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(54) **HOLSTER FOR CHARGING PECTORALLY IMPLANTED MEDICAL DEVICES**

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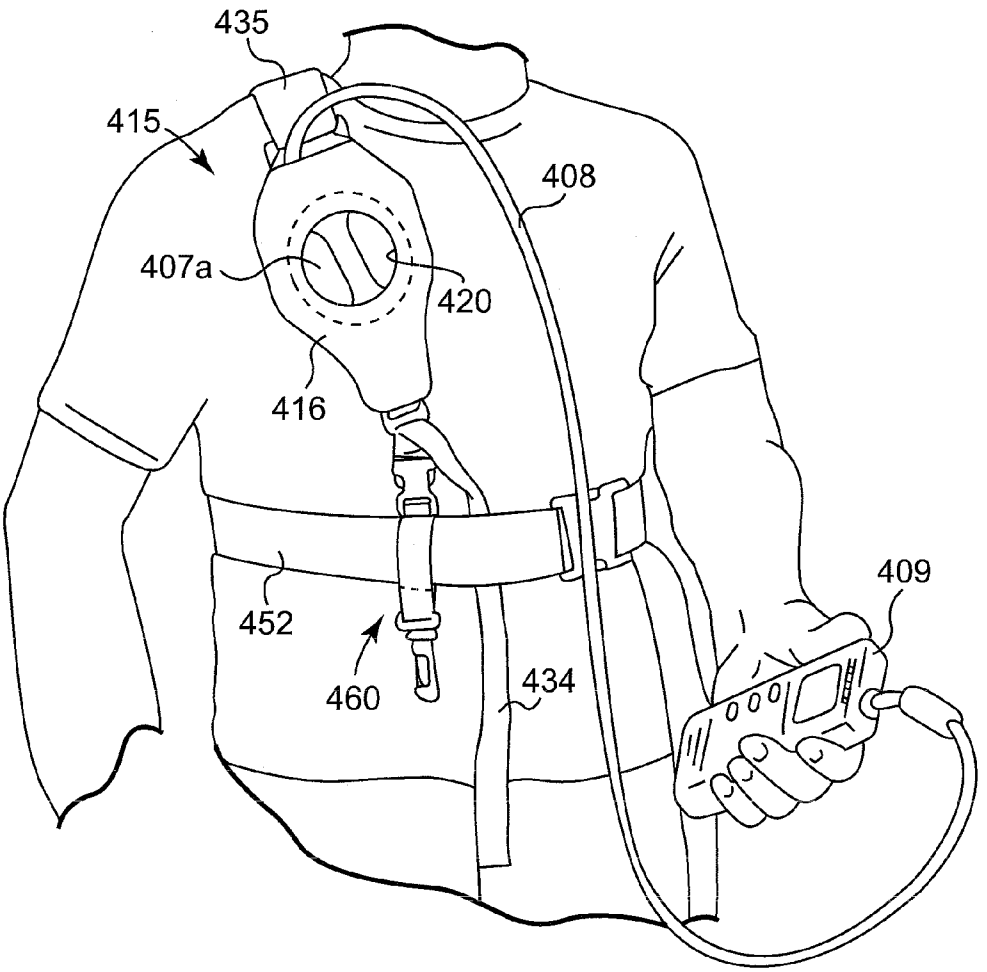
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(52) **U.S. Cl.** **320/108**; 224/660

(57) **ABSTRACT**

A holster that may be donned in a first configuration for charging a pectorally implanted medical device on the patient's right side, a second configuration for charging a pectorally implanted medical device on the patient's left side, or a third configuration for use as a waist belt for charging a pectorally implanted medical device on either side of the patient.



