary boot connecting means on the heel end of the boot.

110. The apparatus of any one of claims **100** to **109**, when directly or indirectly dependent from claim **85**, wherein the third boot connecting means is rotatably coupled to the second connecting means for rotation about the axis of rotation.

111. The apparatus of any one of claims **100** to **110** further comprising first and second projections positioned between laterally opposite sides of the fin apparatus and corresponding laterally opposite sides of the boot toe body.

112. The apparatus of claim **111** wherein the first and second projections are coupled to the fin apparatus.

113. The apparatus of claim **111** or **112** wherein the first and second projections are resiliently deformable.

114. The apparatus of any one of claims **70** to **113** further comprising a means for dampening movement of the boot toe body relative to the fin apparatus.

115. A boot toe body coupleable to a fin apparatus comprising a fin body coupleable to a boot coupling body comprising first and second ends, the boot toe body comprising:

a first boot connecting means on a top side of the boot toe body for connecting with a first complementary boot connecting means on the first end of the boot coupling body; and

a second boot connecting means on a bottom side of the boot toe body for connecting with a second complementary boot connecting means on the second end of the boot coupling body.

116. The boot toe body of claim **115** wherein:

the first boot connecting means comprises a first retaining surface on the top side of the boot toe body for contacting a holder on the first complementary boot connecting means; and

the second boot connecting means comprises a second retaining surface on the bottom side of the boot toe body for contacting a boot clasp on the second complementary boot connecting means.

117. The apparatus of claim **116** wherein the first retaining surface is positioned to retain the holder against movement in a direction towards the fin body when the holder is positioned against the first retaining surface.

118. The apparatus of claim **116** or **117** wherein the second retaining surface is positioned to retain the boot clasp against movement in a direction towards the fin body when the boot clasp is positioned against the second retaining surface.

119. The boot toe body of claim **116**, **117**, or **118** wherein:

the first boot connecting means comprises a first receptacle on the top side of the boot toe body for receiving the holder; and

the second boot connecting means comprises a second receptacle on the bottom side of the boot toe body for receiving the boot clasp.

120. The boot toe body of any one of claims **115** to **119** wherein the boot toe body is integrally coupled to a boot.

121. The boot toe body of any one of claims **115** to **119** wherein the boot toe body is coupleable to a boot.

122. The boot toe body of any one of claims **115** to **121** further comprising a means for dampening movement of the boot toe body relative to the fin apparatus.

123. A fin system comprising the apparatus of any one of claims **70** to **114** and the boot toe body of any one of claims **115** to **122**.

124. The system of claim **123** wherein the first boot connecting means of the boot coupling body and the first boot connecting means of the boot toe body are configured to permit the boot toe body to pivot relative to the boot coupling body about a generally transverse axis of rotation, and to permit the boot coupling body to pivot relative to the boot toe body about the generally transverse axis of rotation, when the first boot connecting means of the boot coupling body is connected to the first boot connecting means of the boot toe body.

125. The system of claim **124** wherein the boot coupling body comprises a curved resiliently deformable portion between the first and second boot connecting means of the boot coupling body.

126. The system of claim **125** wherein the resiliently deformable portion of the boot coupling body has, absent external forces, a curvature that is greater than a curvature of a complementary surface on the boot toe body, such that pivoting the boot toe body relative to the boot coupling body about the generally transverse axis of rotation, or pivoting the boot coupling body relative to the boot toe body about the generally transverse axis of rotation, in a direction that causes the second boot connecting means of the boot coupling body to approach the second boot connecting means of the boot toe body, resiliently deforms the resiliently deformable portion of the boot coupling body to increase a separation distance between the first and second boot connecting means of the boot coupling body.

127. The system of claim **123**, **124**, or **125**, when ultimately dependent on claim **88**, wherein the first and second boot connecting means of the boot coupling body have, absent external forces, positions such that pivoting the boot toe body relative to the boot coupling body about the generally transverse axis of rotation, or pivoting the boot coupling body relative to the boot toe body about the generally transverse axis of rotation, in a direction that causes the second boot connecting means of the boot coupling body to approach the second boot connecting means of the boot toe body, resiliently deforms the boot coupling body to increase the separation distance between the first and second boot connecting means of the boot coupling body.

128. The system of any one of claims **123** to **127** wherein a top edge of the boot toe body and a top edge of the fin body are generally coplanar when the fin apparatus is coupled to the boot toe body.

129. The system of any one of claims **123** to **128** wherein the fin apparatus further comprises:

a retaining surface; and

a means for positioning a front surface of the boot toe body against the retaining surface such that when the fin apparatus is coupled to the boot toe body, the first and second connecting means of the boot coupling body and the retaining surface retain the boot toe body against movement relative to the fin apparatus.

130. The system of claim **129** further comprising a means for adjusting a retentive force holding the retaining surface of the fin apparatus against the front surface of the boot toe body.

131. A fin apparatus coupleable to a boot toe body, the apparatus comprising:

a fin body; and

a boot coupling body coupleable to the fin body, the boot coupling body comprising:

first and second ends;

a first boot connector on the first end of the boot coupling body for connecting with a first complementary boot connector on a top side of the boot toe body; and

a second boot connector on the second end of the boot coupling body for connecting with a second complementary boot connector on a bottom side of the boot toe body.

132. The apparatus of claim **131** wherein the boot coupling body is detachably coupleable to a fin frame detachably coupleable to the fin body.

133. The apparatus of claim **131** wherein the boot coupling body is detachably coupleable to a fin frame non-detachably coupled to the fin body.

134. The apparatus of claim **131**, **132**, or **133** wherein the boot coupling body comprises a unitary body having the first and second boot connectors.

135. The apparatus of claim **132** or **133**, or of claim **134** when dependent from claim **132** or **133**, wherein:

the fin frame comprises a resiliently deformable fin frame retaining member comprising a fin frame retaining surface; and

the boot coupling body defines a through-hole and a fin frame retaining surface complementary to the fin frame retaining surface of the fin frame retaining member such that, when the fin frame retaining member is received in the through-hole of the boot coupling body, the fin frame retaining surface of the fin frame retaining member is positionable against the complementary fin frame retaining surface of the boot coupling body to couple the fin frame detachably to the boot coupling body.

136. The apparatus of claim **132** or **133**, or of claim **134** when dependent from claim **132** or **133**, wherein:

the boot coupling body comprises a first fin connector and a second fin connector; and

the fin frame comprises:

a first complementary fin connector complementary to the first fin connector of the boot coupling body; and

a second complementary fin connector complementary to the second fin connector of the boot coupling body.

137. The apparatus of claim **131** wherein the boot coupling body comprises two or more bodies detachably coupleable together.

138. The apparatus of claim **131** or **137** wherein the boot coupling body comprises a fin frame detachably coupleable to the fin body.

139. The apparatus of claim **131** or **137** wherein the boot coupling body comprises a fin frame non-detachably coupled to the fin body.

140. The apparatus of claim **138** or **139** wherein the first boot connector is on the fin frame.

141. The apparatus of claim **138**, **139**, or **140** wherein the second boot connector is on a coupling body detachably coupled to the fin frame.

142. The apparatus of claim **141** wherein:

the fin frame comprises a resiliently deformable fin frame retaining member comprising a fin frame retaining surface; and

the coupling body defines a through-hole and a fin frame retaining surface complementary to the fin frame retaining surface of the fin frame retaining member such that, when the fin frame retaining member is received in the through-hole of the coupling body, the fin frame retaining surface of the fin frame retaining member is positionable against the complementary fin frame retaining surface of the coupling body to couple the fin frame detachably to the coupling body.

143. The apparatus of claim **141**, wherein:

the coupling body comprises a first fin connector and a second fin connector; and

the fin frame comprises:

a first complementary fin connector complementary to the first fin connector of the coupling body; and

a second complementary fin connector complementary to the second fin connector of the coupling body.

144. The apparatus of claim **136** or **143** wherein the first fin connector comprises a fin receptacle sized to receive the first complementary fin connector.

145. The apparatus of claim **144** wherein the fin receptacle defines at least one fin retaining surface positioned to restrict movement of the fin frame relative to the first fin connector when the first complementary fin connector is received in the fin receptacle.

146. The apparatus of claim **136**, **143**, **144**, or **145** wherein the second fin connector comprises a fin clasp comprising a fin retaining surface positionable against the second complementary fin connector to restrict movement of the fin frame relative to the second fin connector when the second complementary fin connector is positioned against the fin clasp and when the fin clasp is in a retaining position.

147. The apparatus of claim **146** wherein the fin clasp is moveable into a releasing position to allow movement of the fin frame relative to the second fin connector.

148. The apparatus of any one of claims **131** to **147** wherein:

the first boot connector comprises a holding body on the first end of the boot coupling body and having a holding surface positionable against a first retaining surface on the top side of the boot toe body; and

the second boot connector comprises a boot clasp on the second end of the boot coupling body positionable against a second retaining surface on the bottom side of the boot toe body.

149. The apparatus of claim **148** wherein the holding body is configured to be retained against movement in a direction towards the fin body when the holding surface is positioned against the first retaining surface.

150. The apparatus of claim **148** or **149** wherein the boot clasp is configured to be retained against movement in a direction towards the fin body when the boot clasp is positioned against the second retaining surface.

151. The apparatus of claim **148**, **149**, or **150** wherein the boot clasp comprises a roller positionable against the second retaining surface.

152. The apparatus of any one of claims **148** to **151** wherein the boot clasp is rotatable about an axis of rotation extending between the top and bottom sides of the boot toe body to connect the second boot connector to the second complementary boot connector.

153. The apparatus of claim **152** wherein the axis of rotation is angled to cause the boot clasp to move in a direction away from the top side of the boot toe body when the boot clasp is rotated about the axis of rotation to connect the second boot connector to the second complementary boot connector.

154. The apparatus of any one of claims **148** to **153** wherein:

the holding body is receivable in a first receptacle on the top side of the boot toe body; and

the boot clasp is receivable in a second receptacle on the bottom side of the boot toe body.

155. The apparatus of any one of claims **148** to **154** further comprising a lever operable to transfer a force to the second end of the boot coupling body in a direction away from the second receptacle to cause the boot clasp to lose contact with the retaining surface on the bottom side of the boot toe body.

156. The apparatus of claim **152** or **153**, or of claim **154** or **155** when directly or indirectly dependent from claim **152**, wherein the boot clasp is shaped to lose contact with the second retaining surface in response to rotation of the boot clasp about the axis of rotation.

157. The apparatus of claim **156** wherein the axis of rotation is angled to cause the boot clasp to move in a direction towards from the top side of the boot toe body when the boot clasp is rotated about the axis of rotation to decouple the boot toe body from the fin apparatus.

158. The apparatus of any one of claims **131** to **157** wherein the boot coupling body is resiliently deformable to increase a separation distance between the first and second boot connectors.

159. The apparatus of claim **158** wherein the boot coupling body comprises a resilient body unattached to the second boot connector and resiliently deformable to increase the separation distance between the first and second boot connectors.

160. The apparatus of claim **158** wherein the second boot connector is resiliently deformable to increase the separation distance between the first and second boot connectors.

161. The apparatus of claim **160** wherein the boot coupling body comprises a resiliently deformable spring having the second boot connector.

162. The apparatus of any one of claims **131** to **161** further comprising a fastener for coupling the boot coupling body to the fin body.

163. The apparatus of any one of claims **131** to **162** further comprising a third boot connector for connecting with a third complementary boot connector on a heel end of a boot coupled to the boot toe body.

164. The apparatus of claim **163** wherein a distance separating the third boot connector from the first and second boot connectors is adjustable.

165. The apparatus of claim **164** further comprising:

a strap extending from the first and second boot connectors to the third boot connector;

a heel connector body comprising the third boot connector; and

a fastener for fastening the heel connector body to the strap at a desired distance from the first and second boot connectors.

166. The apparatus of claim **163**, **164**, or **165** wherein the third boot connector comprises a holding body receivable in a third receptacle on the heel end of the boot and comprising a holding surface positionable on a third retaining surface on the heel end of the boot.

167. The apparatus of claim **166** further comprising a wedge positionable to be wedged in the third receptacle to urge the third boot connector against the third retaining surface.

168. The apparatus of claim **166** or **167** wherein the third boot connector is configured to be resiliently deformed in response to positioning the holding surface on the third boot connector against the third retaining surface on the heel end of the boot.

169. The apparatus of claim **168** wherein the third boot connector is configured to be resiliently deformed by varying a separation distance between first and second hinges on the third boot connector in response to movement of the third boot connector around the first hinge.

170. The apparatus of claim **169** wherein the third boot connector is configured to vary the separation distance between the first and second hinges on the third boot connector in response to the movement of the third boot connector around the first hinge by causing a connector

connected to the second hinge to move around a third hinge on the boot and spaced apart from the first hinge.

171. The apparatus of claim **168**, **169**, or **170** wherein the third boot connector is configured to cause a resilient force caused by resilient deformation of the third boot connector to retain the holding surface on the third boot connector against the third retaining surface on the heel end of the boot.

172. The apparatus of any one of claims **163** to **171** further comprising a fourth boot connector on the boot coupling body for connecting with a fourth complementary boot connector on the heel end of the boot.

173. The apparatus of claim **172** wherein the fourth boot connector comprises a retaining surface receivable in a receptacle of the fourth complementary boot connector.

174. The apparatus of claim **173** wherein the receptacle of the fourth complementary boot connector defines at least one retaining surface positioned to restrict movement of the fourth boot connector relative to the boot when the retaining surface on the fourth boot connector is received in the receptacle of the fourth complementary boot connector.

175. The apparatus of any one of claims **163** to **174**, when directly or indirectly dependent from claim **152**, wherein the third boot connector is rotatably coupled to the second boot connector for rotation about the axis of rotation.

176. The apparatus of any one of claims **131** to **175** further comprising first and second projections positionable between laterally opposite sides of the fin apparatus and corresponding laterally opposite sides of the boot toe body when the fin apparatus is coupled to the boot toe body.

177. The apparatus of claim **176** wherein the first and second projections are resiliently deformable.

178. The apparatus of any one of claims **131** to **177** further comprising at least one resiliently compressible dampening member positioned between the boot toe body and the fin apparatus

when the fin apparatus is coupled to the boot toe body to dampen movement of the boot toe body relative to the fin apparatus.

179. A boot toe body coupleable to a fin apparatus coupleable to a boot coupling body comprising first and second ends, the boot toe body comprising:

a first boot connector on a top side of the boot toe body for connecting with a first complementary boot connector on the first end of the boot coupling body; and

a second boot connector on a bottom side of the boot toe body for connecting with a second complementary boot connector on the second end of the boot coupling body.

180. The boot toe body of claim **179** wherein:

the first boot connector comprises a first retaining surface on the top side of the boot toe body for contacting a holding surface of a holding body on the first complementary boot connector; and

the second boot connector comprises a second retaining surface on the bottom side of the boot toe body for contacting a boot clasp on the second complementary boot connector.

181. The boot toe body of claim **180** wherein the first retaining surface is positioned to retain the holding body against movement in a direction towards the fin body when the holding surface is positioned against the first retaining surface.

182. The boot toe body of claim **180** or **181** wherein the second retaining surface is positioned to retain the boot clasp against movement in a direction towards the fin body when the boot clasp is positioned against the second retaining surface.

183. The boot toe body of claim **180**, **181**, or **182** wherein:

the first boot connector comprises a first receptacle of the top side of the boot toe body for receiving the holding body; and

the second boot connector comprises a second receptacle of the bottom side of the boot toe body for receiving the boot clasp.

184. The boot toe body of any one of claims **179** to **183** wherein the boot toe body is integrally coupled to a boot.

185. The boot toe body of any one of claims **179** to **183** wherein the boot toe body is coupleable to a boot.

186. The boot toe body of any one of claims **179** to **185** further comprising at least one resiliently compressible dampening member positioned between the boot toe body and the fin apparatus when the fin apparatus is coupled to the boot toe body to dampen movement of the boot toe body relative to the fin apparatus.

187. A fin system comprising the apparatus of any one of claims **130** to **178** and the boot toe body of any one of claims **179** to **186**.

188. The system of claim **187** wherein the first boot connector of the boot coupling body and the first boot connector of the boot toe body are configured to permit the boot toe body to pivot relative to the boot coupling body about a generally transverse axis of rotation, and to permit the boot coupling body to pivot relative to the boot toe body about the generally transverse axis of rotation, when the first boot connector of the boot coupling body is connected to the first boot connector of the boot toe body.

189. The system of claim **188** wherein the boot coupling body comprises a curved resiliently deformable portion between the first and second boot connectors of the boot coupling body.

190. The system of claim **189** wherein the resiliently deformable portion of the boot coupling body has, absent external forces, a curvature that is greater than a curvature of a complementary surface on the boot toe body, such that pivoting the boot toe body relative to the boot coupling body about the generally transverse axis of rotation, or pivoting the boot coupling body relative to the boot toe body about the generally transverse axis of rotation, in a direction that causes the second boot connector of the boot coupling body to approach the second boot connector of the boot toe body, resiliently deforms the resiliently deformable portion of the boot coupling body to increase a separation distance between the first and second boot connectors of the boot coupling body.

191. The system of claim **187**, **188**, or **189**, when directly or indirectly dependent on claim **158**, wherein the first and second boot connectors of the boot coupling body have, absent

external forces, positions such that pivoting the boot toe body relative to the boot coupling body about the generally transverse axis of rotation, or pivoting the boot coupling body relative to the boot toe body about the generally transverse axis of rotation, in a direction that causes the second boot connector of the boot coupling body to approach the second boot connector of the boot toe body, resiliently deforms the boot coupling body to increase the separation distance between the first and second boot connectors of the boot coupling body.

192. The system of any one of claims **187** to **191** wherein a top edge of the boot toe body and a top edge of the fin body are generally coplanar when the fin apparatus is coupled to the boot toe body.

193. The system of any one of claims **187** to **192** wherein:

the fin apparatus further comprises a retaining surface; and

the first and second boot connectors of the boot coupling body are configured to position a front surface of the boot toe body against the retaining surface such that when the fin apparatus is coupled to the boot toe body, the first and second boot connectors of the boot coupling body, and the retaining surface, retain the boot toe body against movement relative to the fin apparatus.

194. The system of claim **193** wherein a position of the retaining surface of the fin apparatus is adjustable to adjust a retentive force holding the retaining surface of the fin apparatus against the front surface of the boot toe body.

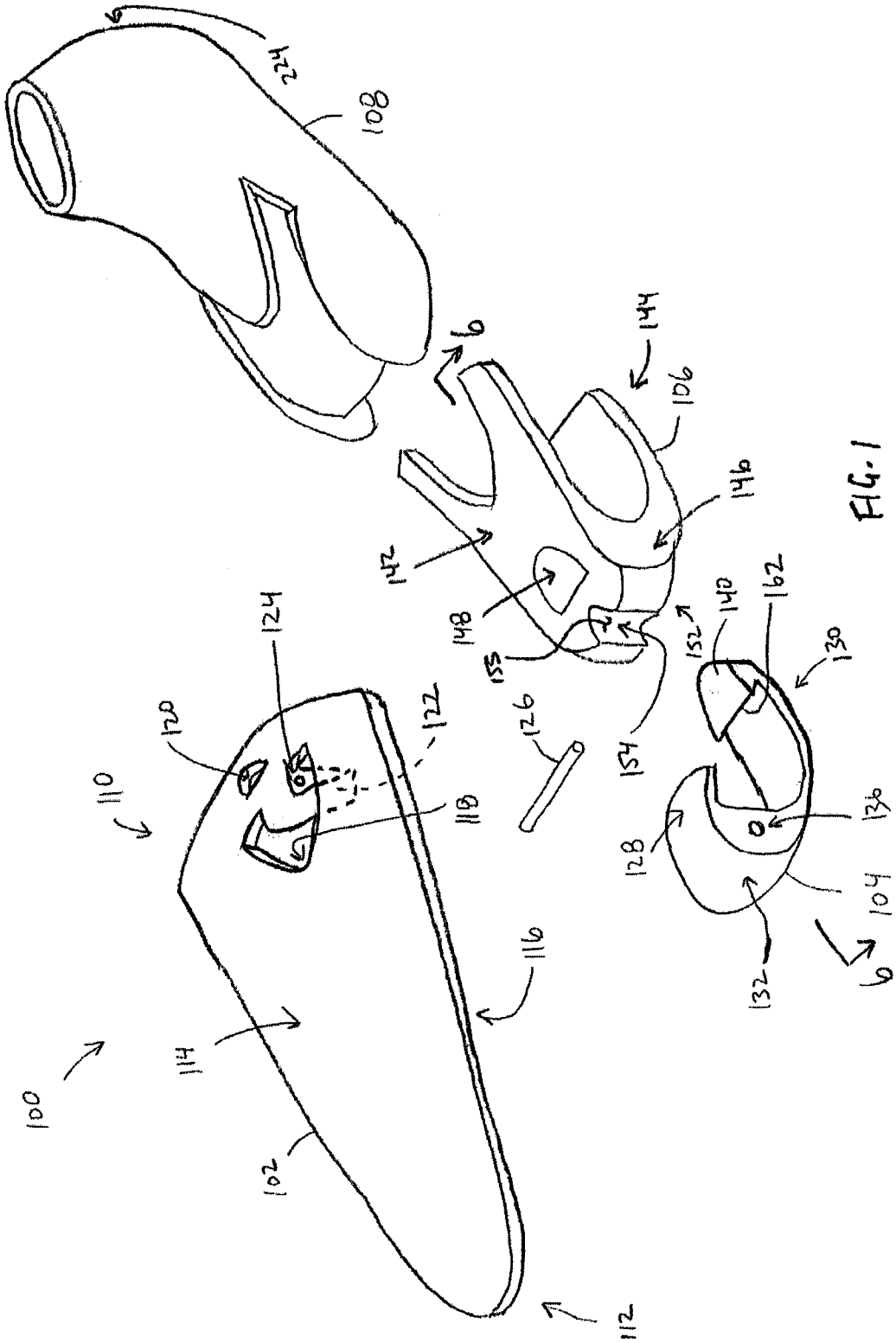
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FIG. 1

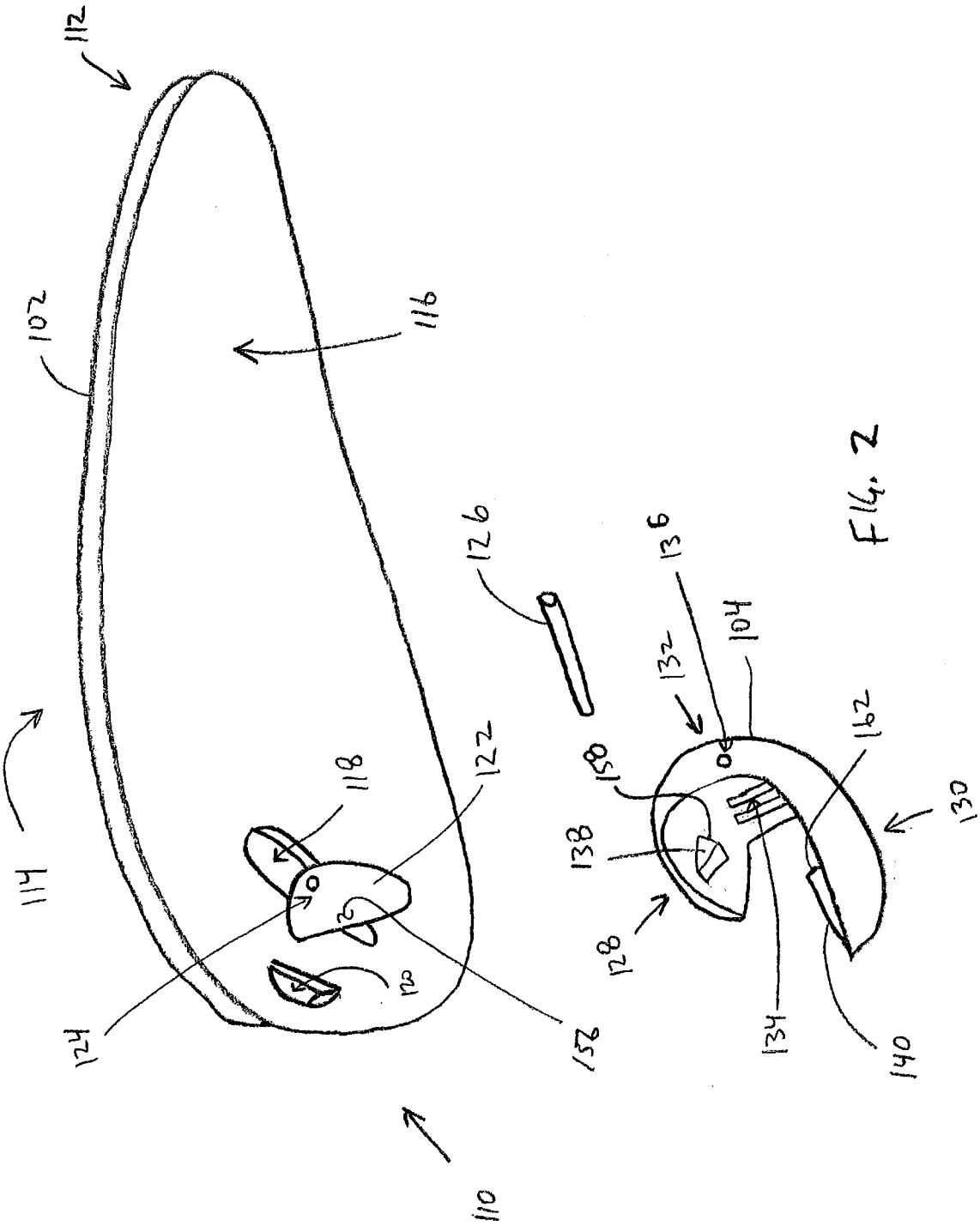
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FIG. 2

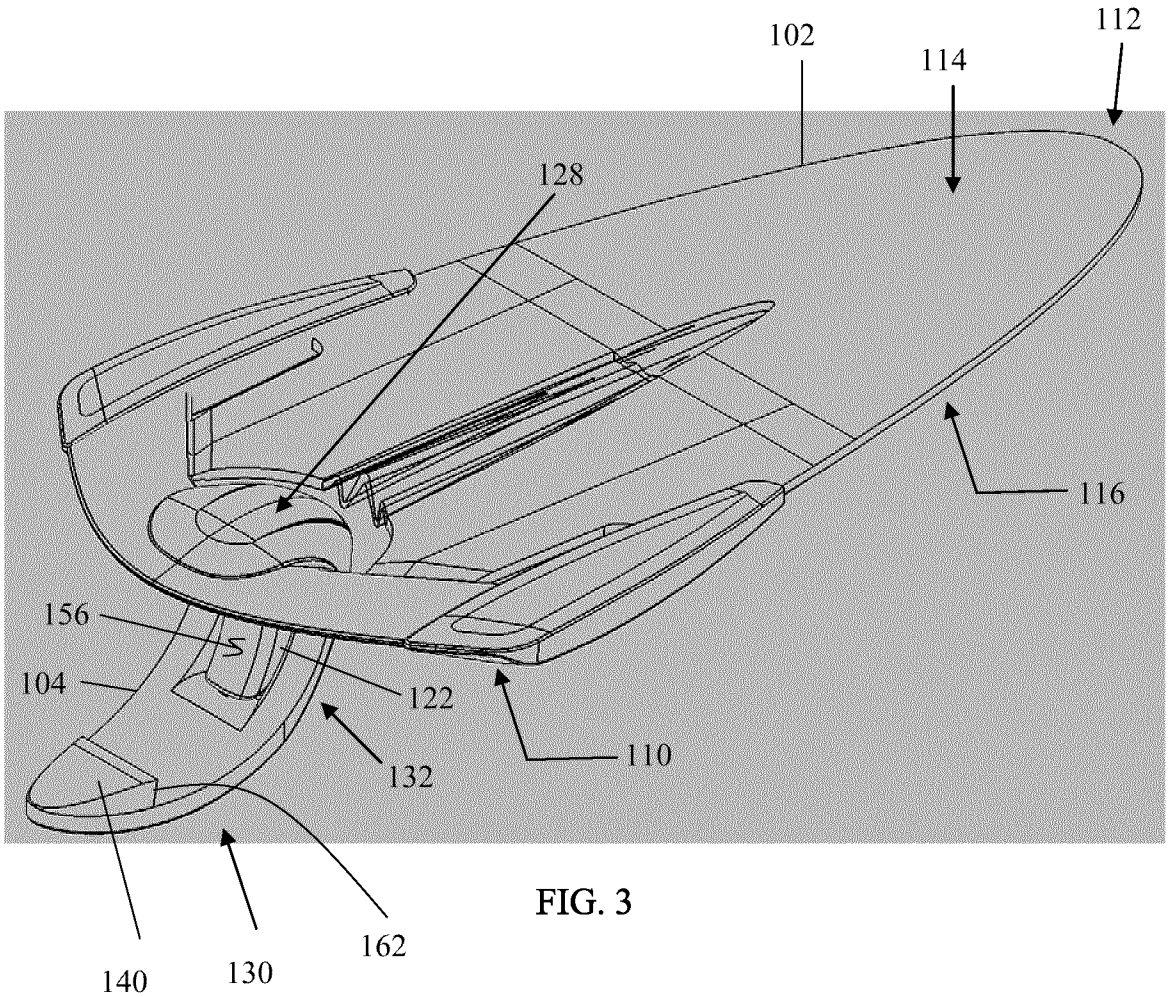
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FIG. 3

