

**(12) United States Patent**  
**Popescu-Stanesti**

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- (54) **BUFFER BATTERY POWER SUPPLY SYSTEM**
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- (\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

- (21) Appl. No.: **09/690,200**
- (22) Filed: **Oct. 16, 2000**

**Related U.S. Application Data**

- (63) Continuation-in-part of application No. 09/272,738, filed on Mar. 8, 1999.
- (51) **Int. Cl.<sup>7</sup>** ..... **H02J 7/04**
- (52) **U.S. Cl.** ..... **320/139**
- (58) **Field of Search** ..... 323/908; 363/136; 320/132, 134, 139

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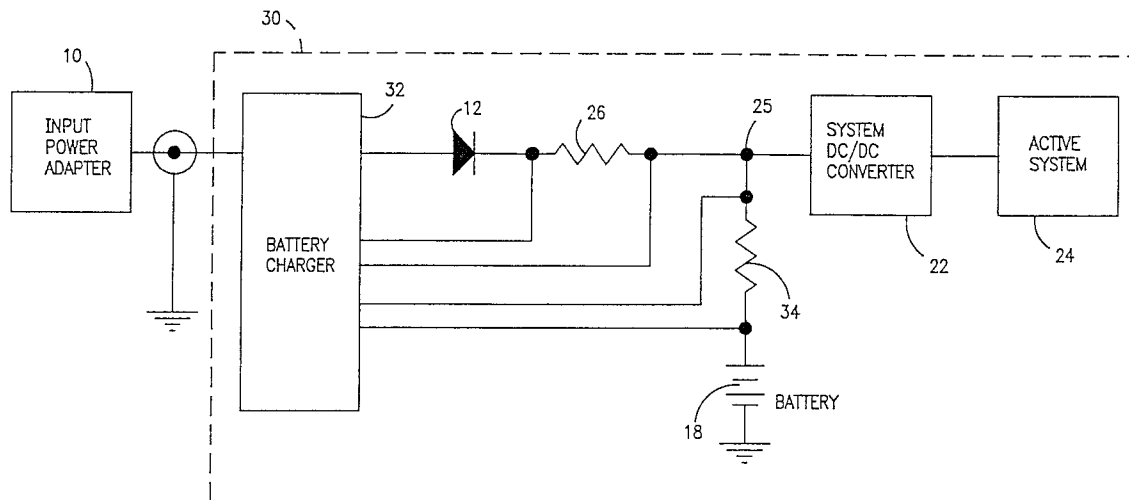
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**(57) ABSTRACT**

A buffer battery power supply circuit is provided. In one embodiment, a battery charger circuit supplies a total output current which is delivered to both an active system and a battery. The total output current and the current delivered to a battery are sensed and compared to a preset threshold total output current signal and threshold battery current signal, respectively. The compared signals generate error signals which are provided as feedback to the battery charger circuit, so that the total output current can be controlled. In another embodiment, in addition to sensing the total output current and the battery current, the total output voltage is sensed and multiplied by the total output current, generating a total output power error signal. The error signals are provided as feedback to the battery charger circuit, so that the total output current and/or the total output voltage can be controlled. In other embodiments, a battery switch is provided that couples/decouples the battery from the load based on the minimum required voltage of the load, and provides a path between the battery and a power source so that the battery can receive a trickle charge even in a deeply discharged state, while permitting the power source to power the load. The circuitry of the present invention provides self-adjusting current management between a load and a rechargeable battery where the load requirements get priority over the battery recharge power requirements.