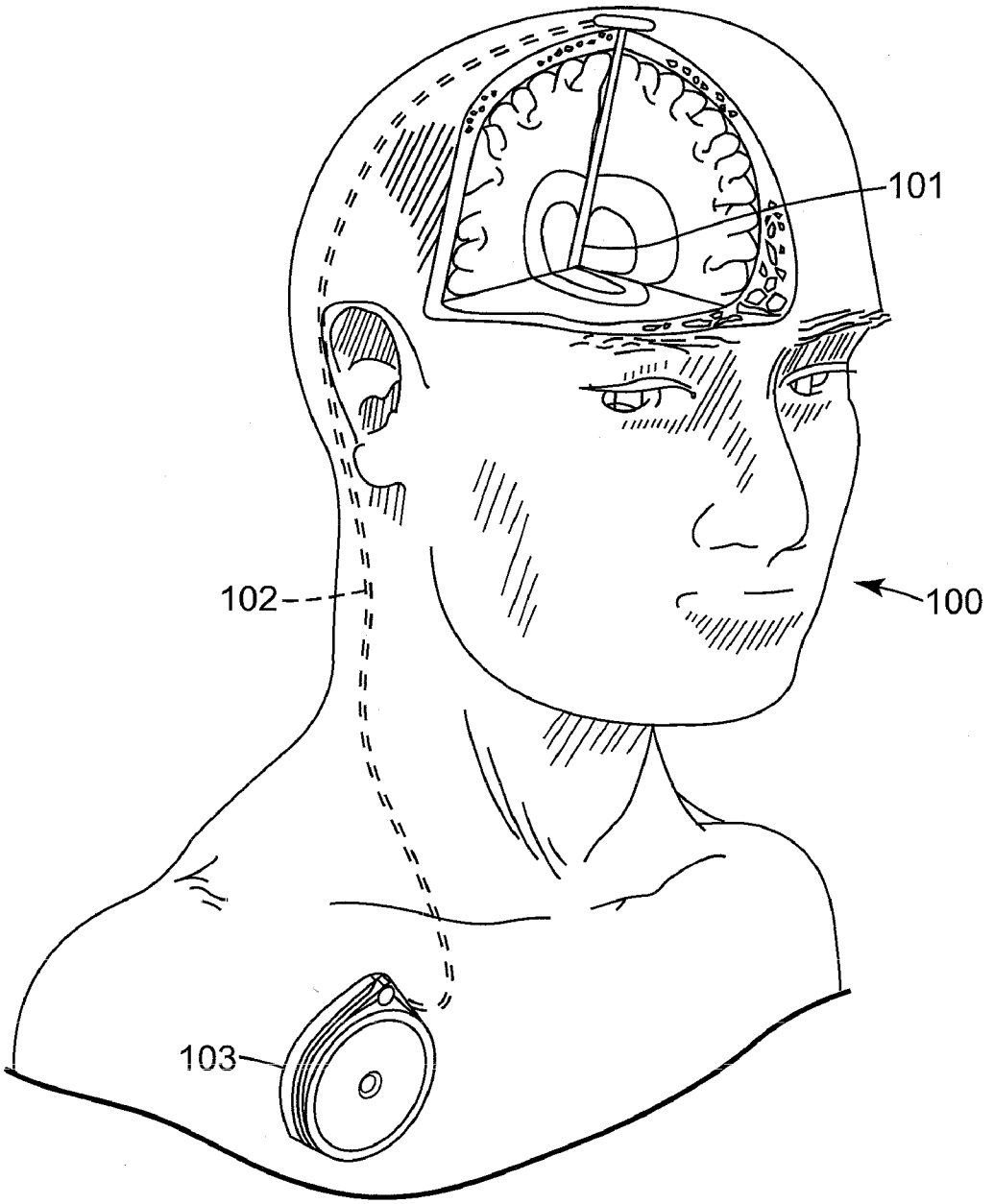


Fig. 1

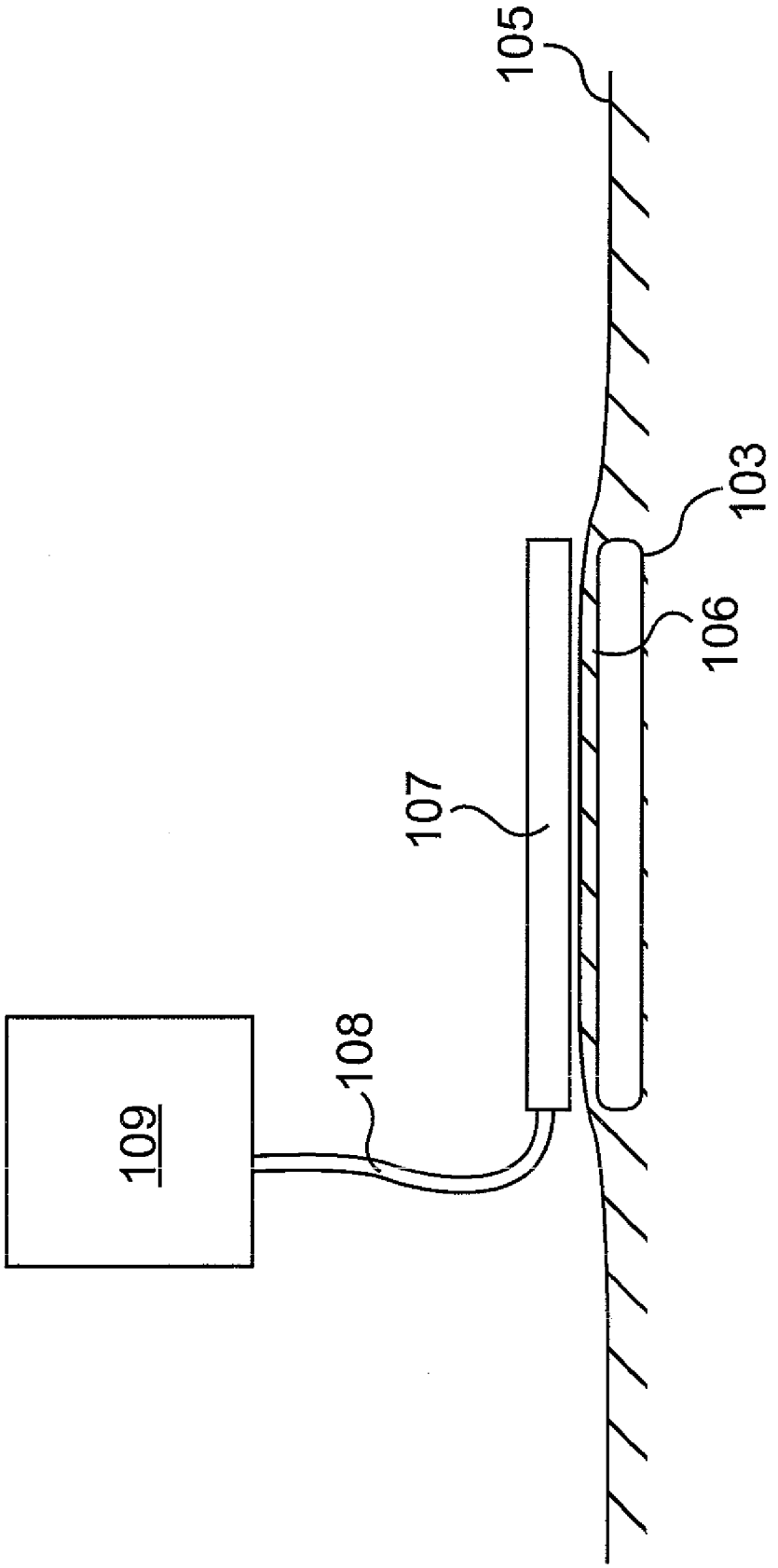


Fig. 2

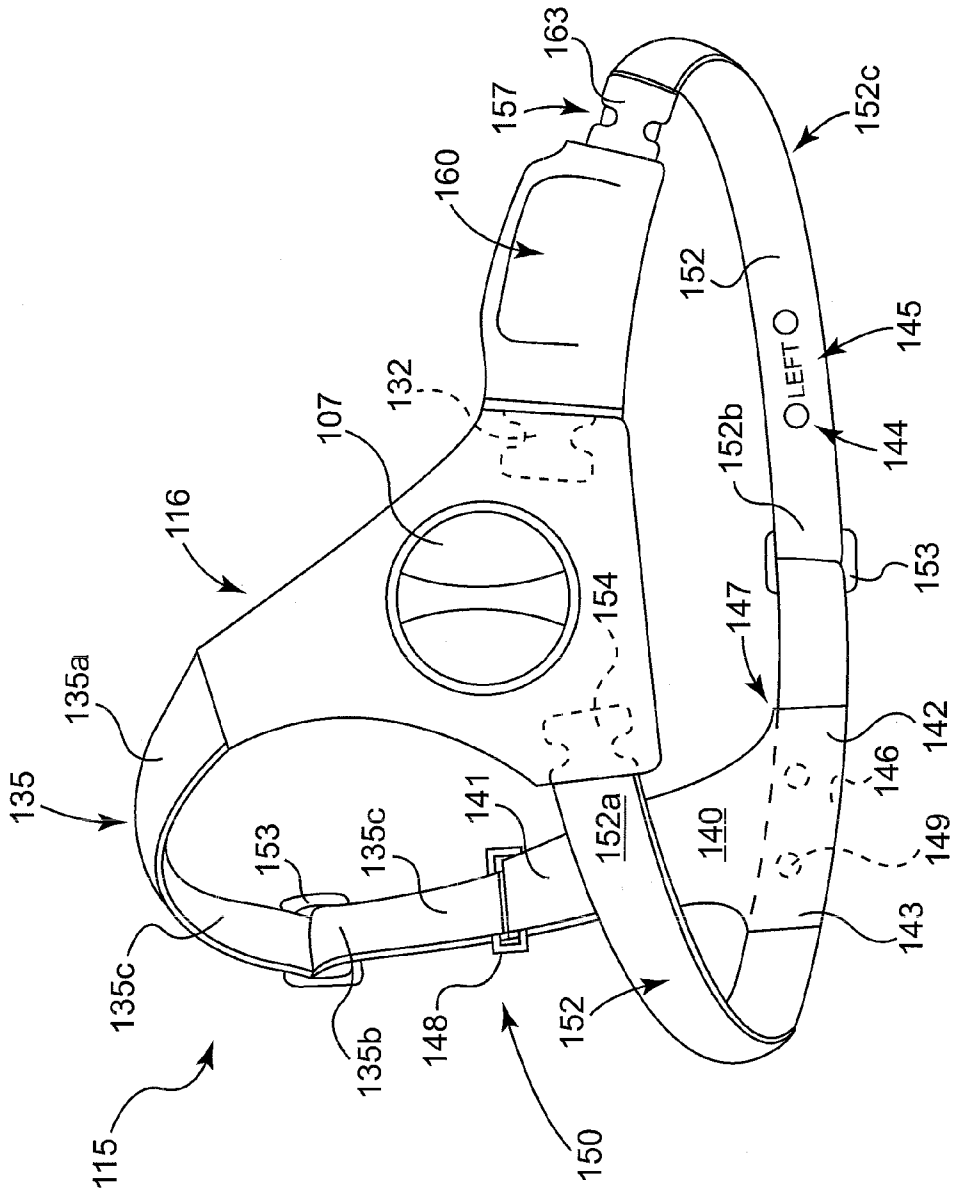

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Fig. 3

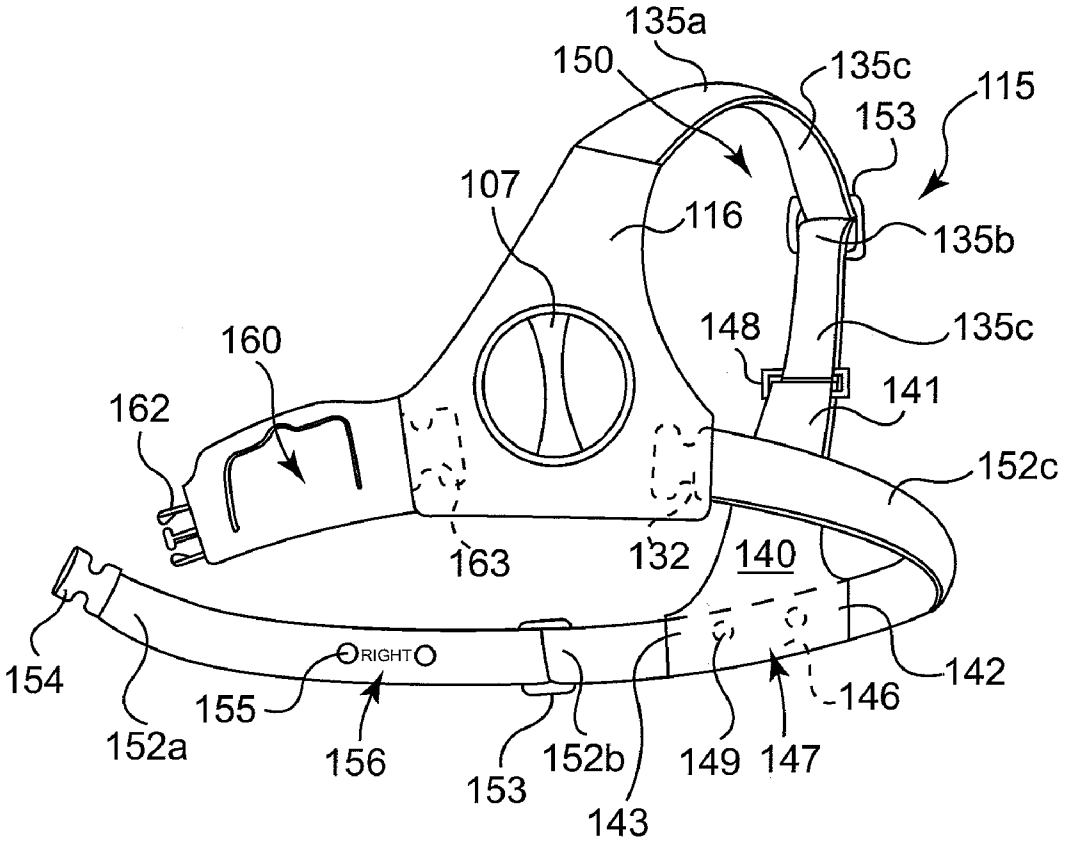

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Fig. 4

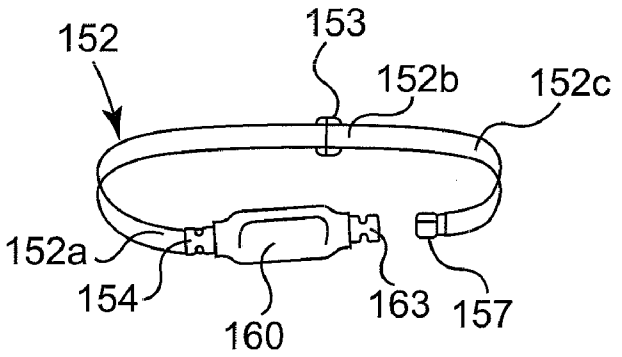

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Fig. 5

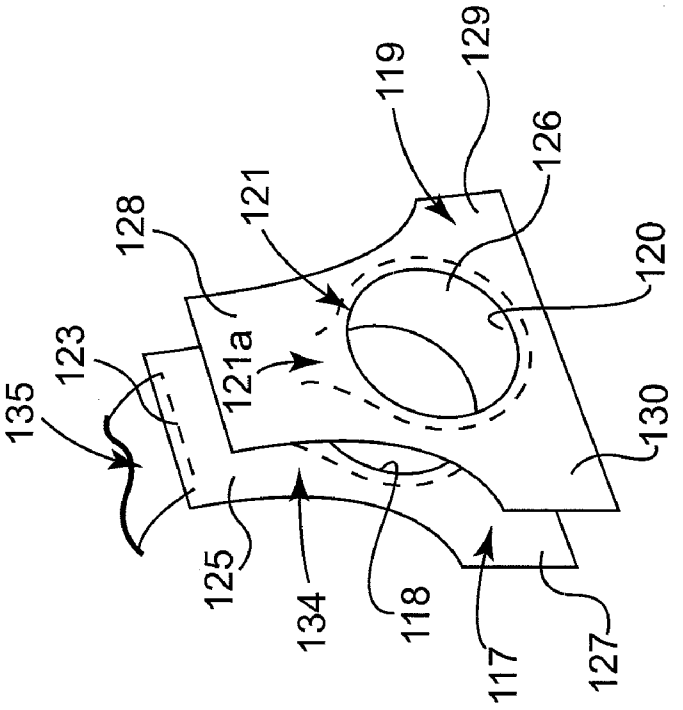

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Fig. 7

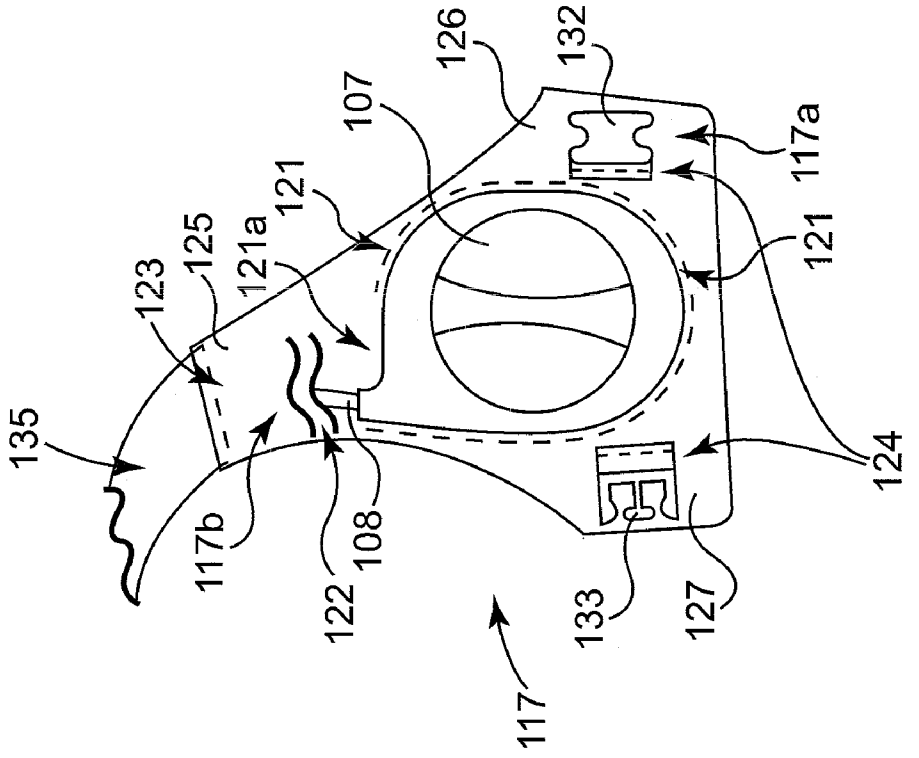

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Fig. 6

