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

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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
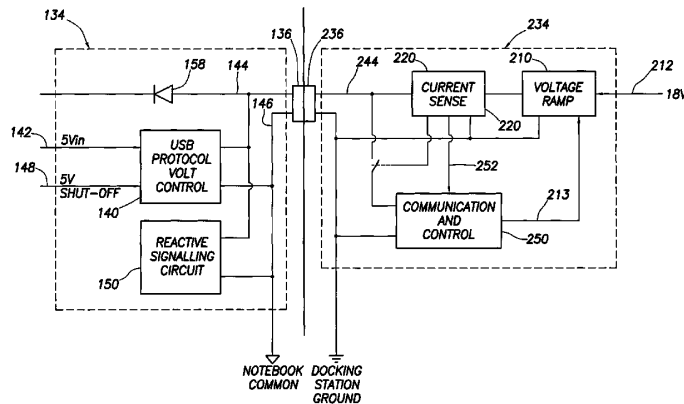See application file for complete search history.

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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

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FIG.1

FIG.2

234

210 — VOLTAGE RAMP

220

CURRENT SENSE

220

244

213

250

252

COMMUNICATION AND CONTROL

236

136

146

144

158

134

5Vin — 142

5V SHUT-OFF — 148

USB PROTOCOL VOLT CONTROL

140

REACTIVE SIGNALLING CIRCUIT
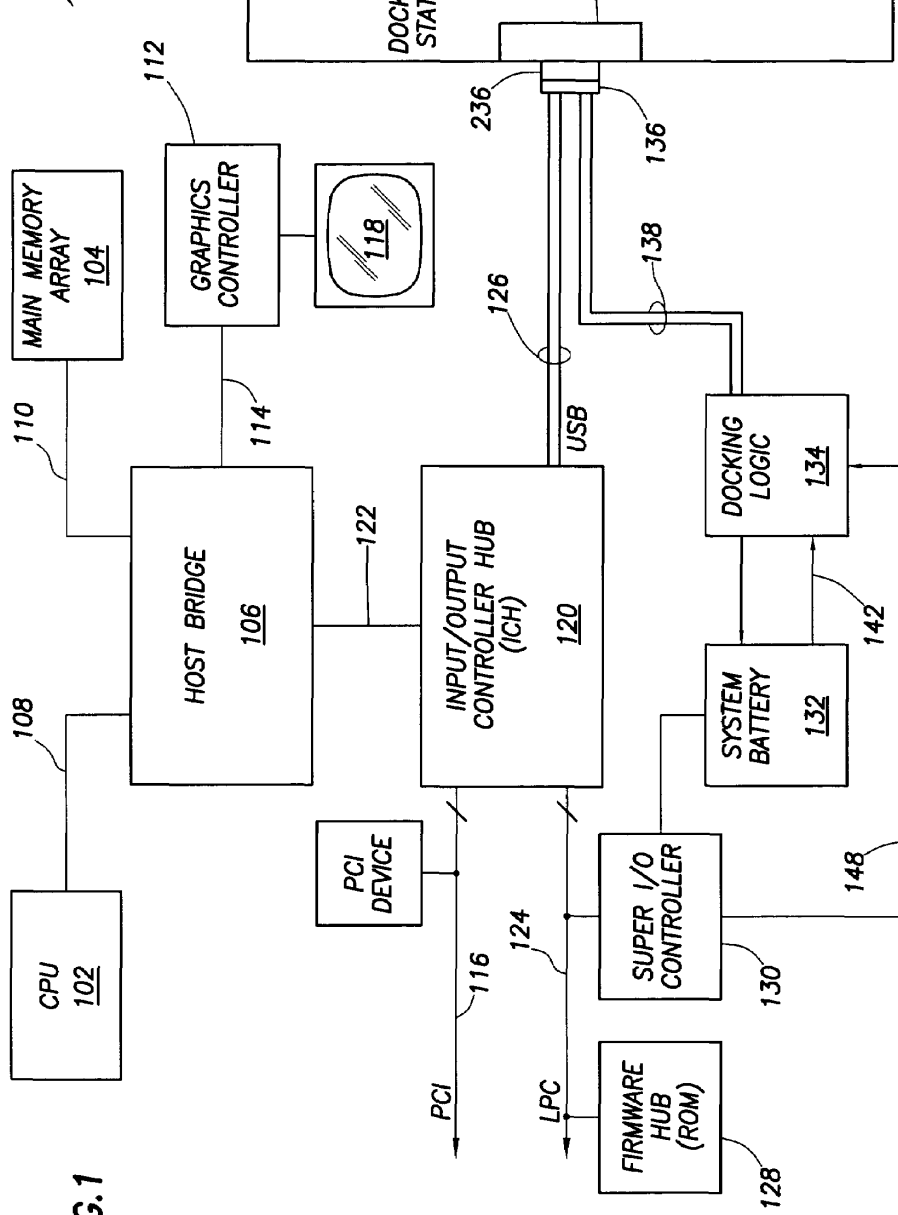
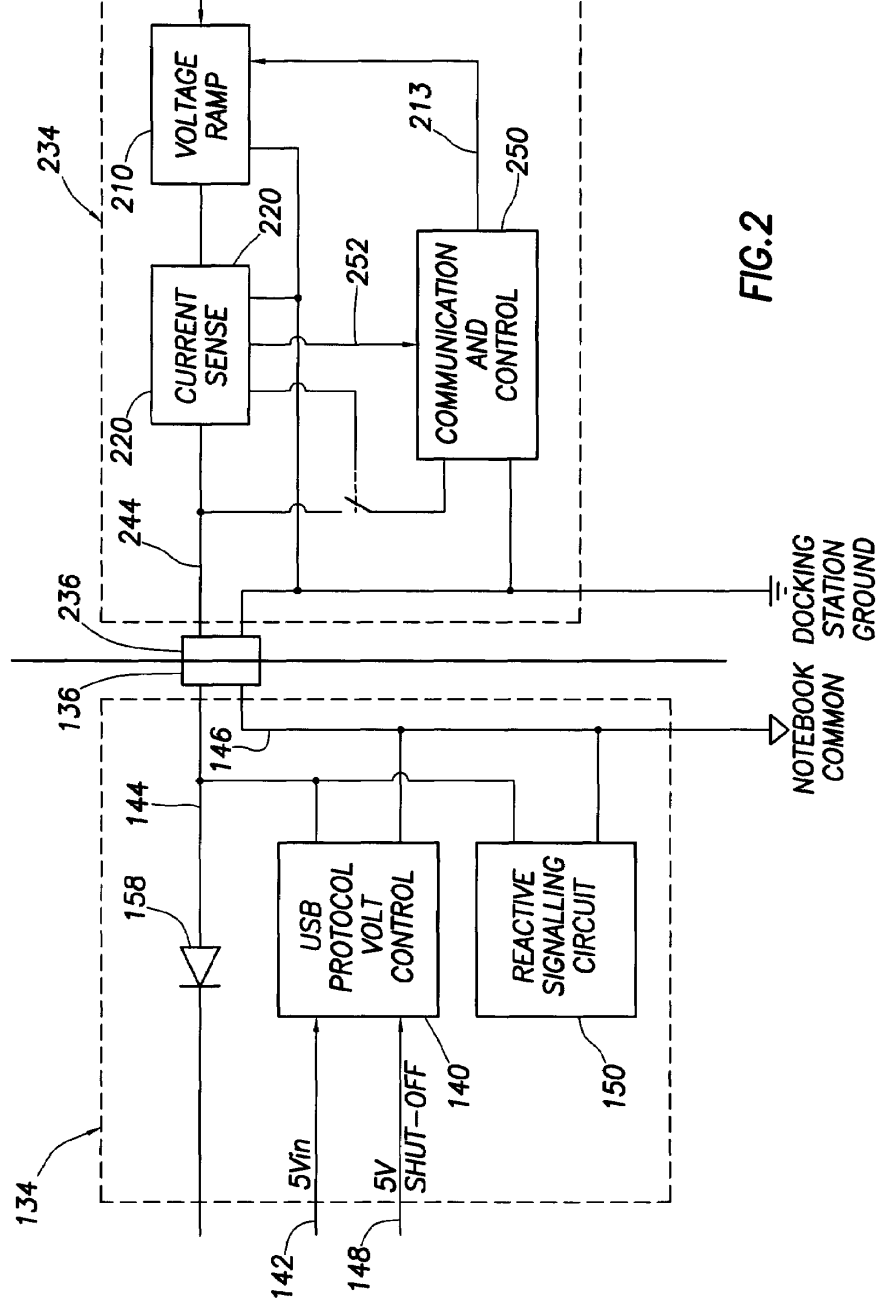150

