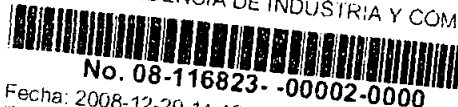


SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



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Ref.: Expediente No. 08.116.823
Solicitud de Patente a nombre de
CODMAN & SHURTLEFF, INC.

Yo, JIMENA ESCOBAR URIBE, identificada como aparece al pie de mi firma, domiciliada en la Carrera 11 No. 86-53, piso 6, obrando como apoderada de la sociedad **CODMAN & SHURTLEFF, INC.**, domiciliada en Raynham, Massachussets, Estados Unidos de América, solicitante de la patente de la referencia, atentamente me permito presentar copia certificada de la solicitud de Patente número 11/931.041 presentada en Estados Unidos de América el día 31 de octubre de 2007, con la debida traducción de lo pertinente.

Señor Superintendente,

JIMENA ESCOBAR URIBE

C.C. 39.779.452 de Usaqué

T.P. 68.228

Cod. 5376

/srr

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Número de Solicitud: 11/931,041

Fecha de Presentación: Octubre 31, 2007

El código del país y el número de su solicitud de prioridad para ser usado en presentación en el extranjero bajo la Convención de París, es US11/931,041

Por la autoridad del.

Subsecretario de Comercio para la Propiedad Intelectual y el Director de la Oficina de Patentes y Marcas de los Estados Unidos

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APPLICATION NUMBER: 11/931,041

FILING DATE: October 31, 2007

THE COUNTRY CODE AND NUMBER OF YOUR PRIORITY APPLICATION, TO BE USED FOR FILING ABROAD UNDER THE PARIS CONVENTION, IS US11/931,041

**By Authority of the
Under Secretary of Commerce for Intellectual Property
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Certifying Officer



Electronic Acknowledgement Receipt

EFS ID:	2403044
Application Number:	11931041
International Application Number:	
Confirmation Number:	1679
Title of Invention:	Wireless Pressure Setting Indicator
First Named Inventor/Applicant Name:	Salim Kassem
Customer Number:	21125
Filer:	Joshua Trevor Matt
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Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Application Data Sheet	ADS_fill.pdf	1010371	no	4
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Information:					
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	Specification		1	19	
	Claims		20	23	
	Abstract		24	24	
Warnings:					
Information:					
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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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WIRELESS PRESSURE SETTING INDICATOR

FIELD

[0001] The present application generally relates to devices and methods for non-invasively indicating the position or setting of a mechanical device, and more particularly for indicating a setting in an implantable medical device, such as the pressure setting in a wireless shunt.

BACKGROUND

[0001] It is often desirable to non-invasively determine the position or setting of a mechanical device, such as a switch, valve, pressure setting mechanism, or other sensor or control, and to be able to indicate the setting to a remote device.

[0002] By way of illustration, treatment of hydrocephalus can involve selecting a pressure setting on an implantable valve to control the flow of cerebrospinal fluid through a hydrocephalus shunt. Hydrocephalus is a neurological condition that is caused by the abnormal accumulation of cerebrospinal fluid (CSF) within the ventricles, or cavities, of the brain. CSF is a clear, colorless fluid that is primarily produced by the choroid plexus and surrounds the brain and spinal cord, aiding in their protection. Hydrocephalus can arise when the normal drainage of CSF in the brain is blocked in some way, which creates an imbalance between the amount of CSF produced by the choroid plexus and the rate at which CSF is absorbed into the bloodstream, thereby increasing pressure on the brain.

[0003] Hydrocephalus is most often treated by surgically implanting a shunt system in a patient. The shunt system diverts the flow of CSF from the ventricle to another area of the body where the CSF can be absorbed as part of the circulatory system. Shunt systems come in a variety of models and typically share similar functional components. These components include a ventricular catheter, which is introduced through a burr hole in the skull and implanted in the patient's ventricle, a drainage catheter that carries the CSF to its ultimate drainage site, and optionally a flow-control mechanism, e.g., shunt valve, that regulates the one-way flow of CSF from the ventricle to the drainage site to maintain normal pressure within the ventricles. The shunt valve can have several settings which determine the pressure at which it will allow CSF to flow the ventricular catheter to the drainage catheter. It is this pressure setting, which can

correspond to the position of components in the valve, that may need to be determined.

[0004] In some cases, determining the pressure setting of a shunt valve can be accomplished using X-rays, magnetic tools, and/or using acoustic feedback. However, it would be advantageous to provide a pressure setting indicator that offers more accurate information directly from the shunt valve, instantaneously and without the need for radiation or cumbersome instruments. Such considerations can apply to a wide range of applications involving settings for implanted or embedded controls, valves, switches, and so on, both in medical devices and elsewhere.

[0002] Accordingly, there remains a need for non-invasively indicating the position or setting of a mechanical device, particularly in implanted medical devices.

SUMMARY

[0003] In one embodiment, an implantable valve is provided. The implantable valve can include a valve housing that has a valve inlet and a valve outlet, and that is adapted to receive fluid flow therethrough. The valve housing can have a valve assembly for controlling the rate of fluid flowing through the valve housing. The valve assembly can have a plurality of predetermined pressure settings for controlling the fluid flow. The implantable valve can also include a device that interacts with a wireless signal (for example, an electromagnetic wireless interrogation signal). For example, the implantable valve can include a radio frequency tag that interacts with a wireless signal emitted by an external reader. The radio frequency tag can produce a response to the wireless signal. A masking element can be disposed in the valve housing, and the masking element and the radio frequency tag can be configured to move relative to one another (for example, the masking element can move relative to the radio frequency tag, or vice versa) to alter the response of the radio frequency tag and thereby indicate a pressure setting of the valve assembly. The masking element, for example, can include a conductive member, for example an electrically conductive material, that alters the response of the radio frequency tag by covering at least a portion of it. The conductive member can influence one or several characteristics of the radio frequency tag. For example, the response of the radio frequency tag can have one or more characteristics, such as a resonant frequency, harmonic spectra, decay characteristic, and Q factor. One or more of the characteristics can indicate the pressure setting. In some

embodiments, a sensor can be disposed within the valve housing and it can measure the pressure of fluid in the valve housing.

[0004] The valve assembly can also include an adjustment mechanism that is configured to move (for example, it can rotate) to select a pressure setting. The linear or angular movement can also cause the masking element to move, for example, relative to the radio frequency tag. The valve assembly can also include a movable adjustment mechanism that selects a pressure setting in response to a magnetic field created by an external control device.

[0005] The radio frequency tag can have a variety of configurations. For example, the radio frequency tag can include a disk that has an asymmetrical antenna formed on it, and the masking element can be configured to at least partially mask the antenna. In some embodiments, the radio frequency tag can include a chip for storing data and an antenna adapted to communicate the stored data to an external reading device.

[0006] The masking element can also have a variety of configurations. For example, the masking element can include a disk formed at least in part of a conductive material and configured to rotate around an axis thereof such that the conductive material selectively masks at least part of the radio frequency tag. In some embodiments, the conductive material can be in the form of a spiral or a plurality of discrete conductive sections, each of which can be formed on the disk. In other embodiments, the masking element can be a wedge formed at least in part of a conductive material. For example, the valve assembly can have a movable adjustment mechanism configured to select a pressure setting and to cause the masking element to move, which can result in lateral movement of the wedge.

[0007] In another embodiment, an implantable valve is provided which has a valve inlet and a valve outlet that are adapted to receive fluid flow therethrough, and which also has a valve assembly for controlling the rate of fluid flowing through the valve housing. The valve assembly can have a plurality of predetermined pressure settings for controlling the fluid flow. The implantable valve can also have a conductive member disposed within the valve assembly that is configured to selectively cover at least a portion of a radio frequency tag, for example depending on the pressure setting, and thereby alter the response of the radio frequency tag to indicate the selected pressure setting. The response can have at least one measurable characteristic, such as

resonance frequency, harmonic spectra, decay characteristic, and Q factor, which for example can indicate the selected pressure setting. The radio frequency tag can produce the response when interrogated by a wireless signal emitted from an external reading device. In some embodiments, the radio frequency tag can include a chip for storing data and an antenna adapted to communicate the stored data to such an external reading device.

[0008] The radio frequency tag can be configured to move relative to the conductive member, for example, such that at least a portion of the radio frequency tag is covered by the conductive material. In some embodiments, the radio frequency tag can include a disk having an asymmetrical antenna formed thereon.

[0009] The conductive member can also be configured to move relative to the radio frequency tag, for example, such that at least a portion of the radio frequency tag is covered by the conductive member. The conductive member can form part of a rotatable disk, and/or the conductive member can be in the form of a layer (on the disk, for example) in the shape of, for example, a spiral or a plurality of discrete conductive sections.

[0010] In yet another exemplary embodiment, an implantable valve can include a valve housing adapted to receive fluid flow therethrough between a valve inlet and a valve outlet, and a valve assembly disposed within the valve housing and having a plurality of selectable positions. The implantable valve can also include a radio frequency tag disposed in the valve housing and adapted to interact with a wireless signal to produce a response thereto, and can include a masking element disposed in the valve housing. The masking element and the radio frequency tag can be configured to move relative to one another to alter the response of the radio frequency tag and thereby indicate the selected position of the valve assembly.

[0011] In other aspects, methods for indicating the pressure setting of an implanted valve are provided. In one embodiment, an exemplary method includes transmitting a wireless signal from a reading device to the radio frequency tag disposed within a valve housing positioned between an inlet tube and an outlet tube, and the radio frequency tag can be adapted to indicate a pressure setting of a valve disposed within the valve housing. In some embodiments, for example, the inlet tube can be coupled to a catheter within a patient's ventricle, and the outlet tube can be coupled to a drainage catheter for draining the patient's cerebrospinal fluid. The valve housing

can also be coupled to a sensor assembly that is adapted to measure a pressure of fluid within the valve housing. The valve housing can have a radio frequency tag disposed therein, and the valve housing can be adapted to control a rate of fluid flowing therethrough according to a pressure setting selected from the plurality of pressure settings. The method can further include wirelessly receiving a response to the wireless signal from the radio frequency tag that indicates the current pressure setting. In some embodiments, the response from the radio frequency tag can communicate information previously stored therein.

[0012] The method can further include changing the pressure setting of the valve to a second pressure setting, and wirelessly receiving a second response from the radio frequency tag that indicates the second pressure setting. The selection of one of the plurality of pressure settings can be performed, for example, with an external control device adapted to emit a magnetic field. The method can also include analyzing the response from the radio frequency tag to detect any of resonant frequency, harmonic spectra, decay characteristics, and Q factor.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Various exemplary embodiments disclosed herein will be more fully understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0014] FIG. 1 is a perspective view of one exemplary embodiment of an implantable valve;

[0015] FIG. 2 is a side cutaway view of the valve shown in FIG. 1 showing a radio frequency tag and a masking element;

[0016] FIG. 3 is a top cutaway view of the valve shown in FIG. 2;

[0017] FIG. 4A is a top view of one exemplary embodiment of a radio frequency tag and a masking element;

[0018] FIG. 4B is a top view of the masking element and radio frequency tag shown in FIG. 4A having magnetic field elements disposed thereon;

[0019] FIG. 4C is a top view the radio frequency tag and masking element of FIG. 4A following rotation of the masking element;

[0020] FIG. 5A is a top view of another embodiment of a radio frequency tag and a masking element;

[0021] FIG. 5B is a top view the radio frequency tag and masking element shown in FIG. 5A following rotation of the masking element;

[0022] FIG. 5C is a top view the radio frequency tag and masking element shown in FIG. 5A following rotation of the masking element;

[0023] FIG. 6 is a top view of another embodiment of a radio frequency tag and a masking element;

[0024] FIG. 7A is a top view of yet another embodiment of a radio frequency tag and a masking element;

[0025] FIG. 7B is a top view the radio frequency tag and masking element shown in FIG. 7A following translation of the masking element and/or radio frequency tag;

[0026] FIG. 8 is a perspective view of an exemplary embodiments of a stepper motor coupled to a masking element that is configured to at least partially cover an RF tag;

[0027] FIG. 9A is a schematic diagram of one exemplary model of a circuit having resonance characteristics;

[0028] FIG 9B is a graph of an output voltage signal as a function of frequency for the circuit shown in FIG. 9A;

[0029] FIG 9C is a graph of an output voltage signal as a function of frequency for the circuit shown in FIG. 9A;

[0030] FIG. 10A is a perspective view of one exemplary reading device for reading a pressure setting from a valve having a radio frequency tag and masking element;

[0031] FIG. 10B illustrates the valve of FIG. 1 implanted in a body and being read by the reading device shown in FIG. 10A; and

[0032] FIG. 11 is a top view of another embodiment of an implantable valve suitable for use in a hydrocephalus shunt.