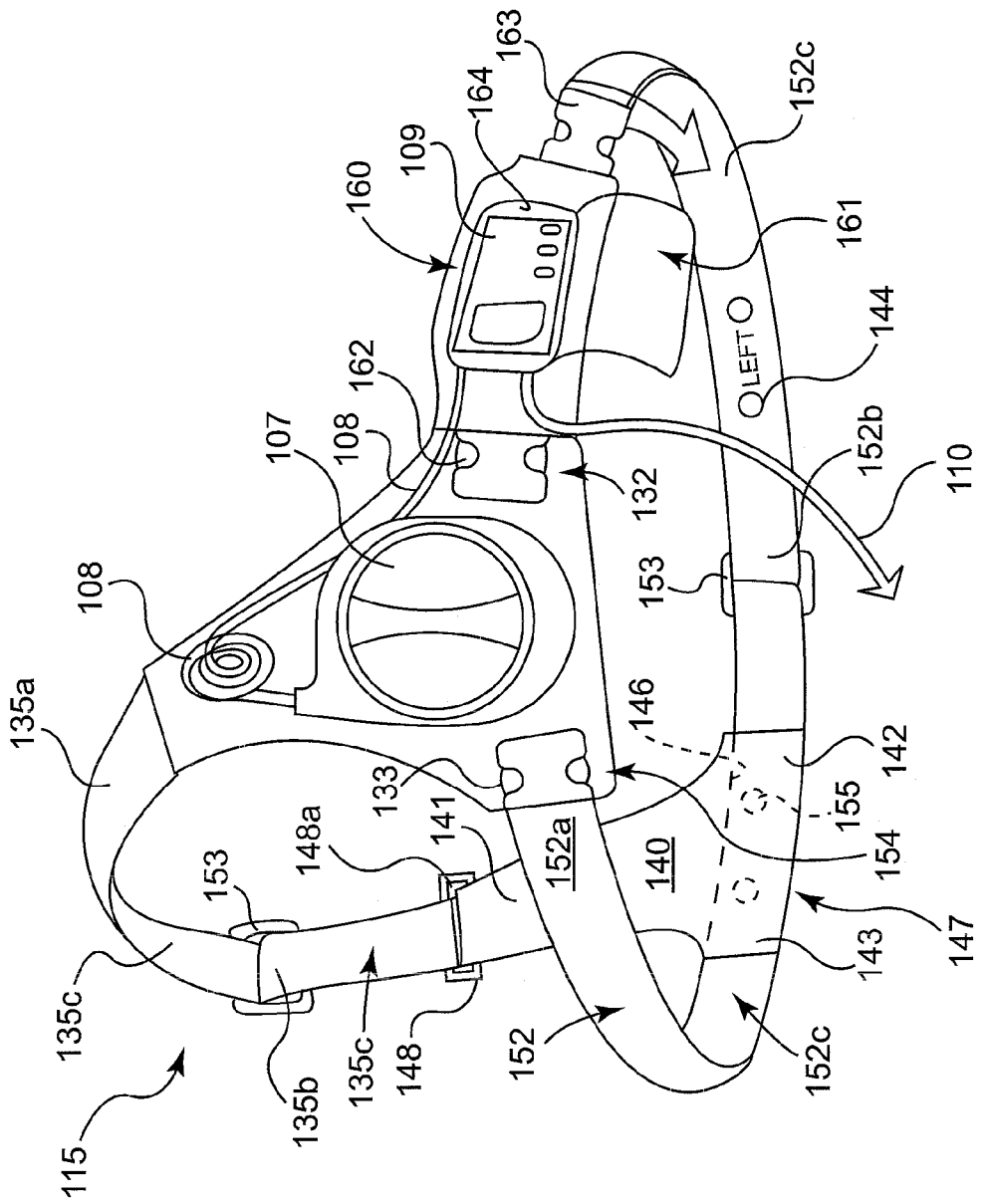

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Fig. 8

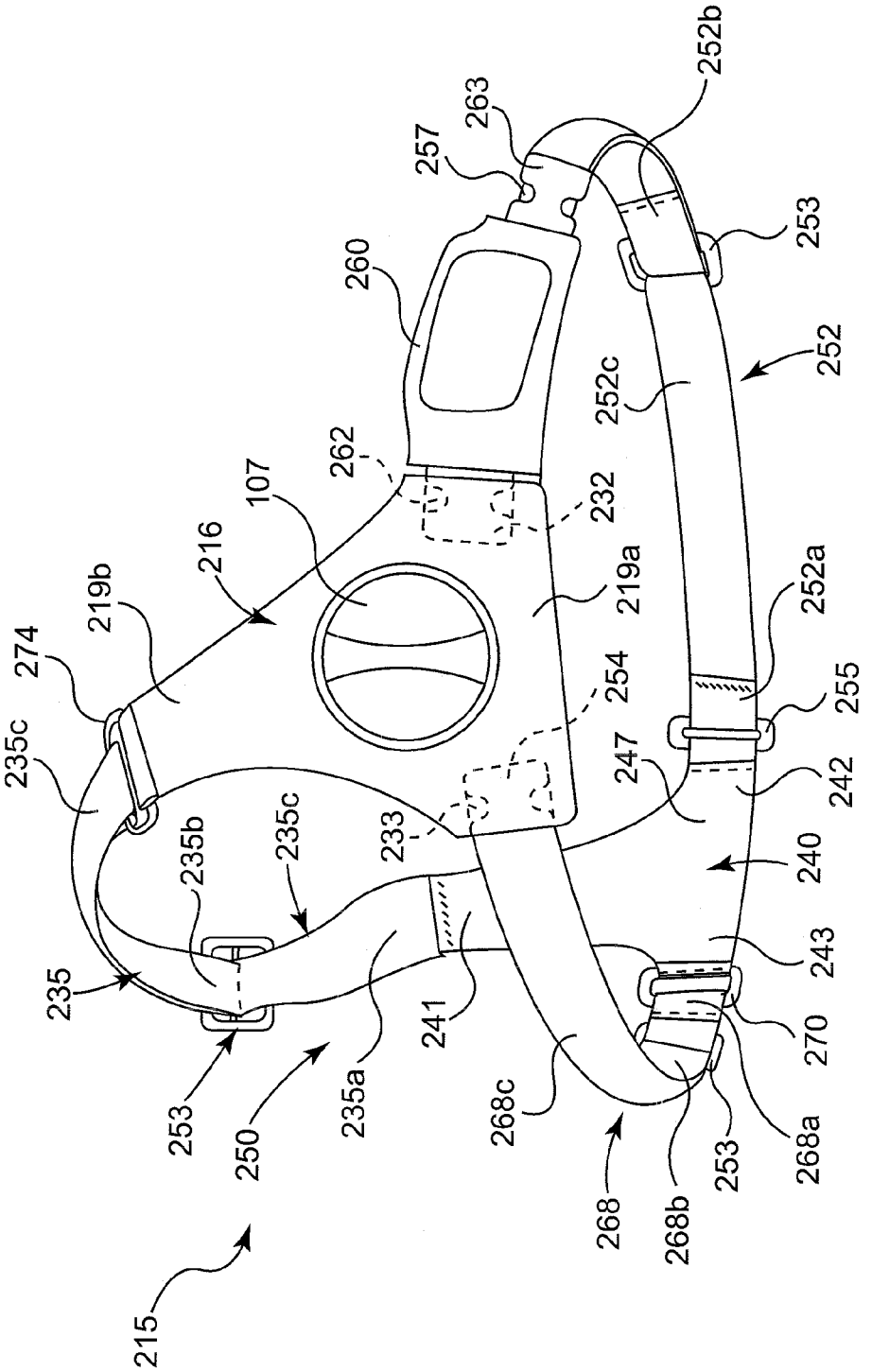

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Fig. 9

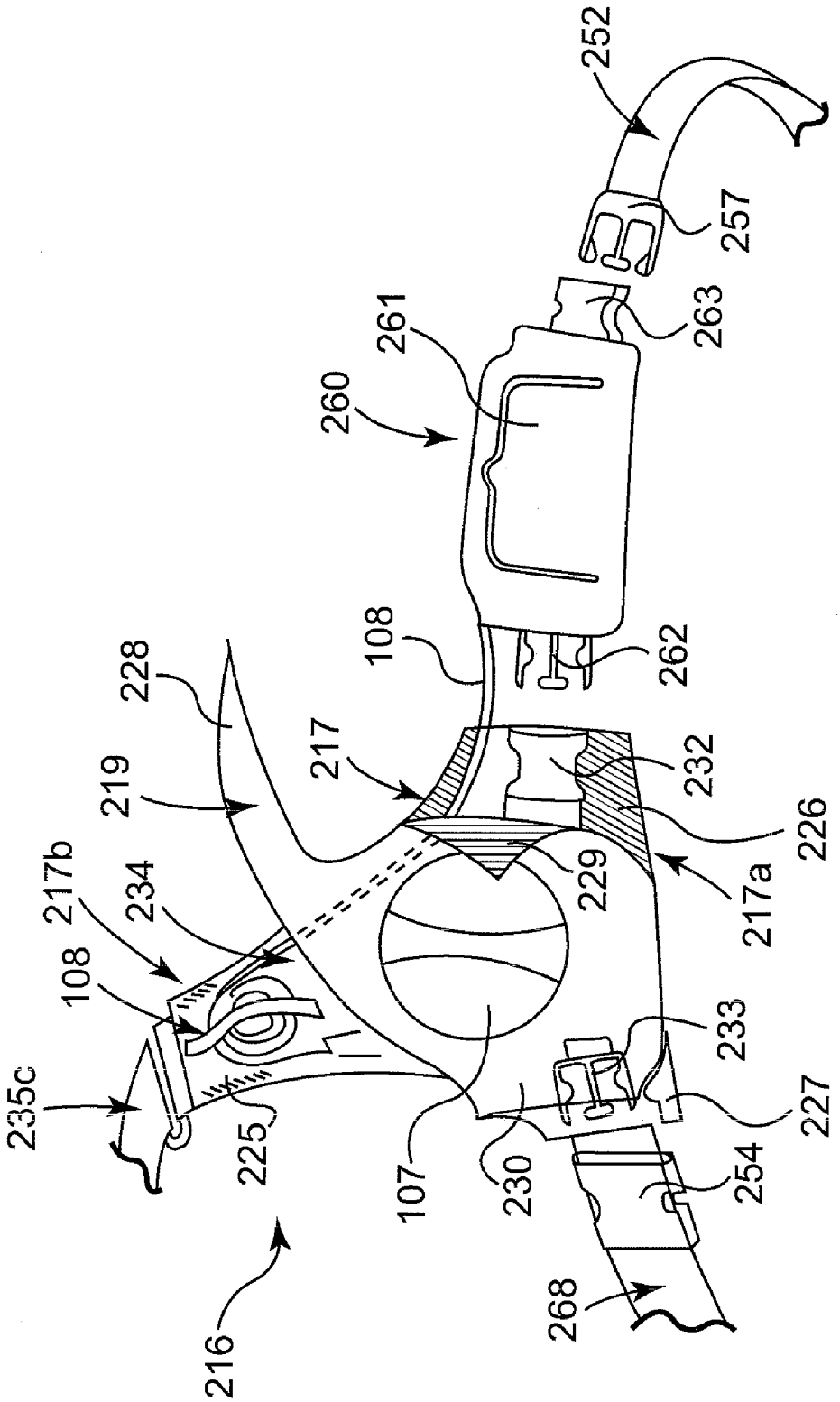

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Fig. 10

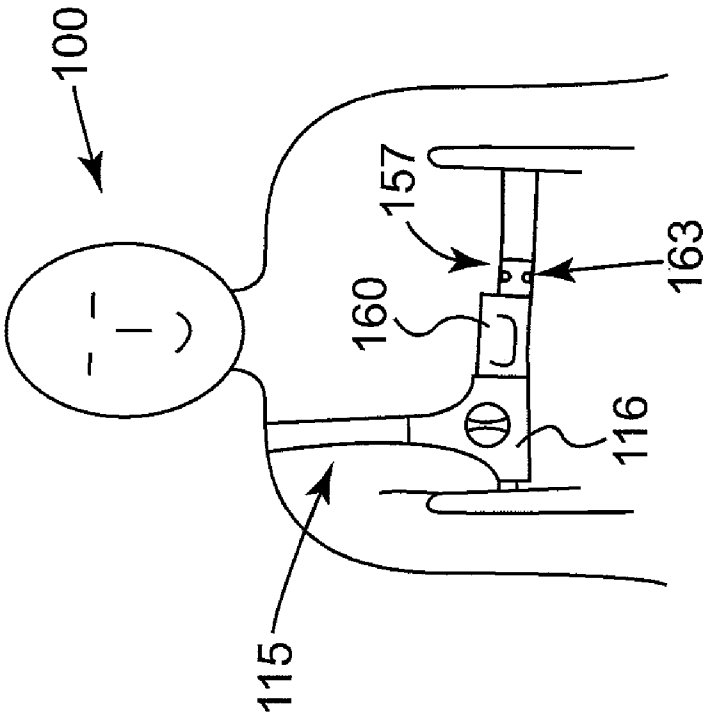


Fig. 12

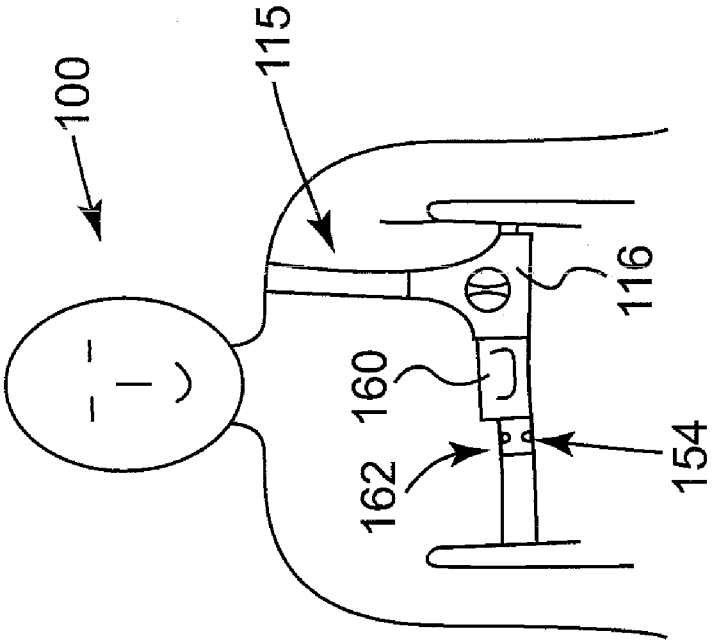


Fig. 11

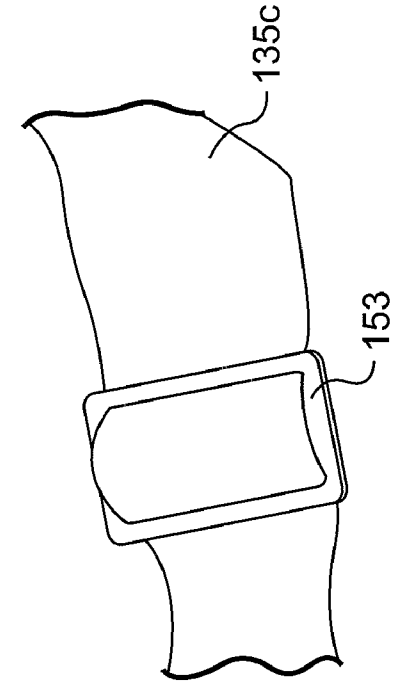


Fig. 14

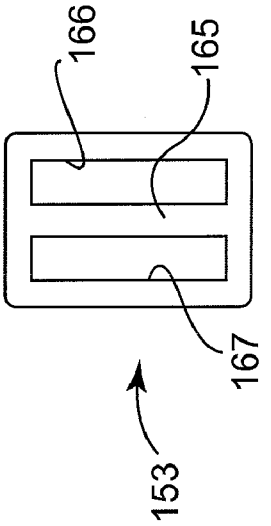


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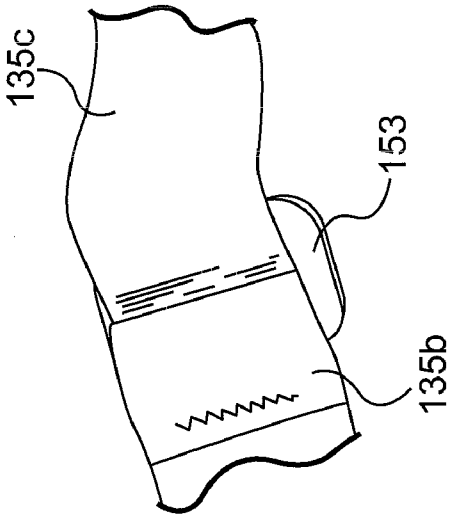


