

AVAILABLE PORTFOLIOS

MEDICAL DEVICES / SURGICAL & MEDICAL EQUIPMENT

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MATERIALS WITH SUPERIOR CHEMICAL & PHYSICAL PROPERTIES

Nguyen Thi Hanh; Romain Louis Billiet

This patent portfolio discloses techniques for fabricating high density materials with high wear and tear resistance and low coefficients of friction.

Superior chemical and physical characteristics, such as high tensile strength, low coefficients of friction, malleability, and ductility, are some of the most desired features of the metals, alloys, and composites used for mechanical and industrial applications. The frictional properties of a material define its wear and tear rates, which affect the durability and utility of the material for different commercial and industrial applications. Conventionally, organic or fluid lubricants, such as vegetable and mineral oils, greases, and animal fats, are applied to reduce the friction between two surfaces and to minimize the wear and tear of the materials. However, these fluidic lubricants fail to address the issues of heat generation and material abrasion under varied temperature, pressure, and environmental conditions. Therefore, other inorganic or solid lubricants, such as graphite, which have softer surfaces than those of the moving material surfaces, are used to minimize the materials' wear and tear. However, such solid lubricants suffer from thermal decomposition and oxidative degradation at high temperature ranges (e.g., above 500-600 degree Celsius). Furthermore, some of the solid lubricants are electrically conductive and chemically reactive with various metals or ferrous alloys, thereby corroding the metals/alloys. Therefore, other solid lubricants that can be used at both low and high-temperatures are used as alternatives. Conventionally, these solid lubricants are fabricated using sintering techniques, however these techniques cannot be used or applied to certain types of alloys, metals, inorganic compounds, nitrides, carbides, and their mixtures limiting their use. Furthermore, the conventional sintering process requires excessive heating and precise control of the material densification in pressure-less conditions, thereby increasing the overall complexity and manufacturing cost.

Value Proposition: The techniques disclosed in this patent portfolio enable pressure-less sintering of h-BN particles to achieve high density h-BN and metal composites at low temperature conditions. The disclosed technique enables h-BN to be used as a solid lubricant with wide applicability in mechanical engines, machine gears, automobile parts, and hydraulic and electro-mechanical systems under varying temperatures and environmental conditions. This patent portfolio also discloses techniques for fabricating a homogeneous inorganic material with biomedical or biocidal (i.e., eliminating pathogenic microorganisms) properties. Various metals, such as copper, gold, silver, and selenium have important therapeutic features that can be used in medical devices and other applications. The disclosed technology enables the fabrication of medical equipment and medical drug compositions/compounds comprising biocidal metals and inorganic/chemical compounds via the sintering process of micro-particulate biocidal metals. High-density materials are widely used across various industries, such as steel manufacturing, construction, avionics, marine, defense, bio-medical, food packaging/distribution, water purification, waste treatment, and other commercial/industrial applications.

Priority Date: 08-21-2007

Representative Claim: US 7,741,254 – Claim #1

A method for producing a dense matrix composite material with intrinsic low coefficient of friction

TECHNOLOGY

HIGH-DENSITY MATERIALS

NOVELTY

PATENT PORTFOLIO DISCLOSES HIGH-DENSITY MATERIALS WITH ENHANCED CHEMICAL AND PHYSICAL CHARACTERISTICS

IMPORTANCE

IP HIGHLY RELEVANT ACROSS MULTIPLE BILLION DOLLAR INDUSTRIES INCLUDING STEEL MANUFACTURING, CONSTRUCTION, AVIONICS, DEFENSE, FOOD PACKAGING/DISTRIBUTION, AND OTHER COMMERCIAL/INDUSTRIAL APPLICATIONS

NUMBER OF ASSETS

4

US PATENTS (1)

7,741,254

US APPLICATIONS (2)

12/621,534
12/705,605

OTHER ASSETS (1)

PCT/IB2011/050595

and high wear resistance, comprising: (a.) providing at least one sinterable matrix material in particulate form with the particle diameter not exceeding 20 μm , (b.) providing a volume of hexagonal boron nitride in particulate form equal to 5-20% of the volume of said sinterable matrix material, (c.) deaggregating said hexagonal boron nitride and coating at least 25% of the surface of said deaggregated hexagonal boron nitride with at least one suitable surfactant to impede its reaggregation, (d.) dispersing said surfactant-coated, deaggregated hexagonal boron nitride and said sinterable matrix material in an organic thermoplastic binder to form a homogeneous moldable compound, (e.) shaping green bodies from said moldable compound and extracting substantially all of said organic thermoplastic binder from said green bodies, (f.) sintering said binder-free green bodies into dense bodies at temperatures at which any liquid phase generated during sintering does not impair the integrity of the sintered bodies.

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The information that has been provided is believed to be complete to the extent provided and described, but ICAP Patent Brokerage makes no warranty that it is complete for all purposes or any specific purpose, industry, or business. Each party considering the portfolio is cautioned to make its own analysis regarding the utility and coverage of the portfolio, and to seek independent assistance in doing so.

SMARTDOSE® - UNIQUE DRUG INFUSION PUMP FOR HOSPITAL, HOMECARE, & AMBULATORY USE

Pro Med

This portfolio discloses enhanced infusion pumps and techniques for driving them.

The controlled delivery of liquid medication is widely used for patient treatment in hospitals, nursing care facilities, physicians' offices, and home environments. Such drug delivery techniques are quite popular as they are often more effective than single bolus treatments, eliminate the need for repeated injections, and do not normally cause drug sensitivities in patients. However, conventional drug administration devices are not suitable for extended storage and generally require complicated valve systems to retain the liquid under pressure, significantly increasing the product's cost and complexity. Advanced devices may be used to circumvent these problems, however these devices are generally bulky and require considerable time to connect to an external gas source, creating an undesirable delay that can endanger a patient in need of immediate treatment. Furthermore, such devices often face other problems including multiple drug solution transfer, handling error, drug contact, and contamination.

Value Proposition:

The infusion pumps and enhanced techniques disclosed in this offering include:

- An infusion pump equipped with a chemically powered energy source used to precisely dispense liquid over a specific amount of time at a preset or adjustable rate. This technology solution is more effective than bolus treatments while additionally generating gas without undesirable delays due to connecting external sources.
- A composition of reactive components designed to control the gas generation rate. The reactants may include a liquid (such as an acid) and a solid mass (such as an alkali metal carbonate) that can react together to produce a gas (such as carbon dioxide). Further, the solid reactant can be blended with other chemicals in order to control the rate of gas generation, ensuring a controlled delivery of medication to the patient.
- Techniques for simultaneous or sequential delivery of multiple drugs to the patient. Such infusion pumps have multiple drug compartments in the form of membranes that can be actuated via gas pressure delivering the drugs contained inside from a single source. With multiple drug solution transfer, this portfolio offers the solution of preventing loss of some medication while making adjustments to the vial adapter.
- Infusion pumps that can be reused by replacing expended drug or gas reactants. In such infusion pumps, the drug is contained in a pressurized bag that can be removed or replaced by opening a housing of the infusion pump after the drug administration is complete. This creates a more cost-effective product as the components are mostly reusable and have minimal operating costs.

