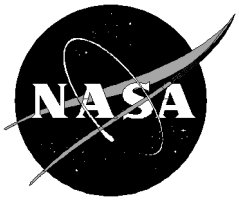
NASA/SP—2003-7039/SUPPL62
January 2003

NASA PATENT ABSTRACTS BIBLIOGRAPHY

A CONTINUING BIBLIOGRAPHY



National Aeronautics and
Space Administration
Langley Research Center
**Scientific and Technical
Information Program Office**

NASA STI Program ... in Profile

Since its founding, NASA has been dedicated to the advancement of aeronautics and space science. The NASA Scientific and Technical Information (STI) Program plays a key part in helping NASA maintain this important role.

The NASA STI Program provides access to the NASA STI Database, the largest collection of aeronautical and space science in the world. The STI Program is also NASA's institutional mechanism for disseminating the results of its research and development activities. These results are published by NASA in the NASA STI Report Series, which includes the following report types:

- TECHNICAL PUBLICATION. Reports of completed research or major significant phases of research that present the results of NASA programs and include extensive data or theoretical analysis. Includes compilations of significant scientific and technical data and information deemed of continuing reference value. NASA counterpart of peer-reviewed formal professional papers, but has less stringent limitations on manuscript length and extent of graphic presentations.
- TECHNICAL MEMORANDUM. Scientific and technical findings that are of preliminary or specialized interest, e.g., quick release reports, working papers, and bibliographies that contain minimal annotation. Does not contain extensive analysis.
- CONTRACTOR REPORT. Scientific and technical findings by NASA-sponsored contractors and grantees.
- CONFERENCE PUBLICATION. Collected papers from scientific and technical conferences, symposia, seminars, or other meetings sponsored or co-sponsored by NASA.
- SPECIAL PUBLICATION. Scientific, technical, or historical information from NASA programs, projects, and missions, often concerned with subjects having substantial public interest.
- TECHNICAL TRANSLATION. English-language translations of foreign scientific and technical material pertinent to NASA's mission.

Specialized services that help round out the STI Program's diverse offerings include creating custom thesauri, building customized databases, organizing and publishing research results ... even providing videos.

The NASA STI Program is managed by the NASA STI Program Office (STIPO). STIPO is the administrative office at Langley Research Center for the NASA STI Program.

For more information about the NASA STI Program, you can:

- Access the NASA STI Program Home Page at *http://www.sti.nasa.gov*
- E-mail your question via the Internet to *help@sti.nasa.gov*
- Fax your question to the NASA STI Help Desk at (301) 621-0134
- Telephone the NASA STI Help Desk at (301) 621-0390
- Write to:
  NASA STI Help Desk
  NASA Center for AeroSpace Information
  7121 Standard Drive
  Hanover, MD 21076-1320

Introduction

Several thousand inventions result each year from research supported by the National Aeronautics and Space Administration. NASA seeks patent protection on inventions to which it has title if the invention has important use in government programs or significant commercial potential. These inventions cover a broad range of technologies and include many that have useful and valuable commercial application.

NASA inventions best serve the interests of the United States when their benefits are available to the public. In many instances, the granting of nonexclusive or exclusive licenses for the practice of these inventions may assist in the accomplishment of this objective. This bibliography is published as a service to companies, firms, and individuals seeking new, licensable products for the commercial market.

The *NASA Patent Abstracts Bibliography* is a semiannual NASA publication containing comprehensive abstracts of NASA owned inventions covered by U.S. patents. The citations included in the bibliography arrangement of citations were originally published in NASA's *Scientific and Technical Aerospace Reports (STAR)* and cover *STAR* announcements made since May 1969.

The citations published in this issue cover the period July 2002 through. December 2002. This issue includes 10 major subject divisions separated into 76 specific categories and one general category/division. (See Table of Contents for the scope note of each category, under which are grouped appropriate NASA inventions.) This scheme was devised in 1975 and revised in 1987 in lieu of the 34 category divisions which were utilized in supplements (01) through (06) covering *STAR* abstracts from May 1969 through January 1974. Each entry consists of a *STAR* citation accompanied by an abstract and, when appropriate, a key illustration taken from the patent or application for patent. Entries are arranged by subject category in ascending order.

A typical citation and abstract presents the various data elements included in most records cited. This appears after the table of contents.

Information About Patent Availability and Licenses

Patent Availability
How to obtain copies of NASA patents.

Licenses for Commercial Use
Information on obtaining a license to use a NASA patented invention.

Address of NASA Patent Counsels
Addresses for the NASA center patent counsels having knowledge of the invention.

Patent Licensing Regulations
Information about the policies and procedures for licensing federally owned inventions in the custody of the National Aeronautics and Space Administration. Visit the U.S. Patent and Trademark Office at: http://www.access.gpo.gov/nara/cfr/waisidx_02/37cfr404_02.html.

The Federal Depository Library Program (FDLP)
The U.S. Congress established the **Federal Depository Library Program** (FDLP) to ensure access by the American public to U.S. Government information. The program acquires and disseminates information products from all three branches of the U.S. Government to nearly 1,300 Federal depository libraries nationwide. The libraries maintain these information products as part of their existing collections and are responsible for assuring that the public has free access to the information. Locate the Federal Depository Libraries at: http://www.access.gpo.gov/su_docs.

Table of Contents

Select a category to view the collection of records cited. N.A. means no abstracts in that category.

Indexes

Two indexes are available. You may use the **Find** command under the **Tools** menu while viewing the PDF file for direct match searching on any text string. You may also view the indexes provided, for searching on *NASA Thesaurus* subject terms and author names.

Selecting an index above will link you to that comprehensive listing.

NASA PATENT ABSTRACTS BIBLIOGRAPHY

A Continuing Bibliography (Suppl. 62)

JANUARY 2003

05
AIRCRAFT DESIGN, TESTING AND PERFORMANCE

Includes aircraft simulation technology. For related information see also 18 Spacecraft Design, Testing and Performance and 39 Structural Mechanics. For land transportation vehicles see 85 Urban Technology and Transportation.

20020089565 NASA Langley Research Center, Hampton, VA USA

Device and Method for Reducing Aircraft Noise

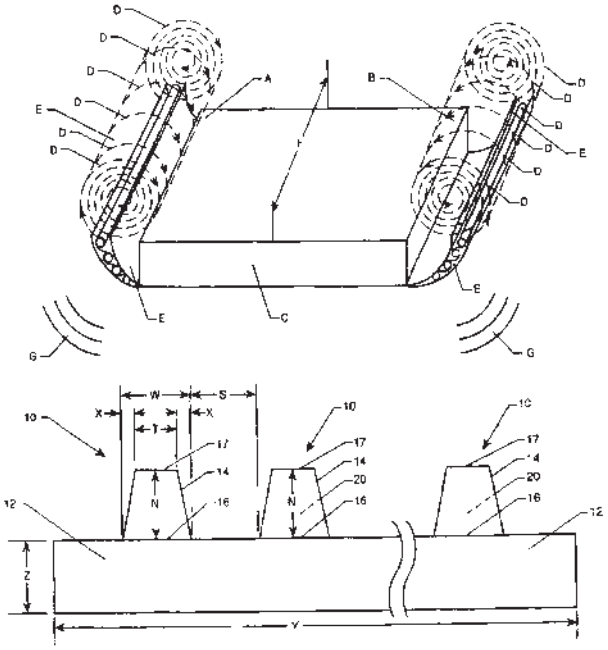
Streett, Craig L., Inventor, NASA Langley Research Center, USA; Lin, John C., Inventor, NASA Langley Research Center, USA; Oct. 29, 2002; 8p; In English; Provisional US-Patent-Appl-SN-125563, filed 22 Mar. 1999

Patent Info.: Filed 22 Mar. 2000; NASA-Case-LAR-15856-1; US-Patent-6,471,157; US-Patent-Appl-SN-533282; US-Patent-Appl–SN-125563; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

A noise abatement device that is positioned adjacent to a body. The noise abatement device generally includes tabs or cavities which thicken the shear layer created by fluid flow over, around, or near the body, by creating horseshoe-shaped vortices; this thickening of the shear layer reduces the strength of fluctuations in the flow which produce noise.

Official Gazette of the U.S. Patent and Trademark Office

Horseshoe Vortices; Aircraft Noise; Noise Reduction; Mechanical Devices



Includes telemetry; space communications networks; astronavigation and guidance; and radio blackout. For related information see also 04 Aircraft Communications and Navigation and 32 Communications and Radar.

20020089610 NASA Dryden Flight Research Center, Edwards, CA USA

Method and Apparatus for Flight Data Acquisition using an Optimized Multiple Frequency Waveform

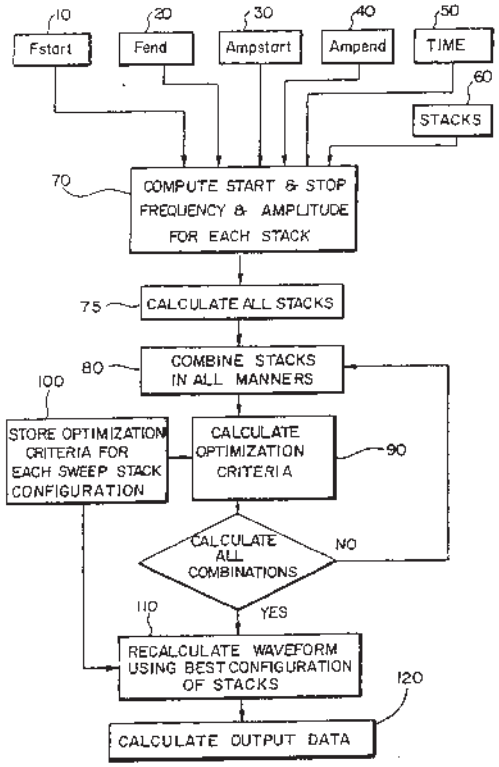
Duke, Bryan D., Inventor, NASA Dryden Flight Research Center, USA; Sep. 03, 2002; 8p; In English

Patent Info.: Filed 23 Feb. 2000; NASA-Case-DRC-099-006; US-Patent-6,446,015; US-Patent-Appl-SN-511583; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

The present invention comprises a method and apparatus that generates a waveform consisting of an arbitrary number of frequency sweeps combined from adding and subtracting mini frequency sweeps. Optimization routines determine the best combination order of frequency sweep to minimize or maximize design criteria such is aerodynamic surface deflection or maximum command rate of the wave form. The invention allows for arbitrary output timing, or commands per second issued for the desired waveform, arbitrary starting and ending frequencies and amplitudes, arbitrary number of frequency sweep components, arbitrary frequency sweep exponent, arbitrary amplitude sweep exponent, and arbitrary waveform length. For a given frequency range and sweep exponent, amplitude range and sweep exponent, desired total waveform time and number of frequency sweep components, the algorithm can determine the optimum arrangement of the components to minimize the maximum amplitude or rate.

Official Gazette of the U.S. Patent and Trademark Office

Flight Operations; Data Acquisition; Algorithms; Waveforms; Frequency Ranges; Sweep Frequency



20
SPACECRAFT PROPULSION AND POWER

Includes main propulsion systems and components, e.g., rocket engines; and spacecraft auxiliary power sources. For related information see also 07 Aircraft Propulsion and Power, 28 Propellants and Fuels, 44 Energy Production and Conversion, and 15 Launch Vehicles and Space Vehicles.

20020077950 NASA Glenn Research Center, Cleveland, OH USA

Rocket Motor Joint Construction Including Thermal Barrier

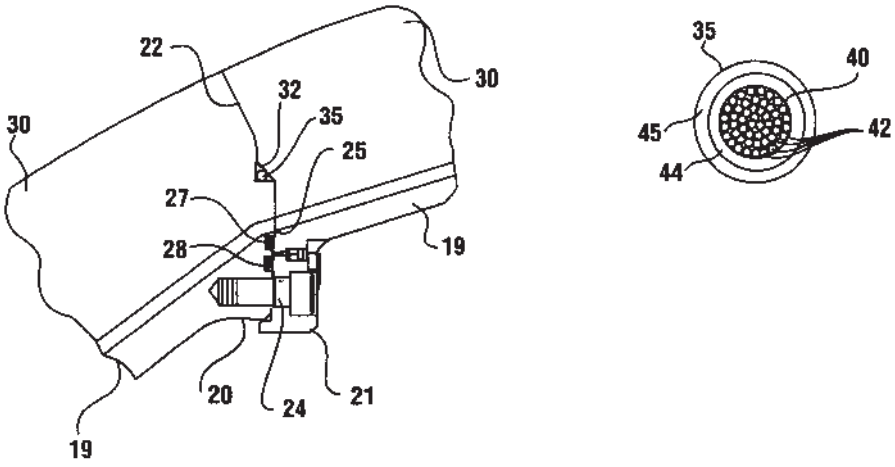
Steinetz, Bruce M., Inventor, NASA Glenn Research Center, USA; Dunlap, Patrick H., Jr., Inventor, NASA Glenn Research Center, USA; Sep. 10, 2002; 12p; In English; Provisional application of US-Patent-Appl-SN-144353, filed 9 Jul. 1999

Patent Info.: Filed 27 Jun. 2000; NASA-Case-LEW-16684-1; US-Patent-6,446,979; US-Patent-Appl-SN-613053; US-Patent-Appl-SN-144353; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

A thermal barrier for extremely high temperature applications consists of a carbon fiber core and one or more layers of braided carbon fibers surrounding the core. The thermal barrier is preferably a large diameter ring, having a relatively small cross-section. The thermal barrier is particularly suited for use as part of a joint structure in solid rocket motor casings to protect low temperature elements such as the primary and secondary elastomeric O-ring seals therein from high temperature gases of the rocket motor. The thermal barrier exhibits adequate porosity to allow pressure to reach the radially outward disposed O-ring seals allowing them to seat and perform the primary sealing function. The thermal barrier is disposed in a cavity or groove in the casing joint, between the hot propulsion gases interior of the rocket motor and primary and secondary O-ring seals. The characteristics of the thermal barrier may be enhanced in different applications by the inclusion of certain compounds in the casing joint, by the inclusion of RTV sealant or similar materials at the site of the thermal barrier, and/or by the incorporation of a metal core or plurality of metal braids within the carbon braid in the thermal barrier structure.