Fig. 15

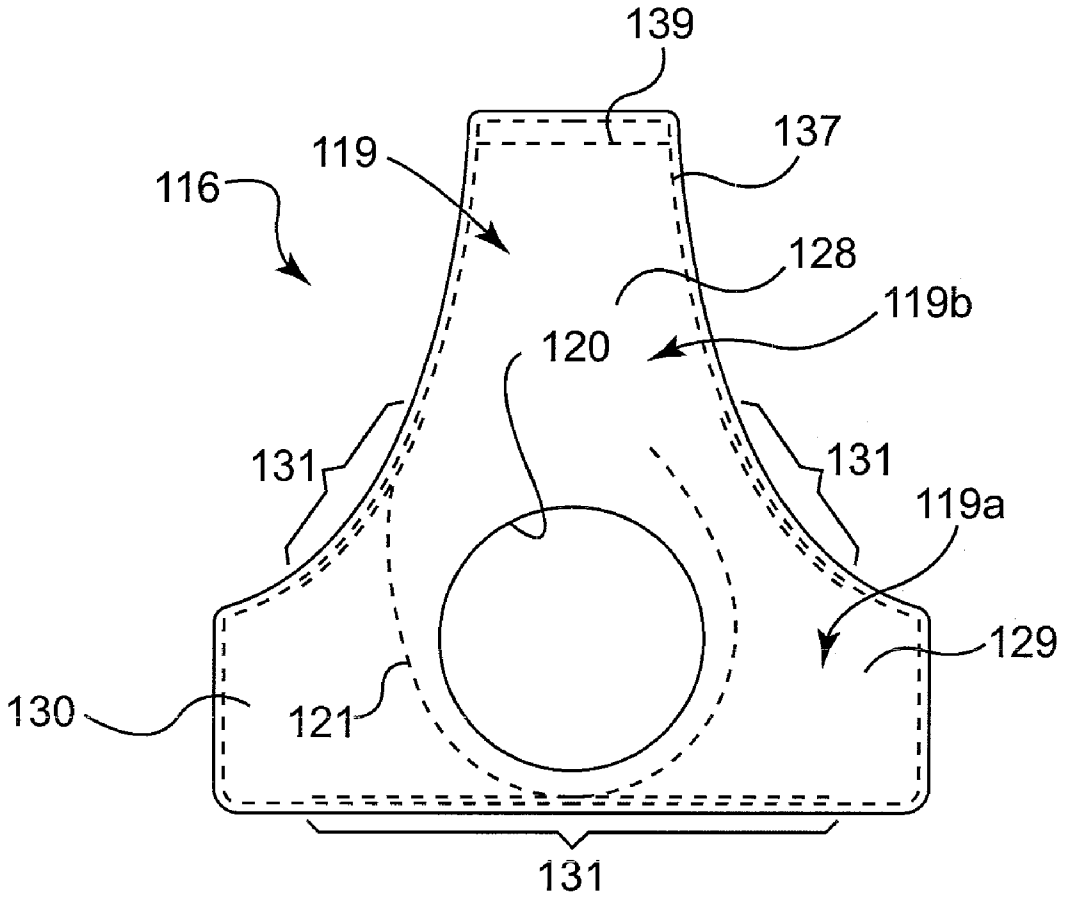


Fig. 16

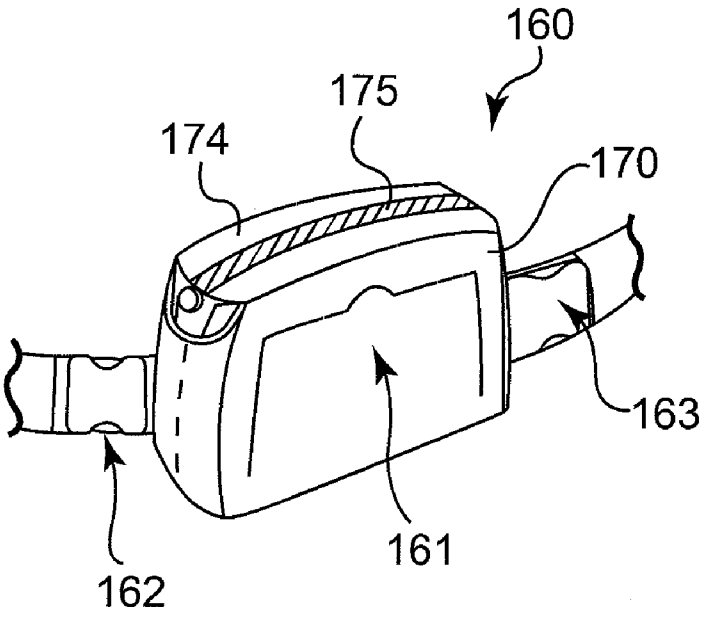


Fig. 17

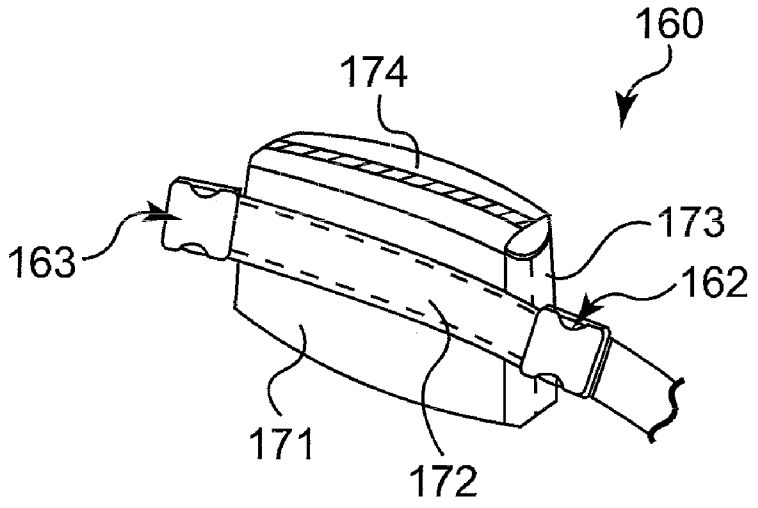


Fig. 18

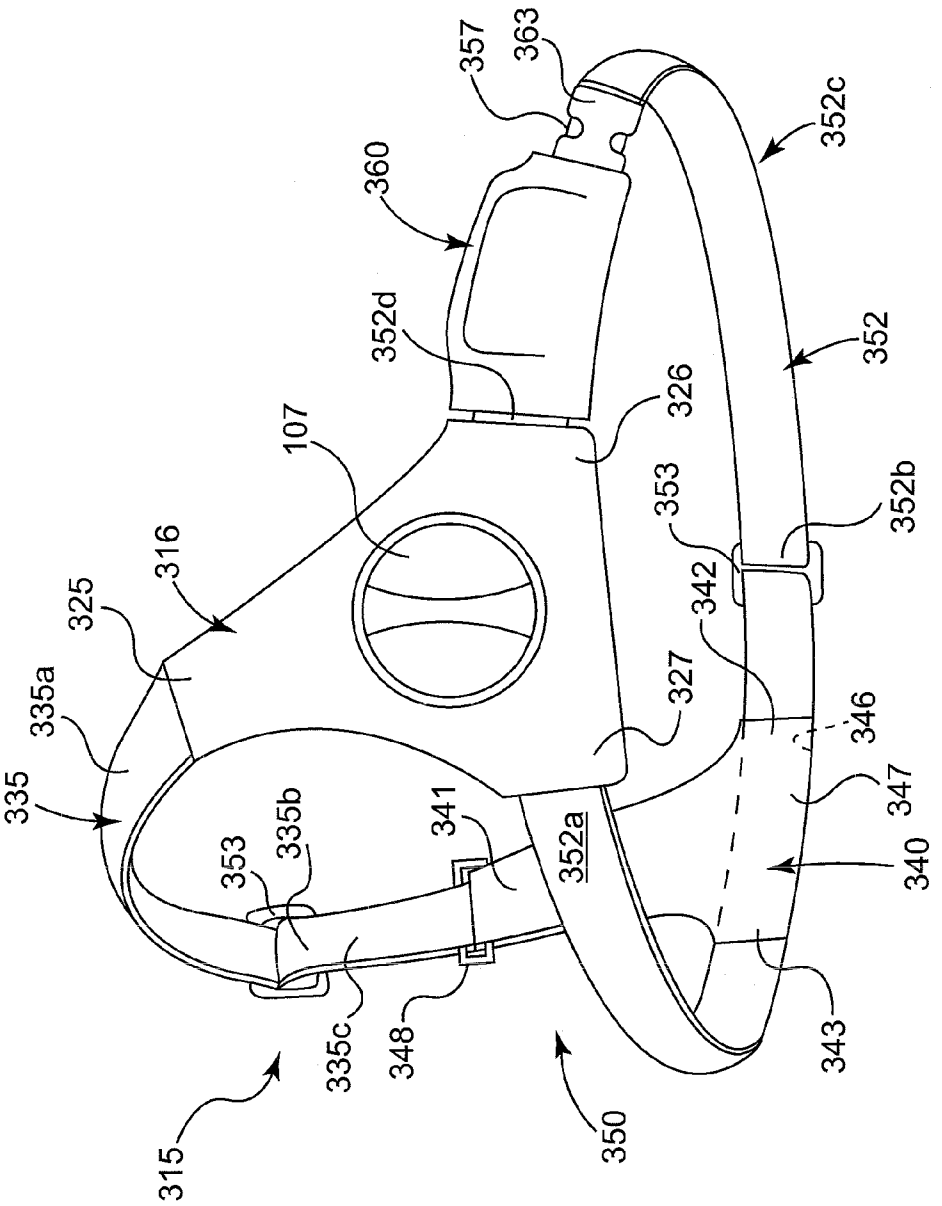

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Fig. 19

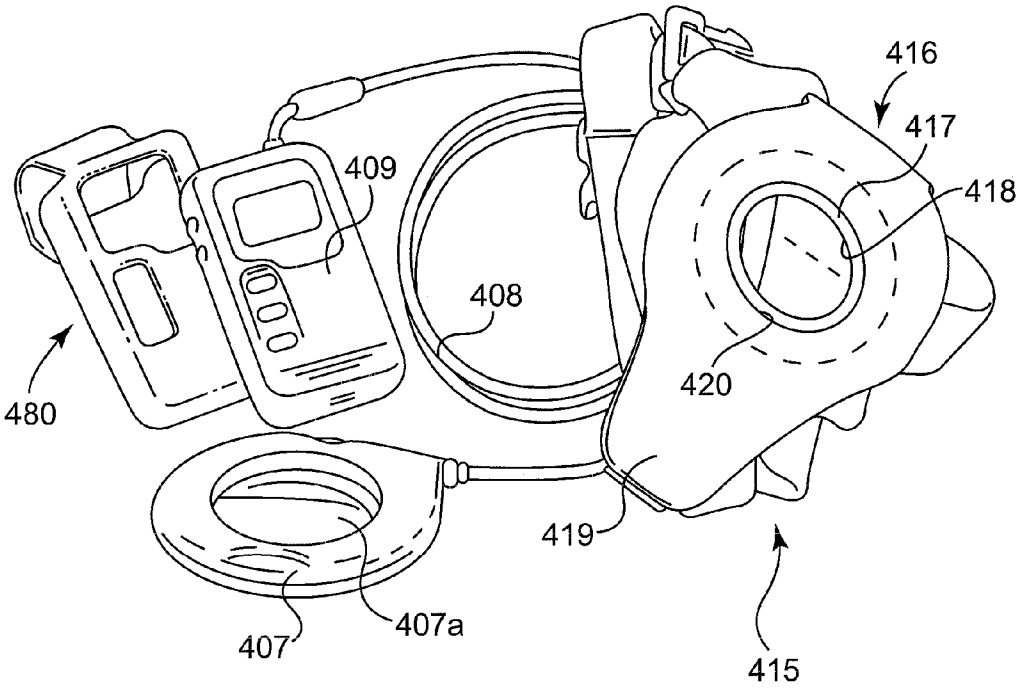


Fig. 20

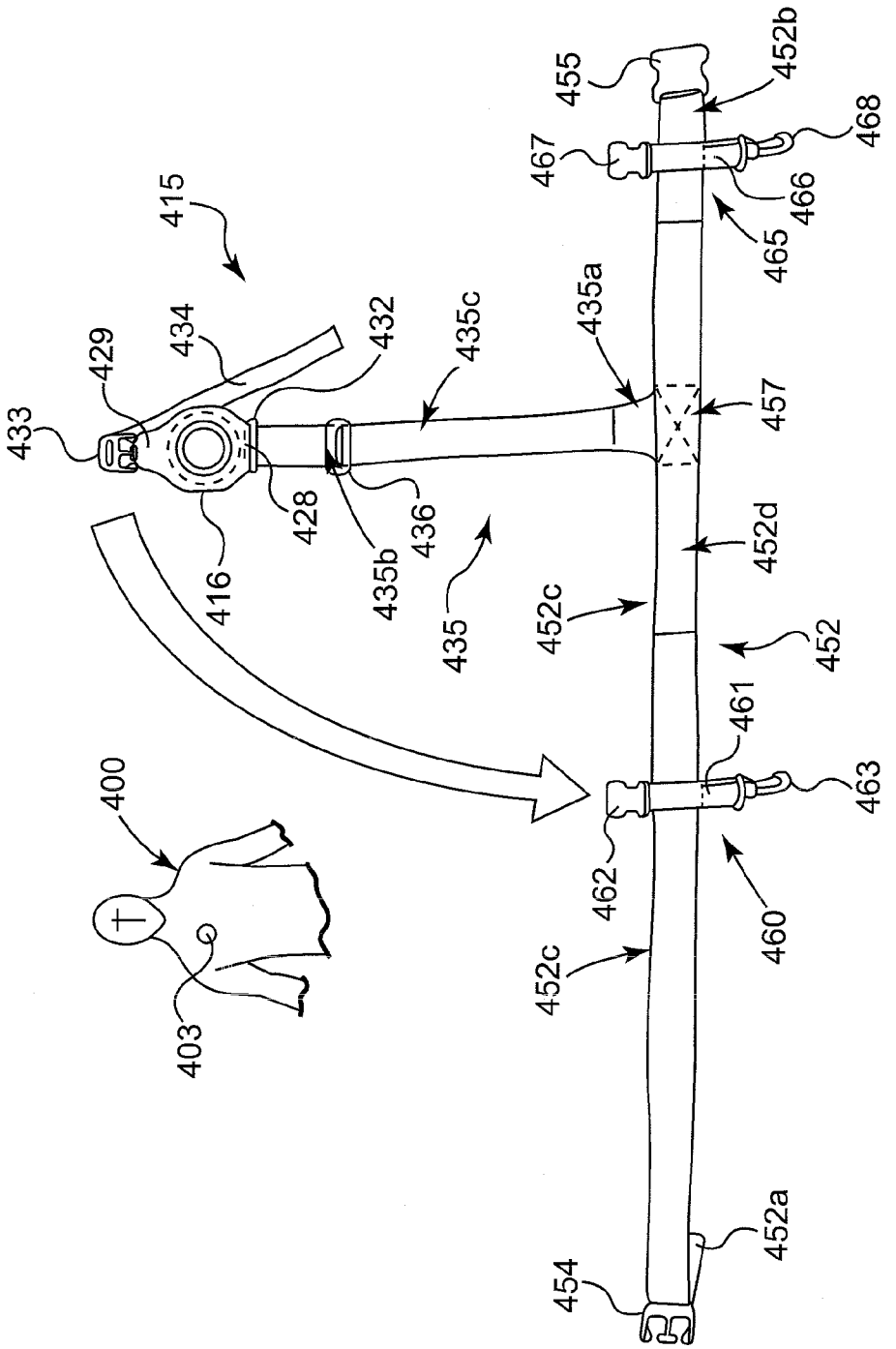

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Fig. 21

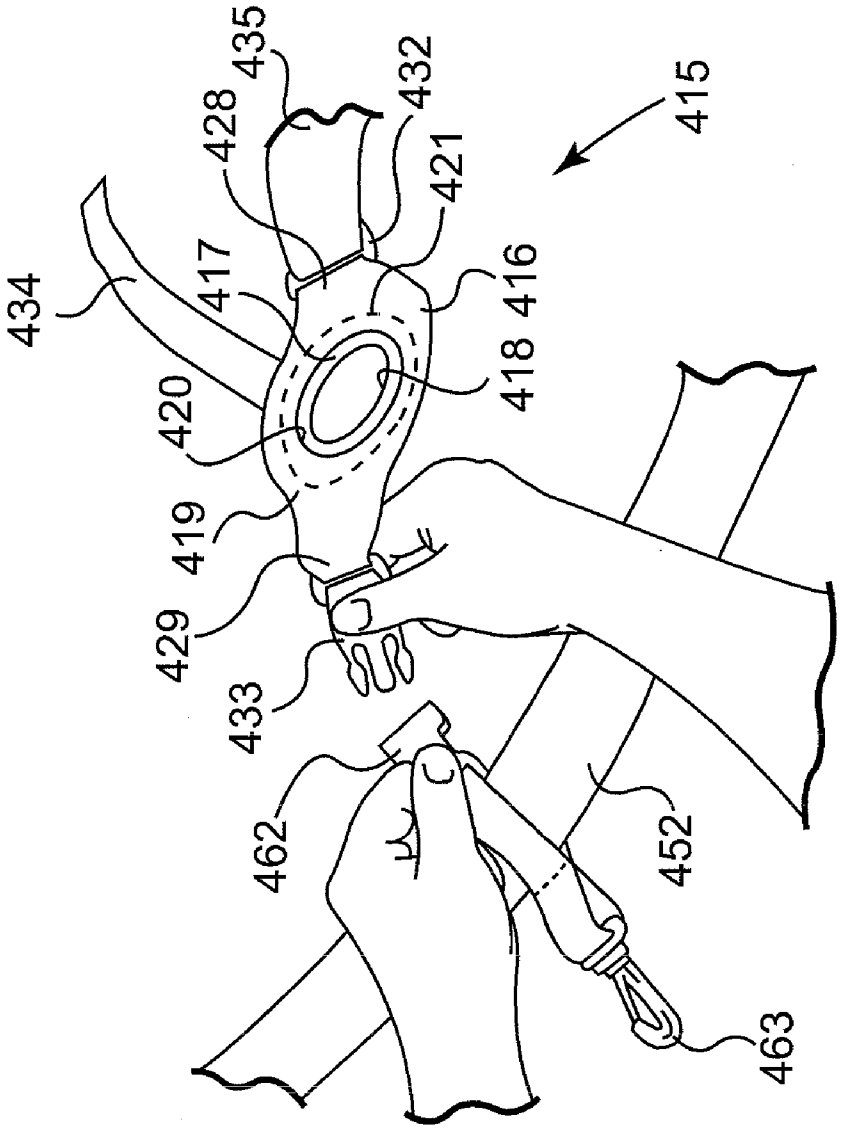


Fig. 22

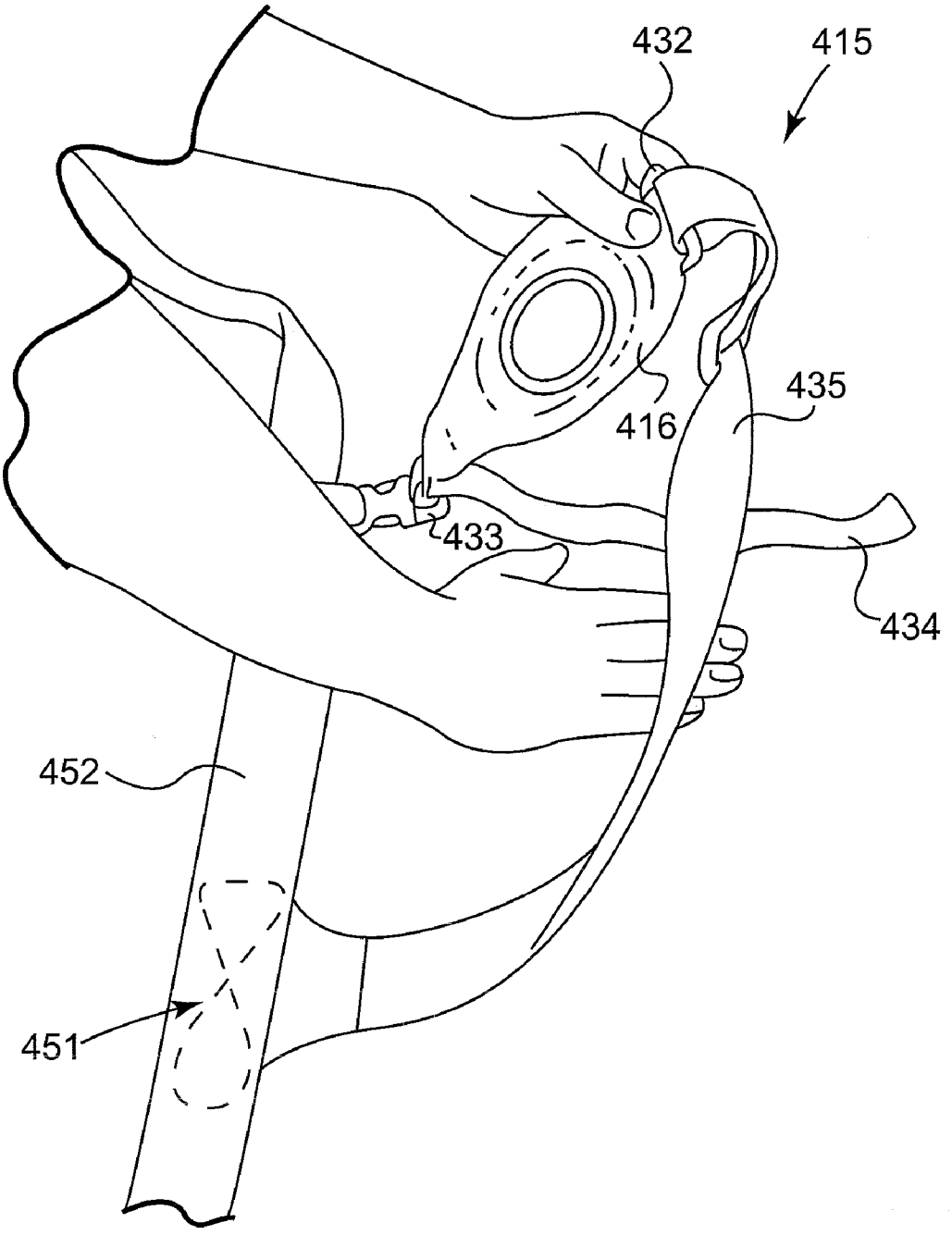


Fig. 23

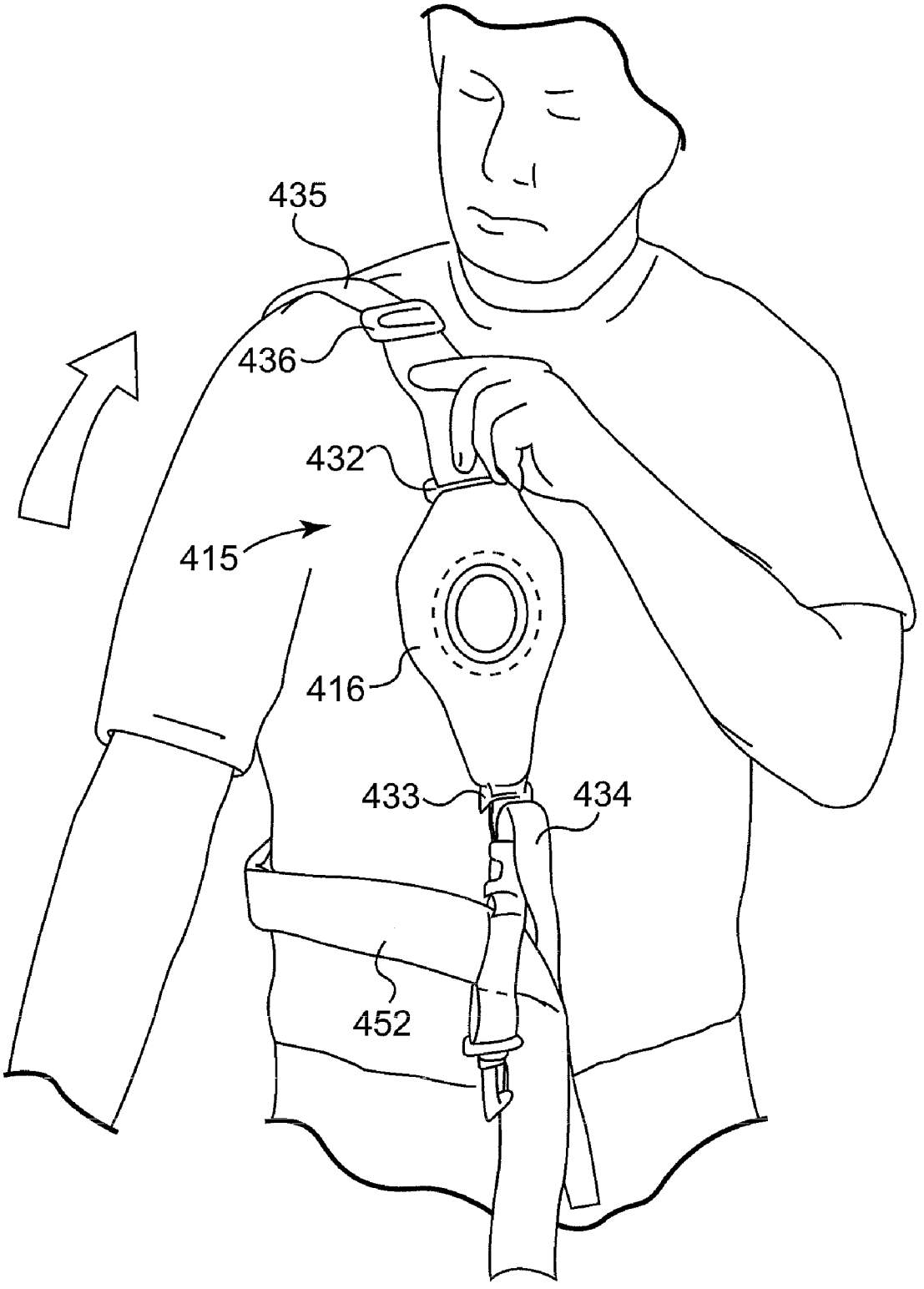


Fig. 24

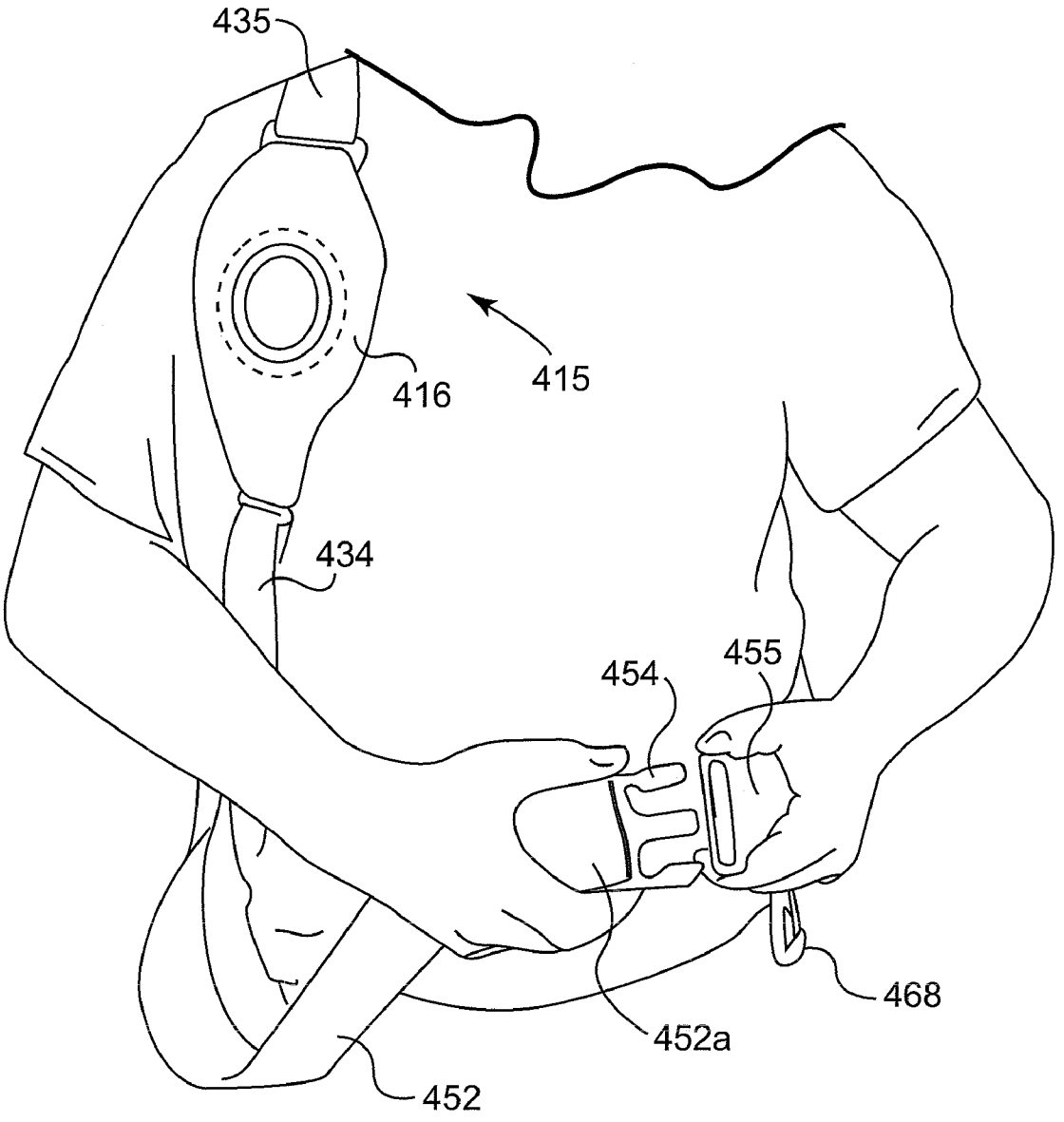


Fig. 25

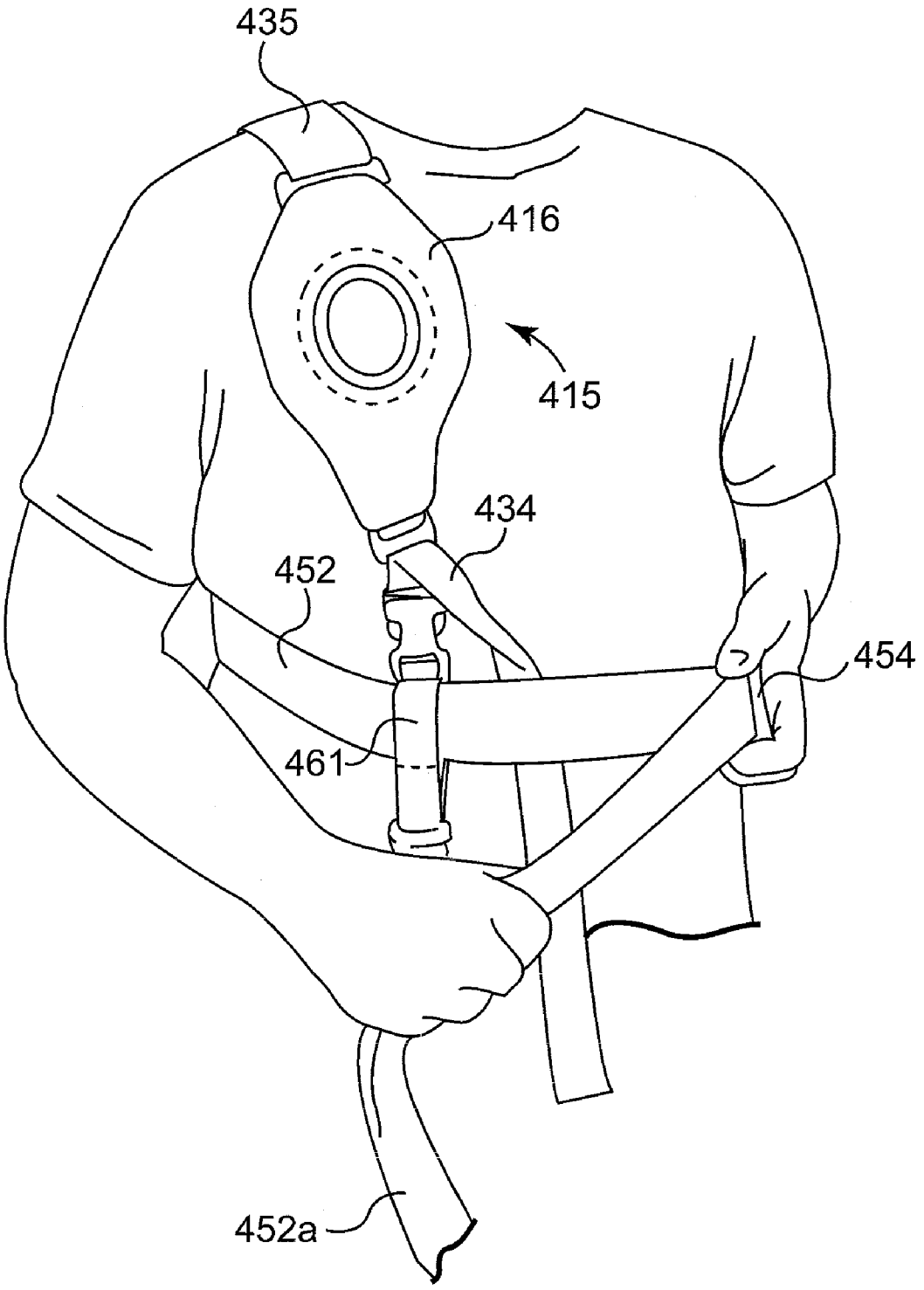


Fig. 26

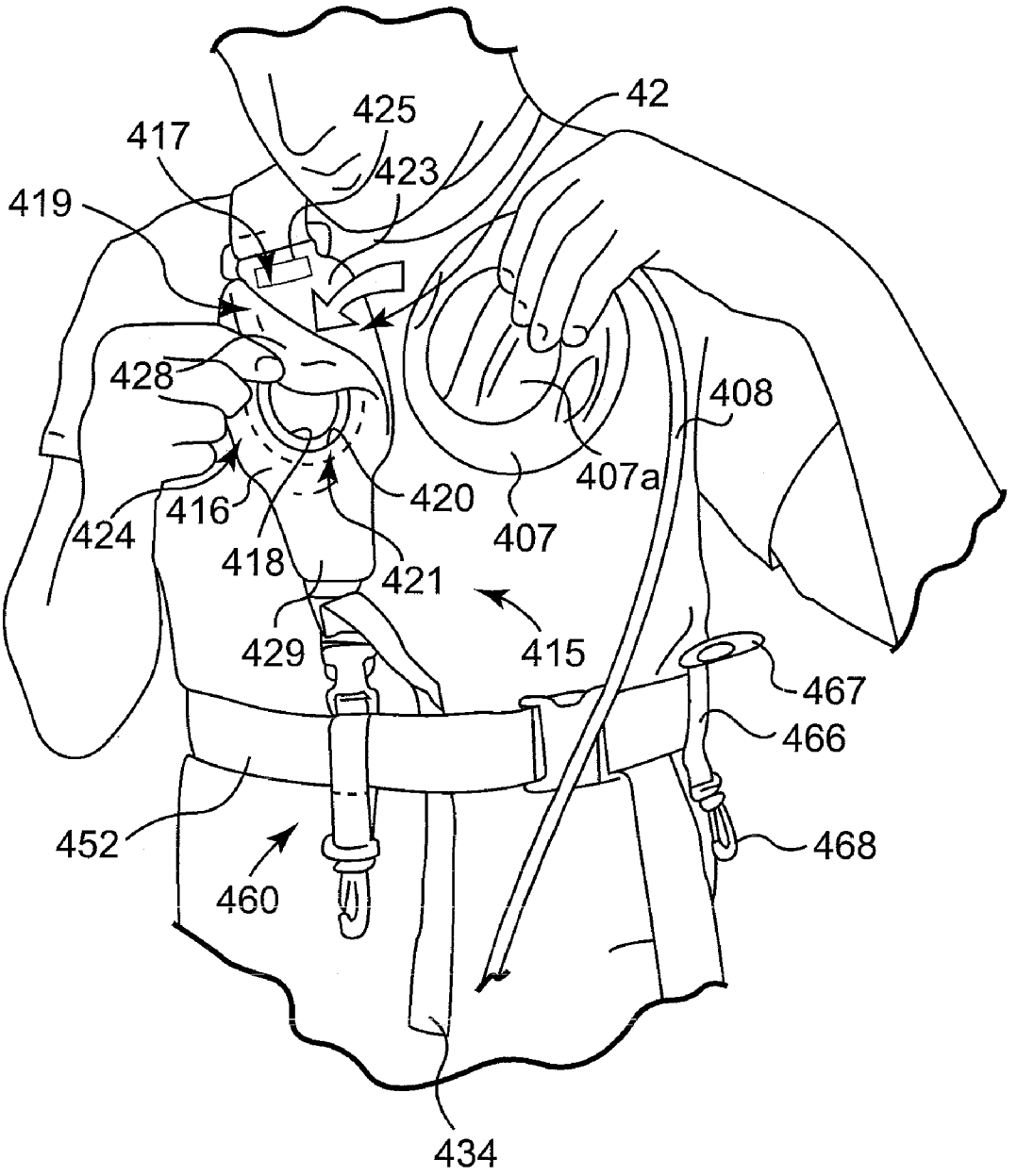

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Fig. 27

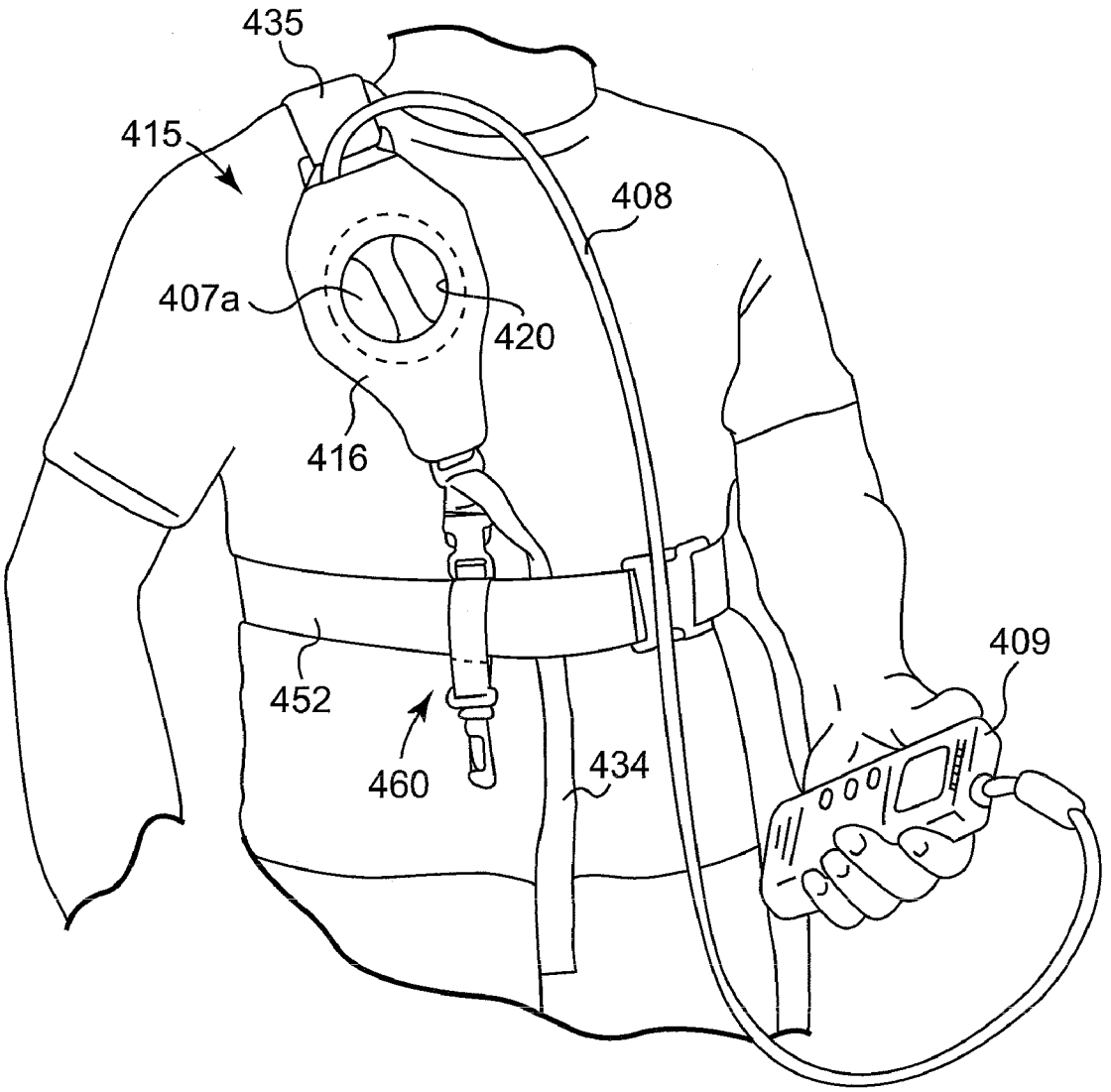


Fig. 28

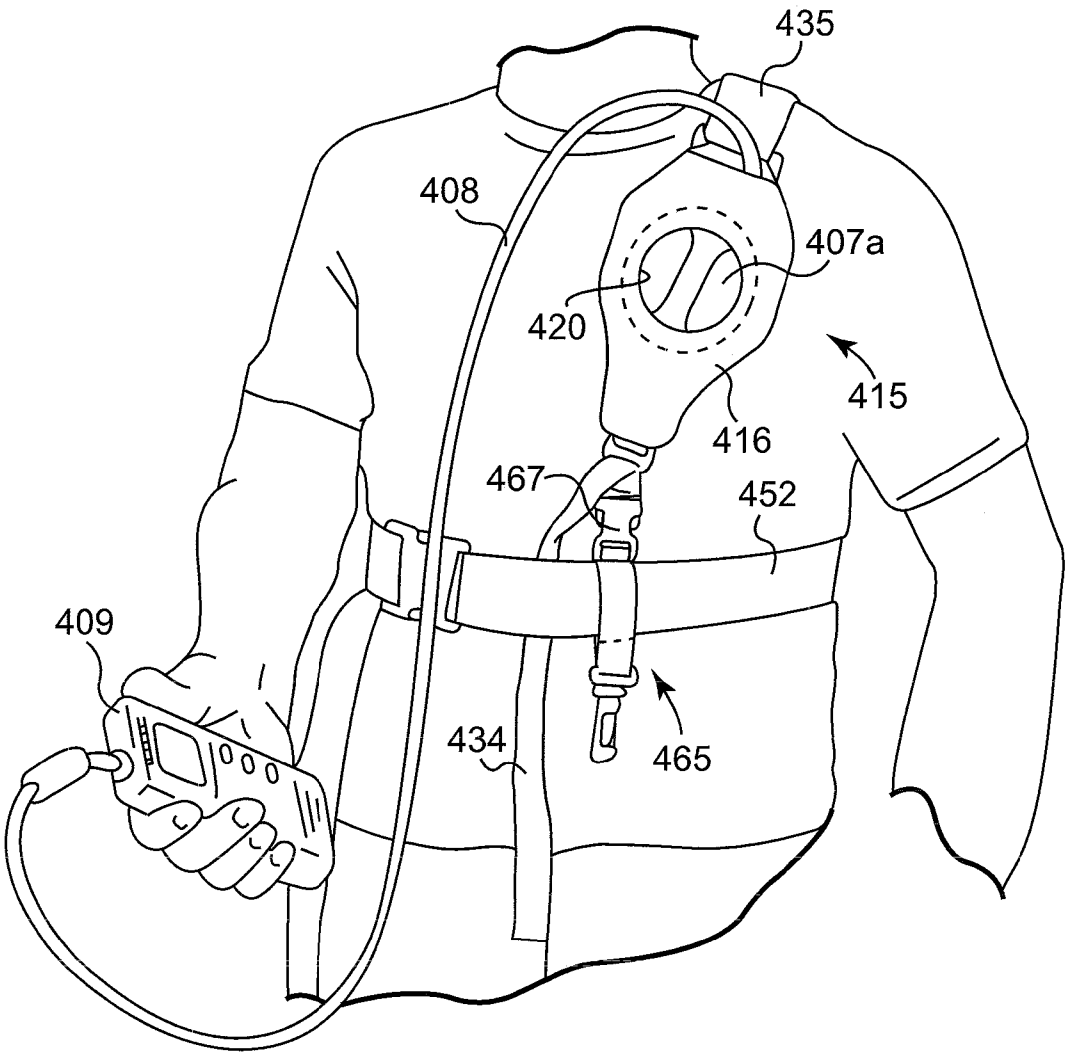


Fig. 29

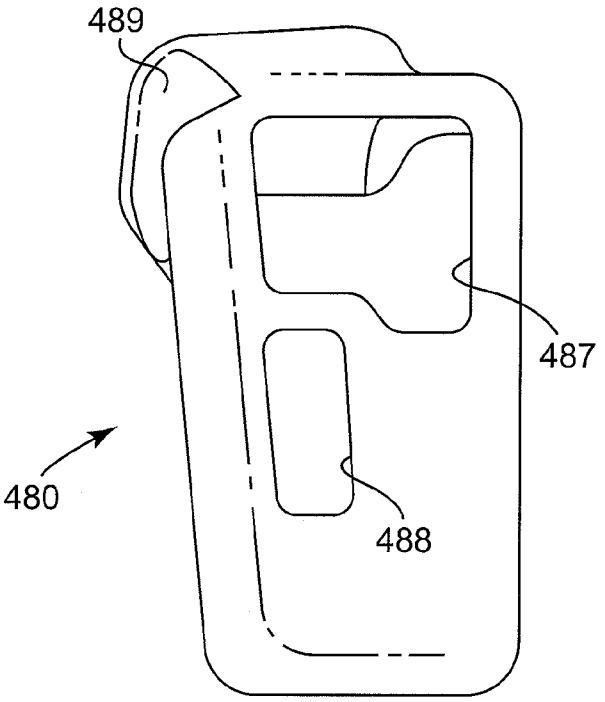


Fig. 30

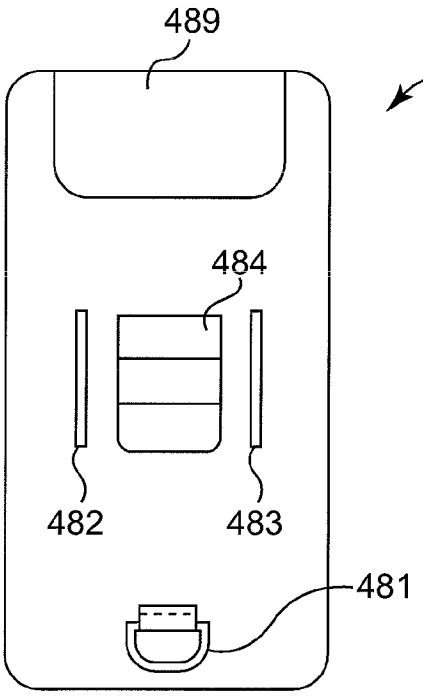


Fig. 31



Fig. 32

HOLSTER FOR CHARGING PECTORALLY IMPLANTED MEDICAL DEVICES

[0001] This application is a continuation-in-part application of U.S. patent application Ser. No. 11/414,155, filed Apr. 28, 2006, which is incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to a holster for charging pectorally implanted medical devices.

BACKGROUND OF THE INVENTION

[0003] Implantable medical devices for producing a therapeutic result in a patient are well known. An example of such an implantable medical device includes implantable neurostimulators used for the treatment of movement disorders such as Parkinson's Disease, essential tremor, and dystonia. Other examples of such implantable medical devices include implantable drug infusion pumps, implantable cardioverters, implantable cardiac pacemakers, implantable defibrillators, and cochlear implants. Of course, it is recognized that other implantable medical devices are envisioned that utilize energy delivered or transferred from an external device.

[0004] A common element in all of these implantable medical devices is the need for electrical power in the implanted medical device. The implanted medical device requires electrical power to perform its therapeutic function whether it be driving an electrical infusion pump, providing an electrical neurostimulation pulse, or providing an electrical cardiac stimulation pulse. This electrical power is derived from a power source.

[0005] Typically, a power source for an implantable medical device can take one of two forms. The first form utilizes an external power source that transcutaneously deliver's energy via wires or radio frequency energy. Having electrical wires that perforate the skin is disadvantageous due, in part, to the risk of infection. Further, continuously coupling patients to an external power for therapy is, at least, a large inconvenience. The second form utilizes single cell batteries as the source of energy of the implantable medical device. This can be effective for low power applications, such as pacing devices. However, such single cell batteries usually do not supply the lasting power required to perform new therapies in newer implantable medical devices. In some cases, such as an implantable artificial heart, a single cell battery might last the patient only a few hours. In other, less extreme cases, a single cell unit might expel all or nearly all of its energy in less than a year. This is not desirable due to the need to explant and re-implant the implantable medical device or a portion of the device. One solution is for electrical power to be transcutaneously transferred through the use of inductive coupling. Such electrical power or energy can optionally be stored in a rechargeable battery. In this form, an internal power source, such as a battery, can be used for direct electrical power to the implanted medical device. When the battery has expended, or nearly expended, its capacity, the battery can be recharged transcutaneously, via inductive coupling from an external power source temporarily positioned on the surface of the skin. Several systems and methods have been used for transcutaneously inductively recharging a rechargeable battery used in an implantable medical device.

[0006] Transcutaneous energy transfer through the use of inductive coupling involves the placement of two coils positioned in close proximity to each other on opposite sides of the cutaneous boundary. The internal coil, or secondary coil, is part of or otherwise electrically associated with the implanted medical device. The external coil, or primary coil, is associated with the external power source or external charger or recharger. The primary coil is driven with an alternating current. A current is induced in the secondary coil through inductive coupling. This current can then be used to power the implanted medical device or to charge or recharge an internal power source or a combination of the two.

