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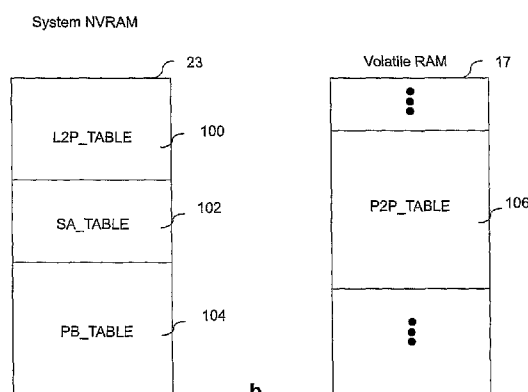
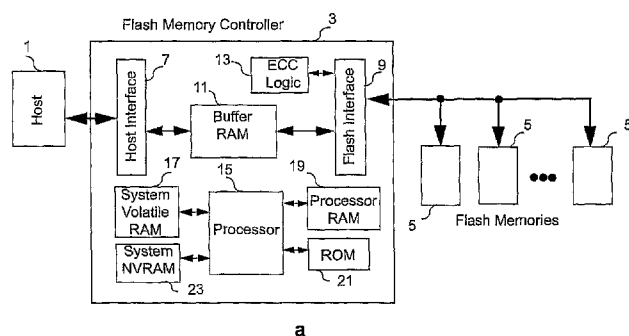
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(54) Title: A CONTROLLER FOR NON-VOLATILE MEMORIES, AND METHODS OF OPERATING THE MEMORY CONTROLLER



(57) Abstract: A non-volatile memory system (3) is proposed consisting of a first non-volatile flash memory (5) having a plurality of blocks, each block having a plurality of pages, each block being erasable and each page being programmable, and a second non-volatile random access memory (23) having a plurality of randomly accessible bytes. The second non-volatile memory (23) stores data for mapping logical blocks to physical blocks and status information of logical blocks. Each logical block has an associated physical page pointer stored in the second non-volatile memory (23) that identifies the next free physical page of the mapped physical block to be written. The page pointer is incremented after every page write to the physical block, allowing all physical pages to be fully utilized for page writes. Furthermore, a method of writing and reading data is disclosed whereby the most recently written physical page associated with a logical address is identifiable by the memory system without programming flags into superseded pages, or recording time stamp values in any physical page or block of the first non-volatile memory (5). Furthermore, a method is provided for a logical block to be mapped to two physical blocks instead of one to provide additional space for page writes, resulting in reduction in page copy operations, thereby increasing the performance of the system.



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