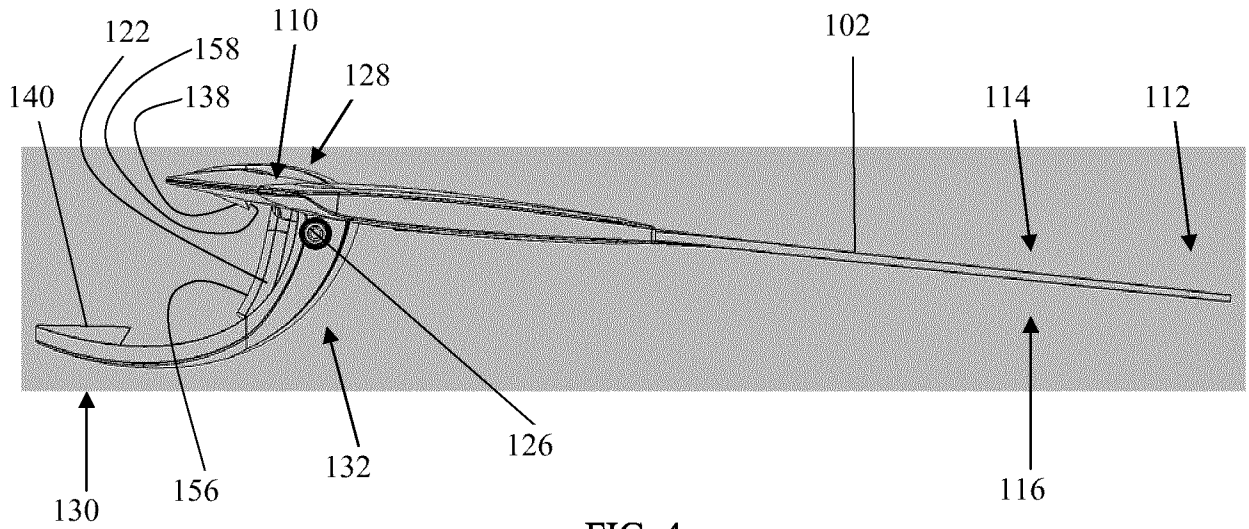
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FIG. 4

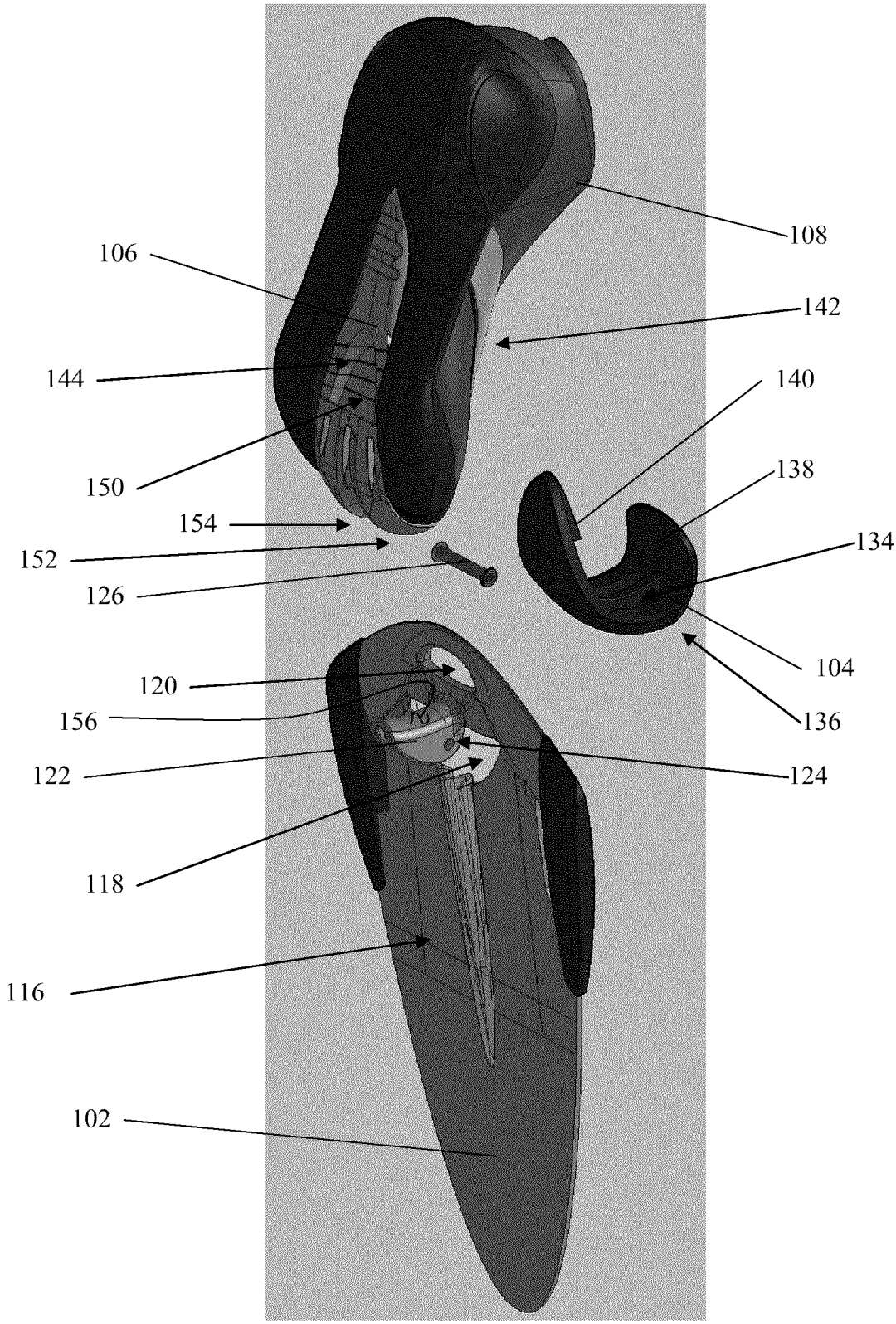
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FIG. 5

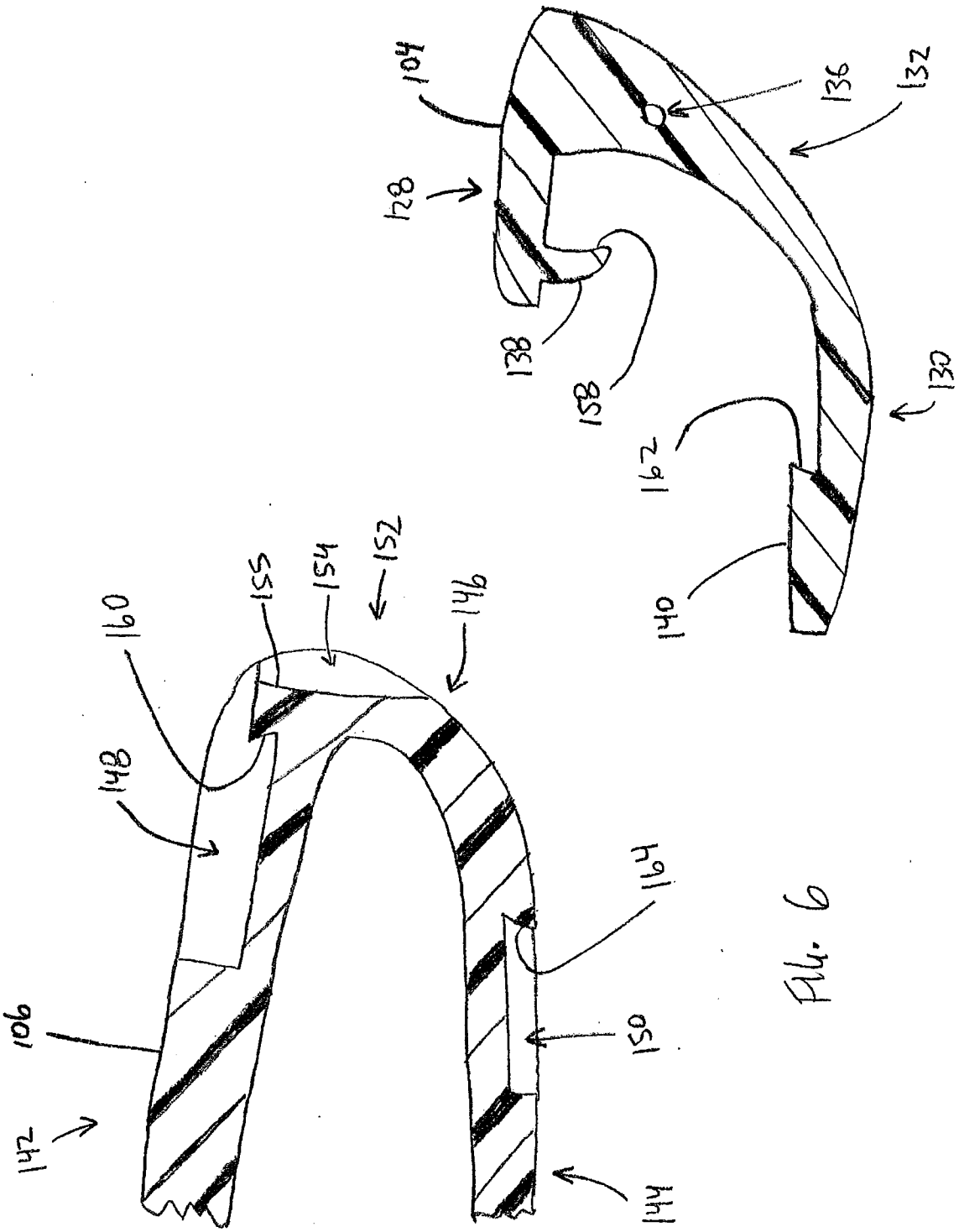
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FIG. 6

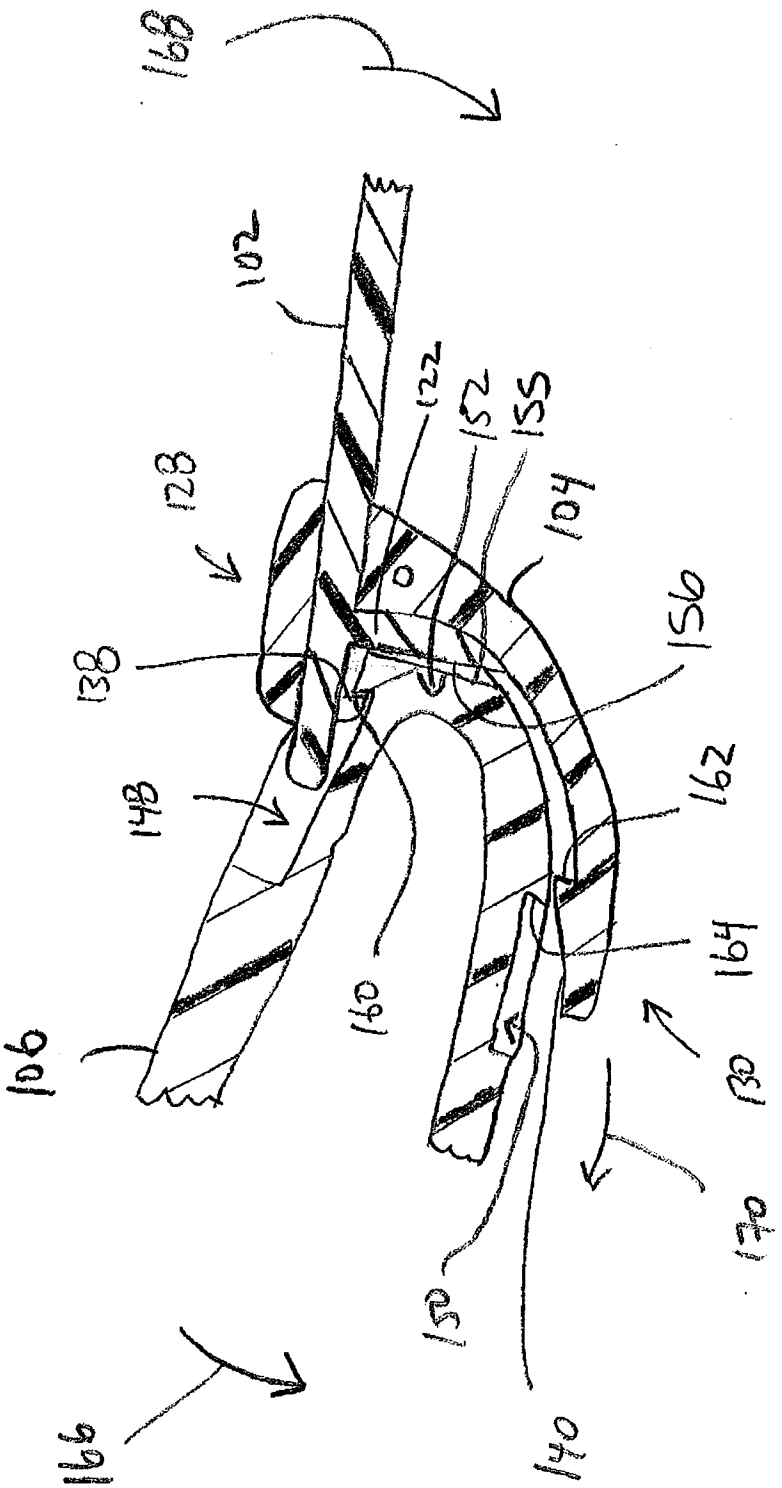
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FIG. 7

