PRIMARY CELL DEPOLARIZATION

WIND, SOLAR, THERMAL, OR FUEL-CELL SOURCE

.ONE CELL OR BATTERY CHARGES ANOTHER

. Vehicle battery charging

.. Employing "jumper" cable

MEANS TO IDENTIFY CELL OR BATTERY TYPE

CELL OR BATTERY CHARGER STRUCTURE

.Charger inductively coupled to cell or battery

.. Charging station for electrically powered vehicle

.. For diverse sizes of cells, batteries, or battery packs

.. Having plug for A-C receptacle

.. For battery pack

.. With charger stand or base adapted to hold battery pack

.. For handheld device

.. With charger stand or base

SERIALLY CONNECTED BATTERIES OR CELLS

.. Switchable to parallel connection

.. With discharge of cells or batteries

.. With individual charging of plural batteries or cells

.. Having variable number of cells or batteries in series

.. Switchable cells (e.g., for voltage regulation, etc.)

.. Bypassable battery cell

.. With generator charging source

SEQUENTIAL CHARGING OR DISCHARGING OF BATTERIES OR CELLS

DIVERSE CHARGING OR DISCHARGING RATES FOR PLURAL BATTERIES

PARALLEL CONNECTED BATTERIES

BATTERY OR CELL DISCHARGING

.. With charging

.. Pulsed discharge

.. Cycling (e.g., discharge/charge cycle, etc.)

.. Deep discharge (e.g., conditioning, etc.)

.. With state-of-charge detection

.. Time control

.. With battery or cell condition monitoring (e.g., for protection from overcharging, heating, etc.)

.. Regulated discharging

.. With battery or cell condition monitoring (e.g., for protection from overcharging, heating, etc.)

BATTERY OR CELL CHARGING

.. Plural charging sources

.. Pulsed

.. With DC-DC converter (e.g., flyback supply, etc.)

.. Pulse modulation

.. Phase controlled

... With voltage compensation

... And temperature compensation

... Pulse-width modulation

... Hysteresis type (e.g., antichattering, etc.)

.. Gas controlled

.. With peak detection of current or voltage (e.g., delta-V or delta-I utilized, etc.)

.. With detection of current or voltage integral (e.g., total charge, etc.)

.. With thermal condition detection

.. Detection of current or voltage differential (e.g., slope, etc.)

.. Detection of current or voltage amplitude

... Temperature compensation

... Thermal switch (e.g., thermostat, bimetallic switch, etc.)

.. Time control

.. Detection of current or voltage differential (e.g., slope, etc.)

.. Detection of current or voltage amplitude

... Having solid-state control device

... Detection of current and voltage amplitude

... Multi-rate charging (e.g., plural charge rates before a maintenance charge, etc.)

... With detection of current or voltage differential (e.g., slope, etc.)
CLASS 320 ELECTRICITY: BATTERY OR CAPACITOR CHARGING OR DISCHARGING

162 .With detection of current or voltage amplitude
163 .Having solid-state control device
164 .Detection of current and voltage amplitude
165 .With current sensing to detect proper battery connection (e.g., polarity, ripple, reverse current, etc.)

CAPACITOR CHARGING OR DISCHARGING
166 .For large capacitance (e.g., "super" capacitor, memory backup capacitor, etc.)

FOREIGN ART COLLECTIONS

FOR 000 CLASS-RELATED FOREIGN DOCUMENTS
Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collections listed below. These Collections contain ONLY foreign patents or non-patent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

FOR 100 CONDENSER CHARGING AND/OR DISCHARGING (320/1)
FOR 101 BATTERY CHARGING AND/OR DISCHARGING (320/2)
FOR 102 .Including dry cells or primary batteries (320/3)
FOR 103 ."Recharging", depolarizing and/or reconditioning (320/4)
FOR 104 .Combined charging and discharging (320/5)
FOR 105 .Plural, diversely treated batteries (320/6)
FOR 106 .Series-parallel connections thereof (320/7)
FOR 107 .Transposition between charging and discharging circuits (320/8)
FOR 108 .Combined regulation of charging source or circuit and discharging circuit (320/9)
FOR 109 .Charging source and/or circuit controlled by discharging circuit (320/10)
FOR 110 .Starting and/or stopping of battery charging (320/11)
FOR 111 .Charging generator control (320/12)
FOR 112 .Discharging circuit regulation (320/13)
FOR 113 .Alternately charging and discharging (320/14)
FOR 114 .Plural, diversely treated, batteries (320/15)
FOR 115 .Series-parallel connections thereof (320/16)
FOR 116 .Series-connected batteries (320/17)
FOR 117 .Variable number in series (320/18)
FOR 118 .Periodic or intermittent charging or discharging (320/19)
FOR 119 .High-rate, short-time charging systems (320/20)
FOR 120 .Periodic or intermittent charging or discharging (320/21)
FOR 121 .Plural rates of charging or discharging (320/22)
FOR 122 .Decreasing rates of charging (320/23)
FOR 123 .Three or more rates (320/24)
FOR 124 .With polarity control (320/25)
FOR 125 .By means of reversing switches (320/26)
FOR 126 .Combined control of source and charging circuit (320/27)
FOR 127 .Including charging circuit-making and/or breaking (320/28)
FOR 128 .Combined circuit regulation and circuit-making and/or breaking (320/29)
FOR 129 .Control responsive to predetermined conditions (320/30)
FOR 130 .Plural, diverse conditions and/or with time-delay means (320/31)
FOR 131 .Including voltage and current magnitudes (320/32)
FOR 132 .For battery circuit-making and/or breaking (320/33)