Official Gazette of the U.S. Patent and Trademark Office

Solid Propellant Rocket Engines; Thermal Barriers (Plasma Control); Joints (Junctions); Sealers



20020089469 NASA Glenn Research Center, Cleveland, OH USA

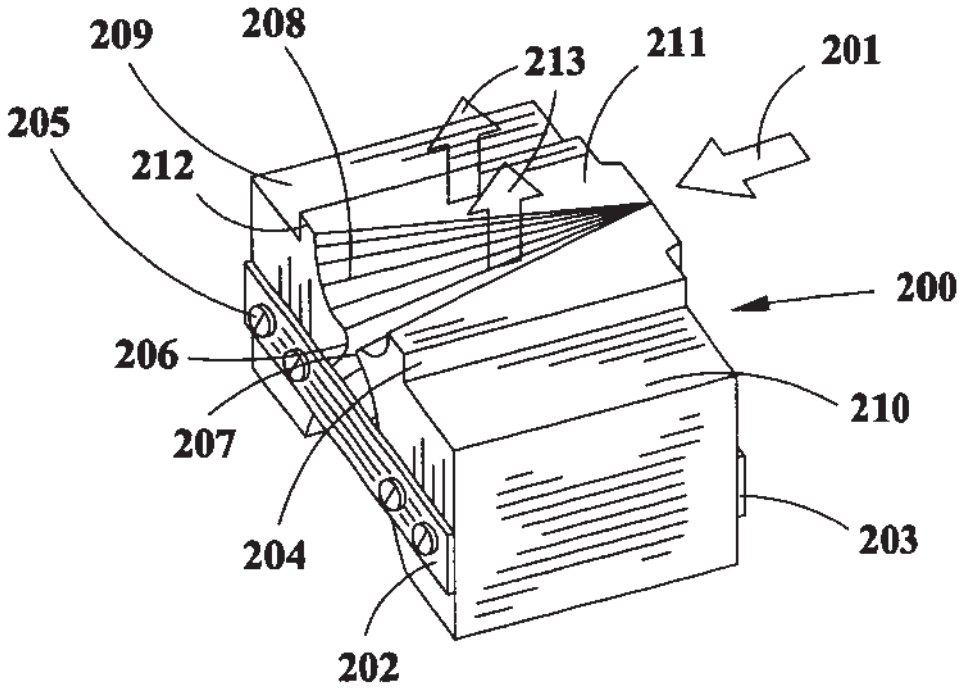
Minimally Intrusive and Nonintrusive Supersonic Injectors for LANTR and RBCC/Scramjet Propulsion Systems

Buggele, Alvin E., Inventor, NASA Glenn Research Center, USA; Gallagher, John R., Inventor, NASA Glenn Research Center, USA; Oct. 29, 2002; 20p; In English; Provisional US-Patent-Appl-SN-219002, filed 17 Jul. 2000

Patent Info.: Filed 16 Jul. 2001; NASA-Case-LEW-17017-1; US-Patent-6,470,672; US-Patent-Appl-SN-909170; US-Patent-Appl-SN-219002; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

A family of supersonic injectors for use on spaceplanes, rockets and missiles and the like is disclosed and claimed. Each injector maintains a specific constant (uniform) Mach number along its length when used while being minimally intrusive at significantly higher injectant pressure than combuster freestream total pressure. Each injector is substantially non-intrusive when

it is not being used. The injectors may be used individually or in a group. Different orientations of the injectors in a group promotes greater penetration and mixing of fuel or oxidizer into a supersonic combustor. The injectors can be made from single piece of Aluminum, investment cast metal, or ceramic or they can be made from starboard and port blocks strapped together to accurately control the throat area. Each injector includes an elongated body having an opening which in cross section is an hour glass (venturi shaped) and the opening diverges in width and depth from the bow section to the stem section of the opening.
Official Gazette of the U.S. Patent and Trademark Office
Supersonic Combustion Ramjet Engines; Propulsion System Performance; Propulsion System Configurations; Nonintrusive Measurement; Injectors

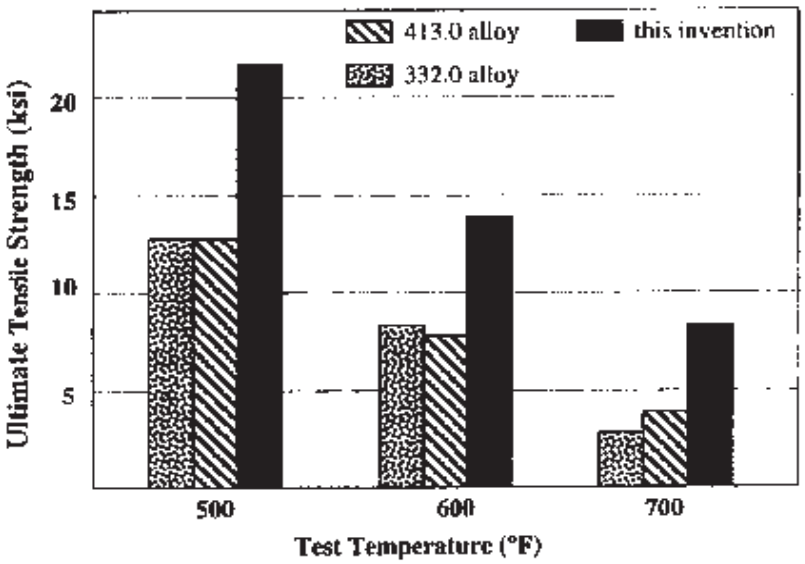


26
METALS AND METALLIC MATERIALS

20020078327 NASA Marshall Space Flight Center, Huntsville, AL USA
Aluminum-Silicon Alloy Having Improved Properties At Elevated Temperatures and Process for Producing Cast Articles Therefrom
Lee, Jonathan A., Inventor, NASA Marshall Space Flight Center, USA; Chen, Po-Shou, Inventor, NASA Marshall Space Flight Center, USA; Jul. 16, 2002; 8p; In English; Continuation-in-part of abandoned US-Patent-Appl-SN-322713, filed 25 May 1999; continuation-in-part of abandoned US-Patent-Appl-SN-152469, filed 8 Sep. 1998
Patent Info.: Filed 22 Dec. 2000; NASA-Case-MFS-31294-6; US-Patent-6,419,769; US-Patent-Appl-SN-749503; US-Patent-Appl-SN-322713; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

A process for making a cast article from an aluminum alloy includes first casting an article from an alloy having the following composition, in weight percent: Silicon 11.0-14.0, Copper 5.6-8.0, Iron 0-0.8, Magnesium 0.5-1.5, Nickel 0.05-0.9, Manganese 0-1.0, Titanium 0.05-1.2, Zirconium 0.12-1.2, Vanadium 0.05-1.2, Zinc 0.05-0.9, Strontium 0.001-0.1, Aluminum balance . In this alloy the ratio of silicon to magnesium is 10 to 25, and the ratio of copper to magnesium is 4 to 15. After an article is cast from the alloy, the cast article is aged at a temperature within the range of 400F to 500F for a time period within the range of four to 16 hours. It has been found especially advantageous if the cast article is first exposed to a solutionizing step prior to the aging step. This solutionizing step is carried out by exposing the cast article to a temperature within the range of 900F to 1000F for a time period of fifteen minutes to four hours. It has also been found to be especially advantageous if the solutionizing step is followed directly with a quenching step, wherein the cast article is quenched in a quenching medium such as water at a temperature within

the range of 120F to 300F. The resulting cast article is suitable in a number of high temperature applications, such as heavy-duty pistons for internal combustion engines.
Official Gazette of the U.S. Patent and Trademark Office
Aluminum Alloys; Silicon Alloys; Casting; High Temperature



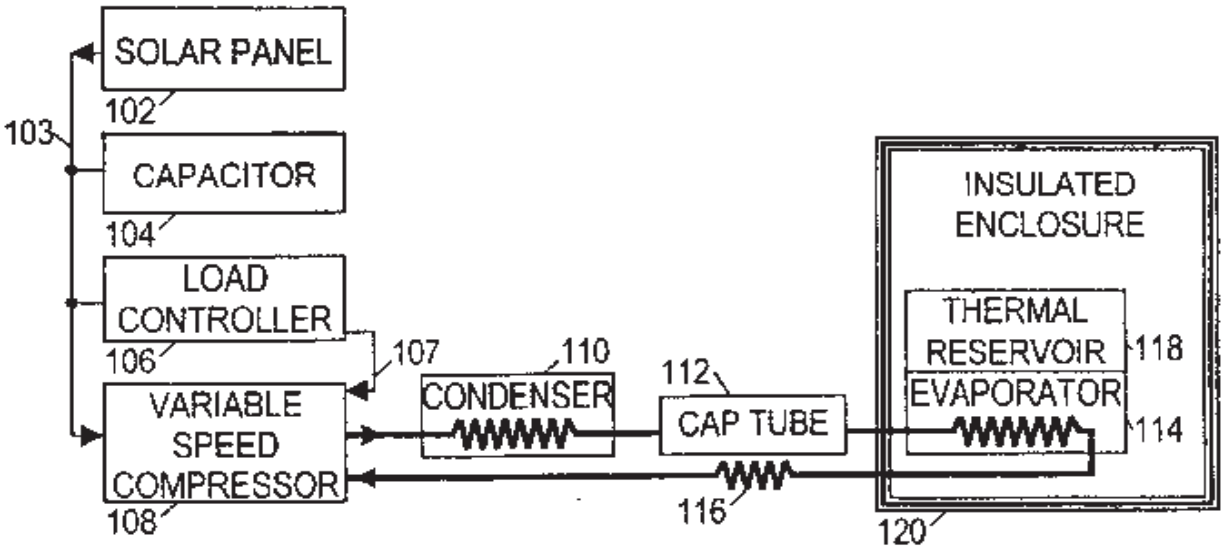
31
ENGINEERING (GENERAL)

Includes vacuum technology; control engineering; display engineering; cryogenics; and fire prevention.

20020089611 NASA Johnson Space Center, Houston, TX USA
Solar-Powered Refrigeration System
Ewert, Michael K., Inventor, NASA Johnson Space Center, USA; Bergeron, David J., III, Inventor, NASA Johnson Space Center, USA; Oct. 22, 2002; 10p; In English; Division of US-Patent-Appl-SN-337208, filed 3 Jun. 1999
Patent Info.: Filed 19 Apr. 2001; NASA-Case-MSC-22970-2; US-Patent-6,469,487; US-Patent-Appl-SN-838679; US-Patent-Appl-SN-337208; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

A solar powered vapor compression refrigeration system is made practicable with thermal storage and novel control techniques. In one embodiment, the refrigeration system includes a photovoltaic panel, a variable speed compressor, an insulated enclosure, and a thermal reservoir. The photovoltaic (PV) panel converts sunlight into DC (direct current) electrical power. The DC electrical power drives a compressor that circulates refrigerant through a vapor compression refrigeration loop to extract heat from the insulated enclosure. The thermal reservoir is situated inside the insulated enclosure and includes a phase change material. As heat is extracted from the insulated enclosure, the phase change material is frozen, and thereafter is able to act as a heat sink to maintain the temperature of the insulated enclosure in the absence of sunlight. The conversion of solar power into stored thermal energy is optimized by a compressor control method that effectively maximizes the compressor's usage of available energy. A capacitor is provided to smooth the power voltage and to provide additional current during compressor start-up. A controller monitors the rate of change of the smoothed power voltage to determine if the compressor is operating below or above the available

power maximum, and adjusts the compressor speed accordingly. In this manner, the compressor operation is adjusted to convert substantially all available solar power into stored thermal energy.
Official Gazette of the U.S. Patent and Trademark Office
Control Systems Design; Refrigerating Machinery; Enclosure; Heat Storage; Solar Energy Conversion



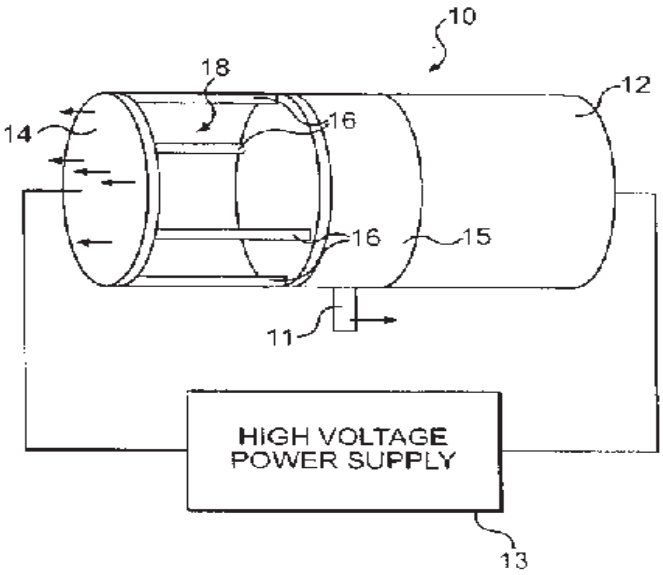
33
ELECTRONICS AND ELECTRICAL ENGINEERING

Includes test equipment and maintainability; components, e.g., tunnel diodes and transistors; microminiaturization; and integrated circuitry. For related information see also 60 Computer Operations and Hardware and 76 Solid-State Physics.