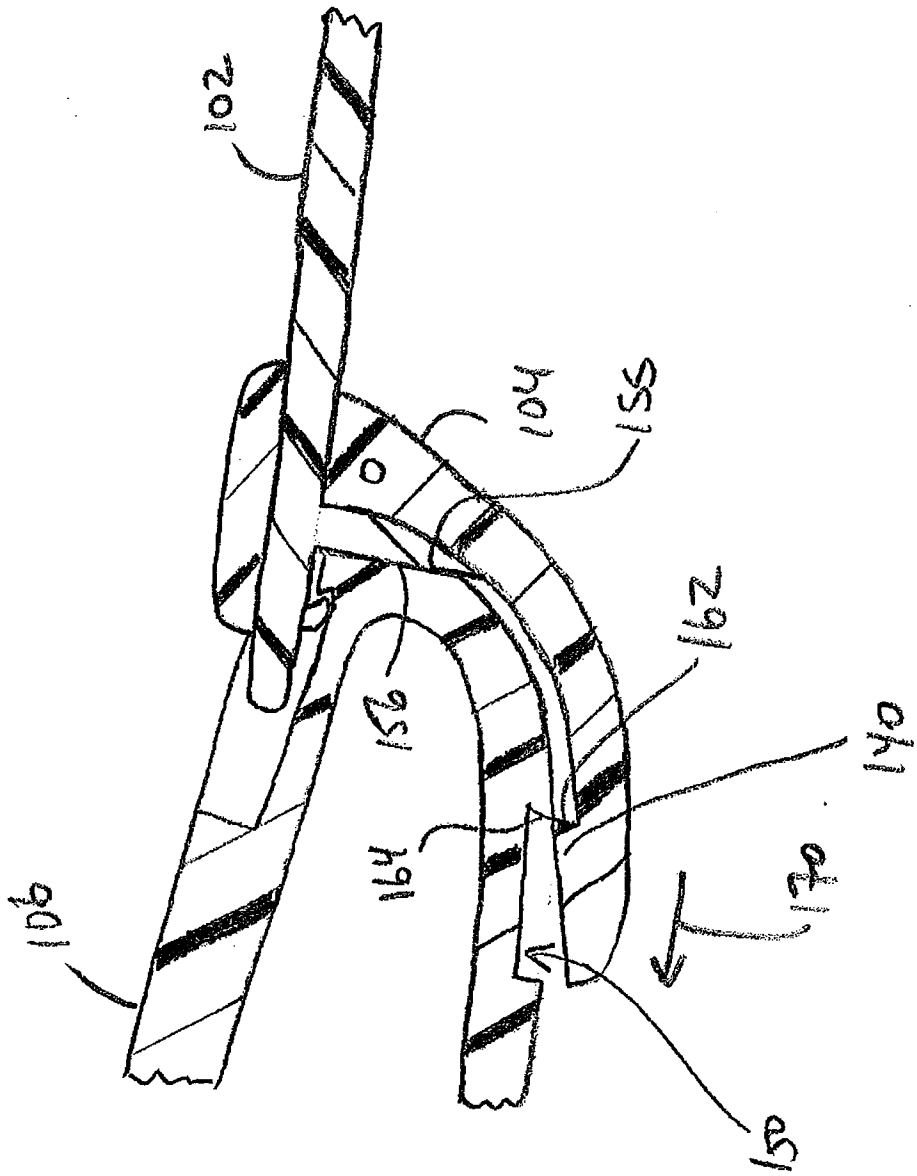

FIG. 8

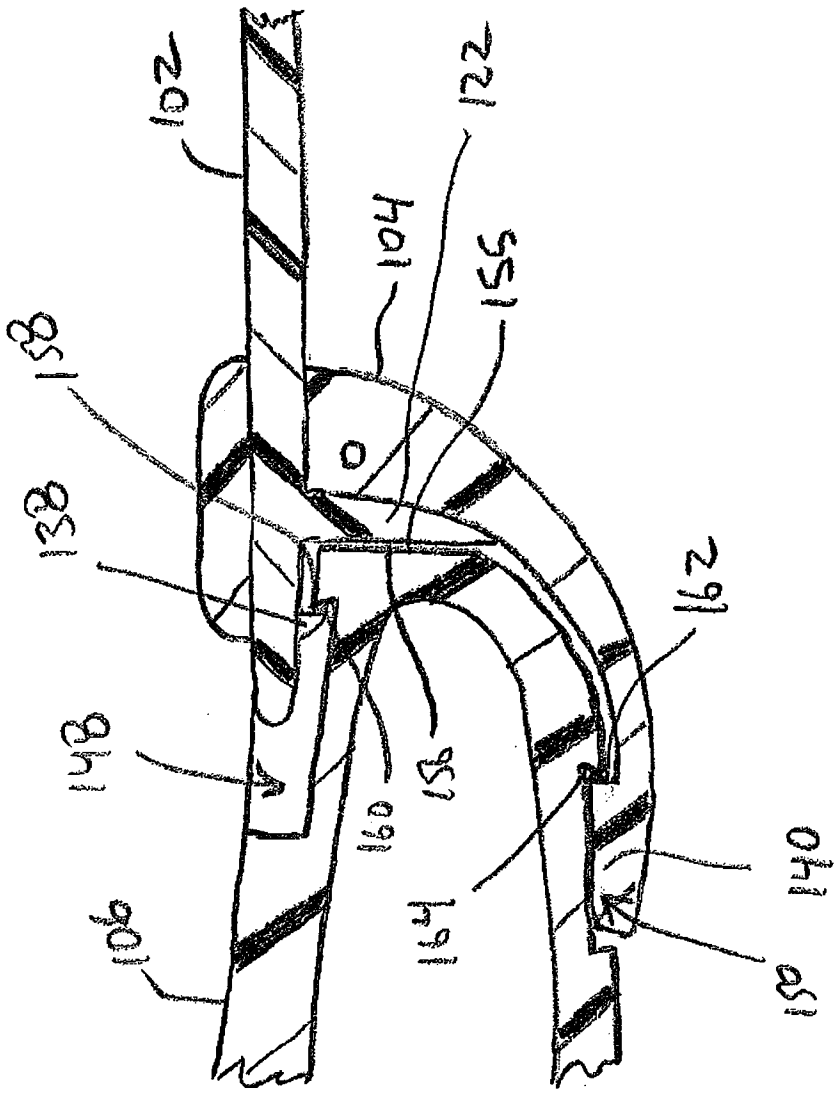

FIG. 9

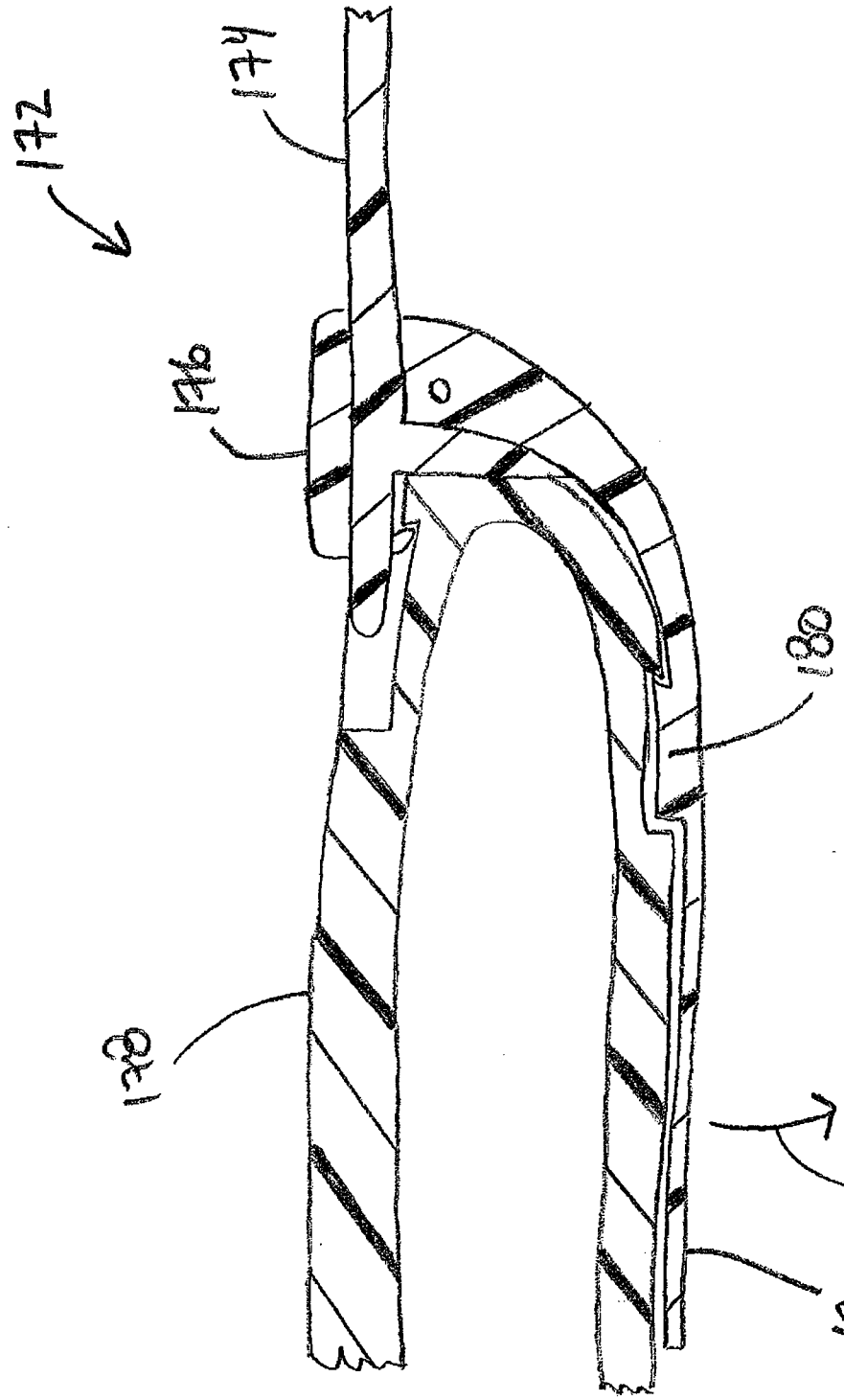

FIG. 10

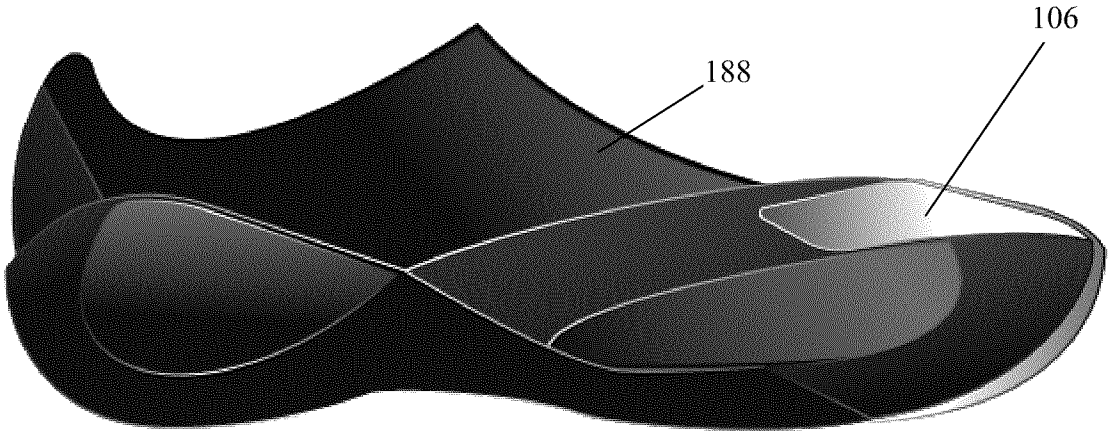

FIG. 11

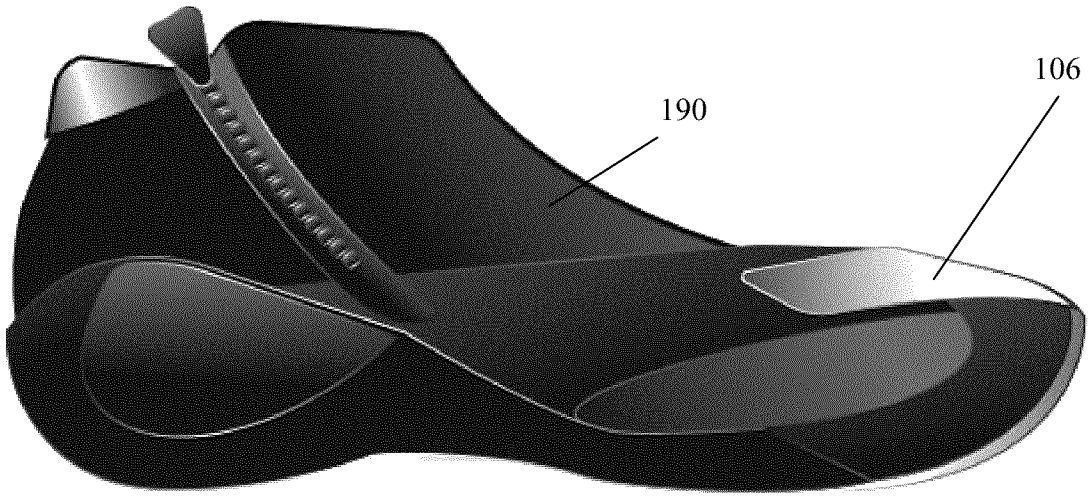

FIG. 12

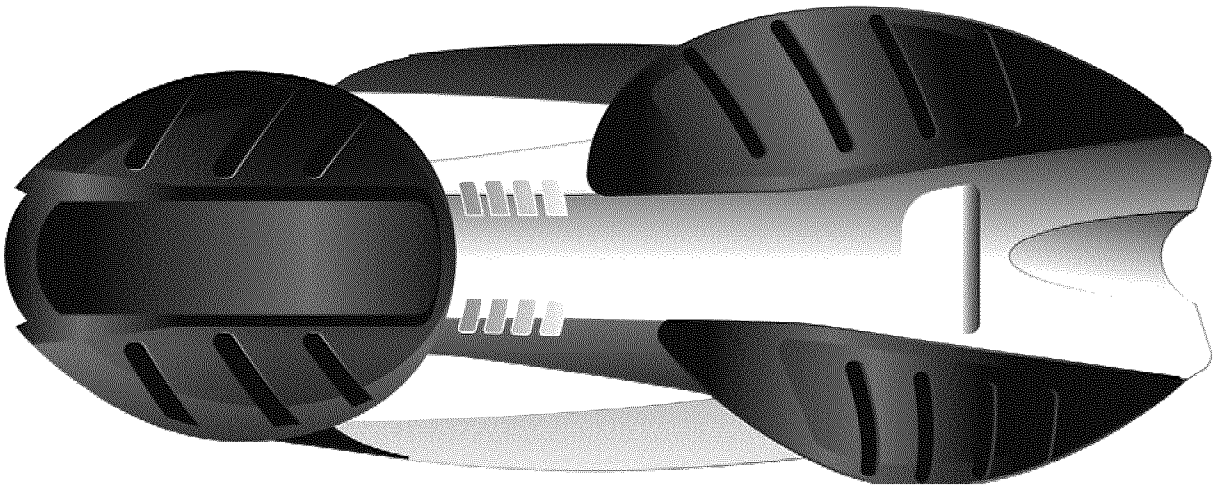

FIG. 13

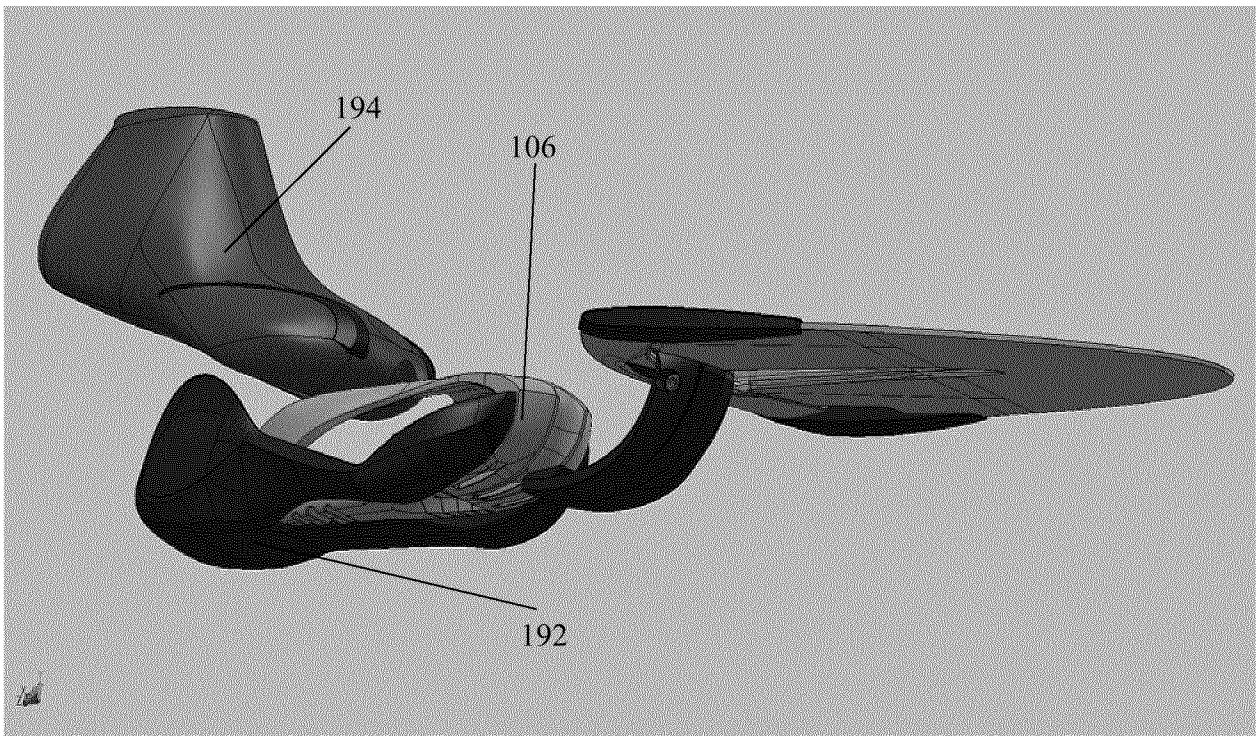

FIG. 14

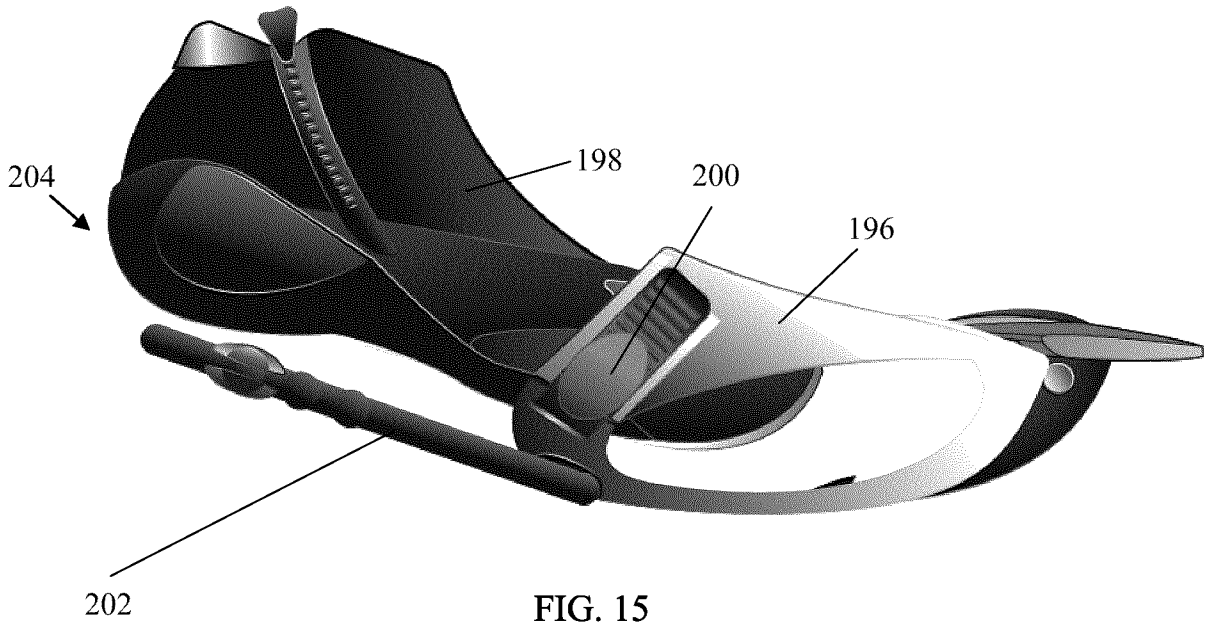

FIG. 15

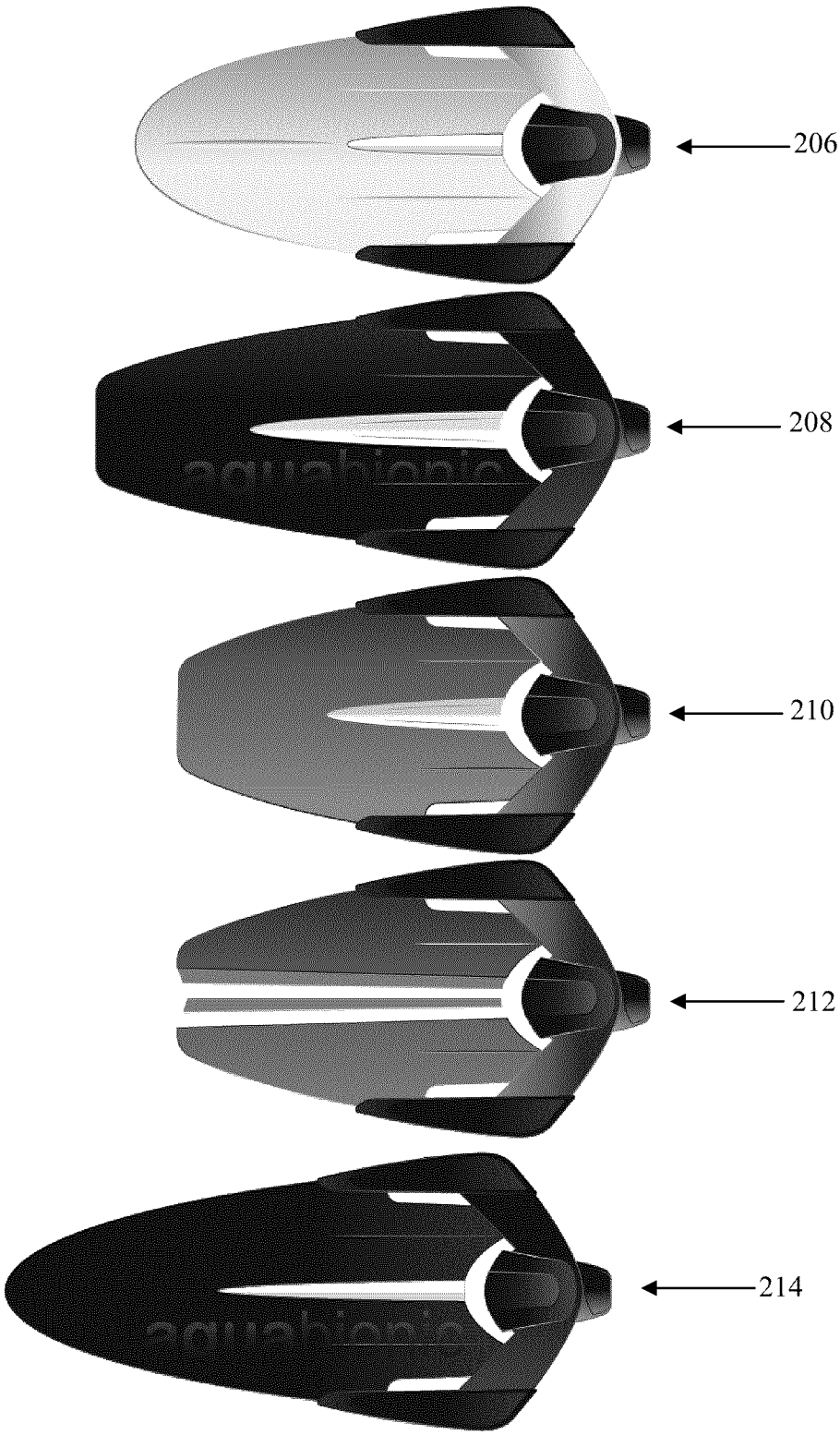

FIG. 16

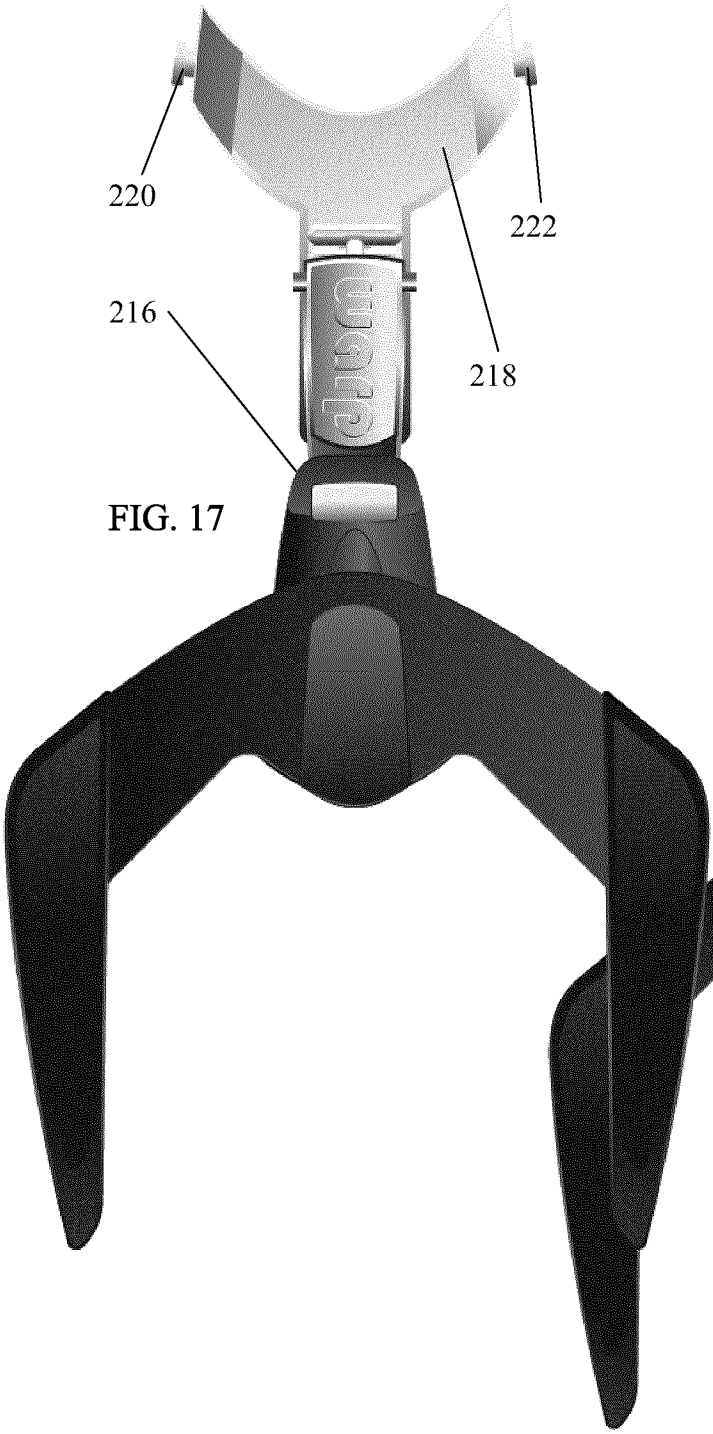

FIG. 17

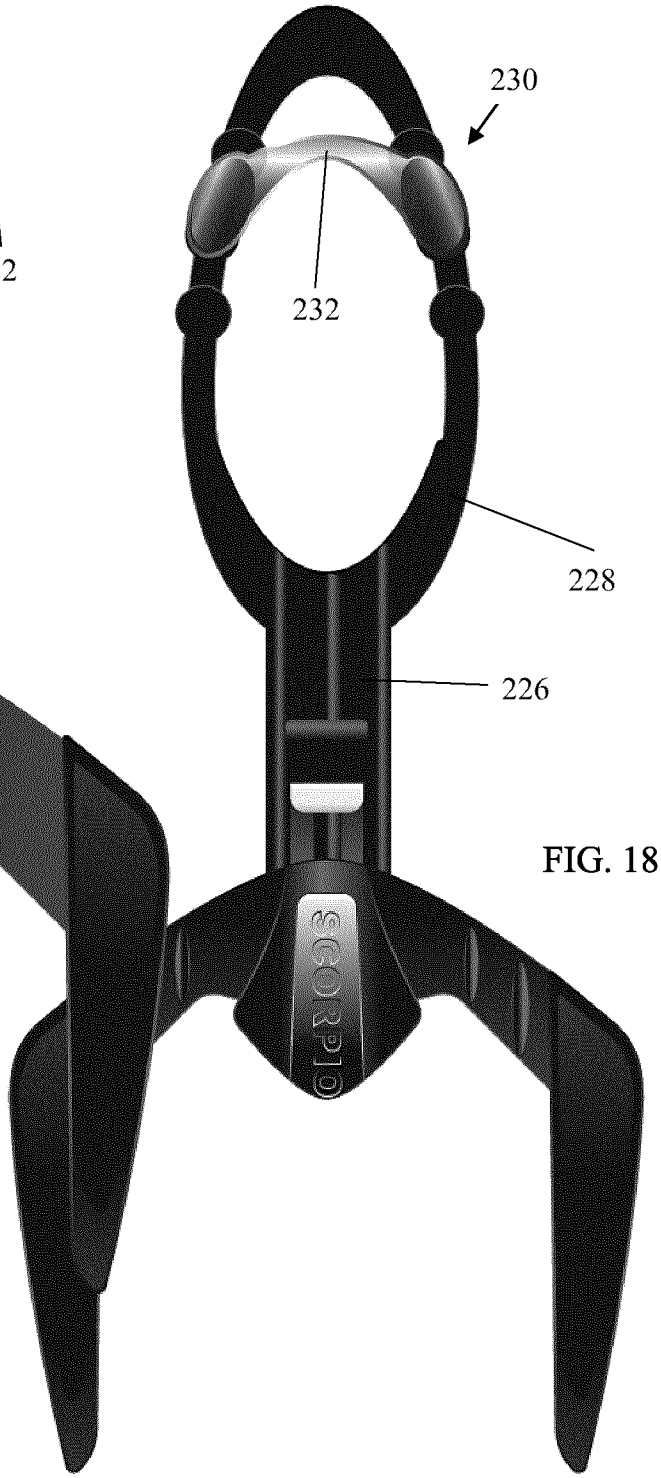

FIG. 18

Prelatch-Pull-Secure

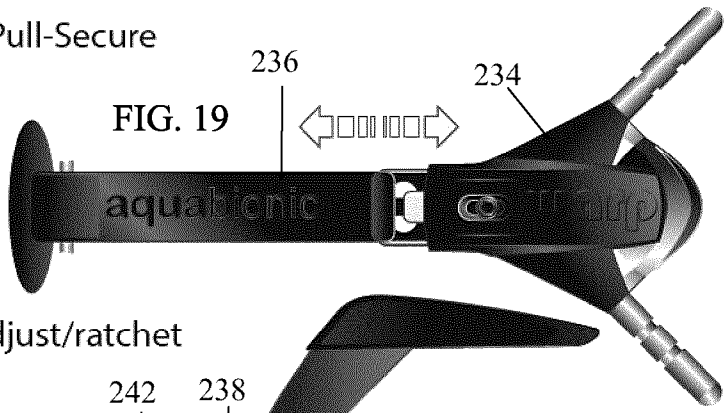

FIG. 19

Length adjust/ratchet

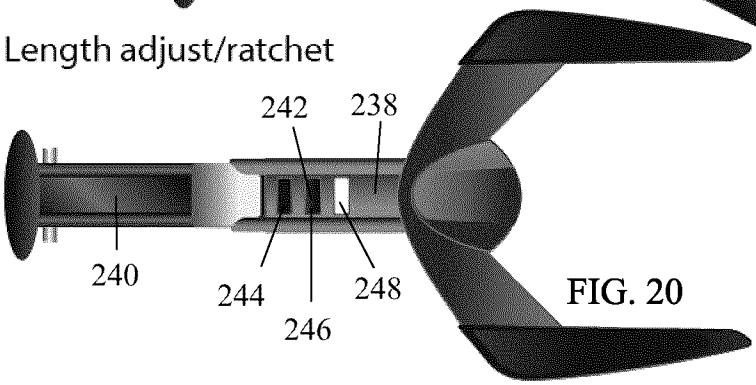

FIG. 20

Heel snap/length adjust semirigid bar/ exchangeable semirigid bar/heel strap adjustment for fine tuning