DETAILED DESCRIPTION

[0033] Certain exemplary embodiments will now be described to provide an overall understanding of the principles of the structure, function, manufacture, and use of the devices and methods disclosed herein. One or more examples of these embodiments are illustrated in the accompanying drawings. Those skilled in the art will understand that the devices and methods specifically described herein and illustrated in the accompanying drawings are non-limiting exemplary embodiments and that the scope is defined solely by the claims. The features illustrated or described in connection with one exemplary embodiment may be combined with the features of other embodiments. Such modifications and variations are intended to be included within the scope of the present application.

[0034] The present application generally provides methods and devices for non-invasively indicating the position or setting of a mechanical device, such as a mechanical control, and for indicating that information to another device, e.g., using telemetry. The methods and devices are particularly useful in the context of implantable devices, such as hydrocephalus shunts and associated valves. While the description herein sometimes refers to hydrocephalus shunts, such description is by way of illustration only. The devices and methods described herein can be used to indicate the settings and/or positions of a wide variety of controls, including valves, switches, and so on, both in and out of the context of hydrocephalus shunts. They can also be used to indicate the settings and/or positions of sensors that may adopt a particular position in response to a physical or environmental stimulus. The devices and methods provided herein can be used in a range of medical devices and in virtually any medical procedure now or later in use.

[0035] FIGS. 1-3 illustrate one exemplary embodiment of an implantable valve 100 having a housing 102 for receiving fluid flow between a valve inlet 104 and an valve outlet 106. The housing 102 can have virtually any configuration, shape, and size. In many embodiments, the size and shape of the housing 102 can be adapted for implantation in a body, e.g., subcutaneous implantation. In the embodiment shown in FIGS. 1-3, the housing 102 has a substantially linear configuration. In other embodiments, the housing can include and/or define a reservoir having a

larger area than the ports 106, 110, which can be advantageous for checking the shunt's patency, tapping the CSF, to administer therapy, or to house pressure or flow sensors.

[0036] The implantable valve 100 can include a valve assembly 110 for controlling the flow of fluid according to one of a plurality of selectable pressure settings. As shown, the valve assembly 110 includes a ball 112 engaging a valve seat 114, which sits in a valve opening 115 in the fluid path between the valve inlet 104 and the valve outlet 106, and which controls fluid flow therethrough. The ball 112 can be under the force of a spring 118 or other biasing element. The spring 118 can be in the form of an arm extending from an adjustment mechanism, which as shown in FIGS. 2 and 3 is a stepper motor 120, to the upper surface of the ball 112 such that it exerts a downward force thereon. The stepper motor 120 includes a stepped surface, each step representing a pressure setting. As can be seen in FIGS. 2-3, the rotational position of the stepper motor 120 can determine the force of the spring 118 on the ball 112 and thereby control the pressure at which fluid will flow through the valve opening 115. In use, the rotational position of the stepper motor 120 can be controlled by an external programmer, for example via a changing electromagnetic field applied to magnetic field elements disposed about a central axis 122 of the stepper motor 120 to rotate the stepper motor in a controlled fashion. The magnetic field elements can be magnets shaped and positioned with respect to the axis or rotor of the stepper motor 120. More information on the operation of stepper motors and such valves can be obtained from U.S. Patent Nos. 5,928,182; 4,772,257; and 4,615,691, all of which are hereby incorporated by reference in their entireties.

[0037] The implantable valve 100 can also include a radio frequency (RF) tag 124 and a masking element 126 coupled to the stepper motor 120. (For clarity, the masking element 124 and RF tag 126 are represented together by an icon in FIG. 2, and embodiments thereof are shown in more detail in FIGS. 4-7.) As will be described in more detail below, the RF tag 124 and the masking element 126 can be configured to move relative to one another in response to and/or in relation to the rotation of the stepper motor 120 to indicate the current pressure setting of the valve 100 to an external reading device. In some embodiments, the RF tag 124 can include a chip capable of storing data, such as identification information (for the valve and/or for the patient) and pressure setting history, which can be communicated to the external reading device. The RF tag 124 and the masking element 126, as well as the valve 100, can include a

coating 128 for protection from the external environment, CSF, and so on. The valve inlet 104 and valve outlet 106 can each be open and adapted to couple to another medical device, such as a ventricular catheter, drainage catheter, or other medical device. A person skilled in the art will appreciate that FIGS. 1-3 merely illustrate one exemplary embodiment of a valve for use with a radio frequency tag and masking element, and that various valves for controlling fluid flow known in the art can be used.

[0038] The masking element 126 can have a wide variety of configurations and it can be adapted to interact with the RF tag 124 in a variety of ways. In one exemplary embodiment shown in FIG. 4A, the masking element 400 can be in the form of a disk and can have an electrically conductive portion 402 and a non-conductive portion (or differently conductive) portion 408. The conductive portion 402 can be a material, such as silver, gold, copper, aluminum, or others known in the art, etc., deposited on the disk. The use of one or more magnetic portions is also possible. The conductive portion 402 can also be attached or coupled to the disk, or it can be a non-circular portion that fits together with a non-conductive portion 408 to form the complete disk, and so on. The conductive portion 402 can have a variety of shapes, but as shown it is spiral or C-shaped such that its width increases between concentric edges. Alternatively, the conductive portion 402 can be in the shape of a strip of varying width, and it can have virtually any shape that is rotationally asymmetric. As shown in FIG. 4A (and in more detail in FIG. 8, described below), the RF tag 404 can be disposed below (in other embodiments, it can be above) the masking element 400, and particularly below the spiral portion formed of conductive material 402. A small gap can separate the masking element 400 and the RF tag 404. In use, the rotational position of the stepper motor 120 can be communicated to the masking element 400 to effect rotation thereof about a central axis 406, while the RF tag 404 can remain fixed (for example, fixed relative to the valve 100 shown in FIGS. 1-3). Depending on the angular position of the masking element 404, the conductive material can cover a differing area of the RF tag 404. In some embodiments, the masking element 400 can include gears or be adapted to receive drive elements from the stepper motor 120 to effect rotation thereof. In other embodiments, the masking element 400 can include magnetic field elements, such as the magnets 410 shown in FIG. 4B, which are shaped and positioned to respond to a changing magnetic field from a programming device for the stepper motor 120, as previously mentioned. The masking element 400 can also be directly coupled to the stepper motor 120 such that it rotates with the motor. In

other embodiments, in which the valve does not include a stepper motor, the masking element can be configured to move in coordination with whatever adjustment mechanism is used to alter the pressure setting of the valve.

[0039] FIG. 4C illustrates one possible result of rotation of the masking element 400, in which, following rotation of the masking element 400 from the position shown in FIG. 4A, a narrow portion of the conductive material 402 covers the RF tag 404. Accordingly, the response of the RF tag 404 to an external signal (e.g., from a reading device emitting a signal at one or more radio frequencies) in FIG. 4A can differ from that of FIG. 4A to indicate such relative position and/or the fact that movement has occurred. For example, in some embodiments, a characteristic of the response of the RF tag 404, such as resonance frequency, harmonic spectra, or Q factor, can change depending on the relative position or motion of the masking element 400, indicating the position of the stepper motor and thus the pressure setting of the valve 100. In use, the external reading device can emit radio frequency signals across one or more frequencies and can analyze the responsive signal from the RF tag 402 for such a characteristic.

[0040] The masking element and the RF tag can have a wide variety of other configurations. For example, FIG. 5A illustrates another exemplary masking element 500 which has a plurality of discrete conductive portions 504 disposed within a disk 508 of non-conductive material 508. As shown, the conductive portions 504 are rectangular and vary in shape and size; however the conductive portions 504 can be virtually any size and shape and in some embodiments can be identical. Some of the conductive portions 504 can be sized to completely cover the RF tag 502, while other conductive portions 504 can be sized to partially cover the RF tag 502. The masking element 500 can be adapted to rotate around an axis 506 (for example, via coupling to the stepper motor 120 of FIG. 2, which coupling may include gears or other elements to transfer mechanical force). FIGS. 5B and 5C illustrate two possible positions of the masking element 500 relative to the RF tag 502 following rotation of the masking element 500. In FIG. 5B, the RF tag 502 is completely covered by a portion of conductive material 504. In FIG. 5C, the RF tag 502 is partially covered by a differently shaped and sized portion of conductive material 504. As can be seen from FIGS. 5A-5C, as different, discrete portions of the RF tag 502 are covered by pieces of conductive material, the response of the RF tag 502 to an external signal can differ (for example in resonance frequency, harmonic spectra, decay characteristic, or Q factor, as described

above) and thereby indicate the relative discrete rotational position of the masking element 500 and/or the RF tag 502, thereby indicating the position of the stepper motor, and thus the pressure setting of the valve. While FIGS. 5A-5C show an example of four discrete positions that can be detected, one skilled in the art will understand that additional masking elements can be used to detect additional positions.

[0041] In another embodiment, shown in FIG. 6, a masking element 600 can be in the form of a rectangle, square, or virtually any other shape, and it can be associated with an RF tag 602 having an asymmetric shape. For example, the RF tag 602 can be in the form of a disk with a rotationally asymmetric antenna pattern formed thereon. The pattern can include, for example, antenna lines with varying width, spacing, orientation, and so on. The masking element 600 can be fixed in the valve housing, while the RF tag 602 can be adapted to rotate relative to the valve housing. For example, the disk forming the RF tag 602 can be coupled to a control, e.g., in the stepper motor 120 shown in FIG. 2, so as to rotate around an axis 604 in relation to a pressure setting, as previously described. In an alternative embodiment, the RF tag 602 can be fixed within the valve and the masking element 600 can be adapted to rotate around an axis or otherwise move relative to the RF tag 602. Such rotation can cause a change or variations in the response of the RF tag 602 as the conductive masking element 600 covers different portions of the asymmetric antenna of the RF tag 602. As previously mentioned, the response can include characteristics, such as resonance frequency, harmonic spectra, decay characteristic, and/or Q factor, which can change as a result of such rotation. These characteristics can be detected in the response of the RF tag 602 to a signal emitted by a reading device.

[0042] In yet another embodiment, the masking element 126 can be configured to translate relative to the RF tag 124. For example, FIG. 7A shows a masking element 700 formed of a conductive material in the shape of a wedge which can be disposed in the valve housing adjacent to the RF tag 702. As the masking element 700 translates relative to the RF tag 702, it covers a different portion of the RF tag 702 (for example as shown in FIG. 7B), creating a detectable difference in the RF tag's response, as previously described. Such a configuration can be advantageous where a control or sensor operates linearly, such as with a sliding switch to change the flow rate of the valve. However, the translatable masking element 700 also can be coupled to a rotating control or sensor, such as a stepper motor, in a variety of ways. For example, the

configuration described above in connection with FIGS. 1-3 can be adapted such that rotation of the stepper motor 120 causes translation of the masking element 700, for example via a rack and pinion gearing, pivoting arms, and so on.