20020076454 NASA Marshall Space Flight Center, Huntsville, AL USA
Apparatus for Generating Thrust Using a Two Dimensional, Asymmetrical Capacitor Module
Campbell, Jonathan W., Inventor, NASA Marshall Space Flight Center, USA; Jun. 25, 2002; 6p; In English; Continuation-in-part of US-Patent-Appl-SN-520817, filed on Mar. 8, 2000
Patent Info.: Filed 20 Sep. 2001; NASA-Case-MFS-31611-1-CIP; US-Patent-6,411,493; US-Patent-Appl-SN-961552; US-Patent-Appl-SN-520817; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

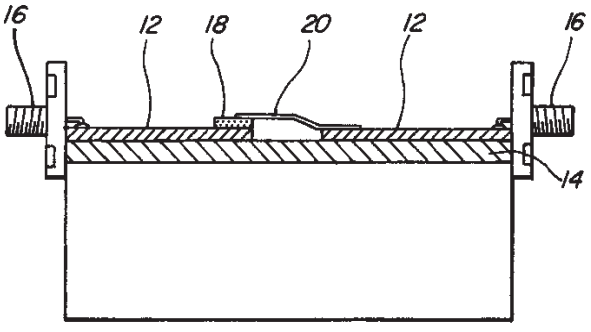
An asymmetrical capacitor module for generating thrust includes two conductive elements of similar but different geometries separated by a dielectric member. Improved embodiments provided in the construction of conductive elements of smaller axial

extent include those where the element is formed by an annular wire or a dielectric supported ring. Other embodiments concern the dielectric member and involve changes in the extent and shape thereof.
Official Gazette of the U.S. Patent and Trademark Office
Asymmetry; Capacitors; Dielectrics; Thrust



20020089606 NASA Pasadena Office, CA USA
Composite Material Switches
Javadi, Hamid, Inventor, Jet Propulsion Lab., California Inst. of Tech., USA; Sep. 03, 2002; 10p; In English; Division of abandoned US-Patent-Appl-SN-530976, filed 20 Sep. 1995
Patent Info.: Filed 28 Dec. 2000; NASA-Case-NPO-19442-3-CU; US-Patent-6,445,280; US-Patent-Appl-SN-808047; US-Patent-Appl-SN-530976; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

A device to protect electronic circuitry from high voltage transients is constructed from a relatively thin piece of conductive composite sandwiched between two conductors so that conduction is through the thickness of the composite piece. The device is based on the discovery that conduction through conductive composite materials in this configuration switches to a high resistance mode when exposed to voltages above a threshold voltage.
Official Gazette of the U.S. Patent and Trademark Office
Circuits; Composite Materials; Switches; Electronic Equipment; Microelectronics



20020089466 NASA Johnson Space Center, Houston, TX USA

Bubble Measuring Instrument and Method

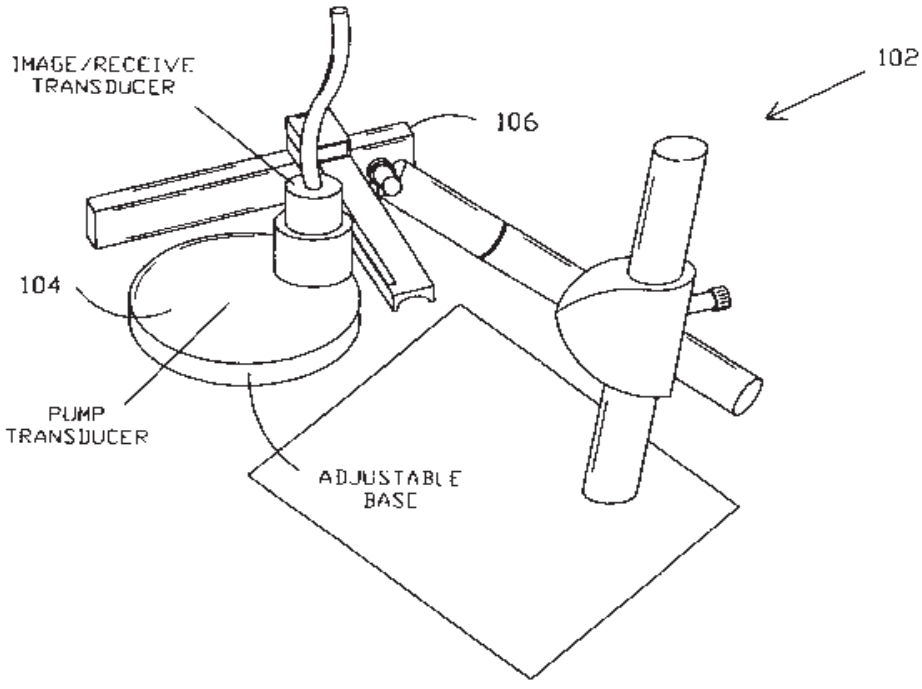
Kline-Schoder, Robert, Inventor, NASA Johnson Space Center, USA; Magari, Patrick J., Inventor, NASA Johnson Space Center, USA; Oct. 15, 2002; 18p; In English; Divsion of US-Patent-Appl-SN-498440, filed 4 Feb. 2000

Patent Info.: Filed 26 Mar. 2002; NASA-Case-MSC-22980-2; US-Patent-6,463,785; US-Patent-Appl-SN-113647; US-Patent-Appl-SN-498440; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Method and apparatus are provided for a non-invasive bubble measuring instrument operable for detecting. distinguishing, and counting gaseous embolisms such as bubbles over a selectable range of bubble sizes of interest. A selected measurement volume in which bubbles may be detected is insonified by two distinct frequencies from a pump transducer and an image transducer, respectively. The image transducer frequency is much higher than the pump transducer frequency. The relatively low-frequency pump signal is used to excite bubbles to resonate at a frequency related to their diameter. The image transducer is operated in a pulse-echo mode at a controllable repetition rate that transmits bursts of high-frequency ultrasonic signal to the measurement volume in which bubbles may be detected and then receive, the echo. From the echo or received signal, a beat signal related to the repetition rate may be extracted and used to indicate the presence or absence of a resonant bubble. In a preferred embodiment, software control maintains the beat signal at a preselected frequency while varying the pump transducer frequency to excite bubbles of different diameters to resonate depending on the range of bubble diameters selected for investigation.

Official Gazette of the U.S. Patent and Trademark Office

Bubbles; Signal Measurement; Measuring Instruments; Image Transducers; Detection



35
INSTRUMENTATION AND PHOTOGRAPHY

Includes remote sensors; measuring instruments and gages; detectors; cameras and photographic supplies; and holography. For aerial photography see 43 Earth Resources and Remote Sensing. For related information see also 06 Aircraft Instrumentation, and 19 Space Instrumentation.

20020078061 NASA Johnson Space Center, Houston, TX USA

Bubble Measuring Instrument and Method

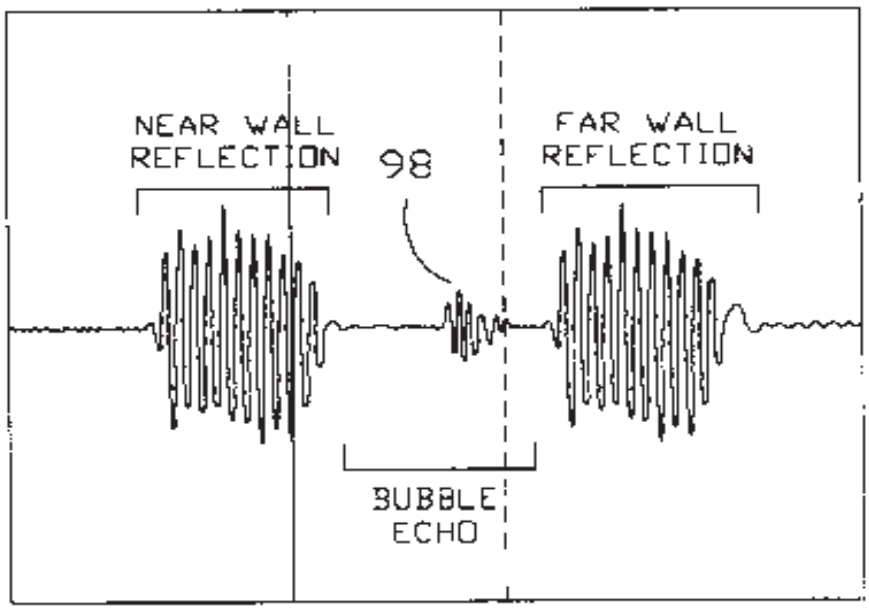
Kline-Schoder, Robert, Inventor, NASA Johnson Space Center, USA; Magari, Patrick J., Inventor, NASA Johnson Space Center, USA; Jun. 25, 2002; 20p; In English

Patent Info.: Filed 4 Feb. 2000; NASA-Case-MSC-22980-1; US-Patent-6,408,679; US-Patent-Appl-SN-498440; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Method and apparatus are provided for a non-invasive bubble measuring instrument operable for detecting, distinguishing, and counting gaseous embolisms such as bubbles over a selectable range of bubble sizes of interest. A selected measurement volume in which bubbles may be detected is insonified by two distinct frequencies from a pump transducer and an image transducer. respectively. The image transducer frequency is much higher than the pump transducer frequency. The relatively low-frequency pump signal is used to excite bubbles to resonate at a frequency related to their diameter. The image transducer is operated in a pulse-echo mode at a controllable repetition rate that transmits bursts of high-frequency ultrasonic signal to the measurement volume in which bubbles may be detected and then receives the echo. From the echo or received signal, a beat signal related to the repetition rate may be extracted and used to indicate the presence or absence of a resonant bubble. In a preferred embodiment, software control maintains the beat signal at a preselected frequency while varying the pump transducer frequency to excite bubbles of different diameters to resonate depending on the range of bubble diameters selected for investigation.

Official Gazette of the U.S. Patent and Trademark Office

Bubbles; Measuring Instruments; Image Transducers; Ultrasonics



20020089465 NASA Kennedy Space Center, Cocoa Beach, FL USA

Transient Voltage Recorder

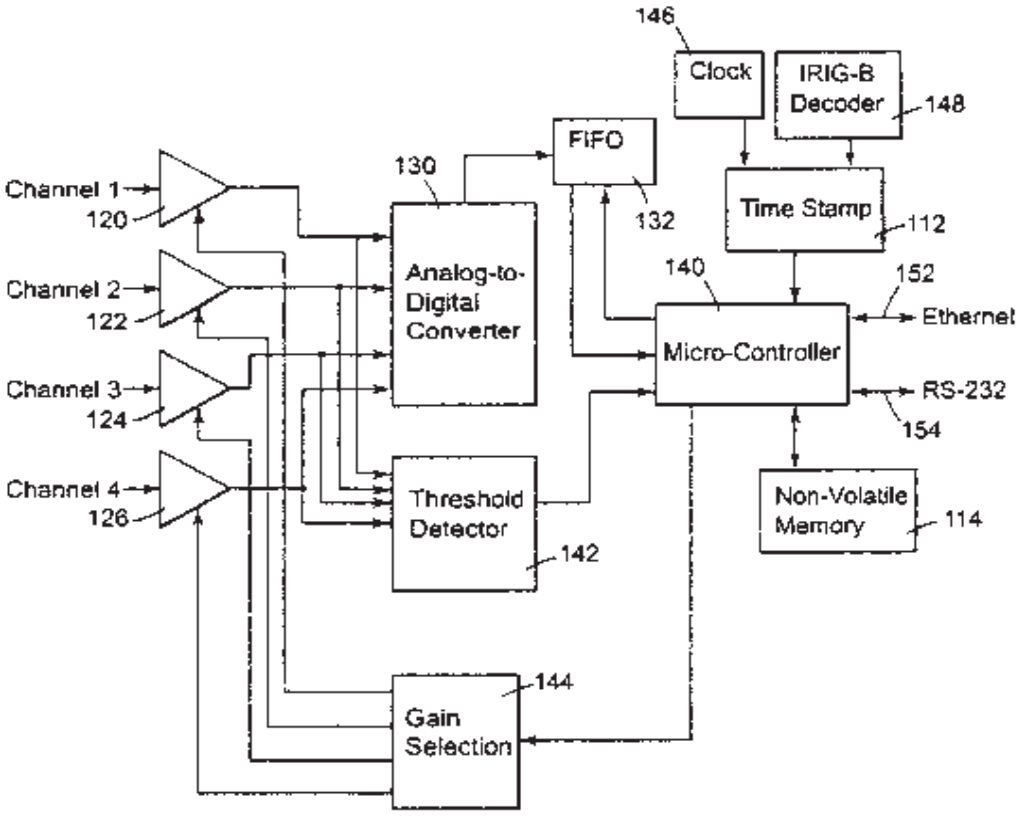
Medelius, Pedro J., Inventor, NASA Kennedy Space Center, USA; Simpson, Howard J., Inventor, NASA Kennedy Space Center, USA; Sep. 17, 2002; 8p; In English; Provisional US-Patent-Appl-SN-175168, filed 7 Jan. 2000

Patent Info.: Filed 8 Jan. 2001; NASA-Case-KSC-11991; US-Patent-6,452,373; US-Patent-Appl-SN-758051; US-Patent-Appl-SN-175168; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

A voltage transient recorder can detect lightning induced transient voltages. The recorder detects a lightning induced transient voltage and adjusts input amplifiers to accurately record transient voltage magnitudes. The recorder stores voltage data from numerous monitored channels, or devices. The data is time stamped and can be output in real time, or stored for later retrieval. The transient recorder, in one embodiment, includes an analog-to-digital converter and a voltage threshold detector. When an input voltage exceeds a pre-determined voltage threshold, the recorder stores the incoming voltage magnitude and time of arrival. The recorder also determines if its input amplifier circuits clip the incoming signal or if the incoming signal is too low. If the input data is clipped or too low, the recorder adjusts the gain of the amplifier circuits to accurately acquire subsequent components of the lightning induced transients.

