

hydrogen gas generated in the battery is accelerated resulting in a reduction of the internal pressure of the battery. Further, the excess capacity of the negative electrode in relation to the capacity of the positive electrode can be reduced resulting in an increase in the battery capacity per unit volume.

COMPONENTS AND/OR CHARGERS

5498486

SECURITY BATTERIES FOR AUTOMOTIVE VEHICLES

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PCT No. PCT/GB93/01345 Sec. 371 Date Feb. 1, 1995 Sec. 102(e) Date Feb. 1, 1995 PCT Filed Jun. 25, 1993 PCT Pub. No. WO94/01894 PCT Pub. Date Jan. 20, 1994. A battery has an exposed negative terminal, but the positive terminal is hidden within the casing of the battery and instead only a dummy terminal is visible. When the vehicle is parked, power is fed from the positive terminal through an isolator relay to an INHIBIT circuit. When power is made available through the ignition switch to a terminal, power is fed via a socket to a keypad. A predetermined code has to be set into the keypad in order to pass an operating signal to an electronic lock, which is effective to switch the relay to connect power to an ENABLE circuit and to disconnect the supply from the INHIBIT circuit. This causes a solenoid to operate for a time determined by a timer so that the positive terminal is connected to the dummy terminal through a plunger. When the ignition key is moved to the start position power is supplied through the starter lead connected from the terminal to a starter motor. Consequently, the motor cannot normally be started unless the ignition sequence includes the keying in of the code into the keypad. Any attempt to bypass the ignition system or bump-start the car will result in sensing devices opening switch contacts supplying power to the alternator via the terminal.

5498488

CONTAINER FOR RAPID CHARGE ACCUMULATOR HAVING CHANNELS MOLDED IN THE LID FOR DISTRIBUTING THE ELECTROLYTE

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PCT No. PCT/EP94/01823 Sec. 371 Date Jan. 25, 1995 Sec. 102(e) Date Jan. 25, 1995 PCT Filed Jun. 6, 1994 PCT Pub. No. WO94/29907 PCT Pub. Date Dec. 22, 1994. The invention discloses an accumulator container comprising a box presenting one or more element-containing cells, each of said cells presenting at least one tube for the inlet of the electrolyte. Said tube has one end connected with an opening made in the lid and its other end arranged near the bottom of the container. Said box presents a lid having at least one first inlet opening, connected through channels for the distribution of the electrolyte with electrolyte inletting tubes, found in the box and in the lid, and at least one second outlet opening connected with level tubes, each belonging to each cell.

5498490

EQUALIZING CHARGE RATES OF INDIVIDUAL BATTERY CELLS

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Charge rates of individual battery cells are equalized and battery safety increased by limiting the amount of current that will flow through the battery in the event of a short circuit either external to or internal to the battery. A solid-polymer battery having a cathodic layer, an anodic layer, an ionically conductive polymeric electrolyte situated intermediate the cathodic layer and the anodic layer, a first electrode electrically connected to the cathodic layer, and a second electrode electrically connected to the anodic layer, has additionally an electronically conductive polymeric layer situated intermediate the first and second electrodes and having a resistivity within a range so as to limit current flow through the battery in case of the occurrence of a short circuit between the cathodic layer and the anodic layer, and to reduce a terminal voltage

of the battery no more than few percent as compared to what the terminal voltage of the battery would be without the electronically conductive polymeric layer. The electronically conductive polymeric layer limits the amount of current that will flow through the battery in the event of a short circuit either external to or internal to the battery. Alternatively, a battery is made up of a plurality of electrochemical hi-fold cells each having a relatively thin layer of anode material and a relatively thin strip of cathode material separated from said anode layer by an interposing solid electrolyte layer, thereby forming a cell laminate with the electrolyte layer and the anode layer, the cell laminate being folded at a fold so as to form a bi-fold cell; a cathode current collector strip; and a resistive adhesive polymer applied to a contact area of the cathode current collector strip so as to attach the cathode current collector strip to each of the bi-fold cells at the fold, the adhesive having a resistivity within a range so as to limit current flow through the battery but reducing a terminal voltage of the battery no more than few percent as compared to what the terminal voltage of the battery would be without the resistive adhesive. The resistive adhesive polymer equalizes charge rates of individual battery cells.

5498950

BATTERY MONITORING, CHARGING AND BALANCING APPARATUS

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Battery charging apparatus comprising a power source coupled to a battery pack comprising a series connected plurality of batteries, and a charge controller and battery balancer coupled to the battery pack that monitors, controls the charging of, and balances the plurality of batteries of the battery pack. The power source is used to charge all of the batteries under control of a controller. The controller is coupled to an isolated current source in the battery balancer and to a battery voltage sensor. The controller is coupled to a plurality of sensors that monitor predetermined battery conditions. The isolated current source and battery voltage sensor are coupled to each battery of the battery pack by way of a monitoring bus and a plurality of controlled switches. The controller monitors the

individual battery voltages using the battery voltage sensor and controls the isolated current source to individually balance low-voltage batteries based upon voltages sensed by the battery voltage sensor.

5499234

METHOD FOR RECHARGING FLOODED CELL BATTERIES

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Maintenance free flooded electrolyte battery cycle life is extended by controlling charge acceptance and gassing during recharge. Charge acceptance is improved by periodically discharging the battery during a portion of the recharge which removes surface charge and reduces overall cell voltage. Gassing is purposefully introduced during periodic supply currents which are interspersed with the periodic discharges of the battery. The supply currents both restore energy to the battery and agitate the electrolyte sufficient to destratify same thereby reducing plate damage and charge gradients thereon. The method results in shorter charge times, full capacity recharges and extended cycle life resulting therefrom and from reductions in corrosive interactions of the electrolyte with the battery plates.

5500177

MANUFACTURING METHOD FOR BATTERY COVERS

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Kabushiki Kais

A manufacturing method for a battery cover, in which plural molds are used for forming a space corresponding to a shape of the cover, the tab terminals are disposed in the space, synthetic resin is filled in the space to embed the tab terminals, characterized by that plural pieces made of the same material as the filled synthetic resin are installed with distances left between