[0007] For implanted medical devices, the efficiency at which energy is transcutaneously transferred may be crucial. First, the inductive coupling, while inductively inducing a current in the secondary coil, also has a tendency to heat surrounding components and tissue. The amount of heating of surrounding tissue, if excessive, can be deleterious. Since heating of surrounding tissue is limited, so also is the amount of energy transfer that can be accomplished per unit time. The higher the efficiency of energy transfer, the more energy can be transferred while at the same time limiting the heating of surrounding components and tissue. Second, it is desirable to limit the amount of time required to achieve a desired charge, or recharge, of an internal power source. While charging or recharging is occurring, the patient necessarily has an external encumbrance attached to his or her body. This attachment may impair the patient's mobility and limit the patient's comfort. The higher the efficiency of the energy transfer system, the faster the desired charging or recharging can be accomplished thus limiting any inconvenience to the patient. Third, the amount of charging or recharging can be limited by the amount of time required for charging or recharging. Since the patient is typically inconvenienced during such charging or recharging, there is a practical limit on the amount of time during which charging or recharging should occur. Hence, the size of the internal power source can be effectively limited by the amount of energy that can be transferred within the amount of charging time. The higher the efficiency of the energy transfer system, the greater amount of energy that can be transferred and, hence, the greater the practical size of the internal power source. This allows the use of implantable medical devices having higher power use requirements and providing greater therapeutic advantage to the patient and/or extends the time between charging effectively increasing patient comfort.

[0008] Implantable medical devices, external power sources, systems and methods have not always provided the best possible system or method for allowing the patient to be ambulatory during energy transfer and/or charging. Physical limitations related to the energy transfer and/or charging apparatus and methods as well as necessary efficiencies of operation can effectively limit the patient's ability to move around during such energy transfer and/or charging and can deleteriously affect patient comfort.

SUMMARY OF THE INVENTION

[0009] One aspect of the present invention provides a holster adapted to receive a power source for transcutaneously powering pectoially implanted medical devices in a patient having a torso and a shoulder comprising a strap and a holder. The strap includes a torso strap portion adapted to receive the torso of the patient and a shoulder strap portion

operatively connected to the torso strap portion and adapted to be supported by the shoulder of the patient. The holder is operatively connected to the strap and is adapted to receive the power source. The holster may be combined with a recharger comprising a power source and a primary coil for inductive coupling with a secondary coil of an implantable medical device having a rechargeable power source. A system may comprise the combination of the holster with the recharger and an implantable medical device having a rechargeable power source and a secondary coil for inductive coupling with the primary coil of the recharger.

[0010] Another aspect of the present invention provides a holster adapted to receive a power source for transcutaneously powering pectorally implanted medical devices in a patient having a torso and a shoulder comprising a strap and a holder. The strap includes a torso strap portion adapted to receive the torso of the patient and a shoulder strap portion operatively connected to the torso strap portion and adapted to be supported by the shoulder of the patient. The torso strap has a first end, a second end, and an intermediate portion, and the shoulder strap has a third end and a fourth end. The holder is operatively connected to the strap and is adapted to receive the power source. The holder has a top and a bottom. The top is operatively connected to the third end, the bottom is releasably connectable to the intermediate portion, the fourth end is operatively connected to the intermediate portion, and the first and second ends are releasably connectable.