Official Gazette of the U.S. Patent and Trademark Office

Electric Potential; Voltage Amplifiers; Transient Response; Recording



20020089598 NASA Langley Research Center, Hampton, VA USA

Ultrasonic Apparatus and Technique to Measure Changes in Intracranial Pressure

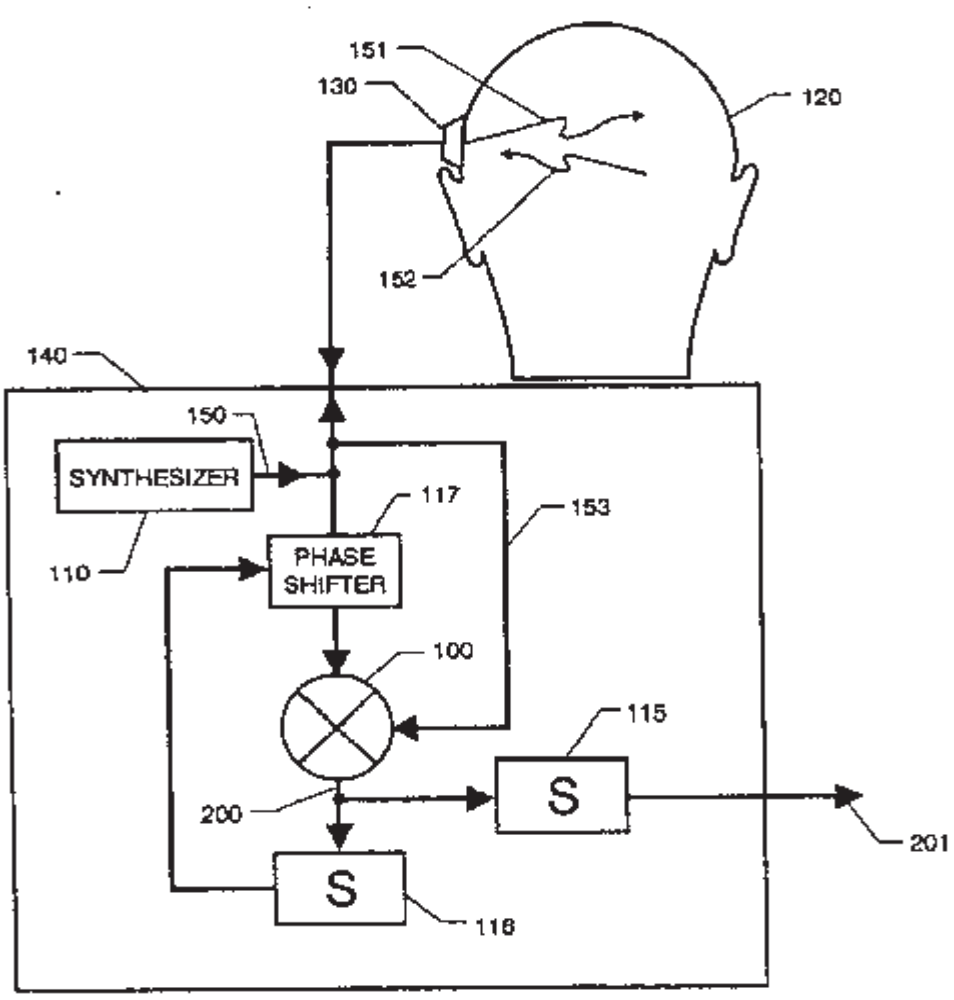
Yost, William T., Inventor, NASA Langley Research Center, USA; Cantrell, John H., Inventor, NASA Langley Research Center, USA; Nov. 05, 2002; 12p; In English; Provisional US-Patent-Appl-SN-117378, filed 27 Jan. 1999

Patent Info.: Filed 27 Jan. 2000; NASA-Case-LAR-15507-1; US-Patent-6,475,147; US-Patent-Appl-SN-493044; US-Patent-Appl-SN-117378; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Changes in intracranial pressure can be measured dynamically and non-invasively by monitoring one or more cerebrospinal fluid pulsatile components. Pulsatile components such as systolic and diastolic blood pressures are partially transferred to the cerebrospinal fluid by way of blood vessels contained in the surrounding brain tissue and membrane. As intracranial pressure varies these cerebrospinal fluid pulsatile components also vary. Thus, intracranial pressure can be dynamically measured. Furthermore, use of acoustics allows the measurement to be completely non-invasive. In the preferred embodiment, phase comparison of a reflected acoustic signal to a reference signal using a constant frequency pulsed phase-locked-loop ultrasonic device allows the pulsatile components to be monitored. Calibrating the device by inducing a known change in intracranial pressure allows conversion to changes in intracranial pressure.

Official Gazette of the U.S. Patent and Trademark Office

Cerebrospinal Fluid; Intracranial Pressure; Ultrasonics; Tissues (Biology); Measuring Instruments



20020089605 NASA Marshall Space Flight Center, Huntsville, AL USA

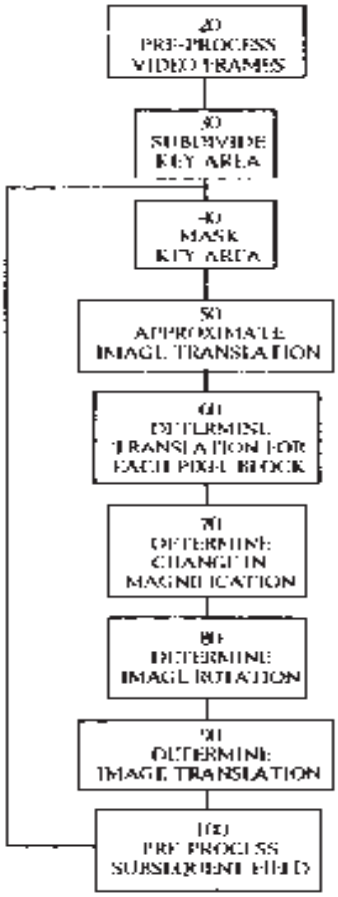
Video Image Stabilization and Registration

Hathaway, David H., Inventor, NASA Marshall Space Flight Center, USA; Meyer, Paul J., Inventor, NASA Marshall Space Flight Center, USA; Oct. 01, 2002; 16p; In English; Provisional US-Patent-Appl-SN-099056, filed 26 Aug. 1998

Patent Info.: Filed 26 Jul. 1999; NASA-Case-MFS-31243-1; US-Patent-6,459,822; US-Patent-Appl-SN-364919; US-Patent-Appl-SN-099056; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

A method of stabilizing and registering a video image in multiple video fields of a video sequence provides accurate determination of the image change in magnification, rotation and translation between video fields, so that the video fields may be accurately corrected for these changes in the image in the video sequence. In a described embodiment, a key area of a key video field is selected which contains an image which it is desired to stabilize in a video sequence. The key area is subdivided into nested pixel blocks and the translation of each of the pixel blocks from the key video field to a new video field is determined as a precursor to determining change in magnification, rotation and translation of the image from the key video field to the new video field.
Official Gazette of the U.S. Patent and Trademark Office
Pattern Registration; Images; Magnification; Video Communication

36

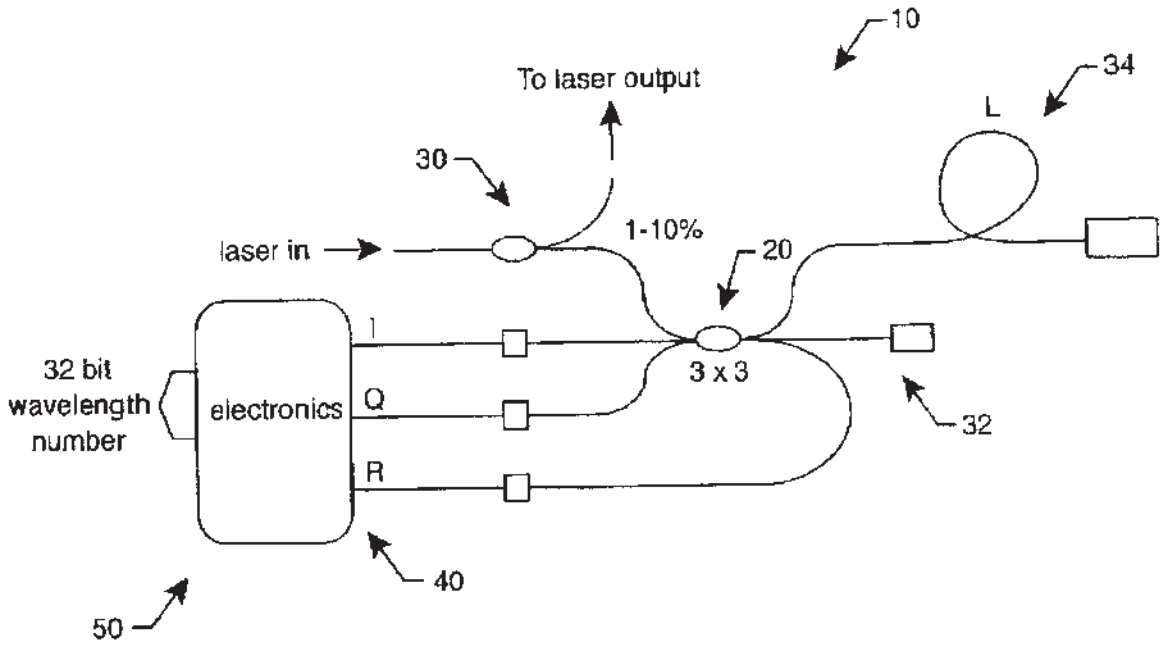


36
LASERS AND MASERS

Includes parametric amplifiers. For related information see also 76 Solid-State Physics.

20020089600 NASA Langley Research Center, Hampton, VA USA
High Precision Wavelength Monitor for Tunable Laser Systems
Froggatt, Mark E., Inventor, NASA Langley Research Center, USA; Childers, Brooks A., Inventor, NASA Langley Research Center, USA; Jul. 30, 2002; 12p; In English
Patent Info.: Filed 22 Aug. 2000; NASA-LAR-16005-1; US-Patent-6,426,496; US-Patent-Appl-SN-648529; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

A solid-state apparatus for tracking the wavelength of a laser emission has a power splitter that divides the laser emission into at least three equal components. Differing phase shifts are detected and processed to track variations of the laser emission.
Official Gazette of the U.S. Patent and Trademark Office
Solid State; Monitors; Wavelengths; Laser Outputs



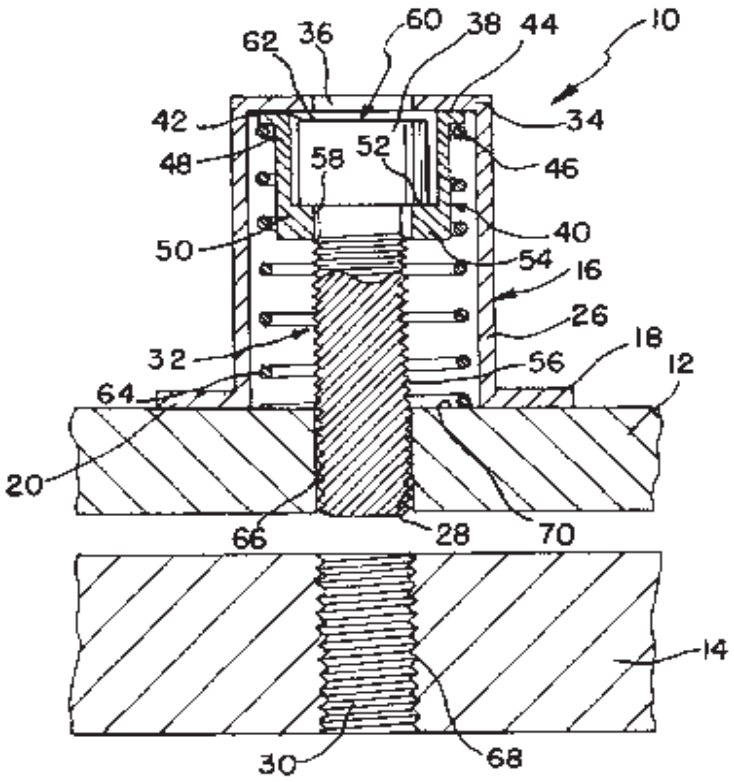
37
MECHANICAL ENGINEERING

Includes auxiliary systems (nonpower); machine elements and processes; and mechanical equipment.

20020089470 NASA Marshall Space Flight Center, Huntsville, AL USA
Captive Fastener Device
Dowling, Timothy Edward, Inventor, NASA Marshall Space Flight Center, USA; Oct. 15, 2002; 6p; In English
Patent Info.: Filed 9 Aug. 2001; NASA-Case-MFS-31544-1; US-Patent-6,464,438; US-Patent-Appl-SN-928017; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

A captive fastener device is utilized to hold two members together. The device is comprised of a housing which may be securely attached to the first member. Within the housing is a spring which biases a bottom of a first lip of a cup washer. The top of the first lip contacts the top of the housing when the fastener is not engaged. The fastener has a ledge at the bottom of the fastener head which rests on a top surface of a second lip of the cup washer. The bottom surface of the second lip contacts the first member when the fastener has fully engaged the second member to secure the first and second members together. The first lip of the cup washer has a greater diameter than the second lip. The first lip also has a greater diameter than the fastener. When the fastener is not engaged, a top surface of the first lip engages a bottom surface of the top of the housing. The housing top has an access hole