Evidence of Use: Yes (Disclosed under NDA)

Priority Date: 08-06-1993

Forward Citing Companies: Boston Scientific, Baxter International, Becton Dickinson, Hospira

TECHNOLOGY
MEDICAL DEVICES

NOVELTY
SIMPLIFIED, COST-EFFICIENT, AND EASILY ADAPTABLE DRUG DELIVERY SYSTEM FOR LIQUID MEDICATION

IMPORTANCE
SIGNIFICANT IP FOR MULTIPLE BILLION DOLLAR GLOBAL MARKETS INCLUDING INFUSION SYSTEMS AND DRUG DELIVERY DEVICES

NUMBER OF ASSETS
64

US PATENTS (11)

5,397,303
5,398,850
5,398,851
5,553,741
5,558,255
5,571,261
5,578,005
5,588,556
7,753,884
D361379
D361617

US APPLICATIONS (2)

08/357,597
08/286,207

OTHER ASSETS (51)
Please inquire for a complete listing.

Representative Claim: US 5,397,303 – Claim #1

A liquid dispensing device comprising: a container for fluid having an interior, an exterior, and an opening which provides fluid communication between the interior and the exterior; a vial having an interior, a neck, a groove in the neck, and a piercable seal; a connector attached to the container surrounding the opening, the connector having a hollow channel disposed therein and in fluid communication with the opening in the container, the channel having a reclosable valve disposed therein, the valve being normally closed; and a vial adaptor having an open proximal end, a closed distal end, a wall disposed between the distal and proximal ends, the wall comprising a flange which releasably engages the groove on the neck of the vial, and a hollow conduit passing through the closed end and having a distal end extending beyond the closed end and sized to fit within the hollow channel of said connector, and a sharp proximal end adapted to pierce the seal on the vial; wherein the vial fits within the open proximal end of the vial adaptor and the flange engages the groove to hold the vial in the adaptor, and the connector and adaptor slidably attach such that the distal end of the hollow conduit in the vial adaptor slides within the hollow channel in the connector and contacts the valve causing it to open, and the proximal end of the conduit pierces the seal on the vial, thereby establishing fluid communication between the interior of the container and the interior of the vial.

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ADVANCED CONDUCTANCE MEASURING DEVICES

Intellectual Property, LLC

This patent portfolio discloses techniques for measuring conductance of a material or human tissue to determine a patient's respiratory and cardiac motion.

Conductance can be used for electronic monitoring of respiration for critically ill or comatose patients, small children at risk of sudden infant death, or patients with sleep apnea. Such systems consist of multiple inductive coils being positioned on the patient to move with respect to each other as the patient breathes. The mutual inductance between the coils changes with their relative movements and is measured to detect respiratory motion. However, in such techniques a sensing coil must be fit snugly to the patient creating an unpleasant confining sensation or pressure on the patient's trunk and stomach. In addition, such techniques are unsuitable for measuring those cardiac motions that do not result in significant distention of the patient's chest or abdomen.

Value Proposition: The disclosed portfolio solves these issues with a single non-contacting conductance sensor that provides improved accuracy in conductance measurement. The sensor includes a conductive coil driven by an auto-tuning oscillator that seeks a resonant frequency of the conductance coil coupled to a measured material to induce eddy currents. The system also includes an impedance measuring circuit that is connected to the conductive coil for providing a measure of the effective resistance of the coil at the resonant frequency. The sensor can be used to electronically monitor a patient's respiratory (or cardiac) motion by measuring changes in conductivity in the patient's tissue within a specified cross-sectional area. Thus, this system does not suffer from the limitations of traditional designs. The result is a system that is more portable and more comfortable for the patient while being more robust against deformation.

Priority Date: 06-29-1999

Forward Citing Companies: Philips, Emerson Electric, Monebo Technologies, Linear Technology Corporation

Representative Claim: US 6,359,449 – Claim #1

A method of quantitative measurement of the resistance of a remote substance using a single coil comprising the steps of: (a) exciting the coil with an electrical signal to produce an electromagnetic field enveloping the remote substance; (b) allowing the frequency of the electric signal to be at the resonant frequency of the coil as affected by the remote substance; (c) adjusting a control signal controlling the amplitude of the electrical signal so that the electric signal at the coil substantially equals a predetermined standard level; and (d) deriving a resistance value of the remote substance based on the adjusted control signal independent of any deformation of the coil, wherein the resistance value of the remote substance is only substantially indicative of a real portion of an impedance of the remote substance and is not substantially indicative of any reactance or inductance of the remote substance or the coil.

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TECHNOLOGY
MEDICAL DEVICES

NOVELTY
PORTABLE AND ROBUST
CONDUCTANCE SENSOR
FOR ACCURATELY
MEASURING PERIODIC
RESPIRATORY AND
CARDIAC MOTION

IMPORTANCE
STRATEGIC IP ACROSS
MULTIPLE BILLION DOLLAR
MARKETS INCLUDING
HEALTHCARE SERVICE
PROVIDERS AND MEDICAL
DEVICE MANUFACTURERS

NUMBER OF ASSETS
7

US PATENTS (1)
6,359,449

APPLICATIONS (6)
EP 0952785
CH 0952785
DE 0952785
DK 0952785
FR 0952785
GB 0952785

**PS
504**

IMPEDANCE CARDIOGRAPHY TECHNIQUES

Intellectual Property, LLC

This patent portfolio discloses techniques for measuring impedance across the human body to determine cardiac output.

Impedance cardiography is a non-invasive method for calculating the cardiac output and stroke volume of a human body. These measurements are necessary for assessing the cardiac state of the human body for both diagnosis and treatment. Impedance cardiography employs electrodes positioned on various locations of the patient's body to apply a high frequency electric signal. A patient's cardiac state is evaluated using the impedance calculated by measuring the voltage difference between the patient's neck and chest. Unfortunately, this technique can indicate inaccurate results in both healthy patients as well as those with certain cardiovascular problems. Therefore, there is a need for an improved system that can accurately measure cardiac output.

Value Proposition: The technology disclosed in this patent portfolio includes both a method and a portable impedance cardiograph device for measuring impedance and subsequently deducing the stroke volume (i.e., heart output) of a patient. The system isolates, amplifies, and filters the electric signals obtained by sensors placed on the chest of a patient, and then translates them into digital values for processing. The end result is a superior measurement system that also enables the display and digital storage of patient information.

Priority Date: 07-07-1994

Forward Citing Companies: Boston Scientific, Philips, Intermedics, Rheo Technology

Representative Claim: US 5,505,209 – Claim #1

An impedance cardiograph used to evaluate cardiac output of a human patient having a height and a chest circumference and chest cross-sectional area A comprising: means for applying an electrical excitation signal to the chest of a patient; electrodes, adapted to be positioned on the patient with a separation distance of L thereby being responsive to the excitation signal, for producing a first electrical signal Z which varies with impedance changes in the patient; an input device for receiving values of the height and circumference and providing corresponding second and third electrical signals H and C indicating those values; electrical circuit means for receiving the first, second and third electrical signals and providing an indication of the patient's cardiac stroke volume SV as a function of Z, A, and L; where A is deduced by the following approximation: ##EQU35## where K is a predetermined constant.

