



(12) **United States Patent**  
**Dougherty et al.**

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(54) **POWERING A NOTEBOOK ACROSS A USB INTERFACE**

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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 470 days.

This patent is subject to a terminal disclaimer.

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(57) **ABSTRACT**

A laptop computer and mating docking station where the docking station provides power to the laptop computer over power rails of the Universal Serial Bus (USB) interface. The laptop computer has laptop docking logic that both provides power in accordance with standard USB protocol, and also receiving power across the power rails of the USB interface. Likewise, the docking station has a docking station dock logic that establishes communication with the laptop docking logic across the USB power rails. Once positive communication is established, the dock station provides voltages on the USB power rails sufficient to power the laptop computer as well as charge the laptop's battery.

(21) Appl. No.: **10/674,923**

(22) Filed: **Sep. 30, 2003**

(65) **Prior Publication Data**

US 2004/0064621 A1 Apr. 1, 2004

**Related U.S. Application Data**

(63) Continuation of application No. 09/608,082, filed on Jun. 30, 2000, now Pat. No. 6,668,296.

(51) **Int. Cl.**

**G06F 13/00** (2006.01)  
**G06F 13/14** (2006.01)  
**G06F 1/26** (2006.01)

(52) **U.S. Cl.** ..... **710/303; 710/305; 713/300**

(58) **Field of Classification Search** ..... **710/303, 710/16; 713/300, 340**

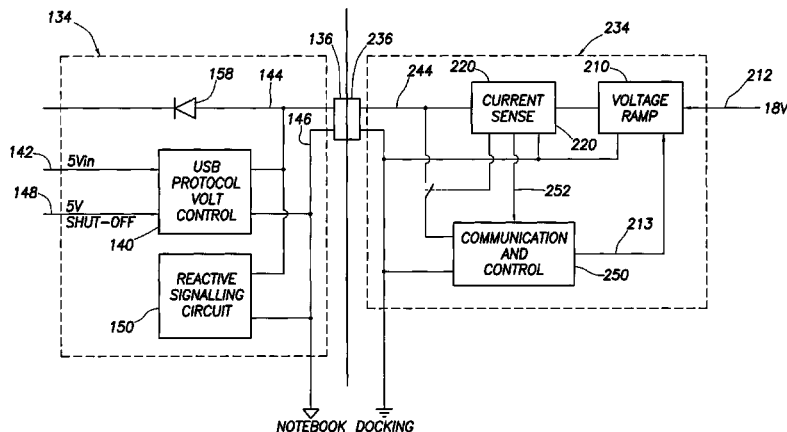
See application file for complete search history.

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**15 Claims, 3 Drawing Sheets**



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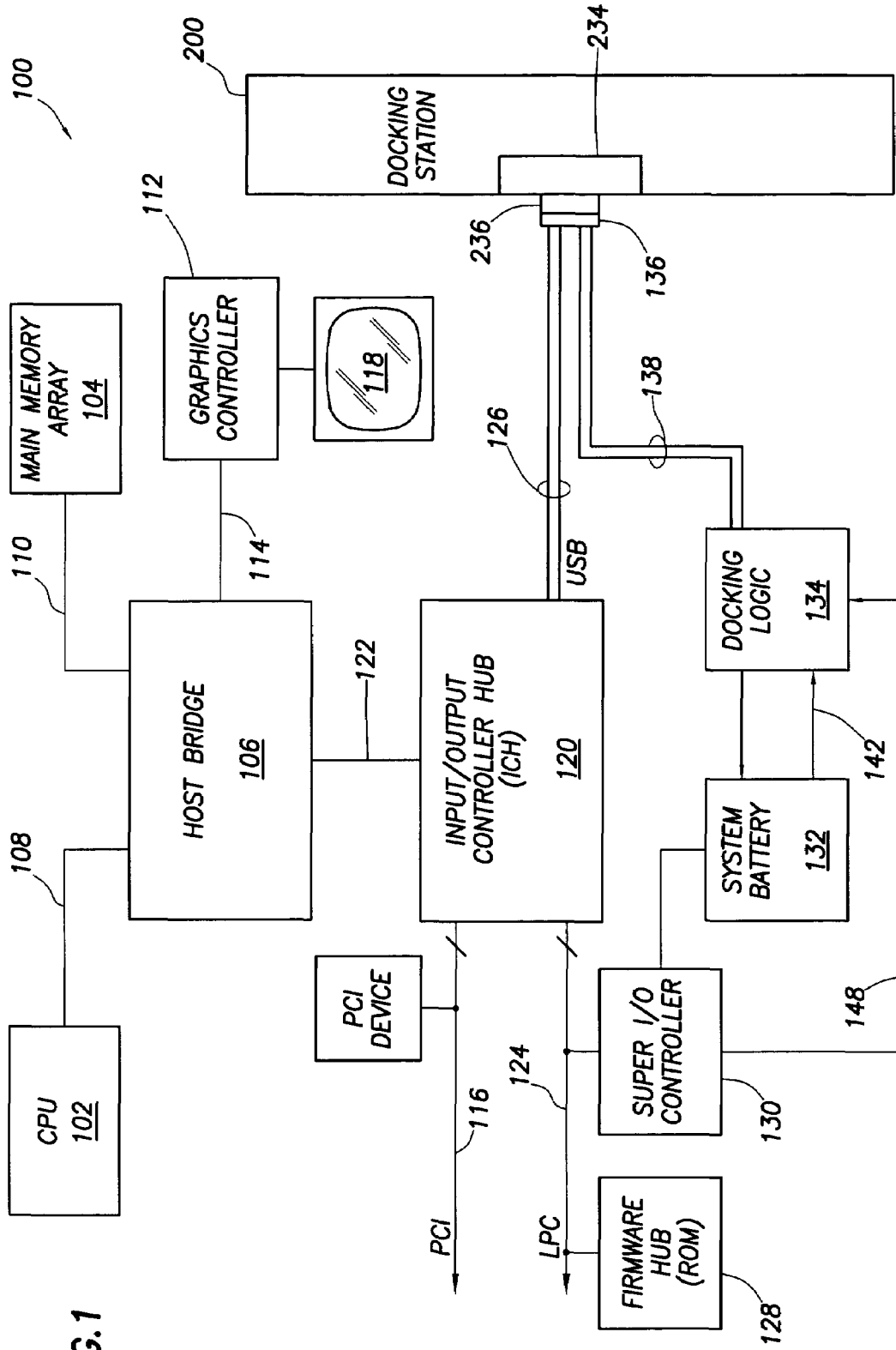