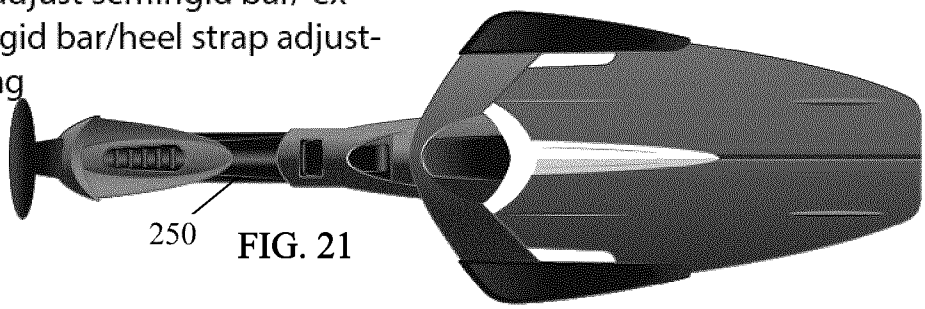

FIG. 21

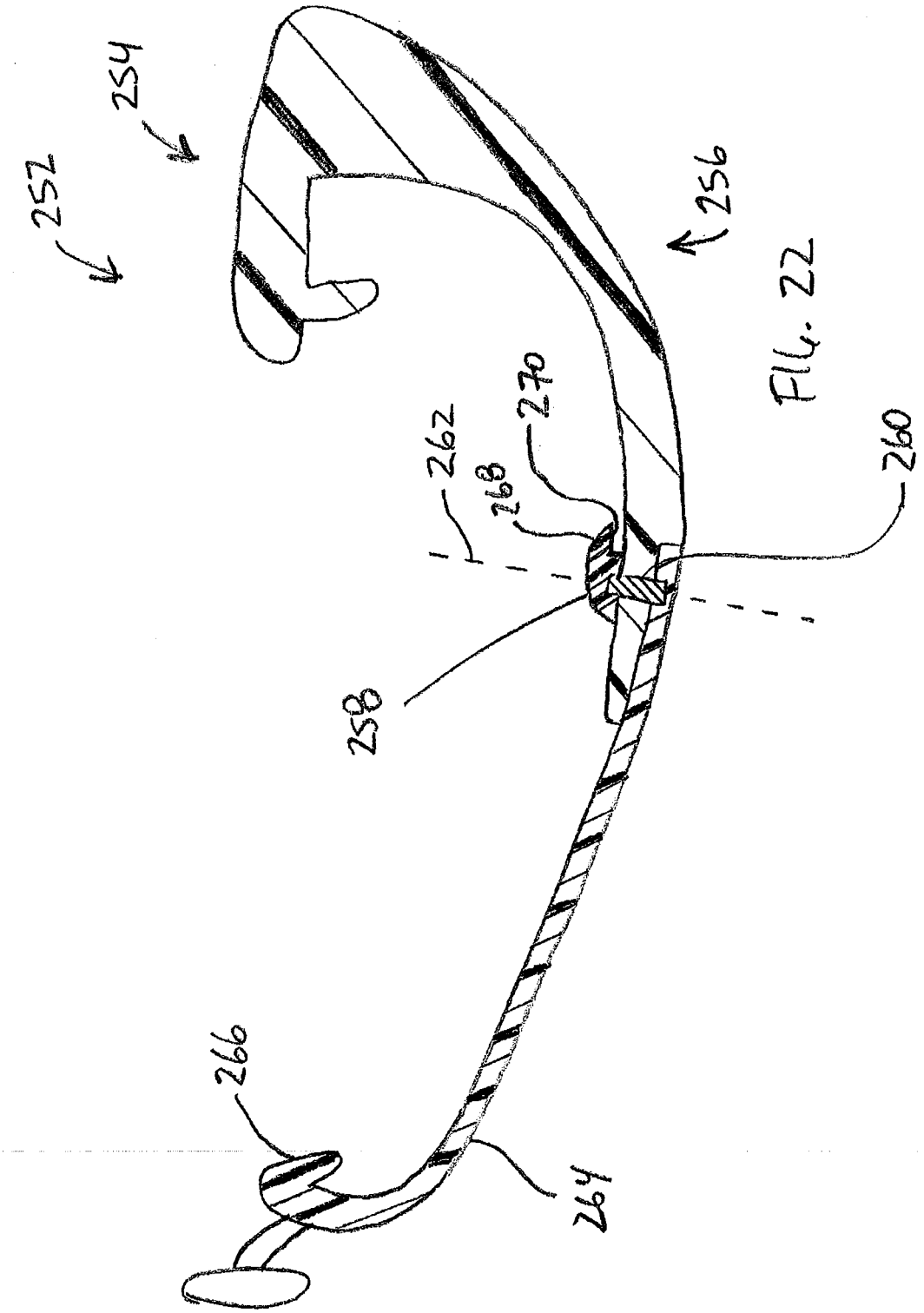

Fig. 22

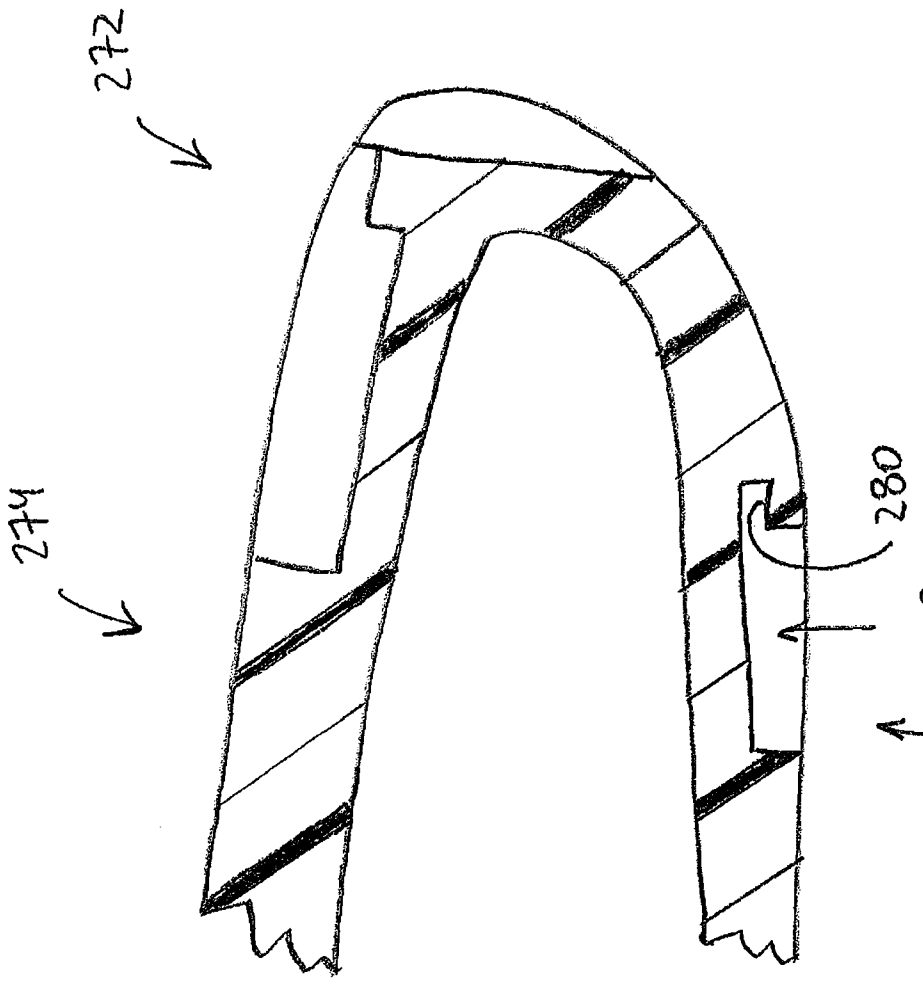

Fig. 23

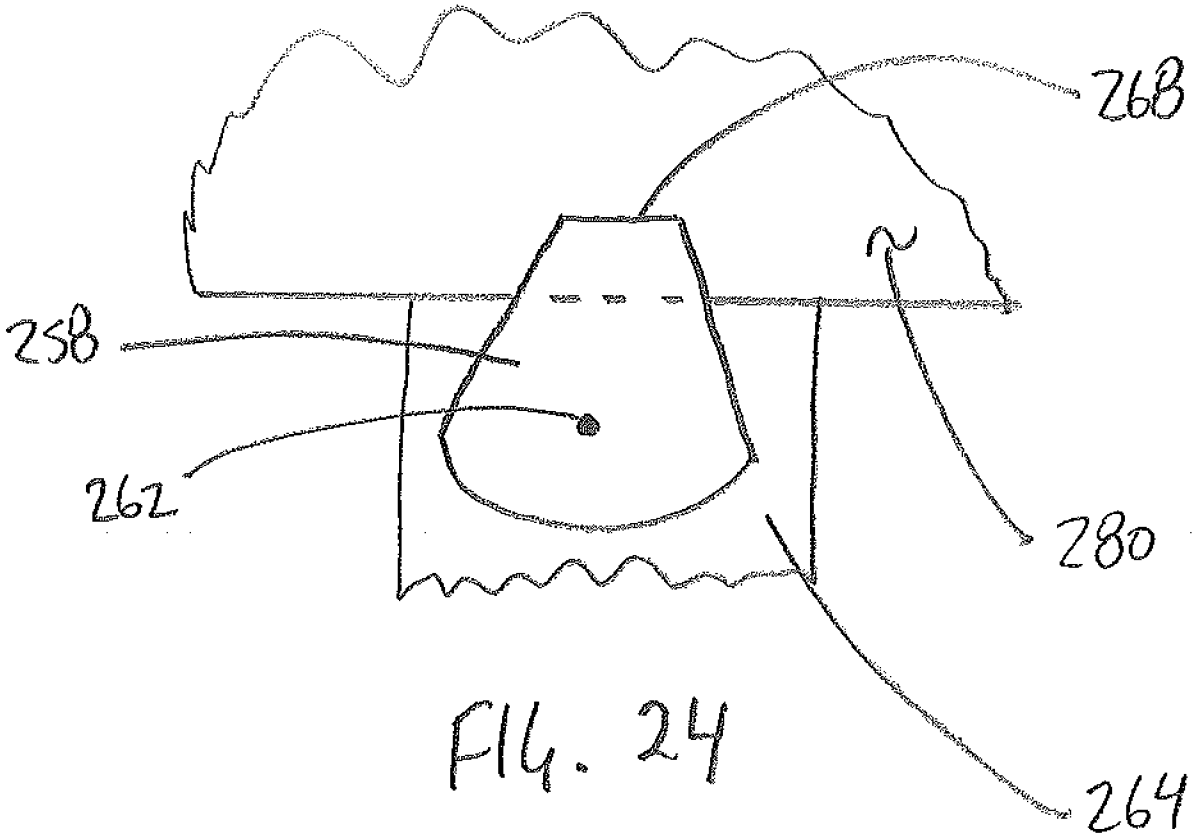

Fig. 24

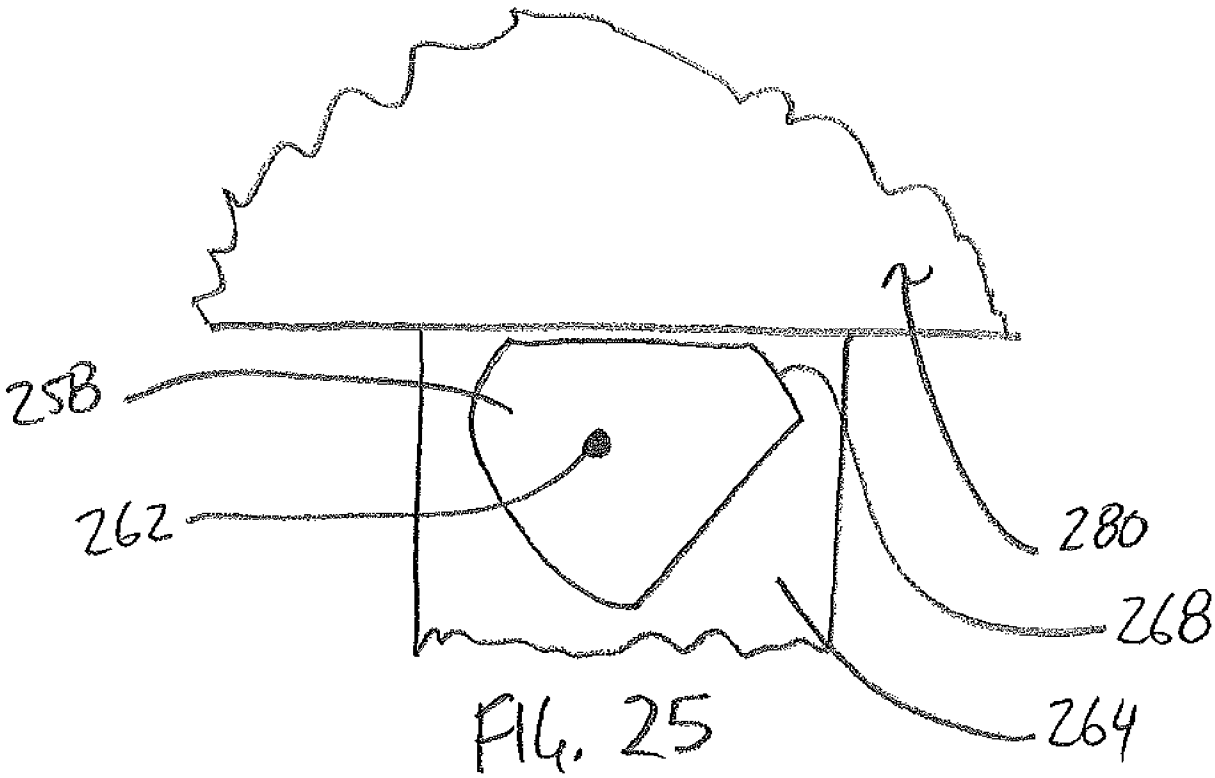

Fig. 25

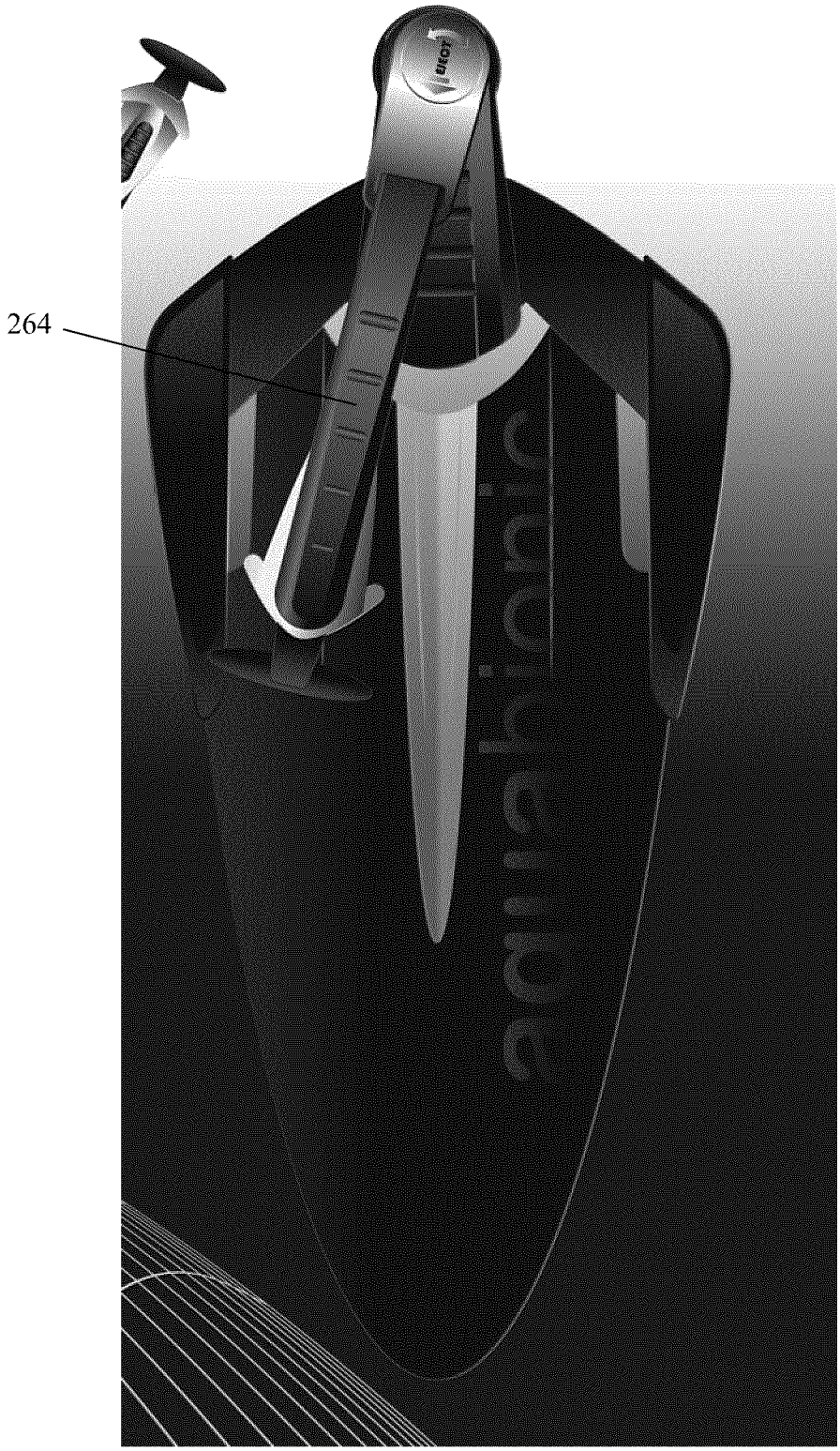

FIG. 26

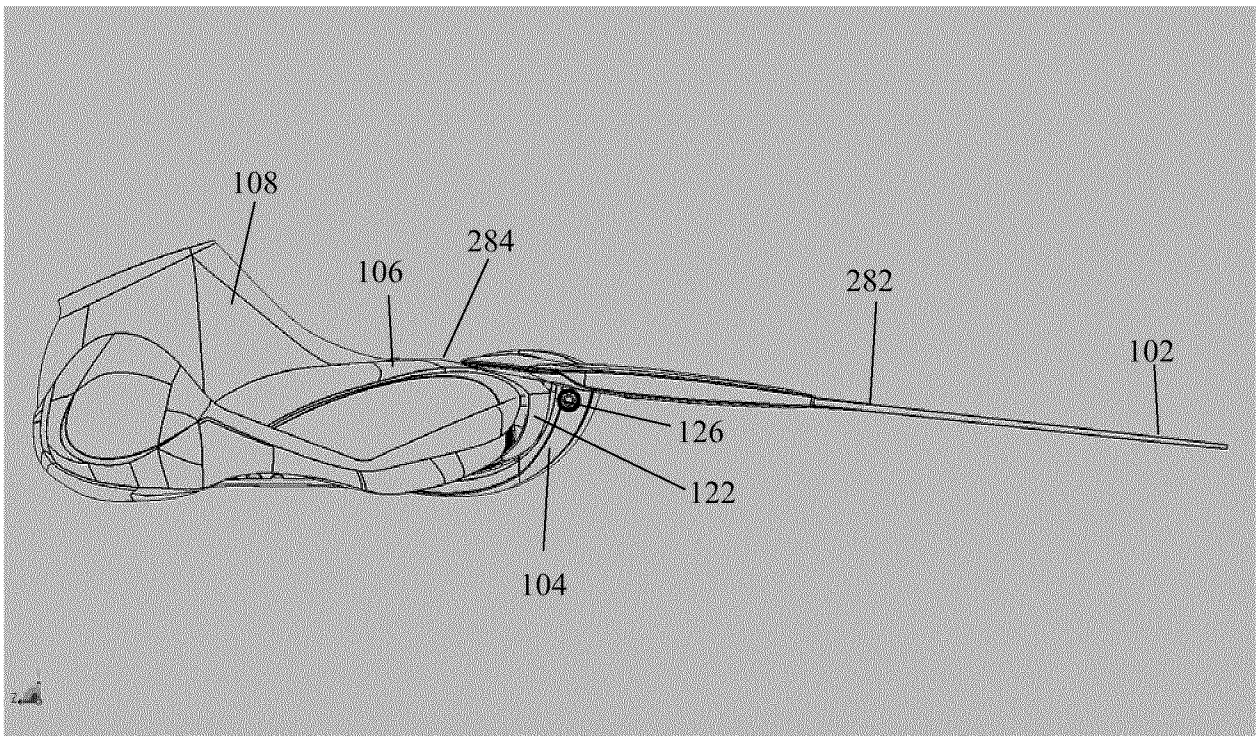

FIG. 27

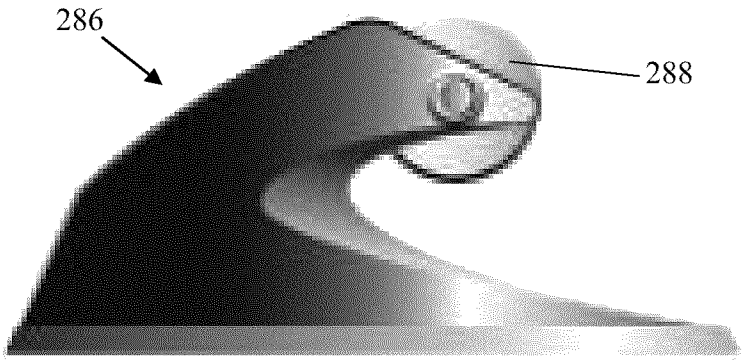

FIG. 28

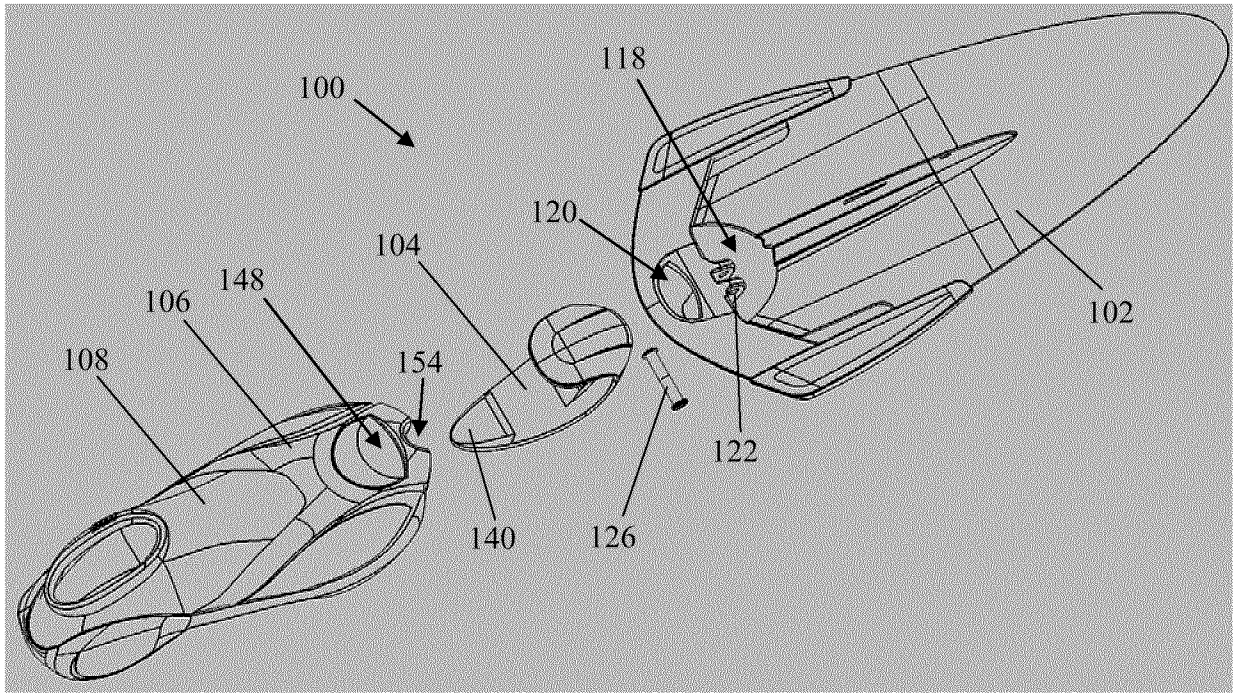
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FIG. 29

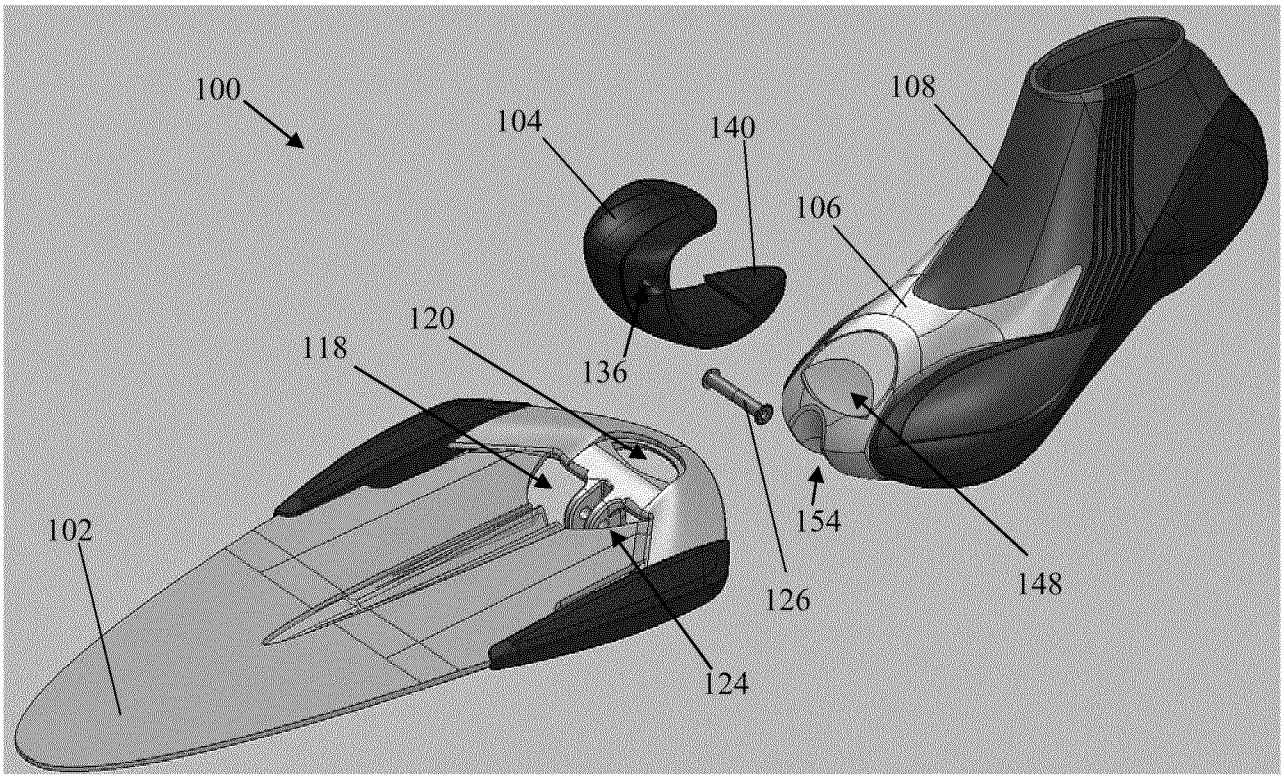
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FIG. 30