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TECHNOLOGY
MEDICAL DEVICES

NOVELTY
IMPEDANCE
CARDIOGRAPH FOR
DETERMINING CARDIAC
OUTPUT AND MEASURING
STROKE VOLUME

IMPORTANCE
PORTFOLIO HAS
SIGNIFICANT POTENTIAL
ACROSS MULTIPLE BILLION
DOLLAR MARKETS
INCLUDING HEALTHCARE
SERVICE PROVIDERS
AND MEDICAL DEVICE
MANUFACTURERS

NUMBER OF ASSETS
6

US PATENTS (1)
5,505,209

APPLICATIONS (5)
EP 0771172
FR 0771172
DE 0771172
GB 0771172
IT 0771172

INTERVERTEBRAL DISC VIEWING & RESTORATION TECHNIQUES

SpineCell Pty Ltd

This patent portfolio discloses techniques for viewing and restoring intervertebral discs in a spinal column.

Intervertebral discs are structures composed of complex arrangements of various connective tissues and are crucial components of a functional spinal column. These discs degenerate over time due to aging or disease resulting in back pain to a patient. Prosthetic replacement devices may be used to replace the entire intervertebral disc structure or the nuclear pulposus of the discs. Replacement techniques require extensive and invasive procedures including surgical incisions on the abdomen, the retraction of large blood vessels, and the complete removal of the lateral annulus of the intervertebral disc followed by the implantation of the prosthesis. To ensure a successful procedure, this technique requires that the surgeon be in a position to view both the cavity and the operating instrument, however this can be difficult given conventional product limitations.

Value Proposition: This portfolio discloses a device for viewing a body cavity such as the nucleus of an intervertebral disc structure and includes a camera for viewing the interior of the cavity and another camera for viewing the location of the previous camera. This offers a solution to restricted viewing of the cavity and operating instrument when using replacement techniques with conventional product limitations. Further, the device may include a device used to ablate a nucleus. Therefore, the surgeon can view the cavity and perform ablation with a minimally invasive procedure. This portfolio also discloses techniques for restoring intervertebral disc structures by using stretchable and elastically deformable disc implants. These implants include stretchable and elastically deformable envelopes with attachments for introducing the implants into cavities of the intervertebral discs. Further, these attachments are used to fill material that causes the envelopes to expand elastically and conform to the cavity. Therefore, the implant can be inserted in a minimally invasive manner and removes the need for major surgery.

Priority Date: 10-01-2002

Representative Claim: KR100755540 – Claim #1

A system for imaging the interior of a bodily cavity of a patient comprising: a first imaging means positionable within and for producing a first image of said interior; and at least a second imaging means positionable within and for producing a second image of said interior; wherein said second imaging means is movable relative to the first imaging means and positionable in a location wherein said first image depicts the location of the second imaging means.

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TECHNOLOGY
MEDICAL DEVICES

NOVELTY
MINIMALLY INVASIVE
TECHNIQUES FOR
VIEWING AND RESTORING
INTERVERTEBRAL DISCS

IMPORTANCE
MINIMALLY INVASIVE
TECHNIQUES FOR
VIEWING AND RESTORING
INTERVERTEBRAL DISCS

*Please inquire for a
complete asset listing.*

VERTEBRAL IMPLANTS ADAPTED FOR POSTERIOR INSERTION

Simonson

This patent portfolio discloses techniques and devices for replacing damaged and painful lumbar vertebral discs. The current standard of care is to remove and fuse the affected motion segment by way of a bone graft. However, the resulting fused vertebrae limit overall movement of the spine and may also accelerate the degeneration of adjacent discs. Current lumbar arthroplasty is accomplished via an anterior approach which has proven risky and has not been broadly adopted by either payers or surgeons. This portfolio eliminates or reduces these problems by teaching a new posterior approach and implant.

Value Proposition: This portfolio addresses the limitations of the anterior lumbar disc arthroplasty by disclosing a technique and device(s) for a lumbar vertebral implant adapted for posterior insertion and replacing the diseased disc. The posterior approach offers significant health and financial advantages over the existing anterior approach by allowing for; the use of only one surgeon, complete neural decompression, decreased risk of major vascular injury/death, low-risk revision capability, addresses facet pathology, retention of the anterior longitudinal ligament, and a familiar surgical approach which will encourage broad adoption. The portfolio accommodates multiple implant designs and surgical approaches that promise to be easier, safer and more cost effective than current offerings.

Priority Date: 12-07-2001

Forward Citing Companies: Benvenue Medical Inc, Medtronic Inc.

Representative Claim: US 7,485,134 – Claim #1

A surgical method for replacing damaged fibrocartilage between facing superior and inferior vertebrae in a patient's spine, each vertebrae having a spinous process, comprising the steps of: making a posterior incision into a patient's back in the vicinity of said damaged fibrocartilage; through said posterior incision, removing damaged fibrocartilage between said superior and inferior vertebrae; inserting posteriorly at least two permanently articulating vertebral implant devices between said superior and inferior vertebrae which, when implanted, permanently allows continued movement of said superior and inferior vertebrae with respect to one another wherein there is at least one of said permanently articulating vertebral implant devices on each side of a vertical medial plane defined by the spinous processes of said superior and inferior vertebrae.

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TECHNOLOGY

SPINAL SURGERY;
VERTEBRAL DEVICES

NOVELTY

EASY, SAFE, AND COST
EFFECTIVE DEVICES
AND METHODS OF
DISC REPLACEMENT
IN THE FIELD OF
POSTEROLATERAL
LUMBAR DISC
ARTHROPLASTY (PLDA)

IMPORTANCE

KEY DEVELOPMENT FOR
THE GROWING MARKET
OF SPINAL LUMBAR
ARTHROPLASTY

NUMBER OF ASSETS

5

US PATENTS (3)

6,572,653
7,052,515
7,485,134

APPLICATIONS (2)

US 12/364,466
PCT/US04/16523

PS
543

IMPROVED BLOOD MANAGEMENT TECHNIQUES

Medtronic, Inc.

This patent portfolio discloses techniques for the management of hemostasis which is an important requirement for a successful surgery.

Blood clotting during a surgery can be reduced significantly by using anticoagulants such as heparin. Further, the administration of heparin has to be done carefully as an inappropriate concentration can be life threatening. Conventionally, a HMS (Hemostasis Management System) assay system is used to determine heparin concentrations. However, the cartridge used by this system tests a limited range of blood concentrations. Therefore, numerous cartridges must be stocked if the entire range of possible heparin concentrations is to be measurable. The cartridges however have limited shelf lives and must be discarded if not used in a timely manner. A rapid and accurate measurement sensor is therefore helpful for efficiently analyzing the heparin concentration in fluids such as blood.

Value Proposition: This portfolio discloses devices and techniques for:

- Rapid determination of heparin level in blood or other fluids such as plasma. One technique includes providing a buffer having disposable cartridges and a kit for quality testing of multi-channel blood test cartridges. Protamine Ion Sensitive Electrodes (ISEs) and other reference electrodes for determining heparin concentration based on the initial slope of the electrode potential rate of change are also disclosed.
- Analysis and measurement of the coagulation process by a permeable membrane. The membrane has pores and a substrate that reacts with a coagulation cascade component in the blood to produce a detectable signal (e.g., fluorescence). This signal is used to determine the heparin concentration in blood and may be used in a biochemical assays and medical diagnostics.

Sample Filing Date: 5-17-2004

Forward Citing Companies: Fresenius Medical Care Holdings, Inc

Claim Example: US Patent 7,699,966 Claim #1

A heparin concentration determination system comprising: a first sample chamber having a first pair of electrodes including a first protamine Ion Selective Electrode and a first means for mixing; a second sample chamber having a second pair of electrodes including a second protamine Ion Selective Electrode and a second means for mixing; a first sample delivery channel for delivering a first sample into the first sample chamber; a second sample delivery channel for delivering a second sample into the second sample chamber; and a heparin remover in communication with the first delivery channel for binding, degrading, and/or inactivating heparin entering the first sample chamber.