[0011] Another aspect of the present invention provides a holster adapted to receive a power source for transcutaneously powering pectorally implanted medical devices in a patient having a torso and a shoulder comprising a strap and a holder. The strap includes a torso strap portion adapted to receive the torso of the patient and a shoulder strap portion operatively connected to the torso strap portion and adapted to be supported by the shoulder of the patient. The shoulder strap portion has a first end and a second end. The first end is operatively connected to the torso strap, and the second end has a first connector. A second connector is operatively connected to the torso strap and is configured and arranged to be releasably connectable to the first connector. A third connector is operatively connected to the torso strap and is configured and arranged to be releasably connectable to the first connector. A holder is operatively connected to the strap and is adapted to receive the power source.

[0012] Another aspect of the present invention provides a method of transcutaneously powering a pectorally implanted medical device on a side of a patient having a torso and a shoulder with a power source. A holster is obtained. The holster comprises a holder and a strap including a torso strap and a shoulder strap. The torso strap is adapted to receive the torso of the patient and has a first connector and a second connector operatively connected to an intermediate portion of the torso strap. The intermediate portion is between releasably connectable ends of the torso strap. The shoulder strap is adapted to receive the shoulder of the patient and has a first end and a second end. The first end is operatively connected to the intermediate portion, and the second end is slidably connected to a third connector. The third connector is releasably connectable to the first connector and the second connector. The holder is operatively connected to the shoulder strap. Connecting the third connector to the first connector forms a first configuration and connecting the third connector to the second connector forms a second configuration. The side of the patient's pectorally implanted medical device is located, and which configuration corresponds with the side is determined. The third connector is connected to the first connector to form a loop with an opening between the torso strap and the shoulder strap. The shoulder strap is placed on the patient's shoulder proximate the side. The torso strap is secured about the patient's torso by connecting the releasably connectable ends of the torso strap. The strap is adjusted to position the holder proximate the pectorally implanted medical device. The power source is placed in the holder proximate the pectorally implanted medical device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. **1** illustrates an implantable medical device implanted in a patient;

[0014] FIG. **2** is a schematic cross-sectional side view of an external antenna and an implanted medical device implanted in a patient;

[0015] FIG. **3** is a front perspective view of a holster for charging a pectorally implanted medical device on a patient's right side;

[0016] FIG. **4** is a front perspective view of the holster shown in FIG. **3** for charging a pectorally implanted medical device on a patient's left side;

[0017] FIG. **5** is a front perspective view of a portion of the holster shown in FIG. **3** for charging a pectorally implanted medical device;

[0018] FIG. **6** is a front view of an external antenna operatively connected to a rear panel of an antenna holder of the holster shown in FIG. **3**;

[0019] FIG. **7** is a front perspective view of a rear panel and a front panel of an antenna holder of the holster shown in FIG. **3**;

[0020] FIG. **8** is a front perspective view of the holster shown in FIG. **3** with a front panel of an antenna holder removed and an access panel of a rechargeable power source in an open position;

[0021] FIG. **9** is a front perspective view of another embodiment holster constructed according to the principles of the present invention;

[0022] FIG. **10** is a front perspective view of an antenna holder of the holster shown in FIG. **9** with a front panel in an open position;

[0023] FIG. **11** illustrates a patient donning the holster shown in FIG. **3** on the patient's left side;

[0024] FIG. **12** illustrates a patient donning the holster shown in FIG. **3** on the patient's right side;

[0025] FIG. **13** is a front view of a connector;

[0026] FIG. **14** is a front perspective view of the connector shown in FIG. **13** operatively connected to a strap;

[0027] FIG. **15** is a rear perspective view of the connector shown in FIG. **13** operatively connected to a strap;

[0028] FIG. **16** is a front view of a front panel of the holster shown in FIG. **3**;

[0029] FIG. **17** is a front perspective view of a rechargeable power source holder of the holster shown in FIG. **3**;

[0030] FIG. **18** is a rear perspective view of the rechargeable power source holder shown in FIG. **17**;

[0031] FIG. **19** is a front perspective view of another embodiment holster constructed according to the principles of the present invention;

[0032] FIG. **20** is a perspective view of a recharging system including a charging unit holder, a charging unit, an antenna, and another embodiment holster constructed according to the principles of the present invention;

[0033] FIG. **21** is a front view of the holster shown in FIG. **20**;

[0034] FIG. **22** is a front perspective view of a portion of the holster shown in FIG. **20** illustrating connection of an antenna holder to a torso strap of the holster;

[0035] FIG. **23** is a front perspective view of a portion of the holster shown in FIG. **20** illustrating how a patient inserts the patient's right arm into an opening of a loop formed by the holster connected as shown in FIG. **22**;

[0036] FIG. **24** is a front perspective view illustrating how the patient places the holster shown in FIG. **20** on the patient's right shoulder;

[0037] FIG. **25** is a front perspective view illustrating how the patient connects the torso strap of the holster shown in FIG. **20** about the patient's torso;

[0038] FIG. **26** is a front perspective view illustrating how the patient adjusts the torso strap of the holster shown in FIG. **20** about the patient's torso;

[0039] FIG. **27** is a front perspective view illustrating how the patient inserts the antenna into the antenna holder of the holster shown in FIG. **20**;

[0040] FIG. **28** is a front perspective view of the patient donning the holster shown in FIG. **20** on the patient's right side;

[0041] FIG. **29** is a front perspective view of the patient donning the holster shown in FIG. **20** on the patient's left side;

[0042] FIG. **30** is a front perspective view of the charging unit holder shown in FIG. **20**;

[0043] FIG. **31** is a rear view of the charging unit holder shown in FIG. **30**; and

[0044] FIG. **32** is a side view of a clip of the charging unit holder shown in FIG. **31**.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0045] A preferred embodiment holster for charging pectorally implanted medical devices constructed according to the principles of the present invention is designated by the numeral **115** in the drawings, another embodiment holster for charging pectorally implanted medical devices constructed according to the principles of the present invention is designated by the numeral **215** in the drawings, another embodiment holster for charging pectorally implanted medical devices constructed according to the principles of the present invention is designated by the numeral **315** in the drawings, and another embodiment holster for charging pectorally implanted medical devices constructed according to the principles of the present invention is designated by the numeral **415** in the drawings.

[0046] The holsters **115**, **215**, **315**, and **415** may be used to charge any suitable pectorally implanted medical device. The term "charge" refers to any type of charge including, but not limited to, an initial charge and a recharge. The pectoral region is preferably proximate the pectoral muscles and is more preferably within a region of the body below the clavicle, above the xiphoid process of the sternum, and between the sternum and the axilla, which is a cavity beneath the junction of the arm and the torso. An example of a suitable pectorally implanted medical device for use with the present invention is disclosed in U.S. Patent Publication No. US 2005/0245996 A1, published Nov. 3, 2005, entitled Spacers for Use with Transcutaneous Energy Transfer System.

[0047] FIG. **1** shows a pectorally implanted medical device **103**, for example a neurostimulator used for the treatment of a movement disorder such as Parkinson's Disease, essential tremor, and dystonia, implanted in the pectoral region of a patient **100**. The pectorally implanted medical device **103** is typically implanted by a surgeon in a sterile surgical procedure performed under local, regional, or general anesthesia. During the sterile surgical procedure, a catheter **102** is typically implanted with the distal end position at a desired therapeutic delivery site **101** and the proximal end tunneled under the skin to the location where the pectorally implanted medical device **103** is to be implanted. The pectorally implanted medical device **103** is then implanted. Once the pectorally implanted medical device **103** is implanted into the patient **100**, the incision can be sutured closed and pectorally implanted medical device **103** can begin operation. The pectorally implanted medical device **103** can be any suitable implantable medical device such as, but not limited to, implantable neurostimulators, implantable drug infusion pumps, implantable cardioverter's, implantable cardiac pacemakers, implantable defibrillators, and cochlear implants.

[0048] The pectorally implanted medical device **103** includes a rechargeable power source that can be charged while the pectorally implanted medical device **103** is implanted in a patient through the use of an external charging device, which is a power source, comprising an external antenna **107** and a charging unit **109**. The charging unit **109** may also be referred to as a recharger. The charging unit **109** contains the electronics necessary to drive a primary coil in the antenna **107** with an oscillating current in order to induce a current in a secondary coil in the pectorally implanted medical device **103** when the primary coil in the antenna **107** is placed in proximity of the secondary coil in the pectorally implanted medical device **103**. The charging unit **109** is preferably operatively coupled to the primary coil in the antenna **107** by cable **108**. Suitable charging units include without limitation those described in U.S. Patent Publication Nos. 2005/0113887; 2005/0075700; 2005/0075699; 2005/0075698; 2005/0075697; 2005/0075696; 2005/0075694; and 2005/0075693; all of which are incorporated herein by reference. It is also recognized that the charging unit **109** and the antenna **107** may be contained in a common housing rather than in separate housings.

[0049] The pectorally implanted medical device **103**, when implanted, usually leaves an area of the patient's body that is not quite as flat as it was before implantation. That is, the pectorally implanted medical device **103** usually leaves a bulging area **106** proximate the surface of the patient's skin which bulges outward somewhat to accommodate the bulk of the pectorally implanted medical device **103**. It is typically relatively easy for the patient, the medical professional, or another person to place the antenna **107** in the general area of the pectorally implanted medical device **103** and move the antenna **107** around until the antenna **107** is relatively centered with the bulging area **106**. Once the antenna **107** is positioned in this manner, the antenna **107** can be secured to the patient's body.

[0050] As shown in FIG. **2**, a schematic cross-sectional side view of an antenna **107** and a pectorally implanted medical device **103** implanted subcutaneously in the pectoral region of a patient, the pectorally implanted medical device **103** is implanted in a patient under cutaneous boundary **105** creating bulging area **106**, an area of the patient's body in which the patient's skin is caused to bulge slightly due to the implantation of the pectorally implanted medical device **103**. Bulging area **106** is an aid to locating the position of the secondary coil in the pectorally implanted medical device **103** and the antenna **107** can be positioned proximate the area where the pectorally implanted medical device **103** is implanted.

[0051] The antenna **107** is placed over the bulging area **106** as a power source to charge the pectorally implanted medical device **103**. Depending upon the application and the pectorally implanted medical device **103**, the pectorally implanted medical device **103** is generally implanted subcutaneously at depths of from 1 centimeter (0.4 inches) to 2.5 centimeters (1 inch) where there is sufficient tissue to support the implanted system. However, the locations of the implantation vary from patient to patient. The amount of bone and the amount of soft tissue between the bone and the cutaneous boundary **105** are factors that affect the actual depth of implant. The actual depth of implant as well as the amount of soft tissue at and around the implant site affect the size and shape of bulging area **106** at the implant site. Further, the location of the pectorally implanted medical device may vary in the patient due to any movement of the pectorally implanted medical device, especially if the pectorally implanted medical device is not sutured into place, any weight loss or gain, or any loss or gain of muscle mass.

[0052] This type of a transcutaneous energy transfer system can be utilized over extended periods of time, either to power the pectorally implanted medical device **103** over an extended period of time or to charge a replenishable power supply within the pectorally implanted medical device **103**. Depending upon the capacity of the replenishable power supply and the efficiency of the energy transfer, the charging unit **109** and the antenna **107** can be utilized for hours. Further, over the extended period of time in which the charging unit **109** is utilized, antenna **107** is affixed to the patient's body. As the patient attempts to continue a normal routine, such as by making normal movement or by sleeping, during the energy transfer, it may be difficult to maintain the antenna **107** in a fixed position relative to the secondary coil in the pectorally implanted medical device **103**. Movement of the antenna **107** with respect to the secondary coil can result in a change in mutual inductance, L_{mutual}, a change in impedance, and a change in the resonant frequency, $f_{resonate}$. Further, any change in spatial positioning of the energy transfer system with any external conductive object, any change in the characteristics of the antenna **107**, such as by fractures in the magnetic core, for example, a change in the charge level of the rechargeable power source of the pectorally implanted medical device **103** or a change in the power level of the charging unit **109**, all of which can result in a change of mutual inductance, L_{mutual}.

[0053] The pectoral region of the patient is typically not a flat surface so the antenna **107** may not sit completely flat against the patient's skin. This may be especially true as the patient moves and the pectoral region moves during such movement. Therefore, it is preferred that the holster **115**, the holster **215**, the holster **315**, and the holster **415** be conformal and flexible in order to conform to the shape of the patient's pectoral region.

[0054] As shown in FIGS. **3**, **4**, and **8**, the holster **115** includes an antenna holder **116**, a shoulder strap **135**, a chest strap **152**, and a charging unit holder **160**. The antenna holder **116** includes a first panel **117** and a second panel **119** forming a cavity **134** therebetween configured and arranged to house an antenna **107**. The first panel **117** preferably includes a rectangular base portion **117***a* with a truncated triangular portion **117***b* having concave sides extending upward from the rectangular base portion **117***a*. The first panel **117** has a top portion **125** proximate the top of the truncated triangular portion **117***b* and a left portion **126** and a right portion **127** proximate opposing sides of the rectangular base portion **117***a*. The second panel **119** preferably also includes a rectangular base portion **119***a* with a truncated triangular portion **119***b* having concave sides extending upward from the rectangular base portion **119***b*. The second panel **119** has a top portion **128** proximate the top of the truncated triangular portion **119***b* and a left portion **129** and a right portion **130** proximate opposing sides of the rectangular base portion **119***a*. The first panel **117** is the inner layer proximate the patient's skin and the second panel **119** is the outer layer. The first panel **117** and the second panel **119** are approximately the same size and include corresponding circular openings **118** and **120**, respectively, with the opening **120** preferably being slightly larger in diameter than the opening **118**. The opening **118** allows the antenna **107** to contact the patient's skin, and the opening **120** provides access to the antenna **107**.

[0055] Stitching is preferably used to connect the first panel **117** and the second panel **119** together and to hold the antenna **107** in place within the cavity **134**. FIGS. **6**, **7**, and **16** show the preferred stitching patterns. Stitching **121** partially encircles openings **118** and **120** proximate the perimeter of the antenna **107** leaving a gap **121***a* proximate the top of the openings **118** and **120** to allow the cable **108** to extend upward therethrough as shown in FIG. **6**. Stitching **121** holds the antenna **107** in place within the cavity **134** so that the antenna **107** is accessible through the openings **118** and **120**. Stitching **122** may be used to secure the cable **108** to the first panel **177** in an upward orientation relative to the antenna holder **116**. Stitching **131** is preferably used to secure the first panel **117** and the second panel **119** closed proximate the bottoms of the rectangular portions **117***a* and **119***a* and the sides of the truncated triangular portions **117***b* and **119***b*. A fastener (not shown) such as hook and loop may be connected to the outer surface of the top portion **125** and

to the inner surface of the top portion **128** so that the top portions **125** and **128** are releasably connectable to allow access to the cavity **134**. As shown in FIG. **16** for the second panel **119**, stitching **137** may be used to finish the edge of the second panel **119** and stitching **137** and **139** may be used to secure the fastener to the top portion **128** of the second panel **119**. The stitching patterns shown in FIG. **16** for the second panel **119** may also be used for the first panel **117**. In addition, stitching **124** connects buckle portions **132** and **133** to the left portion **126** and the right portion **127**, respectively, of the first panel **117** and stitching **123** connects a first end **135***a* of a shoulder strap **135** to the top portion **125** of the first panel **117**. Because the left portions **126** and **129** and the light portions **127** and **120** are not stitched together, the buckle portions **132** and **133** are accessible between the first and second panels **117** and **119**.

[**0056**] The shoulder strap **135** includes the first end **135***a*, a second end **135***b*, and an intermediate portion **135***c* between the first end **135***a* and the second end **135***b*. The first end **135***a* is connected to the top portion **125** of the first panel **117**, and the second end **135***b* is connected to a middle bar portion **165** of an adjuster **153**. The intermediate portion **135***c* of the shoulder strap **135** is routed through slots **166** and **167** of the adjuster **153** and through a slot **148***a* of a connector **148**, which connects the intermediate portion **135***c* to a junction **140**. FIGS. **13-15** illustrate how the shoulder strap **135** is connected to the adjuster **153**. To adjust the length of the shoulder strap **135**, the adjuster **153** and the second end **135***b* may be moved along the length of the intermediate portion **135***c* by sliding the intermediate portion **135***c* through the slots **166**, **167**, and **148***a*. The adjuster **153** preferably does not come into contact with the patient's skin to aid in the comfort of the holster **115**.

[**0057**] The junction **140** is preferably an upside down T-shaped member interconnecting the shoulder strap **135** and the chest strap **152** and including a top portion **141** and a bottom portion **147**. An opening **150** is formed between the shoulder strap **135** and the chest strap **152** through which the patient's arm is inserted to don the holster **115**. The connector **148** interconnects the shoulder strap **135** and the top portion **141**. The bottom portion **147** includes a left portion **142**, a right portion **143**, and a channel **146** extending through the bottom portion **147**. The channel **146** is preferably wide enough to accommodate the chest strap **152** and slide the chest strap **152**, including an adjuster **153**, therethrough. Within the channel **146** are two fasteners **149** proximate the left and right portions **142** and **143**.

[**0058**] The chest strap **152** includes a first end **152***a*, a second end **152***b*, and an intermediate portion **152***c* between the first end **152***a* and the second end **152***b*. The first end **152***a* is connected to a buckle portion **154** and the second end **152***b* is connected to an adjuster **153** in a similar manner as the second end **135***b* of the shoulder strap **135** is connected to an adjuster **153**. The intermediate portion **152***c* is routed through slots **166** and **167** of the adjuster **153** and through a slot (not shown) of a buckle portion **157**. To adjust the length of the chest strap **152**, the adjuster **153** and the second end **152***b* may be moved along the length of the intermediate portion **152***c* by sliding the intermediate portion **152***c* through the slots **166** and **167** and through the slot in the buckle portion **157**. The intermediate portion **152***c* includes a position indicator **145** proximate a left portion of the chest strap **152**, as shown in FIG. **3**, and a position indicator **156** proximate a right portion of the chest strap **152**, as shown in FIG. **4**. A mating fastener **144** is located on each side of the position indicator **145**, and a mating fastener **155** is located on each side of the position indicator **156**. The mating fasteners **144** and **155** are each configured and arranged to mate with the fasteners **149** within the channel **146** of the junction **140** to secure the chest strap **152** to the junction **140**.

[**0059**] As shown in FIGS. **17** and **18**, the charging unit holder **160** includes sides **173** and a top **174** interconnecting a front **170** and a back **171** to form a cavity **164** therebetween. A zipper **175** in the top **174** provides access to the cavity **164** in which the charging unit **109** is housed. The front **170** includes an access panel **161**, which may be opened, as shown in FIG. **8**, to reveal the charging unit **109**. A strap **172** is connected to the back **171** and a buckle portion **162** is connected to one end and a buckle portion **163** is connected to the other end proximate opposing sides of the charging unit holder **160**.