[0043] The RF tag 124 and the masking element 126 can be coupled to the stepper motor 120 in a variety of ways. For example, the stepper motor 120 can have a shaft running through its rotational axis, and the masking element 126 can be connected to this shaft such that the masking element 126 is driven by and rotates with the rotation of the stepper motor 120. Such a configuration can be advantageous for rotationally moving masking elements, as described above. FIG. 8 illustrates such a configuration and shows an exemplary embodiment of a stepper motor 820 having a shaft 822 extending therethrough and connected to a masking element 826. As shown, an RF tag 824 is attached to a surface 828, which represents the housing or other surface of an implantable valve. In other embodiments, the shaft can be attached to a gear which can drive a gear assembly that is connected to the masking element 126. In some embodiments, the gear assembly can include a rack and pinion gearing in order to drive a masking element that translates, as previously described.

[0044] As one skilled in the art will appreciate, the masking element and the RF tag can have a wide variety of other configurations, including virtually any configuration in which a masking element and an RF tag move relative to one another to indicate a setting or the position of a control. For example, in some embodiments a variety of masking element shapes can be provided, in some embodiments only one or both of the masking element and the RF tag can be configured to move relative to the other, and so on. In other embodiments, the masking element covers or is disposed in between the reading device and the RF tag. A wide variety of settings, including rotationally-determined and/or linearly determined settings, can be indicated and are not limited to stepper motors or pressure settings. The embodiments described are not meant to be limited to a particular type or category. For example, the configurations of FIGS. 4-6 can be coupled to a linearly-determined setting or control, for example via a range of known mechanical devices for transforming linear movement to rotational movement such as rack and pinion gearing, pivot arms, and so on. Also, the translatable configuration of FIGS. 7A-7B can be coupled to a rotationally-determined setting or control. Moreover, the location of the masking element and RF tag are not limited to those shown in the illustrated embodiments. The setting of

the stepper motor 120, for example, can be transmitted to a location which may be particularly adapted to receive the masking element/RF tag, and/or to provide for advantageous communication properties.

[0045] Returning to FIGS. 1-3, the shape, technical specifications, and size of the RF tag 124 can vary widely. In many embodiments, a relatively small RF tag can be used so as to minimize the footprint of the tag in the device, for example with dimensions in a range of about 5mm to 10mm, but in other embodiments, tags with dimensions of about 3mm to 50 mm can be used and any size is possible.

[0046] It should be understood that in many embodiments, the RF tag 124 can be chipless, and its physical/electromagnetic parameters can be used to determine position. The RF tag 124 need not have the capability to store data or to communicate according to a protocol, and need not have processing circuitry or digital logic. A chipless RF tag can provide a circuit (for example, having measurable characteristics, such as a tank circuit) and can be powered from the reading device signal. Such an RF tag can be advantageous due to its relatively low power requirements, and need not have the ability to communicate stored data or "identify" itself. However, in other embodiments the RF tag 124 can be chip-based, and can provide data storage for storing additional information related to the application. An example of chip-based tags are the commonly used RF identification tags. Some of these RF identification tags provide minimal information (such as a TRUE or FALSE value), while others can store several bytes of data. A chip-based RF tag can include processing circuitry, digital logic, a separate antenna, and/or a battery. For example, the RF tag 124 can include a memory for storing data related to the patient and/or sensor. By way of non-limiting example, the RF tag 124 can store sensed pressure data, sensor identification information (e.g., implantation date, sensor type, and sensor identifier code), sensor calibration data, historical data stored from the sensor, tag identification information (e.g., implantation date, tag type, and tag identifier code), and/or patient data (e.g., desired CSF flow rate, previous sensor measurements, and patient medical history). An external reading device, described further below, can read and/or store data in such an RF tag 124.

[0047] The RF tag 124 can have any shape, such as elliptical (including circular) or rectangular (including square), and can have virtually any size. The following table lists, by way of example

only, available RF tags suitable for use with the devices and methods described herein. Passive as well as semi-passive and active tags can be used, although semi-passive and active tags sometimes are larger than passive tags because they can incorporate an internal battery, e.g., for power purposes.

Tag Type	Frequency					
	125 KHz	5-7 MHz	13.56MHz	303/433 MHz	860-960 MHz	2.45 GHz
Passive	ISO11784/5, 14223	ISO10536	(ISO15693)	--	ISO18000-6	ISO18000-4
	ISO18000-2	iPico DF/iPX	(ISO15693) MIFARE (ISO14443) Tag-IT (ISO15693) ISO18000-3		Electronic Product Code ("EPC") Class 0 EPC Class 1 EPC GEN II Intellitag tolls (Title 21) rail (Association of American Railroads ("AAR") S918)	Intellitag μ -chip
Semi-Passive	--	--	--	--	rail (AAR S918) Title 21	ISO18000-4 Alien BAP
Active	--	--	--	Savi (American National Standards Institute ("ANSI") 371.2) ISO18000-7 RFCode	--	ISO18000-4 WhereNet (ANSI 371.1)

[0048] By way of further explanation, one exemplary circuit for modeling an RF tag can be generally represented by a resonator circuit 900 as shown in FIG. 9A. The circuit 900 includes a capacitor 902, an inductor 904, and an intrinsic resistance 906. When the RF tag is embedded in

the valve and associated with a masking element, as described above, shifts in the resonant frequency of the circuit 900 can be monitored on a continuous or intermittent basis to monitor the pressure setting through the housing 102. The resonant frequency of the circuit 900 can be detected in a variety of ways, such as by measuring power reflected from the circuit 900 or measuring decaying circulating power of the circuit 900 following an outside signal (e.g., from a reading device). FIG. 9B illustrates an example of a graph showing an output signal of the circuit 900 when introduced to an outside signal. The reflected power of the circuit 900 is at a minimum at the resonant frequency, where ω can be expressed as:

$$\omega = 2\pi f = \frac{1}{\sqrt{LC}}$$

with f representing the resonant frequency, L representing inductance of the inductor 904, and C representing capacitance of the capacitor 902. FIG. 9C illustrates another example of a graph showing an output signal of the circuit 900 when introduced to an outside signal. The reflected power of the circuit 900 in this example is at a maximum at the resonant frequency. Further examples of such RF tags and information on the use of them, including techniques for interrogating them, can be obtained from U.S. Patents No. 6,025,725, and 6,278,379, and U.S. Patent Application Publication No. 2004/0134991, all of which are hereby incorporated by reference in their entireties.

[0049] Referring again to FIGS. 1-3, the housing 102 can be formed from a variety of materials. In one exemplary embodiment, however, the housing 102 is formed from a flexible, biocompatible material. Suitable materials include, for example, polymers such as silicones, polyethylene, and polyurethanes, all of which are known in the art. The housing 102 can also optionally be formed from a radio-opaque material. A person skilled in the art will appreciate that the materials are not limited to those listed herein and that a variety of other biocompatible materials having the appropriate physical properties to enable the desired performance characteristics can be used.

[0050] As previously mentioned, the implantable valve 100 and/or the RF tag 124 and masking element 126 can also optionally include a coating 128 that is adapted to hermetically seal all or at least a portion of the RF tag 114 and/or masking element 126. The coating 128 can be applied to

only a portion of the RF tag 124 and/or masking element 126 that could be exposed to fluid. The RF tag 124 and the valve 100 can be coated separately, with different coatings, or together in a single coating. An adhesive or other mating technique can optionally be used to affix the RF tag 124 and/or masking element 126 within the housing 102, however, in some embodiments it can be useful to allow the RF tag 124 and/or masking element 126 to be removed from the valve 100 if necessary. Alternatively, the valve 100 can be coated after the RF tag 124 and/or masking element 126 are disposed in the valve 100 to form a protective sheath. The valve inlet 104 and valve outlet 106 can be protected from any coating applied thereto, formed after the coating is applied, or be cleared of any coating applied thereto to allow fluid to flow therethrough. In other embodiments, only certain components of the valve 100 can be coated. A person skilled in the art will appreciate that a variety of other techniques can be used to seal the components of the valve 100.

[0051] The material used to form the coating 128 can vary, and a variety of techniques can be used to apply the coating. By way of non-limiting example, suitable materials include polyurethane, silicone, solvent-based polymer solutions, and any other polymer that will adhere to the components to which it is applied to, and suitable techniques for applying the coating include spray-coating or dip-coating.

[0052] FIG. 10A shows one exemplary embodiment of a reading device 1000, such as an RF telemetry device, for use in obtaining information from the RF tag 124. The reading device 1000 can emit a signal at one frequency or over a range of frequencies, and can listen for the response thereto, e.g., from the RF tag 124. In the case of a chipless RF tag, a characteristic of the response from the tag can indicate a measured flow rate, as explained previously. In the case of a chip-based RF tag having memory associated therewith, the response of the tag can indicate the pressure setting in the same way as previously described for a chipless tag, and it can also communicate (e.g., according to a communication protocol) additional information stored in its memory for the reading device. Any type of external reading device can be used. In one exemplary embodiment, the reading device 1000 can include an RF module (e.g., transmitter and receiver), a control unit (e.g., microcontroller), a coupling element to the transponder (e.g., antenna), and an interface (e.g., Recommended Standard (RS) 232, RS-485, Firewire, Universal Serial Bus (USB), Bluetooth, ZigBee, etc.) to enable communication with another device (e.g., a

personal computer). The reading device 1000 can provide the power required by the RF tag 124 to operate, e.g., via inductive coupling. As shown in FIG. 10B, the reading device 1000 can be positioned in proximity to an implanted valve 100 to telemetrically communicate with the RF tag 124, and thereby obtain a reading indicative of a pressure setting.

[0053] FIG. 11 illustrates another exemplary embodiment of an implantable valve for a hydrocephalus shunt which can have a pressure setting indicator. As shown, the implantable valve 1100 can include a valve housing 1106 for receiving fluid flow (such as CSF) therethrough between an inlet port 1108 and an outlet port 1104. A reservoir 1110 can be provided for housing a pressure sensor or a flow sensor, or other sensors and/or controls. For example, suitable pressure sensors are described in co-pending, commonly assigned U.S. Patent Application No. 10/907,665, entitled "Pressure Sensing Valve" by Mauge et al., filed April 11, 2005 and now published as U.S. Publication No. 2006-0211946 A1, and in U.S. Patent No. 5,321,989, U.S. Patent No. 5,431,057, and EP Patent No. 1 312 302, the teachings of all of which are hereby incorporated by reference in their entireties. Suitable flow sensors are described in co-pending, commonly assigned U.S. Patent Application entitled "Wireless Flow Sensor" by Salim Kassem and Aaron Gilletti (Attorney Docket No. 22719-91 (COD-5163USNP)) and filed herewith. The implantable valve 1100 can also include a valve assembly 1102 for controlling the flow of fluid through the valve 1100 according to remotely or telemetrically selectable settings. For example, the valve assembly can include a stepper motor, such as was described in connection with FIG. 1. A coating can be disposed over the valve 1100. Further information on implantable valves can be obtained from U.S. Publication No. 2006-0211946 A1, referenced above. Implantable valve 1100 can include a masking element and/or RF tag to indicate the pressure setting of valve assembly 1102 according to any of the previously-described embodiments.

