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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.

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.	

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- (65) **Prior Publication Data**
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- 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.

(Continued)

OTHER PUBLICATIONS

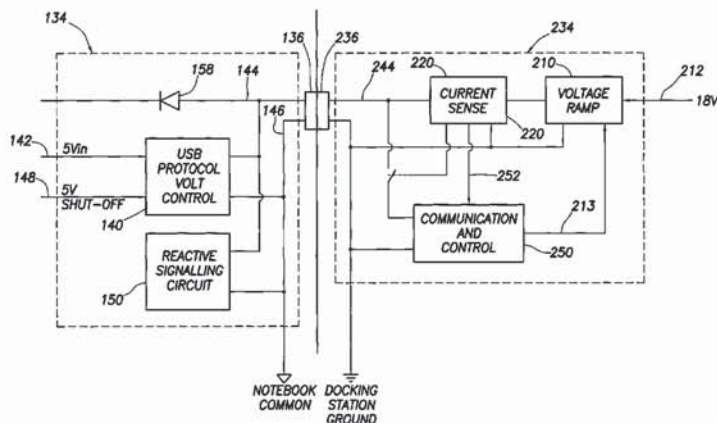
Universal Serial Bus Specification, Revision 2.0- Apr. 27, 2000- Section 7.2.1.*

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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

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U.S. PATENT DOCUMENTS

6,357,011	B2	3/2002	Gilbert				
6,362,610	B1	3/2002	Yang				
6,530,026	B1*	3/2003	Bard	713/320			
6,633,932	B1*	10/2003	Bork et al.	710/72			
					6,668,296	B1*	12/2003
							Dougherty et al.
							710/303
					6,886,104	B1*	4/2005
							McClurg et al.
							713/300
					2001/0034250	A1	10/2001
							Chadha

