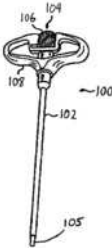
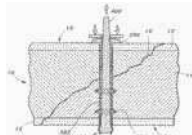
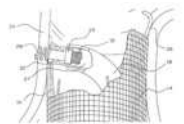
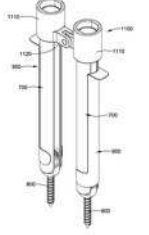
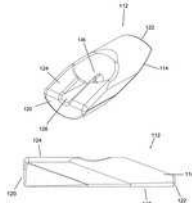
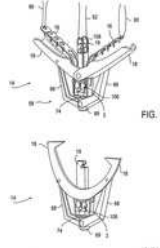
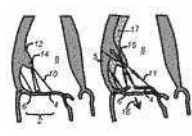
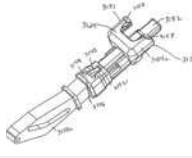
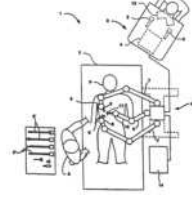
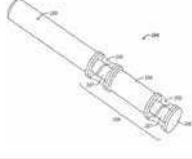
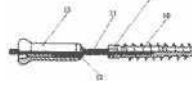
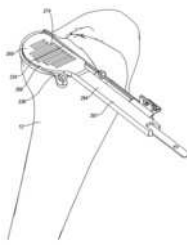
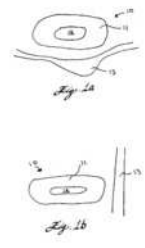
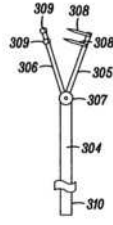
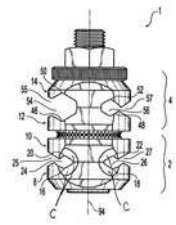
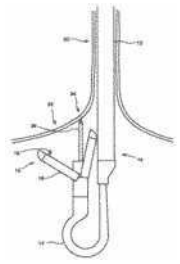
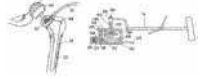
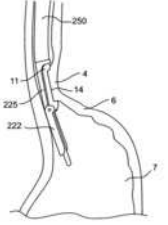
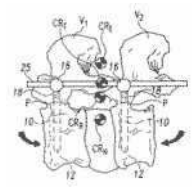
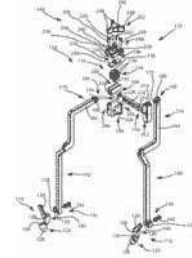
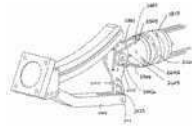


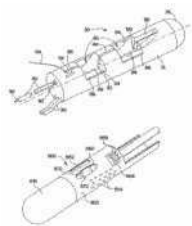
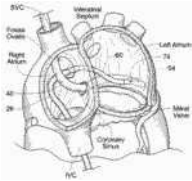
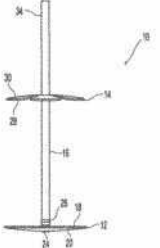
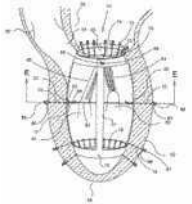
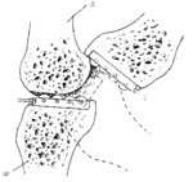
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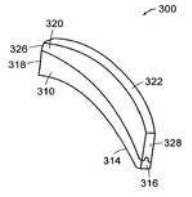
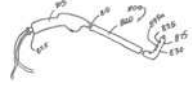
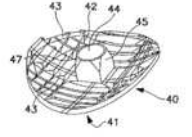
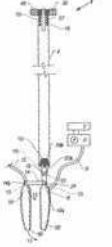
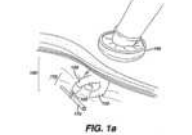
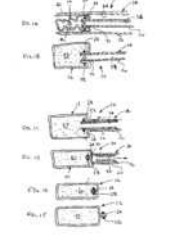
#	Title	Publication number	Publ. date	Applicant/Assignee	
1.	Implantable screw for stabilising an articulated joint or a bone fracture	ZA200204327	2002-10-24	HILDINGER KARL HEINZ* JUSUNG ENGINEERING KARL HEINZ HILDINGER MUCKTER HELMUT DR MEDICAL DIPL. ING MUECKTER HELMUT DR MEDICAL DIPL* NOVO PLANT GERMANY 8 0 5 3 8 MUNICH LIGHTMOL STRASSE 5 1	
The implantable screw includes an elongated body with a proximal head portion (1) and a distal threaded portion (2) having a thread. The head portion and threaded portion are interconnected by a flexible shaft.					
2.	Sternal reconstruction system	US20050240198	2005-10-27	DEPUY SPINE DEPUY SYNTHES* SYNTHES	
A sternal reconstruction system for securing parts of a sternum includes at least one flexible cable with crimp fitting, at least one cannulated screw and at least one reconstruction plate. Circumferential or parasternal fixation may be brought about by use of a sternal reconstruction system including a flexible cable and crimp fitting alone; a sternal reconstruction system including a flexible cable , crimp fitting and cannulated screws; or a system including a flexible cable , crimp fitting, cannulated screws and one or more reconstruction plates. The reconstruction plates are typically planar, having an upper and a lower surface, and containing generally perpendicular and transverse plate holes. The generally perpendicular plate holes are countersunk to better accommodate the heads of the cannulated bone screws. Also provided is a kit for sternal reconstruction.					
3.	Marking and guidance method and system for flexible fixation of a spine	US20050065516	2005-03-24	DEPUY SPINE* DEPUY SYNTHES* K SPINE N SPINE NINE SPINE INK	
A method and system for marking and guiding the insertion of securing members (e.g., pedicle screws) of a spinal fixation device. In one embodiment, the marking and guidance method and system includes the use of a guide tube configured to be inserted into a patient's back until a first end reaches an entry point on or near a vertebral bone of the patient's spinal column, wherein the guide tube includes a hollow cylindrical channel along its longitudinal center axis.					
4.	Tissue retractor for minimally invasive surgery	US20040230100	2004-11-18	ENDIUS ZIMMER SPINE*	
A retractor (4010) is provided that has a proximal portion (4022) that comprises a first side portion (4054) having a first longitudinal edge and a second side portion (4058) having a second longitudinal edge. The first and second portions are movable relative to each other such that the first and second longitudinal edges can be positioned in close proximity to each other or spaced apart by a selected distance. A distal portion (4018) is coupled with the proximal portion (4022). The distal portion (4018) has an outer surface and an inner surface partially defining a passage. The distal portion (4018) is capable of having a configuration when inserted within the patient wherein the cross-sectional area of the passage at a first location is greater than the cross-sectional area of the passage at a second location, wherein the first location is distal to the second location.					
5.	Bone fixation system	WO200180751	2001-11-01	ANCHOR MEDICAL TECHNOLOGIES*	
Disclosed is a bone fixation device of the type useful for connecting soft tissue or tendon to bone or for connecting two or more bone fragments together. The device comprises an elongate body (24) having a distal anchor (34) thereon. A proximal anchor (36) is axially movably disposed with respect to the distal anchor, to accommodate different bone dimensions and permit appropriate tensioning of the fixation device.					
6.	Sternal reconstruction system	US20050240191	2005-10-27	DEPUY SPINE* DEPUY SYNTHES* SYNTHES	
A sternal reconstruction system for securing parts of a sternum includes at least one flexible cable (1) with a fused end fitting (2') which may be crimped to one end of the cable , at least one parallel fitting piece (5') with two channels (8', 9') and at least one ferrule (9). Optionally, the system includes at least one cannulated screw. Circumferential or parasternal fixation may be brought about by use of the sternal reconstruction system. Also provided is a method for sternal reconstruction utilizing the sternal reconstruction system. Also provided is a kit for sternal reconstruction. The end of the cable without the end fitting may be passed through one of the channels, around the sternum, and then through the other channel, with the ferrule subsequently being crimped onto it.					
7.	Devices, system, and methods for guiding an operative tool into an interior body region	US20030100943	2003-05-29	APTUS END SYSTEMS APTUS ENDOSYSTEMS APTASU END SYSTEMS MEDTRONIC VASCULAR*	
A guide device establishes a guide passage through a guide tube, through which an operative tool can be deployed into an interior body region for use. A steering assembly, in use, deflects or bends the distal end region of the guide tube, so that the operative tool can be placed in a desired orientation with respect to tissue. The steering assembly is desirable configured for single handed operation by the clinician. The steering assembly is also desirably configured to provide a mechanical advantage sufficient to translate relatively small increments of clinician control into relatively larger increments of guide tube deflection. In one arrangement, the steering assembly includes a rack and pinion linkage system. In another arrangement, the steering assembly includes a pivoting lever system.					