[0054] In another aspect, a method is provided for non-invasively determining the position or setting of a mechanical device, such as a control or sensor in an implanted medical device, and for indicating that information to another device. In one embodiment, an exemplary method can include implanting a valve, such as the valve 100 described above in connection with FIGS. 1-3, in a body. In the case of a hydrocephalus shunt, a hydrocephalus valve can be subcutaneously implanted in a patient, as shown in FIG. 10B. It should be understood that while FIG. 10B

shows the implantation of a valve in a shoulder region, the device can be implanted virtually anywhere, for example subcutaneously behind the ear, or on the head, torso, etc. The method can also include coupling a proximal end of a catheter, such as a ventricular catheter, to an inlet port of the flow sensor. Another catheter, such as a drainage catheter, can be coupled to an outlet port of the flow sensor. The drainage catheter can extend through the patient to an area where excess fluid, e.g., CSF, can drain safely.

[0055] The method can further include wirelessly transmitting a wireless signal to an RF tag embedded in the valve, for example using a reading device such as reading device 1000 described above in connection with FIG. 10A. The transmitted signal can include one or more frequencies, for example radio frequencies. In some embodiments, the wireless signal can be transmitted according to a protocol to communicate with an RF tag having a chip therein. The method can also include receiving a response from the RF tag that indicates a pressure setting of the valve. The response can be a radio frequency response and can have one or more characteristics, such as resonance frequency, harmonic spectra, decay characteristics, and Q factor, that can be detected and analyzed in order to determine the current pressure setting of the valve. The determination of the pressure setting can be performed using calibration data for a particular pressure sensor and/or valve. In some embodiments, the calibration data, as well as other data such as historical data, can be transmitted from an RF tag having a memory to the reading device. The method can further include changing the pressure setting of the valve. In some embodiments, this can be performed using a programming device that produces and directs a changing electromagnetic field to a stepper motor. Another signal can be wirelessly transmitted to the RF tag using a reading device, and the response to the signal can be analyzed to indicate the changed pressure setting.

[0056] Further information on wireless shunts can be obtained from U.S. Patent Application No. _____, entitled "Wireless Flow Sensor" by Salim Kassem (Attorney Docket No. 22719-91 (COD-5161USNP)), U.S. Patent Application No. _____, entitled "Wireless Pressure Sensing Shunts" by Salim Kassem (Attorney Docket No. 22719-92 (COD-5160USNP)), and U.S. Patent Application No. _____, entitled "Wireless Shunts With Storage" by Salim Kassem (Attorney Docket No. 22719-93 (COD-5176USNP)), all of which are being filed on the same date as the present application and which are hereby incorporated by reference in their entirety. Also

incorporated by reference in its entirety is co-pending, commonly assigned U.S. Patent Application No. 10/907,665, entitled "Pressure Sensing Valve" and published as U.S. Publication No. 2006-0211946 A1.

[0057] A person skilled in the art will appreciate that the various methods and devices disclosed herein can be formed from a variety of materials. Moreover, particular components can be implantable and in such embodiments the components can be formed from various biocompatible materials known in the art. Exemplary biocompatible materials include, by way of non-limiting example, composite plastic materials, biocompatible metals and alloys such as stainless steel, titanium, titanium alloys and cobalt-chromium alloys, glass, and any other material that is biologically compatible and non-toxic to the human body.

[0058] One skilled in the art will appreciate further features and advantages based on the above-described embodiments. Accordingly, the disclosure is not to be limited by what has been particularly shown and described, except as indicated by the appended claims. All publications and references cited herein are expressly incorporated herein by reference in their entirety.

[0059] What is claimed is:

REIVINDICACIONES

1. Una válvula implantable, que comprende:

una carcasa de válvula adaptada para recibir un flujo de líquido a través de ésta entre una entrada de válvula y una salida de válvula;

un montaje de válvula dispuesto dentro de la carcasa de válvula y que tiene una pluralidad de configuraciones de presión predeterminados para controlar una tasa de líquido que fluye a través de la carcasa de válvula;

un marcador de radiofrecuencia dispuesto en la carcasa de válvula y adaptado para interactuar con una señal inalámbrica para producir una respuesta a éste; y

un elemento de enmascaramiento dispuesto en la carcasa de válvula, el elemento de enmascaramiento y el marcador de radiofrecuencia configurados para moverse con relación uno al otro para alterar la respuesta del marcador de radiofrecuencia e indicar de esta manera una configuración de presión del montaje de válvula.

- 120
2. La válvula implantable de la reivindicación 1, en donde el elemento de enmascaramiento comprende un miembro conductor que altera la respuesta del marcador de radiofrecuencia.
 3. La válvula implantable de la reivindicación 2, en donde el elemento de enmascaramiento cubre por lo menos una porción del marcador de radiofrecuencia.
 4. La válvula implantable de la reivindicación 1, en donde por lo menos una característica de la respuesta indica la configuración de presión del montaje de válvula, y por lo menos una característica que se selecciona del grupo que consiste de una frecuencia de resonancia, espectro armónico, característica de desgaste, y factor Q.
 5. La válvula implantable de la reivindicación 1, en donde el montaje de válvula comprende un mecanismo de ajuste configurado para rotar alrededor de un eje de éste para seleccionar uno de la pluralidad de configuraciones de presión y para efectuar el movimiento del elemento de enmascaramiento.

6. La válvula implantable de la reivindicación 1, en donde el elemento de enmascaramiento comprende un disco formado por lo menos en parte de un material conductor y configurado para rotar alrededor del eje de éste de tal forma que tal material conductor enmascara de manera selectiva por lo menos parte del marcador de radiofrecuencia.
7. La válvula implantable de la reivindicación 6, en donde el material conductor se selecciona del grupo que consiste de una espiral y una pluralidad de secciones conductoras discretas.
8. La válvula implantable de la reivindicación 1, en donde el marcador de radiofrecuencia comprende un disco que tiene una antena asimétrica formada sobre éste, el elemento de enmascaramiento configurado para enmascarar por lo menos parcialmente la antena.
9. La válvula implantable de la reivindicación 1, en donde el elemento de enmascaramiento comprende una cuña formada por lo menos en parte de un material conductor, y el montaje de válvula comprende un mecanismo de ajuste configurado para movimiento para seleccionar uno de una

pluralidad de configuraciones de presión y efectuar el movimiento del elemento de enmascaramiento.

10. La válvula implantable de la reivindicación 1, en donde el marcador de radiofrecuencia incluye un circuito integrado para almacenar datos y una antena adaptada para comunicar los datos almacenados a un dispositivo de lectura externo.

11. La válvula implantable de la reivindicación 1, en donde el montaje de válvula comprende un mecanismo de ajuste movable adaptado para seleccionar uno de la pluralidad de configuraciones de presión en respuesta a un campo magnético creado por un dispositivo de control externo.

12. Una válvula implantable, que comprende:

una carcasa de válvula adaptada para recibir flujo de líquido a través de ésta entre una entrada de válvula y una salida de válvula;

un montaje de válvula dispuesto dentro de la carcasa de válvula y que tiene una pluralidad de configuraciones de

presión predeterminados para controlar una tasa de líquido que fluye a través de la carcasa de válvula;

un miembro conductor dispuesto dentro del montaje de válvula y configurado para cubrir selectivamente por lo menos una porción de un marcador de radiofrecuencia y alterar de esta manera una respuesta de éste para indicar un seleccionado de la pluralidad de configuraciones de presión.

13. La válvula implantable de la reivindicación 12, en donde el marcador de radiofrecuencia se adapta para producir la respuesta cuando se interroga mediante una señal inalámbrica emitida desde un dispositivo de lectura externo.
14. La válvula implantable de la reivindicación 12, en donde la respuesta tiene por lo menos una característica medible seleccionada del grupo que consiste de una frecuencia de resonancia, espectro armónico, características de disminución, y el factor Q.
15. La válvula implantable de la reivindicación 12, en donde el miembro conductor y el marcador de radiofrecuencia se

configuran para moverse en relación el uno con el otro, el movimiento relativo debido a que el miembro conductor se mueve mientras que el marcador de radiofrecuencia permanece fijo, o el marcador de radiofrecuencia se mueve mientras que el miembro conductor permanece fijo.

16. La válvula implantable de la reivindicación 12, en donde el marcador de radiofrecuencia comprende un disco que tiene una antena asimétrica formada sobre éste.
17. La válvula implantable de la reivindicación 12, en donde el miembro conductor forma parte de un disco que puede girar.
18. La válvula implantable de la reivindicación 17, en donde el miembro conductor está en la forma de una capa que tiene una forma que se selecciona del grupo que consiste de una espiral y una pluralidad de secciones conductoras discretas.
19. Un método para indicar una configuración de una válvula implantable, que comprende:

transmitir una señal inalámbrica desde un dispositivo de lectura a un marcador de radiofrecuencia dispuesto dentro de la carcasa de la válvula ubicada entre un tubo de entrada y un tubo de salida, el marcador de radiofrecuencia adaptado para indicar una configuración de presión de una válvula dispuesta dentro de la carcasa de válvula;

recibir de manera inalámbrica una respuesta desde el marcador de radiofrecuencia a la señal inalámbrica que indica la configuración de presión común.

20. El método de la reivindicación 19, que comprende además:

cambiar la configuración de presión de la válvula a una segunda configuración de presión,

recibir de manera inalámbrica una segunda respuesta desde el marcador de radiofrecuencia que indica la segunda configuración de presión.

21. El método de la reivindicación 20, que comprende además analizar la respuesta desde el marcador de radiofrecuencia para detectar cualquier frecuencia de

resonancia, espectro armónico, característica de desgaste, y factor Q.

22. El método de la reivindicación 19, en donde la respuesta desde el marcador de radiofrecuencia comunica información previamente almacenada en éste.
23. El método de la reivindicación 19, que comprende además seleccionar uno de una pluralidad de configuraciones de presión con un dispositivo de control externo adaptado para emitir un campo magnético.
24. El método de la reivindicación 19, que comprende además acoplar el tubo de entrada a un catéter dentro de un ventrículo del paciente, y acoplar el tubo de salida a un catéter de drenaje para drenar el líquido cefalorraquídeo del paciente.
25. Una válvula implantable, que comprende:

una carcasa de válvula adaptada para recibir flujo de líquido a través de ésta entre una entrada de válvula y una salida de válvula;

un montaje de válvula dispuesto dentro de la carcasa de válvula y que tiene una pluralidad de posiciones seleccionables;

un marcador de radiofrecuencia dispuesto en la carcasa de válvula y adaptado para interactuar con una señal inalámbrica para producir una respuesta a éste; y

un elemento de enmascaramiento dispuesto en la carcasa de válvula, el elemento de enmascaramiento y el marcador de radiofrecuencia configurado para moverse en relación el uno con el otro para alterar la respuesta del marcador de radiofrecuencia e indicar de esta manera la posición seleccionada del montaje de válvula.

CLAIMS:

1. An implantable valve, comprising:
a valve housing adapted to receive fluid flow therethrough between a valve inlet and a valve outlet;
a valve assembly disposed within the valve housing and having a plurality of predetermined pressure settings for controlling a rate of fluid flowing through the valve housing;
a radio frequency tag disposed in the valve housing and adapted to interact with a wireless signal to produce a response thereto; and
a masking element disposed in the valve housing, the masking element and the radio frequency tag configured to move relative to one another to alter the response of the radio frequency tag and thereby indicate a pressure setting of the valve assembly.
2. The implantable valve of claim 1, wherein the masking element comprises a conductive member that alters the response of the radio frequency tag.
3. The implantable valve of claim 2, wherein the masking element covers at least a portion of the radio frequency tag.
4. The implantable valve of claim 1, wherein at least one characteristic of the response indicates the pressure setting of the valve assembly, the at least one characteristic being selected from the group consisting of resonant frequency, harmonic spectra, decay characteristic, and Q factor.
5. The implantable valve of claim 1, wherein the valve assembly comprises an adjustment mechanism configured to rotate around an axis thereof to select one of the plurality of pressure settings and to effect movement of the masking element.
6. The implantable valve of claim 1, wherein the masking element comprises a disk formed at least in part of a conductive material and configured to rotate around an axis thereof such that the conductive material selectively masks at least part of the radio frequency tag.
7. The implantable valve of claim 6, wherein the conductive material is selected from the group consisting of a spiral and a plurality of discrete conductive sections.