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TECHNOLOGY
BLOOD MANAGEMENT

NOVELTY
RAPID DETERMINATION OF HEPARIN AND ANALYSIS OF BLOOD COAGULATION PROCESS BY USING ELECTRODES OR MEMBRANES

IMPORTANCE
STRATEGIC PORTFOLIO THAT SHOULD BE OF INTEREST TO MEDICAL DEVICE MANUFACTURERS AND, IN PARTICULAR, TO THOSE ACTIVE IN THE AREA OF BLOOD MANAGEMENT

NUMBER OF ASSETS
3

US PATENTS (1)
7,699,966

US APPLICATIONS (2)
11/520,338
12/748,918

BIO-PROSTHETIC DEVICES & METHODS

Medtronic, Inc.

This patent portfolio discloses technology for manufacturing bio-prosthetic devices.

Prosthetic implants such as heart valves, vascular grafts, orthopaedic implants, and tendon prosthetics can be used to replace a missing body part. Cross-linking of collagen-based materials is used to suppress the antigenicity of the material in order to prevent a rejection reaction. In addition, cross-linking is used to improve mechanical properties and enhance resistance to both mechanical and proteolytic degradation. Conventional techniques generally provide a high degree of cross-linking and a high resistance towards enzymatic digestion. However, materials currently being used tend to lack the appropriate flexibility. Improved techniques are therefore required for manufacturing collagen based material.

Value Proposition: This portfolio discloses various methods for manufacturing materials such as cross-linked collagen-based materials for bio-prosthetic devices. The collagen-based materials include collagen amine groups and collagen carboxyl groups. One technique involves removing zero-length ester cross-links in cross-linked materials. The technology affords control over the flexibility and stiffness of materials constructed using the patented techniques. The biocompatibility of such materials may also be enhanced using such methods.

Sample Filing Date: 08-18-1997

Forward Citing Companies: Edwards Lifesciences, Implant Sciences Corporation, Paracor Medical, Gore Enterprise Holdings, Forsight Labs, Grandhope Biotech

Example Claim: US 6,117,979– Claim #1

1. A method for making a bioprosthetic device made of collagen-based material having collagen amine groups and collagen carboxyl groups, the method comprising combining an epoxy functionalized crosslinking agent with the collagen-based material in an aqueous medium at an acidic pH to react a portion of the collagen carboxyl groups with the epoxy functionalized crosslinking agent to form crosslinked collagen-based material comprising residual collagen carboxyl groups.

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TECHNOLOGY

MEDICAL DEVICES SUCH AS PROSTHETIC DEVICES

NOVELTY

CROSS-LINKING COLLAGEN BASED MATERIAL FOR MANUFACTURING BIO-PROSTHETIC DEVICES

IMPORTANCE

STRATEGIC PORTFOLIO FOR COMPANIES IN THE MEDICAL DEVICES INDUSTRY, IN PARTICULAR TO THOSE IN THE FIELD OF PROSTHETIC IMPLANTS

NUMBER OF ASSETS

12

US PATENTS (3)

6,117,979
6,166,184
7,053,051

FOREIGN PATENTS (9)

DE 0897942
DE 0898973
DE 1684816
EP 0897942
EP 0898973
EP 1684816
FR 0897942
FR 1684816
IE 1684816

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BIOMATERIALS FOR STABLE MEDICAL IMPLANTABLE DEVICES

Medtronic, Inc.

This patent portfolio discloses medical devices constructed using biomaterials.

Biomaterials such as polyurethanes and polyureas are used in implantable devices such as artificial hearts, cardiovascular catheters, and pacemaker lead insulation because of their high tensile strength and high resistance. However, the polyether polyurethanes are susceptible to oxidation in the body. Upon oxidation, polyether polyurethane can lose strength and form cracks that can eventually breach the insulation. Therefore new polymers that are more resistant to oxidative attacks are useful.

Value Proposition: This portfolio discloses medical devices that use biomaterial compounds or biostable polymers such as polyurethanes. The compounds include diorgano groups having quaternary carbons or silicon-containing groups and optionally urethane or urea groups or combinations of both. These polymers are also free of ester, ether, and carbonate linkages. Further, the hard or the soft segments of the polymer include a diorgano moiety, which reduces susceptibility to both oxidation and hydrolysis.

Sample Filing Date: 11-14-2001

Forward Citing Companies: Kaneka Corporation

Claim Example: US 7,101,956– Claim #1

A medical device comprising a polymer comprising a urethane group, a urea group, or combinations thereof, wherein the polymer comprises a soft segment that is prepared from an isocyanate-containing compound and a compound of the formula: $Y-R^{sup.5}-(-R^{sup.6}-Z-R^{sup.7}-)$.sub.q-- $R^{sup.8}-Y$ wherein: each Y is independently OH or NH.sub.2; q=1-2000; Z is --C(R.sup.9).sub.2--; R.sup.5, R.sup.6, R.sup.7, and R.sup.8 are each independently a straight chain alkylene group having 1-20 carbon atoms; and each R.sup.9 is independently a straight chain alkyl group having 1-20 carbon atoms; and wherein the polymer is substantially free of ether, ester, and carbonate linkages.

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TECHNOLOGY
MEDICAL DEVICES

NOVELTY
BIOMATERIALS
CONTAINING CARBONS
AND SILICON-CONTAINING
GROUPS FOR MEDICAL
DEVICES

IMPORTANCE
STRATEGIC PORTFOLIO
FOR MEDICAL DEVICE
MANUFACTURERS, WITH
SPECIFIC APPLICATIONS
RELATED TO IMPLANTS

NUMBER OF ASSETS
9

US PATENTS (3)
6,984,700
7,101,956
7,365,134

FOREIGN PATENTS (3)
DE 1539850
EP 1539850
FR 1539850

APPLICATIONS (3)
US 11/484,219
EP 20020793922
EP 20030752414

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PS
547

SUCTION ABLATION DEVICES & TECHNIQUES

Medtronic, Inc.

This patent portfolio discloses medical ablation devices that can be used to create lesions in tissue.

The ablation of cardiac conduction pathways in tissue where electrical signals are malfunctioning is used to eliminate faulty signal paths. Ablation is also used therapeutically with organ tissue in the lungs, prostate, liver, and uterus for the treatment of disorders such as tumors, cancers, and other undesirable growths. Sometimes ablation is necessary only at discrete positions along the tissue, in other cases ablation is desired along a line, which is called linear ablation. Multiple techniques exist for ablation but they are difficult to achieve on certain tissue such as the tissue of a beating heart. Therefore, there is a need for an improved ablation device that is effective and simple in the creation of a lesion.

Value Proposition: This portfolio discloses a medical ablation device that uses vacuum or suction force in conjunction with an ablation element.

