



US005210854A

United States Patent [19]

[11] Patent Number: **5,210,854**

Beaverton et al.

[45] Date of Patent: **May 11, 1993**

[54] **SYSTEM FOR UPDATING PROGRAM STORED IN EEPROM BY STORING NEW VERSION INTO NEW LOCATION AND UPDATING SECOND TRANSFER VECTOR TO CONTAIN STARTING ADDRESS OF NEW VERSION**

[75] Inventors: **Arthur J. Beaverton, Maynard, Mass.; Thomas E. Hunt, Brookline, N.H.**

[73] Assignee: **Digital Equipment Corporation, Maynard, Mass.**

[21] Appl. No.: **366,168**

[22] Filed: **Jun. 14, 1989**

[51] Int. Cl.⁵ **G06F 12/02**

[52] U.S. Cl. **395/500; 364/DIG. 1; 364/259; 364/259.9; 364/243; 364/245.2; 395/425**

[58] Field of Search ... **364/200 MS File, 900 MS File; 395/500, 425**

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,241,405	12/1980	Allocca	364/466
4,298,934	11/1981	Fischer	364/200
4,327,410	4/1982	Patel et al.	364/200
4,403,303	9/1983	Howes et al.	364/900
4,503,491	3/1985	Lusthak et al.	364/200
4,590,557	5/1986	Lillie	364/200
4,663,707	5/1987	Dawson	364/200
4,727,480	2/1988	Albright et al.	364/200
4,742,483	5/1988	Morrell	364/900
4,779,187	10/1988	Letwin	364/200
4,787,032	11/1988	Culley	364/200
4,791,603	12/1988	Henry	364/900
4,803,623	2/1989	Klashka et al.	364/200
4,839,628	6/1989	Davis et al.	340/311.1
4,853,850	8/1989	Krass, Jr. et al.	364/200
4,907,228	6/1990	Bruckert et al.	364/900

4,926,322	5/1990	Stimac et al.	364/200
4,930,129	5/1990	Takahira	371/40.4
4,935,870	9/1990	Burk, Jr. et al.	364/200
4,943,910	7/1990	Nakamura	364/200
4,984,213	1/1991	Abdo et al.	365/230.3
5,008,814	4/1991	Mathur	364/200
5,062,080	10/1991	Goldsmith	365/230.01
5,123,098	6/1992	Gunning et al.	395/400
5,155,680	10/1992	Wiedemer	364/406

FOREIGN PATENT DOCUMENTS

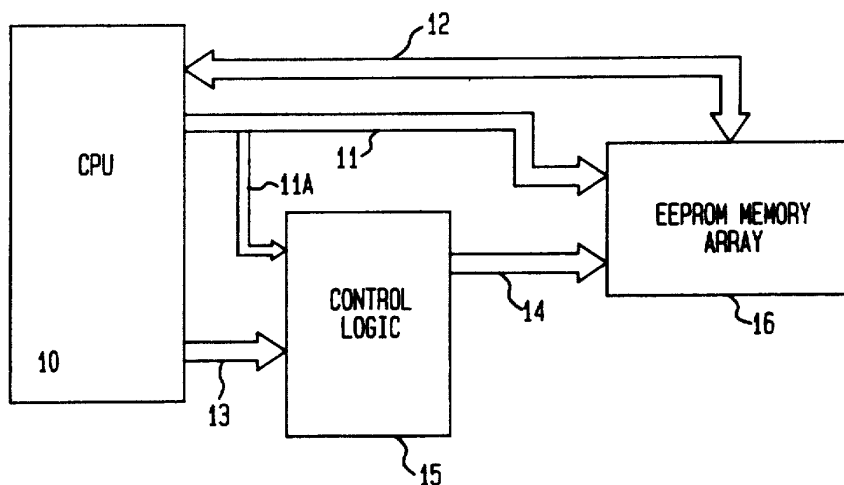
0137758	4/1985	European Pat. Off.
60-059452	4/1985	Japan
1-073435	3/1989	Japan
1-150297	6/1989	Japan

Primary Examiner—Thomas C. Lee
Assistant Examiner—Mehmet Geckil
Attorney, Agent, or Firm—Kenyon & Kenyon