8. The implantable valve of claim 1, wherein the radio frequency tag comprises a disk having an asymmetrical antenna formed thereon, the masking element configured to at least partially mask the antenna.
9. The implantable valve of claim 1, wherein the masking element comprises a wedge formed at least in part of a conductive material, and the valve assembly comprises an adjustment mechanism configured for movement to select one of the plurality of pressure settings and to effect movement of the masking element.
10. The implantable valve of claim 1, wherein the radio frequency tag includes a chip for storing data and an antenna adapted to communicate the stored data to an external reading device.
11. The implantable valve of claim 1, wherein the valve assembly comprises a movable adjustment mechanism adapted to select one of the plurality of pressure settings in response to a magnetic field created by an external control device.
12. An implantable valve, comprising:
 - a valve housing adapted to receive fluid flow therethrough between a valve inlet and a valve outlet;
 - a valve assembly disposed within the valve housing and having a plurality of predetermined pressure settings for controlling a rate of fluid flowing through the valve housing;
 - a conductive member disposed within the valve assembly and configured to selectively cover at least a portion of a radio frequency tag and thereby alter a response thereof to indicate a selected one of the plurality of pressure settings.
13. The implantable valve of claim 12, wherein the radio frequency tag is adapted to produce the response when interrogated by a wireless signal emitted from an external reading device.
14. The implantable valve of claim 12, wherein the response has at least one measurable characteristic selected from the group consisting of resonant frequency, harmonic spectra, decay characteristics, and Q factor.

15. The implantable valve of claim 12, wherein the conductive member and the radio frequency tag are configured to move relative to one another, the relative motion due to the conductive member moving while the radio frequency tag remains fixed, or the radio frequency tag moving while the conductive member remains fixed.
16. The implantable valve of claim 12, wherein the radio frequency tag comprises a disk having an asymmetrical antenna formed thereon.
17. The implantable valve of claim 12, wherein the conductive member forms part of a rotatable disk.
18. The implantable valve of claim 17, wherein the conductive member is in the form of a layer having a shape that is selected from the group consisting of a spiral and a plurality of discrete conductive sections.
19. A method for indicating a pressure setting of an implantable valve, comprising:
transmitting a wireless signal from a reading device to a radio frequency tag disposed within a valve housing positioned between an inlet tube and an outlet tube, the radio frequency tag adapted to indicate a pressure setting of a valve disposed within the valve housing;
wirelessly receiving a response from the radio frequency tag to the wireless signal that indicates the current pressure setting.
20. The method of claim 19, further comprising:
changing the pressure setting of the valve to a second pressure setting,
wirelessly receiving a second response from the radio frequency tag that indicates the second pressure setting.
21. The method of claim 20, further comprising analyzing the response from the radio frequency tag to detect any of resonant frequency, harmonic spectra, decay characteristic, and Q factor.
22. The method of claim 19, wherein the response from the radio frequency tag communicates information previously stored therein.

23. The method of claim 19, further comprising selecting one of the plurality of pressure settings with an external control device adapted to emit a magnetic field.

24. The method of claim 19, further comprising coupling the inlet tube to a catheter within a patient's ventricle, and coupling the outlet tube to a drainage catheter for draining the patient's cerebrospinal fluid.

25. An implantable valve, comprising:

a valve housing adapted to receive fluid flow therethrough between a valve inlet and a valve outlet;

a valve assembly disposed within the valve housing and having a plurality of selectable positions;

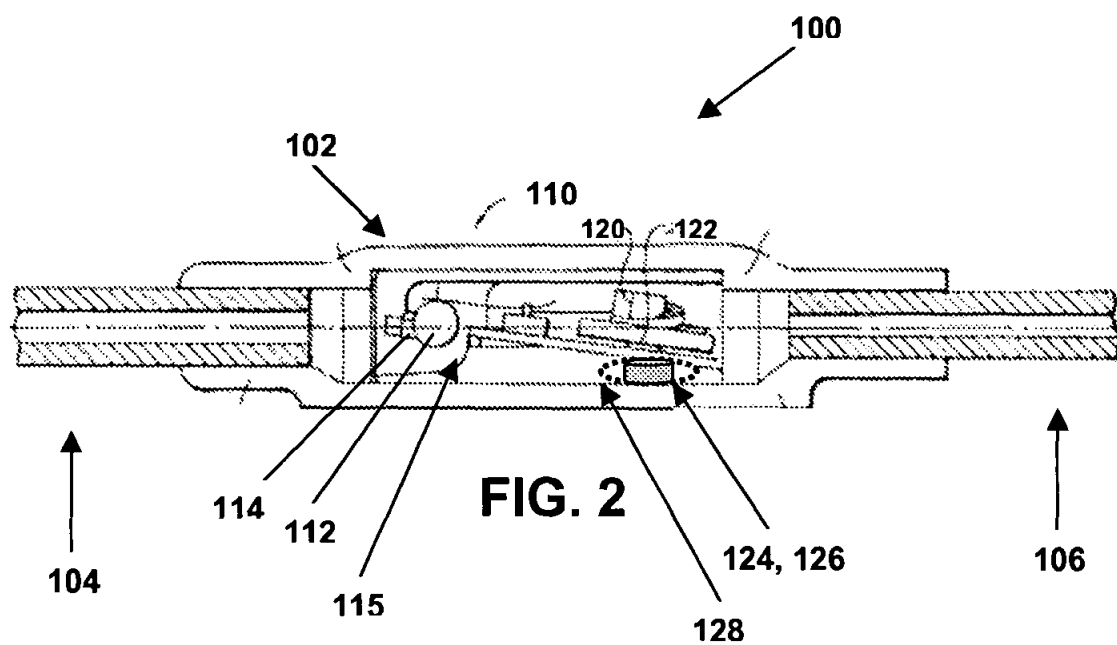
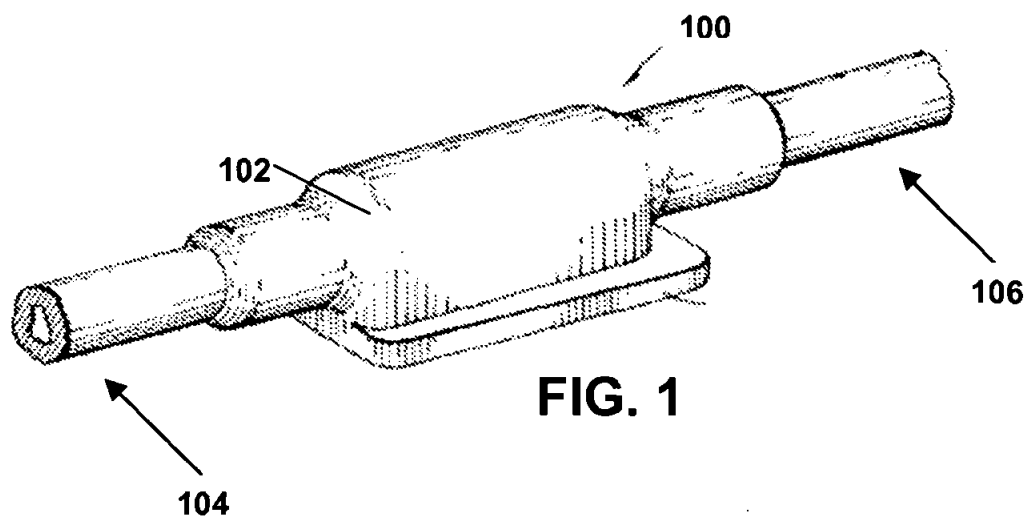
a radio frequency tag disposed in the valve housing and adapted to interact with a wireless signal to produce a response thereto; and

a masking element disposed in the valve housing, the masking element and the radio frequency tag configured to move relative to one another to alter the response of the radio frequency tag and thereby indicate the selected position of the valve assembly.

ABSTRACT

Devices and methods useful for non-invasively indicating the position or setting of a mechanical device, such as a sensor or control in an implanted medical device, are disclosed. In one exemplary embodiment, a valve housing adapted to receive fluid flow therethrough is provided. The flow of fluid through the valve housing can be controlled, for example, by a valve assembly that has a plurality of predetermined pressure settings. A radio frequency tag can be disposed in the valve assembly, and the masking element and the radio frequency tag can be configured to move relative to one another. The relative positions of the masking element and the radio frequency tag can alter the response of the radio frequency tag to a wireless signal (which can be emitted from an external reading device, for example) and thereby indicate the pressure setting of the valve assembly. For example, in some embodiments, the masking element can selectively cover at least part of the radio frequency tag according to the pressure setting of the valve assembly, which can change a characteristic of the radio frequency tag's response to the wireless signal.

