

An improved resistive electrode is disclosed for a welding apparatus for welding a battery terminal post to a battery bushing. The battery terminal post is electrically connected to a battery plate disposed within a battery case and the battery bushing is secured to a battery case cover with the bushing having a central bushing aperture for receiving the battery terminal post therein when the battery case cover is located on the battery case. The resistive electrode comprising a resistive electrode extending between a base end and a tip end with the base end being secured to a power source. A conductive member engages the resistive electrode for facilitating the flow of electric power from the base end to the tip end for concentrating the resistive heat proximate to the tip end of the resistive electrode.

5479083

NON-DISSIPATIVE BATTERY CHARGER EQUALIZER

Brainard Gerald L. San Jose, CA, UNITED STATES
assigned to AST Research Inc

A battery charger is disclosed for recharging reusable batteries in a manner that prevents overcharging of the same. The charger includes a voltage source and non-dissipative shunt arrangement that can be customized to charge any number of batteries. The charger may be a current limiting power supply that is controlled by the voltage or charge state of the batteries being recharged. The non-dissipative shunt includes a pair of transistors for each pair of batteries and an inductor placed one end between the battery pair and another end between the transistor pair. An oscillator, having two phases of equal, but opposite phase, is used to control each transistor to apply charge to a given battery during one phase and then to allow the charge to equalize between the battery pair during the second phase. The equalization is continued until both batteries reach a full charge without overcharging any one battery.

5479084

BATTERY DISCHARGING APPARATUS

Satsuma Eiji; Okada Tetsuya; Yamashita Takahiro
Sumoto, JAPAN assigned to Sanyo Electric Co Ltd

A battery discharging apparatus is provided with a battery discharger and a controller. The controller is connected to a battery voltage sensor and a timer, a current sensor and a discharge switch, or a current sensor and a battery power capacity sensor. The controller directs the discharger to recover battery capacity lost due to the memory effect using a deep memory effect eliminating discharge.

5479085

METHOD AND APPARATUS FOR MEASURING RESIDUAL CAPACITY OF AN ELECTRIC-VEHICLE BATTERY

Honda Satoshi; Nazazawa Yoshihiro Saitama, JAPAN
assigned to Honda Giken Kogyo Kabushiki Kaisha

A method and an apparatus are provided for detecting a current residual capacity of a battery employed in an electric vehicle, such as an electric car. During a charging process, a value of the charge current of the battery is measured and an estimated discharge voltage corresponding to a current battery accumulated power is determined. A power of the battery as a product of the value of the charge current of the battery and the estimated discharge voltage is thereafter computed and the computed power is added to the current battery accumulated power to provide a new current battery accumulated power for display. During a discharging process, values of the discharge voltage and the discharge current are measured. The amount of consumed power is thereafter computed as a product of the values of the discharge voltage and the discharge current. The computed amount of consumed power is subtracted from a current battery residual capacity to produce a new current battery residual capacity for display. The above estimated discharge voltage is found from data obtained from test-working experiments or a process of learning the running states of an actual electric vehicle.

5481174

METHOD OF RAPIDLY CHARGING A LITHIUM ION CELL

Martin Lara J; Garrett Scott M Newport News, VA,
UNITED STATES assigned to Motorola Inc

A battery charger for lithium ion cells closely monitors cell voltage, and charge time, so as to avoid the over-application of charge to the cell. Charge pulses are followed by a first rest, a discharge and a second rest, period prior to re-initiating the charge pulse. If the battery voltage reaches a preselected maximum, in less than a pre-selected period of time, the charge pulse is reduced by a preselected minimum factor. Cycling of the cell is continued until the cells are fully charged.

5481175

SYSTEM AND METHOD FOR CHARGING AUXILIARY BATTERIES

Qualich John; Chmielewski Cary; Sievers Kirk
Buffalo Grove, IL, UNITED STATES assigned to
Motorola Inc

A system and method for charging an auxiliary battery that drives an auxiliary load includes a regulator coupled to an auxiliary battery. The regulator provides a charge current that is variable dependent on a parameter of a control signal. Preferably, the parameter is an amplitude. A switch provides a coupling and a decoupling between the auxiliary battery and the auxiliary load. A control device decouples the auxiliary battery from the auxiliary load via the switch, and then provides the control signal to the regulator. By effecting this action, the regulator provides the variable charge current to the auxiliary battery dependent on the amplitude of the control signal.

5481177

ELECTRONIC CHARGING SYSTEM

Hamley James P Mill Creek, WA, 98012, UNITED STATES

A charging system has an input terminal, coupled to a power source, and an output terminal coupled to the load or battery under charge. The charging system includes an adjustable regulator having an input coupled to the input terminal and an output coupled to the output terminal with its control terminal under control of controller circuitry. The controller circuitry senses the state of charge of the load and provides a controlled, tapered charge thereto until such time that

the load is fully charged. At the fully charged state, the controller changes the voltage at the control terminal of the regulator to cease all charging. Charging does not continue until the sensed level of charge of the battery drops to a predetermined recharge state at which point charger activity continues. The disclosed charger can be housed in a small, light weight enclosure and mounted at a location close to the battery with permanent connections thereto. The power source may be provided as a wall mount transformer having an interconnection to the remotely located charger.

5481185

SOLENOID, TYPE VOLTAGE, POLARITY AND CONTINUITY TESTER

Lane Peter B; Hinz William Thiensville, WI, UNITED STATES assigned to GB Electrical Inc

A solenoid type voltage, polarity and continuity tester has a solenoid operated voltage indicator, and separate positive polarity, negative polarity and continuity indicators. In the circuit for the tester, the solenoid is arranged in series with the polarity and continuity indication circuits so that continuity of the solenoid can be verified when the continuity of a circuit being checked is positively determined. A polarity indication circuit is in parallel with a continuity indication circuit. The continuity circuit has a battery which is switched into a circuit having a high resistance when a voltage is applied to the tester to reduce battery drainage.

5481194

FAULT DETECTION CIRCUIT FOR SENSING LEAKAGE CURRENTS BETWEEN POWER SOURCE AND CHASSIS

Schantz David L; Munro James Ellicott City, MD, UNITED STATES assigned to Westinghouse Electric Corp

A fault detection circuit for detecting leakage currents between a DC power source and chassis of an automobile, includes a voltage sensor coupled to the