

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

(10) **Patent No.:** **US 6,625,790 B1**
 (45) **Date of Patent:** ***Sep. 23, 2003**

(54) **METHOD AND APPARATUS FOR DETECTING THE TYPE OF INTERFACE TO WHICH A PERIPHERAL DEVICE IS CONNECTED**

(75) Inventors: **Mark W. Casebolt**, Seattle, WA (US);
Lord Nigel Featherston, Redmond, WA (US)

(73) Assignee: **Microsoft Corporation**, Redmond, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **09/409,683**

(22) Filed: **Oct. 1, 1999**

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/112,171, filed on Jul. 8, 1998, now Pat. No. 6,460,094.

(51) **Int. Cl.**⁷ **G06F 9/45**

(52) **U.S. Cl.** **716/8; 716/9; 716/10; 716/11**

(58) **Field of Search** **716/4, 8; 712/1, 712/230; 710/8, 26, 63, 108, 262, 269, 305, 306; 379/142.15**

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,500,933 A	2/1985	Chan	360/69
4,785,469 A	11/1988	Joshi et al.	375/110
5,043,938 A	8/1991	Ebersole	364/900
5,473,264 A	12/1995	Mader et al.	326/30
5,481,696 A	1/1996	Lomp et al.	395/500
5,548,782 A	8/1996	Michael et al.	395/835
5,577,213 A	11/1996	Avery et al.	395/280
5,612,634 A	3/1997	MacKenna	326/62

5,644,790 A	7/1997	Li et al.	395/883
5,754,890 A	5/1998	Holmdahl et al.	395/883
5,793,999 A	8/1998	Mori	395/309
5,828,905 A	10/1998	Rao	395/883
5,832,244 A	11/1998	Jolley et al.	395/309
5,857,112 A	1/1999	Hashemi et al.	395/828
5,928,347 A	7/1999	Jones	710/129
5,935,224 A	8/1999	Svancarek et al.	710/63
6,006,295 A	12/1999	Jones et al.	710/62
6,460,094 B1 *	10/2002	Hanson et al.	710/8

FOREIGN PATENT DOCUMENTS

EP	0 860 781 A2	2/1998
WO	WO 97/31386	8/1997
WO	WO 97/17214	4/1999

OTHER PUBLICATIONS

Universal Serial Bus Specification, Rev. 1.1, Section 7.1.5: Device speed identification, pp. 113 and 114, Sep. 23, 1998.

* cited by examiner

Primary Examiner—Vuthe Siek

Assistant Examiner—Naum Levin

(74) *Attorney, Agent, or Firm*—Joseph R. Kelly; Westman, Champlin & Kelly, P.A.

(57) **ABSTRACT**

A peripheral device is connectable to a computer having one of a first interface and a second interface. The first interface communicates with the peripheral device over a differential data connection having a first data conductor and a second data conductor. The second interface communicates with the peripheral device over a clock conductor and a single ended data connection which includes a data conductor. The peripheral device includes an interface detection component coupled to at least one of first and second communication conductors used to communicate between the peripheral device and the computer. The interface detection component is configured to detect which of the first and second interfaces the peripheral device is connected to.

