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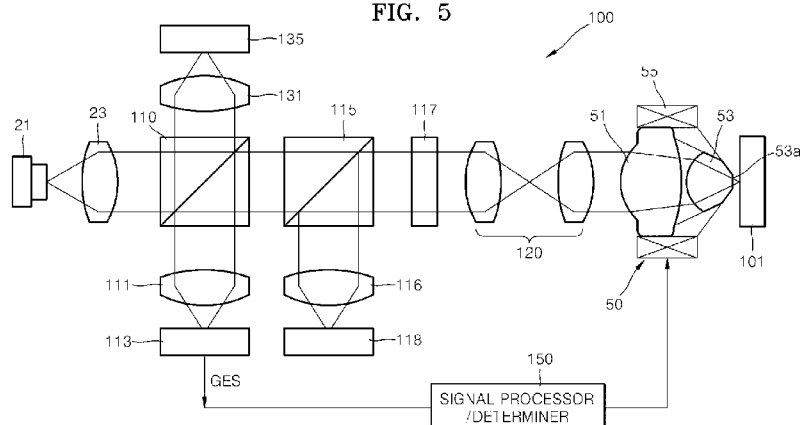
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FIG. 5



(57) Abstract: In a near-field optical recording/reproducing system and a method of controlling a tilt, the near-field optical recording/reproducing system includes: a light source; an objective lens to focus light emitted from the light source to transmit near-field light to an information storage medium; a PD (photodetector) to receive a portion of the light that is transmitted from the objective lens to the information storage medium and is reflected from the information storage medium, to detect a GES (gap error signal) used for controlling an air gap formed between the objective lens and the information storage medium; a signal processor/determiner to obtain an edge voltage using the GES detected by the PD and determine a tilt control point using the edge voltage; and an adjuster to control a relative tilt between the objective lens and the information storage medium in the tilt control position.

A. CLASSIFICATION OF SUBJECT MATTER*G11B 7/135(2006.01)i*

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)

IPC 8: G11B

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

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

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

eKOMPASS(KIPO internal) "near", "field", "tilt", "SIL", "gap", "error"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007-108635 A1 (LG ELECTRRONICS INC.) 27 SEPTEMBER 2007	1,8,13,16
Y	See abstract; page 3, line 20 - page 6, line4; figures 1,3,4,7,8 and 12.	2-7,9-12,14,15,17,18
Y	WO 2007-049893 A1 (LG ELECTRRONICS INC.) 3 MAY 2007	2-7,9-12,14,15,17,18
A	See abstract; paragraphs [0041] - [0177]; figures 4,7,14,17,18 and 21.	1,8,13,16
A	JP 2006-331489 A (SONY CORPORATION) 7 DECEMBER 2006	1-18
	See abstract; paragraphs [0009] - [0046]; figures 1,2,4 and 6.	
A	WO 2005-104114 A1 (KONINKLIJKE PHILIPS ELECTRONICS N.V.) 3 NOVEMBER 2005	1-18
	See abstract; page 1 line 1 - page 7 line 14; figures 1,5 and 8.	



Further documents are listed in the continuation of Box C.



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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007-108635 A1	27.09.2007	EP 2002430 A1	17.12.2008
		KR 10-2007-0096360 A	02.10.2007
		KR 10-2008-0013296 A	13.02.2008
		KR 10-2008-0069471 A	28.07.2008
		US 2009-0003184 A1	01.01.2009
WO 2007-049893 A1	03.05.2007	CN 101288125 A	15.10.2008
		EP 1941506 A1	09.07.2008
		EP 1941506 A4	17.12.2008
		JP 2009-508287 A	26.02.2009
		KR 10-07822010000 B1	28.11.2007
		KR 10-2007-0044271 A	27.04.2007
		KR 10-2008-0001969 A	04.01.2008
		KR 10-2007-0103168 A	23.10.2007
		KR 10-2008-0004716 A	10.01.2008
JP 2006-331489 A	07.12.2006	KR 10-2006-0121703 A	29.11.2006
		TW 200703298 A	16.01.2007
		US 73904734 B2	01.07.2008
		US 2006-0280063 A1	14.12.2006
WO 2005-104114 A1	03.11.2005	CA 2562880 A1	03.11.2005
		EP 1741100 A1	10.01.2007
		JP 2007-534101 A	22.11.2007
		KR 10-2006-0132044 A	20.12.2006
		US 2008-0279064 A1	13.11.2008