1650564.1



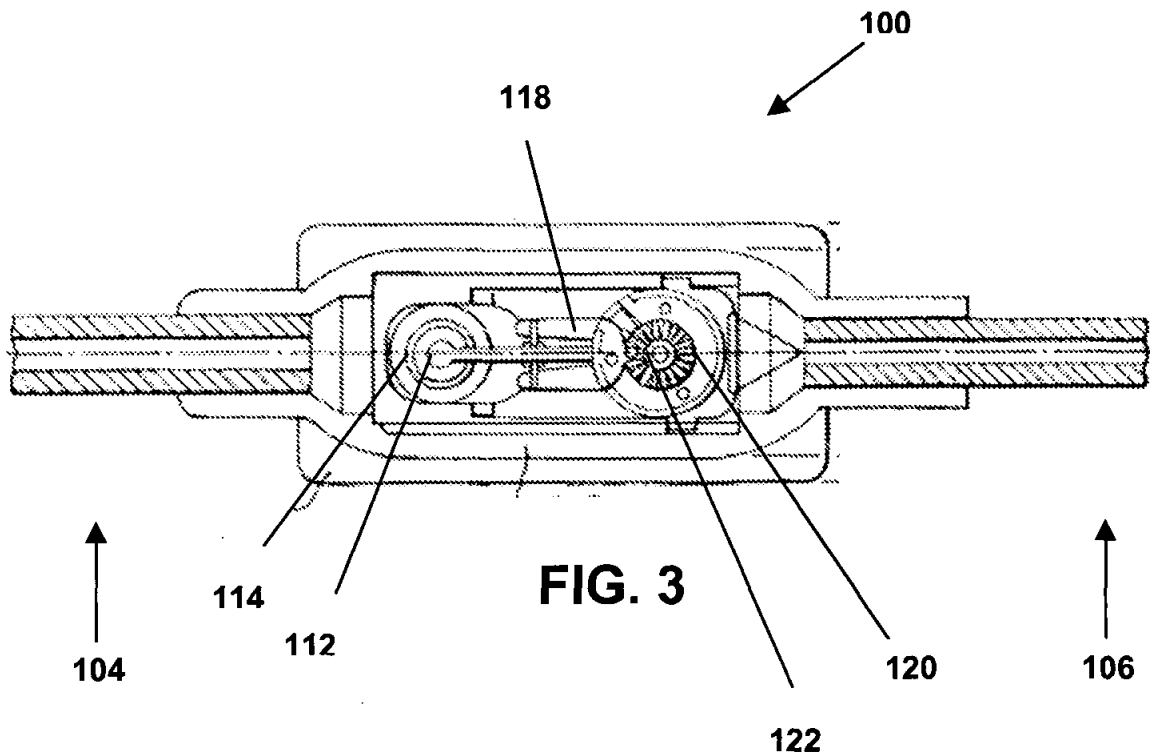


FIG. 4A

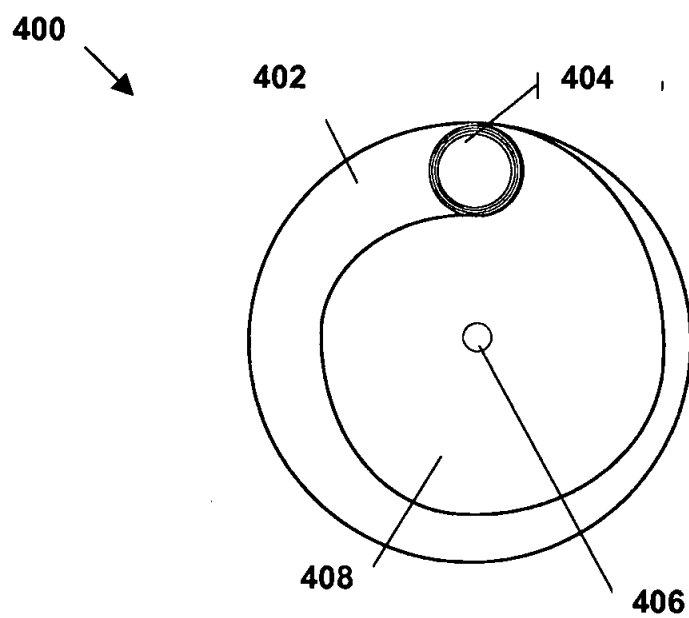


FIG. 4B

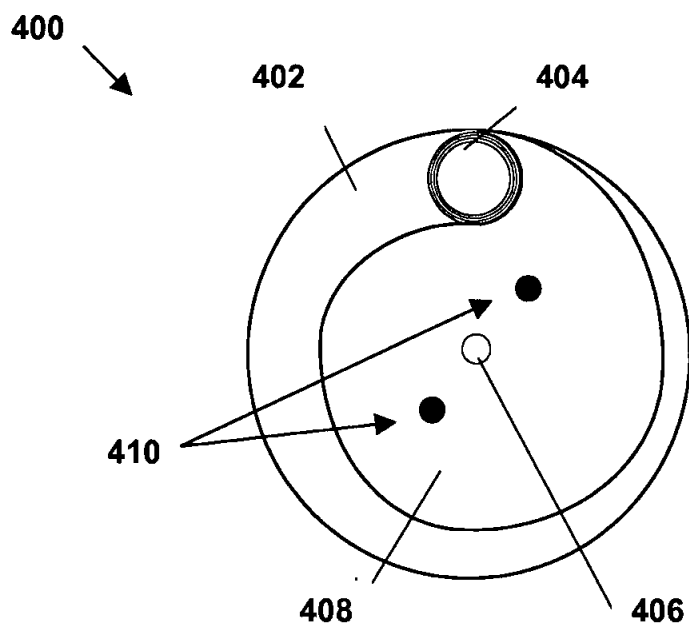


FIG. 4C

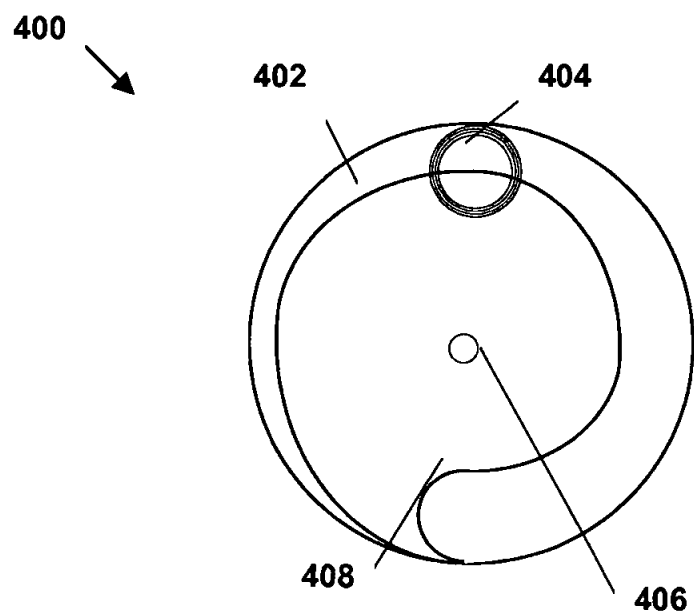


FIG. 5A

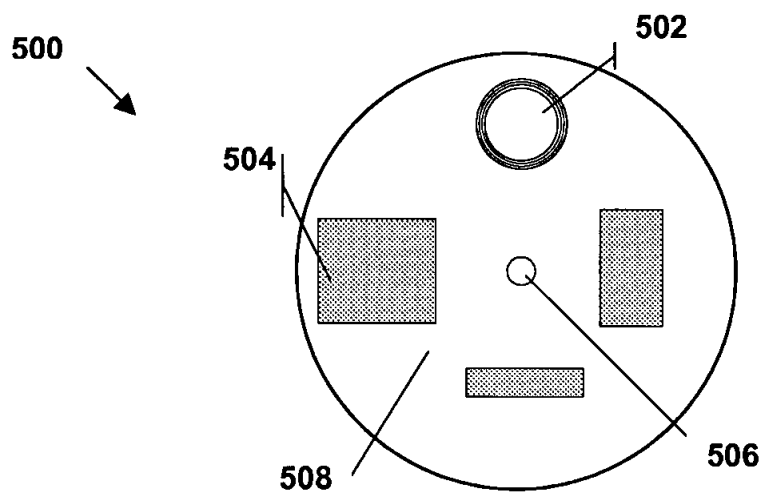


FIG. 5B

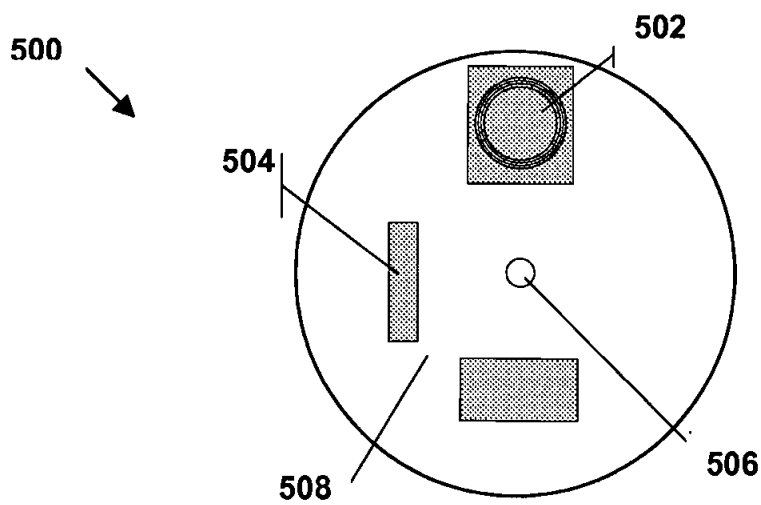


FIG. 5C

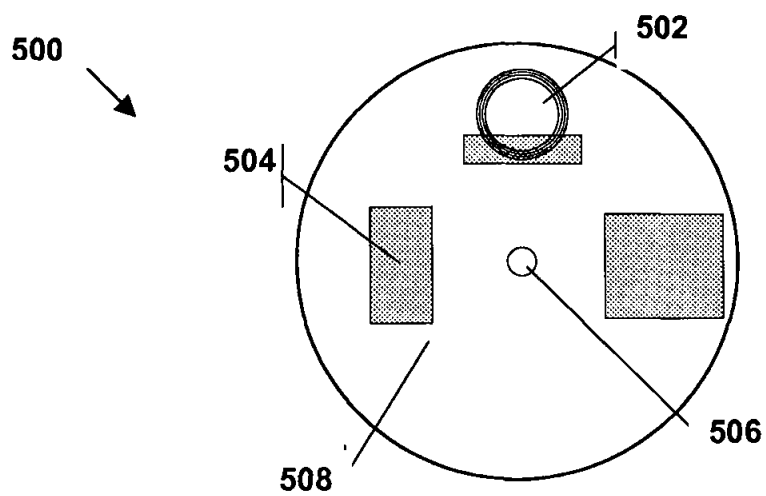
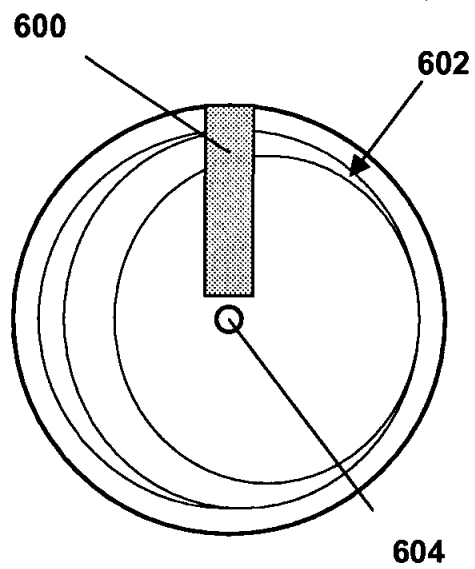


FIG. 6



140

FIG. 7A

700

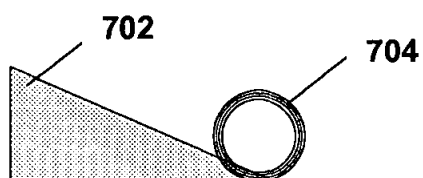
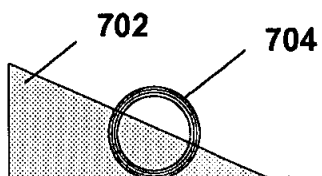


