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**Lee et al.**

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(54) **HYBRID SSD USING A COMBINATION OF SLC AND MLC FLASH MEMORY ARRAYS**

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(51) **Int. Cl.**  
**G06F 13/00** (2006.01)

(52) **U.S. Cl.** ..... **711/103**; 711/E12.083

(58) **Field of Classification Search** ..... None  
See application file for complete search history.

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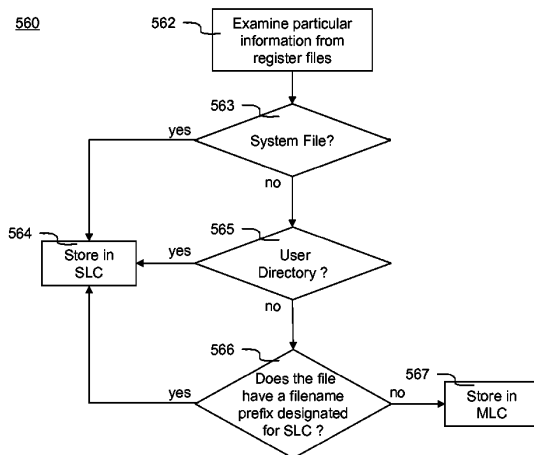
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(57) **ABSTRACT**

Hybrid solid state drives (SSD) using a combination of single-level cell (SLC) and multi-level cell (MLC) flash memory arrays are described. According to one aspect of the present invention, a hybrid SSD is built using a combination SLC and MLC flash memory arrays. The SSD also includes a micro-controller to control and coordinate data transfer from a host computing device to either the SLC flash memory array of the MLC flash memory array. A memory selection indicator is determined by triaging data file based on one or more criteria, which include, but is not limited to, storing system files and user directories in the SLC flash memory array and storing user files in the MLC flash memory array; or storing more frequent access files in the SLC flash memory array, while less frequent accessed files in the MLC flash memory array.

