



US007360004B2

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

(10) **Patent No.:** **US 7,360,004 B2**
(45) **Date of Patent:** ***Apr. 15, 2008**

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

(75) Inventors: **Michael J. Dougherty**, Houston, TX (US); **Kenneth W. Stufflebeam**, Houston, TX (US); **Rahul V. Lakdawala**, Cypress, TX (US); **Thomas P. Sawyers**, Hempstead, TX (US)

(73) Assignee: **Hewlett-Packard Development Company, LP.**, Houston, TX (US)

(*) 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.

5,675,813 A	10/1997	Holmdahl	
5,841,424 A	11/1998	Kikinis	
5,884,049 A *	3/1999	Atkinson	710/303
5,884,086 A *	3/1999	Amoni et al.	713/300
6,009,363 A *	12/1999	Beckert et al.	701/33
6,011,486 A *	1/2000	Casey	340/7.29
6,044,422 A	3/2000	Tran	
6,046,571 A	4/2000	Bovio et al.	
6,094,700 A	7/2000	Deschepper et al.	
6,105,097 A	8/2000	Larky et al.	
6,119,237 A *	9/2000	Cho	713/300
6,178,514 B1 *	1/2001	Wood	713/300
6,184,652 B1 *	2/2001	Yang	320/110
6,211,649 B1	4/2001	Matsuda	
6,281,784 B1 *	8/2001	Redgate et al.	340/310.01
6,283,789 B1	9/2001	Tsai	
6,308,215 B1	10/2001	Kolbet et al.	

(Continued)

(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.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,265,238 A 11/1993 Canova et al.

OTHER PUBLICATIONS

Universal Serial Bus Specification, Revision 2.0- Apr. 27, 2000-Section 7.2.1.*

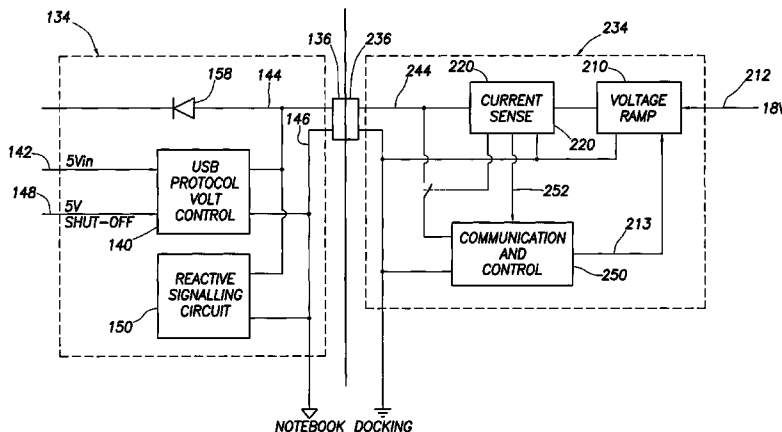
Primary Examiner—Rehana Perveen

Assistant Examiner—Jeremy S. Cerullo

(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.

15 Claims, 3 Drawing Sheets



US 7,360,004 B2

Page 2

U.S. PATENT DOCUMENTS

6,357,011 B2	3/2002	Gilbert	6,668,296 B1 *	12/2003	Dougherty et al.	710/303
6,362,610 B1	3/2002	Yang	6,886,104 B1 *	4/2005	McClurg et al.	713/300
6,530,026 B1 *	3/2003	Bard	2001/0034250 A1	10/2001	Chadha	
6,633,932 B1 *	10/2003	Bork et al.				