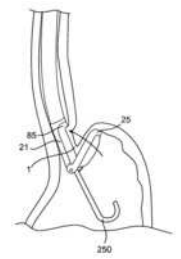
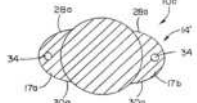
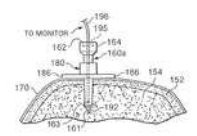
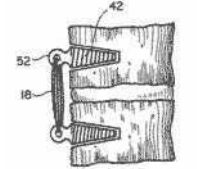
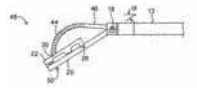
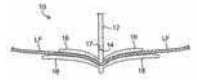
8.	Adjustable height access device for treating the spine of a patient	WO2005018466	2005-03-03	ENDIUS ZIMMER SPINE*		
According to the present invention there is provided a device (9360; 9800) for retracting tissue to provide access to a spinal location within a patient, said device comprising: an elongate body (9804) having a proximal portion (9812) and a distal portion (9816), the elongate body defining a length (9820) between the proximal and distal portions along a longitudinal axis (9824) such that the distal portion can be positioned inside the patient adjacent the spinal location while the proximal portion is accessible, a transverse cross-section of the elongate body in the proximal portion comprises a first dimension (9828) that is longer than a second dimension (9832), the first dimension being perpendicular to the second dimension; and a path (9808) extending through the elongate body between the proximal and distal portions; wherein the elongate body is configured such that the proximal portion may be tilted relative to the distal portion in a first direction generally aligned with the first dimension.						
9.	Stabilizing a spinal anatomical structure	US20060089646	2006-04-27	P TECHNOLOGY* P-TECH		
Methods and devices for stabilizing spinal anatomical structures. Some example methods may include introducing a curved segment of an elongate fastener placement rod adjacent to a spinal anatomical structure, providing a fastener at the leading end of the curved segment, and/or securing the fastener in place with respect to the spinal anatomical structure.						
10.	Locking mechanisms for fixation devices and methods of engaging tissue	WO2005112792	2005-12-01	EVALVE* EVARU CALIFORNIA USA 9 4 0 2 5 MENLO PARK CAMPBELL AVENUE 4 0 4 5		
Devices, systems and methods are provided for tissue approximation and repair at treatment sites. In particular, fixation devices are provided comprising a pair of fixation elements each having a first end, a free end opposite the first end, and an engagement surface therebetween for engaging the tissue, the first ends being movably coupled together such that the fixation elements are moveable between an open position wherein the free ends are spaced apart and a closed position wherein the free ends are closer together with the engagement surfaces generally facing each other. The fixation devices also include a locking mechanism coupled to the fixation elements for locking the fixation elements in place. The devices, systems and methods of the invention will find use in a variety of therapeutic procedures, including endovascular, minimally-invasive, and open surgical procedures, and can be used in various anatomical regions, including the abdomen, thorax, cardiovascular system, heart, intestinal tract, stomach, urinary tract, bladder, lung, and other organs, vessels, and tissues. The invention is particularly useful in those procedures requiring minimally-invasive or endovascular access to remote tissue locations, where the instruments utilized must negotiate long, narrow, and tortuous pathways to the treatment site.						
11.	Cardiac devices and methods for minimally invasive repair of ischemic mitral regurgitation	WO2004012583	2004-02-12	MASSACHUSETTS GENERAL HOSPITAL*		
Novel apparatus and minimally invasive methods to treat atrioventricular valve regurgitation that is a result of tethering of chordae attaching atrioventricular valve leaflets to muscles of the heart, such as papillary muscles and muscles in the heart wall, thereby restricting the closure of the leaflets. Catheter embodiments for delivering and positioning chordal severing and elongating instruments are described.						
12.	Method and devices for tissue reconfiguration	WO03099137	2003-12-04	ETHICON ENDO SURGERY NDO SURGICAL*		
Published without an (From CA2485978 A1)						
13.	Endoscopic beating-heart stabilizer and vessel occlusion fastener	WO200243569	2002-06-06	INTUITIVE SURGICAL*		
Devices, systems and methods related to endoscopic surgery, particularly related to robotic surgical operations, provide a tissue stabilizer for endoscopically stabilizing a target tissue within a patient's body. For stabilizing a beating heart during a closed-chest coronary artery bypass grafting procedure, a stabilizer is inserted through an endoscopic cannula and provides sufficient surface area to contact the heart and effectively stabilize the target tissue area. The stabilizer can straddle a blood vessel, such as a coronary artery, which is targeted for an anastomosis. Vessel occlusion fasteners may occlude the target blood vessel prior to the anastomosis procedure.						
14.	Spinal stabilization device	US20050203517	2005-09-15	DEPUY SPINE DEPUY SYNTHES* ENUSUPAIN K SPINE N SPINE NINE SPINE	○ ○	
A flexible connection unit for use in a spinal fixation device, including: a longitudinal member having first end portion, a second end portion and a flexible member interposed between the first end portion and the second end portion, at least one of the first end portion and the second end portion configured to be coupled to a first bone securing member; and a spacer located between the first and second end portions, wherein at least a portion of the flexible member passes through an axial channel of the spacer and wherein the spacer comprises a resilient element configured to be coupled to a second bone securing member.						
15.	Implantable screw for stabilization of a joint or a bone fracture	US20050177167	2005-08-11	NOVOPLANT*		
A bone screw has a flexible shaft which prevents relative movements in the direction of tension, but permits smaller movements in all other directions. The bone screw is configured as a screw insertable into medullary cavities having a curved surface, where the screw adapts to the given contour.						

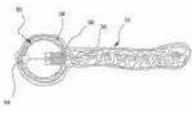
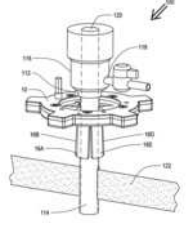
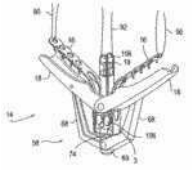
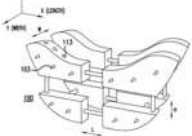
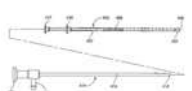
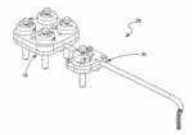
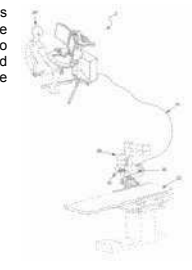
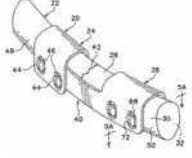
16.	Methods and apparatus for gastric reduction	US20040116949	2004-06-17	HEALTHCARE FINANCIAL SOLUTIONS RETIRING* USGI MEDICAL*	
Apparatus for use with a gastric reduction system for narrowing a cross-sectional area of a patient's gastro-intestinal lumen. The apparatus comprises an anchor (22) that is adapted to be reconfigured from a reduced delivery profile within a delivery catheter (11) to an expanded deployed profile once the anchor (22) is released from the delivery catheter (11).					
17.	Apparatus for capturing objects beyond an operative site utilizing a capture device delivered on a medical guide wire	WO200172205	2001-10-04	ABBOTT CARDIOVASCULAR SYSTEMS* ADVANCED CARDIOVASCULAR SYSTEMS METAMORPHIC SURGICAL DEVICES	
A device (2) for capturing and removing one or more particles (58) from a body canal or vessel includes a sack (12) having a mouth (14) and a closed bottom (16) opposite mouth (14). A guide wire (4) is received through mouth (14) of sack (12) and is connected to closed bottom (16) of sack (12). A collapsible frame (8) is connected between guide wire (4) and mouth (14) of sack (12), with collapsible frame (8) biasing mouth (14) of sack (12) opened around guide wire (4). A containment collar (32) slidably receives guide wire (4), collapsible frame (8), and at least part of sack (12) therein. A pull wire (34) is connected to containment collar (32). In response to relative movement between guide wire (4) and pull wire (34), collapsible frame (8) moves from inside containment collar (32) where mouth (14) of sack (12) is closed and outside containment collar (32) where mouth (14) of sack (12) is biased open by collapsible frame (8). Containment collar (32) has an axial length configured to be positioned entirely in a body and pull wire (34) has an axial length configured to extend from outside the body to containment collar (32) when it is positioned entirely in the body. Containment collar (32) can be removed from guide wire (4) by pulling pull wire (34) relative to guide wire (4) sufficiently that containment collar (32) is withdrawn from the body and from the end of guide wire (4) opposite collapsible frame (8).					
18.	Tethered implant systems with fastener for mounting on an articulation surface of an orthopedic joint	CA2640576	2005-06-30	MEDICINE LODGE MEDICINE LODGE HOLDINGS* ZIMMER*	
An implant system for resurfacing at least a portion of an articulation surface of a bone includes an implant (300) having a top articular surface (306) and an opposing bone apposition surface (303). A first line (438) is coupled with the implant so as to extend away from the bone apposition surface without passing through the top articular surface of the implant. The system also includes a bone anchor (810) and means for securing a portion of the first line to the bone anchor. <IMAGE>					
19.	Expandable implant for partial disc replacement and reinforcement of a disc partially removed in a discectomy and for reduction and maintenance of alignment of cancellous bone fractures and methods and apparatuses for same.	US20030074075	2003-04-17	THOMAS JAMES C JR* THOMAS JR JAMES C	
Expandable implants (16) for intervertebral disc (10) repair, and methods and apparatuses for delivering the same into the disc. The present implants (16) can also be used for repair of bone fractures. The implants (16) generally comprise a compressed form having a size adapted for insertion into a defect in the intervertebral disc (10), and a composition that allows the implant (16) to expand from the compressed form into an expanded form after the implant (16) is inserted into the defect. The expanded form of the implant (16) has a configuration that fills the defect in the disc. The defect in the disc (10) can be an annular defect that resulted from repair of a herniation of the disc (10), or a nucleus (12) that needs to be repaired. The composition used to make the implant (16) can comprise a shape memory alloy (SMA) or any other suitable material.					
20.	Devices, systems and methods for tissue repair	US20050267529	2005-12-01	BAY INNOVATION* CAYENNE MEDICAL	
Devices, systems and methods are disclosed for repairing soft tissue. The surgical system allows for the creation of tissue repair by grasping, aligning and sewing or fixing tissue. For example, this system may be used for clipping together excessive capsular tissue and reducing the overall capsular volume. The deployment device includes a central grasping mechanism and an outer clip delivery system. The clip embodiments may be single or multi-component (penetration and locking base components) that penetrate tissue layers and deploy or lock to clip the tissue together. An example of the system is used to reduce the joint capsule tissue laxity and reduces the potential for subluxation or dislocation of the joint by either restricting inferior laxity (anterior or posterior) and resolving or eliminating pathologic anterior or posterior translation.					
21.	Adjustable fixation clamp	US20060287652	2006-12-21	DEPUY SPINE DEPUY SYNTHES* HAND INNOVATIONS HFSC SYNTHES	
An adjustable fixation clamp having first and second clamp assemblies positioned about a shaft. The clamp assemblies may each have a pair of vise plates. Each pair of vise plates may define at least two receiving portions and insertion portions intersecting the receiving portions. The receiving portions of one clamp assembly may receive at least two fixation components such as screws, pins or wires. The receiving portions of the other clamp assembly may receive at least one connector such as a rod, bar and/or ring. A biasing structure may be positioned between the first and second clamp assemblies and may allow for the fixation components to be snapped into the receiving portions through the insertion portions. Two or more adjustable fixation clamps may be used to form an external fixation system. At least two screws, pins or wires may be inserted into bone and one of the clamp assemblies may be attached thereto. A guide may be used for insertion of screws, pins or wires into bone. The other clamp assembly may be connected to a rod, bar or ring. Thereafter, the clamp assemblies may be oriented relative to each other and locked in place.					