Sample Filing Date: 4-27-2000

Forward Citing Companies: Boston Scientific, Endoscopic Concepts Inc., Terumo, Coaptus Medical

Claim Example: US 6,887,238 - Claim #1

A system for suction assisted ablation for creating a tissue ablation site, the system comprising: a tissue contact surface; a plurality of suction ports positioned substantially linearly along the tissue contact surface and capable of drawing a portion of tissue at least partially within the suction ports upon application of suction; a suction conduit for providing suction from a suction source to the suction ports, the suction conduit operatively connected with the suction ports; a first elongated energy transfer element positioned along the tissue contact surface and extending adjacent a first side of each of the suction ports; a second elongated energy transfer element positioned along the tissue contact surface and extending adjacent a second side of each of the suction ports, said first and second energy transfer elements capable of forming a linear transmural lesion in the portion of tissue drawn within the suction ports by application of energy via the first and second energy transfer elements; a sensor sensing a parameter or characteristic relating to the tissue ablation site positioned along the tissue contact surface; and means for automatically stopping ablation in response to a signal from the sensor.

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TECHNOLOGY
MEDICAL DEVICES

NOVELTY
USE OF SUCTION FORCE
DURING THE CREATION OF
LESIONS IN TISSUE

IMPORTANCE
STRATEGIC PORTFOLIO
FOR MEDICAL AND
SURGICAL DEVICE
MANUFACTURERS

NUMBER OF ASSETS
10

US PATENTS (5)
6,514,250
6,558,382
6,960,205
6,887,238
7,818,039

FOREIGN PATENTS (4)
EP 1276423
FR 1276423
GB 1276423
DE 1276423

US APPLICATIONS (1)
12/881,633

MEDICAL DEVICES & TECHNIQUES FOR JOINING HOLLOW BODIES

Medtronic, Inc.

This patent portfolio discloses medical devices and techniques for treating a patient using an anastomosis or other technique of joining two bodies without a suture.

Conventionally, diseased or injured hollow bodies such as blood vessels are treated using various techniques such as enlarging the blood flow lumen of the artery, forming a bypass, suturing conduits, or using clamps to join the two hollow bodies. However, these techniques are time consuming, risky and they are sometimes impossible due to the remote location of some hollow bodies. Therefore, advanced techniques are required in this critical area of need.

Value Proposition: This portfolio addresses limitations by disclosing, for example:

- Techniques for securing two hollow bodies using either magnetic or mechanical components. Further, techniques are disclosed for manufacturing and using a vessel coupling or a conduit having expandable legs for the purpose of connections.
- Techniques for delivering a conduit into a wall of a patient's heart using a temporary support structure (e.g., a sheath or a guide member).
- Techniques for removing a portion of a wall of a coronary vessel near the heart without disturbing the heart's wall by using a shaft, a tissue-removing mechanism, and an actuator.

Sample Filing Date: 02-13-1998

Forward Citing Companies: Abbott, Boston Scientific, Olympus Medical Systems Corp, Percardia Inc, Saint Gobain Ceramics, Salter Labs

Claim Example: US 6, 651, 670 – Claim # 1

1. A method for placing a conduit in the wall of a patient's heart, the method comprising steps of: (a) providing a support member and a conduit; (b) passing the support member and the conduit through an exterior wall of a coronary vessel and through the wall of a patient's heart; (c) positioning the conduit within the wall of the heart; and (d) removing the support member from the wall of the heart.

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TECHNOLOGY

MEDICAL DEVICES

NOVELTY

MAGNETIC OR MECHANICAL ANASTOMOSIS BETWEEN TWO HOLLOW BODIES WITHOUT A SUTURE

IMPORTANCE

STRATEGIC PORTFOLIO FOR MEDICAL DEVICE MANUFACTURERS WITH PARTICULAR EMPHASIS FOR THOSE INVOLVED IN CARDIAC SURGERY

NUMBER OF ASSETS

28

US PATENTS (20)

6,352,543	7,137,962
6,517,558	7,214,234
6,635,214	7,232,449
6,651,670	7,241,300
6,652,540	7,285,235
6,719,768	7,431,727
6,802,847	7,578,828
6,808,498	7,909,837
6,932,827	7,938,841
7,025,773	7,993,356

US APPLICATIONS (8)

10/299,582	11/594,464
10/778,723	12/179,943
10/920,056	13/080,438
11/039,705	13/187,070

HIGH INTENSITY FOCUSED ULTRASOUND ENERGY FOR ABLATION

Medtronic, Inc.

This patent portfolio discloses techniques for the treatment of anatomical tissue using High Intensity Focused Ultrasound (HIFU) energy.

HIFU, when applied to tissue, produces significant physiological effects resulting from thermal and/or mechanical changes in the tissue. The use of HIFU to alter a target area of tissue within a larger body presents many advantages including the minimization of trauma and pain for a patient, as well as the potential elimination of surgical incisions or stitches. In order to enhance the efficacy of focused ultrasound ablation procedures, it is desirable to customize or tailor lesions to be formed in particular patients.

Value Proposition: This portfolio discloses devices and techniques for utilizing HIFU for ablation (e.g., wrinkle reduction in skin, ablation of heart tissue or other therapeutic applications). For the treatment of skin, HIFU is used to stimulate the superficial layers of the dermis to advantageously affect collagen without damaging other tissue such as the epidermis. The disclosed devices and techniques enable the use of varying intensity levels of HIFU on tissue for varying periods of time depending on the desired ablative effect. The disclosed HIFU devices can be used to form a customized lesion, or a lesion comprising disconnected lesion segments, which could provide a significant improvement in the treatment of multiple diseases.

Sample Filing Date: 01-19-2000

Forward Citing Companies: Guided Therapy Systems, Palomar Medical Tech, Lumenis, Coaptus Medical, Angiodynamics, Ultrashape, Syneron Medical, Lutronic

Claim Example: US 7,706,882 – Claim #1

1. A method of performing an ultrasound ablation procedure on a heart of a patient, comprising: providing a tissue-engaging device; engaging the heart with the tissue-engaging device; positioning the heart into a non-physiological orientation; adjusting the beating of the heart; positioning a portion of an ultrasound ablation device through a mouth of the patient; and performing an ultrasound ablation procedure on the heart.

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TECHNOLOGY
MEDICAL DEVICES

NOVELTY
HIFU USED FOR ABLATION
IN THERAPEUTIC
APPLICATIONS

IMPORTANCE
STRATEGIC PORTFOLIO
FOR COMPANIES
INVOLVED IN ULTRASOUND
AND SURGICAL DEVICES

NUMBER OF ASSETS
11

US PATENTS (9)
6,361,531
6,409,720
6,413,254
6,451,013
6,595,934
6,936,046
7,615,015
7,650,190
7,706,882

APPLICATIONS (2)
US 12/772,437
EP 20080713917

FAILURE CONTROL WITH SELECTIVE PROTECTION OF ELECTRONIC COMPONENTS

Medtronic, Inc.

This patent portfolio discloses techniques for protecting the electronic components of a device.

Electronic medical devices use a number of electronic or electrical components. Any contamination in a device can lead to undesired results such as an over delivery of medicine, which can cause serious injury and even risk the life of the patient. To counter this problem, some devices are chemically coated to minimize the potential for a defect. However, these coatings can be depleted after prolonged device usage and therefore more advanced protection techniques are required to avoid system failure.

Value Proposition: This portfolio addresses market limitation by disclosing techniques for selectively protecting various components of a system so that undesired or unacceptable system failure is avoided. Using this technique, the critical components of a system such as the power driver circuit are protected with a potting material, while non-critical components such as the controller may not be protected. In an event of failure (e.g., contamination), the non-critical components stop the operation of critical components without considerable damage to the system or user.