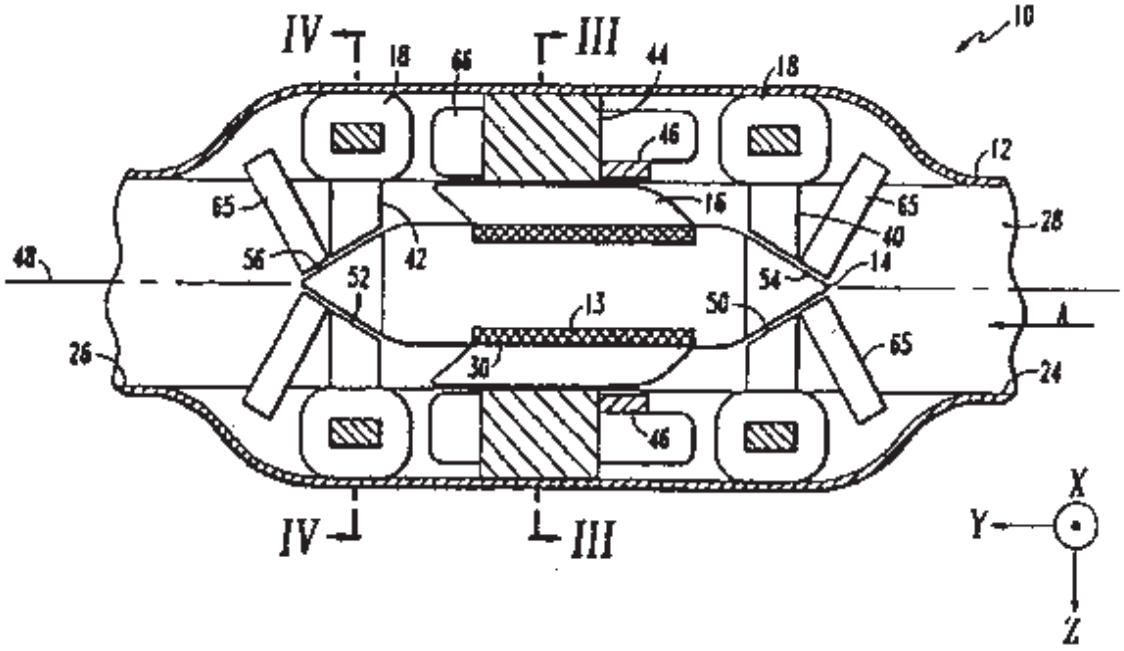
of smaller diameter than the outer diameter of the fastener head which retains the fastener within the housing when the fastener is not engaging the second member.
Official Gazette of the U.S. Patent and Trademark Office
Fasteners; Bias; Mechanical Devices



20020089599 NASA Langley Research Center, Hampton, VA USA
Blood Pump Having a Magnetically Suspended Rotor
Antaki, James F., Inventor, NASA Langley Research Center, USA; Paden, Bradley, Inventor, NASA Langley Research Center, USA; Burgreen, Gregory, Inventor, NASA Langley Research Center, USA; Groom, Nelson J., Inventor, NASA Langley Research Center, USA; Sep. 10, 2002; 50p; In English; Continuation of US-Patent-Appl-SN-356662, filed 19 Jul. 1999, which is a continuation-in-part of US-Patent-Appl-SN-673627, filed 26 Jun. 1996, which is provisional US-Patent-Appl-SN-142354, filed 1 Jul. 1999
Patent Info.: Filed 24 Apr. 2001; NASA-Case-LAR-16536-1; US-Patent-6,447,266; US-Patent-Appl-SN-841223; US-Patent-Appl-SN-356662; US-Patent-Appl-SN-673627; US-Patent-Appl-SN-142354; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

A blood pump preferably has a magnetically suspended rotor that rotates within a housing. The rotor may rotate about a stator disposed within the housing. Radial magnetic bearings may be defined within the stator and the rotor in order to suspend the rotor. The radial magnetic bearings may be passive magnetic bearings that include permanent magnets disposed within the stator and the rotor or active magnetic bearings. The pump may further include an axial magnetic bearing that may be either a passive or an active magnetic bearing. A motor that drives the rotor may be disposed within the housing in order to more easily dissipate heat generated by the motor. A primary flow path is defined between the rotor and the stator, and a secondary flow path is defined

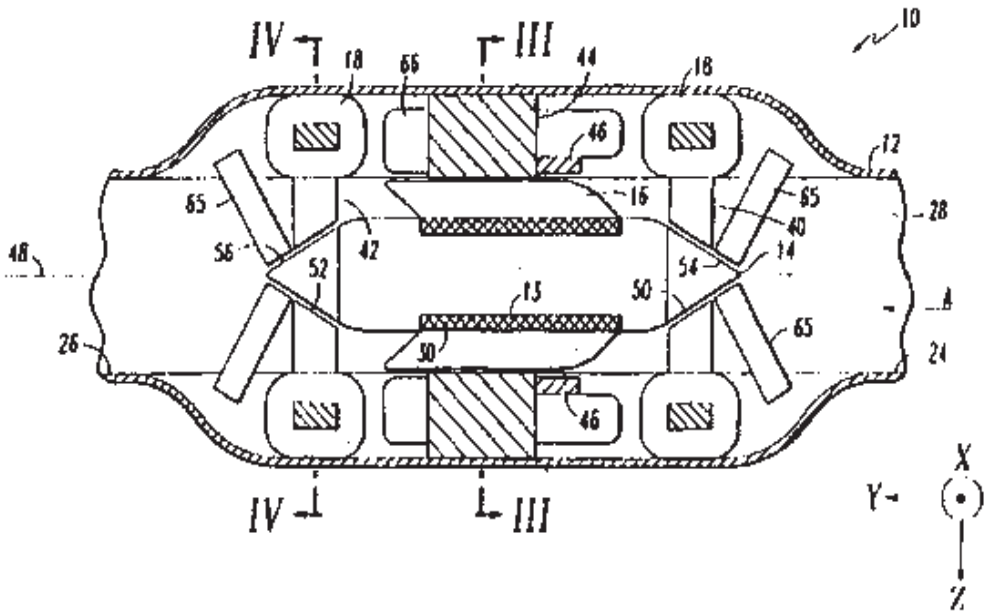
between the stator and the rotor. Preferably, a substantial majority of blood passes through the primary flow path. The secondary flow path is large enough so that it provides adequate flushing of the secondary flow path while being small enough to permit efficient operation of the radial magnet bearings across the secondary flow path.
Official Gazette of the U.S. Patent and Trademark Office
Blood Pumps; Magnetic Suspension; Rotors; Permanent Magnets



20020089601 NASA Langley Research Center, Hampton, VA USA
Blood Pump Having a Magnetically Suspended Rotor
Antaki, James F., Inventor, NASA Langley Research Center, USA; Paden, Bradley, Inventor, NASA Langley Research Center, USA; Burgreen, Gregory, Inventor, NASA Langley Research Center, USA; Groom, Nelson J., Inventor, NASA Langley Research Center, USA; Jun. 12, 2001; 50p; In English; Continuation-in-part of US-Patent-Appl-SN-673627, filed 26 Jun. 1995, which is provisional US-Patent-Appl-SN-142354, filed 1 Jul. 1999
Patent Info.: Filed 19 Jul. 1999; NASA-Case-LAR-16040-1; US-Patent-6,244,835; US-Patent-Appl-SN-356662; US-Patent-Appl-SN-673627; US-Patent-Appl-SN-142354; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

A blood pump preferably has a magnetically suspended rotor that rotates within a housing. The rotor may rotate about a stator disposed within the housing. Radial magnetic bearings may be defined within the stator and the rotor in order to suspend the rotor. The radial magnetic bearings may be passive magnetic bearings that include permanent magnets disposed within the stator and the rotor or active magnetic bearings. The pump may further include an axial magnetic bearing that may be either a passive or an active magnetic bearing. A motor that drives the rotor may be disposed within the housing in order to more easily dissipate heat generated by the motor. A primary flow path is defined between the rotor and the stator, and a secondary flow path is defined between the stator and the rotor. Preferably, a substantial majority of blood passes through the primary flow path. The secondary

flow path is large enough so that it provides adequate flushing of the secondary flow path while being small enough to permit efficient operation of the radial magnet bearings across the secondary flow path.
Official Gazette of the U.S. Patent and Trademark Office
Blood Pumps; Rotors; Magnetic Suspension; Permanent Magnets



38
QUALITY ASSURANCE AND RELIABILITY

Includes product sampling procedures and techniques; and quality control.

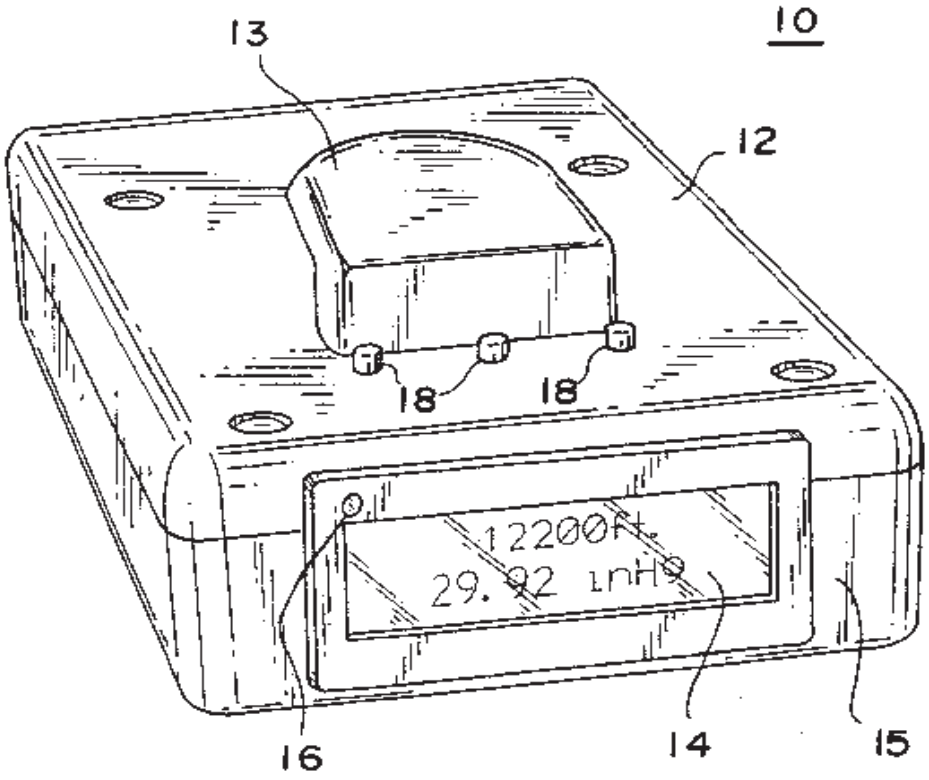
20020089471 NASA Kennedy Space Center, Cocoa Beach, FL USA
Personal Cabin Pressure Monitor and Warning System
Zysko, Jan A., Inventor, NASA Kennedy Space Center, USA; Sep. 17, 2002; 8p; In English; Provisional US-Patent-Appl-SN-214243, filed 14 Jun. 2000
Patent Info.: Filed 8 Mar. 2001; NASA-Case-KSC-12168; US-Patent-6,452,510; US-Patent-Appl-SN-802535; US-Patent-Appl-SN-214243; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

A cabin pressure altitude monitor and warning system provides a warning when a detected cabin pressure altitude has reached a predetermined level. The system is preferably embodied in a portable, pager-sized device that can be carried or worn by an individual. A microprocessor calculates the pressure altitude from signals generated by a calibrated pressure transducer and a temperature sensor that compensates for temperature variations in the signals generated by the pressure transducer. The microprocessor is programmed to generate a warning or alarm if a cabin pressure altitude exceeding a predetermined threshold is detected. Preferably, the microprocessor generates two different types of warning or alarm outputs, a first early warning or alert when a first pressure altitude is exceeded. and a second more serious alarm condition when either a second. higher pressure altitude is exceeded, or when the first pressure altitude has been exceeded for a predetermined period of time. Multiple types of alarm

condition indicators are preferably provided, including visual, audible and tactile. The system is also preferably designed to detect gas concentrations and other ambient conditions, and thus incorporates other sensors, such as oxygen, relative humidity, carbon dioxide, carbon monoxide and ammonia sensors, to provide a more complete characterization and monitoring of the local environment.

Official Gazette of the U.S. Patent and Trademark Office

Pressure Sensors; Temperature Sensors; Pressurized Cabins; Early Warning Systems; Carbon Dioxide



47
METEOROLOGY AND CLIMATOLOGY

Includes weather forecasting and modification.

20020078320 NASA Kennedy Space Center, Cocoa Beach, FL USA

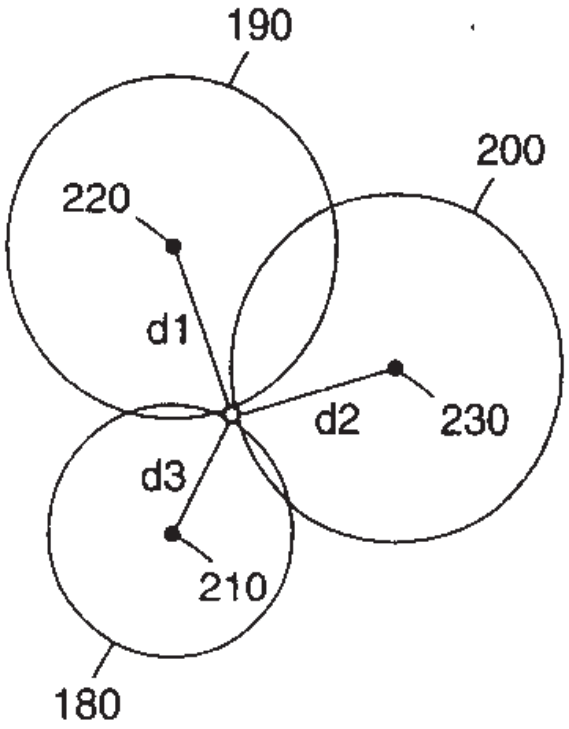
System and Method of Locating Lightning Strikes

Medelius, Pedro J., Inventor, NASA Kennedy Space Center, USA; Starr, Stanley O., Inventor, NASA Kennedy Space Center, USA; Jul. 16, 2002; 8p; In English; Provisional US-Patent-Appl-SN-182404, filed 14 Feb. 2000

Patent Info.: Filed 13 Feb. 2001; NASA-Case-KSC-11992-1; US-Patent-6,420,862; US-Patent-Appl-SN-784405; US-Patent-Appl-SN-182404; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

A system and method of determining locations of lightning strikes has been described. The system includes multiple receivers located around an area of interest, such as a space center or airport. Each receiver monitors both sound and electric fields. The detection of an electric field pulse and a sound wave are used to calculate an area around each receiver in which the lighting is detected. A processor is coupled to the receivers to accurately determine the location of the lighting strike. The processor can

manipulate the receiver data to compensate for environmental variables such as wind, temperature, and humidity. Further, each receiver processor can discriminate between distant and local lightning strikes.
Official Gazette of the U.S. Patent and Trademark Office
Lightning; Position (Location); Receivers; Electric Fields; Sound Fields