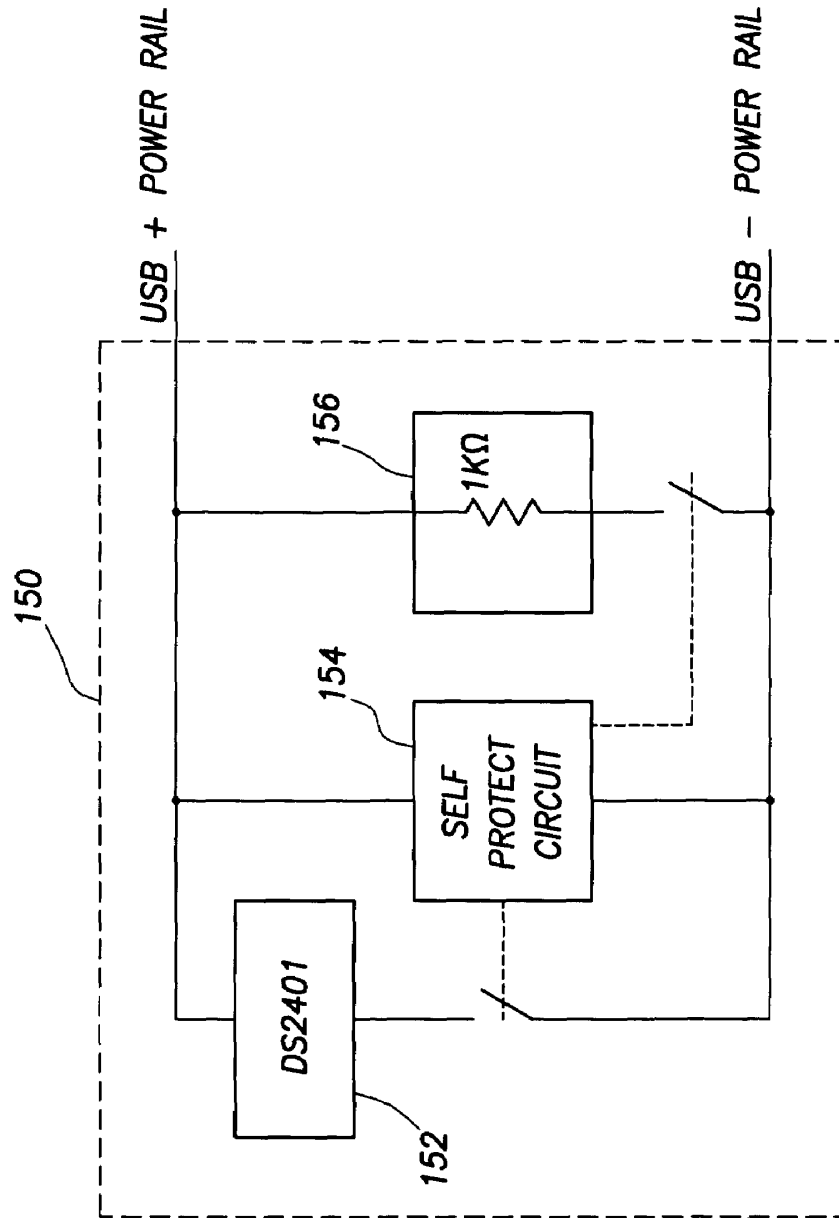NOTEBOOK COMMON

DOCKING STATION GROUND

FIG.3

DOCKET ALARM

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