**38 Claims, 12 Drawing Sheets**



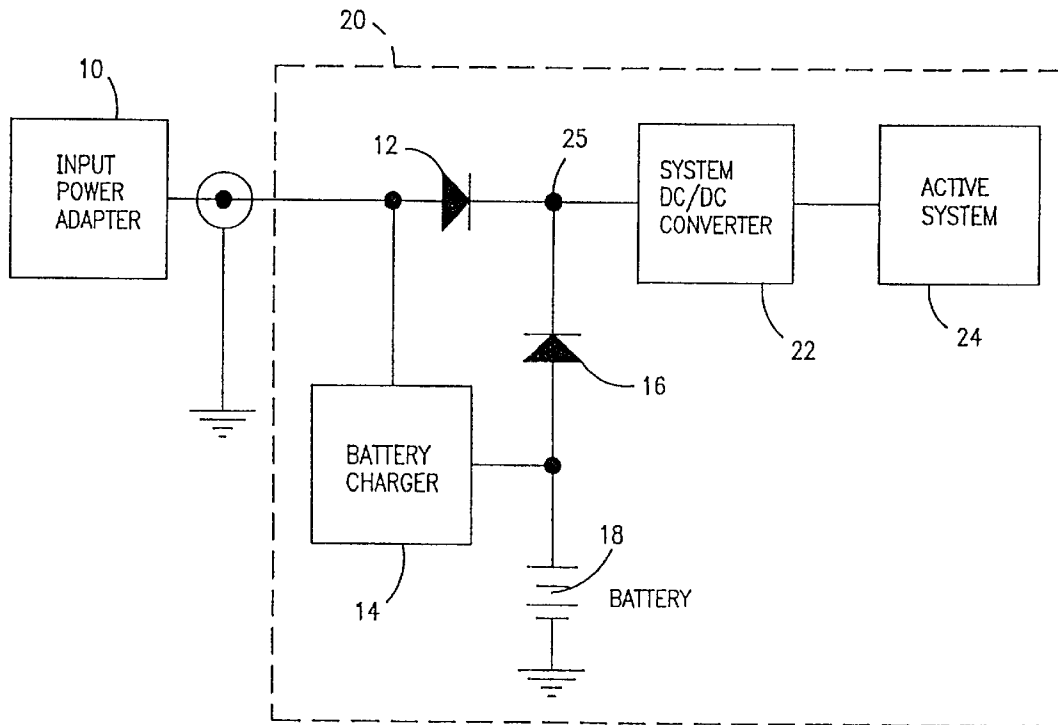


FIG. 1  
PRIOR ART

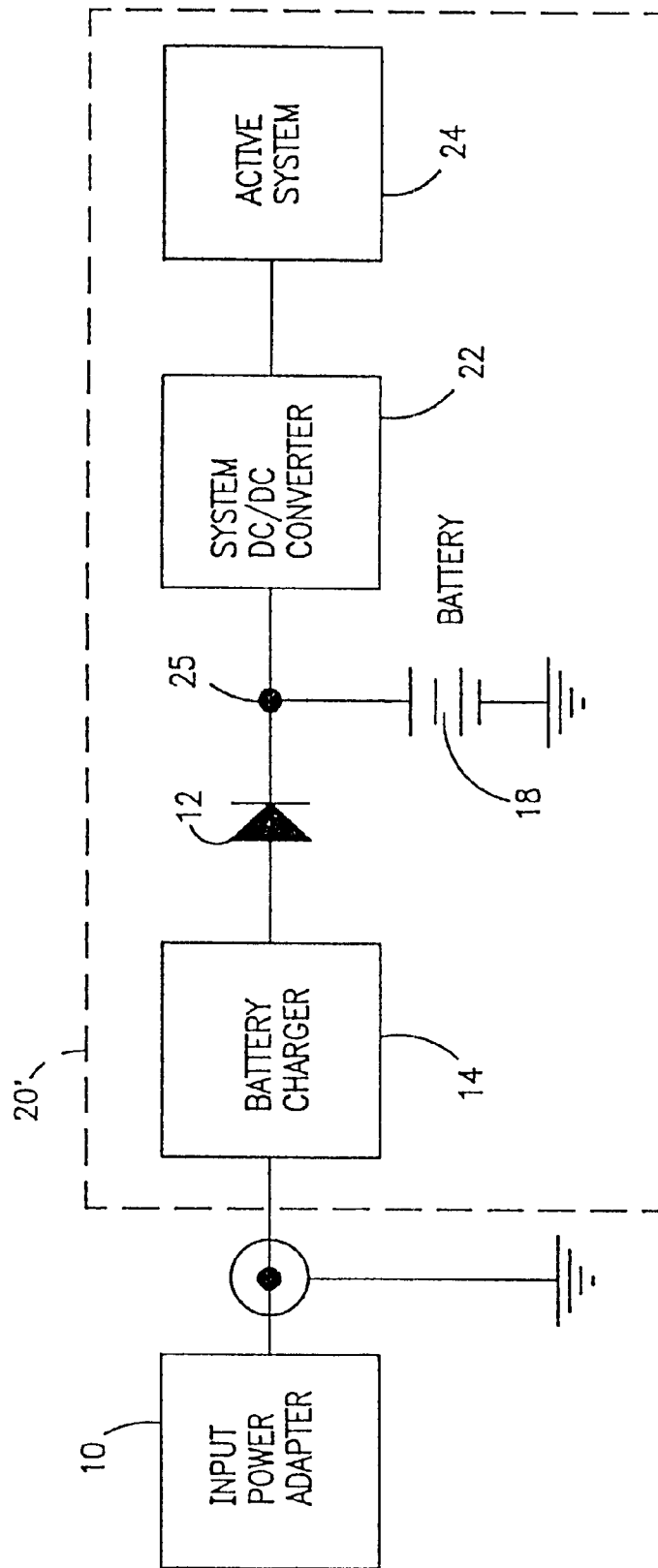