Sample Filing Date: 04-19-2001

Forward Citing Companies: Abbott Diabetes Care INC, Valeritas INC, Deka Products Limited Partnership

Claim Example: US 6,801,420 – Claim # 1

A selectively protected electrical system for providing power from a power source to energize a load, comprising: a power driver circuit for controllably transferring power from the power source to the load, the power driver circuit being encapsulated; and a controller for enabling and disabling the power driver circuit, the controller being un-encapsulated, such that contaminants in the protected electrical system are more likely to induce an electrical fault and disable the un-encapsulated controller and are substantially inhibited from inducing an electrical fault in the encapsulated power driver circuit.

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TECHNOLOGY
MEDICAL DEVICES;
ELECTRONICS

NOVELTY
PROTECTING OR
ENCAPSULATING CRITICAL
COMPONENTS OF A
SYSTEM IN ORDER TO
PREVENT UNDESIRE
SYSTEM FAILURES

IMPORTANCE
SIGNIFICANT
OPPORTUNITY FOR
ENTITIES ACTIVE IN
ELECTRICAL AND MEDICAL
DEVICE MANUFACTURING

NUMBER OF ASSETS
7

US PATENTS (4)
6,801,420
7,187,528
7,460,350
7,760,481

APPLICATIONS (3)
CA 20022469550
EP 20020804697
JP 20030551813

ADVANCED PERIPHERAL NERVE TECHNOLOGIES

Nervonix, Inc.

The focus of the Nervonix, Inc. portfolio is the location, evaluation, treatment targeting, diagnosis, monitoring, and documentation of peripheral nerves (those outside the brain and spinal cord). These technologies may be implemented alone or in combination for human and veterinary use, in small devices or capital equipment, for the operating room, emergency room, battlefield, and a variety of office settings involving peripheral nerves.

Value Proposition: This intellectual property portfolio includes a new imaging technology specific for nerve tissue and information about nerve condition, which can be implemented in a range of formats from hand-held devices to capital equipment – all with a consumable stream. In addition, this portfolio also includes technologies related to peripheral nerve stimulation needles which improve peripheral nerve block efficiency by reducing the number of hands needed to perform a procedure, even when combined with other technologies such as ultrasound. Lastly, the portfolio includes optimal parameters for nerve stimulation that improve nerve stimulation accuracy and efficiency by providing optimal stimulation parameters (voltage control, waveform) that are based on the biological properties of the nerve cell membrane. These features would be suitable for nerve stimulation devices used for peripheral nerve blocks and would improve nerve stimulation in a variety of medical devices such as evoking potential monitoring during spine surgery.

Priority Date: 02-02-1994

Forward Citing Companies: Nuvasive, Baxano, Neurometrix, Abbott Laboratories

Representative Claim: US 7,865,236– Claim #1

A method of discriminating a location of nerve tissue within a subject, comprising: placing a waveform electrode array on skin of the subject, wherein each electrode in the waveform electrode array has an area of no more than approximately 10 mm²; placing a return electrode on skin of the subject at a position on the skin removed from the waveform electrode array at a linear inter-electrode separation distance that falls within a tail region of an impedance v. distance curve for the subject; applying a signal serially to each of the electrodes in the waveform electrode array and the return electrode; measuring a change in a characteristic of the signal resulting from transmission through tissue between each electrode in the waveform array and the return electrode; and discriminating a location of nerve tissue located beneath the waveform electrode array by processing the measured change in the characteristics of the signal to identify anisotropic features in underlying tissue.

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TECHNOLOGY
MEDICAL DEVICES

NOVELTY
PERIPHERAL NERVE
LOCATION AND
NERVE EVALUATION
FOR DIAGNOSIS AND
TREATMENT IN PAIN
MANAGEMENT

IMPORTANCE
SIGNIFICANT IP WITH
APPLICATIONS IN
MEDICAL DEVICES,
CAPITAL IMAGING, PAIN
MANAGEMENT, AND
SURGICAL TOOLS

NUMBER OF ASSETS
24

US PATENTS (7)
5,560,372
6,564,079
6,609,018
6,706,016
7,047,085
7,212,865
7,865,236

APPLICATIONS (17)
US 11/252,556
US 11/381,741
US 11/385,680
US 12/962,382
US 60/253,064
US 60/619,921
US 61/447,505
AT 20010959192
AU 20010280776
AU 20020243217
DE 20016014031
EP 20050076748
JP 20020515141
JP 20020555859
PCT/US05/18152
PCT/US05/37389
PCT/US05/37916

SOLID DOSE DRUG INJECTION AND VACCINATION

Glide Pharmaceutical Technologies Limited

This patent portfolio discloses technology for the self-injection of pharmaceuticals and vaccines in a solid dosage form.

Although there are many established routes for getting drugs into the body, such as tablets and inhalers, many drugs and vaccines have to be injected because they cannot survive the hostile environment in the gastrointestinal tract (acidity in the stomach and high enzymatic activity in the intestinal tract). Traditionally, injections have used a needle and syringe with the drug in solution. Over the last couple of decades, more sophisticated auto-injector and pen-injector systems have been regularly used as they enable patients to self-inject more easily and reliably. These systems require the drug as a liquid and also require a needle. Liquid jet injectors remove the need for a needle, but these technologies are complicated and expensive and still inject a liquid formulation.

Value Proposition: The Glide SDI® (solid dose injector) incorporates a novel dosage form. Few novel dosages have come to market in the last twenty years. Patches, inhalers and fast melt tablets have had excellent commercial success. The target is for the Glide SDI® to emulate the success of these dosage forms. There is a wide range of products that can be developed by Glide, in addition to a large number of proprietary drugs and vaccines owned by pharmaceutical companies that could benefit from delivery with the Glide technology.

The Glide SDI®, due to its ease of use and solid dosage form, has a wide range of technical and commercial benefits over existing technologies to patients, healthcare professionals and pharmaceutical companies:

- Low cost and simple design
- Simple to use, suited to self-injection
- Preferred by volunteers to a standard injection in clinical studies
- Improved stability for some drugs and vaccines
- Avoids the need for refrigeration with some drugs
- Enables controlled release of some drugs
- Improved efficacy in some vaccine studies

The Glide SDI® technology has been successfully demonstrated in three clinical trials, two of which used active drugs, fentanyl and octreotide. In the clinic the volunteers in the studies overwhelmingly preferred an injection with the Glide SDI® to an injection with a standard needle and syringe. The technology does not cause bleeding or bruising or any other adverse skin reaction. In formulation development, the technology has been shown to enable enhanced stability for drugs and vaccines and the controlled release of a drug from a formulation has also been demonstrated.

Priority Date: 09-11-2001

TECHNOLOGY

MEDICAL DEVICES

NOVELTY

EASY, SAFE, AND CONVENIENT INJECTION OF DRUGS AND VACCINES IN A SOLID DOSAGE FORM

IMPORTANCE

STRATEGIC IP WITH CONSIDERABLE APPLICATIONS IN PHARMACEUTICALS AND VACCINES

NUMBER OF ASSETS

121

US PATENTS (3)

7,615,234
7,727,223
7,862,543

US APPLICATIONS (5)

11/633,804
11/883,901
12/527,980
12/851,328
61/303,451

OTHER ASSETS (113)

Please inquire for a complete asset listing.

