



US006073193A

**United States Patent** [19]  
**Yap**

[11] **Patent Number:** **6,073,193**  
[45] **Date of Patent:** **Jun. 6, 2000**

[54] **FAIL SAFE METHOD AND APPARATUS FOR A USB DEVICE**

FOREIGN PATENT DOCUMENTS

WO 97/36230 10/1997 WIPO .

[75] Inventor: **Kok-Kean Yap**, Milpitas, Calif.

*Primary Examiner*—Ayaz R. Sheikh

[73] Assignee: **Cypress Semiconductor Corp.**, San Jose, Calif.

*Assistant Examiner*—Ario Etienne

*Attorney, Agent, or Firm*—Christopher P. Maiorana, P.C.

[57] **ABSTRACT**

[21] Appl. No.: **08/839,981**

A method and apparatus for determining and recovering from a USB micro-controller busy condition, wherein a toggle variable indicative of whether the USB micro-controller is in the busy condition or not is stored in a memory, and a counter is incremented if the toggle variable is set. The counter is checked to determine if the counter has reached a predetermined count, and if so data lines of the USB micro-controller are disconnected from a USB bus coupled to the USB micro-controller for a predetermined amount of time to cause a USB host computer coupled to the USB micro-controller to re-initialize the USB micro-controller. The memory contains a data structure including fields for storing the toggle variable, and a count indicative of how many times the toggle variable has been set for implementing the counter. Firmware in the memory includes code segments configured to store the toggle variable in the data structure, determine if the toggle variable is set, increment the count field if the toggle variable is set, determine if the counter has reached the predetermined count, and disconnect the data lines of the processor from the USB bus for a predetermined amount of time if the counter has reached the predetermined count.

[22] Filed: **Apr. 24, 1997**

[51] **Int. Cl.**<sup>7</sup> ..... **G06F 13/00**

[52] **U.S. Cl.** ..... **710/100; 710/131; 714/1; 714/3**

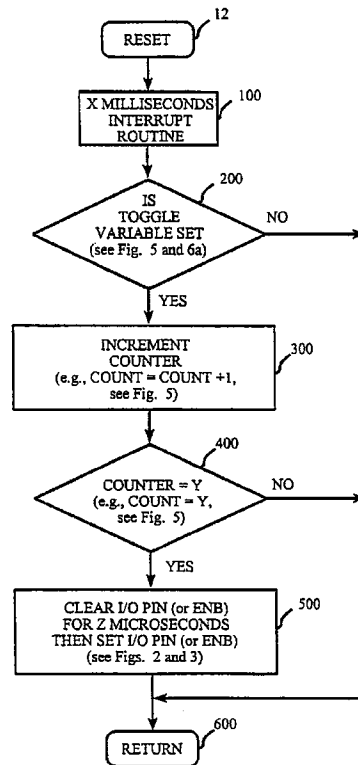
[58] **Field of Search** ..... 395/280, 180, 395/181, 182.01, 182.03, 828, 830; 710/100, 8, 10, 131; 714/1, 2, 3, 5