33 Claims, 7 Drawing Sheets

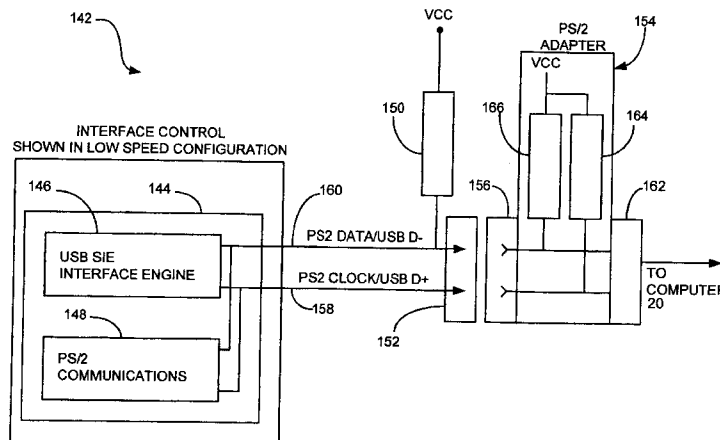
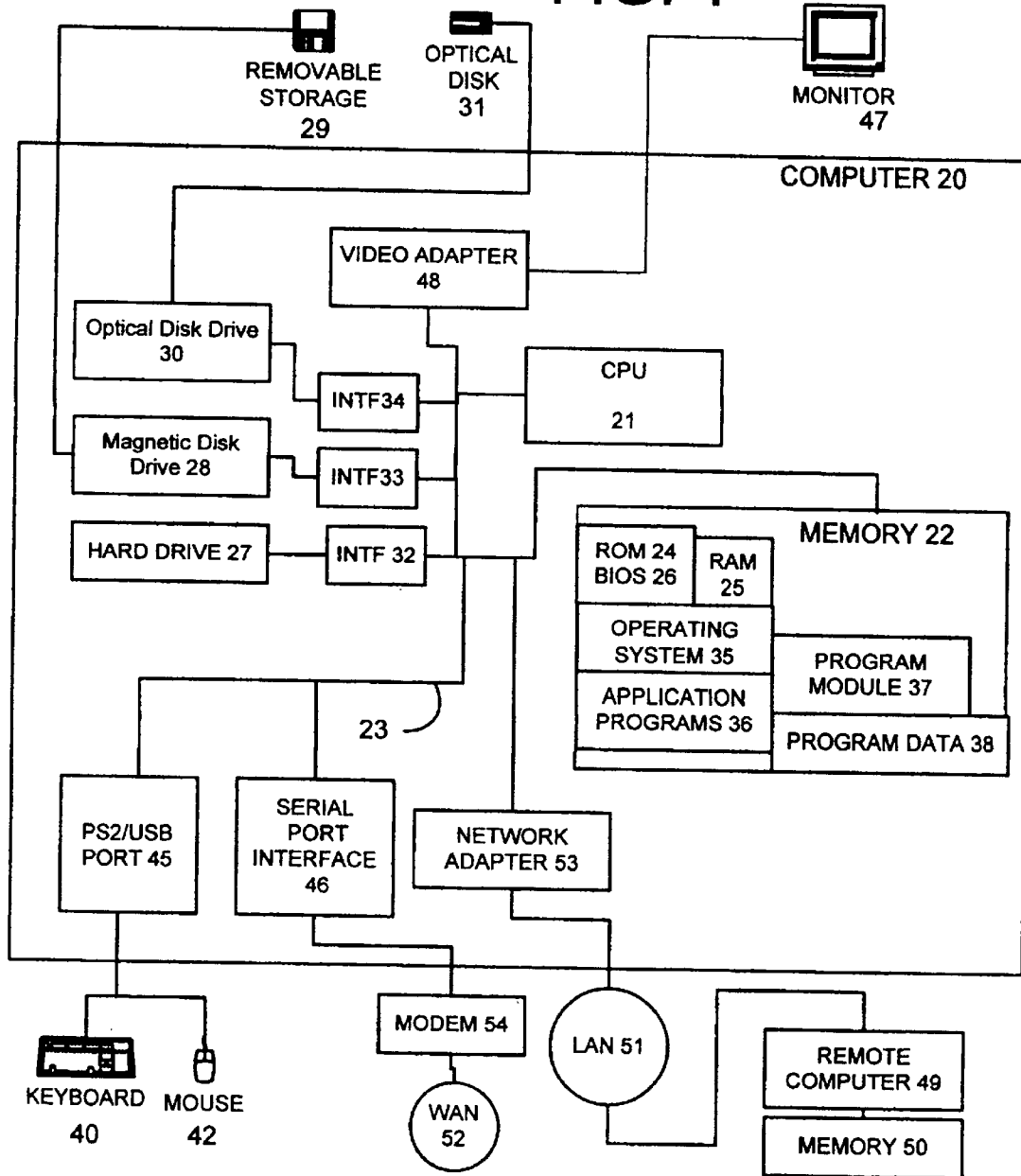


