



US008130554B1

(12) **United States Patent**
Linnell

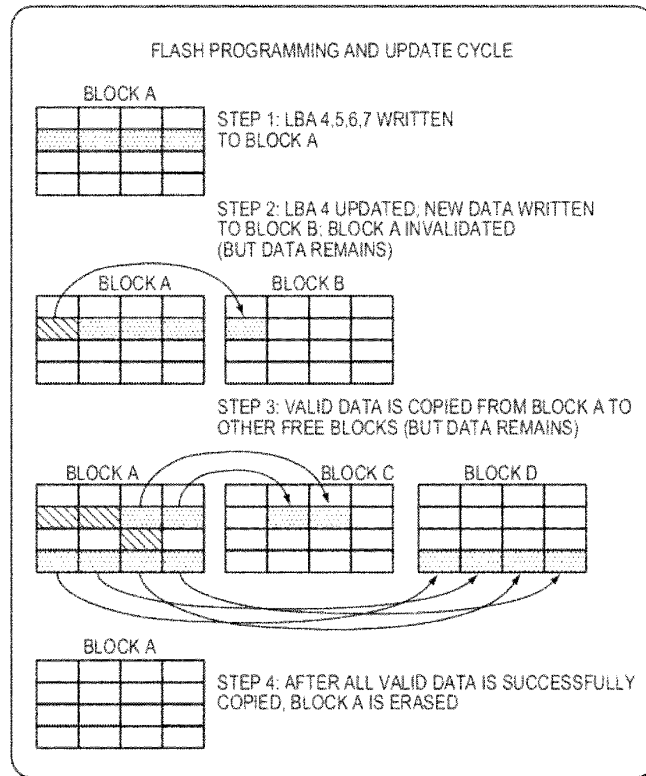
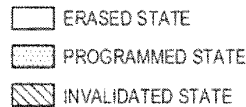
(10) **Patent No.:** **US 8,130,554 B1**
(45) **Date of Patent:** **Mar. 6, 2012**

- (54) **SECURELY ERASING FLASH-BASED MEMORY**
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 - (73) Assignee: **EMC Corporation**, Hopkinton, MA (US)
 - (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 828 days.
 - (21) Appl. No.: **12/240,100**
 - (22) Filed: **Sep. 29, 2008**
 - (51) **Int. Cl.**
G11C 16/04 (2006.01)
 - (52) **U.S. Cl.** **365/185.28**; 365/185.29; 711/159
 - (58) **Field of Classification Search** 365/185.28, 365/185.29; 711/159
- See application file for complete search history.

- (56) **References Cited**
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(57) **ABSTRACT**
A method is used in securely erasing flash-based memory. A new version of data is received for a logical location of a flash-based memory. An old version of the data of the logical location is stored in a first physical location in the flash-based memory. The old version of the data is caused to be subject to an obscure operation. The new version of the data is caused to be stored in a second physical location in the flash-based memory.

19 Claims, 8 Drawing Sheets



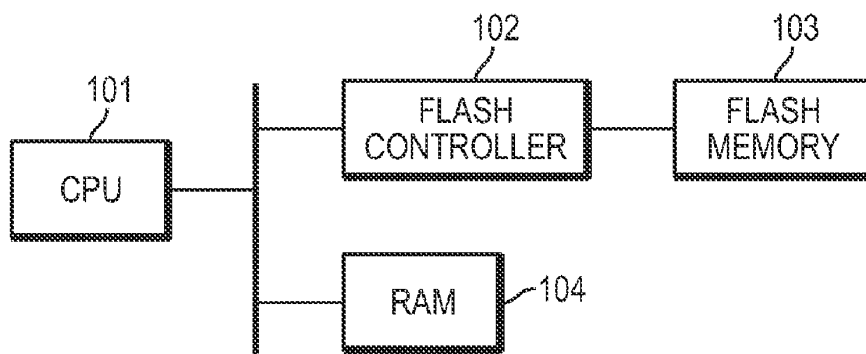


FIG. 1
(PRIOR ART)

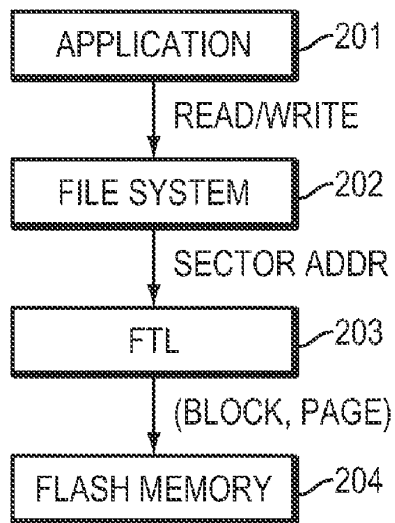


FIG. 2
(PRIOR ART)

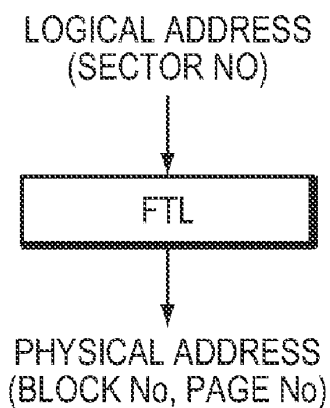


FIG. 3
(PRIOR ART)

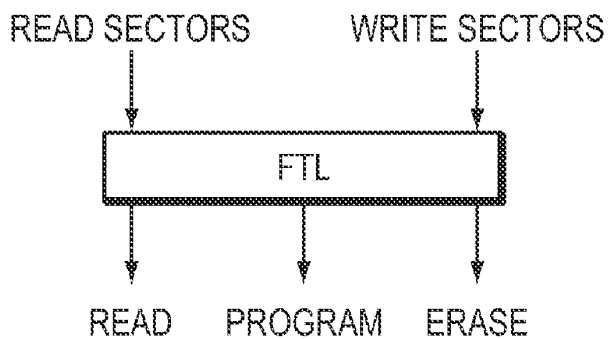


FIG. 4
(PRIOR ART)