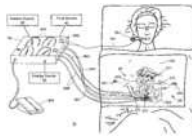
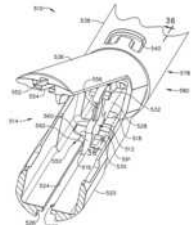
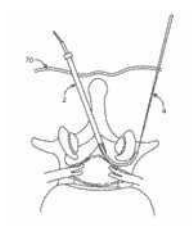
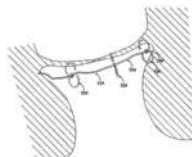
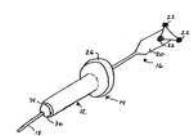
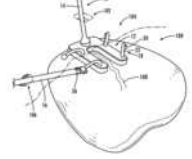
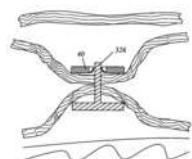
22.	Method and devices for tissue reconfiguration	US20040010245	2004-01-15	ETHICON ENDO SURGERY*
An instrument for reconfiguring stomach tissue includes a sealing member that seals a section of a tissue manipulator from contact with bodily fluids. The tissue manipulator includes a first portion that is configured for releasable coupling to an actuating member and a second portion configured to receive an implant to be deployed within the patient. The tissue manipulator also includes a rectangular member and a cavity for receiving a coupler of the actuating member. The tissue manipulator has a first member with tissue penetrating elements and a second member with engaging elements configured to deflect the tissue penetrating elements upon relative movement of the first and second members. The actuating member includes a tissue penetrating element support positioned to limit bending of the tissue manipulator. The instrument includes an actuating mechanism that is configured to move at least one of the first and second members of the tissue manipulator.				
				
23.	Impaction device for an implant	WO02102254	2002-12-27	ALEXANDRIA RESEARCH TECHNOLOGIES ALEXANDRIA RESEARCH TECHNOLOGIES LIABILITY ALEXANDRIA RESEARCH TECHNOLOGIES LIMITING ABILITY ROYALTY DRY ALEXANDRIA RESEARCH TECHNOLOGY CAYENNE MEDICAL*
An apparatus for imparting force between first (232) and second (230) adjacent bones to secure an implant, the apparatus comprising: an impaction device (260) including an attachment portion (216) for attaching the impaction device to the second bone; and an implant (252) for securing to a first bone.				
				
24.	Devices for tissue invagination	US20050149072	2005-07-07	BOSTON SCIENTIFIC* BOSTON SCIENTIFIC SCIMED COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH DEVRIES ROBERT B. SHAW WILLIAM J. SULLIVAN ROY H. TASSY MARC JR.
Surgical devices and methods used for invaginating tissue during, for example, an endoscopic fundoplication procedure, are disclosed. The device (10) includes an elongated tube (20) having a proximal end configured to extend outside of the body and a distal end configured to extend proximate the tissue to be invaginated, and a distal member coupled to the distal end of the tube. The distal member is configured to hold or grasp the tissue to be invaginated. The devices may include a protective distal sleeve.				
				
25.	Dynamic spinal stabilization system	US20050143823	2005-06-30	SPINE WAVE*
A dynamic stabilization construct for implantation within the spine comprises bone anchors (10) that include a flexible portion (18) between the bone engaging and head portions (12 & 16) of the anchor. The head portion (16) is configured to mate with different types of stabilization elements adapted to span between spinal motion segments. The engagement portion (12) can also be configured for different types of fixation to a motion segment, such as within the pedicle of a vertebra. The flexible portion (18) permits limited bending of the bone anchor beneath the level of the stabilization element. In one embodiment, the flexible portion is integrated into the body of the bone anchor in the form of hinge elements (20). In another embodiment, a separate flexible element (58), such as a spacer or spring, is interposed between the head and engagement portions. In a further embodiment, the bone anchor includes a portion having a reduced cross-section (90). The flexible bone anchors may be used to tailor the dynamic flexibility of spinal stabilization instrumentation at each level of the construct.				
				
26.	Implantable mechanical device with adjustable geometry	FR2843875	2004-03-05	ARMAND*
The invention concerns an implantable mechanical device with adjustable geometry comprising, aligned and attached, an input component (1) having a first cylinder (11), an output component (2) having two second (21) and third (22) opposite cylinders, a reference component (3) integral in rotation with part of the organism and having a fourth cylinder (31). A friction spring (7) mounted astride on the first (11) and second cylinders (21) and a second friction spring (8), wound in an opposite direction of the spring (7) mounted astride on the third (22) and fourth (31) cylinders transform the reciprocating rotation applied to the input component (1) from outside the organism through means (931) into a rotation in a direction of the output component (2) which is helically connected (51, 52) to the driven component (4) integral with part of the organism by means (911), which is thereby translated. The device enables in particular manufacture of elongation nails and spinal rods.				
				
27.	Surgical measurement and resection framework	US20050131538	2005-06-16	DELAWARE LIA & 2 JIEMU TAY VILNIUS FACET SOLUTIONS GLOBUS MEDICAL*
A frame is attachable to first and second bone portions of a patient to facilitate measurement and resection of one or more bony landmarks. The frame has two anchoring features, each of which has a semispherical surface that permits rotational adjustment of the frame against the bone portions until the frame is secured. A bridging structure couples the anchoring features together such that the anchoring features are lockably movable with respect to each other. The bridging structure may have three linear sliders that provide the relative motion. A locking mechanism exerts pressure on all three sliders to lock them in place. An external anchoring feature enables attachment of the frame to a stationary reference to stabilize the frame. The frame also has registration features that permit attachment of measurement or resection tools to the frame. The frame is particularly useful for measuring and resecting spinal facets for facet replacement.				
				
28.	Hand-actuated device for remote manipulation of a grasping tool	US20050107667	2005-05-19	INTUITIVE SURGICAL* NOVARE SURGICAL SYSTEMS
The invention provides an articulating mechanism useful, for example, for remote manipulation of various surgical instruments and diagnostic tools within, or to, regions of the body. Movement of segments (A1, B1, D1) at the proximal end (106, 107, 121, 606, 806, 1711, 1801) of the mechanism results in a corresponding, relative movement of segments (A2, B2, D2) at the distal end (108, 109, 123, 604, 808, 1721, 1822) of the mechanism. The proximal and distal segments are connected by a set of cables (104) in such a fashion that each proximal segment forms a discrete pair with a distal segment. This configuration allows each segment pair to move independently of one another and also permits the articulating mechanism to undergo complex movements and adopt complex configurations. The articulating mechanisms may also be combined in such a way to remotely mimic finger movements for manipulation of an object or body tissue.				
				

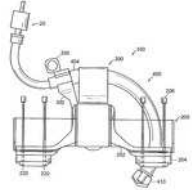
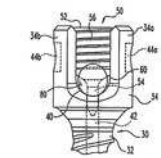
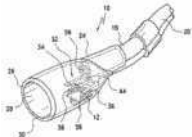
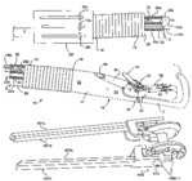
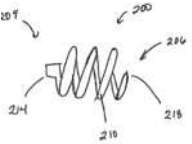
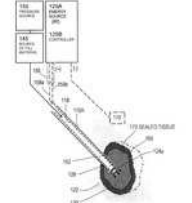
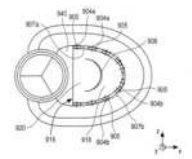
29.	Endoscopic tissue apposition device with multiple suction ports	WO200166018	2001-09-13	CR BARD*		
An improved endoscopic tissue apposition device (50) having multiple suction ports (86) permits multiple folds of tissue to be captured in the suction ports (86) with a single positioning of the device (50) and attached together by a tissue securement mechanism such as a suture (14), staple or other form of tissue bonding. The improvement reduces the number of intubations required during an endoscopic procedure to suture tissue or join areas of tissue together. The suction ports (86) may be arranged in a variety of configurations on the apposition device (50) to best suit the desired resulting tissue orientation. The tissue apposition device (50) may also incorporate tissue abrasion means (852) to activate the healing process on surfaces of tissue areas that are to be joined by operation of the device to promote a more secure attachment by permanent tissue bonding.						
30.	Through the scope tension member release clip	US20050070758	2005-03-31	BOSTON SCIENTIFIC BOSTON SCIENTIFIC SCIMED* SCIMED LIFE SYSTEMS		
A clip assembly includes a clip slidably mounted within a capsule so that, when the clip is drawn proximally into the capsule, arms of the clip are drawn to a closed position. As the clip is drawn into the capsule, an abutting surface of the arms contacts a surface of the capsule to provide a first user feedback indicating closure of the clip. A tension member connected to the clip arms biases them toward an open configuration and a yoke slidably received within the capsule is releasably coupled to the tension member. The yoke receives a connector of a delivery device control element maintaining the clip assembly coupled to the delivery device. The control element fails to detach the yoke from the delivery device, providing a second user feedback with release of the yoke from the tension member providing a third user feedback.						
31.	Devices and systems for reshaping a heart valve annulus	US20050222489	2005-10-06	AMPLE MEDICAL MEDICAL AMPOULES MVRX* VENTURE LENDING & LEASING		
Implants or systems of implants apply a selected force vector or a selected combination of force vectors within or across the left atrium, which allow mitral valve leaflets to better coapt. The implants or systems of implants make possible rapid deployment, facile endovascular delivery, and full intra-atrial retrievability. The implants or systems of implants also make use of strong fluoroscopic landmarks.						
32.	Method and apparatus for improved stiffness in the linkage assembly of a flexible arm	WO03030830	2003-04-17	BIOVENTRIX* ENDOSCOPIC TECHNOLOGIES NXT CAPITAL* TERUMO CARDIOVASCULAR SYSTEMS*		
The invention includes linkage assemblies (1000) comprising coupled links (110-s, 110t) with metallic contact surfaces with improved stiffness. The inventors found significant mechanical problems with all previous descriptions of metallic contact links sufficient to preclude their commercial use. These metallic contact links are a significant improvement over existing plastic ball and metal joint, or all plastic beads as found in the prior art. The invention includes methods providing these links friction couplings between them, as well as the linkage assemblies and flexible arms resulting from these processes.						
33.	Cranial flap clamp instrument	US20020016593	2002-02-07	DEPUY SYNTHES* HFSC SYNTHES		
The disclosed cranial flap clamp includes first and second clamping members and an extension member. A portion of the first member is positionable against inferior surfaces of a bone flap and skull and a portion of the second member is positionable against superior surfaces of the flap and skull. The extension member extends from the first member through the second member and fits between the flap and skull. Movement of either of the clamping members urges the inner surface of the first member against the inferior surfaces of the flap and skull and urges the inner surface of the second member against the superior surfaces of the flap and skull. The securing instrument includes features useful in cutting or crimping the extension member. The tension limiting assembly provides variable designs and combinations for limiting the tension placed on, and exerted by, the securing instrument during use.						
34.	Method and apparatus for the surgical treatment of congestive heart failure	WO2005099374	2005-10-27	GENESEE BIOMEDICAL*		
An apparatus implantable in a heart ventricle (52) includes a frame (10) configured to engage an inner circumferential periphery of the ventricle (52) and to expand and contract between an expanded state corresponding to a desired end diastolic diameter of the ventricle and a contracted state corresponding to a desired end systolic diameter of the ventricle. Assisting means (15) are operatively associated with the frame for mechanically assisting movement of the ventricle toward at least one of an end systolic diameter during systole and an end diastolic diameter during diastole. The assisting means (15) may be integrally formed of the frame (10). The frame (10) may be configured to have expanded and contracted bistable states for assisting both systole and diastole. A method of implanting the apparatus in a heart ventricle includes surgically accessing a ventricle (52), inserting the apparatus in the ventricle and attaching the device to a portion of myocardium defining an inner circumferential periphery of the ventricle (52).						
35.	Minimally invasive clamp	US20060161201	2006-07-20	BOSTON SCIENTIFIC BOSTON SCIENTIFIC SCIMED*		
A clamp including first and second clamp members, at least one of which can be pivoted between an open orientation and a closed orientation.						
36.	Implants for partial knee arthroplasty	US6482209	2002-11-19	ALEXANDRIA RESEARCH TECHNOLOGY CAYENNE MEDICAL*		
The present invention provides a method and device for restoring individual patient joint kinematic using minimally invasive surgical procedures. The instrumentation of the invention sculpts the articular surface of a first bone that normally articulates in a predetermined manner with a second bone. The implant system is comprised of implants that provide intraoperative surgical options for articular constraint and facilitate proper alignment and orientation of the joint to restore kinematics as defined by the individual patient anatomy.						
37.	Devices and methods for tissue removal	WO2006044727	2006-04-27	AMENDIA* BAXANO MIS IP HOLDINGS*		
Methods and apparatus are provided for selective surgical removal of tissue, e.g., for enlargement of diseased spinal structures, such as impinged lateral recesses and pathologically narrowed neural foramen. In one variation, tissue may be ablated, resected, removed, or otherwise remodeled by standard small endoscopic tools delivered into the epidural space through an epidural needle. Once the sharp tip of the needle is in the epidural space, it is converted to a blunt tipped instrument for further safe advancement. A nerve stimulator optionally may be provided to reduce a risk of inadvertent neural abrasion. Additionally, safe epidural placement of the working barrier and epidural tissue modification tools may be further improved with the use of electrical nerve-stimulation capabilities within the invention that, when combined with neural stimulation monitors, provide neural localization capabilities to the surgeon.						