FIG. 7B

700



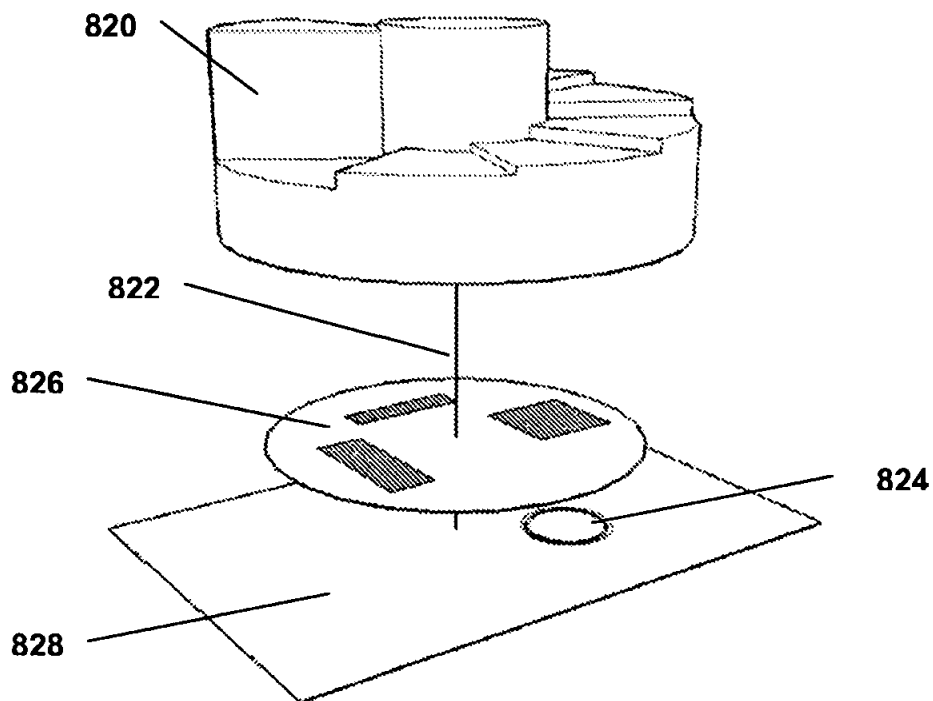


FIG. 8

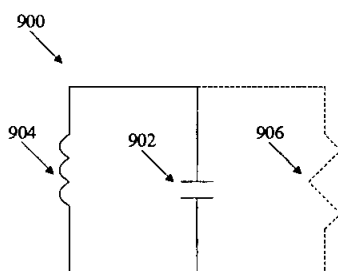


FIG. 9A

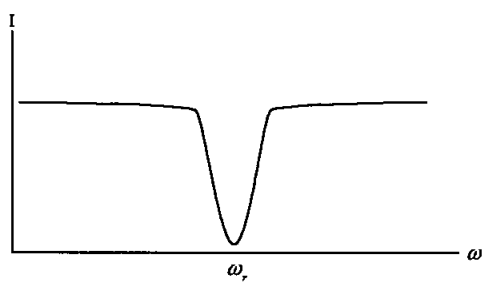


FIG. 9B

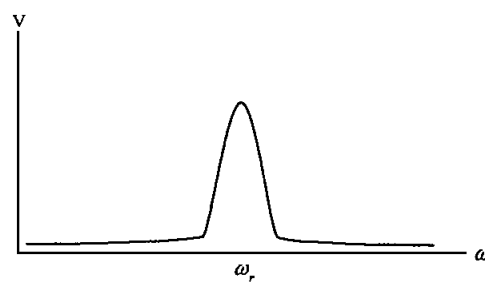
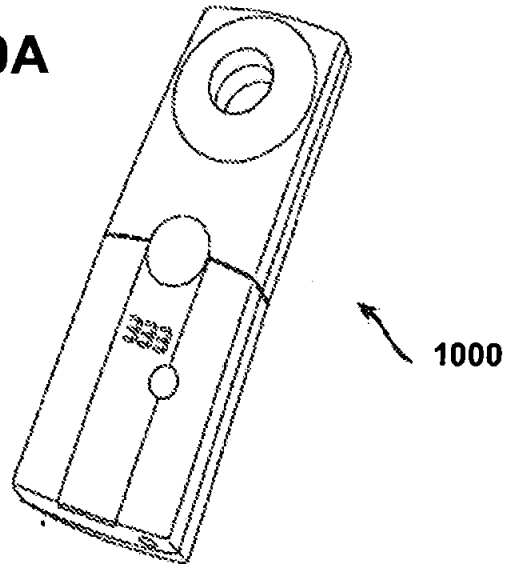


FIG. 9C

FIG. 10A



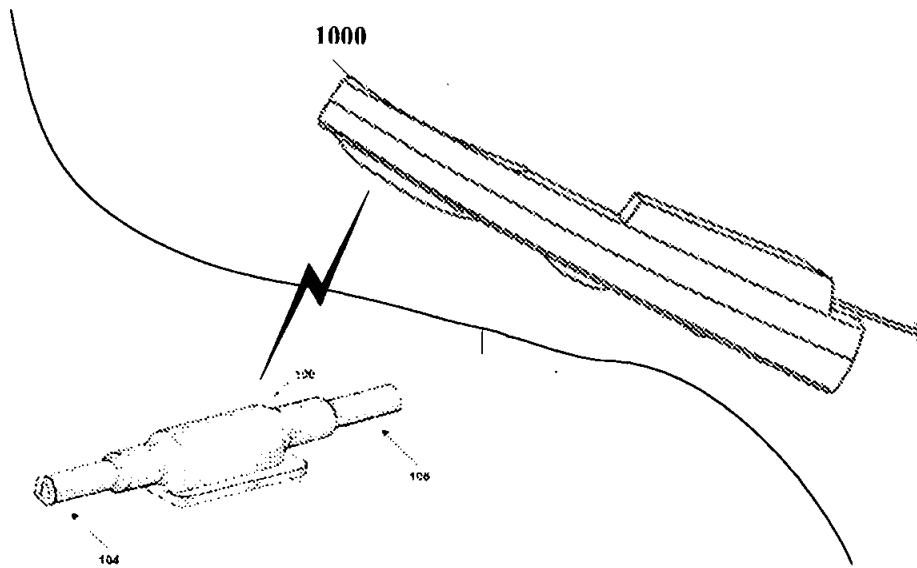
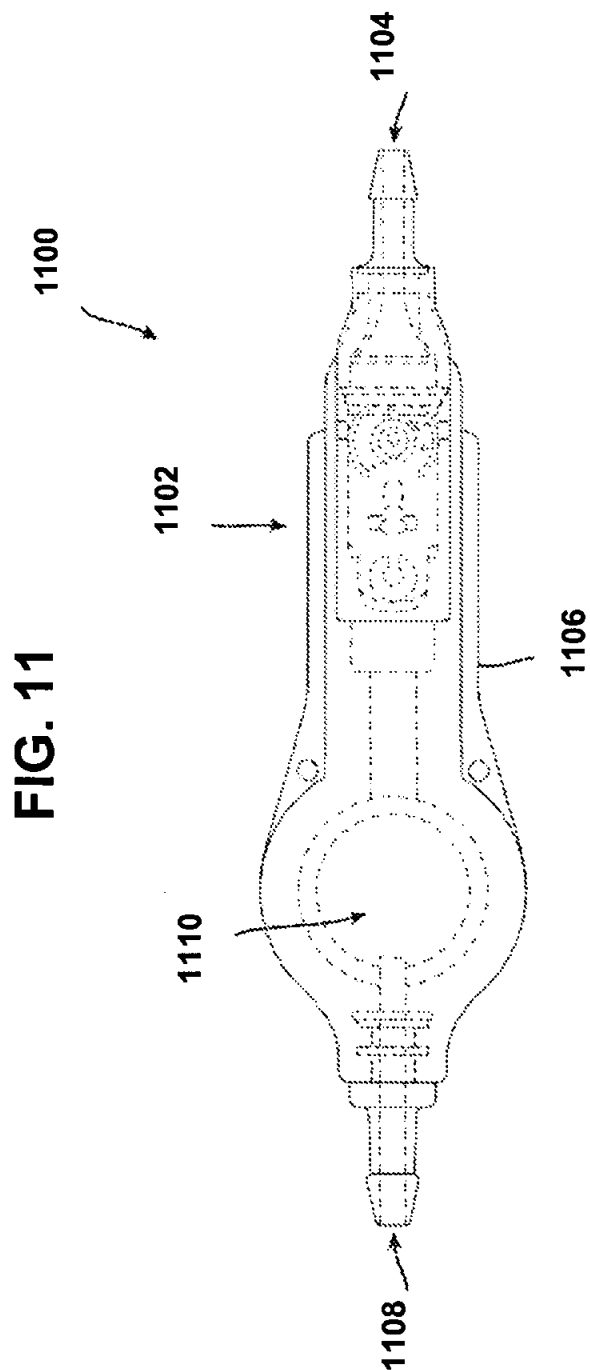


FIG. 10B



1662707.1

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	22719-90 (COD5163USNP)
		Application Number	
Title of Invention	Wireless Pressure Setting Indicator		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

- ☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Applicant Information:

Applicant 1						Remove	
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117		☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name		Family Name		Suffix	
	Salim			Kassem			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service							
City	North Attleboro		State/Province	MA	Country of Residence i	US	
Citizenship under 37 CFR 1.41(b) i			CO				
Mailing Address of Applicant:							
Address 1		1 Stonefield Court					
Address 2							
City	North Attleboro			State/Province	MA		
Postal Code	02760			Countryi	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.							
Add							

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	21125		
Email Address	jmatt@nutter.com		Add Email Remove Email

Application Information:

Title of the Invention	Wireless Pressure Setting Indicator		
Attorney Docket Number	22719-90 (COD5163USNP)	Small Entity Status Claimed ☐	
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	13	Suggested Figure for Publication (if any)	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	22719-90 (COD5163USNP)
	Application Number	
Title of Invention	Wireless Pressure Setting Indicator	

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐	Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections completed the Customer Number will be used for the Representative Information during processing.			
Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	21125		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.			
Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).			
			Remove
Application Number	Country i	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			☒ Yes ☐ No
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			Add

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.	
Assignee 1	Remove

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	22719-90 (COD5163USNP)
		Application Number	
Title of Invention	Wireless Pressure Setting Indicator		

If the Assignee is an Organization check here. ☒			
Organization Name	Codman Shurleff, Inc.		
Mailing Address Information:			
Address 1	325 Paramount Drive		
Address 2			
City	Raynham	State/Province	MA
Country	US	Postal Code	02767
Phone Number		Fax Number	
Email Address			
Additional Assignee Data may be generated within this form by selecting the Add button. Add			

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/Joshua T. Matt/		Date (YYYY-MM-DD)	2007-10-31	
First Name	Joshua	Last Name	Matt	Registration Number	55435

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Clarke, Modet & C^o

COLOMBIA

P-1719 /PCT

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES

E. S. D.

Ref.: Expediente No. 08-116.823
Solicitud de Patente a nombre de
CODMAN & SHURTLEFF, INC.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 08-116823- -00003-0000

Fecha: 2009-01-21 14:55:19 Dep. 2020 NUECREACION
Tra. 2 PATENTES Eve: 1 REGDEPOSITO
Act. 444 RESPUESTAREQUE Folios: 13

Yo, JIMENA ESCOBAR URIBE, identificada como aparece al pie de mi firma, domiciliada en la en la Carrera 11 No. 86-53, piso 6, obrando como apoderada de la sociedad **CODMAN & SHURTLEFF, INC.** domiciliada en Raynham, Massachussets, Estados Unidos de América, solicitante de la patente de la referencia, en respuesta al oficio No. 14950 notificado por fijación en lista el día 27 de noviembre de 2008, me permito presentar:

Documento (s) en que consta la cesión del inventor a favor de mi mandante, junto con la traducción de las partes pertinentes del inglés al español.

Espero con esto haber dado cabal cumplimiento a lo solicitado por ese despacho y de conformidad con lo indicado en los artículos 3º, inciso 3; 35, inciso 2 y 59, inciso 2 del CCA, al analizar este memorial, atentamente ruego se traten todas las cuestiones planteadas con motivo del mismo.

Señor Superintendente,

JIMENA ESCOBAR URIBE
C.C.39.779.452 de Usaquén
T.P. 68228
Cód. 5376

P-1719.

APOSTILLE

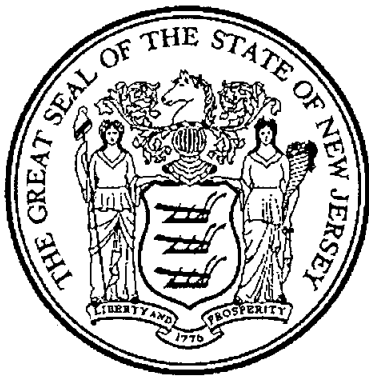
(CONVENTION DE LA HAYE DU 5 OCTOBRE 1961)

1. COUNTRY: UNITED STATES OF AMERICA
2. THIS PUBLIC DOCUMENT HAS BEEN SIGNED BY:
CHRISTINA A CLICKNER
3. ACTING IN THE CAPACITY OF:
NOTARY PUBLIC OF NEW JERSEY
4. BEARS THE SEAL/STAMP OF:
CHRISTINA A CLICKNER, NOTARY

CERTIFIED

5. AT TRENTON, NEW JERSEY
6. THE 6TH DAY OF JANUARY 2009
7. BY: R. David Rousseau, NEW JERSEY TREASURER
8. NO. A350633
9. SEAL/STAMP:

10. SIGNATURE



Certificate Number: 113365355

Verify this certificate online at

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COD5163CONP

CERTIFICATION

I hereby certify that I have compared the attached document with the original, and that such said document is a true copy of the original Assignment document as filed and recorded in the U.S. Patent Office in connection with USSN 11/931,041 filed OCTOBER 31, 2007.

