United States Patent [19]

Moroz et al.

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[54] **UNIVERSAL DOCKING STATION**

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[21] Appl. No.: **08/679,131**

[22] Filed: **Jul. 12, 1996**

Related U.S. Application Data

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[51] **Int. Cl.^{6}** **G06F 13/00**

[52] **U.S. Cl.** **710/101**; 361/683

[58] **Field of Search** 395/281, 552, 395/555; 364/708.1; 361/683–686

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,941,845	7/1990	Eppley et al. .
4,969,830	11/1990	Daly et al. .
5,187,645	2/1993	Spalding et al. .
5,373,149	12/1994	Rasmussen .
5,452,180	9/1995	Register et al. .
5,477,415	12/1995	Mitcham et al. .
5,632,020	5/1997	Gephardt et al. 395/283
5,634,080	5/1997	Kikinis et al. 395/893
5,724,529	3/1998	Smith et al. 395/309

OTHER PUBLICATIONS

Don Anderson et al., *CardBus System Architecture,* 150–153, 194–201, 228–231; 322–325 (1995).

Don Anderson, *PCMCIA System Architecture,* 16–Bit PC Cards, 2nd Edition, 146–167, 214–215, 218–225, 296–297 (1995).

Brochure entitled "Card Station Expanding Your Portable World", Axonix Corporation (1994).