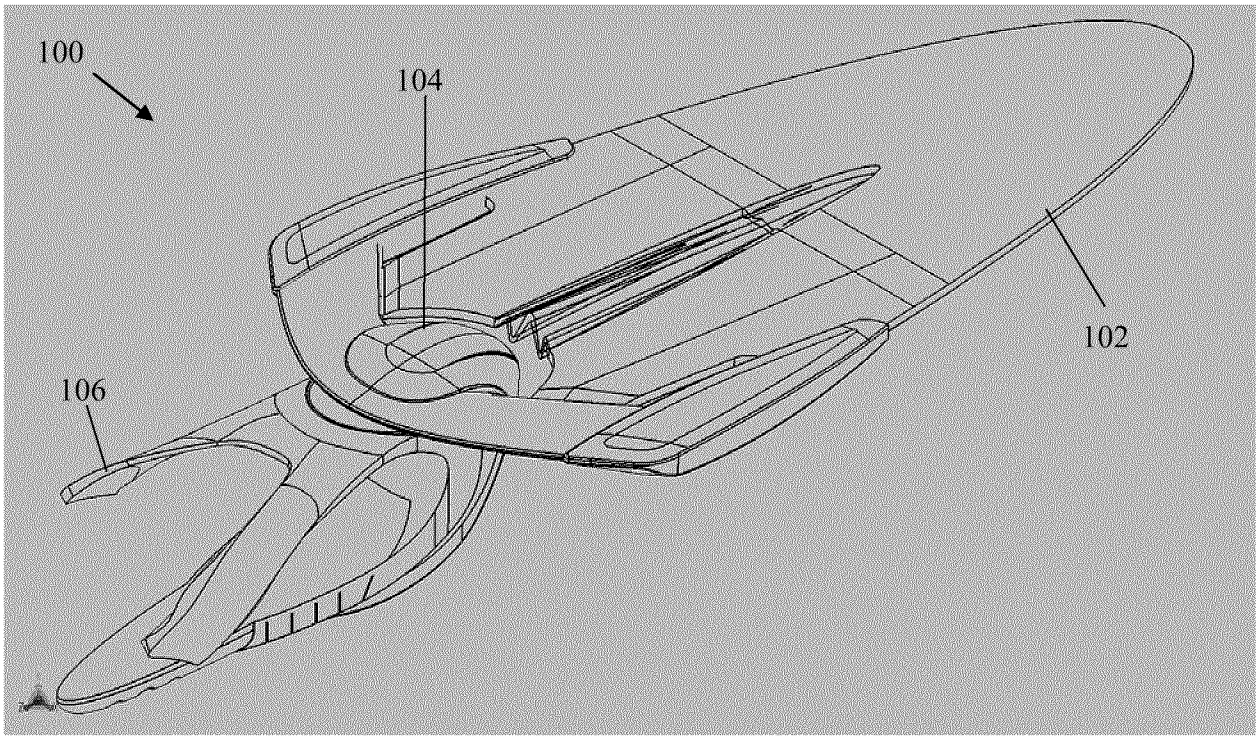


FIG. 31

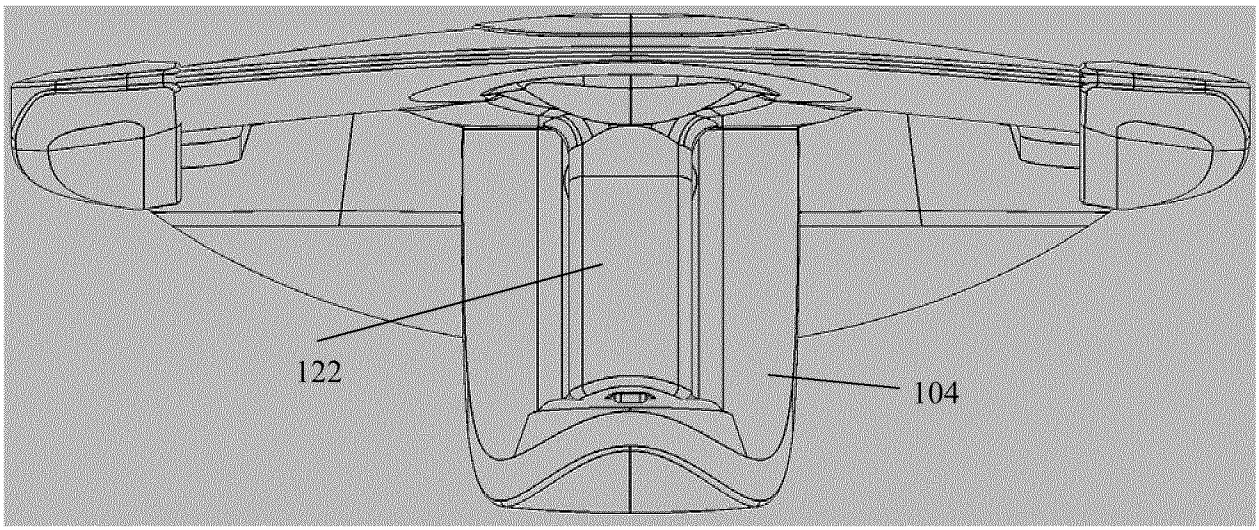


FIG. 32

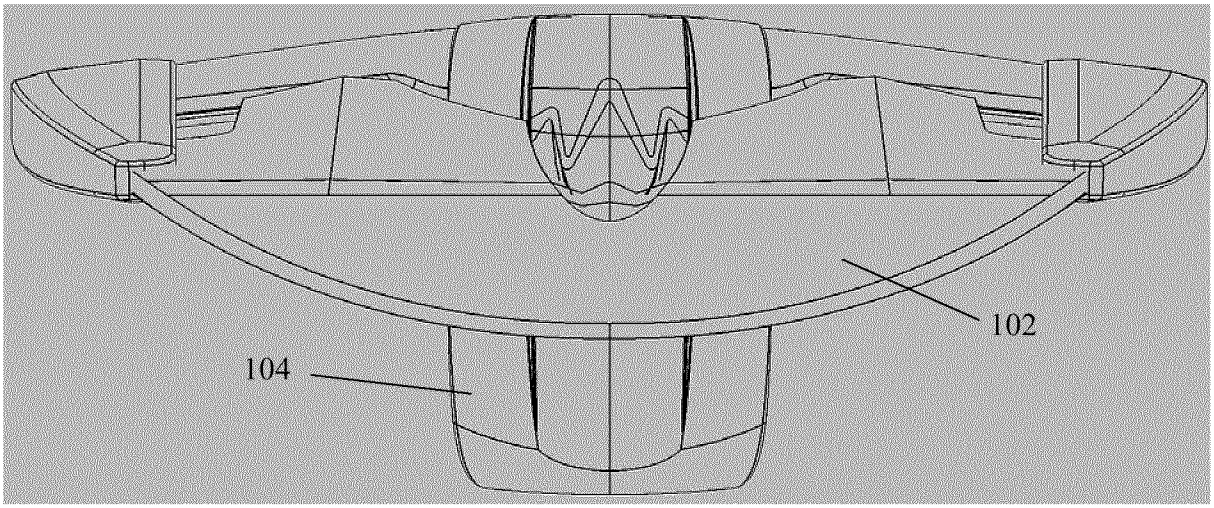


FIG. 33

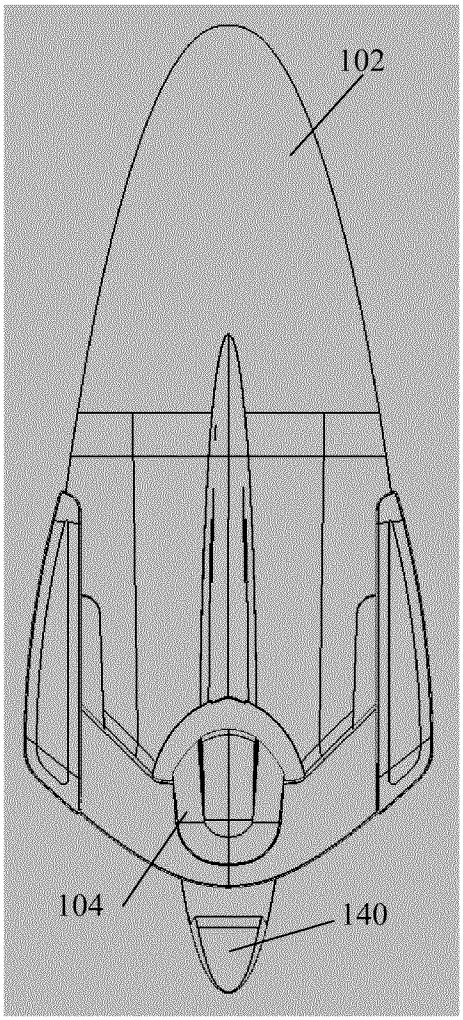


FIG. 34

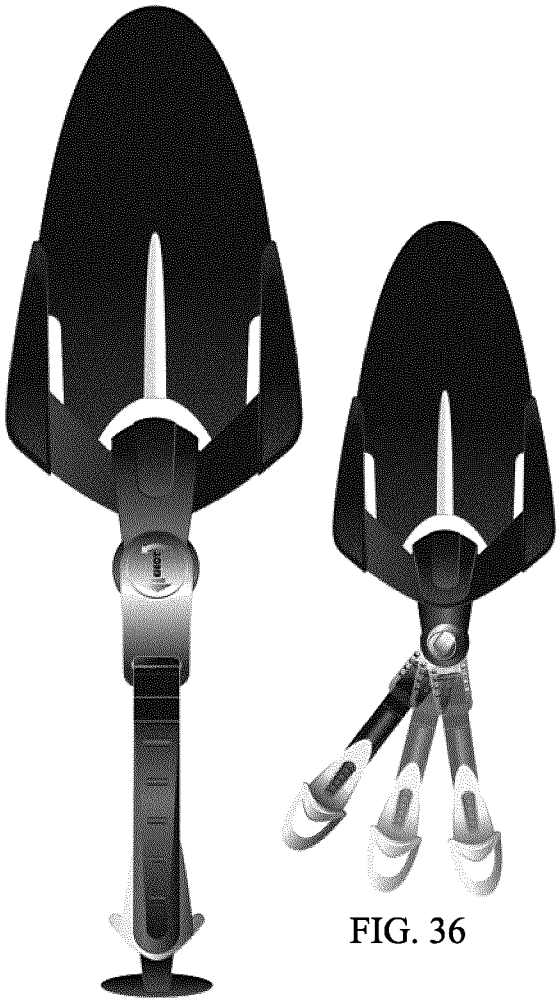


FIG. 35

FIG. 36

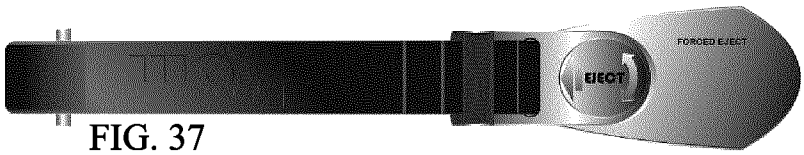


FIG. 37

FIG. 38

FIG. 39

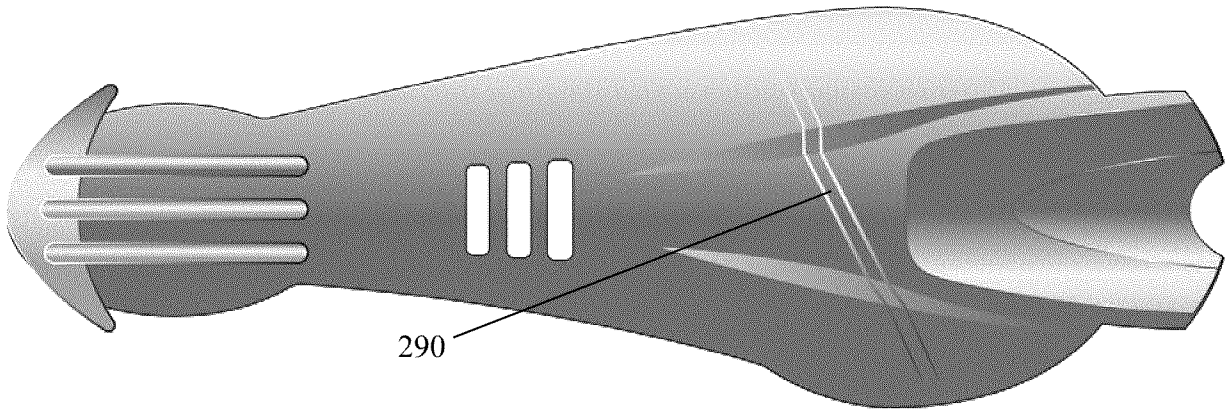


FIG. 40

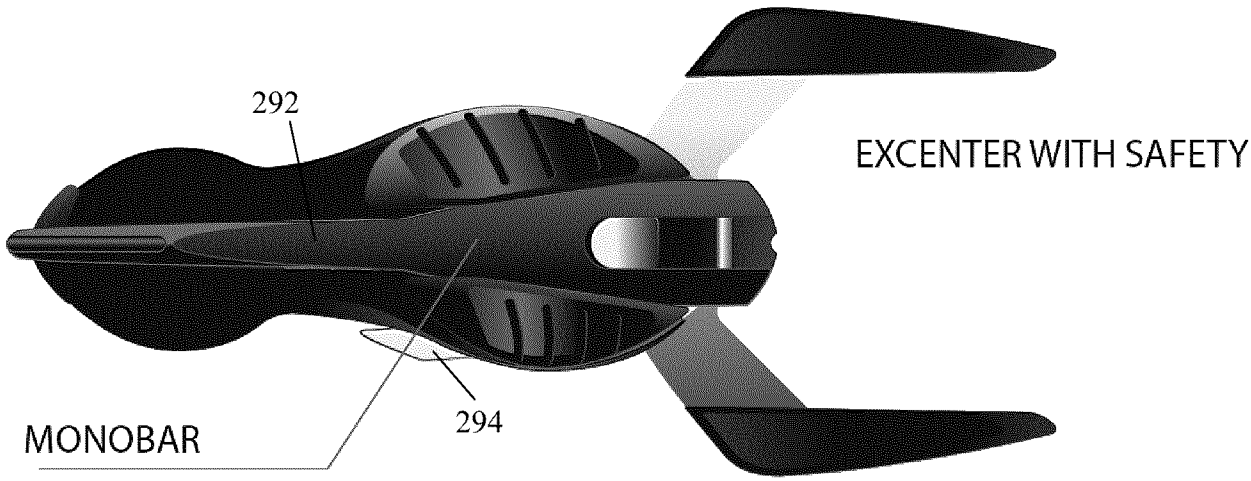
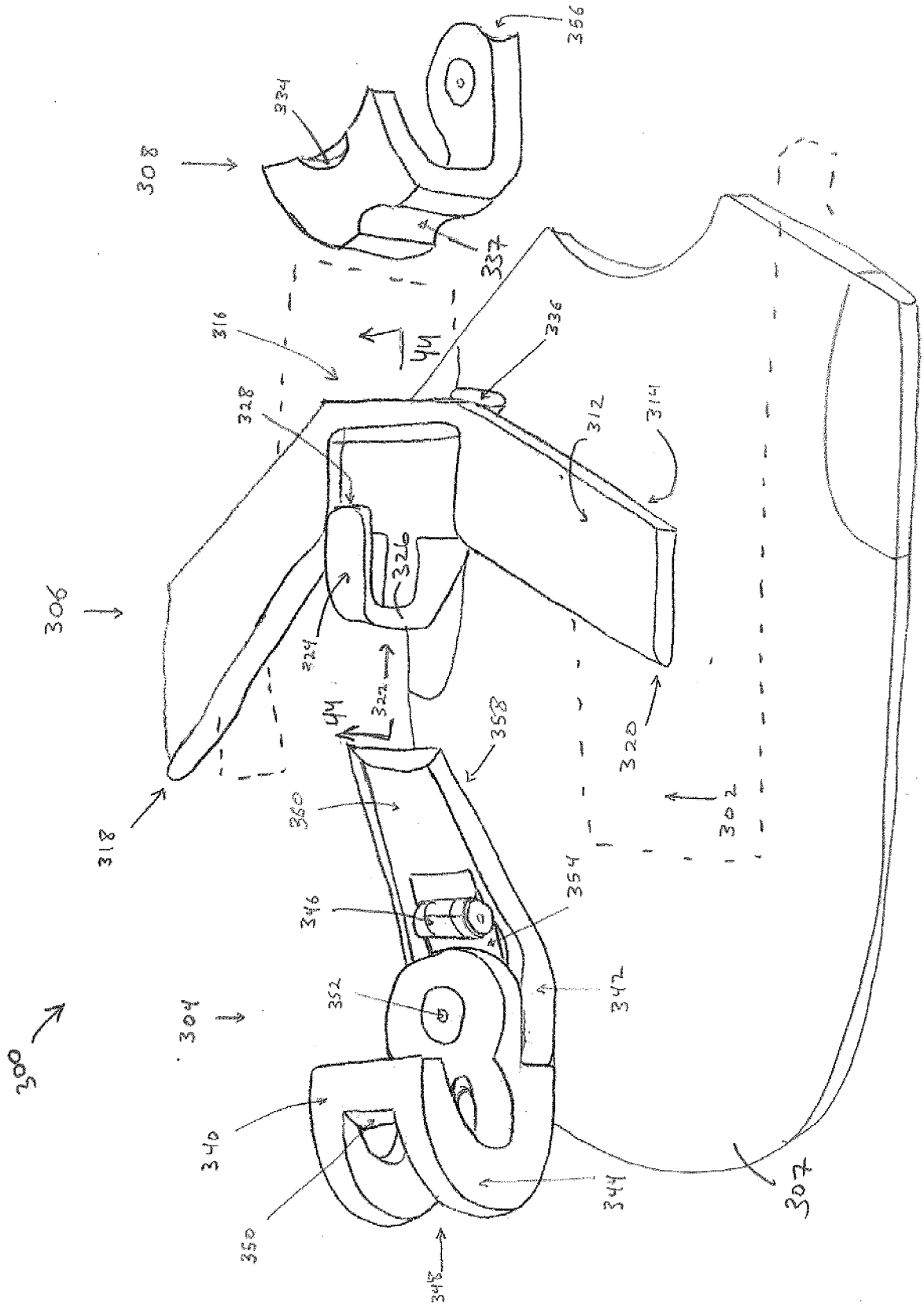


FIG. 41

FIG. 42

FIG. 43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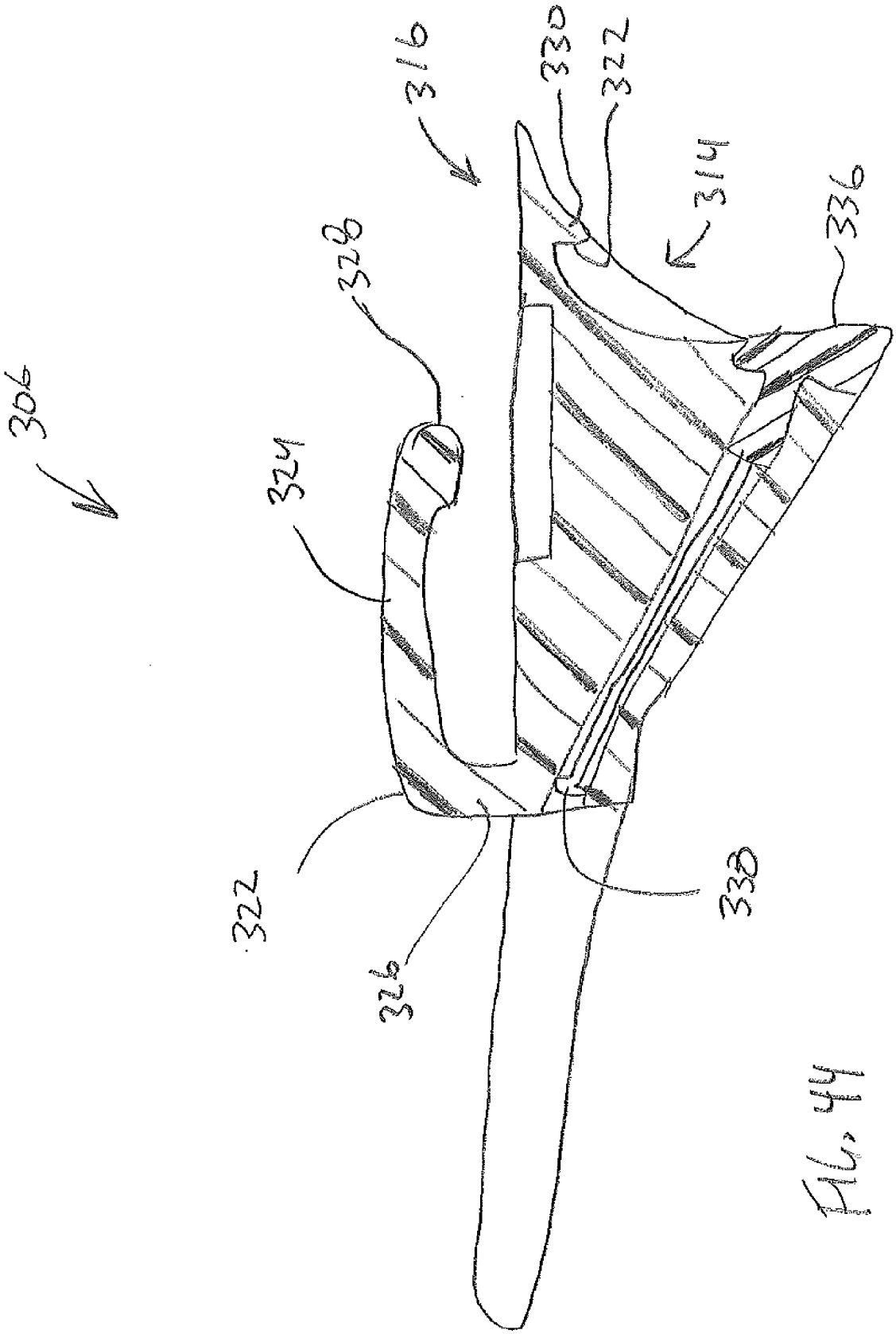

Fig. 44

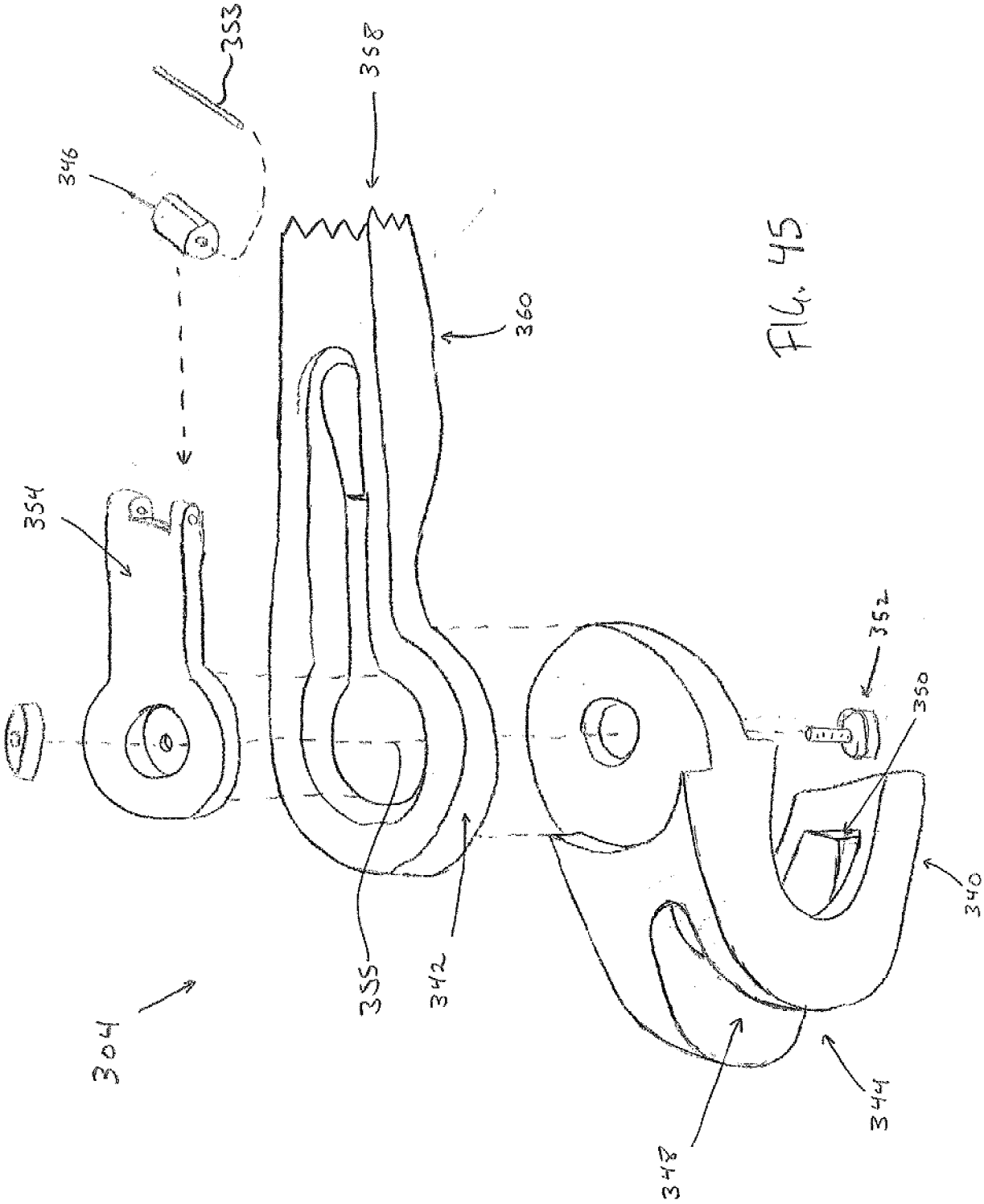

FIG. 45

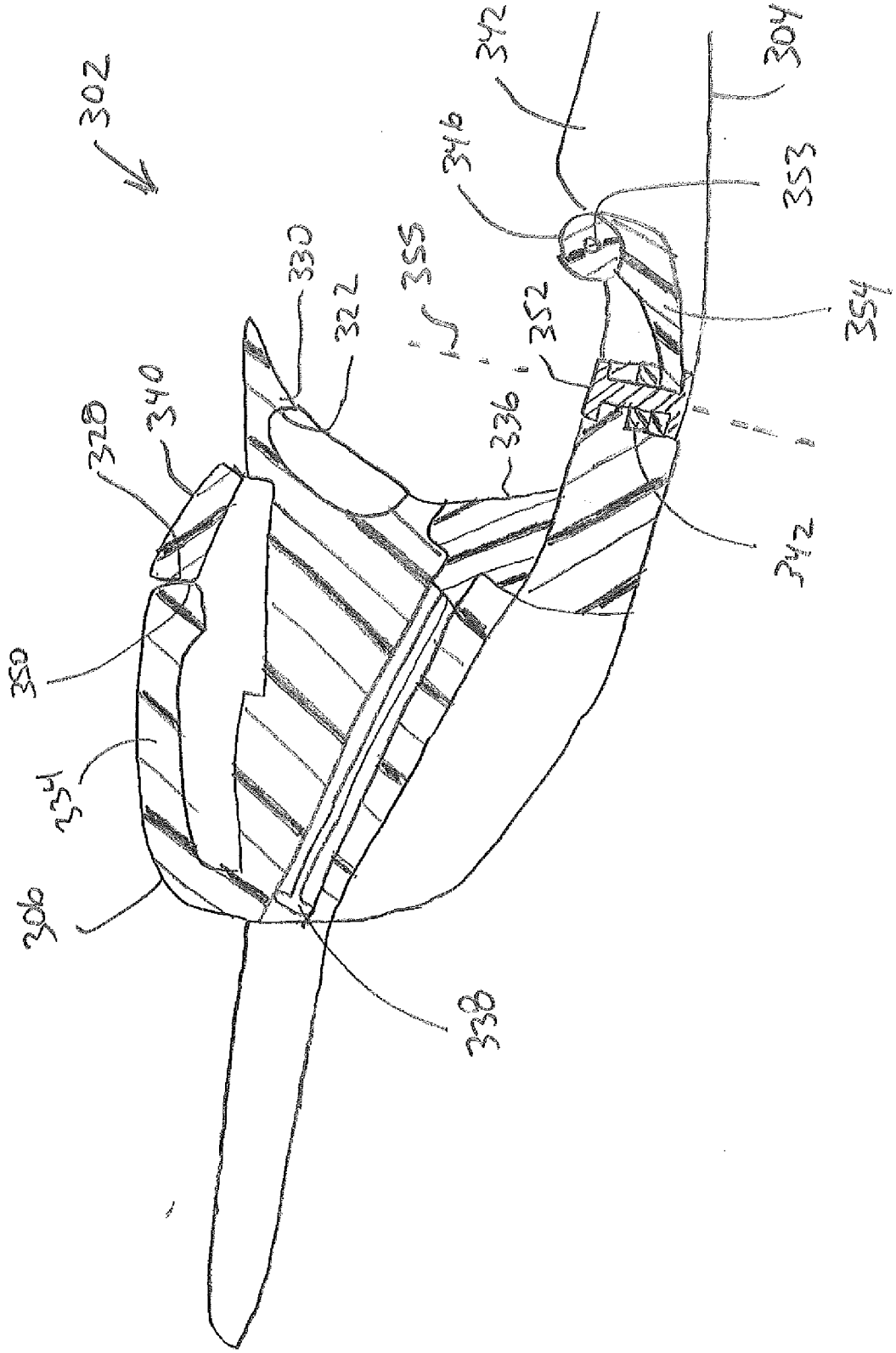
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Fig. 4b

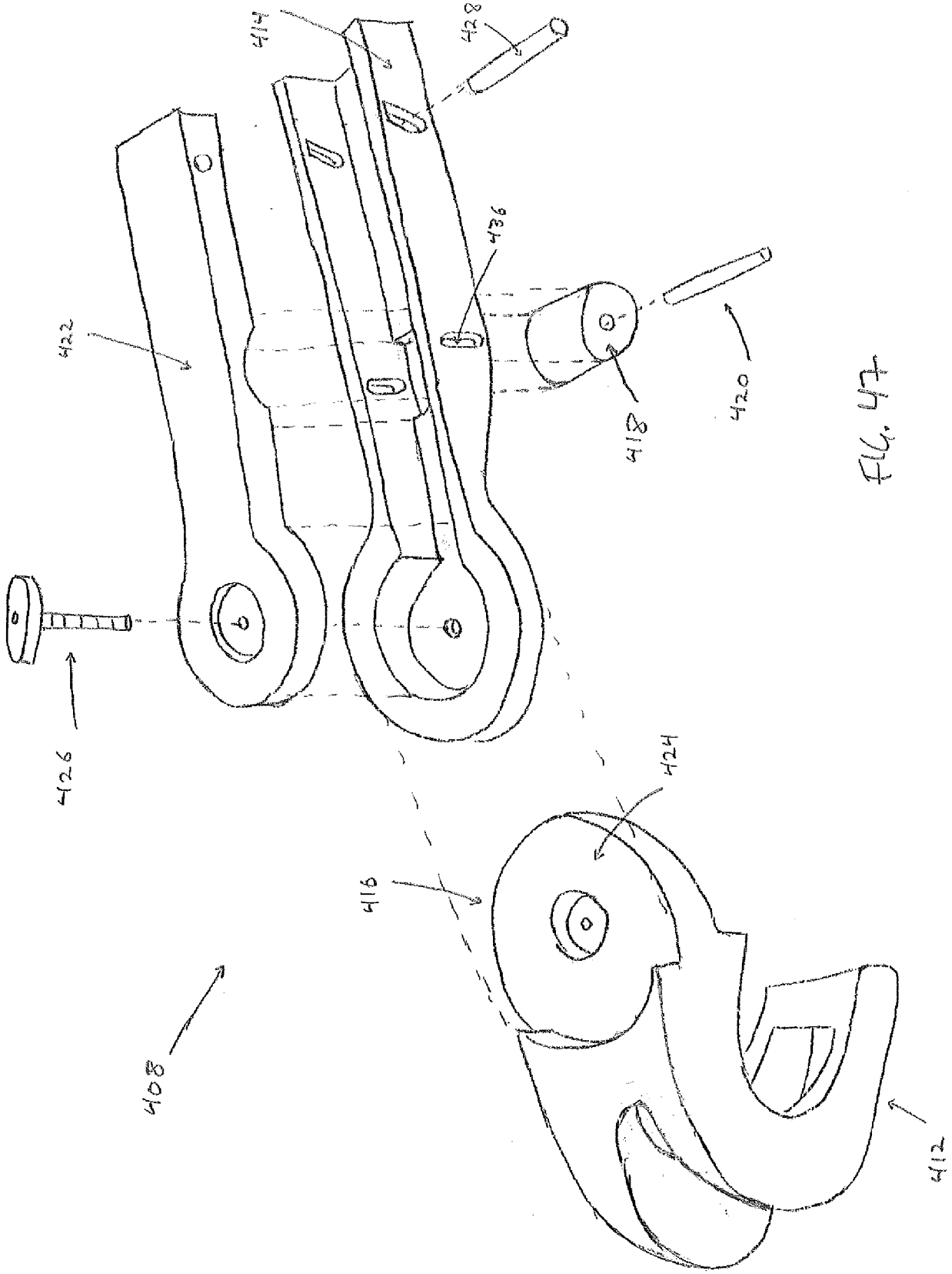

FIG. 47

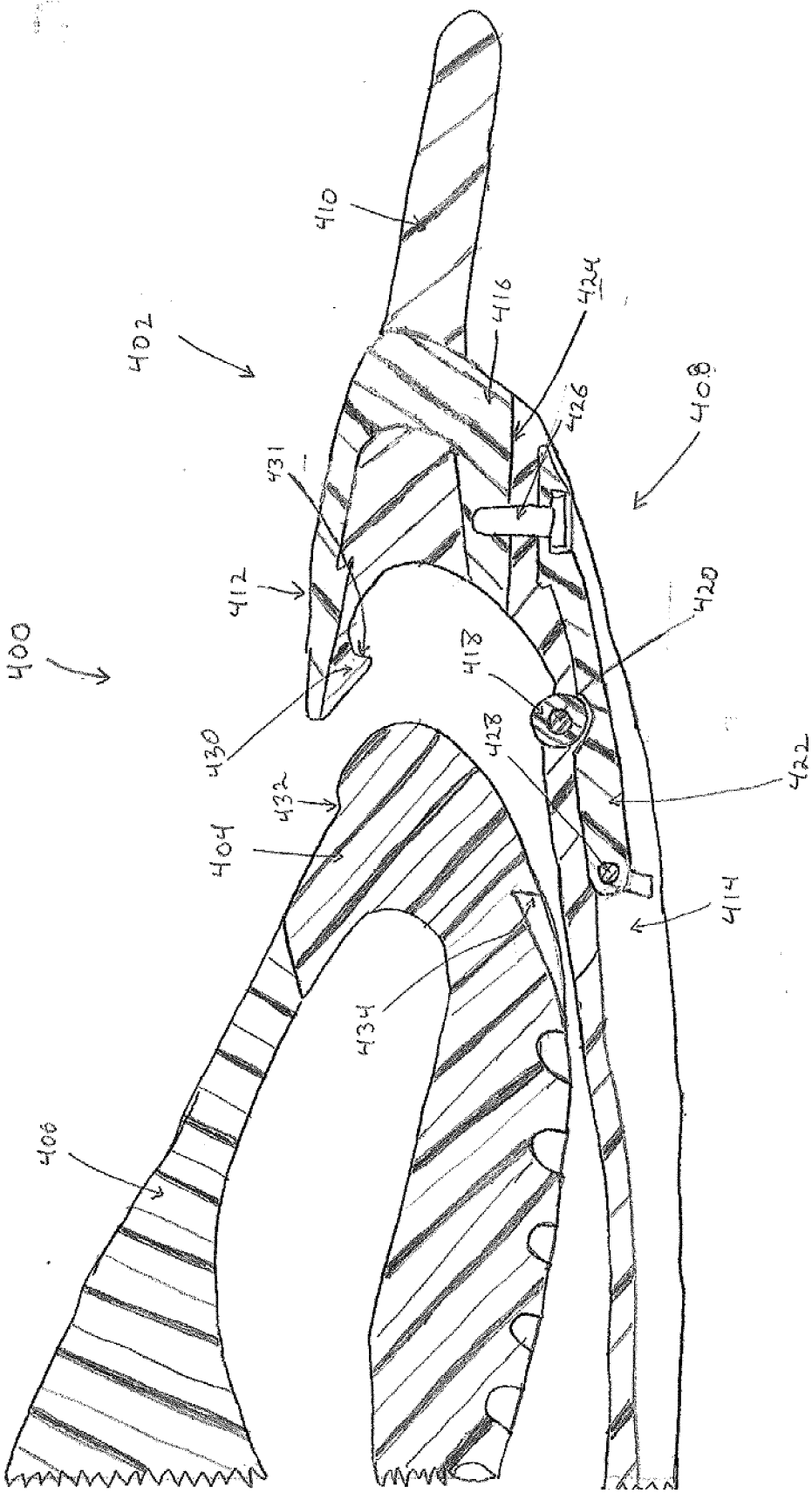
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FIG. 4B

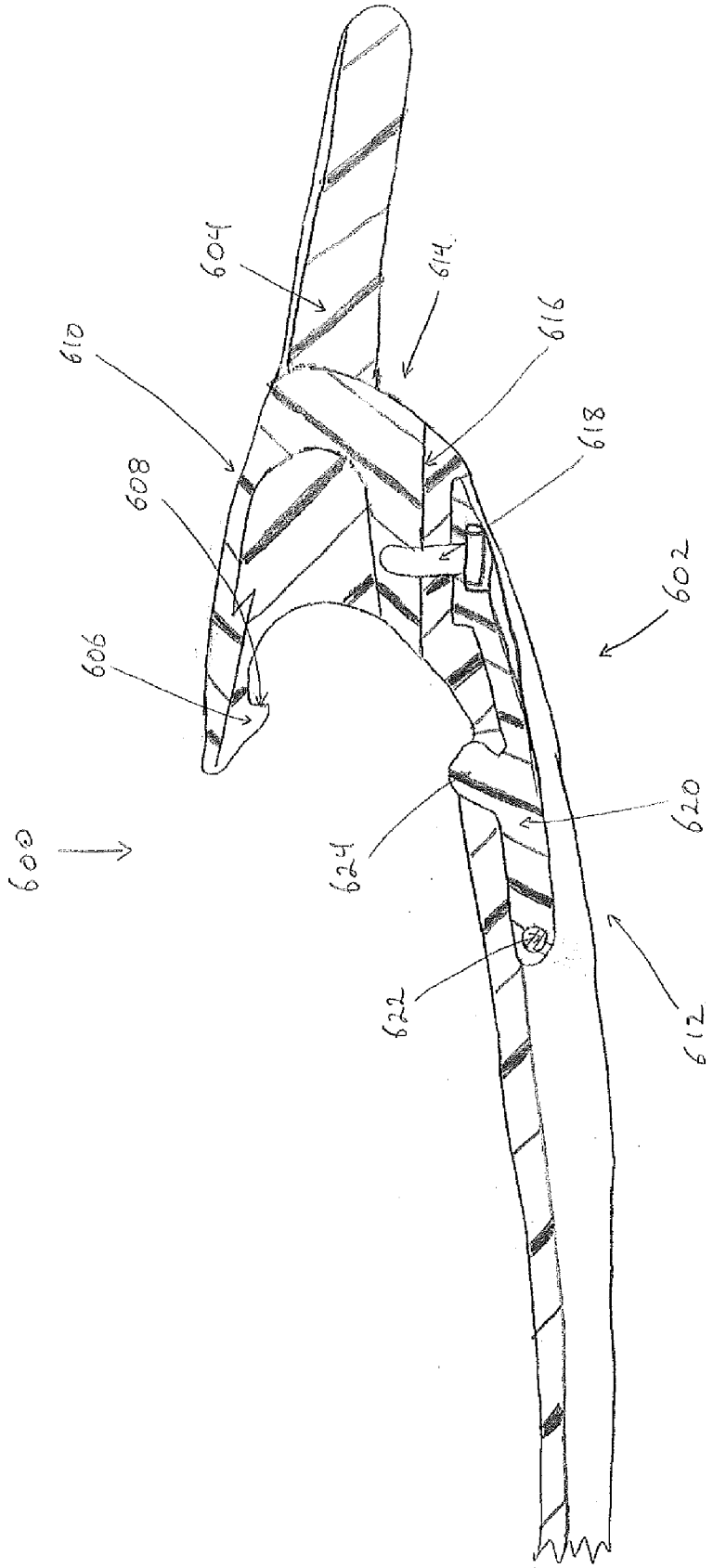
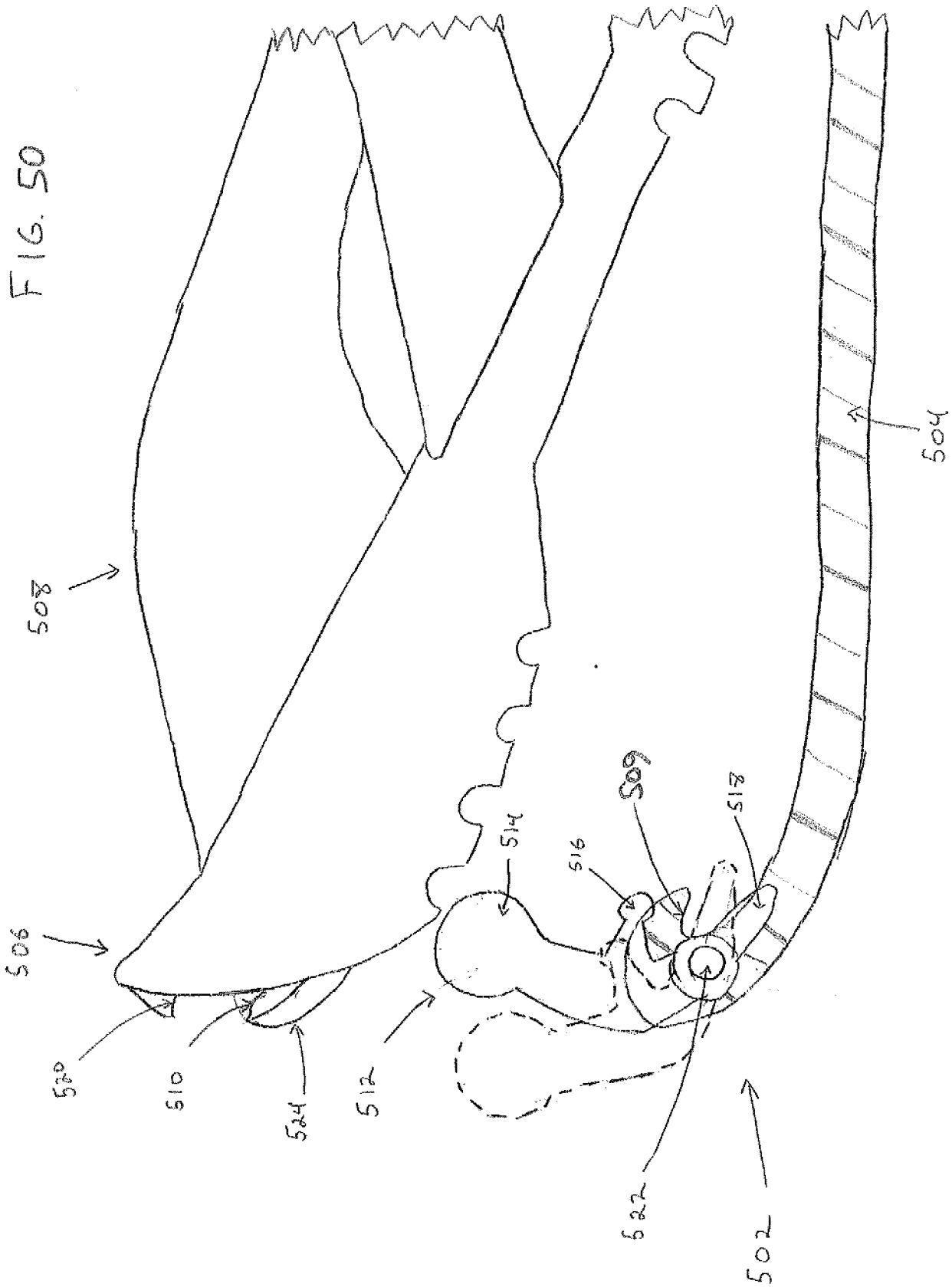