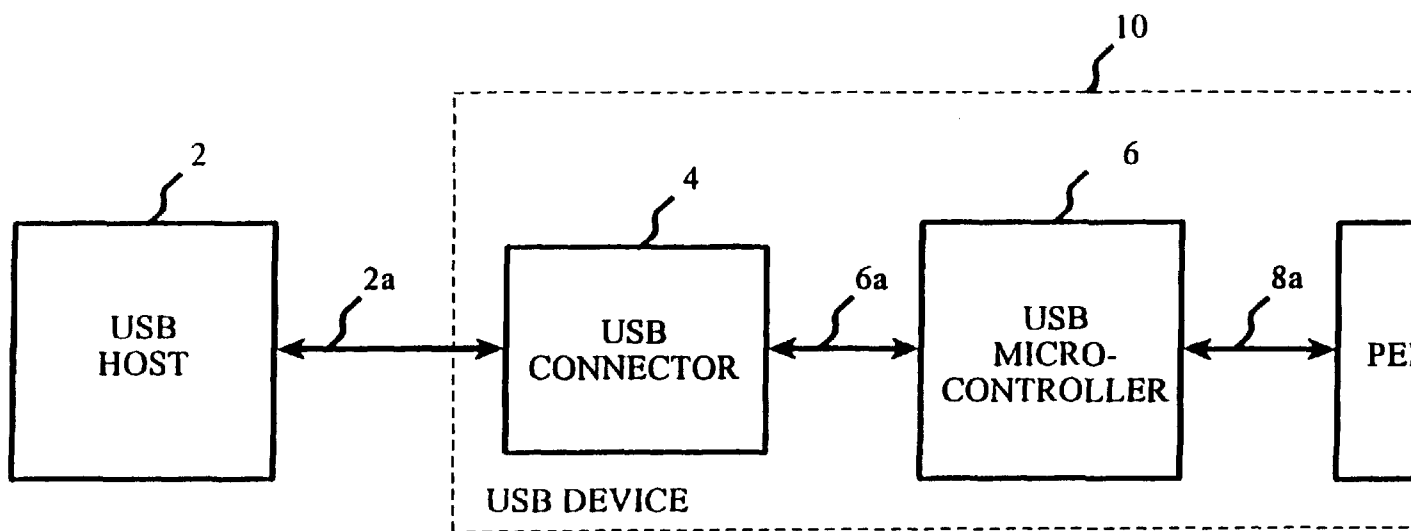
[56] **References Cited**

**U.S. PATENT DOCUMENTS**

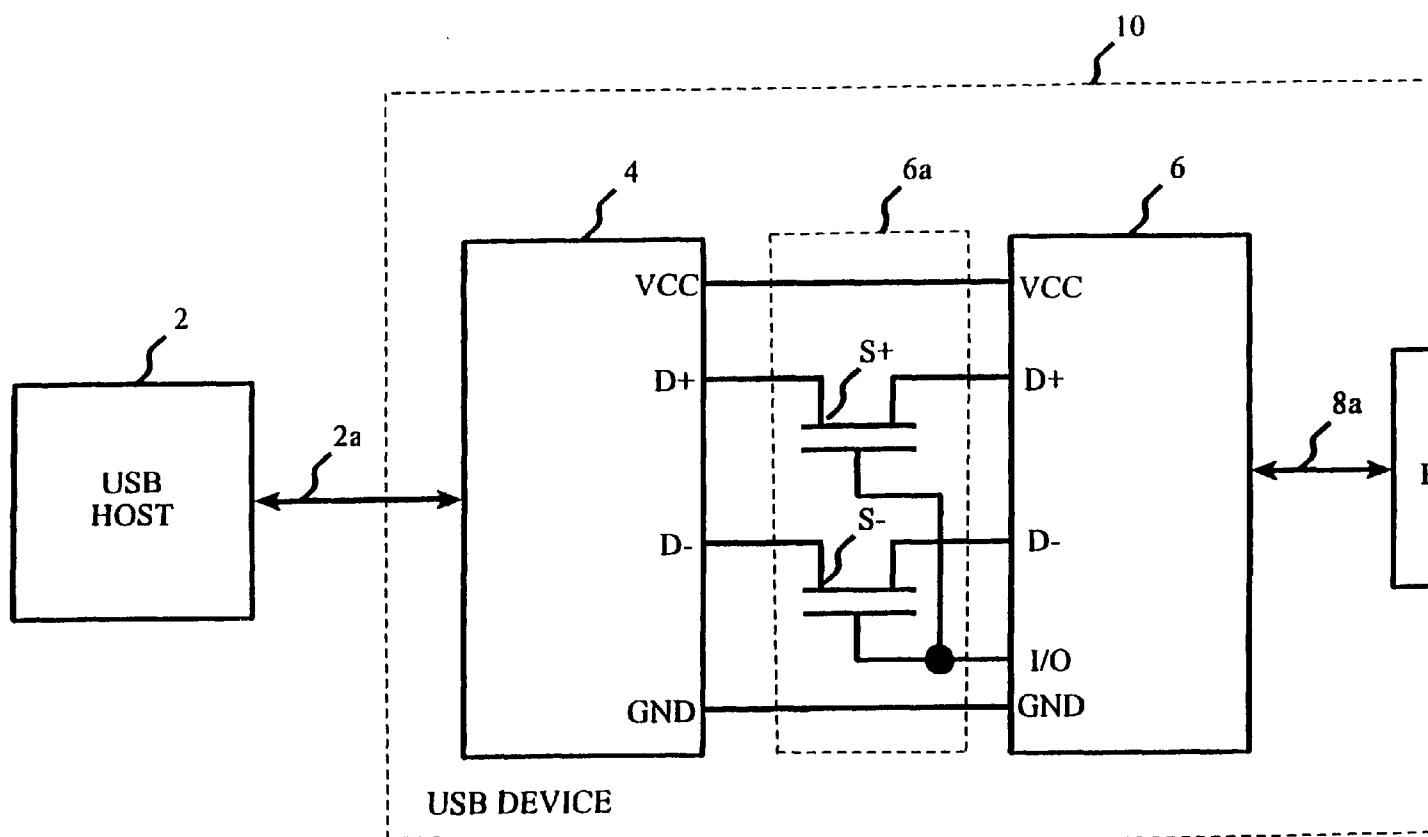
3,800,090	3/1974	Matena	379/33
3,810,120	5/1974	Huettner et al.	340/172.5
3,864,670	2/1975	Inoue et al.	340/172.5
4,195,351	3/1980	Barner et al.	340/825.05
4,481,625	11/1984	Roberts et al.	370/85
4,775,976	10/1988	Yokoyama	371/9
5,282,166	1/1994	Ozaki	365/203
5,404,480	4/1995	Suzuki	711/117
5,471,524	11/1995	Colvin et al.	379/200
5,566,296	10/1996	Ohmori et al.	395/180
5,675,813	10/1997	Holmdahl	