Representative Claim: US 7,727,223– Claim #1

A method of delivering at least one therapeutic compound to a human or animal in the form of a needleless injection comprising: providing an injection device comprising a casing having an aperture and a spring for storing energy, an ejector pin for pushing an injectate through the aperture wherein the injectate comprises at least one therapeutic compound; placing the aperture of the device close to or in contact with the skin of a human or animal; actuating the device by causing the spring to release its stored energy generating a force that causes the injector pin to engage the injectate and push it out of the aperture as a single unit; penetrating the skin of the human or animal with the injectate at a velocity of less than 100 m/s wherein the injectate has a maximum diameter of less than 3 mm and is left in the human or animal and wherein the ejector pin continues to push the injectate beyond the device and into the human or animal.

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DISPOSABLE COVER FOR A MEDICAL DEVICE

Innova-Med Solutions, LLC

This patent portfolio discloses a disposable cover for a stethoscope head. The stethoscope is a medical device used for listening to the internal sounds of an animal body such as breathing of the lungs or the beating of the heart. The stethoscope head has a diaphragm portion that is placed in contact with the skin of the patient. The skin surface contacted by the stethoscope head may be broken or open due to a variety of causes such as surgical incisions, weeping dermatitis, or infected lesions. Further, examinations are often conducted on multiple patients without disinfecting the stethoscope head which can result in the transmission of harmful substances or organisms from one patient to another.

Value Proposition: This portfolio addresses market limitations by disclosing a disposable cover for a stethoscope head to help prevent the spread of foreign matter from stethoscope usage. The cover comprises a seamless casing formed from a flexible, stretchable sheet material and has an open end for the introduction of the stethoscope head into the casing. Further, the cover includes a tapered section that is smaller in width than the open end. The cover also includes a receiving section that receives and envelopes the stethoscope head. The disclosed cover is configured as a closed end tube of uniform diameter that easily fits all commonly used stethoscope heads.

Priority Date: 12-04-1996

Forward Citing Companies: Covies LLP, Doctors Research Group, St Joseph Solutions LLC, Alpine Innovations LLC, Stethocap Inc, Steth-Glove Inc.

Representative Claim: US 5,747,751 – Claim #1

A disposable cover for a stethoscope head having a round diaphragm portion of a first diameter and, optionally, a round bell portion of a second diameter which is smaller than said first diameter, and a stem extending outwardly there from, said disposable cover comprising: (a) a seamless casing formed from a substantially thin, sound transmitting, flexible and stretchable sheet material which is substantially impervious to body fluids; (b) said seamless casing having an open end of a dimension when not stretched that is sufficient to permit introduction of the stethoscope head slidingly into the casing, a tapered neck section adjacent to the open end with a narrowest dimension thereof which when not stretched is smaller than the first diameter of said diaphragm portion of the stethoscope head and a receiving section located outwardly and adjacent to the tapered neck section and of a dimension when not stretched to slidingly receive and envelope the stethoscope head, the narrowest dimension of the tapered neck section when not stretched also being smaller than the open end (c) said open end further comprising a reinforcing edge.

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TECHNOLOGY
MEDICAL DEVICES

NOVELTY
DISPOSABLE COVER FOR A
STETHOSCOPE HEAD

IMPORTANCE
STRATEGIC PORTFOLIO
IMPORTANT TO MEDICAL
DEVICE AND ACCESSORIES
MANUFACTURERS

NUMBER OF ASSETS
1

US PATENTS (1)
5,747,751

ENDOVASCULAR TREATMENT USING ULTRASOUND ENERGY

Michael Wallace

This patent portfolio discloses techniques for treating vascular stenosis. Conventional treatment for arterial stenosis involves balloon angioplasty in which a balloon catheter is advanced through the artery to the stenotic site and expanded therein to widen the artery. Also, a stent is placed at the stenotic site for maintaining patency of the newly opened artery. However, angioplasty and stent implantation are effective only for a limited time due to restenosis. Further, vascular stenosis and restenosis can also be prevented by administering a therapeutic agent at the stenosis site. In this case, the therapeutic agent is delivered to the stenotic site through a catheter. However, conventional techniques for delivering antistenotic therapeutic agents to the blood vessel wall tissue are not effective. Moreover, absorption of the therapeutic agent into the blood vessel wall is difficult.

Value Proposition: This patent portfolio discloses techniques for the treatment of vascular stenosis and restenosis using endovascular ultrasound technology. These disclosed techniques deliver therapeutic agents directly to a targeted therapeutic site such as a stenotic site on an arterial wall and enhance the absorption of the agent into the artery's wall using ultrasound energy. A combined ultrasound/drug delivery catheter is disclosed having a distal end that is advanced to an area of stenosis or restenosis in an artery for delivering a stenosis inhibiting therapeutic agent. Further, the ultrasound catheter is activated to emit ultrasound energy while delivering the therapeutic agent. The disclosed technique reduces plaque, increases the patency of the afflicted blood vessel and has been proven clinically.

Priority Date: 10-06-2009

Representative Claim: US 12/930,415 – Claim #1

A method for treating stenosis or inhibiting restenosis in an artery comprising of: performing angioplasty procedure at the treatment area; applying endovascular ultrasound energy at the treatment area to enhance the vessel permeability, positioning a blood flow protection device around the treatment area, and delivering a therapeutic agent in mixture with a contrast agent.

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TECHNOLOGY

MEDICAL DEVICES

NOVELTY

ENHANCING THE ABSORPTION OF THE THERAPEUTIC AGENTS IN THE ARTERY WALL USING ULTRASOUND ENERGY

IMPORTANCE

STRATEGIC PORTFOLIO IMPORTANT TO COMPANIES MANUFACTURING MEDICAL DEVICES

NUMBER OF ASSETS

7

APPLICATIONS (7)

US 12/661,853
US 12/807,129
US 12/925,495
US 12/930,415
US 13/134,470
US 61/278,353
PCT/US11/01498

IMPROVED SURGICAL DEVICES WITH TISSUE PROTECTION

Impulse Dynamics N.V.

This patent portfolio discloses improved medical devices such as catheters, implantable cardioverter-defibrillators, etc. The catheters are used to inject, sample, drain, biopsy, and implant various instruments in a body. However, conventional catheters tend to be weak, easily torn and relatively difficult to insert or remove from the target tissue. Typically, Electrical Tissue Control (or ECT) techniques such as cardiac pacing, defibrillation, etc., use electrodes to deliver electrical pulses and antiarrhythmic agents. However, electrolytic and thermal mechanisms may cause local tissue damage due to direct electrode-tissue contact. This limits the range of waveforms and amplitudes that can be applied using metallic-phase electrodes or non-flowing ionic-phase electrodes.

Value Proposition: This portfolio discloses technologies that provide highly responsive, reliable, and improved shockless defibrillation of the heart:

- An electro-optically driven relay system is disclosed that transports electrically mediated drugs into the tissue. Further, the relay system includes a current generator and a switching unit for controlling the energization of tissues for improved transport of the drugs.
- A partially-braided sheath that can be inserted into a patient's vessel and is used to guide a catheter having thinner distal ends. The catheter is used to deliver electrode to destination tissues.
- Techniques are disclosed for reducing harm to tissues during ECT operation by using improved removable electrode. The electrode includes a metallic part that is not placed in direct physical contact with the tissue. Moreover, the monophasic action potentials from the tissues are measured and electric activity of the tissues is temporarily blocked during defibrillation.
- An improved electrical cardiac stimulator for reducing motion of the heart during minimally invasive or open-chest surgeries.