FIG. 49

FIG. 50



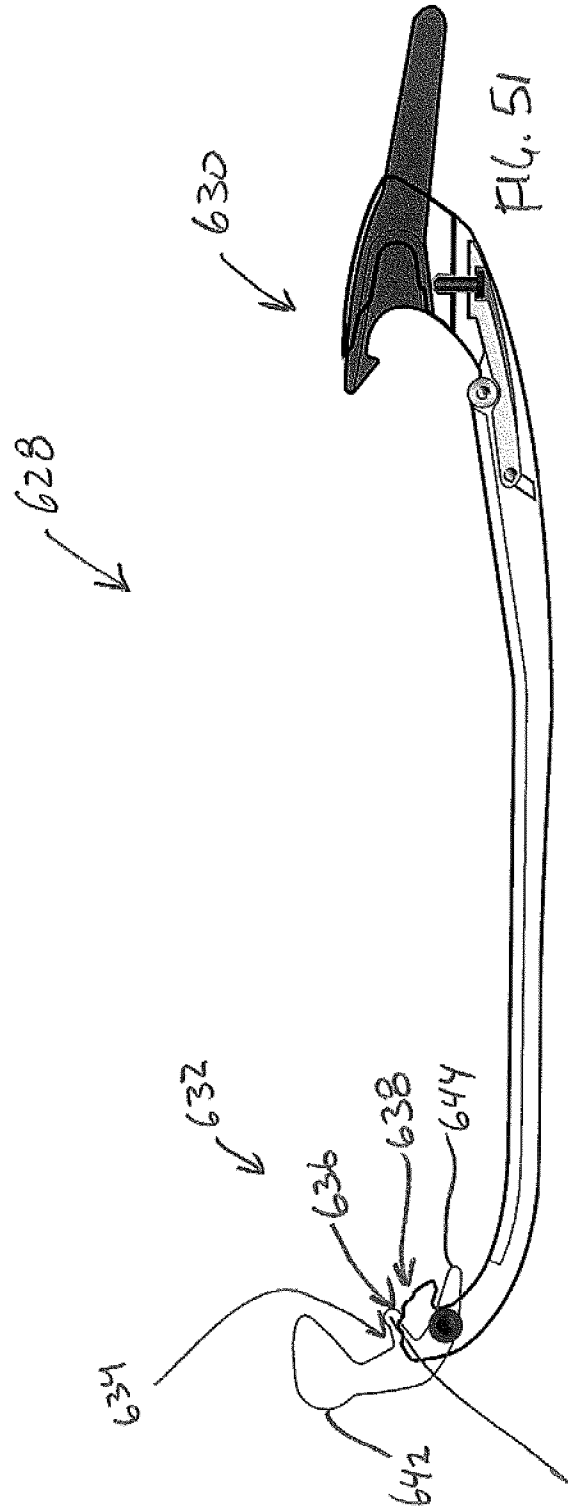


FIG. 51

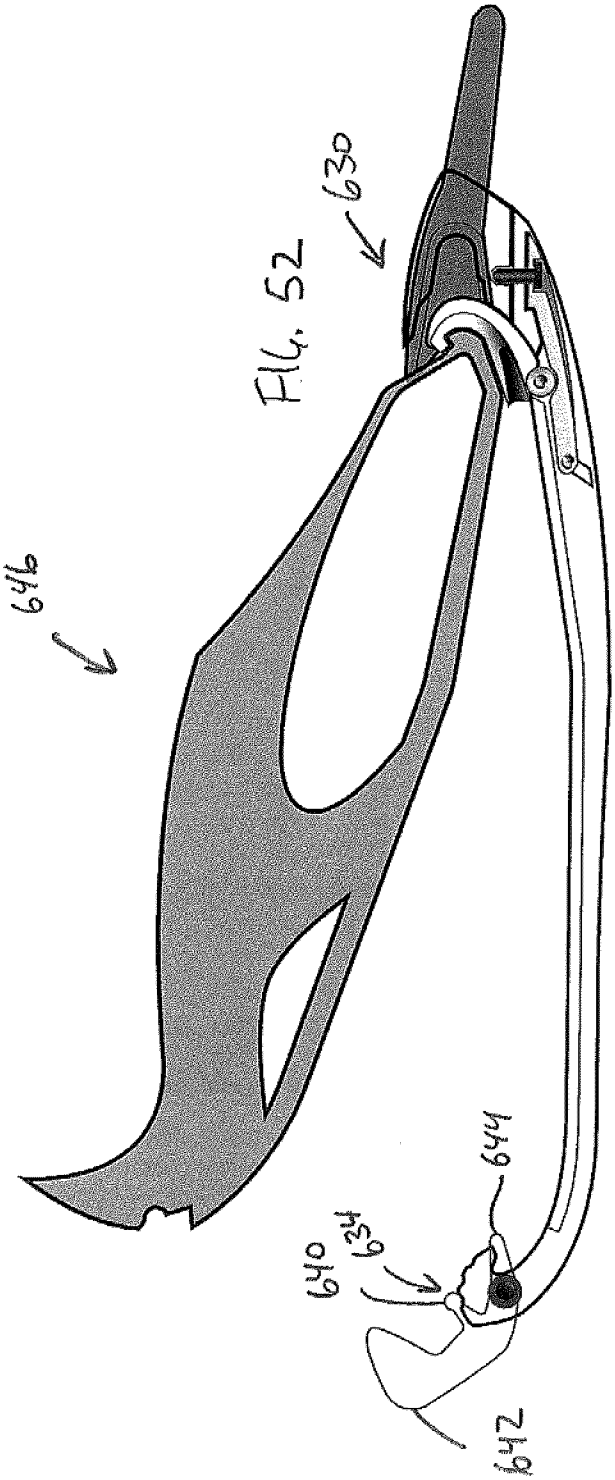


FIG. 52

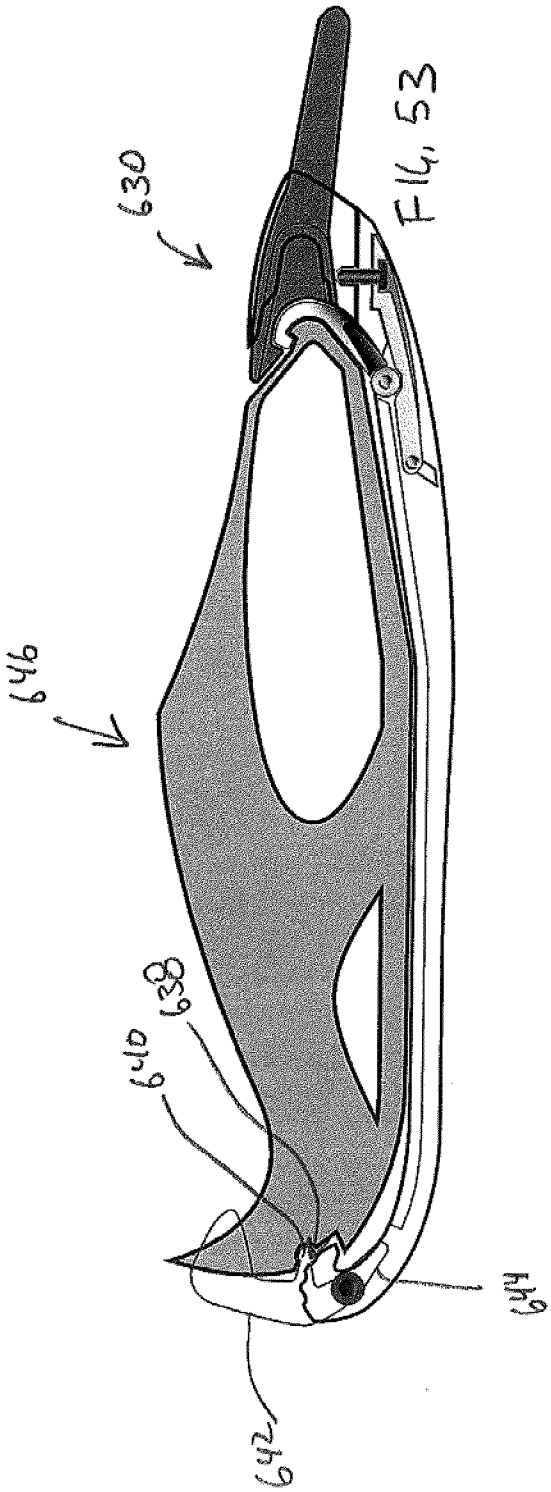


FIG. 53

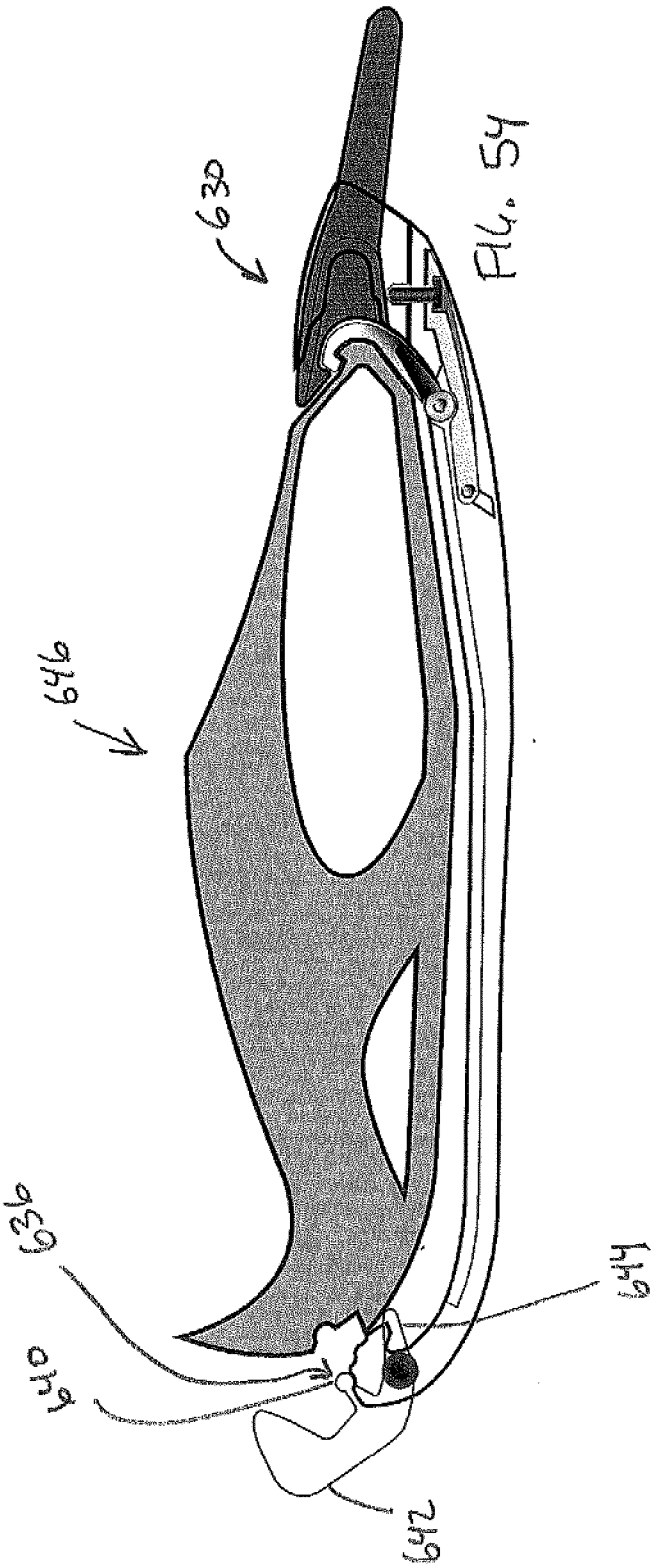


FIG. 54

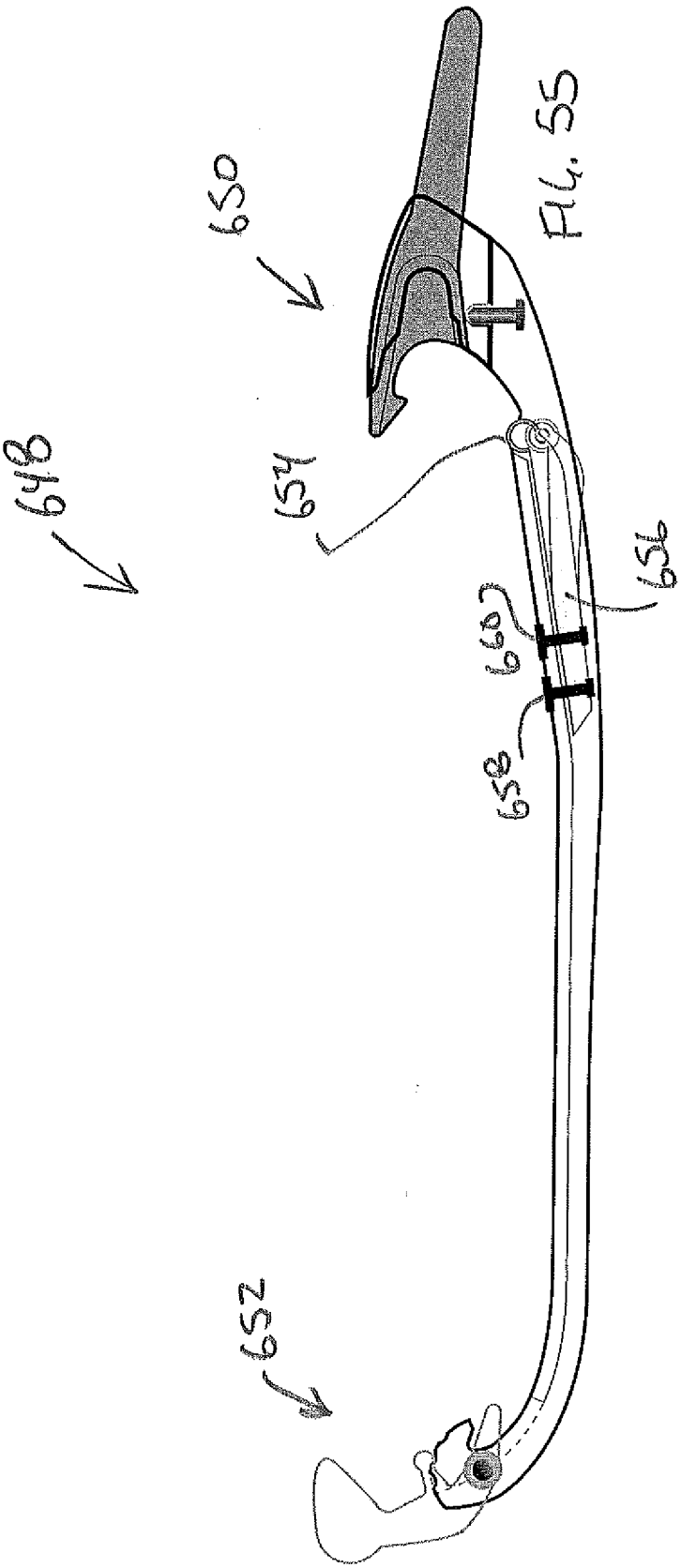


Fig. 55

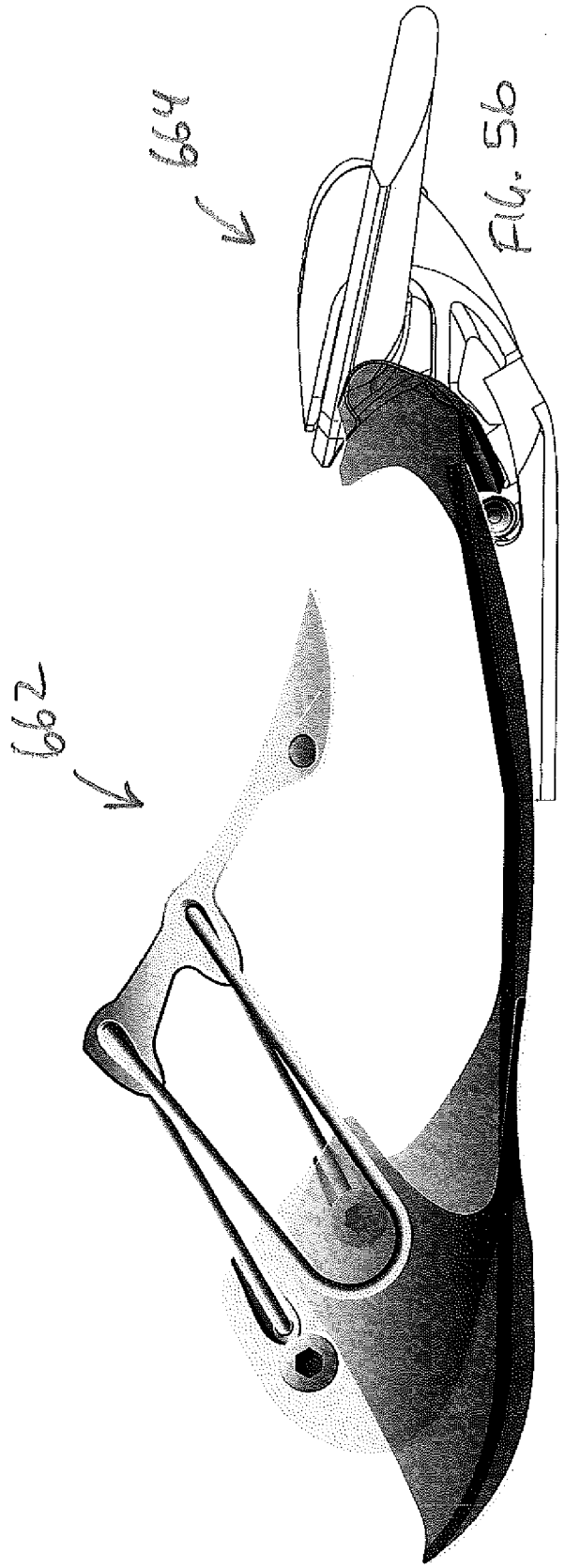


Fig. 5b

Fig. 5c

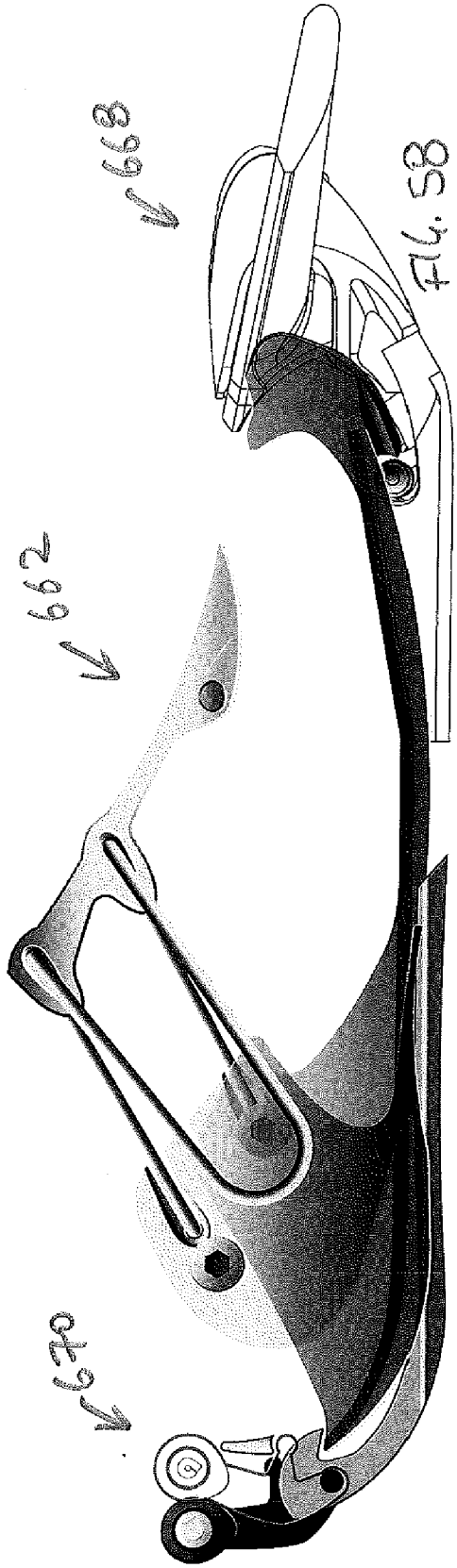


FIG. 58

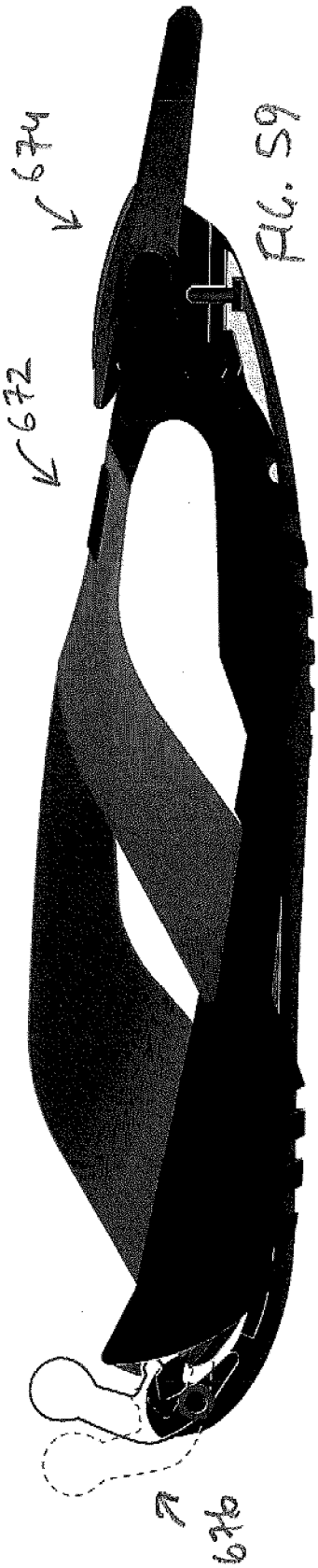


FIG. 59

Fig. 60
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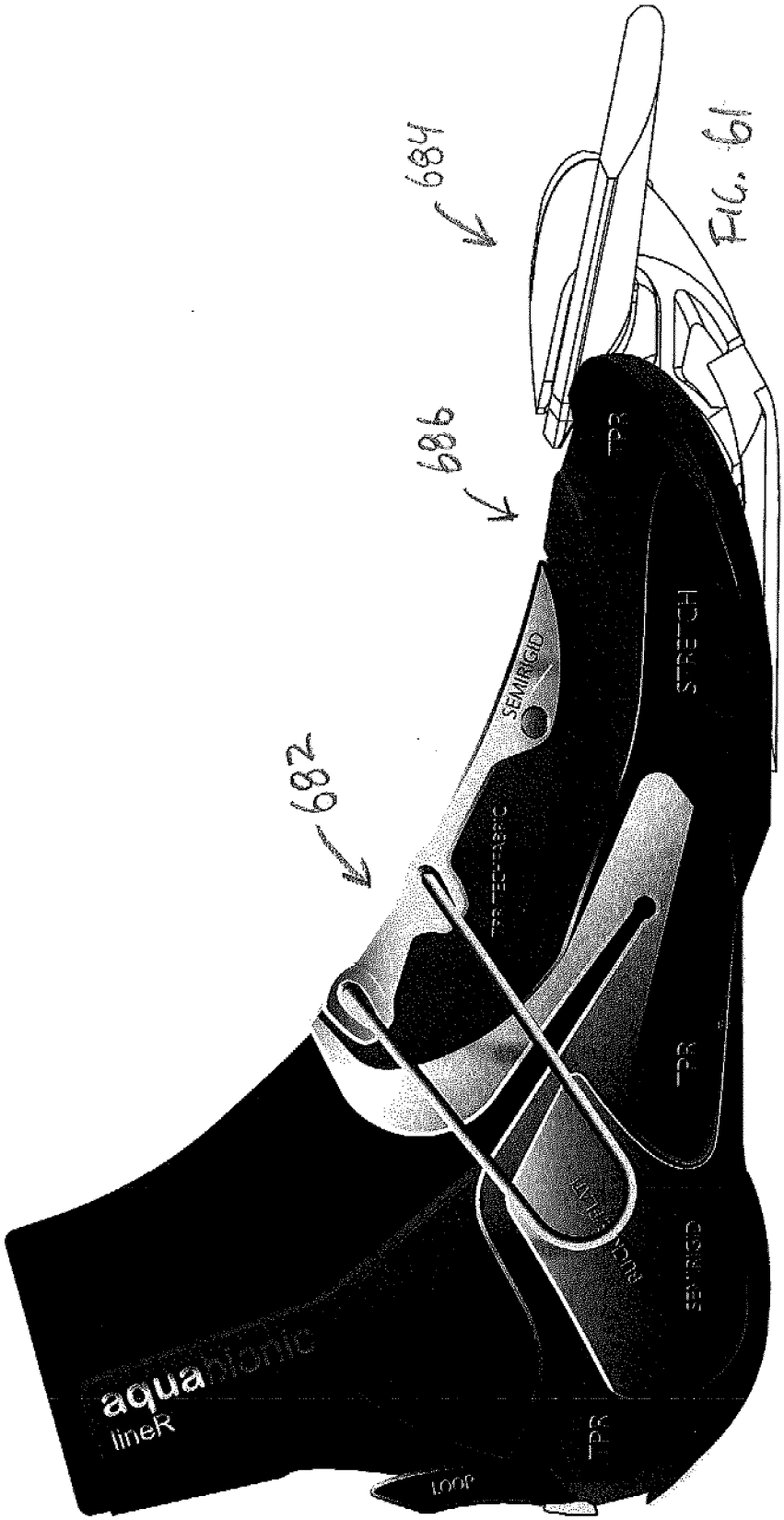

