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12/118,251 9 May 2008 (09.05.2008) US(71) Applicant (for all designated States except US): **INTERNATIONAL BUSINESS MACHINES CORPORATION** [US/US]; New Orchard Road, Armonk, New York 10504 (US).

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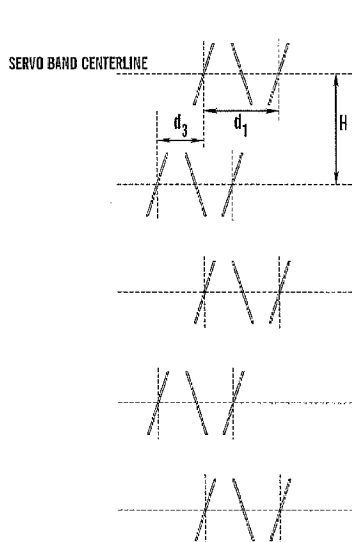
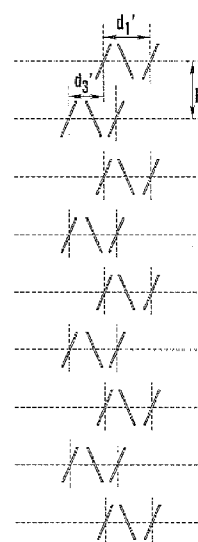
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[Continued on next page]

(54) Title: HEAD DESIGN FOR WRITING SERVO PATTERNS ON MAGNETIC TAPE

**FIG. 4A****FIG. 4B**

(57) Abstract: A servo write head is provided and is configured to simultaneously write at least two servo patterns in respective servo bands on linear magnetic tape. Centerlines of the servo patterns are substantially uniformly spaced in the lateral direction. In addition, the servo patterns of all adjacent respective servo bands are displaced relative to each other in a longitudinal direction by an amount that is related to a length of a servo frame and a type of the servo patterns.

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## INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2009/051882

## A. CLASSIFICATION OF SUBJECT MATTER

INV. G11B5/584 G11B21/10

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

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

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/151844 A1 (EATON JAMES HOWARD [US] ET AL) 14 August 2003 (2003-08-14) paragraph [0039]; figures 3-5,9 -----	1-21
X	EP 1 204 096 A (HEWLETT PACKARD CO [US]) 8 May 2002 (2002-05-08) paragraph [0029]; figure 6 -----	1,10,17
A	US 2006/066976 A1 (OHTSU HIROKI [JP]) 30 March 2006 (2006-03-30) paragraph [0027]; figure 4 -----	1-21
A	US 2005/030661 A1 (BUI NHAN XUAN [US] ET AL) 10 February 2005 (2005-02-10) abstract; figure 12 -----	1-21
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☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 940 812 A (HEWLETT PACKARD CO [US]) 8 September 1999 (1999-09-08) paragraph [0018]; figure 4 -----	1-12
A	EP 1 600 967 A (QUANTUM CORP [US]) 30 November 2005 (2005-11-30) abstract; figure 21 -----	1-21

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2009/051882

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2003151844	A1	14-08-2003	AT 326047 T	15-06-2006
			AU 2003202708 A1	04-09-2003
			CN 1610937 A	27-04-2005
			DE 60305155 T2	21-12-2006
			EP 1476865 A1	17-11-2004
			WO 03069600 A1	21-08-2003
			JP 2005518053 T	16-06-2005
EP 1204096	A	08-05-2002	CN 1357879 A	10-07-2002
			JP 3920071 B2	30-05-2007
			JP 2002183923 A	28-06-2002
			KR 20020030722 A	25-04-2002
			US 6700729 B1	02-03-2004
			US 2004109257 A1	10-06-2004
US 2006066976	A1	30-03-2006	JP 4095600 B2	04-06-2008
			JP 2006092701 A	06-04-2006
US 2005030661	A1	10-02-2005	CN 1606070 A	13-04-2005
			SG 109018 A1	28-02-2005
			US 2005280919 A1	22-12-2005
			US 2005280920 A1	22-12-2005
			US 2005280921 A1	22-12-2005
			US 2005280922 A1	22-12-2005
			US 2005280923 A1	22-12-2005
			US 2005286158 A1	29-12-2005
			US 2005286159 A1	29-12-2005
			US 2005286160 A1	29-12-2005
EP 0940812	A	08-09-1999	JP 11312208 A	09-11-1999
EP 1600967	A	30-11-2005	JP 2005339775 A	08-12-2005
			US 2007064327 A1	22-03-2007
			US 2007064328 A1	22-03-2007
			US 2007070545 A1	29-03-2007
			US 2005259349 A1	24-11-2005