5640079

BATTERY CHARGER FOR PORTABLE RECHARGEABLE BATTERIES

Nelson Robert; Baum Roger R Scottsdale, AZ, UNITED STATES assigned to Andrew Corporation

The method of charging a portable rechargeable battery produces an electrical signal representing the battery output voltage. Rapid charging of the battery is initiated by supplying a high charging current to the battery when a signal representing the battery output voltage drops below a preselected lower threshold. The battery voltage at this lower threshold is high enough to maintain the operation of a device powered by the battery. The rapid charging of the battery is terminated after the signal representing the battery output voltage rises to a preselected upper threshold. The battery voltage at the upper threshold is substantially below the output voltage of a battery that is charged to 100% of its nominal capacity.

5640080

SECONDARY BATTERY CHARGER

Tamai Mikitaka; Amazutsumi Toor Hyogo, JAPAN assigned to Sanyo Electric Co Ltd

A charging apparatus charges a secondary battery in alternating charging and rest periods. The charge amount supplied in the charging periods is restricted to an amount which reduces or eliminates deterioration of the secondary battery by overcharging.

5640081

METHOD AND APPARATUS FOR MONITORING DISCHARGE OF A BATTERY DEVICE BASED ON BATTERY SELF-DISCHARGE AND DISCHARGE OVER TIME

Austin Steven; Blanc James J; Townsley David B; Kim Stephen J Fremont, CA, UNITED STATES assigned to Apple Computer Inc

A novel battery monitoring device is described. The monitoring device determines amount of battery self-discharge, determines amount of battery discharge from a monitoring circuit, determines amount of battery discharge from a host device when the host device is in a first power consumption mode, and determines amount of battery discharge from the host device when the host device is in a second power consumption mode. The first mode causes greater discharge of the battery during a given period of time than the second mode.

5640150

RESETTABLE STATE-OF-CHARGE INDICATOR FOR RECHARGEABLE BATTERIES

Atwater Terrill North Plainfield, NJ, UNITED STATES assigned to The United States of America as represented by the Secretary of the Army

An improved state-of-charge indicator for a battery wherein the counter circuit of the battery state-of-charge indicator includes a means for both resetting and fine-tuning the counter circuit. The current flowing from the monitored battery is passed through a sensing resistor. The voltage across the resistor is amplified and integrated over time and the result of the integration is stored in a capacitor discharged by a switch whenever a threshold voltage is achieved. The cycle is repeated each time coulomb of capacity is removed from the battery. The counter circuit counts the charge/discharge cycles of the capacitor resulting in a count representative of the amount of energy dissipated and therefore indirectly of the amount of energy remaining in the battery system. In this improvement, both a resetting means and a fine-tuning means are included for the counter circuit when the battery is being recharged. The fine tuning means can be preset to reset the counter circuit upon reaching a predetermined voltage signifying that the battery is fully charged. The fine-tuning means may further comprise a zener diode used with a MOSFET mixer.