Fig. 61

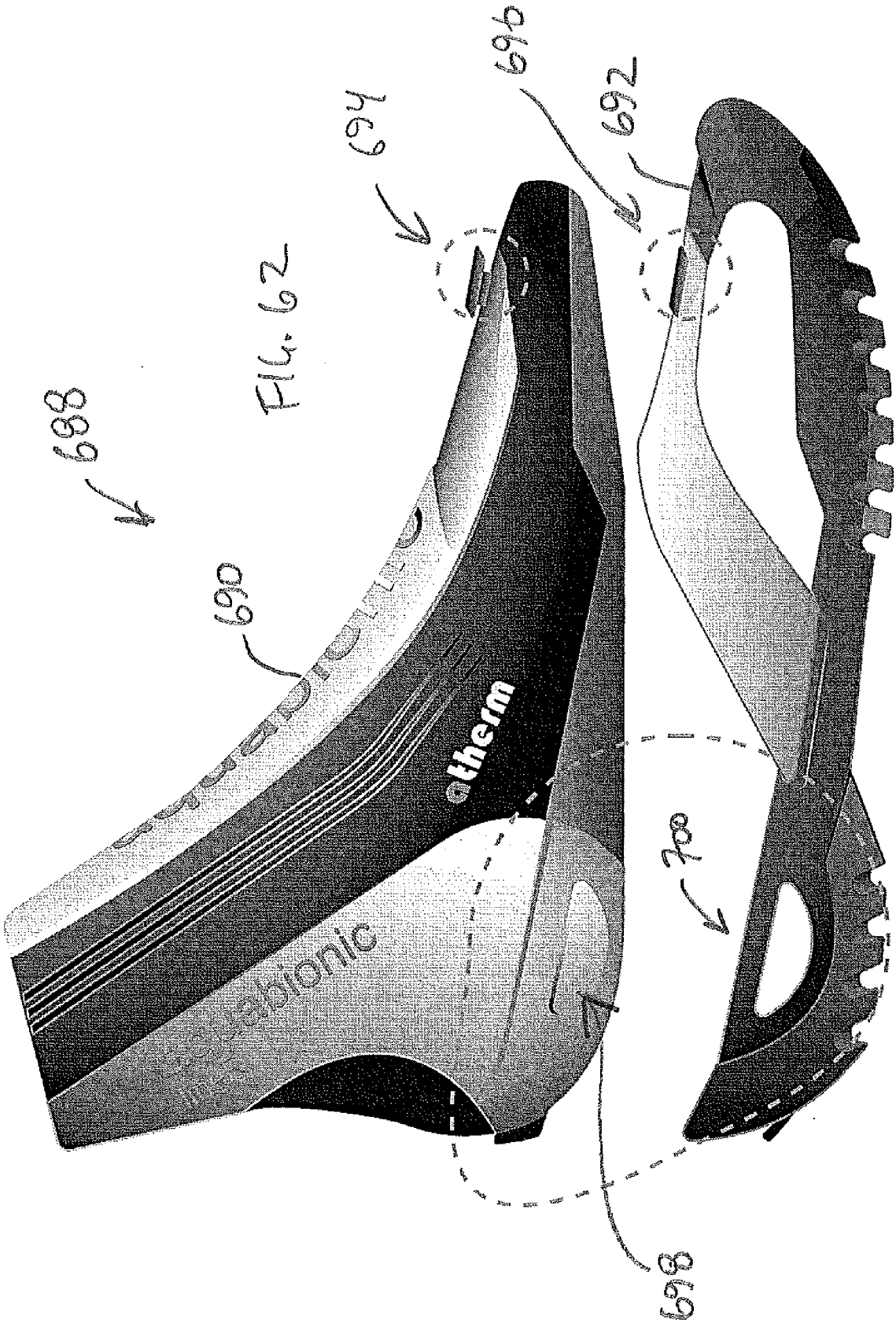
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FIG. 62
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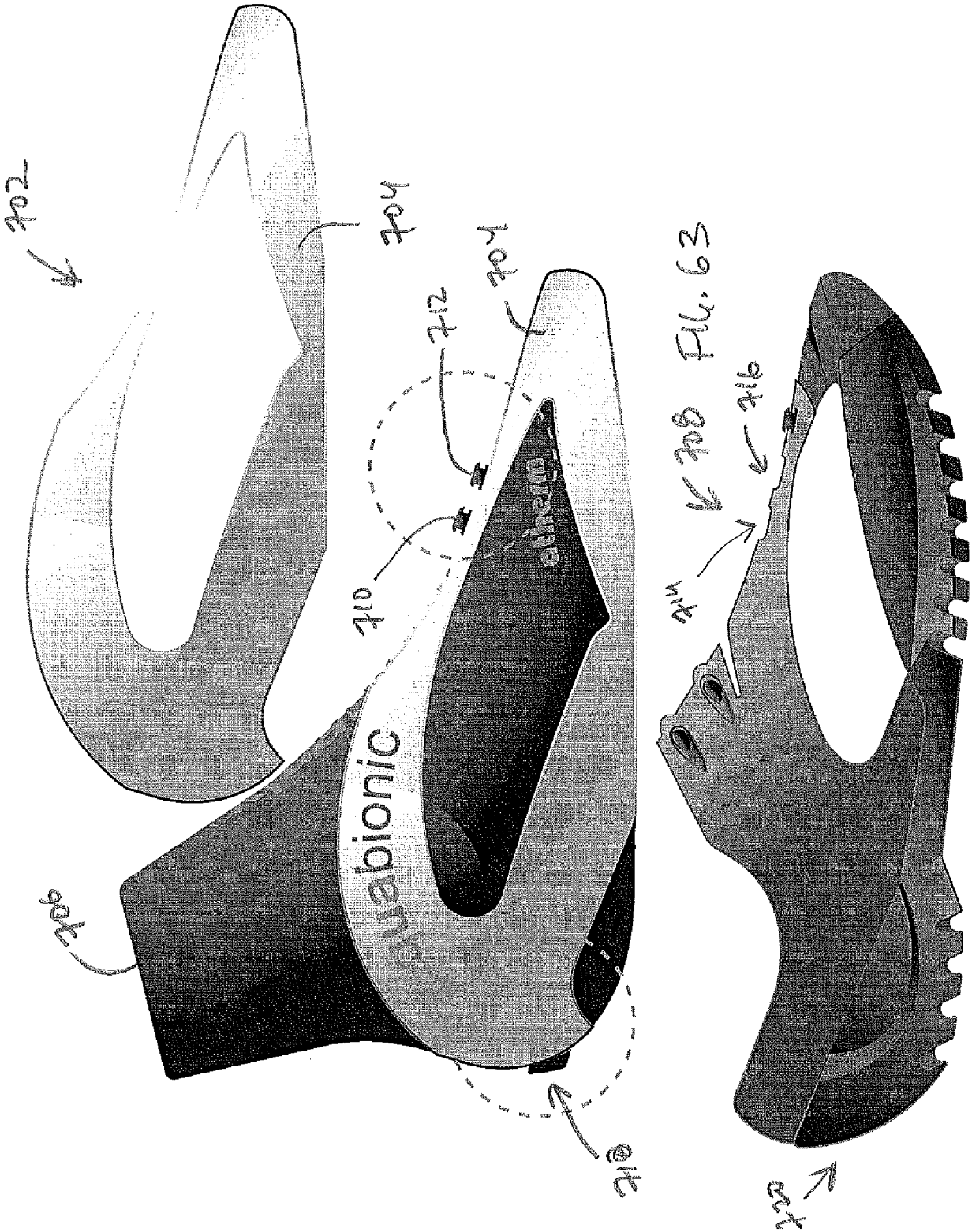

Fig. 63

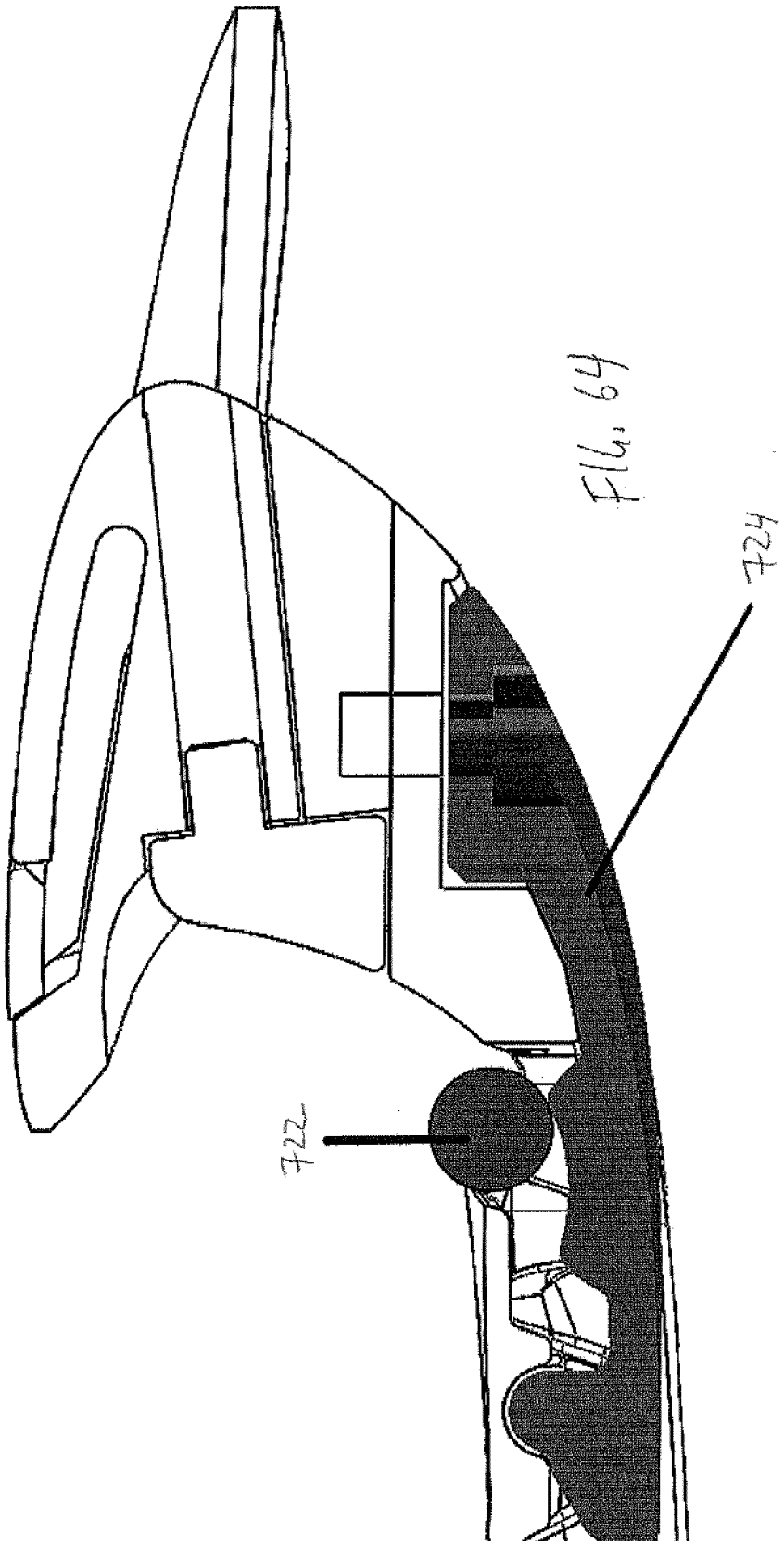

Fig. 64

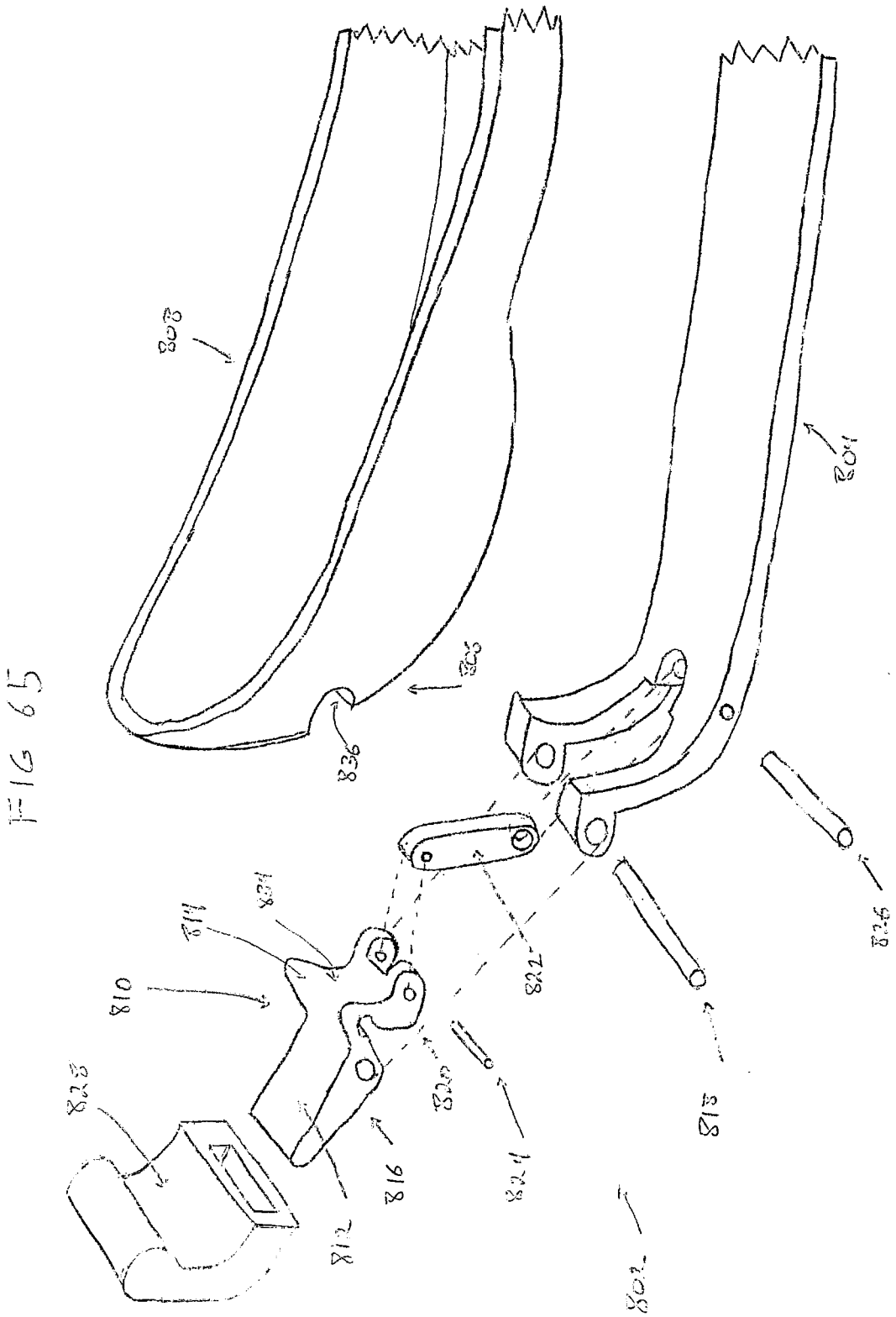

FIG 65

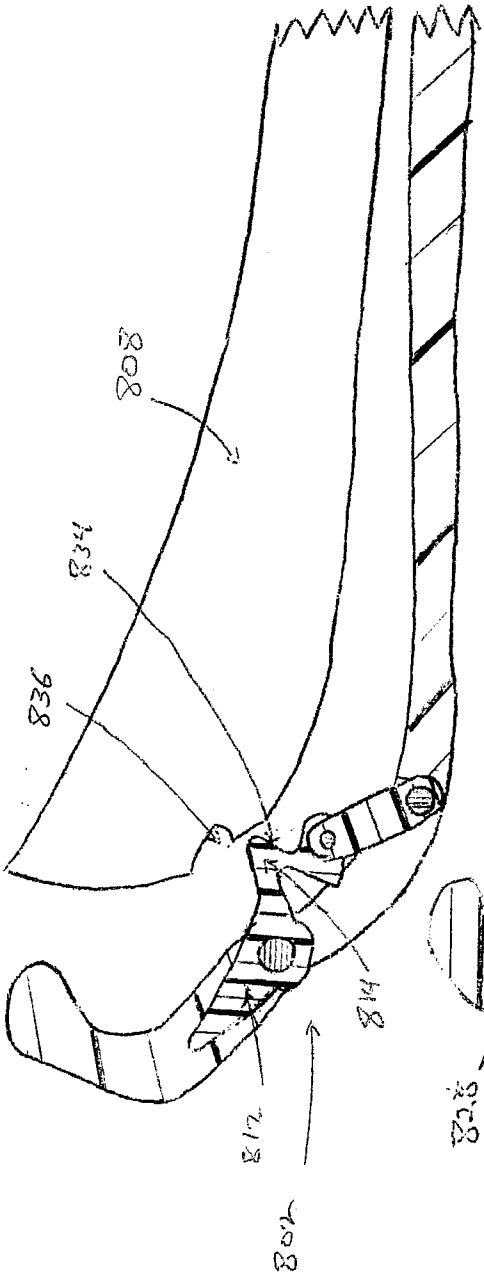
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FIG. 66

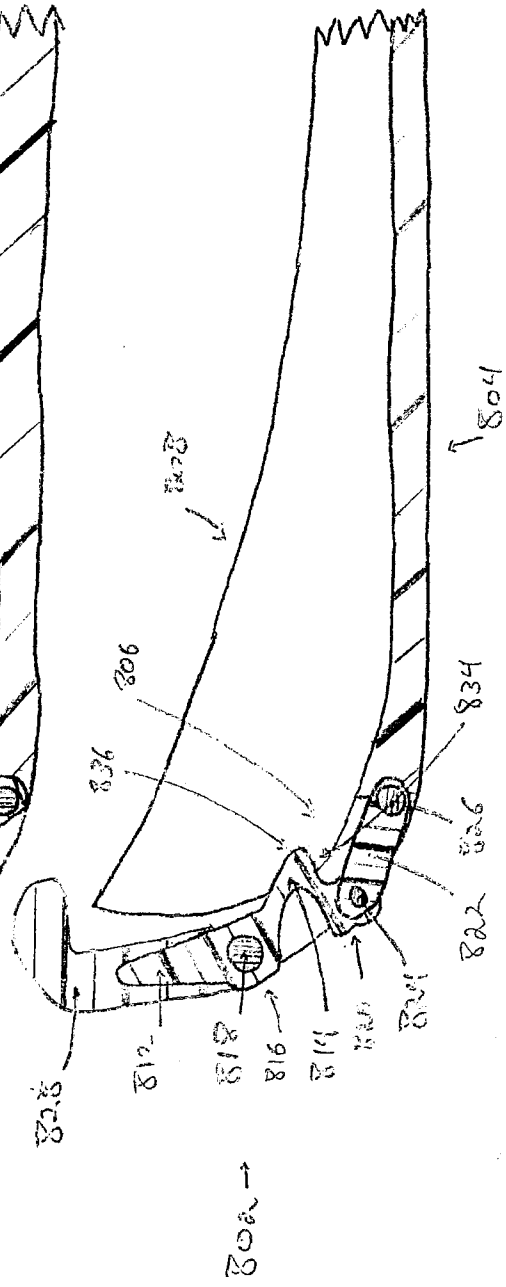
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FIG 67

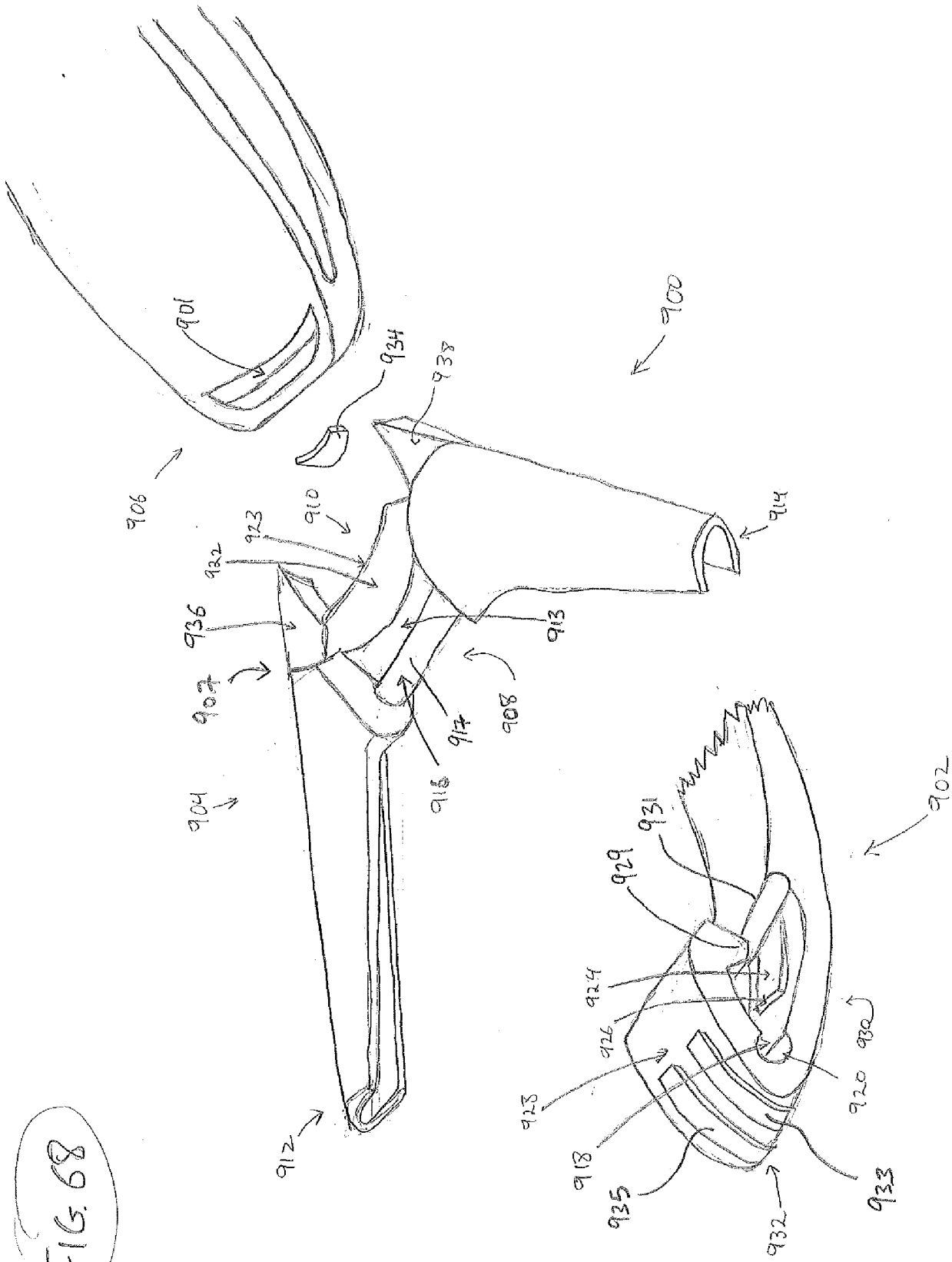
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FIG. 68

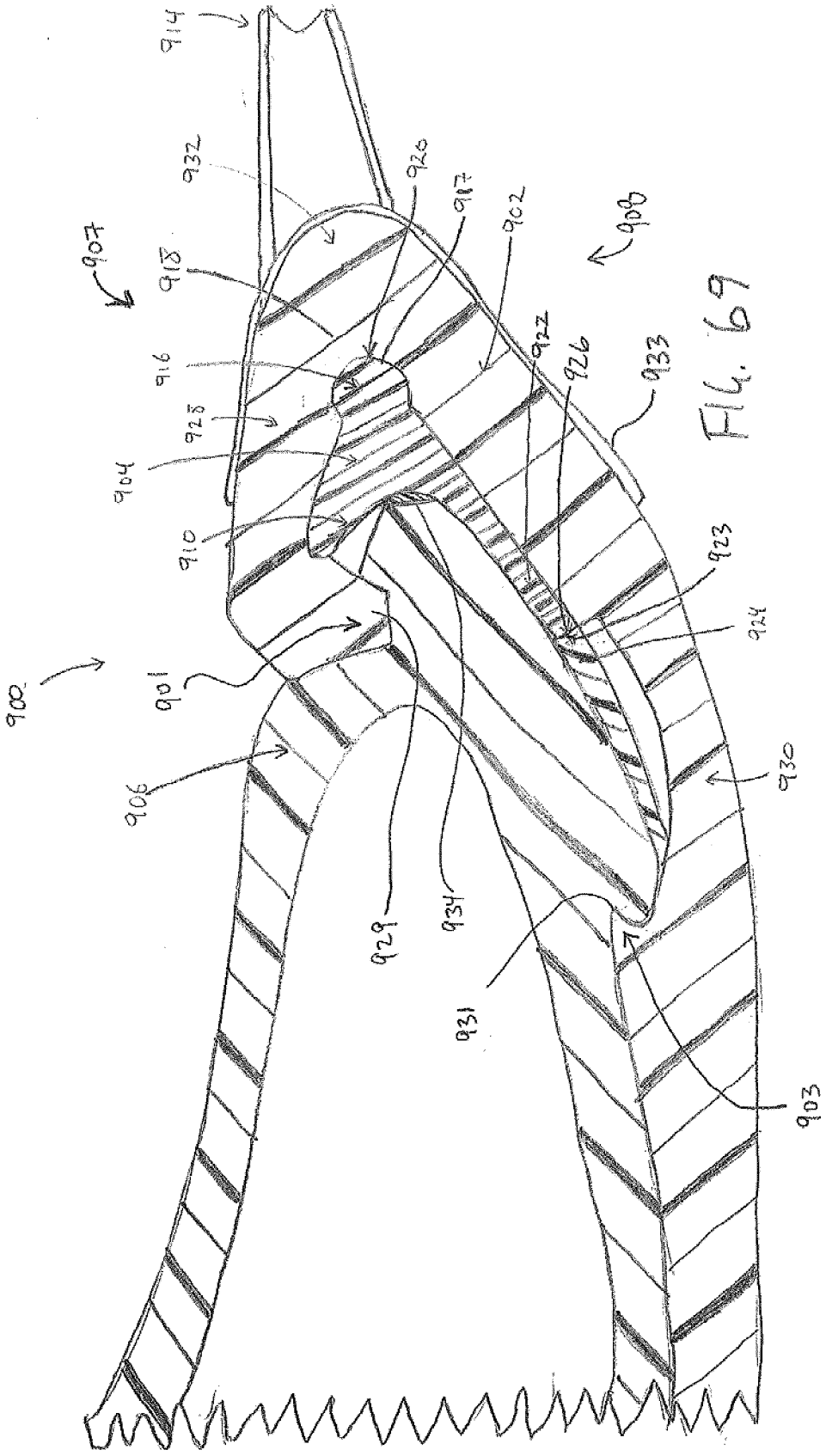
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FIG. 69