* cited by examiner

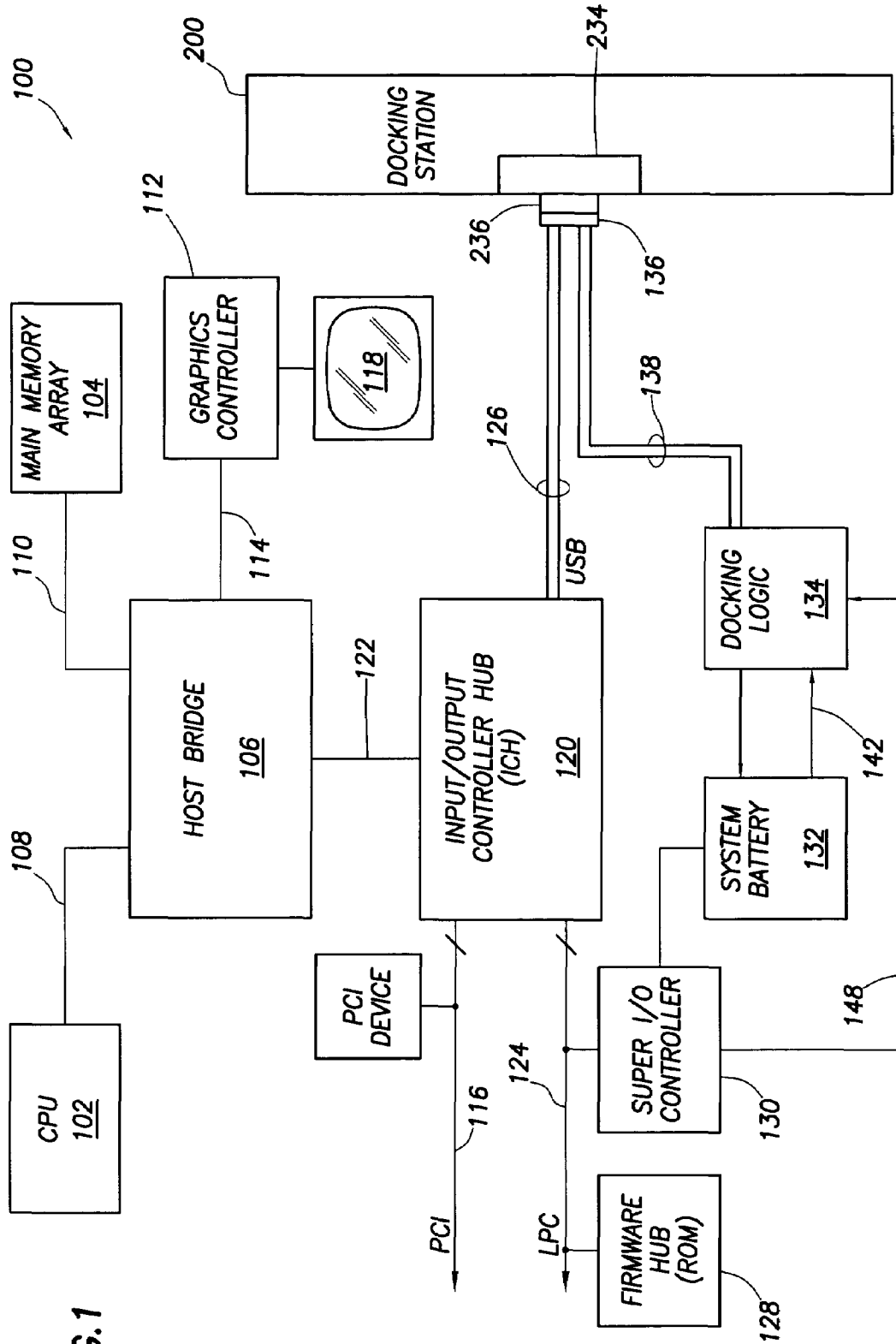


FIG. 1

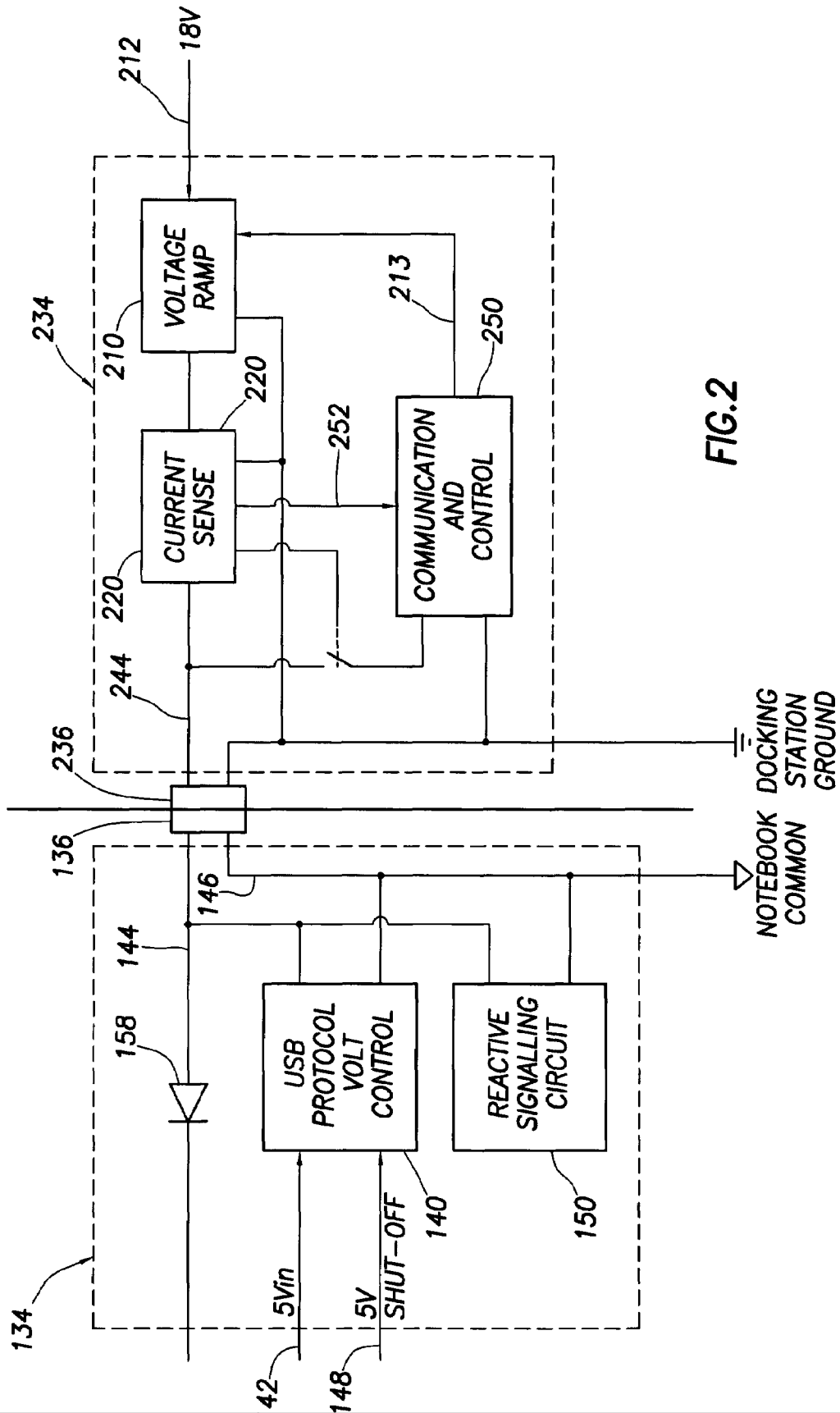