FIG. 1



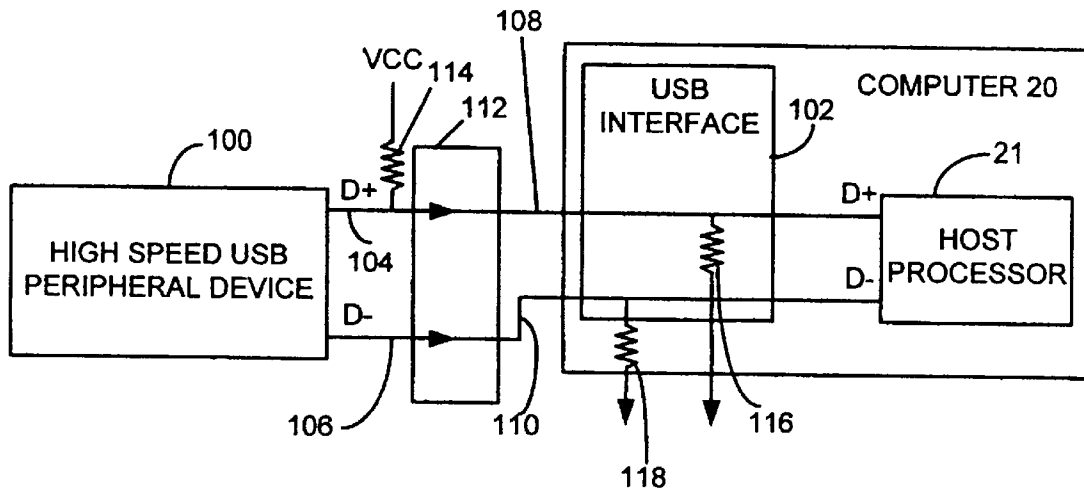


FIG. 2A