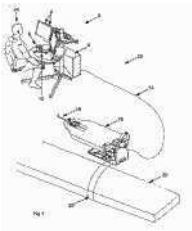
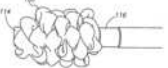
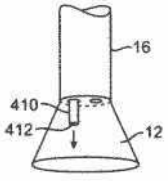
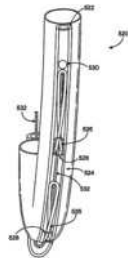
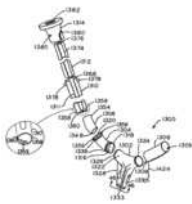
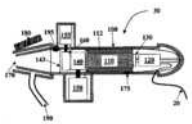
38.	In-situ formed intervertebral fusion device	WO2004073563	2004-09-02	DEPUY SPINE DEPUY SYNTHES*
An orthopedic device for implanting between adjacent vertebrae comprising: an arcuate balloon and a hardenable material within said balloon. In some embodiments, the balloon has a footprint that substantially corresponds to a perimeter of a vertebral endplate. An inflatable device is inserted through a cannula into an intervertebral space and oriented so that, upon expansion, a natural angle between vertebrae will be at least partially restored. At least one component selected from that group consisting of a load-bearing component and an osteobiologic component is directed into the inflatable device through a fluid communication means.				
				
39.	Superelastic/shape memory tissue stabilizers and surgical instruments	US20030060685	2003-03-27	ADVANCED CATHETER ENGINEERING CARDIOVASCULAR TECHNOLOGIES*
A surgical instrument is used for temporary use in a medical procedure in a mammalian body. The surgical instrument is configured to be changed between two shapes upon application of one or both of heating and cooling. The instrument includes a first member, a second member having a surface configured to contact tissue, and a means to apply heating or cooling to one or both of the first member and the second member to change the shape between a first shape and a second shape. A surgical instrument also may be configured to be changed between two shapes upon removal of a constraining force. The surgical instrument includes a first member, a second member having a surface configured to contact tissue, and a constraining means to apply a constraining force to one or both of the first member and the second member to cause one or both of the first member and the second member to be in a first constrained shape. The surgical instruments may be used in minimally invasive valve surgery.				
				
40.	System for locating a working axis on an articular surface of bone	WO200182677	2001-11-08	ARTHRO SURFACE ARTHROSURFACE* ARTHROSURFACE STANDARD MANUFACTURING
A generic bone implant, or set of standardized implants, is created based on using a guide device to develop an axis normal to an articular surface of bone and collecting only one or two data points. A generic cutting tool is used to cut the bone to a point where a generic implant can be used. Several improved tools relating to the procedure for using such an implant, as well as methods for using implants consistent with the invention are further described, including: single-axis and biaxial drill guide tools and methods, generic single-axis implant methods and devices, generic biaxial implant methods and devices, tools and methods for holding or delivering an implant, removal or revision tools and methods, digital measuring systems and methods, and set of measuring gauges for determining the appropriate implant dimensions.				
				
41.	Tissue stabilizer and methods of using the same	US20040082837	2004-04-29	MAQUET CARDIOVASCULAR*
Devices and methods are provided for stabilizing tissue, e.g., a beating heart, within a patient's body. In certain embodiments, the subject devices are characterized by having a shaft and at least two contacting members operatively associated with the shaft where the contacting members are capable of assuming a substantial coaxial alignment when in a low profile configuration and also capable of assuming an open, working configuration. In other embodiments, the devices are characterized by having a shaft and at least one tissue contacting member associated with the shaft using a ball and socket mechanism, wherein the at least one tissue contacting member may be caused to pitch and/or roll and/or yaw. In the subject methods, a subject device is advanced to the target site and stabilizes the target tissue using compression, negative pressure or both. The subject invention also includes kits for use in practicing the subject methods.				
				
42.	Method and apparatus for performing catheter-based annuloplasty using local plications	WO2004037317	2004-05-06	DHC SYSTEMS HEALTHCARE FINANCIAL SOLUTIONS RETIRING MITORARIGUN MITRALIGN* MITRALIGN INCORPORATED
The present invention relates to a minimally invasive method of performing annuloplasty. According to one aspect of the present invention, a method for performing annuloplasty includes creating a first plication in the tissue near a mitral valve of a heart, using at least a first plication element (905), and creating a second plication in the tissue near the mitral valve such that the second plication is substantially coupled to the first plication.				
				
43.	Fingertip surgical instruments	WO2004073495	2004-09-02	ETHICON ENDO SURGERY*
Disclosed is a minimally invasive surgical instrument that may be used in handassisted laparoscopic surgeries. The device is multifunctional surgical instrument that may be mounted directly on a surgeon's fingertip and inserted through an incision to allow the surgeon to manipulate tissue during a surgical procedure.				
				
44.	Apparatus and methods for treating spinal discs	US20020147497	2002-10-10	CORE MEDICAL*
Apparatus and methods for treating a spinal disc are disclosed. An opening (95) is created in the annulus fibrosis (92), and nucleus pulposus is removed from the interior of the disc. The interior is lined with a nonporous, bioabsorbable liner, and filled with a fill material, such as nucleus pulposus, to cause the liner to expand to engage tissue surrounding the interior (91, 92). The liner may be a sheet of extra-cellular matrix material that is introduced into the interior, or a bladder (12) of extra-cellular matrix material including a neck (24) communicating with an interior region of the bladder. The sheet or bladder may be carried by delivery device, e.g., a catheter (16) or rod. After the interior region is filled, the opening (95) is closed using a plug (114) or other closure device. The plug may include thread (115) on its external surface for securing the plug in the opening.				
				