FIG. 2

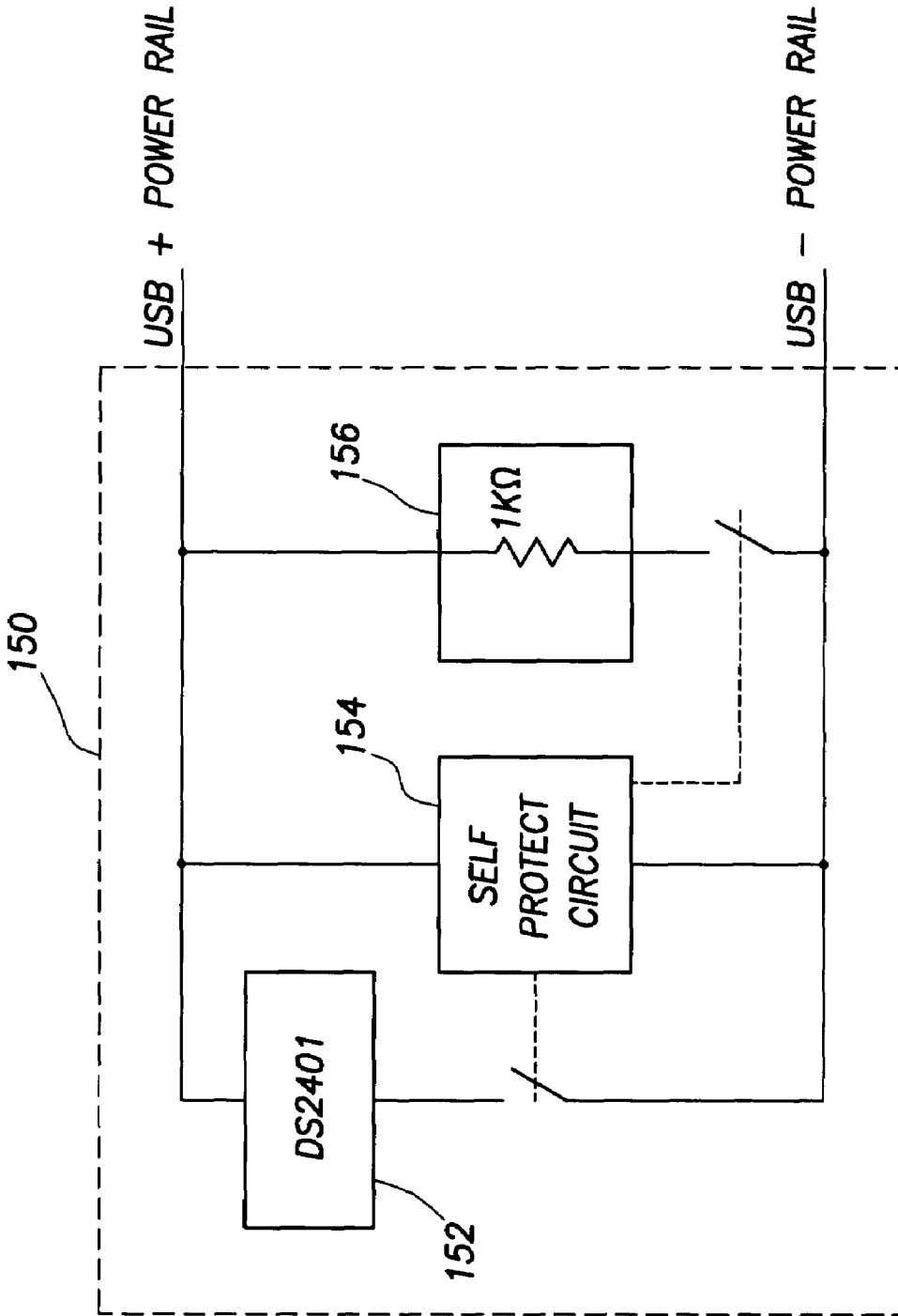


FIG.3

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.