* cited by examiner

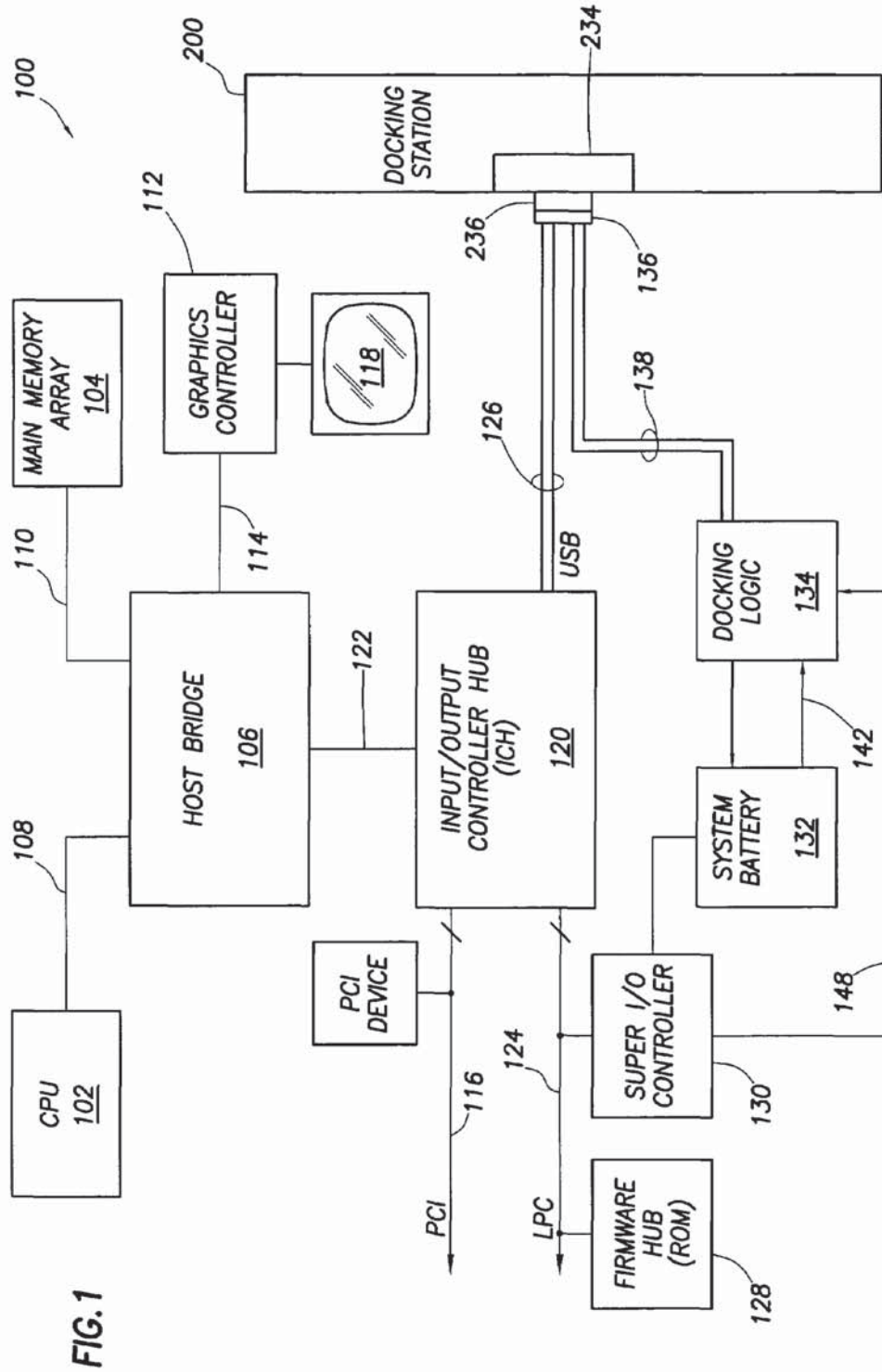


FIG. 1

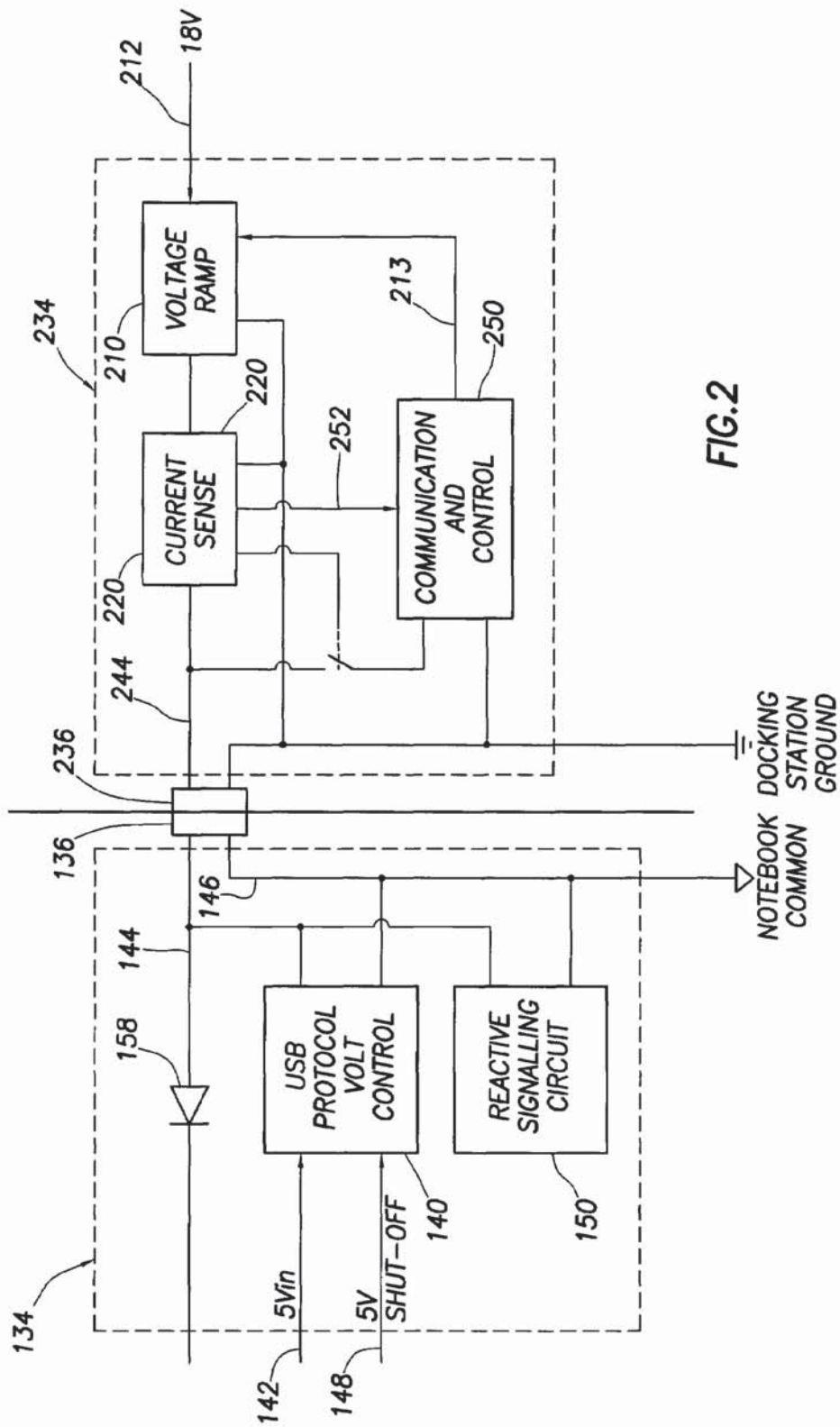