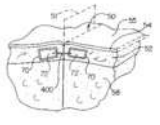
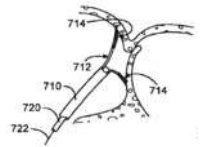
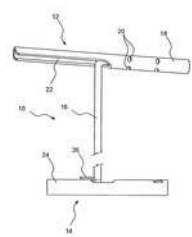
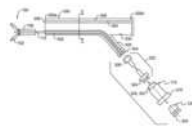
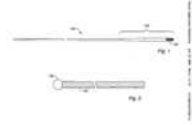
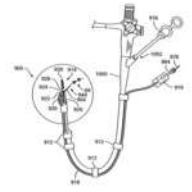
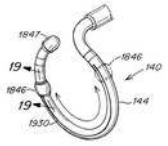
45.	Treatments for a patient with congestive heart failure	WO03049619	2003-06-19	TRANSCARDIAC THERAPEUTICS*	
The invention is directed to two minimally invasive therapeutic procedures, particularly for patients with congestive heart failure, and devices and systems for such procedures. One procedure involves providing a valved passageway through the patient's left ventricular wall at the apex of the patient's heart and advancing instruments through the valved passageway to connect the valve leaflets of the patient's heart valve, e.g. the mitral valve, in a "Bow-Tie" configuration to prevent or minimize regurgitation through the valve. The second procedure involves advancing a pacing lead and a pacing lead implanting device through a trocar in the patient's chest and implanting the pacing lead on an exposed epicardial region of the patient's heart wall. The pacing lead has a penetrating electrode which is secured within the heart wall. One or both procedures may be performed on a patient with CHF. Improved devices for these procedures include a minimally invasive grasping device having an inner lumen for advancing connecting members and other instruments through the device to the distal end thereof. Other improved devices include a pacing lead implant instrument which is releasably secured by its distal end to the exposed heart wall to facilitate penetration of the pacing lead electrode into the heart wall. Other improved instruments include a leaflet connector with an artificial cordae tendinae strand secured to an end of the leaflet connector.					
46.	Link systems and articulation mechanisms for remote manipulation of surgical or diagnostic tools	US20050273085	2005-12-08	INTUITIVE SURGICAL* NOVARE SURGICAL SYSTEM NOVARE SURGICAL SYSTEMS	
Articulating mechanisms, link systems, and components thereof, useful for a variety of purposes including, but not limited to, the remote manipulation of instruments such as surgical or diagnostic instruments or tools are provided. The link systems include links wherein at least two adjacent links are pivotable relative to one another around two distinct pivot points. Mechanisms for locking the links are also provided.					
47.	Devices for fastening tissue layers	WO2004019788	2004-03-11	BOSTON SCIENTIFIC BOSTON SCIENTIFIC SCIMED*	
Endoscopic devices and methods used for fastening multiple tissue layers, such as, for example, an endoscopic fundoplication procedure, are disclosed. The device may include, for example, an elongated tubular member (15) having a proximal end for extending outside of the body and a distal end for positioning proximate the multiple tissue layers (4, 6), a grasper (80) configured for positioning proximate the distal end of the tubular member and for grasping at least one of the multiple tissue layers, a device (20) coupled to the distal end of the tubular member for folding the multiple tissue layers together, a tissue fastener (200) configured to be inserted into the tissue layers to hold the tissue layers together, and a fastener head for inserting the tissue fastener into the tissue layers.					
48.	Methods and apparatus providing suction-assisted tissue engagement through a minimally invasive incision	US20040138522	2004-07-15	MEDTRONIC*	
Suction-assisted tissue-engaging devices, systems, and methods are disclosed that can be employed through minimal surgical incisions to engage tissue during a medical procedure through application of suction to the tissue through a suction member applied to the tissue. A shaft is introduced into a body cavity through a first incision, and a suction head is attached to the shaft via a second incision. The suction head is applied against the tissue by manipulation of the shaft and suction is applied to engage the tissue while the medical procedure is performed through the second incision. A system coupled to the shaft and a fixed reference point stabilizes the shaft and suction head. When the medical procedure is completed, suction is discontinued, the suction head is detached from the shaft and withdrawn from the body cavity through the second incision, and the shaft is retracted through the first incision.					
49.	Artificial disc device	US20030220691	2003-11-27	PIONEER LABORATORIES PIONEER SURGICAL TECHNOLOGY* RTI SURGICAL* TUTOGEN MEDICAL*	
An artificial disc device (10) for replacing a damaged nucleus is disclosed. In one form, the device (10) may be inserted in the components such that the device may be assembled within and retained by the natural annulus therein. In another form, the device (10) may be inserted into the natural annulus in a collapsed or compressed state or arrangement and then be expanded within and retained by the annulus therein. In a further form, the device (10) may be provided with a releasable connection so that the device may be connected in an inset configuration and may be released in an operable configuration. Inset tools and methods are also disclosed.					
50.	Apparatus and method to access bone marrow	US20030225344	2003-12-04	TELEFLEX MEDICAL DEVICES S.A.* L* VAIDEACARE COPER LEASHAN USA TEXAS STATE 7 8 2 1 6 SAN ANTONIO A ISAMU LOUD 7 2 2 VIDACARE	
An apparatus and method for penetrating bone marrow is provided. The apparatus may include a housing such as a handheld body, a penetrator assembly, a connector that releasably attaches the penetrator assembly to a drill shaft, a gear mechanism, a motor and a power supply and associated circuitry operable to power the motor. The penetrator assembly may include a removable inner trocar and an outer penetrator or needle. It may also include a grooved trocar that allows bone chips to be expelled as the apparatus is inserted into bone marrow. Various connectors are provided to attach the penetrator assembly to the drill shaft.					
51.	System and method for flexible correction of bony motion segment	WO2005037150	2005-04-28	OSTEOTECH*	
A non-rigid system and method for stabilizing displaced bony members include a flexible unit of tethering material coupled to the displaced bony members so as to restore a desired shape, curvature of or relationship between the bony members without excessively limiting mobility of bony members located adjacent to the displaced members the rest of the portions of the motion bony segment during a restoration process.					
52.	Apparatus and methods for manipulating and securing tissue	US20050251176	2005-11-10	HEALTHCARE FINANCIAL SOLUTIONS RETIRING* USGI MEDICAL*	
Apparatus and methods for manipulating and securing tissue are described herein. In creating tissue folds within the body of a patient, a tissue manipulation assembly may generally have an elongate tubular member, an engagement member slidably disposed through the tubular member and a distal end adapted to engage tissue via a helical member, tissue stabilizing members positioned at the tubular member distal end which are adapted to stabilize tissue therebetween, and a delivery tube pivotable about the tissue stabilizer. The stabilizing members can be adapted to become angled relative to a longitudinal axis of the elongate tubular member. Moreover, one or all the articulation controls and functions can be integrated into a singular handle assembly connectable to the tissue manipulation assembly via a rigid or flexible tubular body.					
53.	Methods and devices for tissue grasping and assessment	WO2006037073	2006-04-06	ABBOTT VASCULAR* D VU ARUVU EVALVE	
Devices, systems and methods are provided for stabilizing and grasping tissues such as valve leaflets, assessing the grasp of these tissues, approximating and fixating the tissues, and assessing the fixation of the tissues to treat cardiac valve regurgitation, particularly mitral valve regurgitation.					

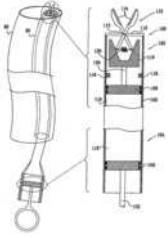
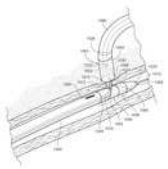
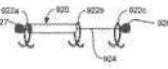
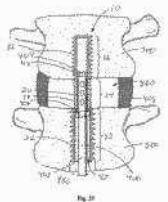
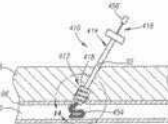
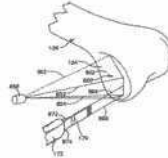
54.	Device for endoluminal therapy	WO2004021894	2004-03-18	KELLEHER BRIAN;STONE CORBETT	
A device and method for selectively engaging or penetrating a layer of a luminal organ wall (20) where the luminal organ wall (20) has a plurality of layers including an outermost layer (22) and an innermost layer (28) adjacent to the lumen of the organ. The device and method select one of the plurality of layers of the organ wall other than the innermost layer (28) and deploy from within the lumen of the organ a tissue device through the innermost layer (28) to a specific depth to engage or penetrate the selected one of the plurality of layers. The device and method may be employed to create luminal pouches (9) or restrictive outlets (13). In a stomach organ (10), the device and methods may be employed to treat obesity by forming a gastric pouch (9) with or without a restrictive outlet (13).					
55.	Surgical retractor apparatus for use with a surgical port	US20050165281	2005-07-28	ARVIK ENTERPRISES*	
An improved surgical retraction apparatus (and corresponding method of operation) includes a plurality of rigid retraction members disposed about a central axis that move radially with respect to the central axis between a closed state and an open state. In the closed state, the retraction members form a central opening that is adapted to closely fit around the tubular section of a surgical port device. In the illustrative embodiment, a planetary gear train, cable assemblies, lever arms or two annular slotted plates used to control radial movement of the retraction members with respect to the central axis.					
56.	Locking mechanisms for fixation devices and methods of engaging tissue	US20060020275	2006-01-26	EVALVE*	
Devices and methods are provided for tissue approximation and repair. Fixation devices comprise a pair of elements each having a first end, a free end opposite the first end, and an engagement surface therebetween for engaging the tissue, the first ends being moveable between an open position wherein the free ends are spaced apart and a closed position wherein the free ends are closer together with the engagement surfaces generally facing each other. The fixation devices include a locking mechanism coupled to the elements for locking the elements in place. The devices and methods find use in a variety of therapeutic procedures, including endovascular, minimally-invasive, and open surgical procedures, and can be used in various anatomical regions. The invention is particularly useful in procedures requiring minimally-invasive or endovascular access to remote tissue locations, where the instruments utilized must negotiate long, narrow, and tortuous pathways to the treatment site.					
57.	3-d expansile intervertebral disc implant	US20050256576	2005-11-17	MOSKOWITZ FAMILY*	
A total artificial expansible disc having at least two pairs of substantially parallel shells, which move in multiple directions defined by at least two axes, is disclosed. Several methods for implanting the total artificial expansible disc are also disclosed. The total artificial expansible disc occupies a space defined by a pair of vertebral endplates. An expansion device, which expands in two or three dimensions, moves the pairs of shells in multiple directions. A core is disposed between the pairs of shells, and the core permits the parallel shells to move relative to one another.					
58.	Devices for less-invasive intracardiac interventions	US20020026094	2002-02-28	HEARTPORT* ROTH ALEX T.	
Devices, systems, and methods are provided for accessing the interior of the heart and performing procedures therein while the heart is beating. In one embodiment, a tubular access device having an inner lumen is provided for positioning through a penetration in a muscular wall of the heart, the access device having a means for sealing within the penetration to inhibit leakage of blood through the penetration. The sealing means may comprise a balloon or flange on the access device, or a suture placed in the heart wall to gather the heart tissue against the access device. An obturator is removably positionable in the inner lumen of the access device, the obturator having a cutting means at its distal end for penetrating the muscular wall of the heart. The access device is preferably positioned through an intercostal space and through the muscular wall of the heart. Elongated instruments may be introduced through the tubular access device into an interior chamber of the heart to perform procedures such as septal defect repair and electrophysiological mapping and ablation. A method of septal defect repair includes positioning a tubular access device percutaneously through an intercostal space and through a penetration in a muscular wall of the heart, passing one or more instruments through an inner lumen of the tubular access device into an interior chamber of the heart, and using the instruments to close the septal defect. Devices and methods for closing the septal defect with either sutures or with patch-type devices are disclosed.					
59.	Apparatus for securing an electrophysiology probe to a clamp	US20030158549	2003-08-21	ATRICURE* BOSTON SCIENTIFIC BOSTON SCIENTIFIC SCIMED NCONTACT SURGICAL* NXT CAPITAL	
An apparatus in the form of a forceps or clamp having at least one of the two tongs removable energy transmission device, which can be secured to the clamp by an engagement device.					
60.	System and method for denaturing and fixing collagenous tissue	US20060057560	2006-03-16	AURIS HEALTH* HANSEN MEDICAL	
A method for modifying a geometry of a collagenous tissue mass includes heating the collagenous tissue mass to a temperature sufficient to cause denaturation, and introducing a biocompatible fixative, such as genepin, into the collagenous tissue mass.					
61.	Robotic catheter system	WO2006119495	2006-11-09	AURIS HEALTH* HANSEN MEDICAL	
A robotic catheter system (32) includes a controller with a master input device (12) . An instrument driver (116) is in communication with the controller and has a guide instrument interface including a plurality of guide instrument drive elements responsive to control signals generated, at least in part , by the master input device . An elongate guide instrument (18 , 30 , 174 , 176 , 178 , 180 , 182 , 184 , 186) has a base (44 , 48) , distal end, and a working lumen , wherein the guide instrument base is operatively coupled to the guide instrument interface . The guide instrument includes a plurality of guide instrument control elements (192) operatively coupled to respective guide drive elements and secured to the distal end of the guide instrument . The guide instrument control elements are axially moveable relative to the guide instrument such that movement of the guide instrument distal end may be controlled by the master input device .					
62.	Bone plates	WO2005020800	2005-03-10	OREGON HEALTH & SCIENCE UNIVERSITY*	
Systems, including methods, apparatus, and kits, for fixing bones, such as rib bones, with bone plates.					

