

operator to move the battery pack out of the battery holding location, across a platform deck of the apparatus, and to a storage location. The operator can then use the pneumatic carrier to move a fresh battery pack located in a different storage location to the battery powered vehicle.

5508598

METHOD FOR QUICK CHARGING OF RECHARGEABLE BATTERIES

Al-Abassy Issam Graz, AUSTRIA

A device for quick charging of batteries, whereby the charging current of the battery is directed in constant current impulses. Several charging current strengths of varying strengths, are brought into effect, depending on the respective charging condition of the battery, by clock impulses. Assigned to each charging current strength is a battery-specific zone in the electrochemical voltage gradient $U=f(t)$, whereby the individual zones are indicated by voltage set values. The voltage zone assigned to each charging current strength is so chosen that in passing through this zone, no heating or gassing occurs. Thereby use is made of the fact that the battery at the beginning of the charging can accept a very high current. The charging condition of the battery is measured in each impulse pause, stored and compared with the voltage set value. Where there is a variance, the set-current value assigned to the zone is correspondingly adjusted.

5508599

BATTERY CONDITIONING SYSTEM HAVING COMMUNICATION WITH BATTERY PARAMETER MEMORY MEANS IN CONJUNCTION WITH BATTERY CONDITIONING

Koenck Steven Cedar Rapids, IA, UNITED STATES assigned to Norand Corp

In an exemplary embodiment, a battery conditioning system monitors battery conditioning and includes a

memory for storing data based thereon; for example, data may be stored representative of available battery capacity as measured during a deep discharge cycle. With a microprocessor monitoring battery operation of a portable unit, a measure of remaining battery capacity can be calculated and displayed. Where the microprocessor and battery conditioning system memory are permanently secured to the battery so as to receive operating power therefrom during storage and handling, the performance of a given battery in actual use can be accurately judged since the battery system can itself maintain a count of accumulated hours of use and other relevant parameters. In the case of a non-portable conditioning system, two-way communication may be established with a memory associated with the portable unit so that the portable unit can transmit to the conditioning system information concerning battery parameters (eg, rated battery capacity) and/or battery usage (eg, numbers of shallow discharge and recharge cycles), and after a conditioning operation, the conditioning system can transmit to the portable unit a measured value of battery capacity, for example.

5508600

METHOD FOR DISPLAYING A CHARGE LEVEL OF A BATTERY

Myslinski Theodore A; Heredia Rafael Freehold, NJ, UNITED STATES assigned to NCR Corporation

A method for displaying a charge level of a battery includes the steps of (1) displaying the charge level of the battery in a first manner during battery charging, and (2) displaying the charge level of the battery in a second manner which is different than the first manner during battery discharging. The first manner displaying step includes the step of operating a battery charge level indicator in a first mode, and the second manner displaying step includes the step of operating the battery charge level indicator in a second mode which is different than the first mode. In addition, a battery charge level indicator is disclosed and includes a display for indicating a charge level of a battery, and a mechanism for operating the display so as to indicate whether the battery is in a charge state of operation or a discharge state of operation.