5645957

LEAD-ACID BATTERY HAVING A COVER EXTENDING BEYOND A JAR

Misra Sudhan; Wagner Franz North Wales, PA, UNITED STATES assigned to C & D Charter Power Systems Inc

A lead-acid cell includes a case, positive and negative plates within the case, microporous separator material between adjacent plates and electrolyte in a starved amount, with the case having jar and covers joined by a weldment along overlapping cover and jars. The positive plates include a grid frame with an intermediate member extending between spaced apart generally peripheral portions of the frame, with pasted active material on the grid frame separated substantially into two portions by the intermediate member. Compressive force is adjustably continuously applied to the positive and negative plates within the case. The plates are suspended within the case at positions removed from the wall of the case, while plate growth is permitted in a manner that plate shorting is avoided.

5645959

BATTERY PLATES WITH SELF-PASSIVATING IRON CORES AND MIXED ACID ELECTROLYTE

Rowlette John J Monrovia, CA, UNITED STATES assigned to Bipolar Power Corporation

The Battery Plates with Self-Passivating Iron Cores and Mixed Acid Electrolyte disclosed and claimed in this patent application solve the problems encountered by previous attempts to construct practical bipolar plates for lead-acid batteries. One of the preferred embodiments of the present invention comprises a novel combination of a self-repairing substrate surrounded by a lead coating resulting in a bipolar plate which is nearly three times lighter than its pure lead counterpart. Since this innovative plate incorporates a core or substrate that is self-passivating under the electrical potential and highly acidic conditions found in the lead-acid battery, any pinholes, gaps, or flaws in the lead coatings are naturally resealed. Another preferred embodiment utilizes a coating of a semi-conducting metal oxide, such as fluorine-doped stannic oxide, on the positive side of the bipolar plate instead of lead, which further reduces the weight. The self-passivation of the central core is enhanced by combining phosphoric or boric acid with the sulfuric acid electrolyte used in the battery.

FUEL CELL

5634989

AMORPHOUS NICKEL ALLOY HAVING HIGH CORROSION RESISTANCE

Hashimoto Koji; Mitsuhashi Akira; Asami Katsuhiko; Kawashima Asahi; Takizawa Yoshio Izumi, JAPAN assigned to Mitsubishi Materials Corporation; Koji Hashimo

A corrosion-resistant amorphous alloy containing Ta in an amount of from 10 to 40 atomic % and Mo, Cr, W, P, B and/or Si is disclosed. This alloy can be prepared by rapidly cooling and solidifying molten alloy, shows a satisfactory corrosion resistance in high-temperature concentrated phosphoric acid, and is adapted to be used as a plant structural material or a separator for a fuel cell.

5637414

METHOD AND SYSTEM FOR CONTROLLING OUTPUT OF FUEL CELL POWER GENERATOR

Inoue Shinichiro; Nagai Tetsuya; Komatsu Tadashi; Wakatsuki Shigeru; Mogi Hiroshi Kawasaki, JAPAN assigned to Fuji Electric Co Ltd

A fuel cell power generator having an output controlling system for preventing the deterioration of the fuel cell performance caused by fuel gas shortages. The fuel cell power generator includes a fuel reformer, a fuel cell, an inverter, and an output controlling system. The output controlling system includes an output control regulator for controlling the output power of the inverter as close to the current value corresponding to the output power set value as possible, a current command computing unit, an inverter controller, and an output correction

section. The output correction section includes an available output computing unit for computing the maximum available output power value of the fuel cell on the basis of the detected flow rate of fuel gas flowing into the fuel cell or fuel exhaust gas flowing out of the fuel cell; a low level selector for selecting either the computed maximum available output power value or the output power set value, whichever is the lower; and an output correction regulator for supplying the output control regulator with a signal for correcting the output power set value so as to control the detected output current from the fuel cell as close to the current value corresponding to the output current value of the low level selector as possible.

5639572

INTERCONNECTOR MATERIAL FOR ELECTROCHEMICAL CELLS

Mori Kazutak; Miyamoto Hitoshi; Matsudaira Tsuneak Takasago, JAPAN assigned to Mitsubishi Jukogyo Kabushiki Kaisha

An interconnector material for use in electrochemical cells having Y2O3-stabilized ZrO2 as a solid electrolyte, said interconnector material comprising a lanthanum chromite material of the following general formula: (*See Patent for Tabular Presentation*) PS where M is Zr or Ti, x is in the range of 0.1 to 0.2, and y is in the range of 0.05 to 0.2.

5641328

FUEL CELL CATHODES

Ong Estela T; Donado Rafael A Chicago, IL, UNITED STATES assigned to Electric Power Research Institute

Methods of making fuel cell electrodes in which the pores of an electrically conductive metal substrate are filled with a slurry containing particles of the same or a different electrically conductive metal. The liquid phase of the slurry is removed, leaving the particles of conductive material in the pores of the substrate; and the conductive metal(s) making up the substrate and the metal particles supplied from the slurry are converted to oxide.

5641585

MINIATURE CERAMIC FUEL CELL

Lessing Paul A; Zuppero Anthony C Idaho Falls, ID, UNITED STATES assigned to Lockheed Idaho Technologies Company

A miniature power source assembly capable of providing portable electricity is provided. A preferred embodiment of the power source assembly employing a fuel tank, fuel pump and control, air pump, heat management system, power chamber, power conditioning and power storage. The power chamber utilizes a ceramic fuel cell to produce the electricity. Incoming hydro carbon fuel is automatically reformed within the power chamber. Electrochemical combustion of hydrogen then produces electricity.

5641586

FUEL CELL WITH INTERDIGITATED POROUS FLOW-FIELD

Wilson Mahlon Los Alamos, NM, UNITED STATES assigned to The Regents of the University of California Office of Technology Transfer

A polymer electrolyte membrane (PEM) fuel cell is formed with an improved system for distributing gaseous reactants to the membrane surface. A PEM fuel cell has an ionic transport membrane with opposed catalytic surfaces formed thereon and separates gaseous reactants that undergo reactions at the catalytic surfaces of the membrane. The fuel cell may also include a thin gas diffusion layer having first and second sides with a first side contacting at least one of the catalytic surfaces. A macroporous flow-field with interdigitated inlet and outlet reactant channels contacts the second side of the thin gas diffusion layer for distributing one of the gaseous reactants over the thin gas diffusion layer for transport to an adjacent one of the catalytic surfaces of the membrane. The porous flow field may be formed from a hydrophilic material and provides uniform support across the backside of the electrode assembly to facilitate the use of thin backing layers.