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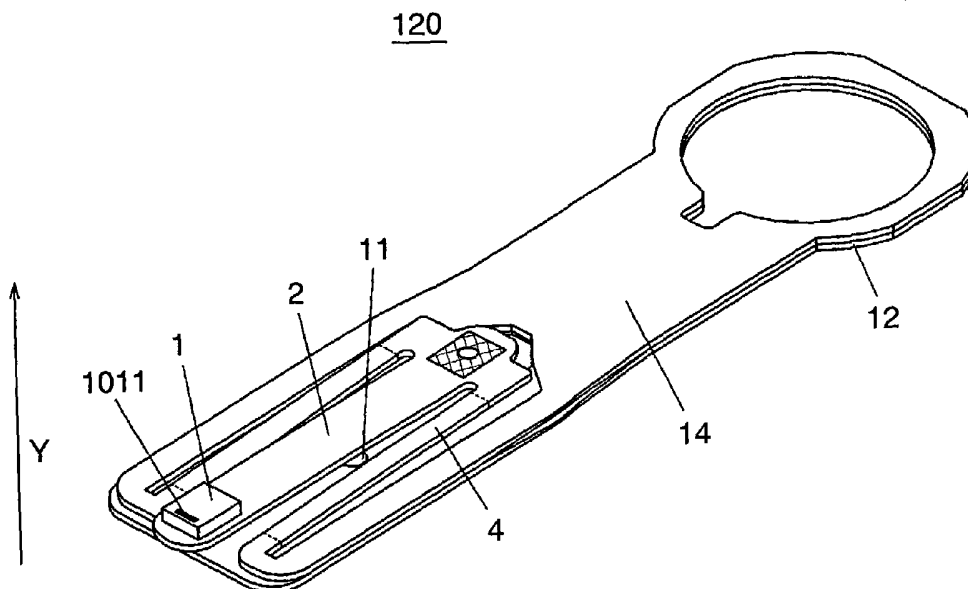
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- (21) International Application Number: PCT/JP2003/007327 (74) Agents: **IWAHASHI, Fumio** et al.; c/o Matsushita Electric Industrial Co., Ltd., 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8501 (JP).
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14 October 2004
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- (75) Inventors/Applicants (*for US only*): **UENO, Yoshihiro** [JP/JP]; 3-10-316, Nakamiyakitamachi, Hirakata-shi, Osaka 573-1194 (JP). **KUWAJIMA, Hideki** [JP/JP]; 36-3,

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HEAD SUPPORT MECHANISM, HEAD DRIVE DEVICE, AND DISK APPARATUS



(57) Abstract: A head support mechanism of the invention comprises a head (1011) for recording on a disk or reproducing a disk, a head support member composed of this head (1011) and a support arm (2) having this head (1011) attached to one end portion thereof, a base arm (12) including a rotation support part (11) for supporting the head support member rotatably in a vertical direction to the surface of the disk, and an elastic member (4) of which one end portion is connected to other end portion of the support arm (2) and other end portion is connected to the base arm (12) for thrusting the head support member in the disk direction. Therefore, the support arm (2) can be formed of a member of high rigidity, and the slider (1) is prevented from colliding against the disk if an impact force acts from outside.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/JP 03/07327

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G11B5/48

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 7 G11B

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 115 221 A (UTSUNOMIYA MOTOYASU) 5 September 2000 (2000-09-05)	1,2,5,6, 8-11
Y	figures 2A,4A-6B,36	12,13
A	column 1, line 8-32 column 5, line 33 -column 7, line 16 column 9, line 57,58 column 15, line 25-32	3,4
Y	US 6 388 843 B1 (TAKAGI YASUJI ET AL) 14 May 2002 (2002-05-14)	12,13
X	column 1, line 21-39; figure 12 column 3, line 40 -column 4, line 30	1
X	US 5 796 554 A (CASEY SHAWN ET AL) 18 August 1998 (1998-08-18) column 7, line 22-38; figures 11A-11C	1
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the International filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"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.

"&" document member of the same patent family

Date of the actual completion of the international search

3 November 2003

Date of mailing of the international search report

09/01/2004

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/JP 03/07327

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 748 522 A (TAKAHASHI, ATSUSHI ET AL) 31 May 1988 (1988-05-31) column 3, line 27 -column 4, line 43; figures 3,4 -----	1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP 03/07327

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 7
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 7

meaning of the subject-matter of claim 7 obscure

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/JP 03/07327

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6115221	A	05-09-2000	JP 2853683 B2 JP 10162535 A	03-02-1999 19-06-1998
US 6388843	B1	14-05-2002	JP 3443021 B2 JP 2000195209 A	02-09-2003 14-07-2000
US 5796554	A	18-08-1998	NONE	
US 4748522	A	31-05-1988	NONE	