FIG. 2  
PRIOR ART

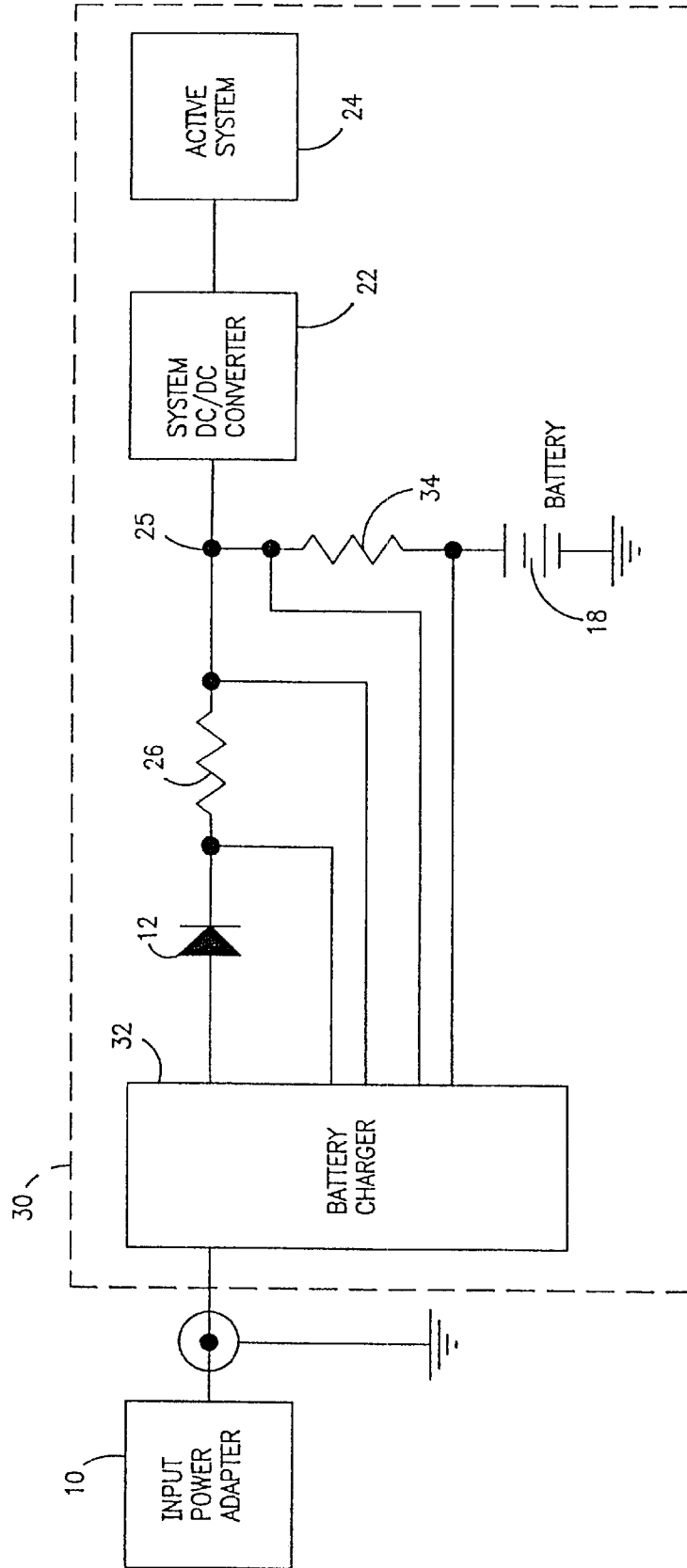


FIG. 3



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