63.	Devices and methods for interstitial injection of biologic agents into tissue	WO02054937	2002-07-18	MEDITRONIC MEDTRONIC*
The current invention discloses a method for treating infarcted/ischemic injury to a myocardium by injecting a substance into the myocardium. The injected substance helps to prevent negative adaptive remodeling by providing mechanical reinforcement or mechanical reinforcement combined with biological therapy. A number of substances for injection are disclosed, including multi component substances such as platelet gel, and other substances. The substances disclosed may contain additives to augment/enhance the desired effects of the injection. The invention also discloses devices used to inject the substances. The devices can include means for ensuring needles do not penetrate beyond a desired depth into the myocardium. The devices can also include needles having multiple lumens such that the components of the platelet gel will be combined at the injection site and begin polymerization in the myocardium. (From US7740623 B2)				
64.	Surgical stapling instrument having a medical substance dispenser	US20050165415	2005-07-28	EIHCION ENDO SURGERY ETHICON* ETHICON ENDO SURGERY JOHNSON & JOHNSON
In various embodiments, an assembly of a surgical instrument is disclosed. The assembly includes a housing, a cutting member relatively movable with respect to the housing, and an agent cartridge connected to the housing. The agent cartridge houses a medical agent. The assembly is configured to deliver the medical agent proximate a cutting surface of the cutting member.				
65.	Devices and methods for tissue modification	US20060089640	2006-04-27	AMENDIA* BAXANO MIS IP HOLDINGS*
Methods and apparatus are provided for selective surgical removal of tissue. In one variation, tissue may be ablated, resected, removed, or otherwise remodeled by standard small endoscopic tools delivered into the epidural space through an epidural needle. The sharp tip of the needle in the epidural space, can be converted to a blunt tipped instrument for further safe advancement. The current invention includes specific tools that enable safe tissue modification in the epidural space, including a barrier that separates the area where tissue modification will take place from adjacent vulnerable neural and vascular structures. A nerve stimulator may be provided to reduce a risk of inadvertent neural abrasion.				
66.	Termination device for locking a tether	US20060122633	2006-06-08	ANCORA HEART* GUIDED DELIVERY SYSTEMS
Devices and methods used in termination of a tissue tightening procedure are described. Termination includes the cinching of a tether to tighten the tissue, locking the tether to maintain tension, and cutting excess tether. In procedures involving anchors secured to the tissue, the tether is coupled to the anchors and the tissue is tightened via tension applied to the anchors by cinching the tether. In general, the devices and methods can be used in minimally invasive surgical procedures, and can be applied through small incisions or intravascularly. A method for tightening tissue by fixedly coupling a first anchor to a tether and slidably coupling a second anchor to the tether, securing both anchors to the tissue, applying tension to the tether intravascularly, fixedly coupling the tether to the second anchor, and cutting the tether is described. The tissue to be tightened can comprise heart tissue, in particular heart valve annulus tissue. Various devices and methods for locking the tether in place and cutting excess tether are described.				
67.	Apparatus and methods for performing brain surgery	WO2006050225	2006-05-11	NICO STRATEGIC TECHNOLOGY ASSESSMEN SURGICAL TECHNOLOGIES ASSESSMENT VYCOR MEDICAL*
Less invasive surgical techniques for performing brain surgery are disclosed in which a dilating obturator and cannula assembly is inserted into brain tissue until the obturator tip and cannula are adjacent the target tissue. The obturator is removed and surgery is performed through the cannula. In preferred embodiments the obturator and cannula are placed using image guidance techniques and systems to coordinate placement with pre-operative surgical planning. A stylet with associated image guidance may be inserted prior to insertion of the obturator and cannula assembly to guide insertion of the obturator and cannula assembly. Surgery preferable is performed using an endoscope partially inserted into the cannula with an image of the target tissue projected onto a monitor.				
68.	Surgical instruments and methods for use in reduced-access surgical sites	WO2006127236	2006-11-30	CARDIOTHORACIC SYSTEMS* MAQUET CARDIOVASCULAR
Devices and methods for stabilizing a portion of an organ or tissue in a closed or restricted space surgical site. Devices and methods for manipulating an organ or tissue in a closed or restricted space surgical site. Devices and methods for positioning and orienting stabilizers and manipulators in a closed or restricted space surgical site.				
69.	Axially steerable and torsionally rigid mechanical transmission	FR2875282	2006-03-17	CNRS - CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE* SINTERS*
The invention concerns an axially steerable and torsionally rigid mechanical transmission between a proximal end (2) and a distal end (4) comprising at least one pair of hinged transverse shields (6, 7, 9), and flexible members (16) controlled by traction of the axial orientation of the transmission traversing said shields (6, 7, 9). The shields (6, 7, 9) are hinged in pairs by at least one connection to a spherical contact central point. Flexible but shear-rigid retaining rods (21) are coupled to the shields (6, 7, 9) so as to maintain them relative to one another in torsion about the neutral axis while allowing the axially oriented bending movements of the transmission.				
70.	Obesity treatment systems	US20050216042	2005-09-29	MINI MASS SURGICAL SYSTEMS MINIMUS SURGICAL SYSTEMS
In one embodiment, a pressure sensing system is described which transmits data to a patient management system external to a patient. The pressure sensing system can rigidly couple to an implantable port or flexibly couple to an implantable port. In some embodiments, the pressure sensing system communicates with a hydraulic actuating system. In some embodiments, the pressure sensing system is implantable and comprises a circuit capable of wireless transmission through the skin of a patient to an external receiver which is part of a patient management system. A patient management system is described which receives up to date as well as historical data from the pressure sensing system and manages the data in the context of a patient database.				

71.	Systems, devices and apparatuses for bony fixation and disk repair and replacement and methods related thereto	WO2005037082	2005-04-28	HIGHGATE ORTHORPEDICS K2M* K2M HOLDINGS*	
The present invention features new methods, apparatuses and devices for fixing adjacent bone segments, segments of a bony structure and adjacent vertebrae of a spine. The methods, apparatuses and devices utilize a new apparatus for forming a channel in a surface of the bone or bony structure segments or adjacent vertebra or a channel submerged within the bone or bony structure segments or adjacent vertebra. In more particular embodiments such apparatuses and methods including forming an arcuate channel and which channel can receive therein a curved rod or implant member, which also preferably is arcuate, and avoids the associated problems with prior cage or straight rod and screw systems. Also featured are systems, apparatuses and methods for repairing, replacing or augmenting the nucleus and/ or annulus of a disc.					
72.	Flexible spinal stabilization system	US20030083657	2003-05-01	AAIPHARMA OSOPEDIKKU WAUSAU SDGI HOLDINGS WARSAW ORTHOPEDIC*	
Devices, methods and systems for stabilizing at least a portion of the spinal column are provided. Devices include anchors and coupling members for engaging an elongate member. Systems include an elongate member sized to span a distance between at least two vertebral bodies and being at least partially formed of a flexible material. A number of anchors and coupling members are used to secure the elongate member to each of the vertebral bodies. The anchors can be compressed towards one another and the elongate member secured thereto and/or the elongate member can be tensioned to provide corrective forces to the spine. (From US6783527 B2)					
73.	A method and apparatus for endoscopically performing gastric reduction surgery in a single pass	BRPI0603381	2006-10-03	ETHICON ENDO SURGERY* JOHNSON & JOHNSON	
A gastric reduction apparatus provides for the secure attachment of multiple fasteners into the gastric wall, the fasteners being linked with a flexible member in a manner permitting the reduction of the effective size of an individual's stomach. The apparatus includes an applicator head including a proximal end and a distal end. The applicator head of the gastric reduction apparatus includes a cavity shaped and dimensioned for receiving tissue. A fastener attachment mechanism is positioned within the cavity for access to tissue that is pulled within the cavity and the fastener attachment mechanism includes a plurality of fasteners.					
74.	Surgical instrument for invagination and fundoplication	US20010049469	2001-12-06	BOSTON SCIENTIFIC* BOSTON SCIENTIFIC SCIMED SYMBIOSIS SYMBIOSYS	
An endoscopic surgical instrument for deploying a two part fastener having a male fastener part and a female fastener part, includes a tube having a proximal end and a distal end. An end effector is coupled to said distal end of said tube and is configured to hold the male fastener part and the female fastener part in opposed relation. An actuator is coupled to said proximal end of said tube and is configured to actuate the end effector. A shearing device may be positioned proximate the end effector to shear off a tip of the male fastener part after the male and female fastener parts are moved into locking relation. In addition, the surgical instrument may include a male fastener part having a shaft with a plurality of detent positions. Further, the male fastener part may include a base and a shaft pivotally connected to the base.					
75.	Devices for closing a patent foramen ovale	US20050187568	2005-08-25	EV3 ENDOVASCULAR* EV3 SUNNYVALE KLENK ALAN R MEDTRONIC EV3	
A patent foramen ovale closure device and method are provided. The device (200, 300) is deployed at the foramen ovale (402) to secure the septum primum (444) and septum secundum (442) together, thus sealing the foramen ovale. In one embodiment, the closure device is a coil that is delivered through the septum secundum and septum primum in an axially elongated state using a tissue piercing structure (554). After being delivered, the coil is released, causing the coil to axially shorten to pinch the septum primum and septum secundum together. In other embodiments, a countertraction element (900, 1000, 1100, 1200) is provided to hold the patent foramen ovale together while the device is being deployed, to ensure adequate positioning of the closure device. The countertraction element may be a balloon, guidewire or any other suitable device used to hold the position of the patent foramen ovale.					
76.	Bone treatment systems & methods	US20060122625	2006-06-08	DFINE* DIFUEIENUI	
A system for treating bone, comprising: an elongated introducer (110A) with a flow channel (224a, 224b) extending therethrough for introducing a bone fill material into an interior of a bone; a source of bone fill material (145) coupled to the flow channel (224a, 224b) and configured to deliver a flow of bone fill material through the flow channel (224a, 224b); an energy source (125A) selectively coupleable to the bone fill material to alter the viscosity of the bone fill material; a sensor (235) configured to measure a characteristic of the bone fill material; and a controller (125B) configured to control the application of energy from the energy source (125A) to the bone fill material, wherein the controller (125B) includes algorithms that ramp-up and ramp-down power delivery from the energy source (125A) to the bone fill material in response to the measured characteristic of the bone fill material.					
77.	Method and apparatus for performing catheter-based annuloplasty using local plications	US20050184122	2005-08-25	MITRALIGN*	
A minimally invasive method of performing annuloplasty. According to one aspect, a method for performing annuloplasty includes creating a first plication in the tissue near a mitral valve of a heart, using at least a first plication element, and creating a second plication in the tissue near the mitral valve such that the second plication is substantially coupled to the first plication.					

