

What is claimed is::

1. A method of charging a portable rechargeable battery, said method comprising
producing an electrical signal representing the battery output voltage,
initiating rapid charging of the battery by supplying a high charging current to the battery when the signal representing the battery output voltage drops below a preselected lower threshold, the battery output voltage corresponding to said lower threshold being high enough to maintain the operation of a device powered by said battery, and
terminating the rapid charging of the battery after the signal representing the battery output voltage rises to a preselected upper threshold, the battery output voltage corresponding to said upper threshold being substantially below the output voltage of a battery that is charged to 100% of its nominal capacity.
2. The method of claim 1 which includes the steps of
starting the measurement of a preselected time interval when the signal representing the battery output voltage rises to said preselected upper threshold, and
terminating the rapid charging of the battery and initiating a trickle charge by supplying a low charging current to the battery when said preselected time interval expires.
3. The method of claim 2 which includes the step of adjusting said preselected time interval in response to the magnitude of the battery output voltage.
4. The method of claim 2 which includes the steps of initiating the measurement of a backup time interval whenever the charging system is energized, and reducing said threshold voltages if said backup time interval expires before the charging system is de-energized.
5. The method of claim 1 which includes the steps of monitoring the ambient temperature, and adjusting at least said upper threshold to compensate for variations in said ambient temperature.