A handwritten signature in cursive script, appearing to read 'Christina A. Clickner', is written over a horizontal line.

Christina A. Clickner
(Notary Public of New Jersey)

My Commission Expires:
March 2, 2010

TO: JOSHUA T. MATT COMPANY: 155 SEAPORT BOULEVARD

**UNITED STATES PATENT AND TRADEMARK OFFICE**

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE



500437981A

JANUARY 11, 2008

PTAS

JOSHUA T. MATT
155 SEAPORT BOULEVARD
BOSTON, MA 02210-2604

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RECORDATION DATE: 01/11/2008

REEL/FRAME: 020355/0630

NUMBER OF PAGES: 2

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).
DOCKET NUMBER: 22719-90

ASSIGNOR:

KASSEM, SALIM

DOC DATE: 11/08/2007

ASSIGNEE:

CODMAN & SHURTLEFF, INC.
325 PARAMOUNT DRIVE
RAYNHAM, MASSACHUSETTS 02767-0350

SERIAL NUMBER: 11931041

FILING DATE: 10/31/2007

PATENT NUMBER:

ISSUE DATE:

TITLE: WIRELESS PRESSURE SETTING INDICATOR

USPTO

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020355/0630 PAGE 2

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PATENT ASSIGNMENT

Electronic Version v1.1
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01/11/2008
500437981

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
Salim Kassem	11/08/2007
RECEIVING PARTY DATA	
Name:	Codman & Shurtleff, Inc.
Street Address:	325 Paramount Drive
City:	Raynham
State/Country:	MASSACHUSETTS
Postal Code:	02787-0350
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	11931041
CORRESPONDENCE DATA	
Fax Number:	(617)310-9651
<i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>	
Phone:	617-439-2651
Email:	jmatt@nutter.com
Correspondent Name:	Joshua T. Matt
Address Line 1:	155 Seaport Boulevard
Address Line 4:	Boston, MASSACHUSETTS 02210-2604
ATTORNEY DOCKET NUMBER:	22719-90
NAME OF SUBMITTER:	Joshua T. Matt
Total Attachments: 1 source=Assignment#page1.tif	

OP \$40.00 11931041

Traducción oficial hecha por Jimena Escobar Uribe, traductora e intérprete oficial según resolución No. 0369 del Ministerio de Justicia, del documento legalizado mediante la **APOSTILLA** No. **A350633** de 6 de enero de 2009 expedida en Estados Unidos de América correspondiente a un documento de cesión.

COD5163CONP

CERTIFICACION

Por medio del presente certifico que he comparado el documento anexo con el original y que dicho documento es una copia veraz de la cesión original tal como fue presentada y registrada en la Oficina de Patentes de los Estados Unidos en relación con USSN 11/931,041 presentada el 31 DE OCTUBRE DE 2007.

Firmado: Christina A. Clickner, Notario Público
Mi comisión termina el 2 de marzo del 2010
(sello notarial, Estado de New Jersey)

Oficina de Patentes y Marcas de los Estados Unidos
Subsecretario de Comercio para la Propiedad Intelectual y
Director de la Oficina de patentes y Marcas de los Estados
Unidos

Enero 11 de 2008

Joshua T. Matt
155 Seaport Boulevard
Boston, MA 00210-2604


JIMENA ESCOBAR URIBE
Traductor e Intérprete Oficial
Resolución No. 0369 Min. Justicia 1995

Oficina de Patentes y Marcas de los Estados Unidos
Notificación de registro de un documento de cesión

El documento adjunto ha sido registrado por la división de cesiones de la Oficina de Patentes y Marcas de los Estados Unidos. Un microfilm completo está disponible en el cuarto de búsqueda de cesiones en un rollo y un marco con número referenciado abajo.

Por favor revise toda la información contenida en esta notificación. La información contenida en esta notificación de registro refleja los datos presentados en el sistema de cesiones de patentes y marcas. Si usted encuentra algún error o tiene preguntas relacionadas con la notificación, puede contactar al empleado cuyo nombre aparece en esta notificación al 571-272-3350. Por favor envíe su solicitud de corrección a: Oficina de Patentes y Marcas de los Estados Unidos, Correo; Rama de Servicios de cesiones, P.O. Box 1450, Alexandria, Virginia 22313.

Fecha de registro: 01/11/2008

Rollo/marco: 020355/0630

Número de páginas: 2

Resumen: cesión de interés del cedente (ver documento para detalles).

Número de referencia: 22719-90

Cedente: Kassem, Salim Fecha del documento: 11/08/2207

Cesionario:

Codman & Shurtleff, Inc.

325 paramount Drive

Raynham, Massachusetts 02767-0350

Número de serie: 11931041

Fecha de presentación: 10/31/2007

Patente número:

Fecha de expedición:

Título: Indicador de postura de presión inalámbrico

Rama de Servicios de Cesiones

División de Registros Públicos

CESIÓN DE PATENTE

Versión electrónica v1.1

Versión de hoja de estilo v1.1

Tipo de Presentación: Nueva Cesión

Naturaleza de Consignación: Cesión

Datos de la Parte Consignataria

Nombre	Fecha de Ejecución
Salim Kassem	11/08/2007

Datos de la Parte Receptora

Nombre:	Codman & Shurtleff
Dirección:	325 Paramount Drive
Ciudad:	Raynham
Estado/País:	Massachusetts
Código Postal:	02767-0350

Número de Propiedad total: 1

Tipo de Propiedad	Número
Solicitud número	11931041

Datos de correspondencia

No. Fax (617) 310-9651

Correspondencia será enviada vía Correo de Estados Unidos cuando el intento por fax no sea exitoso

Teléfono: 617-439-2651

Email: jmaatt@nutter.com

Nombre del corresponsal: Joshua T. Matt

Línea 1 dirección: 155 Seaport Boulevard

Línea 4 dirección: Boston, Massachusetts 00210-2604

Número de archivo de abogado:	22719-90
Nombre del presentado:	Joshua T. Matt

Total de anexos: 1

Archivo de abogado No. 22719-90 (COD5163USNP)

CESION

Yo, Salim Kassem, de North Attleboro, Massachusetts, en consideración a Un Dólar y otras consideraciones de valor pagadas a mí por

CODMAN & SHURTLEFF, INC.

Una sociedad de Nueva Jersey con lugar de negocios en 325 Paramount Drive, Raynham, Massachusetts 02767-0350, el recibo del cual se acusa por medio del presente, por este medio vendo, cedo y transfiero a dicho

CODMAN & SHURTLEFF, INC.

Sus sucesores y cesionarios, la totalidad del interés para los Estados Unidos de América y todos los países extranjeros incluyendo todos los derechos de prioridad bajo la Convención Internacional para la Protección de la Propiedad Industrial, sobre un cierto invento o mejora en

INDICADOR DE POSTURA DE PRESIÓN INALÁMBRICO

Descrito en una solicitud de patente presentada en la Oficina de Patentes y Marcas de los Estados Unidos en 31 de octubre de 2007 y el cual recibió número de serie

11/931,041, y todos los títulos de patente de los Estados Unidos y todos los países extranjeros que sean otorgados sobre dicho invento o cualquier parte del mismo o sobre dicha solicitud o cualquier divisional, continuación, reexpedición u otras solicitudes basados en todo o en parte sobre el mismo. Y yo acuerdo, por mi parte y de mis ejecutores y administradores, con dicha sociedad y sus sucesores y cesionarios pero a su costa y cargo, de ahora en adelante ejecutar todas las solicitudes, modificación memorias descriptivas, documentos u otros instrumentos y hacer todos los actos necesarios o adecuados para asegurar el otorgamiento de título de patente en los Estados Unidos y en todos los países extranjeros a dicha sociedad, con memorias descriptivas y reivindicaciones en dicha forma en que sean aprobadas por parte del consejero de dicha sociedad y otorgar y confirmar a dicha sociedad, sus sucesores y cesionarios, la titularidad legal de todas dichas patentes.

Y por medio del presente autorizo y solicito al Comisionado de Patentes y Marcas de los Estados Unidos expedir dichos títulos de patente que sean otorgados sobre dicha solicitud o solicitudes basados sobre las mismas a la sociedad, sus sucesores y cesionarios.

EN TESTIMONIO DE LO CUAL, mi firma y sello este día 8 de noviembre de 2007.

(Firmado): Por Salim Kassem

Estado/Commonwealth de Massachusetts
Condado de Bristol

QUE SEA RECORDADO, que en este día 8 de noviembre de 2008, ante mí, Notario Público, compareció personalmente Salim

Kassem, quien estoy satisfecho es la persona nombrada y quien ejecutó el instrumento precedente en mi presencia, y habiéndole yo indicado el contenido del mismo, él reconoció que lo firmó, selló y otorgó como un acto voluntario para los usos y propósitos allí expresados.

Firmado: firma ilegible, (firma oficial y sello del notario)
Sello notarial: Brenda Lee O'Malia, notario público, Commonwealth de Massachusetts, mi comisión termina el 31 de mayo de 2013.

APOSTILLA

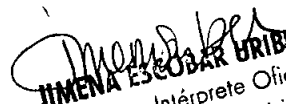
(Convención de la Haya de 5 de octubre de 1961)

1. País: Estados Unidos de América
2. Este documento público ha sido firmado por:
Christina A. Clickner
3. Actuando en su calidad de:
Notario Público de Nueva Jersey
4. Lleva el sello/estampilla de:
Christina A. Clickner, Notario

CERTIFICADO

5. En Trenton, Nueva Jersey
6. El 6 de enero de 2009
7. Por R. David Rousseau, Tesorero de Nueva Jersey
8. NO. A350633
9. Sello/Estampilla: Sello del Estado de Nueva Jersey
10. Firma: ilegible

Certificado número: 113365355
Verifique este número en línea en
https://www1.state.nj.us/TYTR_StandingCert/JSP/Verify_Cert.jsp


JIMENA ESCOBAR URIBE
Traductor e Intérprete Oficial
Resolución No. 0369 Min. Justicia 1995

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RELACIONES EXTERIORES

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2020
Bogotá D.C.,

Doctor(a)
ESCOBAR URIBE JIMENA
Apoderado(a) y/o Representante de
CODMAN & SHURTLEFF INC

REFERENCIA	Radicación No. 8 116823
	Trámite 2
	Evento 1
	Actuación 416
	Oficio No. 9615
	Folios 1

Teniendo en cuenta que la solicitud de privilegio de patente que se tramita bajo el expediente indicado en la referencia, reúne los requisitos de forma establecidos en los artículos 26 y 27 de la Decisión 486 de la Comisión de la Comunidad Andina, y en las demás disposiciones vigentes sobre la materia, se envía el extracto de la solicitud a la Oficina de Comunicaciones para efecto de su publicación en la Gaceta de Propiedad Industrial, conforme lo establece el artículo 40 de la misma Decisión.

Siendo manifestación expresa del interesado de efectuar la publicación "inmediato", esta se realizará en la próxima gaceta de Propiedad Industrial.

Cúmplase
Dado en Bogotá DC,

05 DIC. 2009

ALIX CARMENZA CESPEDES DE VERGEL
Directora de Nuevas Creaciones (c)

jfernand