

## U.S. PATENTS (January–December 1986)

- R. E. Fischell, *Manually Actuated Hydraulic Sphincter*, No. 4,571,749, Feb 25:  
An implantable system for controlling urinary incontinence. The implanted apparatus includes a manually actuated hydraulic control unit, the fluid pressure in which can be set and adjusted without surgery.
- R. E. Fischell (APL) and P. C. Lord (Pacesetter), *Refillable Medication Infusion Apparatus*, No. 4,573,994, Mar 4:  
An improved method and structure for safely filling and refilling the internal reservoir of an implantable medication infusion system.
- R. S. Potember, T. O. Poehler, and R. C. Benson, *Optical Storage and Switching Devices Using Organic Charge Transfer Salts*, No. 4,574,366, Mar 4:  
An optical storage/switching device fabricated as a thin crystalline film of charge transfer salt. In one embodiment, an erasable optical memory is disclosed.
- J. G. Parker and W. D. Stanbro, *Electro-Optical Device and Method for Monitoring Instantaneous Singlet Oxygen Concentration Produced During Photoradiation Using a CW Excitation Source*, No. 4,576,173, Mar 18:  
A method and apparatus for monitoring the generation of singlet oxygen during photochemotherapy using a CW light-excitation source, for dosimetry purposes.
- J. G. Parker and W. D. Stanbro, *Electro-Optical Device and Method for Monitoring Instantaneous Singlet Oxygen Concentration Produced During Photoradiation Using Pulsed Excitation and Time Domain Signal Processing*, No. 4,592,361, Jun 3:  
Relates generally to the same technology as Patent No. 4,576,173, above, but uses a pulsed-light excitation source and time domain signal processing to enhance the separation and measurement of the singlet oxygen emission signal.
- R. E. Fischell, *Single Valve Diaphragm Pump with Decreased Sensitivity to Ambient Conditions*, No. 4,594,058, Jun 10:  
An improved pump structure, particularly well suited for use in a medication infusion system.
- H. C. Yang and J. Silverman (Univ. Maryland), and J. J. Wozniak (APL), *Low Temperature Heat Shrinkable Polymer Material*, No. 4,596,728, Jun 24:  
A heat-shrinkable polymer material useful in implanted biomedical applications, such as a connecting sleeve for sutureless vascular anastomosis.
- G. H. Fountain, D. G. Lee, Jr., and D. A. Kitchin, *Patient ECG Recording Control for an Automatic Implantable Defibrillator*, No. 4,625,730, Dec 2:  
A system enabling a patient to initiate storage of electrocardiogram data relating to the operation of an automatic implantable defibrillator device.
- J. G. Chubbuck and M. H. Epstein, *X-Ray Readable Implantable Pressure Sensor*, No. 4,627,443, Dec 9:  
An implantable sensor device for measuring cerebral spinal fluid pressure within a brain ventricle. The sensor incorporates a radiopaque material that moves within a metering channel in accordance with cerebral spinal fluid pressure and is detectable by X-ray.
- R. Turner, *Method and Apparatus Using Laser Radiation for Generating and Measuring Gas Bubbles*, No. 4,627,726, Dec 9:  
A system using laser apparatus for generating and measuring the size and velocity of bubbles within a liquid under test, for the purpose of qualitative analysis.
- W. H. Zinger and J. A. Krill, *Multiport Rectangular  $TE_{10}$  to Circular  $TE_{01}$  Mode Transducer Having Pyramidal Shaped Transducing Means*, No. 4,628,287, Dec 9:  
A transducer structure that allows efficient coupling over a relatively wide bandwidth between a circular  $TE_{01}$  overmoded waveguide and multiple standard rectangular  $TE_{10}$  mode waveguides.
- J. L. Keirse, *Solid Fuel Ramjet Flow Control Device*, No. 4,628,688, Dec 16:  
A device for controlling the rate of fuel generation on board a solid fuel ramjet by changing the distribution of air within the solid fuel combustor in response to changes in engine and flight conditions encountered in operation.
- R. E. Fischell and D. A. Todd (C. R. Bard, Inc.), *Urethral Sphincter Cuff*, No. 4,632,114, Dec 30:  
An adjustable inflatable urethral sphincter cuff for use in an implantable urinary control system.
- W. Seamone and J. H. Loveless, *Prosthetic Elbow with a Motor-Driven Release Mechanism*, No. 4,604,098, Aug 5:  
An improved release mechanism for a prosthetic elbow lock.
- R. W. Makofski, J. T. Massey, F. F. Mark, F. B. Weiskopf, Jr., and W. H. Guier (APL), and P. C. Walsh and F. F. Marshall (JHU), *Means and Method for the Noninvasive Fragmentation of Body Concretions*, No. 4,610,249, Sep 9:  
A system for noninvasively fragmenting kidney stones and other body concretions. The concretion is localized with ultrasound and then shattered by means of shockwaves coupled to the patient by a flexible membrane that covers a fluid-filled reflector structure housing the shockwave generator.
- C. W. Webster and R. K. Stilwell, *Backfire Bifilar Helix Antenna*, No. 4,608,574, Aug 26:  
A backfire bifilar helix antenna having an input impedance that can be adjusted over a broad band of frequencies.
- R. E. Fischell, *Apparatus for Detecting at Least One Predetermined Condition and Providing an Informational Signal in Response Thereto in a Medication Infusion System*, No. 4,619,653, Oct 28:  
Relates to a system for monitoring and telemetering various operating conditions of an implanted medication infusion system, including: fluid leak within the implant, unsafe dosage limit being programmed, medication level being pumped does not correlate with intended level, low battery voltage or medication reserve.
- E. E. Westerfield, *Transdigitizer for Relaying Signals from Global Positioning System (GPS) Satellites*, No. 4,622,557, Nov 11:  
A circuitry for receiving and converting geodetic position-determining signals from Global Position System satellites and retransmitting them to a receiving station for processing. One practical application is for locating an array of sonobuoys used in determining the splashdown point of a test missile.
- J. J. Wozniak, *Vascular Everting Instrument*, No. 4,622,970, Nov 18:  
An instrument for everting the end of a blood vessel or the like, for example, during a vascular anastomosis procedure.