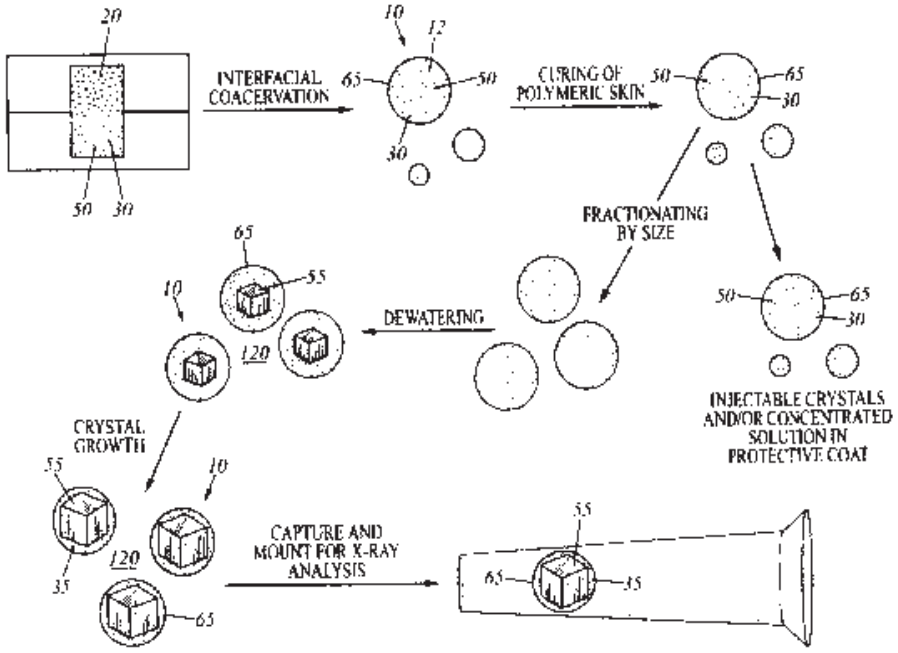


51
LIFE SCIENCES (GENERAL)

20020078393 NASA Johnson Space Center, Houston, TX USA
Microencapsulated Bioactive Agents and Method of Making
Morrison, Dennis R., Inventor, NASA Johnson Space Center, USA; Mosier, Benjamin, Inventor, NASA Johnson Space Center, USA; May 14, 2002; 24p; In English; Continuation-in-part of US-Patent-Appl-SN-349169, filed 2 Dec. 1994
Patent Info.: Filed 15 May 1998; NASA-Case-MSC-22936-1; US-Patent-6,387,399; US-Patent-Appl-SN-079766; US-Patent-Appl-SN-349169; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Microcapsules prepared by encapsulating an aqueous solution of a protein, drug or other bioactive substance inside a semi-permeable membrane by are disclosed. The microcapsules are formed by interfacial coacervation under conditions where the shear forces are limited to 0- 100 dynes per sq cm at the interface. by placing the microcapsules in a high osmotic watering solution, the protein solution is gradually made saturated and then supersaturated, and the controlled nucleation and crystallization of the protein is achieved. The crystal-filled microcapsules prepared by this method can be conveniently harvested and stored while keeping the encapsulated crystals in essentially pristine condition due to the rugged, protective membrane. Because the membrane components themselves are x-ray transparent, large crystal-containing microcapsules can be individually selected. mounted in x-ray capillary tubes and subjected to high energy x-ray diffraction studies to determine the 3-D structure of the protein molecules. Certain embodiments of the microcapsules of the invention have composite polymeric outer membranes which are

somewhat elastic, water insoluble, permeable only to water, salts, and low molecular weight molecules and are structurally stable in fluid shear forces typically encountered in the human vascular system.
Official Gazette of the U.S. Patent and Trademark Office
Protein Crystal Growth; Membranes; Proteins; Loads (Forces)



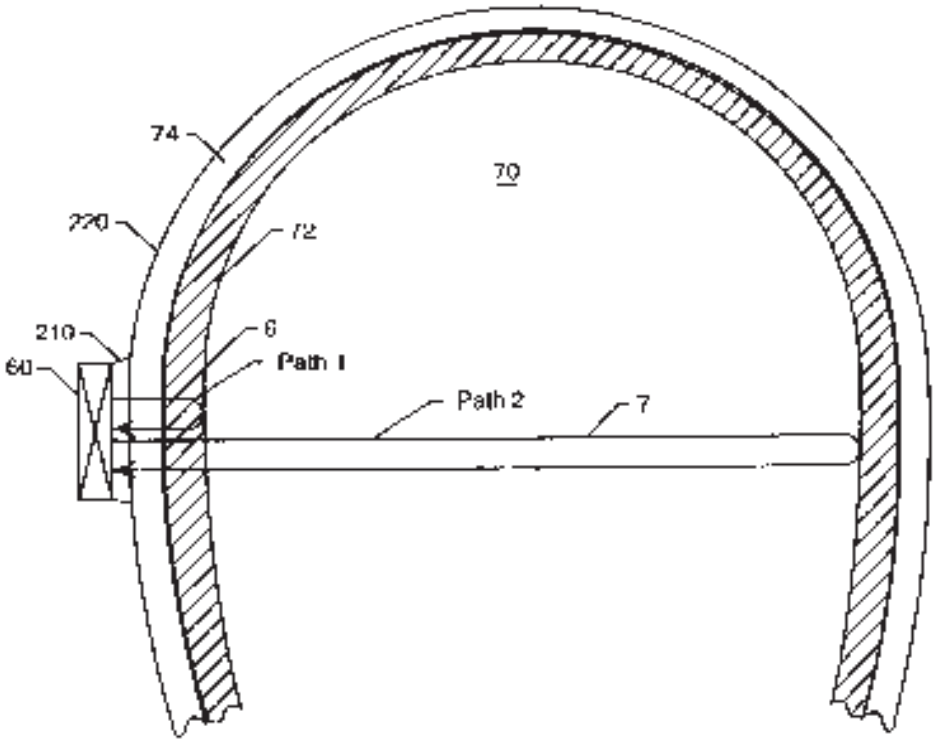
52
AEROSPACE MEDICINE

Includes physiological factors; biological effects of radiation; and effects of weightlessness on man and animals.

20020078324 NASA Langley Research Center, Hampton, VA USA
Method and Apparatus for Assessment of Changes in Intracranial Pressure
Yost, William T., Inventor, NASA Langley Research Center, USA; Cantrell, John H., Inventor, NASA Langley Research Center, USA; Jul. 02, 2002; 16p; In English
Patent Info.: Filed 2 Dec. 1999; NASA-Case-Lan-15499-1; US-Patent-6,413,227; US-Patent-Appl-SN-459384; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

A non-invasive method and apparatus for monitoring changes in intracranial pressure which removes extracranial effects from the measurements. The method and apparatus can include the supplying of a fixed frequency electrical output to a transducer coupled to the patient's head, thereby generating an acoustical tone burst in the patient's head which generates a first echo and a second echo, the first echo reflecting from a first interface in the side of the patient's head coupled to the transducer, and the second echo reflecting from a second interface at the opposite side of the patient's head. The first and second echoes are received by the transducer which can generate a first electrical signal and a second electrical signal, wherein the first and second electrical signals vary in accordance with the corresponding first and second echoes. The counterbalancing phase shifts required to bring

about quadrature between each of the first and second electrical signals and the fixed frequency electrical output can be measured, and values for the change in intracranial distance based on the changes in the counterbalancing phase shifts can be obtained.
Official Gazette of the U.S. Patent and Trademark Office
Intracranial Pressure; Nonintrusive Measurement; Transducers; Phase Shift



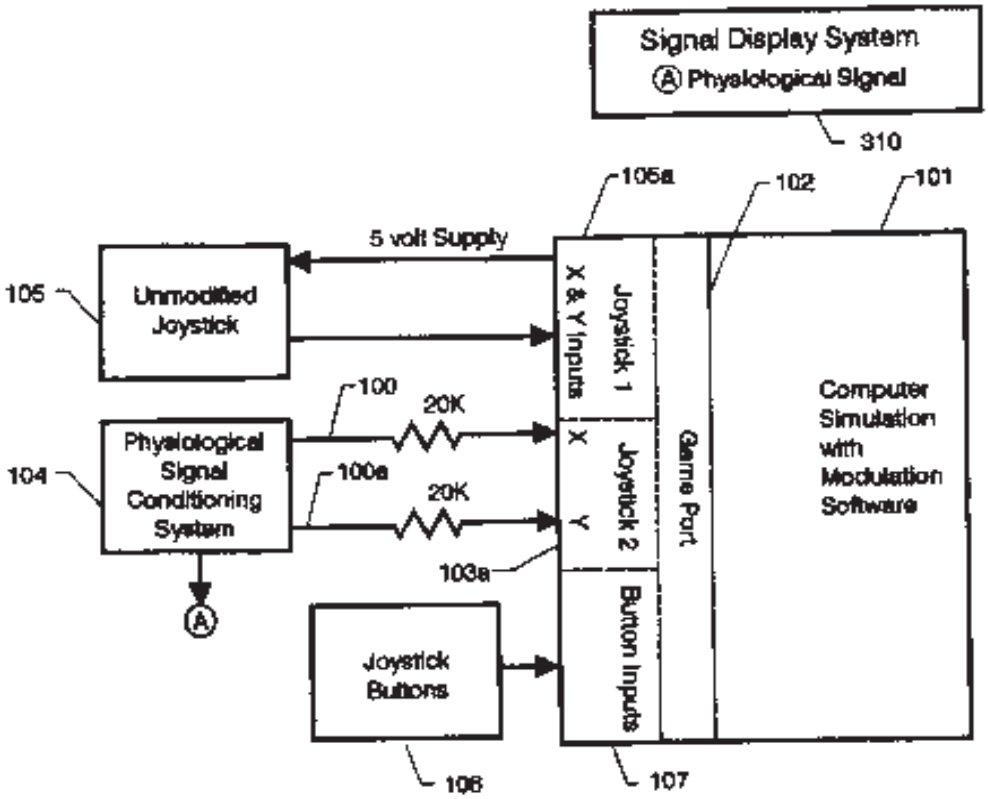
54
MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT

Includes human engineering; biotechnology; and space suits and protective clothing. For related information see also 16 Space Transportation.

20020089607 NASA Langley Research Center, Hampton, VA USA
Method and Apparatus for Encouraging Physiological Self-Regulation Through Modulation of an Operator's Control Input to a Video Game or Training Simulator
Palsson, Olafur S., Inventor, NASA Langley Research Center, USA; Harris, Randall L., Sr., Inventor, NASA Langley Research Center, USA; Pope, Alan T., Inventor, NASA Langley Research Center, USA; Sep. 17, 2002; 32p; In English; Provisional US-Patent-Appl-SN-143028, filed 9 Jul. 1999
Patent Info.: Filed 3 Jul. 2000; NASA-Case-LAR-15817-1; US-Patent-6,450,820; US-Patent-Appl-SN-612412; US-Patent-Appl-SN-143028; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Apparatus and methods for modulating the control authority (i.e., control function) of a computer simulation or game input device (e.g., joystick, button control) using physiological information so as to affect the user's ability to impact or control the

simulation or game with the input device. One aspect is to use the present invention, along with a computer simulation or game, to affect physiological state or physiological self-regulation according to some programmed criterion (e.g., increase, decrease, or maintain) in order to perform better at the game task. When the affected physiological state or physiological self-regulation is the target of self-regulation or biofeedback training, the simulation or game play reinforces therapeutic changes in the physiological signal(s).
Official Gazette of the U.S. Patent and Trademark Office
Automatic Control; Computerized Simulation; Modulation; Physiological Responses; Training Simulators; Video Equipment



62
COMPUTER SYSTEMS

Includes computer networks and special application computer systems.

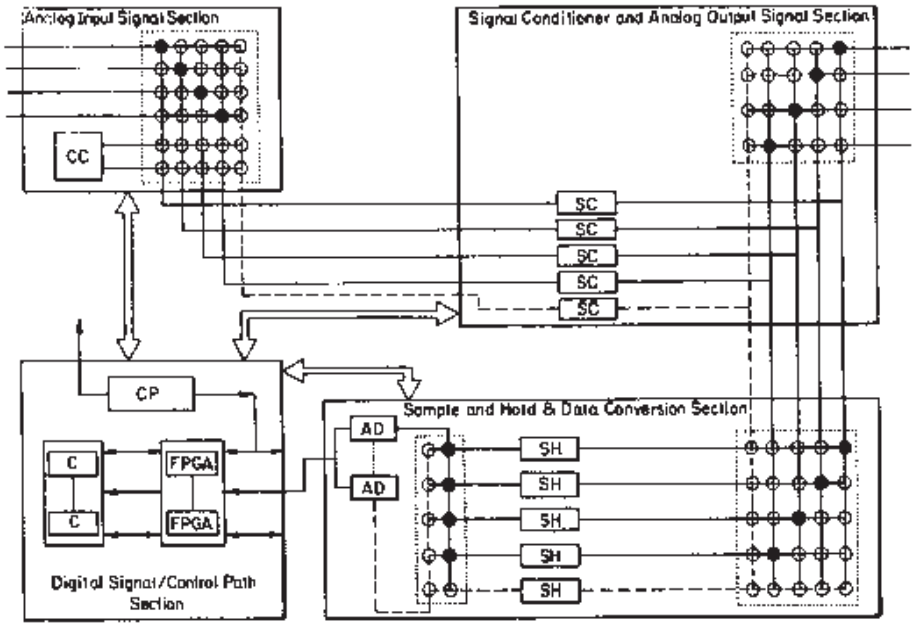
20020089602 NASA Kennedy Space Center, Cocoa Beach, FL USA
Advanced Self-Calibrating, Self-Repairing Data Acquisition System
Medelius, Pedro J., Inventor, NASA Kennedy Space Center, USA; Eckhoff, Anthony J., Inventor, NASA Kennedy Space Center, USA; Angel, Lucena R., Inventor, NASA Kennedy Space Center, USA; Perotti, Jose M., Inventor, NASA Kennedy Space Center, USA; Oct. 08, 2002; 12p; In English; Provisional US-Patent-Appl-SN-322845, filed 7 Sep. 2001

Patent Info.: Filed 5 Mar. 2002; NASA-Case-KSC-12301; US-Patent-6,462,684; US-Patent-Appl-SN-095344; US-Patent-Appl-SN-322845; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

An improved self-calibrating and self-repairing Data Acquisition System (DAS) for use in inaccessible areas, such as onboard spacecraft, and capable of autonomously performing required system health checks, failure detection. When required, self-repair is implemented utilizing a ”spare parts/tool box” system. The available number of spare components primarily depends upon each component’s predicted reliability which may be determined using Mean Time Between Failures (MTBF) analysis. Failing or degrading components are electronically removed and disabled to reduce power consumption, before being electronically replaced with spare components.