FIG. 1

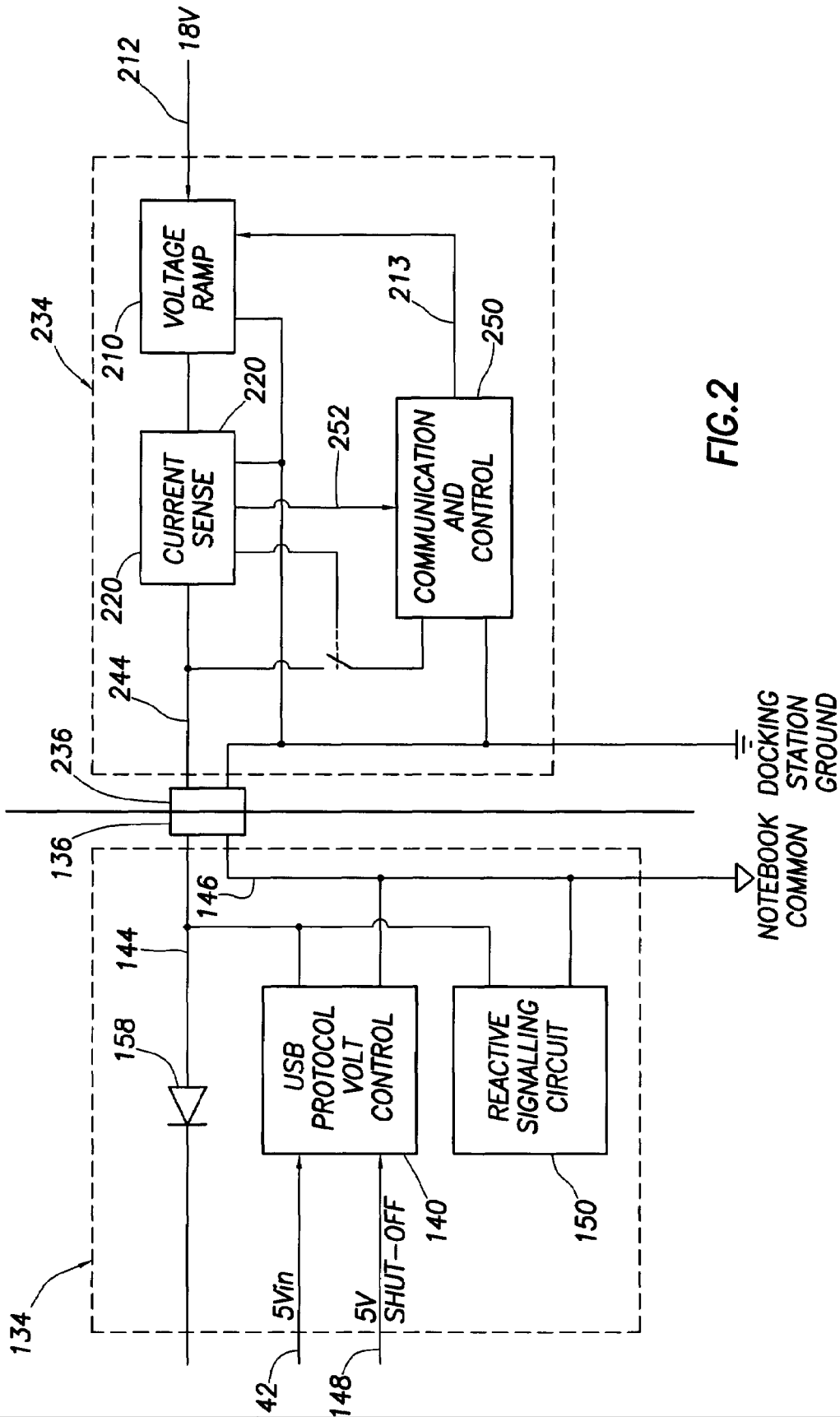


FIG. 2

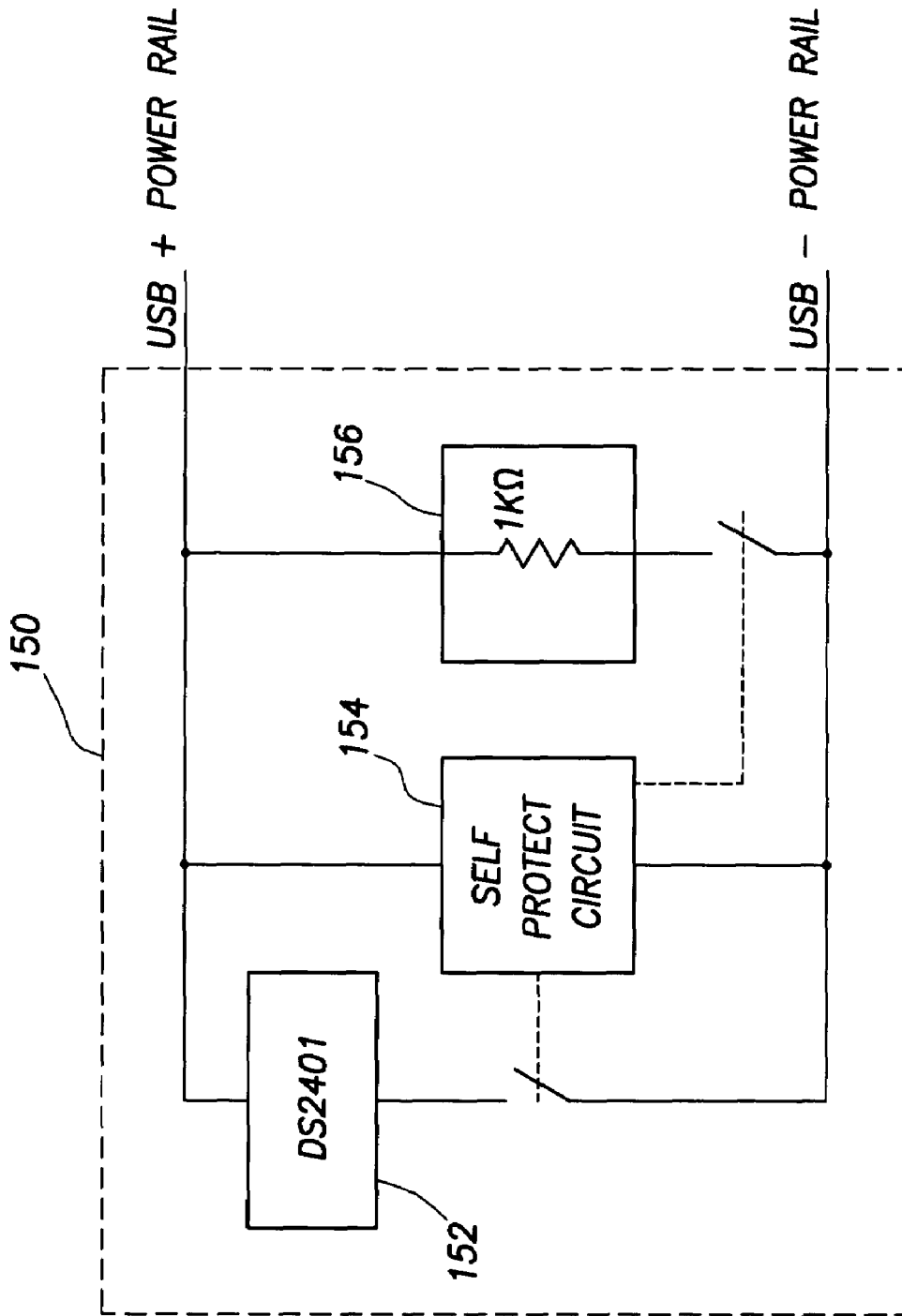


FIG. 3

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