**20 Claims, 14 Drawing Sheets**



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**FIG. 1**

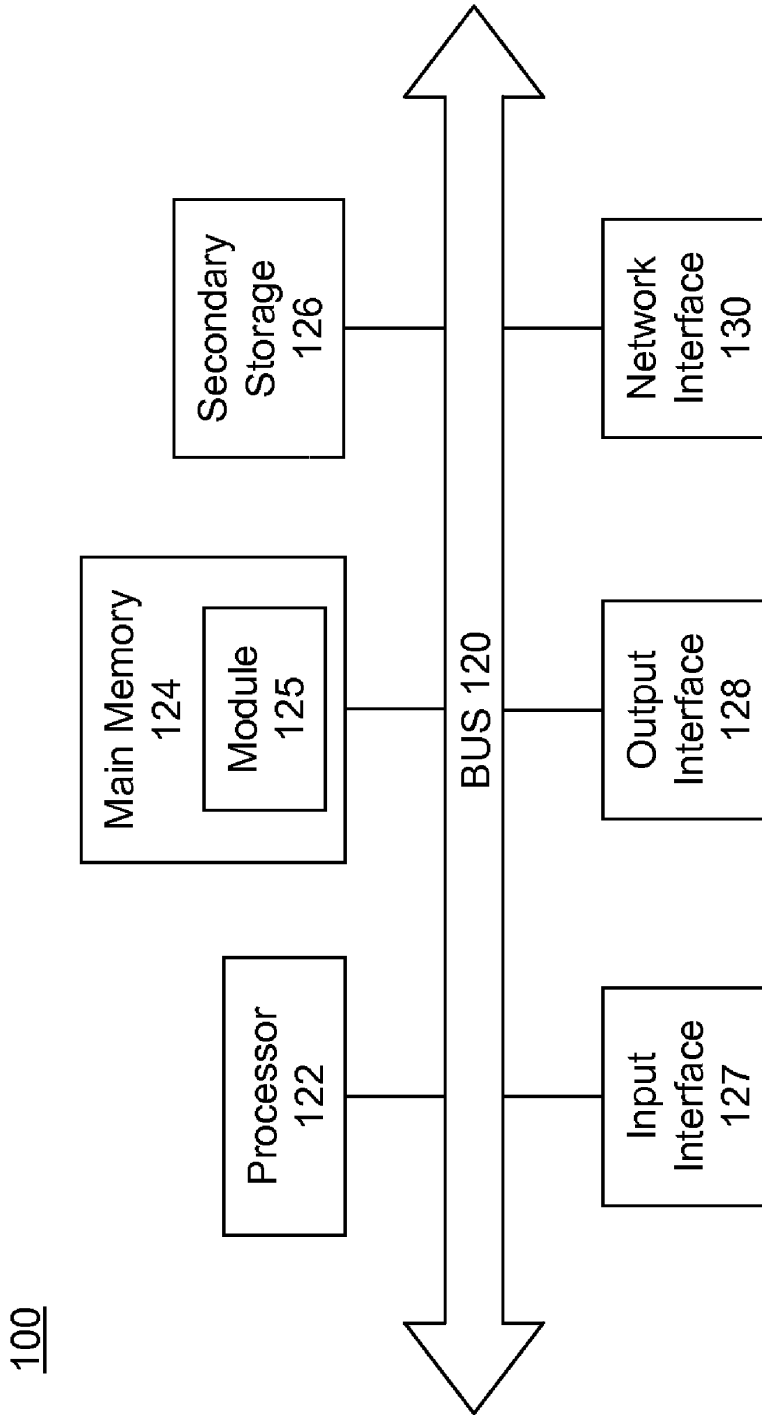


FIG. 2