78.	Robotically controlled intravascular tissue injection system	WO2006020943	2006-02-23	HANSEN MEDICAL*	
A robotic catheter system includes a controller including a master input device and instrument driver in communication with the controller. An elongate flexible guide instrument is operatively coupled to the instrument driver. A fluid injection needle may be advanced from, or retracted into, a distal portion of the guide instrument.					
					
79.	Materials and apparatus for treating bone	WO2004110300	2004-12-23	DEPUY SPINE* DEPUY SYNTHES DISC O TECH MEDICAL TECHNOLOGIES DISC OH TECHNOLOGY MEDICAL TECHNOLOGIES DISC ORTHOPAEDIC TECHNOLOGIES MEDTRONIC KYPHON ORTHOPHOENIX SOCIETE RESUPONSABIRITE RIMITE KAIFENG	
A system for injecting a bone cement which comprises a first component and a second component. Contacting the first component and the second component produces a mixture which attains a high viscosity within a short initial period following initial contact of the first and second components. The viscosity remains relatively stable for a working time after the initial period. The system includes a reservoir for the bone cement and a pressure source adapted to apply pressure the bone cement to expel it for injection into a patient.					
					
80.	Tendon-driven endoscope and methods of insertion	WO200174235	2001-10-11	AMIR BELSON INTUITIVE SURGICAL* NEO GUIDE SYSTEMS NEOGUIDE SYSTEMS	
A steerable, tendon-driven endoscope is described herein. The endoscope has an elongated body with a manually or selectively steerable distal portion and an automatically controlled, segmented proximal portion. The steerable distal portion and the segment of the controllable portion are actuated by at least two tendons. As the endoscope is advanced, the user maneuvers the distal portion, and a motion controller actuates tendons in the segmented proximal portion so that the proximal portion assumes the selected curve of the selectively steerable distal portion. By this method the selected curves are propagated along the endoscope body so that the endoscope largely conforms to the pathway selected. When the endoscope is withdrawn proximally, the selected curves are propagated distally along the endoscope body. This allows the endoscope to negotiate tortuous curves along a desired path through or around and between organs within the body.					
					
81.	Tissue visualization and manipulation system	WO2006083794	2006-08-10	BOCA EDGE MEDICAL INTUITIVE SURGICAL* VOYAGE MEDICAL	
Tissue visualization and manipulation systems are described herein. Such a system may include a deployment catheter and an attached imaging hood deployable into an expanded configuration. In use, the imaging hood is placed against or adjacent to a region of tissue to be imaged in a body lumen that is normally filled with an opaque bodily fluid such as blood. A translucent or transparent fluid, such as saline, can be pumped into the imaging hood until the fluid displaces any blood, thereby leaving a clear region of tissue to be imaged via an imaging element in the deployment catheter. Additionally, any number of therapeutic tools can also be passed through the deployment catheter and into the imaging hood for treating the tissue region of interest.					
					
82.	Devices and methods for anchoring tissue	US20050273138	2005-12-08	ANCORA HEART* GUIDED DELIVERY SYSTEMS	
Anchors, anchoring systems, anchor delivery devices, and method of using anchors are described. An anchor may be a flexible anchor having two curved legs that cross in a single turning direction to form a loop, wherein the legs are adapted to penetrate tissue. The ends of the curved legs may be blunt or sharp. The anchor can assume different configurations such as a deployed configuration and a delivery configuration, and the anchor may switch between these different configurations. In operation, the anchor may be inserted into tissue by releasing the anchor from a delivery configuration so that the anchor self-expands into the deployed configuration, so that the legs of the anchor may penetrate the tissue in a curved pathway.					
					
83.	Method and apparatus for reducing femoral fractures	US20060064164	2006-03-23	ZIMMER*	
A method and apparatus for reducing a hip fracture utilizing a minimally invasive procedure. A femoral implant achieves intramedullary fixation as well as fixation into the femoral head. To optimally position the femoral implant, a minimally invasive incision is aligned with the greater trochanter and the wound is developed to expose the greater trochanter. Various reamers are utilized to prepare a cavity in the femur extending from the greater trochanter into the femoral head and further extending from the greater trochanter into the intramedullary canal of the femur.					
					
84.	Tissue removal using biocompatible materials	WO200238125	2002-05-16	PEARL TECHNOLOGY HOLDINGS*	
Biocompatible materials are propelled at the skin with sufficient velocity to cause desired resurfacing of tissue to the desired penetration depth. The materials, such as dry ice or water ice, are harmonious with the human body and thus eliminate foreign body reactions. Various materials may be in used in combination, including local anesthetics and vasoconstrictors in solid or liquid form. The biocompatible solid or liquid particles are suspended in a cold carrier fluid and propelled through an insulated delivery system to the surface of the skin. The treatment of diseased skin lesions may be accomplished using the present invention as a drug delivery system.					
					

85.	Apparatus for bilateral tissue fastening	US20030236551	2003-12-25	INCISIVE SURGICAL* INSIDE SURGICAL INK MINNESOTA USA 5 5 3 0 5 MINNETONKA FAIRFIELD ROAD 1 4 0 9 SITU SURGICAL INK UNITED STATES MINNESOTA 5 5 4 4 7 4 6 8 5 PLYMOUTH SUITE 1 3 0 TWENTY FIRST AVENUE NORTH 1 4 4 0 5
A mechanical system for bilaterally securing tissue preferably utilizes a tissue manipulator apparatus to approximate a portion of an interior surface of each of two pieces of living tissue along a vertical interface below an exterior surface of the tissue without overlapping 5 either interior surface across the vertical interface. An applicator apparatus includes a driving head portion positioned in the vertical interface and at least partially below the exterior surface and a handle portion positioned at least partially above the exterior surface. The applicator apparatus bilaterally drives at least one portion of a fastener through each piece of the living tissue behind the interior surface of that piece of tissue such that the fastener is positioned below 10 the exterior surface and a portion of the fastener is positioned generally transverse to the vertical interface. Preferably, the manipulator apparatus and the applicator apparatus are arranged together as part of a hand-held instrument capable of carrying and deploying multiple fasteners.				
86.	Methods and apparatus for treatment of patent foramen ovale	US20040193147	2004-09-30	CIERRA TERUMO*
Apparatus for treating a patent foramen ovale, the apparatus comprising an elongate catheter body having a proximal end and a distal end, an energy transmission element located on a distal portion of the catheter body for transmitting energy to contact tissue of the patent foramen ovale to close the patent foramen ovale, and a backstop element adapted to be positioned distal of the energy transmission element for facilitating energy delivery to the patent foramen ovale.				
87.	Rod-shaped implant element for the application in spine surgery or trauma surgery and stabilization device with such a rod-shaped implant element	EP1757243	2007-02-28	BIEDERMANN MOTECH BIEDERMANN TECHNOLOGIES*
A rod-shaped implant element (1) is provided for connecting at least two bone anchoring elements (2, 3), each of which comprising an anchoring section (21, 21') to be anchored in the bone and a receiver member (22, 22') to be connected to the rod-shaped implant element, the rod-shaped implant element comprising: a longitudinal axis; at least one first length of a rigid section (4) that is configured to cooperate with and be received in the receiver member; a second length of a flexible section (8) adjacent to the rigid section; a bore (9) coaxial to the longitudinal axis and extending through the rigid section and the flexible section; and a core (12) accommodated in the bore, the core having two opposite ends, wherein at least one end of the core is freely movable in the bore when said flexible section is extended or compressed in a direction of the longitudinal axis.				
88.	Devices, systems and methods for retracting, lifting, compressing, supporting or repositioning tissues or anatomical structures	US20060265042	2006-11-23	EXPLORAMED NC2 NEOTRACT*
A device useable to anchor an elongate member to tissue of a human or animal subject, said anchor device comprising: an anchor body having a hollow passage through which the filament may pass; and a locking member that is initially positioned in a non-locked position that allows the anchor body to advance over the filament and a locked position where the locking member engages the filament thereby holding the anchor body at a substantially fixed position on the filament.				
89.	Endoscopic apparatus and method	US20030105488	2003-06-05	BOSTON SCIENTIFIC SCIMED*
The present invention is directed to a medical device, such as an endoscopic device, configured to be loaded into a channel of an endoscope prior to insertion of the endoscope into a body, and a method of performing an operative procedure with an endoscopic device. The endoscopic device comprises an elongate member for insertion into the channel of the endoscope, wherein a length of the elongate member is greater than a length of the channel of the endoscope. The endoscopic device also comprises a distal assembly connected to a distal portion of the elongate member and operable to perform an endoscopic operation, wherein the distal assembly has an open configuration and a closed configuration with a profile larger than a diameter of the channel of the endoscope, wherein the distal assembly is adapted to be exterior to the channel when the endoscope is inserted into the body.				
90.	Spinal stabilization system using flexible members	US20040147928	2004-07-29	ABBOTT SPINE*
A spinal stabilization system and method are provided for use in minimally invasive procedures. A plane of separated tissue may be established between adjacent vertebrae. In some embodiments, threaded members may be positioned in bone. Flexible members may be coupled to the threaded members. In an embodiment, flexible members may be used to position components of a spinal stabilization system proximate bone. Flexible members may maintain an alignment along a centerline of a threaded member. In some embodiments, a thickness of a flexible member may be varied to increase a stiffness of the flexible member.				
91.	Removable apparatus and methods for manipulating and securing tissue	US20050250986	2005-11-10	USGI MEDICAL*
Removable apparatus and methods for manipulating and securing tissue are described herein. In creating tissue folds within the body of a patient, a tissue manipulation assembly may generally have tissue stabilizing members adapted to stabilize tissue therebetween, an engagement member slidably disposed through the stabilizing members and having a distal end adapted to engage tissue, and a delivery tube pivotable about the tissue stabilizing members. The tissue manipulation assembly optionally may be configured for removable attachment to an endoscope.				
92.	Improved electrophysiology loop catheter	WO2004039273	2004-05-13	BOSTON SCIENTIFIC SCIMED* CR BARD
An electrophysiology catheter including control, localization, and/or fluid delivery features, and methods of using the same. One embodiment of the invention is directed to an electrophysiology catheter including a superelastic wire and a cable , and a method of controlling the catheter using the cable . Another embodiment is directed to an electrophysiology catheter including an adhesive to bias the orientation of the catheter. A further embodiment is directed to an electrophysiology catheter including adhesive and one or more cables, and a method of controlling the catheter using the one or more cables. Another embodiment is directed to a method including acts of injecting a fluid into the heart of a patient and adjusting the diameter of an arcuate curve of the catheter. Further embodiments are directed to a catheter having multiple position sensors on an arcuate curve of the catheter, or a position sensor associated with a movable electrode of the catheter.				