Official Gazette of the U.S. Patent and Trademark Office

Calibrating; Data Acquisition; Systems Engineering; Autonomy; Self Repairing Devices



64
NUMERICAL ANALYSIS

Includes iteration, difference equations, and numerical approximation.

20020076392 NASA Ames Research Center, Moffett Field, CA USA

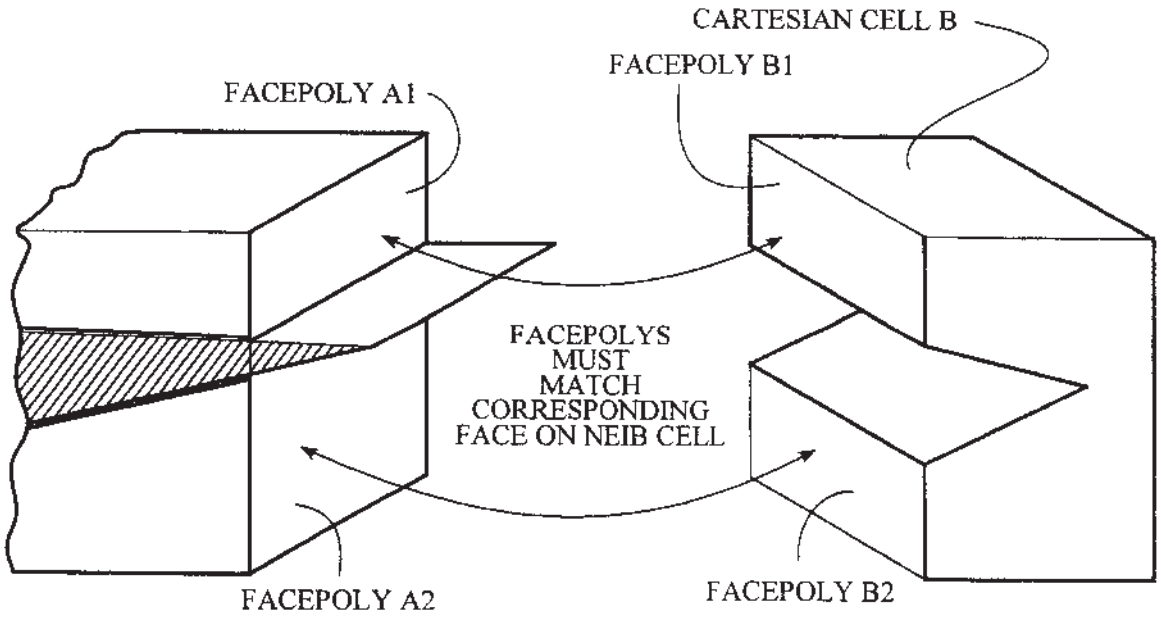
Triangle Geometry Processing for Surface Modeling and Cartesian Grid Generation

Aftosmis, Michael J., Inventor, NASA Ames Research Center, USA; Melton, John E., Inventor, NASA Ames Research Center, USA; Berger, Marsha J., Inventor, NASA Ames Research Center, USA; Sep. 03, 2002; 18p; In Belorussian, Cameroon; Provisional US-Patent-Appl-SN-068846, filed 29 Dec. 1997

Patent Info.: Filed 24 Dec. 1998; NASA-Case-ARC-14275-1; US-Patent-6,445,390; US Patent-Appl-SN-226673; US-Patent-Appl-SN-068846; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Cartesian mesh generation is accomplished for component based geometries, by intersecting components subject to mesh generation to extract wetted surfaces with a geometry engine using adaptive precision arithmetic in a system which automatically breaks ties with respect to geometric degeneracies. During volume mesh generation, intersected surface triangulations are

received to enable mesh generation with cell division of an initially coarse grid. The hexagonal cells are resolved, preserving the ability to directionally divide cells which are locally well aligned.
Official Gazette of the U.S. Patent and Trademark Office
Grid Generation (Mathematics); Cartesian Coordinates



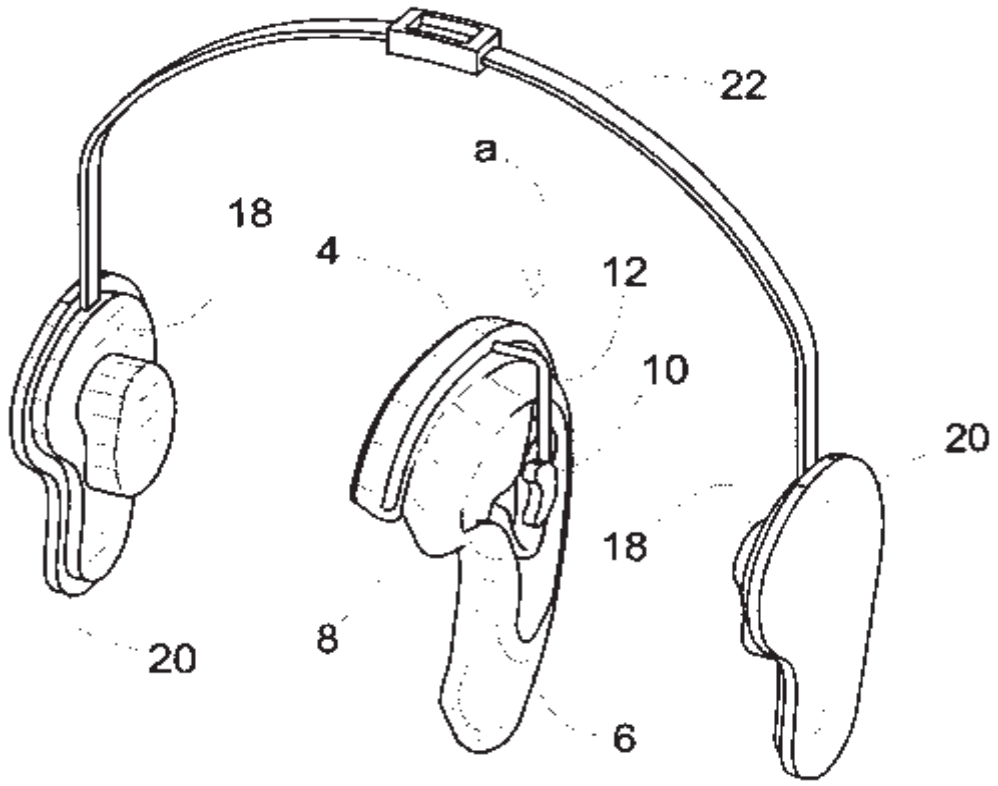
71
ACOUSTICS

Includes sound generation, transmission and attenuation. For noise pollution see 45 Environmental Pollution.

20020077964 NASA Marshall Space Flight Center, Huntsville, AL USA
Hearing Aid Assembly
Grugel, Richard N., Inventor, NASA Marshall Space Flight Center, USA; Sep. 03, 2002; 6p; In English
Patent Info.: Filed 6 Aug. 2001; NASA-Case-MFS-31560-1; US-Patent-6,445,805; US-Patent-Appl-SN-923261; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

Progress in hearing aids has come a long way. Yet despite such progress hearing aids are not the perfect answer to many hearing problems. Some adult ears cannot accommodate tightly fitting hearing aids. Mouth movements such as chewing, talking, and athletic or other active endeavors also lead to loosely fitting ear molds. It is well accepted that loosely fitting hearing aids are the cause of feedback noise. Since feedback noise is the most common complaint of hearing aid wearers it has been the subject

of various patents. Herein a hearing aid assembly is provided eliminating feedback noise. The assembly includes the combination of a hearing aid with a headset developed to constrict feedback noise.
Official Gazette of the U.S. Patent and Trademark Office
Hearing; Noise (Sound); Audiology; Mechanical Devices

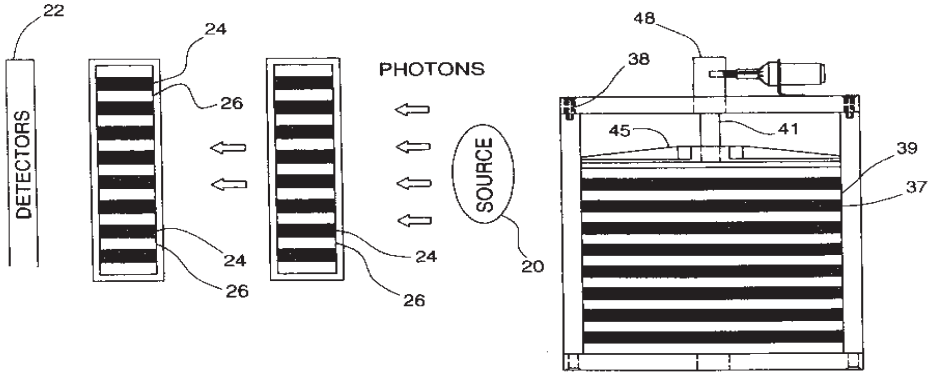


73
NUCLEAR PHYSICS

20020078400 NASA Glenn Research Center, Cleveland, OH USA
High Precision Grids for Neutron, Hard X-Ray, and Gamma-Ray Imaging Systems
Campbell, Jonathan W., Inventor, NASA Glenn Research Center, USA; Sep. 03, 2002; 10p; In English
Patent Info.: Filed 30 May 2001; NASA-Case-MFS-31546-1; US-Patent-6,445,772; US-Patent-Appl-SN-867995; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

Fourier telescopes permit observations over a very broad band of energy. They generally include synthetic spatial filtering structures, known as multilayer grids or grid pairs consisting of alternate layers of absorbing and transparent materials depending on whether neutrons or photons are being imaged. For hard x-rays and gamma rays high (absorbing) and low (transparent) atomic number elements, termed high-Z and low-Z materials may be used. Fabrication of these multilayer grid structures is not without its difficulties. Herein the alternate layers of the higher material and the lower material are inserted in a polyhedron, transparent

to photons of interest, through an open face of the polyhedron. The inserted layers are then uniformly compressed to form a multilayer grid.
Official Gazette of the U.S. Patent and Trademark Office
Telescopes; Mesh; Imaging Techniques; Polyhedrons

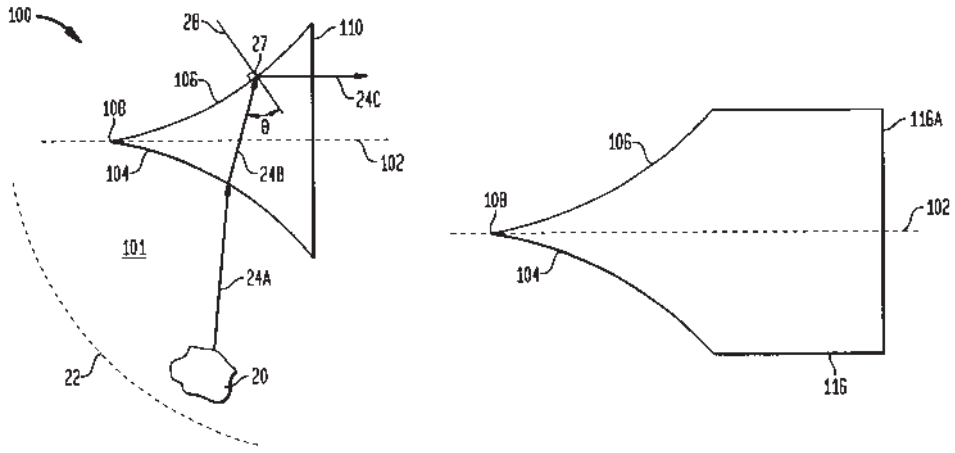


74
OPTICS

Includes light phenomena; and optical devices. For lasers see 36 Lasers and Masers.

20020077664 NASA Marshall Space Flight Center, Huntsville, AL USA
Panoramic Refracting Optic
Lindner, Jeffrey L., Inventor, NASA Marshall Space Flight Center, USA; Jul. 23, 2002; 8p; In English
Patent Info.: Filed 28 Jul. 2000; NASA-Case-MFS-31475-1; US-Patent-6,424,470; US-Patent-Appl-SN-616624; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

An optical device having a semi-spherical or hemispherical field-of-view is provided. A conically-shaped piece of optical material has an annular surface satisfying Snell's Law for total internal reflection with respect to light passing through the piece and incident on the annular surface from within the piece.
Official Gazette of the U.S. Patent and Trademark Office
Optical Materials; Refraction; Optics; Field of View



Includes superconductivity. For related information, see also 33 Electronics and Electrical Engineering and 36 Lasers and Masers.