[57] **ABSTRACT**

A universal docking station for coupling a portable computer to a plurality of peripheral devices via a PCMCIA interface is provided, wherein at least one of the peripheral devices is a user input device. The docking station comprises a PCMCIA interface adapted to be coupled to the portable computer, peripheral control units adapted to be coupled to the plurality of peripheral devices, and a docking station control unit coupled to the PCMCIA interface and the peripheral control units, wherein the docking station control unit selectively transfers data between the PCMCIA interface and one of the peripheral control units, and wherein the docking station control unit extends the period of time data written by the computer remains stable on the PCMCIA interface. A computer system including the universal docking station is also provided. A method for interfacing a standard peripheral device to a computer via a PCMCIA bus is also provided.
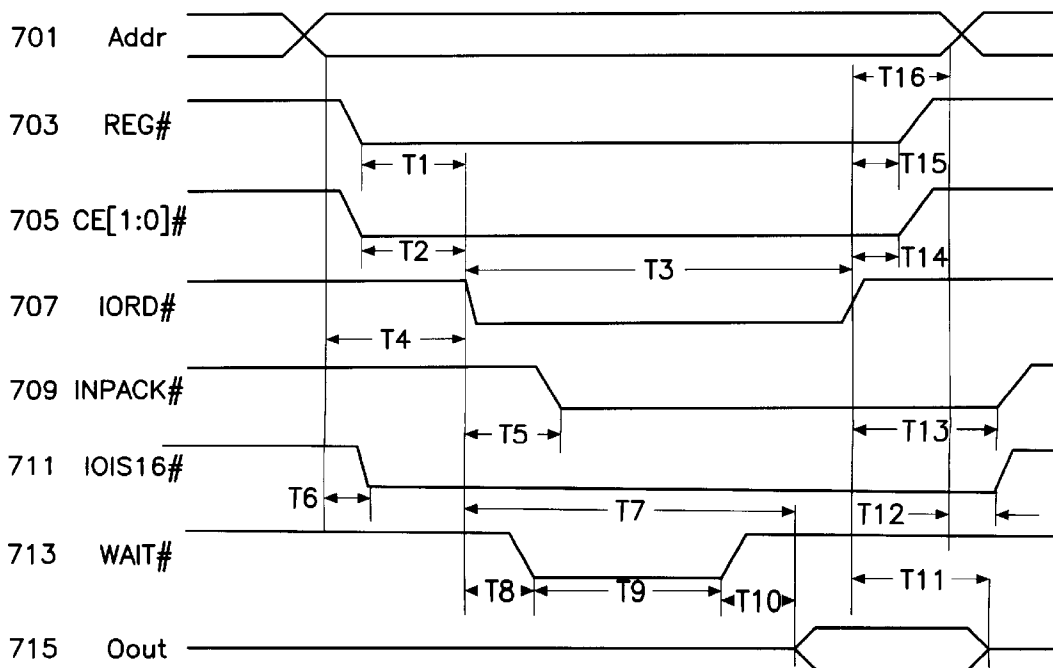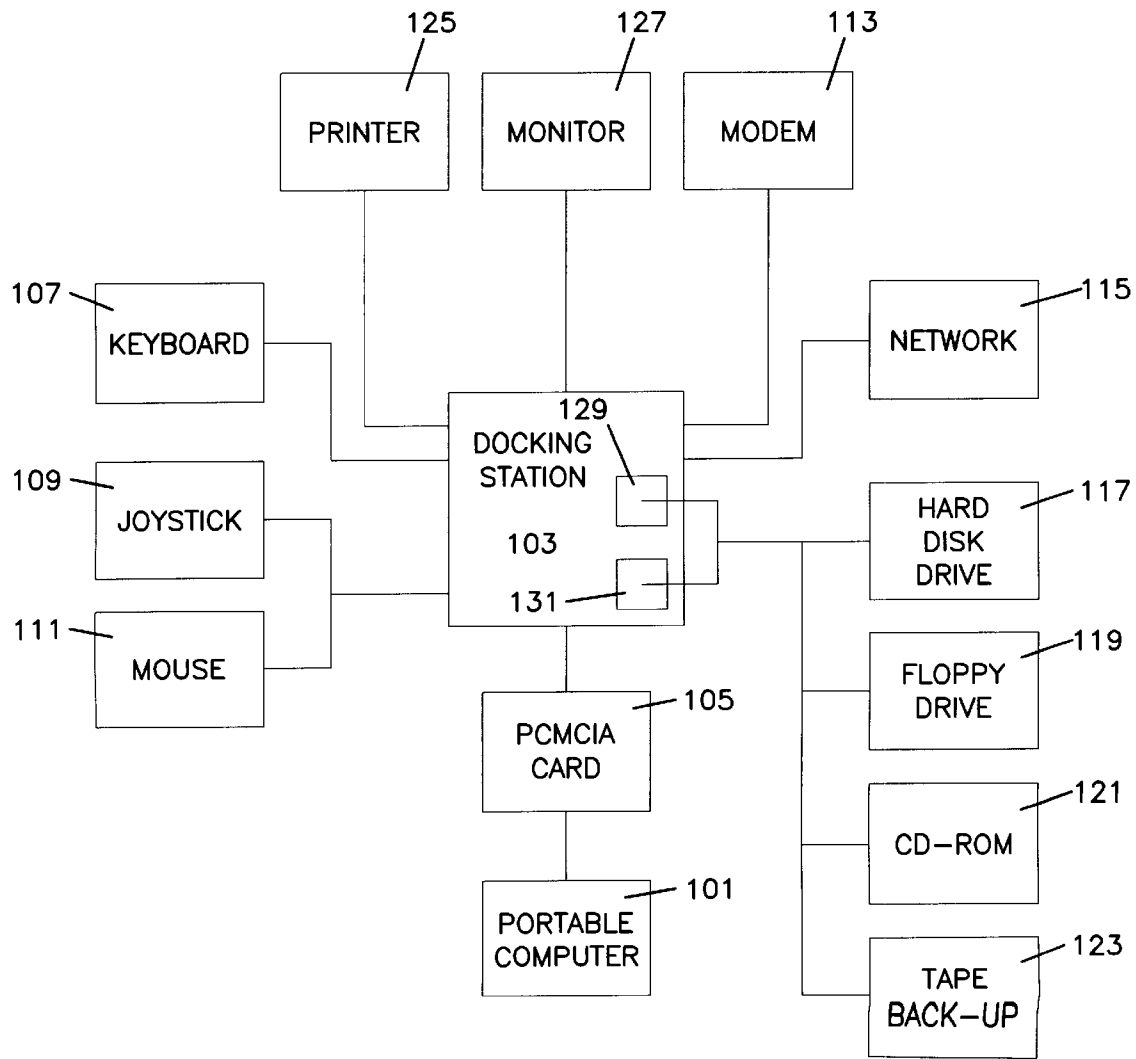
5 Claims, 6 Drawing Sheets

IO Read with Wait State

FIG. 1

FIG. 2

101 103

201 PCMCIA BUS

239 PCMCIA CONTROL BUS
241 ADDRESS BUS
243 DATA BUS

203 ADDRESS DECODE AND CONTROL LOGIC
205 CONFIGURATION REGISTERS
207 ATTRIBUTE MEMORY

245
247 CONTROL BUS
247 ADDRESS BUS
245
245

209 PARALLEL CONTROLLER
211 SERIAL CONTROLLER
213 IDE INTERFACE LOGIC
215 KEYBOARD AND MOUSE CONTROLLER
217 FLOPPY DISK CONTROLLER
219 VGA CONTROLLER
221 NETWORK CONTROLLER

249
251
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223 PARALLEL CONNECTOR
225 SERIAL CONNECTOR
227 IDE CONNECTOR
229 KEYBOARD CONNECTOR
231 MOUSE CONNECTOR
233 FLOPPY DISK CONNECTOR
235 VGA CONNECTOR
237 NETWORK CONNECTOR