[**0060**] The holster **115** is versatile as it may be donned in a first configuration on the patient's right side as illustrated in FIGS. **3** and **12**, in a second configuration on the patient's left side as illustrated in FIGS. **4** and **11**, or in a third configuration as a waist belt as illustrated in FIG. **5**. The buckle portions **133**, **157**, and **162** are preferably male buckle portions, and the buckle portions **132**, **154**, and **163** are preferably female mating buckle portions. The male buckle portions are releasably connectable to the female buckle portions. This enables the charging unit holder **160** to be positioned on either side of the antenna holder **116** or to be used with the chest strap **152** as a waist belt. Alternatively, the charging unit holder **160** could be eliminated from the holster **115**.

[**0061**] For a pectorally implanted medical device in the patient's right pectoral region, the buckle portion **162** of the charging unit holder **160** is connected to the buckle portion **132** of the antenna holder **116**, and the buckle portion **133** of the antenna holder **116** is connected to the buckle portion **154** of the chest strap **152**. These connections are preferably hidden from view between the first and second panels **117** and **119** of the antenna holder **116**. The buckle portion **163** of the charging unit holder **160** is connected to the buckle portion **157** of the chest strap **152** and serves as the main buckle the patient uses to secure and release the holster **115**. Once the holster **115** has been adjusted to fit the patient, only the main buckle needs to be secured and released to don the holster **115** and the other buckle portions can remain secured. The fasteners **155** of the chest strap **152** are connected to the fasteners **149** of the junction **140** and the position indicator **145** provides indication that the longer portion of the chest strap **152** should be positioned proximate the patient's left side thereby positioning the antenna holder **116** proximate the patient's right side.

[**0062**] For a pectorally implanted medical device in the patient's left pectoral region, the buckle portion **163** of the charging unit holder **160** is connected to the buckle portion **133** of the antenna holder **116**, and the buckle portion **132** of the antenna holder **116** is connected to the buckle portion **157** of the chest strap **152**. These connections are preferably hidden from view between the first and second panels **117** and **119** of the antenna holder **116**. The buckle portion **162** of the charging unit holder **160** is connected to the buckle

portion **154** of the chest strap **152** and serves as the main buckle the patient uses to secure and release the holster **115**. Once the holster **115** has been adjusted to fit the patient, only the main buckle needs to be secured and released to don the holster **115** and the other buckle portions can remain secured. The fasteners **144** of the chest strap **152** are connected to the fasteners **149** of the junction **140** and the position indicator **156** provides indication that the longer portion of the chest strap **152** should be positioned proximate the patient's right side thereby positioning the antenna holder **116** proximate the patient's left side.

[**0063**] Alternatively, the charging unit holder **160** could be eliminated from the holster **115** and the buckle portion **154** could be connected to the buckle portion **127** and the buckle portion **132** could be connected to the buckle portion **157**.

[**0064**] For use as a waist belt, the antenna holder **116**, the shoulder strap **135**, and the junction **140** are removed from the holster **115** leaving the chest strap **152** and the charging unit holder **160**. Preferably, the buckle portion **163** of the charging unit holder **160** is connected to the buckle portion **157** of the chest strap **152** and the buckle portion **162** of the charging unit holder **160** is connected to the buckle portion **154** of the chest strap **152**. The antenna **107** is then either manually held proximate the pectorally implanted medical device **103** or held by other suitable means known in the art.

[**0065**] Regardless how the holster **115** is donned by the patient, the antenna **107** is placed within the cavity **134** and the openings **118** and **120** of the antenna holder **116** and the charging unit **109** is placed within the cavity **164** of the charging unit holder **160**. The cable **108** interconnects the antenna **107** and the charging unit **109**, and any excess cable **108** may be stored within the cavity **134** of the antenna holder **116**. In FIG. **8**, the charging unit **109** is shown operatively connected to a cable **110** which operatively connects the charging unit **109** to a power source such as a wall outlet. The cable **110** is preferably only used when the charging unit **109** is being charged and may be removed to allow the patient to be ambulatory during charging of the pectorally implanted medical device.

[**0066**] To don the holster **115**, it is first determined on which side of the patient the pectorally implanted medical device is located, and then the holster **115** is configured accordingly. Then, the patient inserts the patient's arm through the shoulder strap **135** and through the opening **150** between the shoulder strap **135** and the chest strap **152**. After the pectorally implanted medical device **103** has been located, the antenna **107** is then placed proximate the pectorally implanted medical device **103**. For a pectorally implanted medical device on the patient's right side, the main buckle is the connection between the buckle portion **163** of the charging unit holder **160** and the buckle portion **157** of the chest strap **152** and serves as the main buckle the patient uses to secure and release the holster **115**. For a pectorally implanted medical device on the patient's left side, the main buckle is the connection between the buckle portion **162** of the charging unit holder **160** and the buckle portion **154** of the chest strap **152** and serves as the main buckle the patient uses to secure and release the holster **115**. The shoulder strap **135** and the chest strap **152** may be adjusted using the adjusters **153** as needed to ensure that the antenna **107** is proximate the pectorally implanted medical device **103**. For a shorter charge time of the pectorally implanted medical device **103**, the center of the antenna **107** should be placed over the center of the pectorally implanted medical device **103**. The antenna **107** should not be moved around or the charge time could be increased. Also, the less tissue there is between the pectorally implanted medical device **103** and the antenna **107**, the shorter the charge time will be.

[**0067**] Another embodiment holster **215** is shown in FIG. **9**. The holster **215** includes an antenna holder **216**, a shoulder strap **235**, a left chest strap **252**, a right chest strap **268**, and a charging unit holder **260**. The antenna holder **216** includes a first panel **217** and a second panel **219** forming a cavity **234** therebetween configured and arranged to house an antenna **107**. The first panel **217** and the second panel **219** are similarly constructed. The first panel **217** preferably includes a rectangular base portion **217***a* with a truncated triangular portion **217***b* having concave sides extending upward from the rectangular base portion **217***a*. The first panel **217** has a top portion **225** proximate the top of the truncated triangular portion **217***b* and a left portion **226** and a right portion **227** proximate opposing sides of the rectangular base portion **217***a*. The second panel **219** also includes a rectangular base portion **219***a* with a truncated triangular portion **219***b* having concave sides extending upward from the rectangular base portion **219***b*. The second panel **219** has a top portion **228** proximate the top of the truncated triangular portion **219***b* and a left portion **229** and a right portion **230** proximate opposing sides of the rectangular base portion **219***a*. The first panel **217** is the inner layer proximate the patient's skin and the second panel **219** is the outer layer. The first panel **217** and the second panel **219** are approximately the same size and include corresponding circular openings (not shown) with the opening in the second panel **219** preferably being slightly larger in diameter than the opening in the first panel **217**. The opening in the first panel **217** allows the antenna **107** to contact the patient's skin, and the opening in the second panel **219** provides access to the antenna **107**. Stitching (not shown) is preferably used to connect the first panel **217** and the second panel **219** together and to hold the antenna **107** in place within the cavity **234**. In addition, a fastener (not shown) such as hook and loop may be connected to the outer surface of the top portion **225** and to the inner surface of the top portion **228** so that the top portions **225** and **228** are releasably connectable to allow access to the cavity **234**.

[**0068**] The shoulder strap **235** includes a first end **235***a*, a second end **235***b*, and an intermediate portion **235***c* between the first end **235***a* and the second end **235***b*. The first end **235***a* is connected to a top portion **241** of a junction **240** and the second end **235***b* is connected to an adjuster **253**. The intermediate portion **235***c* of the shoulder strap **235** is routed through slots in the adjuster **253** and through a slot of a connector **274**, which connects the intermediate portion **235***c* to the top portions **225** and **228** of the antenna holder **216**. To adjust the length of the shoulder strap **235**, the adjuster **253** and the second end **235***b* may be moved along the length of the intermediate portion **235***c* by sliding the intermediate portion **235***c* through the slots in the adjuster **253** and the connector **274**. The adjuster **253** preferably does not come into contact with the patient's skin to aid in the comfort of the holster **215**.

[**0069**] The junction **240** is preferably an upside down T-shaped member interconnecting the shoulder strap **235**

and the left and right chest straps **252** and **268** and including a top portion **241** and a bottom portion **247**. As shown in FIG. **9**, an opening **250** is formed between the shoulder strap **235** and the chest strap **252** through which the patient's arm is inserted to don the holster **215** for a pectorally implanted medical device on the patient's right side. The bottom portion **247** includes a left portion **242** connected to a connector **255** and a right portion **243** connected to a connector **270**.

[**0070**] The left chest strap **252** includes a first end **252***a*, a second end **252***b*, and an intermediate portion **252***c* between the first end **252***a* and the second end **252***b*. The first end **252***a* is connected to the connector **255** and the second end **252***b* is connected to an adjuster **253** in a similar manner as the second end **235***b* of the shoulder strap **235** is connected to an adjuster **253**. The intermediate portion **252***c* is routed through slots (not shown) in the adjuster **253** and through a slot (not shown) of a buckle portion **257**. To adjust the length of the left chest strap **252**, the adjuster **253** and the second end **252***b* may be moved along the length of the intermediate portion **252***c* by sliding the intermediate portion **252***c* through the slots in the adjuster **253** and the buckle portion **257**.

[**0071**] The right chest strap **268** includes a first end **268***a*, a second end **268***b*, and an intermediate portion **268***c* between the first end **268***a* and the second end **268***b*. The first end **268***a* is connected to the connector **270** and the second end is connected to an adjuster **253** in a similar manner as the second end **235***b* of the shoulder strap **235** is connected to an adjuster **253**. The intermediate portion **268***c* is routed through slots (not shown) in the adjuster **253** and through a slot (not shown) of a buckle portion **254**. To adjust the length of the right chest strap **268**, the adjuster **253** and the second end **268***b* may be moved along the length of the intermediate portion **268***c* by sliding the intermediate portion **268***c* through the slots in the adjuster **253** and the buckle portion **254**.

[**0072**] The charging unit holder **260** is preferably rectangular in shape and includes an access panel **261** which may be opened to reveal the charging unit housed therein. A buckle portion **263** is connected to the left end and a buckle portion **262** is connected to the right end of the charging unit holder **260**.

[**0073**] FIG. **10** shows the top portion **228** peeled away from the top portion **225** to expose the cable **108**, the left portion **229** peeled away from the left portion **226** to expose the buckle portion **232**, and the right portion **230** peeled away from the right portion **227** to expose the buckle portion **254**.

[**0074**] The holster **215** is versatile as it may be donned in a first configuration on the patient's right side as illustrated in FIG. **9** or in a second configuration on the patient's left side (not shown). The buckle portions **233**, **257**, and **262** are preferably male buckle portions, and the buckle portions **232**, **254**, and **263** are preferably female mating buckle portions. The male buckle portions are releasably connectable to the female buckle portions. This enables the charging unit holder **260** to be positioned on either side of the antenna holder **216** for donning on either the right or the left side of the patient. Alternatively, the charging unit holder **260** could be eliminated from the holster **215**.

[**0075**] For a pectorally implanted medical device in the patient's right pectoral region, the buckle portion **262** of the charging unit holder **260** is connected to the buckle portion **232** of the antenna holder **216**, and the buckle portion **233** of the antenna holder **216** is connected to the buckle portion **254** of the right chest strap **268**. These connections are preferably hidden from view between the first and second panels **217** and **219** of the antenna holder **216**. The buckle portion **263** of the charging unit holder **260** is connected to the buckle portion **257** of the left chest strap **252** and serves as the main buckle the patient uses to secure and release the holster **215**. Once the holster **215** has been adjusted to fit the patient, only the main buckle needs to be secured and released to don the holster **215** and the other buckle portions can remain secured.

[**0076**] For a pectorally implanted medical device in the patient's left pectoral region, which is not shown, the buckle portion **263** of the charging unit holder **260** is connected to the buckle portion **233** of the antenna holder **216**, and the buckle portion **232** of the antenna holder **216** is connected to the buckle portion **257** of the left chest strap **252**. These connections are preferably hidden from view between the first and second panels **217** and **219** of the antenna holder **216**. The buckle portion **262** of the charging unit holder **260** is connected to the buckle portion **254** of the right chest strap **268** and serves as the main buckle the patient uses to secure and release the holster **215**. Once the holster **215** has been adjusted to fit the patient, only the main buckle needs to be secured and released to don the holster **215** and the other buckle portions can remain secured.

[**0077**] Alternatively, the charging unit holder **260** could be eliminated from the holster **215** and the buckle portion **254** could be connected to the buckle portion **227** and the buckle portion **232** could be connected to the buckle portion **257**. Alternatively, the antenna holder **216** and the shoulder strap **235** could be eliminated from the holster **215** and used as a waist belt.

[**0078**] To don the holster **215**, it is first determined on which side of the patient the pectorally implanted medical device is located, and then the holster **215** is configured accordingly. Then, the patient inserts the patient's arm through the shoulder strap **235** and through the opening **250** between the shoulder strap **235** and either the left chest strap **252** or the right chest strap **268**. After the pectorally implanted medical device has been located, the antenna **107** is then placed proximate the pectorally implanted medical device. For a pectorally implanted medical device on the patient's right side, the main buckle is the connection between the buckle portion **263** of the charging unit holder **260** and the buckle portion **257** of the left chest strap **252** and serves as the main buckle the patient uses to secure and release the holster **215**. For a pectorally implanted medical device on the patient's left side, the main buckle is the connection between the buckle portion **262** of the charging unit holder **260** and the buckle portion **254** of the right chest strap **268** and serves as the main buckle the patient uses to secure and release the holster **215**. The shoulder strap **235** and the chest straps **252** and **268** may be adjusted using the adjusters **253** as needed to ensure that the antenna **107** is proximate the pectorally implanted medical device.

[**0079**] Another embodiment holster **315** is shown in FIG. **19**. The holster **315** includes an antenna holder **316**, a shoulder strap **335**, a chest strap **352**, and a charging unit holder **360**. The antenna holder **316** is preferably constructed

similarly to the antenna holders **116** and **216** and is configured and arranged to house an antenna **107**.

[**0080**] The shoulder strap **335** includes a first end **335***a*, a second end **335***b*, and an intermediate portion **335***c* between the first end **335***a* and the second end **335***b*. The first end **335***a* is connected to a top portion **325** of the antenna holder **316**, and the second end **335***b* is connected to an adjuster **353**. The intermediate portion **335***c* of the shoulder strap **335** is routed through slots in the adjuster **353** and through a slot of a connector **348**, which connects the intermediate portion **335***c* to a junction **340**. To adjust the length of the shoulder strap **335**, the adjuster **353** and the second end **335***b* may be moved along the length of the intermediate portion **335***c* by sliding the intermediate portion **335***c* through the slots of the adjuster **353** and the connector **348**. The adjuster **353** preferably does not come into contact with the patient's skin to aid in the comfort of the holster **315**.

[**0081**] The junction **340** is preferably an upside down T-shaped member interconnecting the shoulder strap **335** and the chest strap **352** and including a top portion **341** and a bottom portion **347**. An opening **350** is formed between the shoulder strap **335** and the chest strap **352** through which the patient's arm is inserted to don the holster **315**. The connector **348** interconnects the shoulder strap **335** and the top portion **341**. The bottom portion **347** includes a left portion **342**, a right portion **343**, and a channel **346** extending through the bottom portion **347**. The channel **346** is preferably wide enough to accommodate the chest strap **352** and slide the chest strap **352**, including an adjuster **353**, therethrough.

[**0082**] The chest strap **352** includes a first end **352***a*, a second end **352***b*, an intermediate portion **352***c* between the first end **352***a* and the second end **352***b*, and an optional extension portion **352***d*. The first end **352***a* is connected to the right side **327** of the antenna holder **316** and the second end **352***b* is connected to an adjuster **353** in a similar manner as the second end **335***b* of the shoulder strap **335** is connected to an adjuster **353**. One end of the extension portion **352***d* is connected to the left side **326** of the antenna holder **316** and the other end is connected to a buckle portion **363**. The extension portion **352***d* is optional as the buckle portion **363** could be connected to the left side **326** of the antenna holder **316**. The intermediate portion **352***c* is routed through slots (not shown) of the adjuster **353** and through a slot (not shown) of a buckle portion **357**. The buckle portions **363** and **357** are mating buckle portions. To adjust the length of the chest strap **352**, the adjuster **353** and the second end **352***b* may be moved along the length of the intermediate portion **352***c* by sliding the intermediate portion **352***c* through the slots of the adjuster **353** and the buckle portion **357**.

[**0083**] The charging unit holder **360** is preferably constructed similarly to the charging unit holders **160** and **260** and is configured and arranged to house a charging unit but does not include a strap with buckles connected to the back. Rather, a fastener (not shown) is preferably connected to the back and is configured and arranged to be releasably connected to a mating fastener (not shown) connected to the chest strap **352** or to the shoulder strap **335**. These mating fasteners are preferably hook and loop, snaps, or other suitable mating fasteners that would allow the charging unit holder **360** to be releasably connected to the chest strap **352** or to the shoulder strap **335**. The charging unit holder **360** may be positioned and repositioned at any suitable location along the length of the chest strap **352** or the shoulder strap. Alternatively, the charging unit holder **360** may be placed in the patient's pocket, around the patient's waist using a waist belt, or any other suitable location.

[**0084**] The holster **315** is versatile as it may be donned in a first configuration on the patient's right side as illustrated in FIG. **19** or it may be donned in a second configuration on the patient's left side. The shoulder strap **335** may be placed on either the right or the left shoulder of the patient, and the charging unit holder **360** may be positioned anywhere along the length of the chest strap **352** or the shoulder strap **335**.

[**0085**] To don the holster **315**, it is first determined on which side of the patient the pectorally implanted medical device is located, and then the holster **315** is configured accordingly. Then, the patient inserts the patient's arm through the shoulder strap **335** and through the opening **350** between the shoulder strap **335** and the chest strap **352**. The buckle portions **363** and **357** are then connected. After the pectorally implanted medical device **103** has been located, the antenna **107** is then placed proximate the pectorally implanted medical device **103**. The shoulder strap **335** and the chest strap **352** may be adjusted using the adjusters **353** as needed to ensure that the antenna **107** is proximate the pectorally implanted medical device **103**. For a shorter charge time of the pectorally implanted medical device **103**, the center of the antenna **107** should be placed over the center of the pectorally implanted medical device **103**. The antenna **107** should not be moved around or the charge time could be increased. Also, the less tissue there is between the pectorally implanted medical device **103** and the antenna **107**, the shorter the charge time will be.

[**0086**] Another embodiment holster **415** is shown in FIGS. **20-29**. The holster **415** includes an antenna holder **416**, a shoulder strap **435**, and a torso strap **452**. An optional charging unit holder **480** may be used with the holster **415**.