[57] **ABSTRACT**

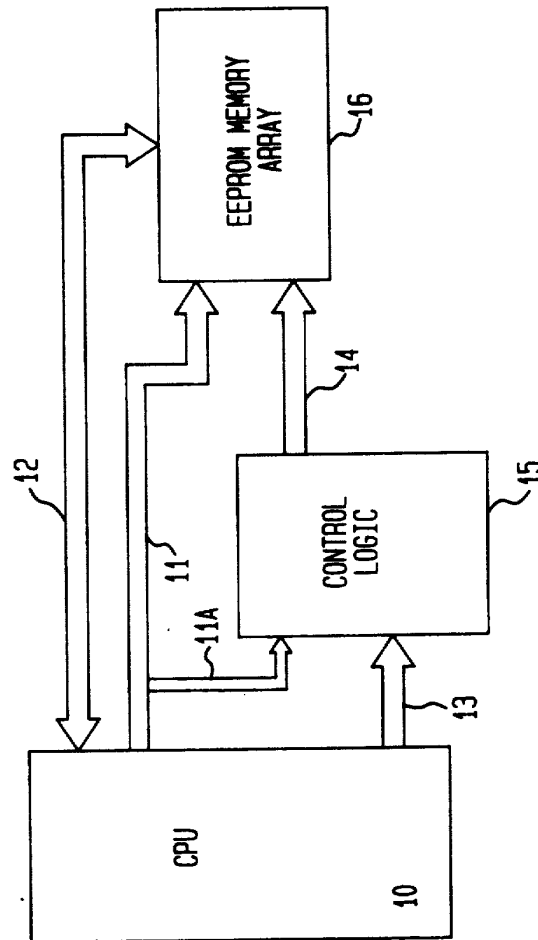
Firmware resident in electrically erasable programmable read only memory ("EEPROM") can be updated by a user while maintaining the intelligence of a computer system during the updating process by a control logic device. The control logic device decodes address and control signals to provide a hardware partitioning of the firmware resident in the EEPROMs to prevent writing to protected partitions of the firmware. Transfer vectors are used to provide indirect accessing of subroutines resident in the firmware. During an updating process, a new version of a subroutine is stored in a free area in the EEPROMs before the transfer vector pointing to the old version of the subroutine is updated. The window of vulnerability to errors during the updating process is minimized by only updating a page of memory containing the transfer vector that points to the old version of the subroutine after the new version has been stored.

