

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