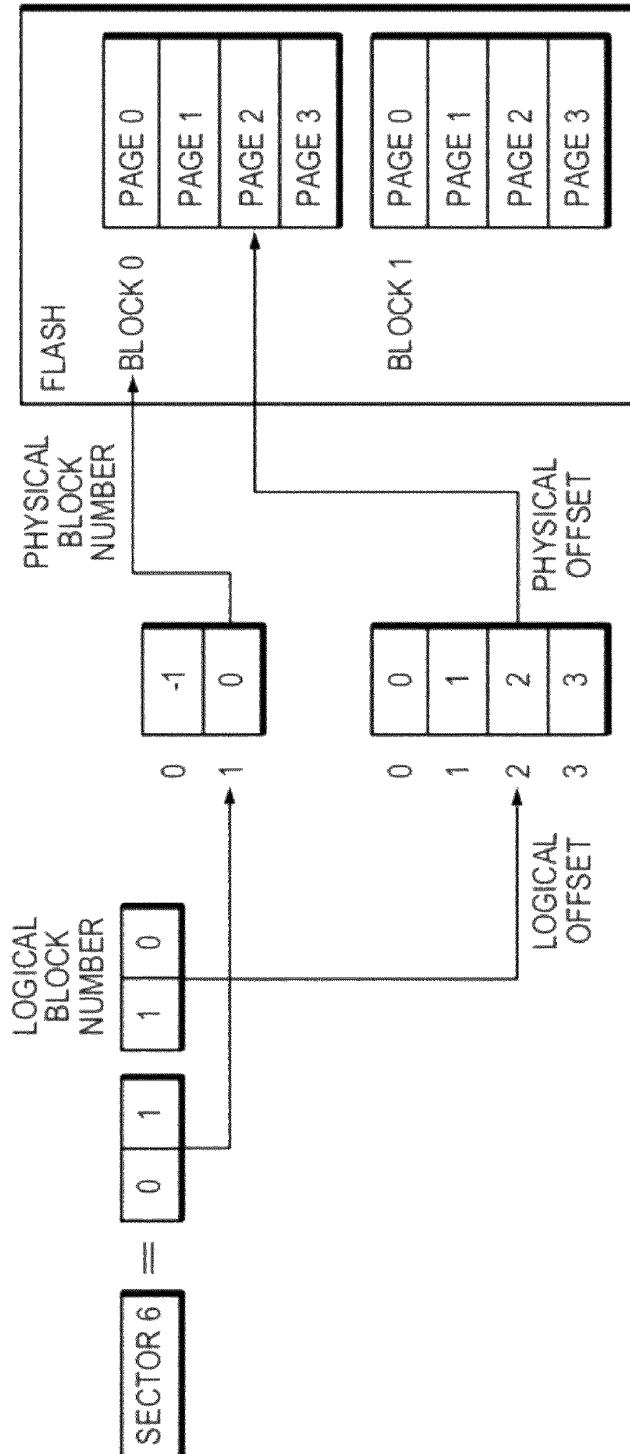


FIG. 5
(PRIOR ART)

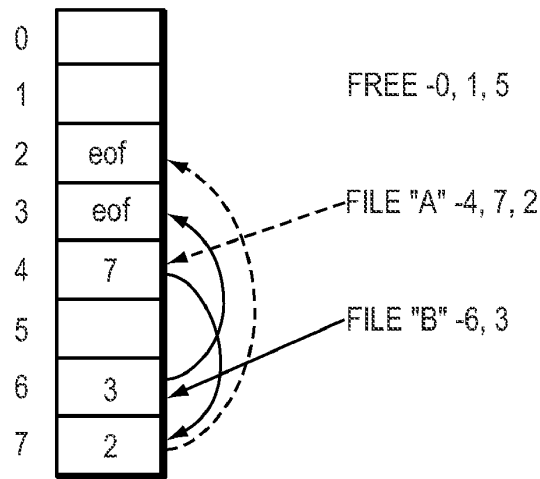


FIG. 6
(PRIOR ART)

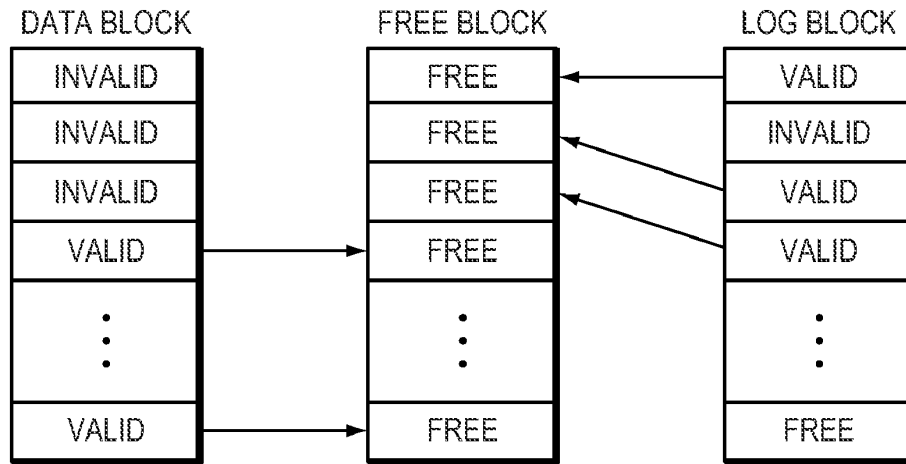


FIG. 7
(PRIOR ART)

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