Priority Date: 12-19-1999

Forward Citing Companies: Intrapace Inc, Northshore University Healthsystem Research Institute, Coaptus Medical Corporation, Pacesetter Inc, Impulse Dynamics Nv, Microchips, Inc.

Representative Claim: US 6,529,778– Claim 1

A fluid-phase electrode lead apparatus for the delivery of electrical signals to an excitable tissue comprising: a catheter, having distal and proximal ends; at least one electrode provided at the distal end of said catheter, electrically connectable to an electric signal generator; means for providing electrolytic fluid to facilitate electric conduction of an electric signal from said at least one electrode to said excitable tissue; and an internal conduit fluidically connected to means for providing vacuum to facilitate anchoring of said distal end of the catheter to said excitable tissue.

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TECHNOLOGY

MEDICAL DEVICES

NOVELTY

IMPROVED MEDICAL DEVICES THAT CAN BE EASILY INSERTED AND REMOVED FROM TISSUE

IMPORTANCE

IMPORTANT PORTFOLIO FOR COMPANIES MANUFACTURING MEDICAL OR SURGICAL DEVICES

NUMBER OF ASSETS

23

US PATENTS (18)

6,152,882
6,254,610
6,292,704
6,304,777
6,335,538
6,348,045
6,415,178
6,442,424
6,529,778
6,602,183
6,662,055
6,749,600
7,092,753
7,171,263
7,190,997
7,195,637
7,218,963
8,014,858

FOREIGN ASSETS (5)

DE 69901089
EP 1013303
IT 1013303
JP 4065027
ZA 9706114

**PS
584**

MEDICAL DEVICE FOR REHABILITATION OF PATIENTS

Motorika Ltd.

This patent portfolio discloses medical devices used for rehabilitation. The rehabilitation or retraining of an injured person to use specific muscles requires tedious repetition of muscle movements that may cause pain. Listening to music is enjoyable and can be combined with exercise such as aerobics and physical therapy to help alleviate this pain. Muscle fibers exhibit electrical potential across cell membranes, which changes when a muscle contracts. This potential is used in electromyography (EMG) to diagnose medical conditions in patients such as stroke victims. A stroke patient's muscles cannot contract normally as electrical signals are not generated in them. Conventional techniques use Neuromuscular Electrical Stimulation (NMES) to produce contraction of muscles. However, conventional NMES techniques are not always effective in producing contraction in voluntary muscles. Therefore, there is a need for techniques to provide rehabilitation using music and improved NMES.

Value Proposition: This patent portfolio discloses:

- A medical device that combines rehabilitation with music. The device tracks a patient's motion and gives feedback to the patient or trainer by indicating changes in music such as speed or smoothness in motion. Further, the device uses music to give advance warning or a reminder of a change in motion such as a raising tempo indicating an upcoming change in the direction of motion.
- Techniques for providing rehabilitation using brain plasticity and NMES. NMES is provided at an amplitude that in combination with nerve impulses arising in the patient's motor cortex, allow the body part to move. Further, the technique discloses an actuating device that resists and guides the motion to a desired pathway. Furthermore, the portfolio discloses a technique that uses brain activity measurements to provide feedback to patients or trainers during an exercise or a session. The feedback is used to identify problems in the rehabilitation process. The feedback is further used for rehabilitation exercises that selectively focus on certain brain areas.

Priority Date: 02-05-2004

Representative Claim: EP 1729711 – Claim 1

Rehabilitation apparatus (100, 200), comprising: at least one motion support element (160, 240, 320) adapted to support a motion of a part of a human (290); at least one sensor (260, 270) adapted to sense a movement and generate a movement signal of said at least one motion support element (160, 240, 320); and a generator of audio (190); a controller (170) in communication with said generator (190) and said at least one sensor (260, 270), said controller adapted to: control said generator of audio (190) to generate rhythmic audio timed to a stored desired movement of said human (290); receive said sensed movement signal from said at least one sensor (260, 270); characterized in that the controller is adapted to modify said generator provided rhythmic audio in accordance with said sensed movement signal.

Contact:

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TECHNOLOGY

MEDICAL DEVICES

NOVELTY

USING MUSIC THERAPY AND BRAIN PLASTICITY TO PROVIDE REHABILITATION

IMPORTANCE

IMPORTANT PORTFOLIO FOR COMPANIES MANUFACTURING MEDICAL DEVICES

NUMBER OF ASSETS

13

PATENTS (13)

EP 1727591
EP 1729711
EP 1838270
FR 1727591
FR 1729711
FR 1838270
GR 602005014097
GR 602005014215
GR 602005015621
JP 4695605
UK 1727591
UK 1729711
UK 1838270

MEDICAL DEVICES FOR CONTROLLING MUSCLES

Metacure Limited

This patent portfolio discloses techniques for controlling mechanical and electrical activity of smooth muscle. Contraction of muscles such as cardiac muscle or smooth muscle, is initiated by changes in trans-membrane potentials. The activity of such muscles is synchronized by propagating an excitatory field or electrical activation signals that cause muscles to depolarize and contract. However, sometimes these electrical signals are not properly activated, resulting in diseases such as ulcers in the gastrointestinal tract, or pregnancies ending in premature labor. Conventional techniques use drugs or externally applied electrical currents to stimulate organs like the uterus. However, these techniques are not very effective in reducing pain and bleeding.

Value Proposition: This patent portfolio discloses:

- Techniques for controlling smooth muscles by applying electrical fields to them. Non-excitatory electric fields are used to control the force of contraction of the muscle. The non-excitatory electric field does not induce the propagating action potential in the muscle rather it modifies the reaction of the muscle to the excitatory field. Further, the technique discloses desensitizing smooth muscle to an activation signal so that the desensitized muscle does not respond and propagate the activation signal.
- A medical device is also disclosed for inhibiting premature labor, or inducing labor in overdue pregnancy by governing the amplitude, timing, and duration of the uterus contractions. Effective refined control is provided, for example, for the uterus, the gastrointestinal tract, the bladder, endocrine glands, gall bladder, and blood vessels.

Priority Date: 07-16-1997

Forward Citing Companies: University Of Florida Research Foundation Inc., Convergent Engineering Inc.

Representative Claims: US 7,765,008 – Claim 1

A method of controlling blood pressure, the method comprising: providing at least one electrode adapted to apply a local electric field to at least one blood vessel; and applying the local electric field to the at least one blood vessel responsive to a subjective evaluation of blood pressure by a subject in whom the electrodes have been provided.

US 6,694,192 – Claim 40

A device for controlling contractions of a uterus of a female comprising: at least one of a plurality of sensors for sensing uterine contractions; an electric signal generator for generating electric signals to be applied on the uterus; electric signal delivery means for delivering electric signal from the electric signal generator to at least one of a plurality of predetermined locations on the uterus; and a control unit for receiving signals corresponding to uterine contractions from said sensors and actuate said signal generator in a predetermined manner for generating non-excitatory electric field at said at least one of a plurality of predetermined locations on the uterus in predetermined timing and duration with respect to the sensed uterine contraction.

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TECHNOLOGY

MEDICAL DEVICES

NOVELTY

CONTROLLING SMOOTH MUSCLES BY USING BOTH NON-EXCITATORY AND EXCITATORY FIELDS

IMPORTANCE

IMPORTANT PORTFOLIO FOR COMPANIES MANUFACTURING MEDICAL OR SURGICAL DEVICES

NUMBER OF ASSETS

2

US PATENTS (2)

6,694,192

7,765,008

**PS
586**