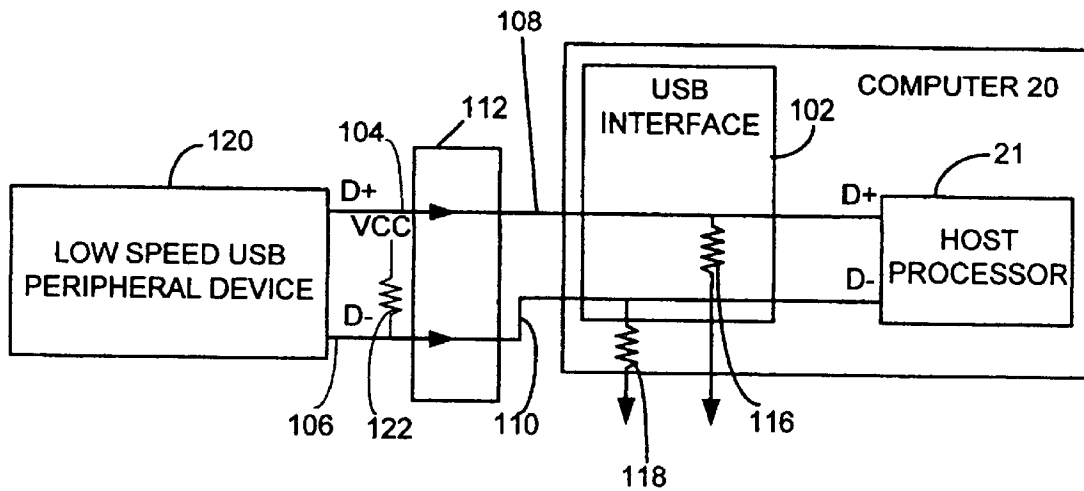
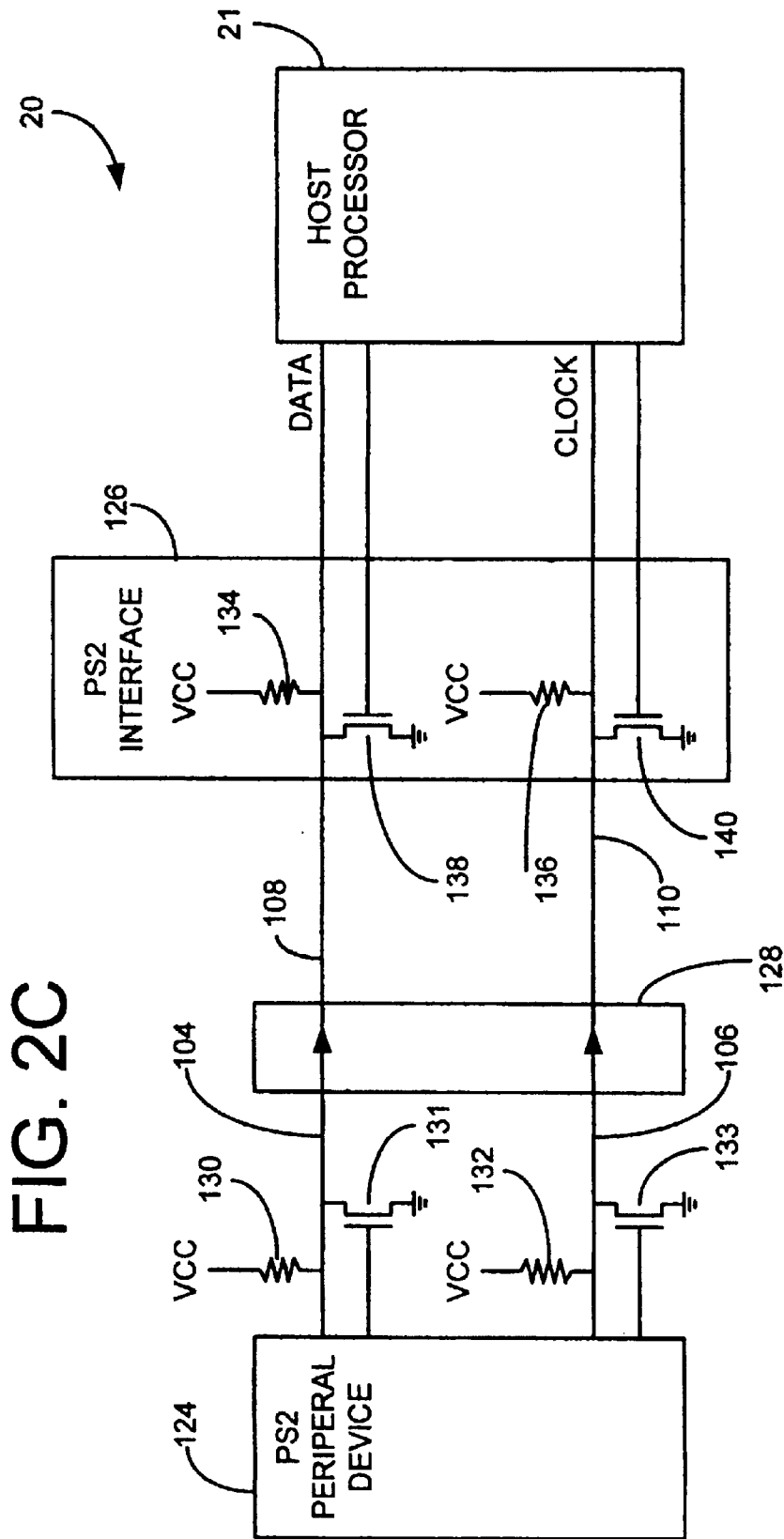