[**0087**] The antenna holder **416** is preferably constructed similarly to the antenna holders **116**, **216**, and **316** and is configured and arranged to house an antenna **407** including a raised portion **407***a* and a contact portion (not shown). The antenna holder **416** includes a first panel **417** and a second panel **419** preferably interconnected by stitching (not shown) around the edges of the panels **417** and **419**. The panels **417** and **419** proximate the top of the antenna holder **416** are preferably not sewn together to allow access to a cavity **422** between the panels **417** and **419** and are releasably connected with a fastener (not shown) such as but not limited to hook and loop or a snap. The first panel **417** includes a rounded center portion **423**, a top portion **425**, and a bottom portion (not shown) corresponding with a rounded center portion **424**, a top portion **428**, and a bottom portion **429** of the second panel **419**. The center portion **423** includes an opening **418** and the center portion **424** includes an opening **420**. The antenna **407** is housed within the cavity **422** between the first and second panels **417** and **419** proximate the center portions **423** and **424**. The center portions **423** and **424** correspond with the shape of the antenna **407** and are configured and arranged to receive the antenna **407**. The shape of the center portions **423** and **424** assist in keeping the antenna **407** positioned properly within the antenna holder **416**. The opening **418** is configured and arranged to expose the contact portion (not shown) and the

opening **420** is configured and arranged to accommodate the raised portion **407***a*, which extends through the opening **420** to also assist in keeping the antenna **407** positioned properly within the antenna holder **416**. Preferably, the opening **420** is larger than the opening **418**. Stitching **421** is configured and arranged to hold a retaining member (not shown) in place proximate the opening **420**. The retaining member is preferably a plastic ring member configured and arranged to accommodate the raised portion **407***a* to assist in keeping the raised portion **407***a* in place within the opening **420**.

[**0088**] Proximate the bottom portions, a strap **434** is operatively connected to the antenna holder **416**, preferably with stitching (not shown). The strap **434** is threaded through slots in a male buckle portion **433**, which is slidably connected to the strap **434**. Proximate the top portions **425** and **428**, a connector **432** interconnects the antenna holder **416** to the shoulder strap **435**. The shoulder strap **435** includes a first end **435***a*, a second end **435***b*, and an intermediate portion **435***c* between the first end **435***a* and the second end **435***b*. The first end **435***a* is operatively connected to an intermediate portion **452***c* of the torso strap **452**, preferably with stitching **457**. The second end **435***b* is operatively connected to an adjuster **436**. The intermediate portion **435***c* of the shoulder strap **435** is routed through slots in the adjuster **436** and through a slot of the connector **432**, which connects the intermediate portion **435***c* to the top portions **425** and **428** of the antenna holder **416**. The adjuster **436** may be slid along the intermediate portion **435***c* to adjust the length of the shoulder strap **435**. The adjuster **436** preferably does not come into contact with the patient's skin to aid in the comfort of the holster **415**. Although the strap **434** is preferably a separate strap from the shoulder strap **435**, the strap **434** may be considered an extension of the shoulder strap **435** functioning as a connecting strap interconnecting the shoulder strap **435** and the torso strap **452**.

[**0089**] The torso strap **452** includes a first end **452***a*, a second end **452***b*, an intermediate portion **452***c* between the first end **452***a* and the second end **452***b*, and an optional elastic portion **452***d* of the intermediate portion **452***c*. The first end **452***a* is routed through slots in a male buckle portion **454** and the second end **452***b* is connected to a female buckle portion **455**, which mates with the male buckle portion **454**.

[**0090**] A first connector **460** includes a strap **461**, a female buckle portion **462**, and an optional hook member **463**. The strap **461** is routed through a slot in the female buckle portion **462**, folded back onto itself, and then connected to the hook member **463**. Thus, the strap **461** includes two layers between the female buckle portion **462** and the hook member **463** through which the torso strap **452** is routed so that the first connector **460** is positioned on the intermediate portion **452***c* between the shoulder strap **435** and the first end **452***a* and may be slid along the intermediate portion **452***c*. A second connector **465** includes a strap **466**, a female buckle portion **467**, and an optional hook member **468**. The strap **466** is routed through a slot in the female buckle portion **467**, folded back onto itself, and then connected to the hook member **468**. Thus, the strap **466** includes two layers between the female buckle portion **467** and the hook member **468** through which the torso strap **452** is routed so that the second connector **465** is positioned on the intermediate portion **452***c* between the shoulder strap **435** and the second end **452***b* and may be slid along the intermediate portion **452***c*. The female buckle portions **462** and **467** are configured and arranged to mate with the male buckle portion **433**.

[**0091**] Preferably, the straps of the holster **415** are made of a nylon or a polyester material. Portions of the straps of the holster **415** may be made of an elastic material to enhance the comfort of donning the holster **415**. For example, the strap **434** may be elastic, the portion **452***d* of the intermediate portion **452***c* may be elastic, and the straps **461** and **466** may be elastic.

[**0092**] The optional charging unit holder **480** is configured and arranged to house the charging unit **409**. The charging unit holder **480** is shown in FIGS. **30** and **31**. The optional charging unit holder **480** may be used as a protective sleeve for the charging unit **409** and may be used as a means for connecting the charging unit **409** to a connecting structure such as but not limited to the holster **415**, a belt, a pocket, the patient's clothing, or any other suitable connecting structure. The front of the charging unit holder **480** includes a viewing window **487** proximate the top to allow the screen of the charging unit **409** to be viewed and a window **488** below the viewing window **487** to allow access to the buttons on the charging unit **409**. A releasable flap **489** proximate the top of the charging unit holder **480** allows the charging unit **409** to be secured within and removed from the charging unit holder **480**. A fastener (not shown), such as but not limited to hook and loop or a snap, is used to releasably connect the flap **489** to the rear of the charging unit holder **480**.

[**0093**] The rear of the charging unit holder **480**, shown in FIG. **31**, may include a suitable connector for connecting the charging unit holder **480** to the connecting structure. An example of a suitable connector is a ring **481** connected proximate the bottom of the charging unit holder **480**. The ring **481** may be connected to either of the hook members **463** and **468** of the holster **415**, preferably with the front of the charging unit holder **480** facing away from the patient. To view the screen of the charging unit **409**, the charging unit holder **480** is simply pivoted upward toward the patient so that the front of the charging unit holder **480** faces the patient. Another example of a suitable connector is a first slot **482** and a second slot **483** proximate the middle of the charging unit holder **480**. The torso strap **452** or the shoulder strap **435** of the holster **415**, a belt, or any other suitable elongate member may be threaded through the slots **482** and **483** to connect the charging unit holder **480** to the holster **415**, the belt, or the other suitable elongate member. Another example of a suitable connector is a clip **484** that may be slid onto any suitable connecting structure. A side view of the clip **484** is shown in FIG. **32**. The charging unit holder **480** may be connected, disconnected, and reconnected to any suitable connecting structure. Alternatively, the charging unit holder **480** or the charging unit **409** may be placed in the patient's pocket or even hand-held.

[**0094**] The holster **415** is versatile as it may be donned in a first configuration on the patient's right side as illustrated in FIG. **28** or it may be donned in a second configuration on the patient's left side as illustrated in FIG. **29**. FIG. **21** shows a patient **400** with a pectoral implant **403** located proximate the patient's right pectoral region. How the holster **415** is configured to be donned on the patient's right side is illustrated in FIGS. **21-28**. First, the male buckle portion **433**

is connected to the female buckle portion **462** as shown in FIGS. **21** and **22** forming a loop with an opening through which the patient's right arm is inserted as shown in FIG. **23**. The shoulder strap **435** is placed on the patient's right shoulder as shown in FIG. **24**. Then, the torso strap **452** is positioned about the patient's torso and the male buckle portion **454** is connected to the female buckle portion **455** as shown in FIG. **25**. The torso strap **452** may be tightened about the patient's torso by pulling on the torso strap **452** proximate the first end **452***a* thus sliding the torso strap **452** through the slots in the male buckle portion **454** as shown in FIG. **26**.

[**0095**] After the pectorally implanted medical device **403** has been located, the antenna holder **416** is positioned proximate the pectorally implanted medical device **403**. The shoulder strap **435**, the torso strap **452**, and the strap **461** may be adjusted as needed to ensure that the antenna holder **416** is proximate the pectorally implanted medical device **403**. Preferably, to optimize the charge and to reduce the charge time, the opening **418** exposing the contact portion of the antenna **407** should correspond with the location of the pectorally implanted medical device **403**. For a shorter charge time of the pectorally implanted medical device **403**, the center of the antenna **407** should be placed over the center of the pectorally implanted medical device **403**. The antenna **407** should not be moved around or the charge time could be increased. Also, the less tissue there is between the pectorally implanted medical device **403** and the antenna **407**, the shorter the charge time will be.

[**0096**] To adjust the length of the torso strap **452**, the first end **452***a* and the intermediate portion **452***c* proximate the first end **452***a* is slid through the slots in the male buckle portion **454**. The torso strap **452** may be raised and lowered on the patient's torso, including the chest and the waist, so the patient can position the holster **415** where it is most comfortable. To adjust the length between the top portions **425** and **428** of the antenna holder **416** and the torso strap **452**, the adjuster **436** and the second end **435***b* are moved along the length of the intermediate portion **435***c* by sliding the intermediate portion **435***c* through the slots of the adjuster **436** and the connector **432**. To adjust the length between the bottom portions of the antenna holder **416** and the torso strap **452**, the strap **434** is slid through the slots in the male buckle portion **433**. The strap **461** may also be adjusted by simply sliding it to the desired location on the intermediate portion **452***c*.

[**0097**] The antenna **407** is then placed within the cavity **422** of the antenna holder **416** by separating the first and second panels **417** and **419**, inserting the antenna **407** between the panels **417** and **419**, and positioning the raised portion **407***a* of the antenna **407** so that it extends through the opening **420**. This is shown in FIG. **27**. The first and second panels **417** and **419** are then connected to secure the antenna **407** within the antenna holder **416**.

[**0098**] If the pectoral implant **403** is located proximate the patient's left pectoral region, the male buckle portion **433** is connected to the female buckle portion **467**. The holster **415** is then configured to be donned proximate the patient's left side similarly as described with respect the patient's right side. The holster **415** is shown donned on the patient's left side in FIG. **29**.

[**0099**] FIGS. **28** and **29** show the patient holding the charging unit **409** connected to the antenna **407** with a cable **408**. The charging unit **409** may be placed in a pocket or in the charging unit holder **480** and connected to a connecting structure.

[**0100**] Holsters **115**, **215**, **315**, and **415** are reversible and adjustable so that they may be used to accommodate most all patients with pectorally implanted medical devices. The features of the holsters **115**, **215**, **315**, and **415** may be interchanged among the embodiments. Holsters **115**, **215**, **315**, and **415** may be made of any suitable material and are preferably made of a breathable material and may even be made of an elastic material or a moisture wicking material.

[**0101**] The above specification, examples and data provide a complete description of the manufacture and use of the composition of the invention. Since many embodiments of the invention can be made without departing from the spirit and scope of the invention, the invention resides in the claims hereinafter appended.

We claim:

1. A holster adapted to receive a power source for transcutaneously powering pectorally implanted medical devices in a patient having a torso and a shoulder, comprising:

a) a strap including a torso strap portion adapted to receive the torso of the patient and a shoulder strap portion operatively connected to the torso strap portion and adapted to be supported by the shoulder of the patient; and

b) a holder operatively connected to the strap and adapted to receive the power source.

2. The holster of claim 1, wherein the torso strap portion is adapted to receive the chest of the patient.

3. The holster of claim 1, wherein the torso strap portion is adapted to receive the waist of the patient.

4. The holster of claim 1, wherein the shoulder strap is removable for use as a waist strap.

5. The holster of claim 1, wherein the torso strap is adjustable.

6. The holster of claim 1, wherein the shoulder strap is adjustable.

7. The holster of claim 1, wherein the holder comprises an antenna holder adapted to receive an antenna.

8. The holster of claim 7, wherein the antenna holder has a top, a first side, and a second side, the torso strap has a first end, a second end, and an intermediate portion, and the shoulder strap has a third end and a fourth end, the first end being operatively connected to the first side of the antenna holder, the second end being releasably connectable to the second side of the antenna holder, the third end being operatively connected to the top of the antenna holder and the fourth end being operatively connected to the intermediate portion of the torso strap.

9. The holster of claim 7, wherein the antenna holder has a top and a bottom, the torso strap has a first end, a second end, and an intermediate portion, and the shoulder strap has a third end and a fourth end, the top being operatively connected to the third end, the bottom being releasably connectable to the intermediate portion, the fourth end being operatively connected to the intermediate portion, and the first and second ends being releasably connectable.

10. The holster of claim 7, wherein the holder further comprises a charging unit holder adapted to receive a charging unit connected to the antenna.

11. The holster of claim 10, wherein the antenna holder has a top, first and second opposing sides, and a first cavity adapted to receive the antenna, the charging unit holder has third and fourth opposing sides and a second cavity adapted to receive the charging unit, the third side being operatively connected to the first side, the torso strap has a first portion, a second portion, and an intermediate portion, the first portion being operatively connected to the second side, the second portion being operatively connected to the fourth side, and the shoulder strap has a third portion operatively connected to the top of the antenna holder and a fourth portion operatively connected to the intermediate portion of the torso strap.

12. The holster of claim 10, wherein the charging unit holder is operatively connected to a hook member operatively connected to the torso strap.

13. The holster of claim 10, wherein the charging unit is a rechargeable power source.

14. The holster of claim 1, wherein the power source is a charging unit operatively coupled to a primary coil in an antenna by a cable, the charging unit and the antenna being housed in separate housings.

15. A combination of the holster of claim 1 with a recharger comprising a second power source and a primary coil for inductive coupling with a secondary coil of an implantable medical device having a rechargeable power source.

16. A system comprising the combination of claim 15 and an implantable medical device having a rechargeable power source and a secondary coil for inductive coupling with the primary coil of the recharger.

17. A holster adapted to receive a power source for transcutaneously powering pectorally implanted medical devices in a patient having a torso and a shoulder, comprising:

a) a strap including a torso strap portion adapted to receive the torso of the patient and a shoulder strap portion operatively connected to the torso strap portion and adapted to be supported by the shoulder of the patient, the torso strap has a first end, a second end, and an intermediate portion, and the shoulder strap has a third end and a fourth end; and

b) a holder operatively connected to the strap and adapted to receive the power source, the holder having a top and a bottom, the top being operatively connected to the third end, the bottom being releasably connectable to the intermediate portion, the fourth end being operatively connected to the intermediate portion, and the first and second ends being releasably connectable.

18. The holster of claim 17, wherein a first connector and a second connector are operatively connected to the intermediate portion and a third connector is operatively connected to the bottom, the third connector being releasably connectable to the first connector and the second connector.

19. The holster of claim 17, wherein the torso strap portion is adapted to receive the chest of the patient.

20. The holster of claim 17, wherein the torso strap portion is adapted to receive the waist of the patient.

21. The holster of claim 17, wherein the torso strap is adjustable.

22. The holster of claim 17, wherein the shoulder strap is adjustable.

23. The holster of claim 17, further comprising a connecting strap interconnecting the bottom and the third connector, the third connector being slidable along the connecting strap.

24. The holster of claim 17, wherein the holder comprises an antenna holder adapted to receive an antenna.

25. The holster of claim 24, further comprising a charging unit holder adapted to receive a charging unit connected to the antenna, the charging unit holder having a fourth connector configured and arranged to releasably connect the charging unit holder to a connecting structure.

26. A holster adapted to receive a power source for transcutaneously powering pectorally implanted medical devices in a patient having a torso and a shoulder, comprising:

a) a strap including a torso strap portion adapted to receive the torso of the patient and a shoulder strap portion operatively connected to the torso strap portion and adapted to be supported by the shoulder of the patient, the shoulder strap portion having a first end and a second end, the first end being operatively connected to the torso strap, the second end having a first connector;

b) a second connector operatively connected to the torso strap and configured and arranged to be releasably connectable to the first connector;

c) a third connector operatively connected to the torso strap and configured and arranged to be releasably connectable to the first connector; and

d) a holder operatively connected to the strap and adapted to receive the power source.

27. The holster of claim 26, wherein the torso strap and the shoulder strap are adjustable.

28. The holster of claim 26, wherein the holder comprises an antenna holder adapted to receive an antenna.

29. The holster of claim 28, further comprising a charging unit holder adapted to receive a charging unit connected to the antenna, the charging unit holder having a fourth connector configured and arranged to releasably connect the charging unit holder to a connecting structure.

30. The holster of claim 28, wherein the antenna holder is operatively connected to the shoulder strap and the shoulder strap includes a connecting strap operatively connected to the antenna holder proximate a bottom of the antenna holder, the first connector being slidably connected to the connecting strap.

31. A method of transcutaneously powering a pectorally implanted medical device on a side of a patient having a torso and a shoulder with a power source, comprising

a) obtaining a holster comprising a holder and a strap including a torso strap and a shoulder strap, the torso strap being adapted to receive the torso of the patient and having a first connector and a second connector operatively connected to an intermediate portion of the torso strap, the intermediate portion being between releasably connectable ends of the torso strap, the shoulder strap being adapted to receive the shoulder of the patient and having a first end and a second end, the first end being operatively connected to the intermediate portion, the second end being slidably connected to a third connector, the third connector being releasably connectable to the first connector and the second connector, the holder being operatively connected to the shoulder strap, wherein connecting the third connector

to the first connector forms a first configuration and connecting the third connector to the second connector forms a second configuration;

b) locating the side of the patient's pectorally implanted medical device;

c) determining which configuration corresponds with the side;

d) connecting the third connector to the first connector to form a loop with an opening between the torso strap and the shoulder strap;

e) placing the shoulder strap on the patient's shoulder proximate the side;

f) securing the torso strap about the patient's torso by connecting the releasably connectable ends of the torso strap;

g) adjusting the strap to position the holder proximate the pectorally implanted medical device; and

h) placing the power source in the holder proximate the pectorally implanted medical device.

32. The method of claim 31, further comprising donning the holster for a time sufficient to power the pectorally implanted medical device and then removing the holster.

33. The method of claim 32, further comprising allowing the pectorally implanted medical device power to become drained and powering the pectorally implanted medical device by donning the holster for a second time sufficient to power the pectorally implanted medical device.

34. The method of claim 32, wherein the holster is removed by disconnecting the releasably connected ends of the torso strap and removing the shoulder strap from the patient's shoulder.

35. The method of claim 34, further comprising allowing the pectorally implanted medical device power to become drained and powering the pectorally implanted medical device by donning the holster for a second time sufficient to power the pectorally implanted medical device by repeating steps e) through h) of claim 1.

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