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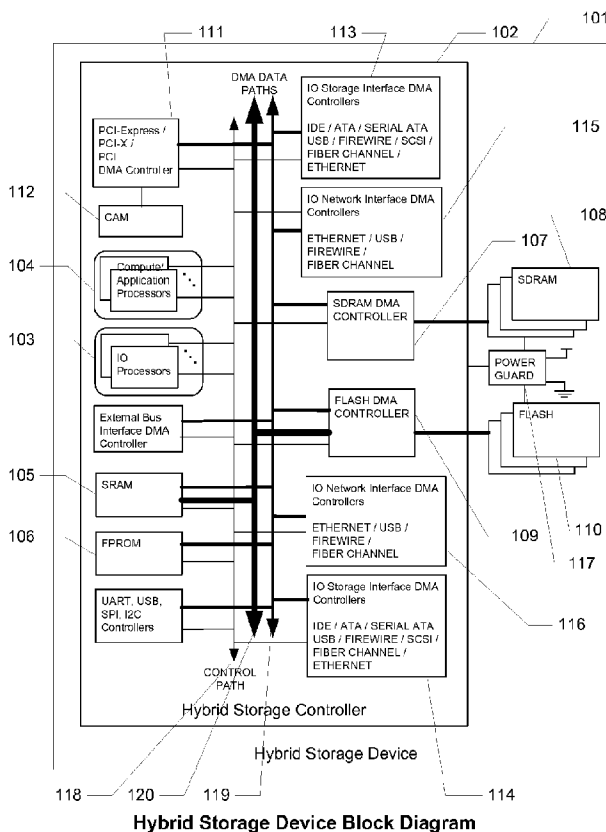
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[Continued on next page]

(54) Title: CONFIGURABLE AND SCALABLE HYBRID MULTI-TIERED CACHING STORAGE SYSTEM

(57) Abstract: A hybrid storage system comprising mechanical disk drive means, flash memory means, SDRAM memory means, and SRAM memory means is described. IO processor circuits and DMA controller circuits are devised to eliminate host intervention. Multi-tiered caching system and novel data structure for mapping logical address to physical address results in a configurable and scalable high performance computer data storage solution.



Hybrid Storage Device Block Diagram

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FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL,  
PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM,  
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**A. CLASSIFICATION OF SUBJECT MATTER**

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USPC - 711/119

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

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USPC - 711/119

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

USPC - 711/100,105,113

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWEST (PGPB, USPT, EPAB, JPAB); Google Scholar

Search Terms Used: data, hard drive, disk drive, cache, map, mapping, volatile, non-volatile, memory, flash, ram, sram, sdram, i/o, io, input-output, controller, processor, instructions

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/0166026 A1 (ULRICH et al.), 07 November 2002 (07.11.2002), entire document, especially paras. [0033], [0112], [0115], [0119], [0122], [0131]-[0132], [0138], [0147], [0152], [0154], [0155], [0156], [0157], [0160]-[0162], [0190], [0194], [0195], [0290], [0404], [0426], [0579], [0597]-[0602]	1-28
A	US 2004/0205299 A1 (BEARDEN), 14 October 2004 (14.10.2004), entire document	1-28
A	US 2005/0256976 A1 (SUSAIRAJ et al.), 17 November 2005 (17.11.2005), entire document	1-28
A	US 2005/0210304 A1 (HARTUNG et al.), 22 September 2005 (22.09.2005), entire document	1-28

Further documents are listed in the continuation of Box C.

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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