93.	Piston-actuated endoscopic tool	WO2004028585	2004-04-08	SIGHTLINE TECHNOLOGIES* SITE LINE TECHNOLOGIES STRAJCKER STRYKER	
Endoscopic apparatus (400) is provided, having a distal end (102) for insertion into a body of a patient and a proximal end (104) that is held outside the body of the patient. The apparatus (400) includes a proximal cylinder (404), disposed in a vicinity of the proximal end (104) of the endoscopic apparatus (400). A proximal piston (406) is slidably contained within the proximal cylinder (404). A distal cylinder (328) is disposed in a vicinity of the distal end (102) of the endoscopic apparatus (400), and a distal piston (310) is slidably contained within the distal cylinder (328). A tube (402) for containing a liquid is coupled between the proximal (404) and distal (328) cylinders. A tool (e.g., biopsy tool 412) is coupled to be actuated by displacement of the distal piston (310), so as to perform a mechanical action on tissue of the body or contents of the body, responsive to displacement of the distal piston (310).					
94.	Devices, systems, and methods for reshaping a heart valve annulus	WO03028802	2003-04-10	AM DISCOVERY AMPERE MEDICAL AMPLE MEDICAL MEDICAL AMPOULES MVRX*	
Implants or systems of implants and methods apply a selected force vector or a selected combination of force vectors within or across the left atrium, which allow mitral valve leaflets to better coapt. The implants or systems of implants and methods make possible rapid deployment, facile endovascular delivery, and full intra - atrial retrievability. The implants or systems of implants and methods also make use of strong fluoroscopic landmarks. The implants or systems of implants and methods make use of an adjustable implant and a fixed length implant. The implants or systems of implants and methods may also utilize a bridge stop to secure the implant, and the methods of implantation employ various tools.					
95.	Delivery devices for heart valve repair	CA2913610	2005-03-24	ANCORA HEART* GUIDED DELIVERY SYSTEMS	
Devices, systems and methods facilitate positioning of a cardiac valve annulus treatment device, thus enhancing treatment of the annulus. Methods generally involve advancing an anchor delivery device through vasculature of the patient to a location in the heart for treating the valve annulus, contacting the anchor delivery device with a length of the valve annulus, delivering a plurality of coupled anchors from the anchor delivery device to secure the anchors to the annulus, and drawing the anchors together to circumferentially tighten the valve annulus. Devices generally include an elongate catheter having at least one tensioning member and at least one tensioning actuator for deforming a distal portion of the catheter to help it conform to a valve annulus. The catheter device may be used to navigate a subannular space below a mitral valve to facilitate positioning of an anchor delivery device.					
96.	Systems and methods for intravertebral reduction	WO2004019815	2004-03-11	3D NANOCOLOR* BISMARCK IP* MAGNUS IP* MARATHON OIL* MARATHON VENTURES S Å** R L* MEDTECH DEVELOPMENT DEUTSCHLAND* MOTHEYE TECHNOLOGIES* MUNITECH IP S Å** R L* NYANZA PROPERTIES* ORTHOPHOENIX* OSOPEDIKKU WAUSAU SDGI HOLDINGS SYNCHRONICITY IP* TLI COMMUNICATIONS* TRAVERSE TECHNOLOGIES* VERMILION PARTICIPATIONS* WARSAW ORTHOPEDIC	
Intravertebral reduction systems are provided to restore a deformed or damaged vertebral body (100) to a desired configuration. The reduction systems can include a plurality of reduction elements (32) sequentially positionable in the intravertebral space (114) for reduction of the same. The reduction systems can also include reduction elements that include a linear insertion configuration and are deformable transversely to the linear insertion configuration in the intravertebral space.					
97.	Spinal mobility preservation apparatus	WO2005041793	2005-05-12	TRANSI*	
A spinal mobility preservation apparatus and methods are disclosed. The spinal mobility preservation apparatus (10) may include a proximal body (12), an intermediate body (14), a distal body (16), and an expandable membrane (18). The proximal body (12) and the distal body (16) secure the mobility preservation apparatus (10) to adjacent vertebral bodies (800, 900). At least one of an intermediate body (14) and an expandable membrane (18) secure the proximal body (12) to the distal body (16) and provide a degree of support to a spinal motion segment defined by the adjacent vertebral bodies (800, 900). A single proximal body (12) and an expandable membrane (18) may also compose a spinal mobility preservation apparatus (10). The proximal body (12) secured to one of a superior or an inferior vertebral body and the expandable membrane (18) extending into the intervertebral disc space (860) to support the spinal motion segment.					
98.	Apparatus for providing tactile feedback while delivering a closure device	US20020072768	2002-06-13	INTEGRATED VASCULAR SYSTEM* INTEGRATED VASCULAR SYSTEMS	
An apparatus for sealing a passage through tissue includes a tubular member, a plug (412), and a locator member (416). The plug is disposed on a distal end of the tubular member and includes an external thread (418). The locator member is inserted into a lumen of the tubular member until a distal portion is disposed beyond the plug. The distal portion includes a helically wound wire and a tether coupled to the wire that is movable for causing the wire to buckle. To seal a passage communicating with a blood vessel, the distal portion of the locator member is inserted into the passage, and the plug is threaded into the passage until the distal portion extends into the vessel. The tether is pulled to buckle the wire, and the plug is unthreaded until the buckled wire contacts a wall of the vessel, whereupon the plug is released to seal the passage.					
99.	Method of performing total knee arthroplasty	US20070173946	2007-07-26	BONUTTI SKELETAL INNOVATIONS*	
An improved method of performing total knee arthroplasty. The method including making an incision having a length of less than eleven (11) centimeters proximate a knee joint of a leg of a patient. Performing all of the following through the incision: moving a femoral cutting guide through the incision; positioning the femoral cutting guide against a femur of the leg; cutting a medial condyle, a lateral condyle, and a trochlear groove of the femur of the leg to create at least one femoral cut surface; moving a unitary femoral component of a knee implant through the incision to replace articulating surfaces of the medial and lateral condyles and the trochlear groove; and positioning the unitary femoral component with respect to the at least one femoral cut surface.					

100. Methods and apparatus for treating spinal stenosis US20060106381

2006-05-18 BIOTRONIC NATIONAL*
IMPULSE MONITORING*
NUVASIVE*
NUVASIVE CLINICAL SERVICES*
NUVASIVE CLINICAL SERVICES
MONITORING*
NUVASIVE SPECIALIZED
ORTHOPEDICS*
RIVERBEND DESIGN

Surgical implants are configured for placement posteriorly to a spinal canal between vertebral bodies to distract the spine and enlarge the spinal canal. In preferred embodiments the device permits spinal flexion while limiting spinal extension, thereby providing an effective treatment for treating spinal stenosis without the need for laminectomy. Invention may be used in cervical, thoracic, or lumbar spine. Numerous embodiments are disclosed, including elongated, length-adjustable components coupled to adjacent vertebral bodies using pedicle screws. Preferred embodiments, however, teach a device configured for placement between adjacent vertebral bodies and adapted to fuse to the lamina, facet, spinous process or other posterior elements of a single vertebra. Various mechanisms, including shape, porosity, tethers, and bone-growth promoting substances may be used to enhance fusion. Tether may be a wire, cable, suture, or other single or multi-filament member. Preferably, device forms a pseudo-joint in conjunction with the non-fused vertebra. Alternatively, device could be fused to the caudal vertebra or both the cranial and caudal vertebra.