FIG. 2B



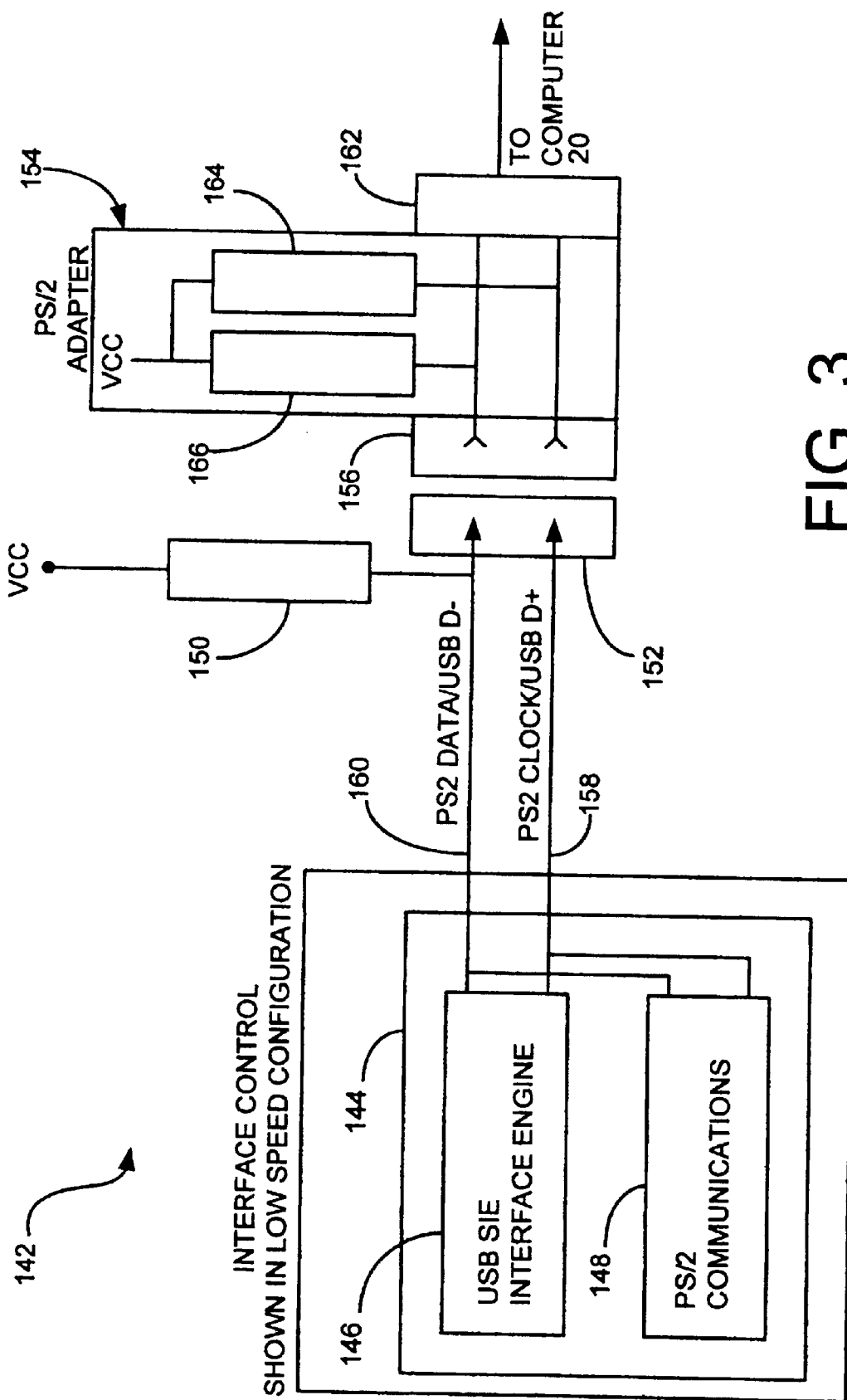


FIG. 3

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.