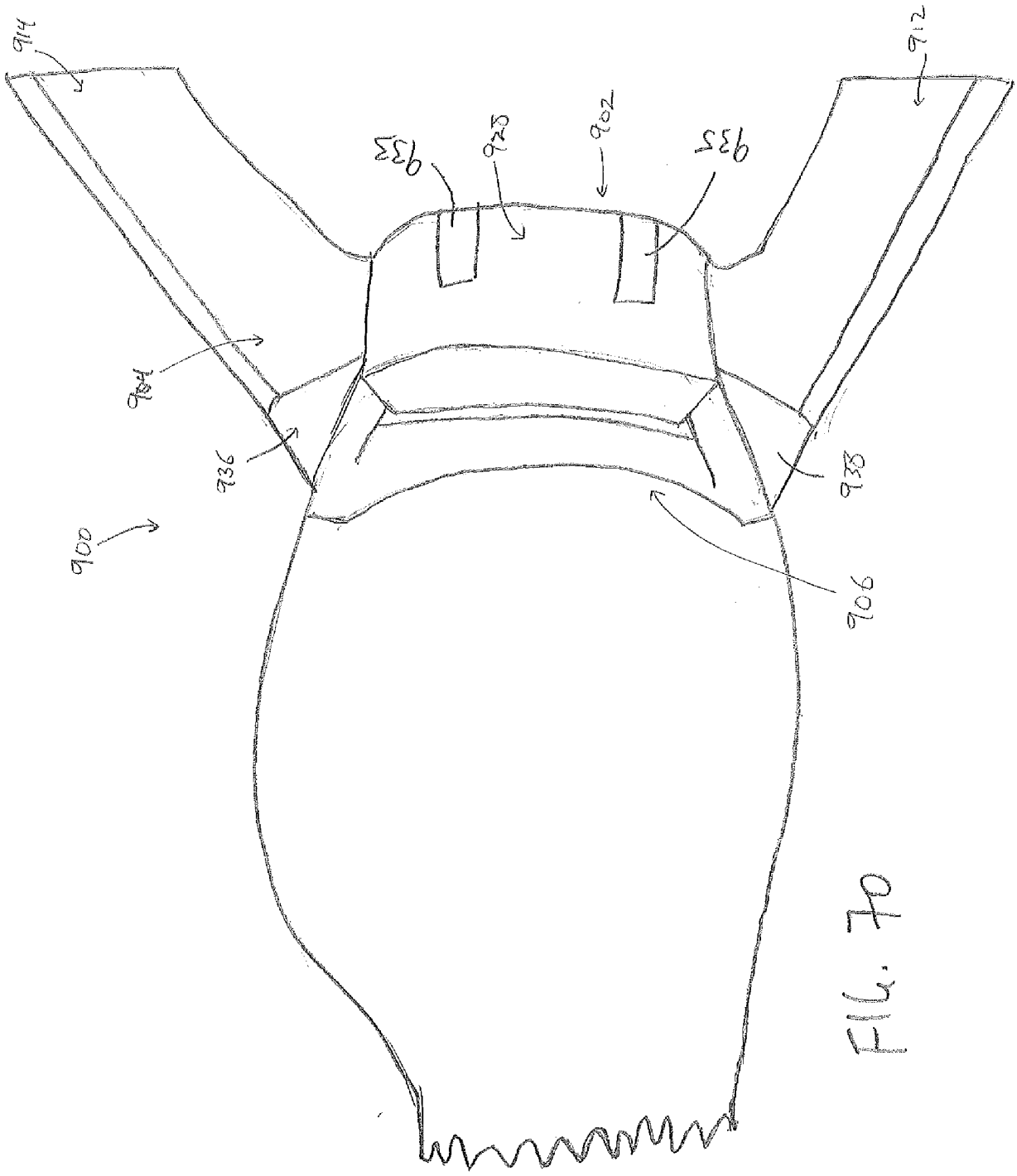

Fig. 7p

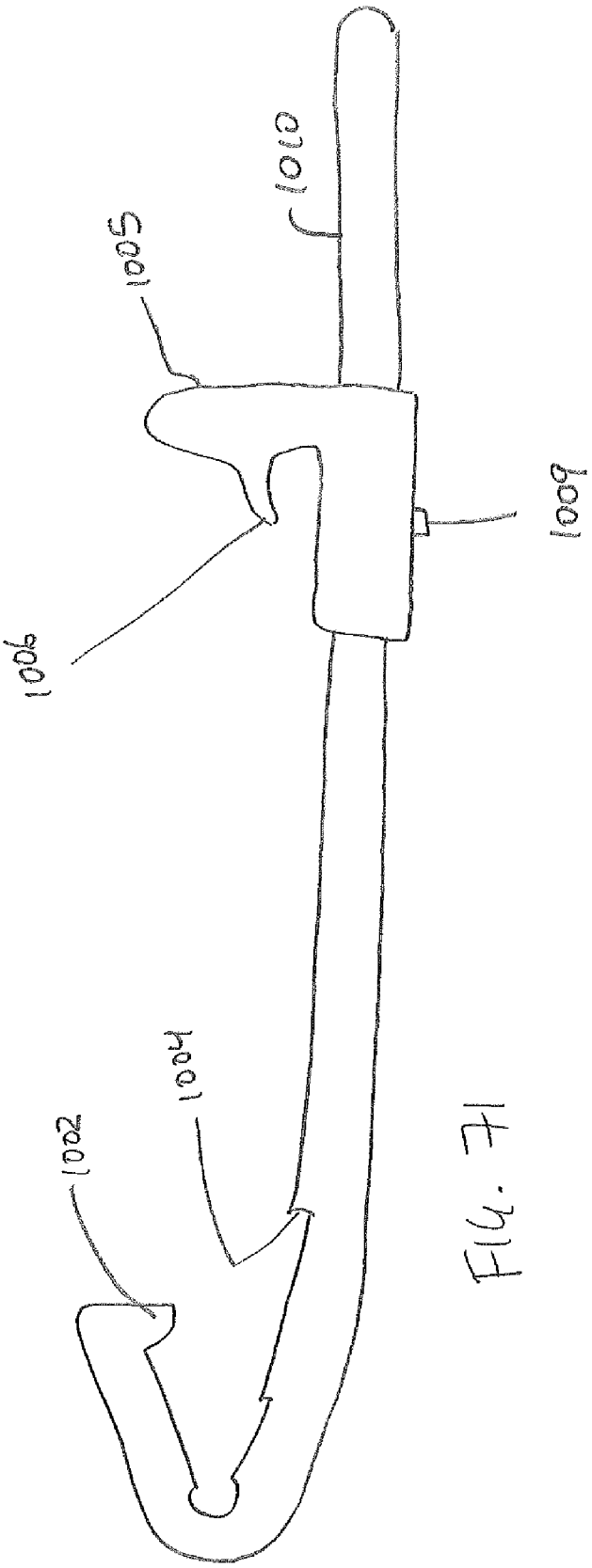

FIG. 71

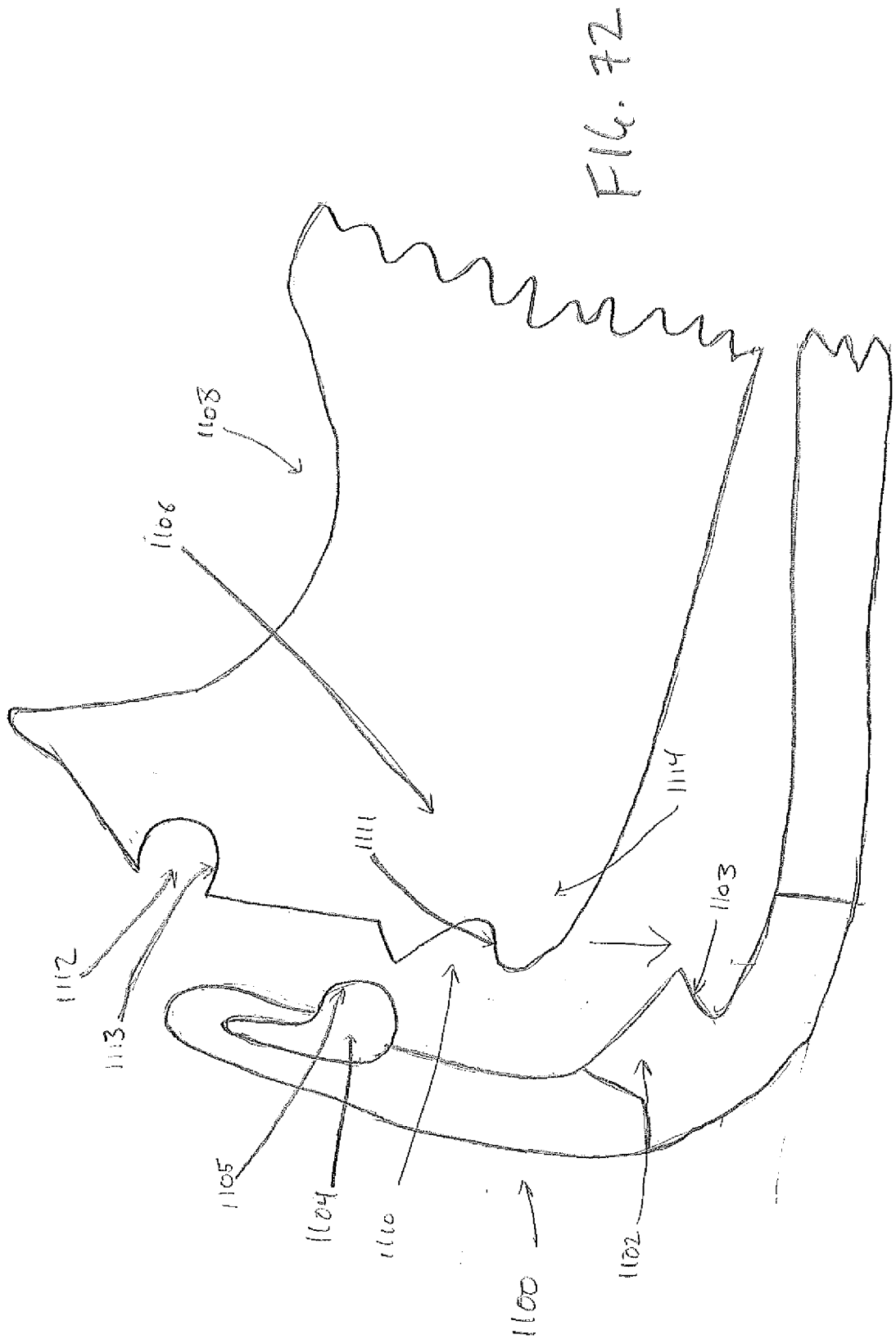

Fig. 72

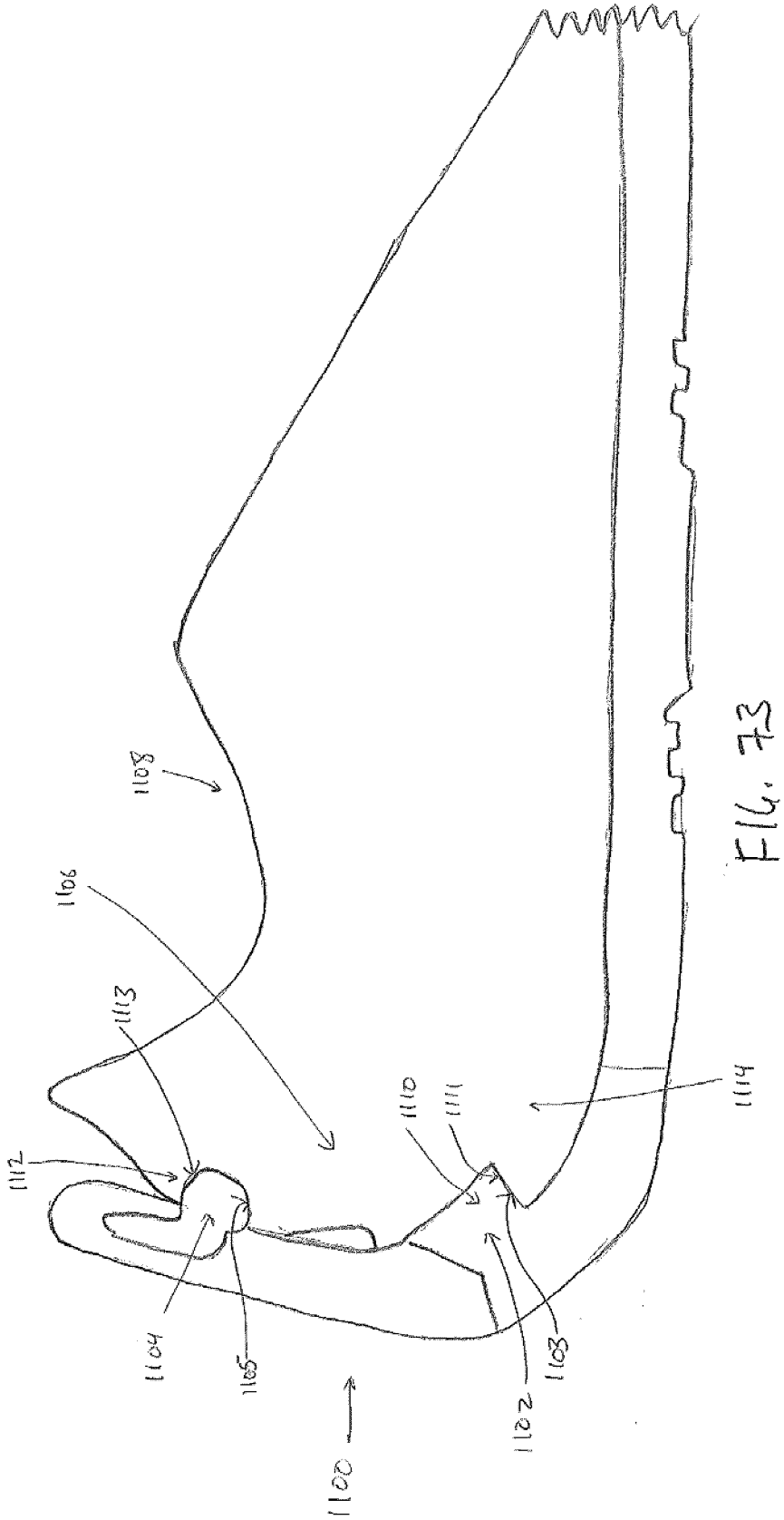
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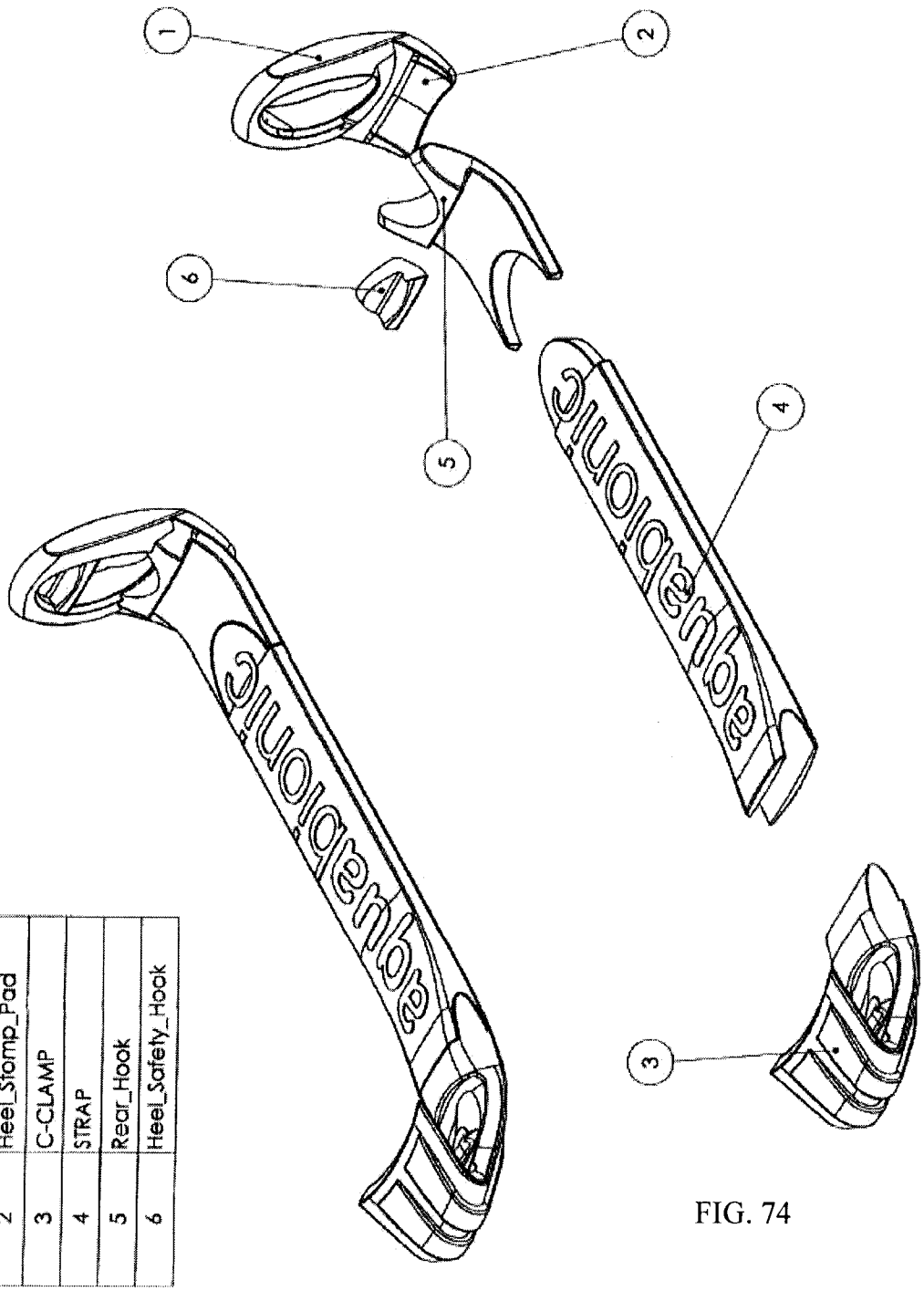
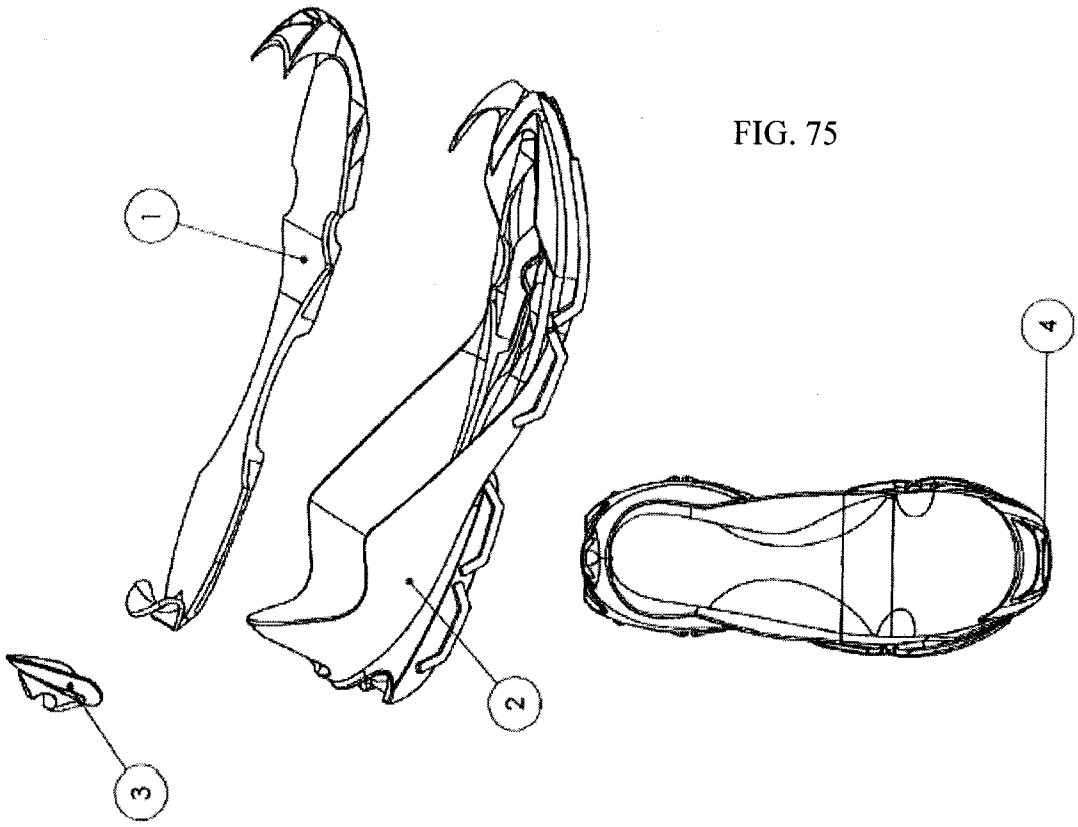
FIG. 73



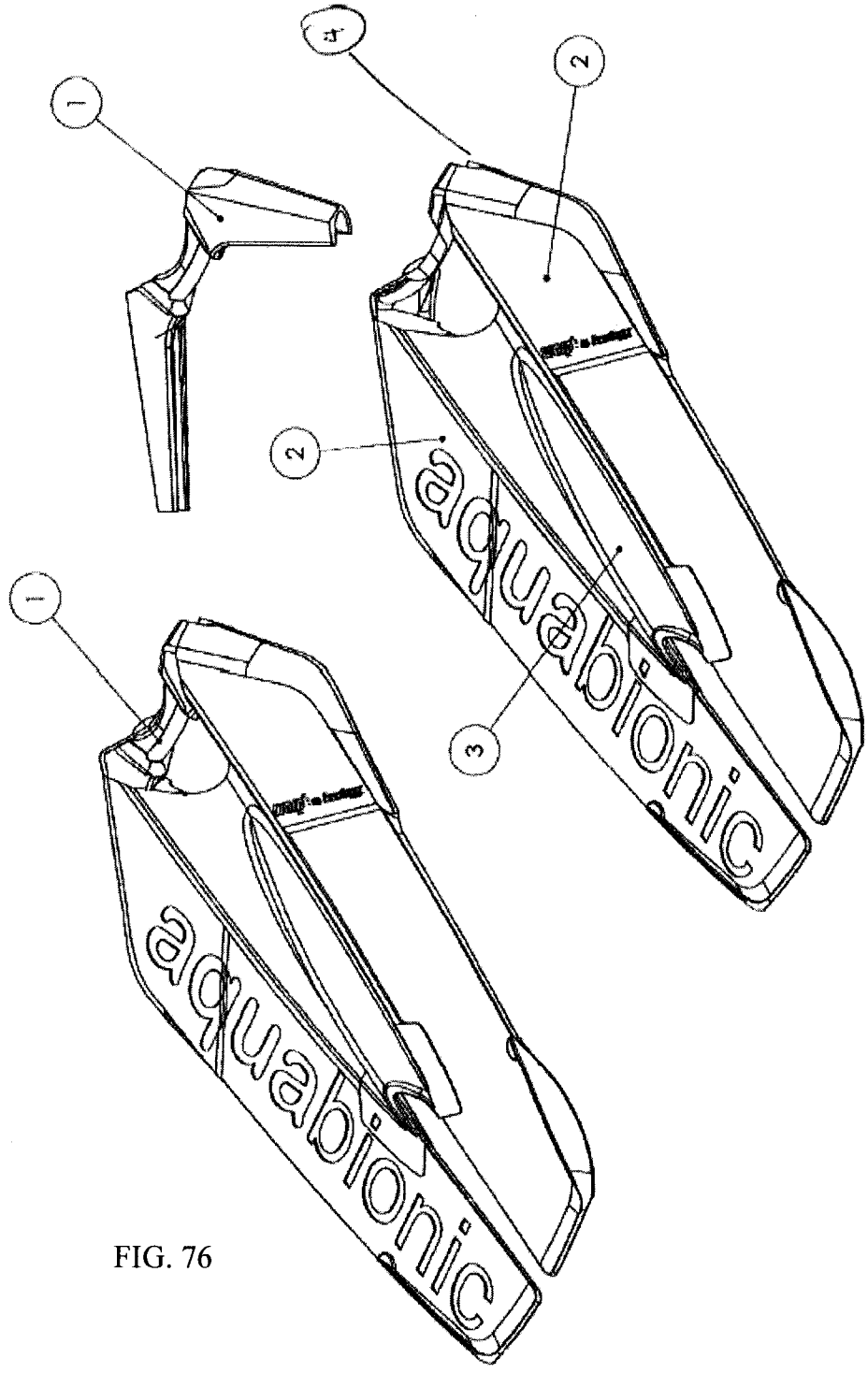
ITEM NO.	FEATURE NAME
1	Heel_Pad
2	Heel_Stomp_Pad
3	C-CLAMP
4	STRAP
5	Rear_Hook
6	Heel_Safety_Hook

FIG. 74

FIG. 75



Item No.	Feature Name
1	Inlay
2	SOLE
3	Boot Heel Safety
4	Front Top Hook
5	Rear Hook
6	Front Bottom Hook



ITEM No.	Feature Name
1	YFRAME
2	HINGE
3	MEMBRANE
4	SPIKES / DEPUIS TUBE

FIG. 76

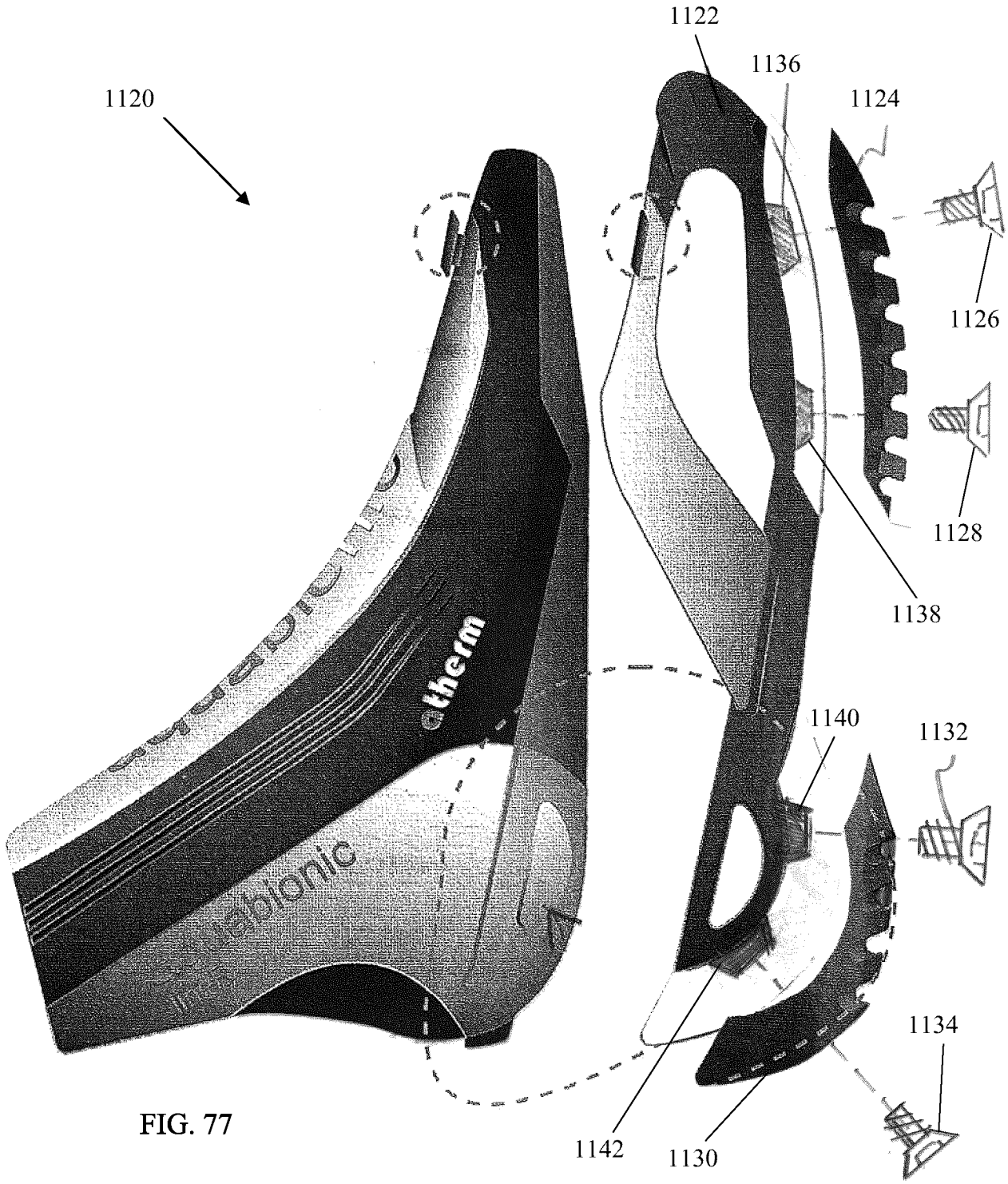

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FIG. 77

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2017/050044

A. CLASSIFICATION OF SUBJECT MATTER
IPC: ***A63B 31/11*** (2006.01), ***A43B 13/36*** (2006.01), ***A43B 3/24*** (2006.01), ***A43B 5/08*** (2006.01), ***A43B 5/18*** (2006.01), ***B63C 11/02*** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC : A63B 31/11 (2006.01), A43B 3/24 (2006.01), A43B 5/00 (2006.01), A43B 5/04 (2006.01), A43B 5/08 (2006.01), A43B 5/18 (2006.01), A43B 13/36 (2006.01), B63C 11/02 (2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

DATABASES : Questel Orbit (FAMPAT), Canadian Patent Database (CPD)
KEYWORDS : FIN, FLIPPER, BOOT, SHOE, BINDING, FOOT_WEAR

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	WO 2016/086319 A1 (ORTWIG, Jan Peter) 9 June 2016 (09-06-2016) * see whole document	1-11, 21-53, 61, 62, 70-104, 110, 115-121, 123-140, 148-167, 175, 179-185, 187-194
A	WO 2014/056066 A1 (ORTWIG, Jan Peter) 17 April 2014 (17-04-2014) * see whole document	1-194
A	WO 2011/1123950 A1 (ORTWIG, Jan Peter) 13 October 2011 (13-10-2011) * see whole document	1-194
A	EP 0 310 828 A2 (SEMEIA, Roberto) 12 April 1989 (12-04-1989) * see whole document	1-194

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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Date of the actual completion of the international search 21 March 2017 (21-03-2017)	Date of mailing of the international search report 25 April 2017 (25-04-2017)
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 819-953-2476	Authorized officer Casey Thomas (819) 639-7907

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	WO 2008/087589 A1 (MONTALDO, Marco) 24 July 2008 (24-07-2008) * see whole document	1-194
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