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FOR 133 ...For battery circuit-making and/or breaking (320/34)
FOR 134 ...Thermal condition (320/35)
FOR 135 ...For battery circuit-making and/or breaking (320/36)
FOR 136 ...Instant of, or period of time (320/37)
FOR 137 ...For battery circuit-making and/or breaking (320/38)
FOR 138 ...Voltage or current magnitude (320/39)
FOR 139 ...For battery circuit-making and/or breaking (320/40)
FOR 140 ...Speed or centrifugal forces (320/41)
FOR 141 ...For battery circuit-making and/or breaking (320/42)
FOR 142 ...Condition of battery charge (320/43)
FOR 143 ...Control by ampere-hour or watt-hour type of device (320/44)
FOR 144 ...For battery circuit-making and/or breaking (320/45)
FOR 145 ...Control by gas pressure-responsive means (320/46)
FOR 146 ...For battery circuit-making and/or breaking (320/47)
FOR 147 ...With indicating, signaling and/or testing means (320/48)
FOR 148 ...Battery circuit control (320/49)
FOR 149 ...With bucking and/or boosting e.m.f. in charging circuit (320/50)
FOR 150 ...By impedance in charging or discharging circuit (320/51)
FOR 151 ...Pressure-responsive type of impedance (320/52)
FOR 152 ...Unidirectionally conductive devices in battery circuit (320/53)
FOR 153 ...Battery circuit-making and/or breaking (320/54)
FOR 154 ...Plural circuit makers and/or breakers (320/55)
FOR 155 ...Plural, diverse or diversely treated sources of supply for charging (320/56)
FOR 156 ...Rectifying systems for battery charging (320/57)
FOR 157 ...Dynamoelectric-type rectifier (320/58)
FOR 158 ...Unidirectionally conductive-type rectifier (320/59)
FOR 159 ...Space-discharge devices (320/60)
FOR 160 ...Generation systems for battery charging (320/61)
FOR 161 ...Physical starting and/or stopping of generator (320/62)
FOR 162 ...Generator used as starting means (320/63)
FOR 163 ...Generator field-winding circuit control (320/64)
FOR 164 ...Plural, diversely treated field windings (320/65)
FOR 165 ...Differentially related (320/66)
FOR 166 ...Auxiliary source or field circuit e.m.f. (320/67)
FOR 167 ...Field-winding circuit impedance (320/68)
FOR 168 ...Step short-circuited type (320/69)
FOR 169 ...Pressure-responsive type of impedance (320/70)
FOR 170 ...Armature or generating circuit shorted or grounded (320/71)
FOR 171 ...Generator structure control (320/72)

DIGESTS

DIG 10 NONBATTERY LOAD CONTROLS CHARGING
DIG 11 PRIORITIZED SUPPLY OF POWER OR POWER SUPPLY COMPENSATION
DIG 12 PRECHARGING ANALYSIS (E.G., DETERMINING PRESENCE OF BATTERY, ETC.)
DIG 13 FAULT DETECTION
DIG 14 BATTERY ACTS AS BUFFER
DIG 15 POLARITY CONTROL
DIG 16 REMOVAL OF MEMORY EFFECT IN BATTERIES
DIG 17 SENSING OF "GASSING" VOLTAGE
DIG 18 INDICATOR OR DISPLAY
DIG 19 .Charger status (e.g., voltmeter, etc.)
DIG 20 .Polarity
DIG 21 .State of charge of battery
DIG 22 LINE IMPEDANCE (E.G., RESISTOR, ETC.)
DIG 23 .Capacitor
DIG 24 .Inductor
DIG 25 OPTICAL COUPLER
DIG 26 BUTTON OR HEARING AID TYPE
DIG 27 TRANSFORMERLESS
DIG 28 REGULATING TRANSFORMER (E.G.,
    HIGH LEAKAGE, FERRO-RESONANT,
    ETC.)
DIG 29 TRANSFORMER HAVING PLURAL
    SECONDARIES
DIG 30 PLURAL TRANSFORMERS
DIG 31 PLURAL RECTIFIER SYSTEMS
DIG 32 VOLTAGE DIVIDER HAVING DIVERSE
    ELEMENTS OTHER THAN MERELY
    PLURAL RESISTORS
DIG 33 AIRCRAFT OR SPACECRAFT
    APPLICATION
DIG 34 ROBOT, HYBRID, RECREATIONAL OR
    EMERGENCY VEHICLE
DIG 35 HOME POWER STATION
DIG 36 DISTRIBUTION SYSTEM (E.G.,
    RAILROAD LIGHTING, ETC.)