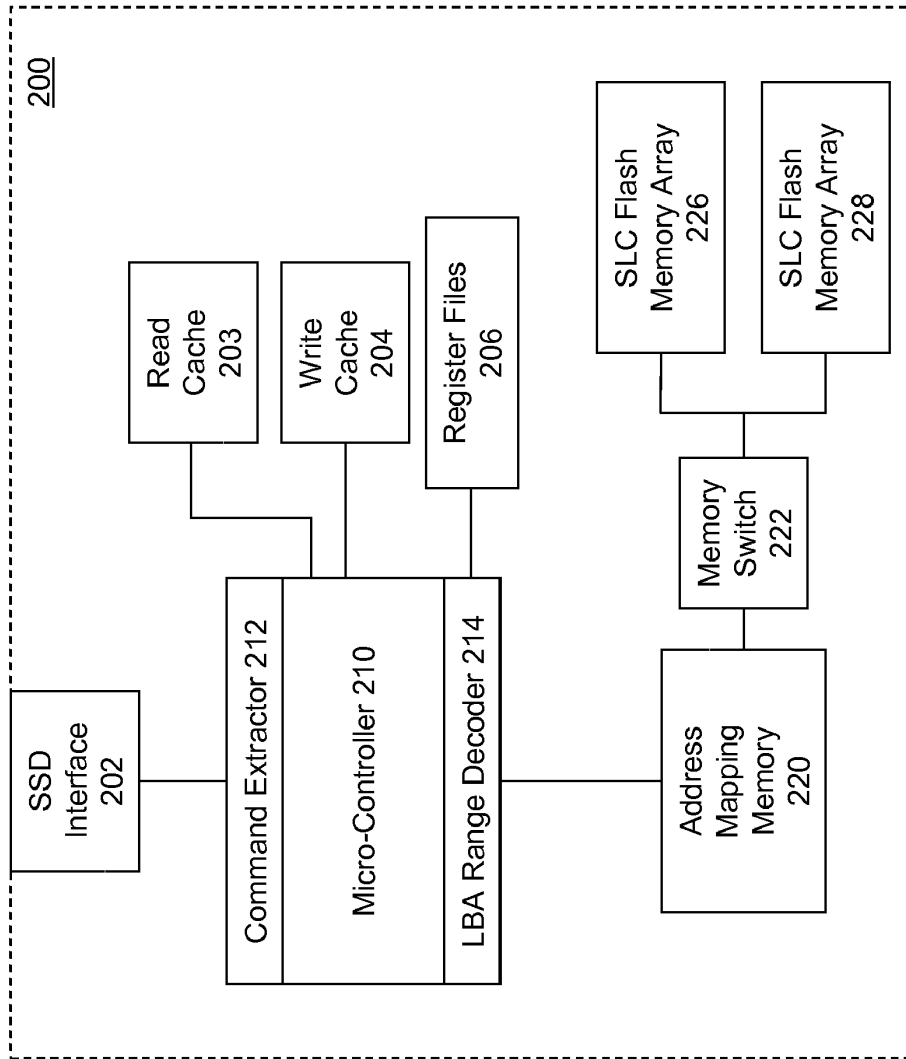
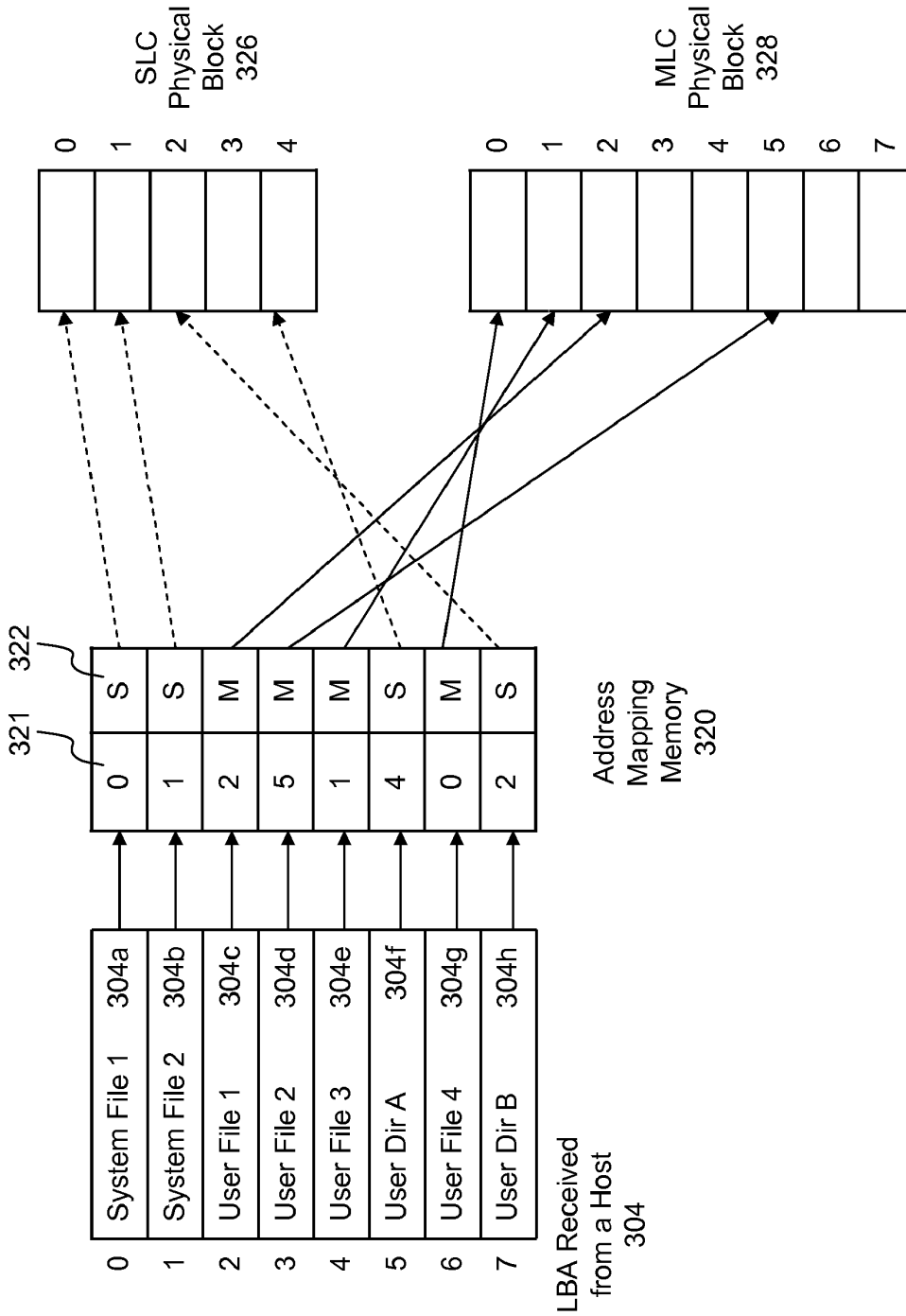


FIG. 3



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