**20 Claims, 7 Drawing Sheets**





*Fig. 1*



*Fig. 2*

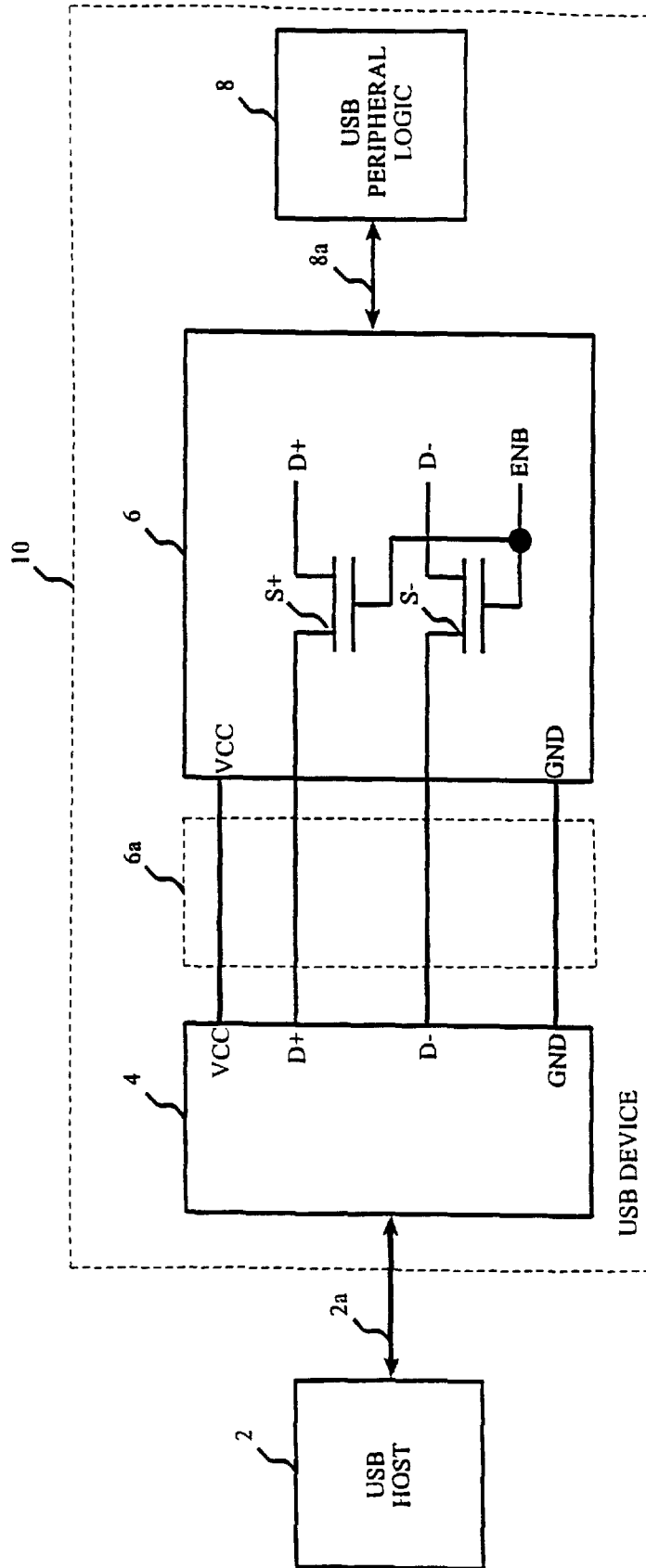


Fig. 3

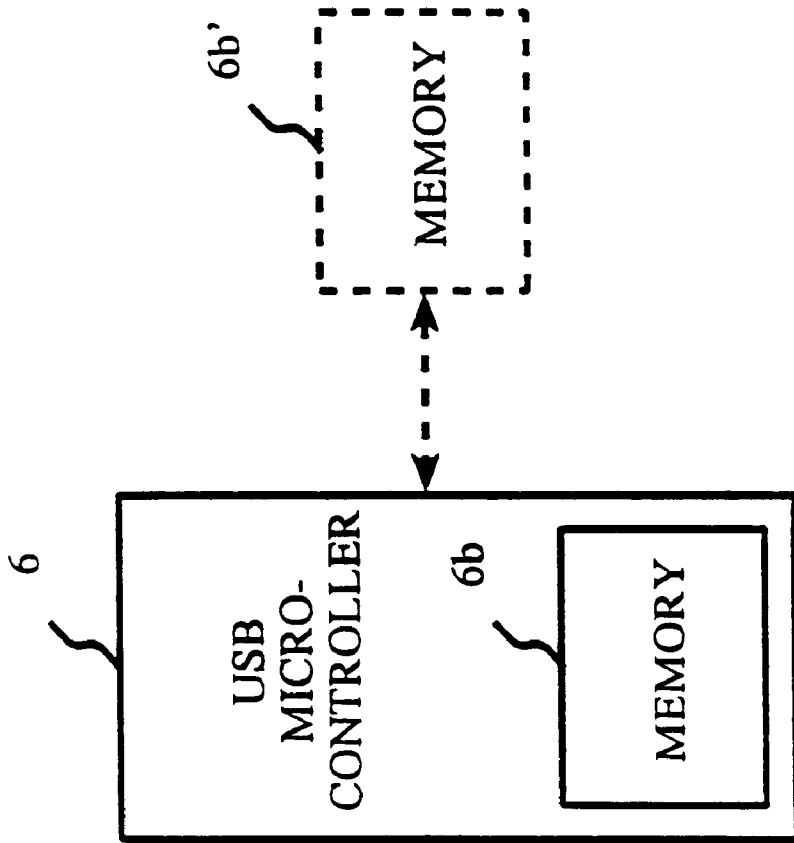


Fig. 4

# 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.