7 Claims, 5 Drawing Sheets



**Liberty Mutual
Exhibit 1007**

FIG. 1



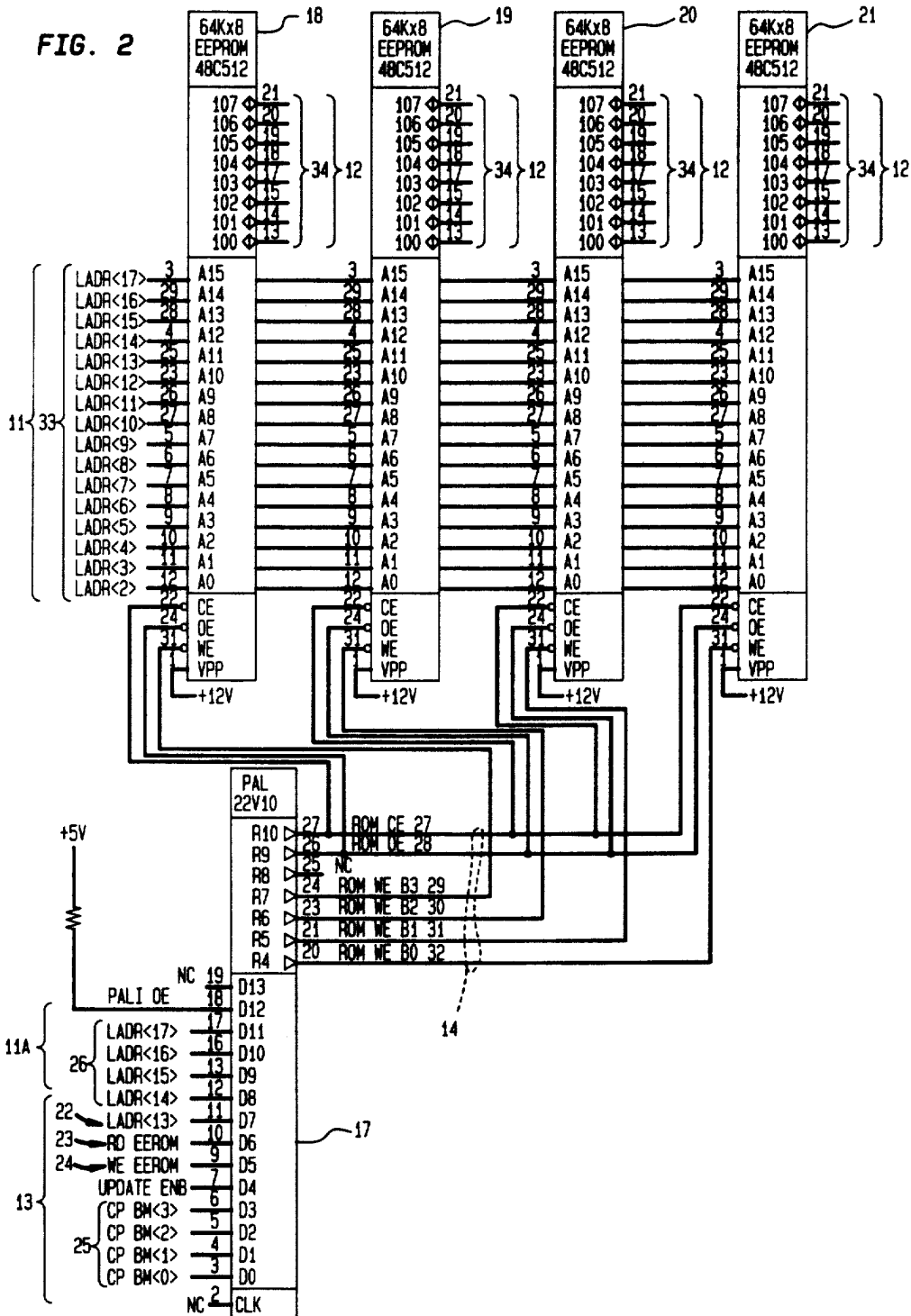


FIG. 3

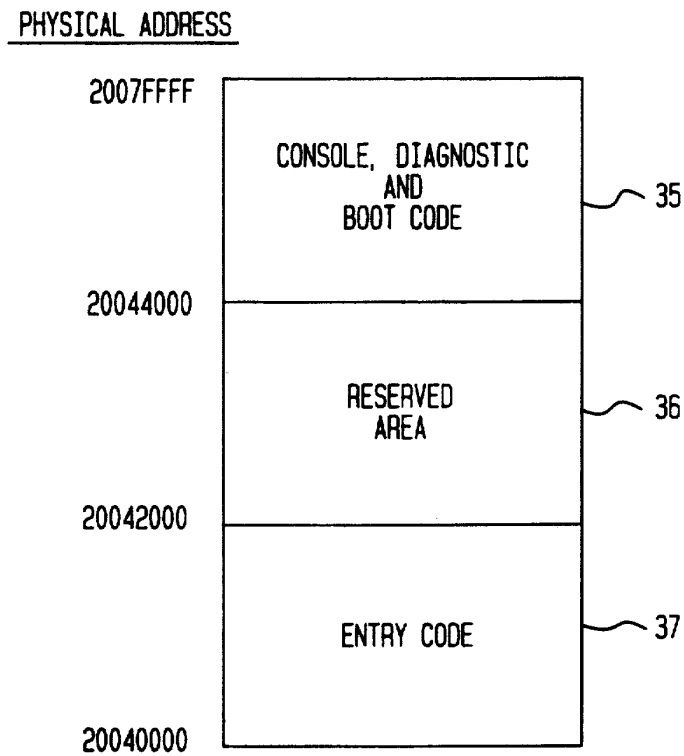
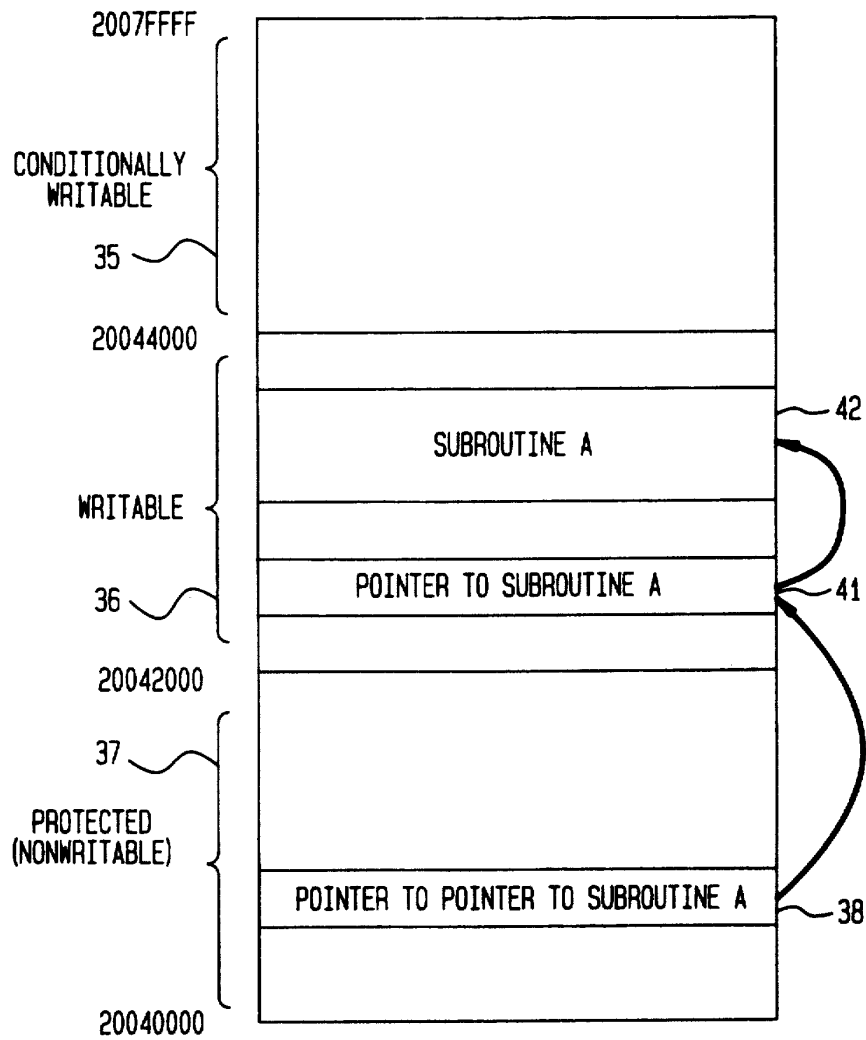


FIG. 4



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.