FIG. 3

DEVICE DRIVER — 301

IS CARD SERVICES INSTALLED ? — 303

NO → REPORT ERROR & RETURN — 307

YES

REGISTER WITH CARD SERVICES — 311

SETUP INTERRUPT HANDLERS — 313

WAIT FOR CARD TO BE INSERTED — 317

FIG. 4

CARD INSERTED — 401

GET MANUFACTURES ID — 403

IS THIS OUR ID — 405 — NO → IGNORE CARD — 407

YES

GET FIRST CONFIGURATION ENTRY — 409

YES

REQUEST I/O — 411 — FAIL → DOES CONFIGURATION SUPPORT OTHER I/O'S ? — 413

SUCCESS   NO

YES

REQUEST IRQ — 415 — FAIL → DOES CONFIGURATION SUPPORT OTHER IRQ'S ? — 417 — NO → RELEASE I/O — 418

SUCCESS

YES

REQUEST DMA — 419 — FAIL → DOES CONFIGURATION SUPPORT OTHER DMA'S ? — 421 — NO → RELEASE I/O & IRQ — 422

SUCCESS

REQUEST MEMORY — 421 — FAIL → RELEASE I/O, IRQ & DMA — 428 → ARE THERE OTHER CONFIGURATION'S ? — 423 — YES

SUCCESS   NO   GET NEXT CONFIGURATION ENTRY — 425

REQUEST CONFIGURATION — 427   REPORT ERROR — 433

CONFIGURE HARDWARE ON PCB — 429
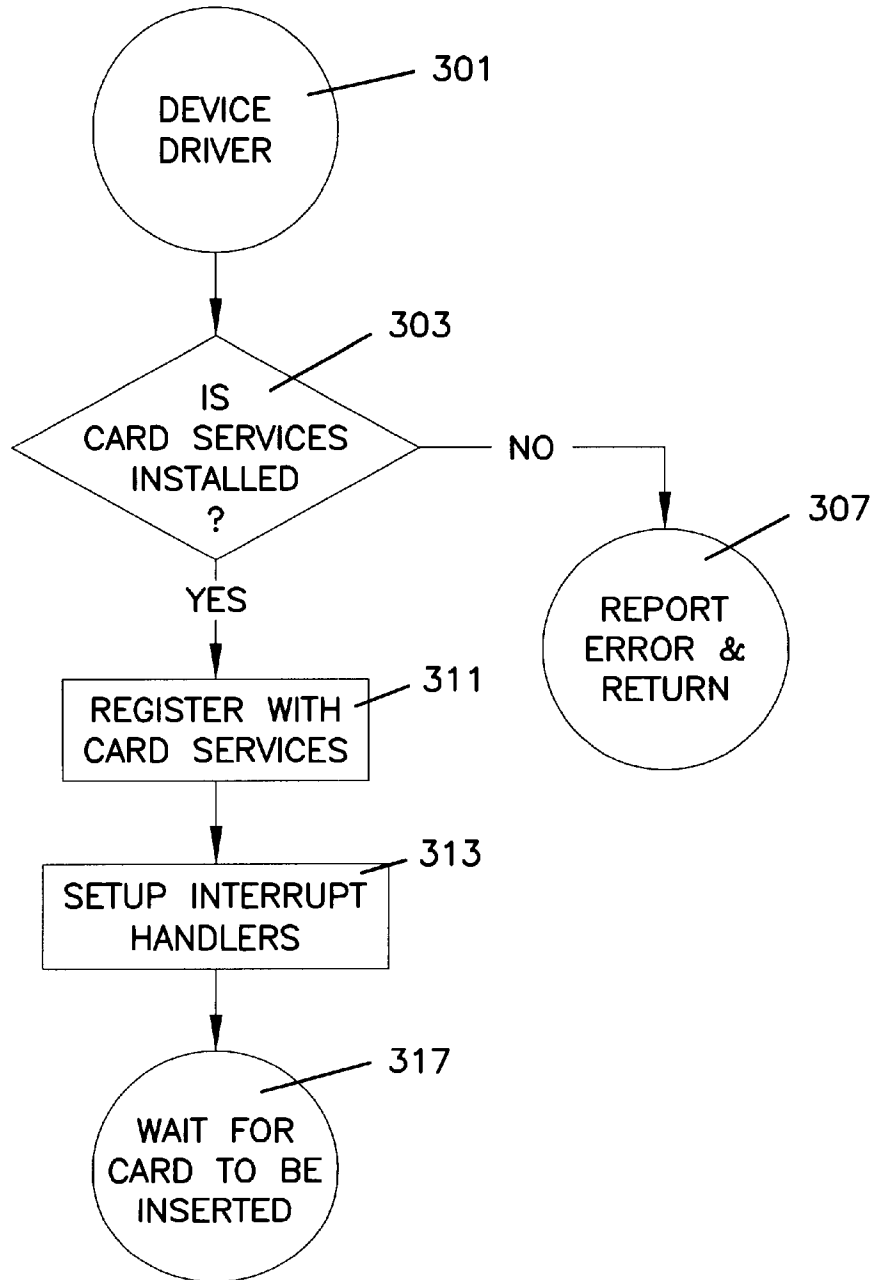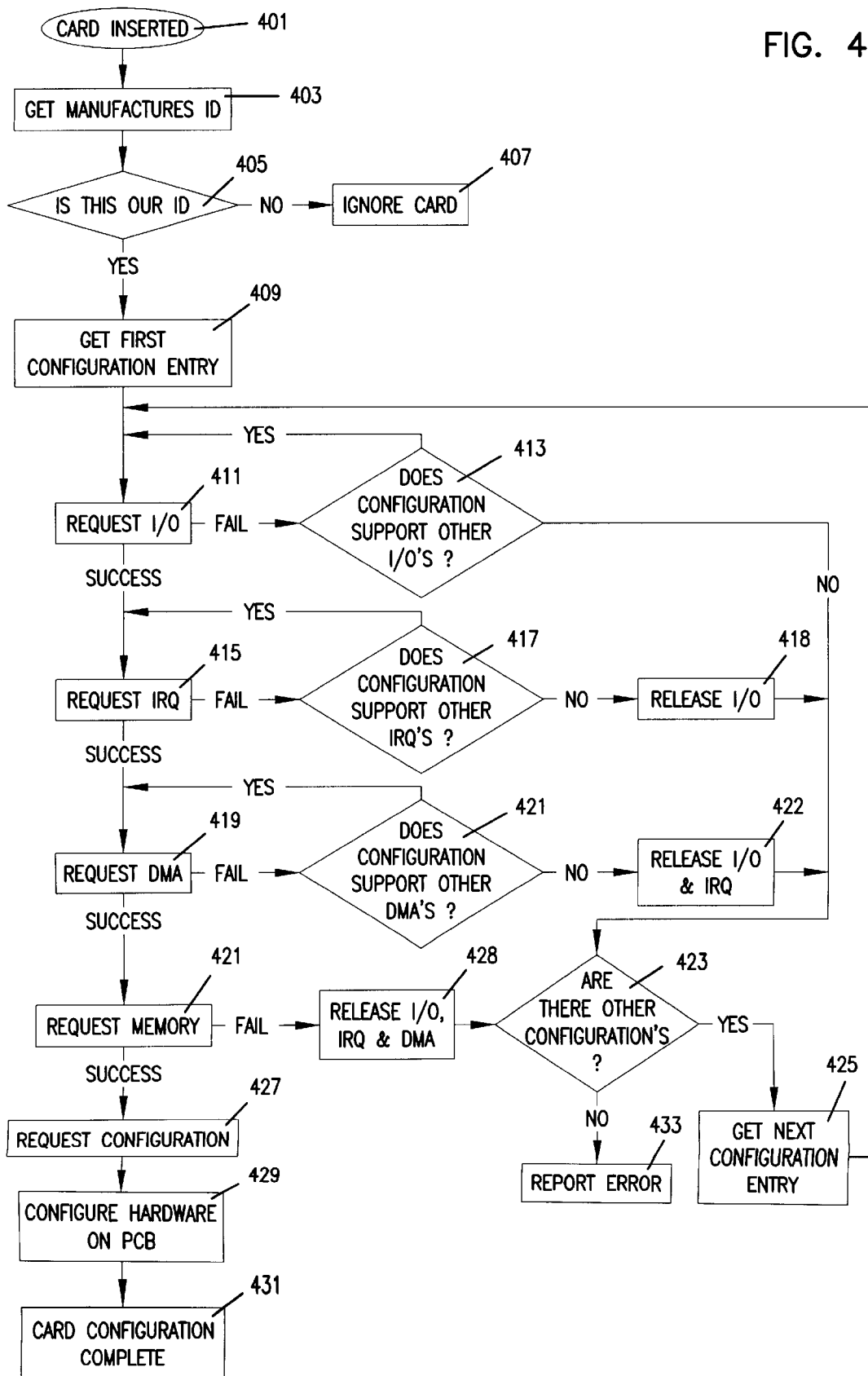
CARD CONFIGURATION COMPLETE — 431

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