FIG. 2

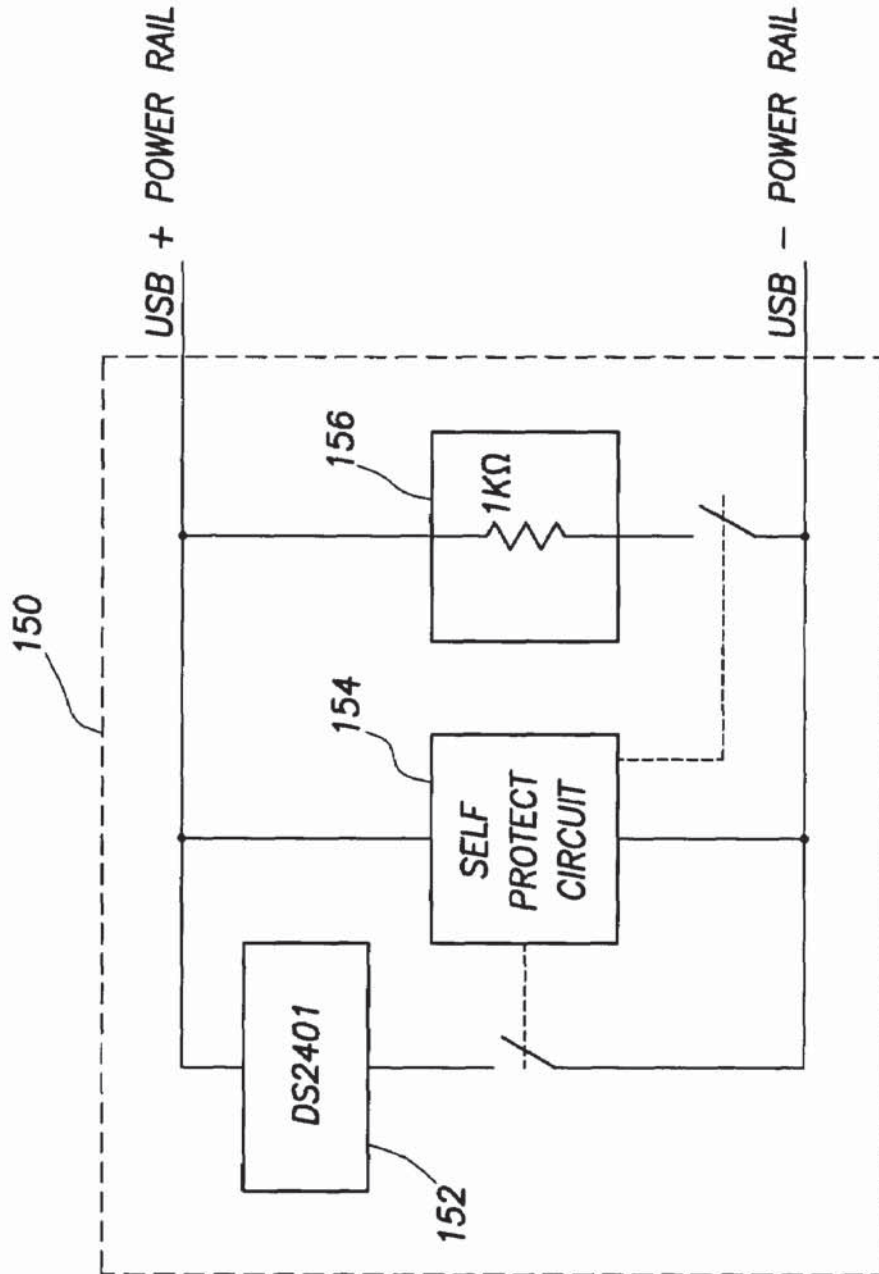


FIG.3

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