20020076390 NASA Pasadena Office, CA USA

Method of Forming Three-Dimensional Semiconductors Structures

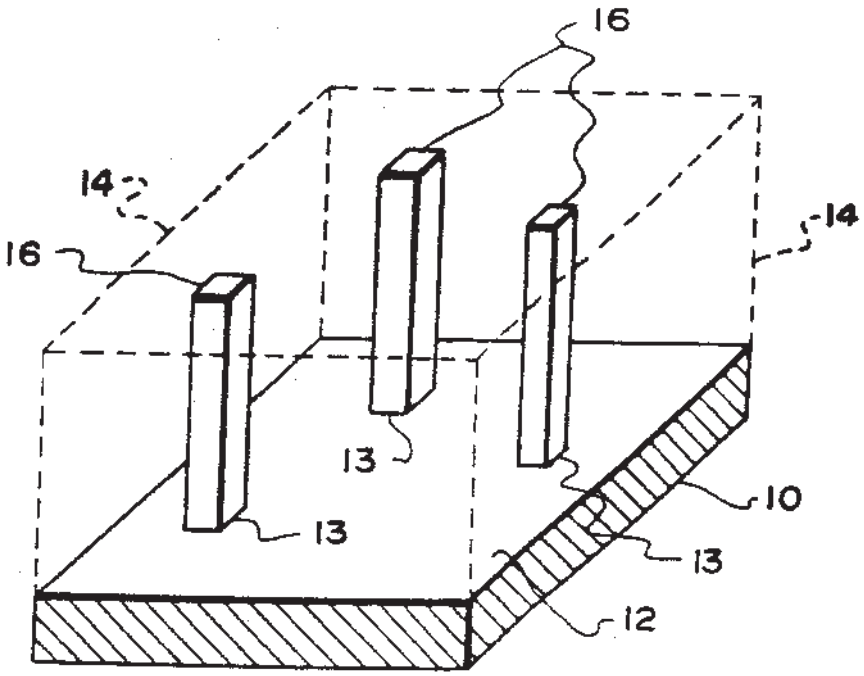
Fathauer, Robert W., Inventor, Jet Propulsion Lab., California Inst. of Tech., USA; May 14, 2002; 6p; In English

Patent Info.: Filed 18 May 1990; NASA-Case-NPO-17835; US-Patent-6,387,781; US-Patent-Appl-SN-524959; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

Silicon and metal are coevaporated onto a silicon substrate in a molecular beam epitaxy system with a larger than stoichiometric amount of silicon so as to epitaxially grow columns of metal silicide embedded in a matrix of single crystal, epitaxially grown silicon. Higher substrate temperatures and lower deposition rates yield larger columns that are farther apart while more silicon produces smaller columns. Column shapes and locations are selected by seeding the substrate with metal silicide starting regions. A variety of 3-dimensional, exemplary electronic devices are disclosed.

Official Gazette of the U.S. Patent and Trademark Office

Molecular Beam Epitaxy; Substrates; Silicides



20020077663 NASA Glenn Research Center, Cleveland, OH USA

Method and Apparatus for Obtaining a Precision Thickness in Semiconductor and Other Wafers

Okojie, Robert S., Inventor, NASA Glenn Research Center, USA; Jul. 30, 2002; 9p; In English

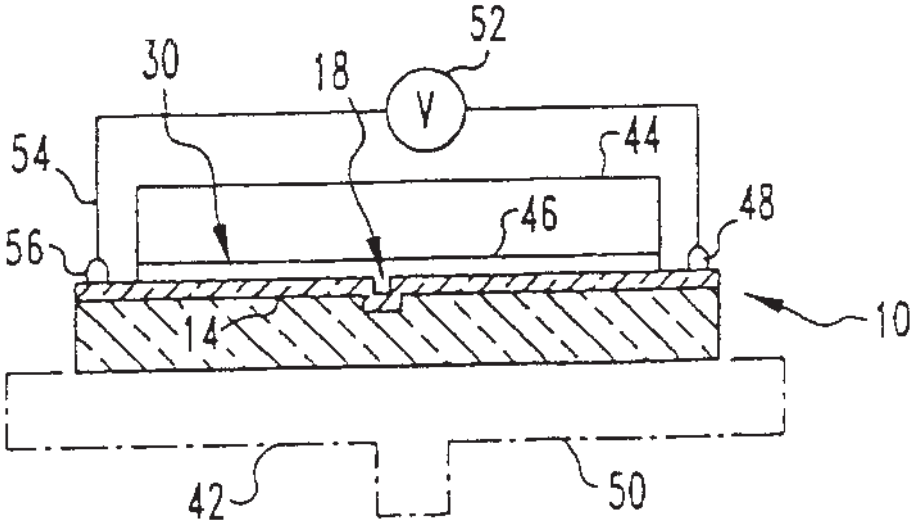
Patent Info.: Filed 8 Sep. 2000; NASA-Case-LEW-17022-1; US-Patent-6,426,296; US-Patent-Appl-SN-657744; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

A method and apparatus for processing a wafer comprising a material selected from an electrical semiconducting material and an electrical insulating material is presented. The wafer has opposed generally planar front and rear sides and a peripheral edge, wherein said wafer is pressed against a pad in the presence of a slurry to reduce its thickness. The thickness of the wafer is controlled by first forming a recess such as a dimple on the rear side of the wafer. A first electrical conducting strip extends from

a first electrical connection means to the base surface of the recess to the second electrical connector. The first electrical conducting strip overlies the base surface of the recess. There is also a second electrical conductor with an electrical potential source between the first electrical connector and the second electrical connector to form. In combination with the first electrical conducting strip, the second electrical conductor forms a closed electrical circuit, and an electrical current flows through the closed electrical circuit. From the front side of the wafer the initial thickness of the wafer is reduced by lapping until the base surface of the recess is reached. The conductive strip is at least partially removed from the base surface to automatically stop the lapping procedure and thereby achieve the desired thickness.

Official Gazette of the U.S. Patent and Trademark Office

Insulation; Semiconductors (Materials); Wafers; Thickness



20020089464 NASA Johnson Space Center, Houston, TX USA

Solar Powered Refrigeration System

Ewert, Michael K., Inventor, NASA Johnson Space Center, USA; Bergeron, David J., III, Inventor, NASA Johnson Space Center, USA; Sep. 24, 2002; 6p; In English; Division of US-Patent-Appl-SN-337208, filed 3 Jun. 1999

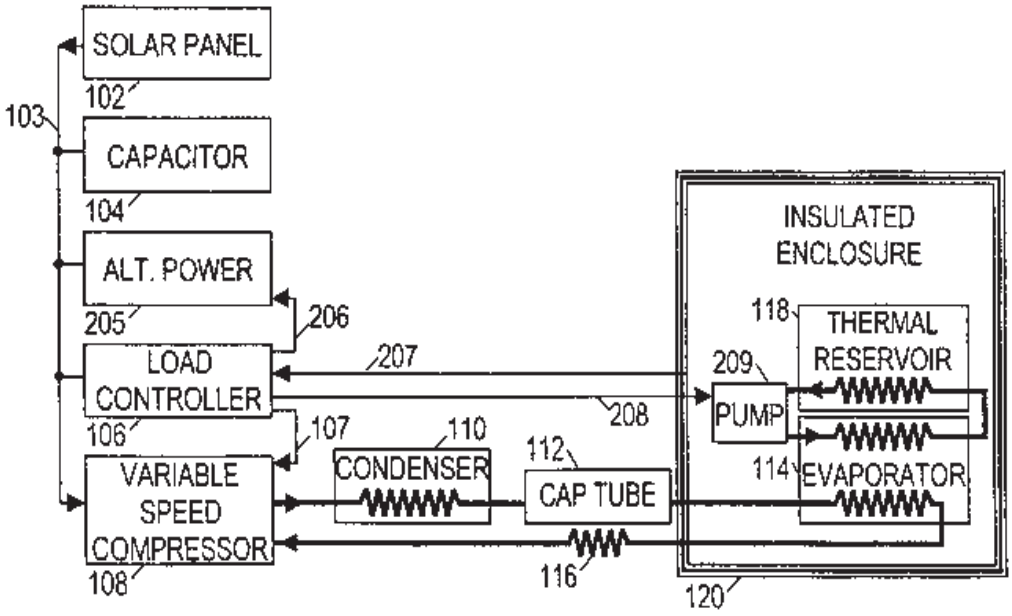
Patent Info.: Filed 19 Apr. 2001; NASA-Case-MSC-22970-3; US-Patent-6,453,693; US-Patent-Appl-SN-838680; US-Parent-Appl-SN-337208; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

A solar powered vapor compression refrigeration system is made practicable with thermal storage and novel control techniques. In one embodiment, the refrigeration system includes a photovoltaic panel, a variable speed compressor, an insulated enclosure, and a thermal reservoir. The photovoltaic (PV) panel converts sunlight into DC (direct current) electrical power. The DC electrical power drives a compressor that circulates refrigerant through a vapor compression refrigeration loop to extract heat from the insulated enclosure. The thermal reservoir is situated inside the insulated enclosure and includes a phase change material. As heat is extracted from the insulated enclosure, the phase change material is frozen, and thereafter is able to act as a heat sink to maintain the temperature of the insulated enclosure in the absence of sunlight. The conversion of solar power into stored thermal energy is optimized by a compressor control method that effectively maximizes the compressor's usage of available energy. A capacitor is provided to smooth the power voltage and to provide additional current during compressor start-up. A controller monitors the rate of change of the smoothed power voltage to determine if the compressor is operating below or above the available

power maximum, and adjusts the compressor speed accordingly. In this manner, the compressor operation is adjusted to convert substantially all available solar power into stored thermal energy.

Official Gazette of the U.S. Patent and Trademark Office

Control Systems Design; Electric Potential; Heat Storage; Refrigerating; Solar Cooling



Subject Term Index

T

U

V

W

Personal Author Index

PUBLIC AVAILABILITY OF COPIES OF PATENTS

Copies of U.S. patents may be purchased directly from the U.S. Patent and Trademark Office, Washington, D.C. 20231 at $3.00 per copy. When ordering patents, the U.S. Patent Number should be used, and payment must be remitted in advance, preferably by money order or check payable to the Commissioner of Patents and Trademarks. Prepaid purchase coupons for ordering are also available from the Patent and Trademark Office.

Copies of U.S. patents may also be purchased on–line from the U.S. Patent and Trademark Office via its web site at http://www.uspto.gov. Additionally, patents may be viewed for free on–line at the U.S. Patent and Trademark Office web site.

LICENSES FOR COMMERCIAL USE: INQUIRIES AND APPLICATIONS FOR LICENSE

NASA inventions abstracted in this bibliography are available for nonexclusive or exclusive licensing in accordance with the Department of Commerce Patent License Regulations (37 CFR Part 404). Applications for licensing NASA patents must be submitted in writing to the Patent Counsel of the NASA installation having cognizance of the specific invention. All NASA patent licenses shall be by express written instruments executed by the NASA General Counsel.

Inquiries concerning the NASA Patent Licensing Program or the availability of licenses for the commercial use of NASA–owned inventions covered by U.S. patents or pending applications for patent should be forwarded to the NASA Patent Counsel of the NASA installation having cognizance of the specific invention, or the Associate General Counsel for Intellectual Property, code GP, National Aeronautics and Space Administration, Washington, D.C. 20546. Inquiries should refer to the NASA Case Number, the Title of the Invention, and the U.S. Patent Number assigned to the invention as shown in this bibliography. Patent applications available for licensing are periodically advertised in the Federal Register.

The NASA Patent Counsel having cognizance of the invention is determined by the first three letters or prefix of the NASA Case Number assigned to the invention. The addresses and contact numbers for NASA Patent Counsels are listed alongside the NASA Case Number prefix letters in the following table.

CENTER PATENTS COUNSELS

ARC-xxxxx **Ames Research Center**, Mail Code 202A-4,
Moffett Field, CA 94035
650-604-0887 (Phone) 650-604-7486 (FAX)

HQN-xxxxx **NASA Headquarters**, Mail Code GP, 300 E Street SW,
Washington, DC 20546-0001
202-358-2041 (Phone) 202-358-4341 (FAX)

LEW-xxxxx **Glenn Research Center at Lewis Field**, Mail Code 500-118,
21000 Brookpark Rd, Cleveland, OH 44135-3191
216-433-5756 (Phone) 216-433-6790 (FAX)

GSC-xxxxx **Goddard Space Flight Center**, Mail Code 503,
Greenbelt, MD 20771-0001
301-286-7351 (Phone) 301-286-9502 (FAX)

MSC-xxxxx **Lyndon B. Johnson Space Center**, Mail Code HA,
2101 NASA Road 1, Houston, TX 77058-8452
281-483-1013 (Phone) 281-244-8452 (FAX)

KSC-xxxxx **John F. Kennedy Space Center**, Mail Code CC-A,
Kennedy Space Center, FL 32899-0001
321-867-3058 (Phone) 321-867-1817 (FAX)

LAR-xxxxx **Langley Research Center**, Mail Code 212,
Hampton, VA 23681-2199
757-864-3955 (Phone) 757-864-9190 (FAX)

MFS-xxxxx **George C. Marshall Space Flight Center**, Mail Code LS01,
Marshal Space Flight Center, AL 35812-0001
256-544-0018 (Phone) 256-544-0258 (FAX)

NPO-xxxxx **NASA Management Office-JPL**, Mail Code 180-801,
4800 Oak Grove Dr, Pasadena, CA 91109
818-354-7770 (Phone) 818-393-3160 (FAX)

DRC-xxxxx **Dryden Flight Research Center**, PO Box 273,
Edwards, CA 93523-0273
No assigned Patent Counsel - services provided by NASA Management Office -JPL

SSC-xxxxx **John C. Stennis Space Center**,
Stennis Space Center, MS 39529-6000
No assigned Patent Counsel - services provided by Kennedy Space Center

Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
NASA/SP—2003-7039/SUPPL62		

4. Title and Subtitle	5. Report Date
NASA Patent Abstracts A Continuing Bibliography (Supplement 62)	January 2003
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
	10. Work Unit No.
9. Performing Organization Name and Address	
NASA Scientific and Technical Information Program Office	11. Contract or Grant No.

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
National Aeronautics and Space Administration Langley Research Center Hampton, VA 23681	Special Publication
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This report lists reports, articles and other documents recently announced in the NASA STI Database.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
Bibliographies Patent Policy NASA Programs	Unclassified - Unlimited Subject Category - 82

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	41	A03/HC

For sale by the NASA Center for AeroSpace Information, 7121 Standard drive, Hanover, MD 21076