



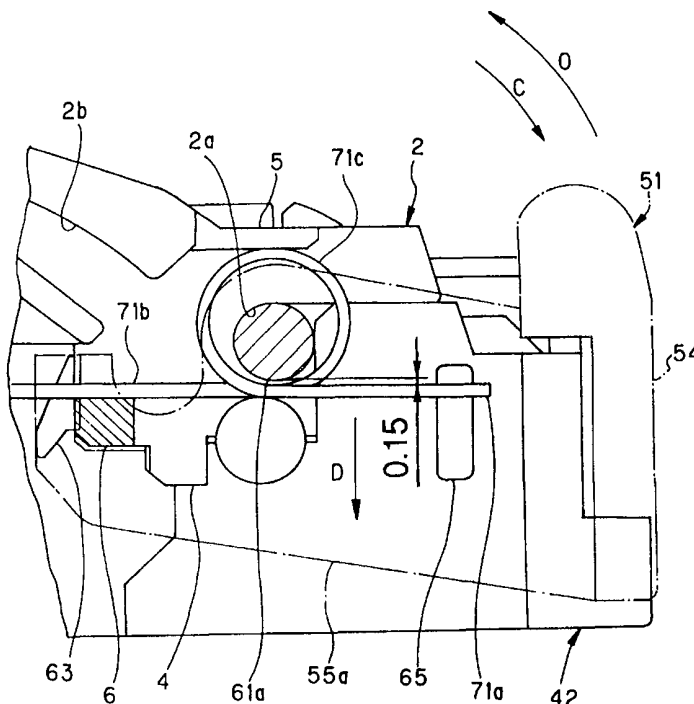
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/JP99/03120 (22) International Filing Date: 11 June 1999 (11.06.99) (30) Priority Data: 10/165503 12 June 1998 (12.06.98) JP 10/170196 17 June 1998 (17.06.98) JP 10/176263 23 June 1998 (23.06.98) JP 10/197482 13 July 1998 (13.07.98) JP 10/203716 17 July 1998 (17.07.98) JP 10/246324 31 August 1998 (31.08.98) JP 10/300005 21 October 1998 (21.10.98) JP 10/310949 30 October 1998 (30.10.98) JP 11/138724 19 May 1999 (19.05.99) JP (71) Applicant (for all designated States except US): FUJI PHOTO FILM CO., LTD. [JP/JP]; 210, Nakanuma, Minami-Ashigara-shi, Kanagawa 250-0123 (JP). (72) Inventors; and (75) Inventors/Applicants (for US only): ASHIKAWA, Teruo [JP/JP]; Fuji Photo Film Co., Ltd., 12-1, Ogicho 2-chome, Odawara-shi, Kanagawa 250-0001 (JP). ONMORI, Shozo [JP/JP]; Fuji Photo Film Co., Ltd., 12-1, Ogicho 2-chome, Odawara-shi, Kanagawa 250-0001 (JP). HIRAGUCHI, Kazuo [JP/JP]; Fuji Photo Film Co., Ltd., 12-1, Ogi-		cho 2-chome, Odawara-shi, Kanagawa 250-0001 (JP). MORITA, Kiyoo [JP/JP]; Fuji Photo Film Co., Ltd., 12-1, Ogicho 2-chome, Odawara-shi, Kanagawa 250-0001 (JP). NAITO, Hiroyuki [JP/JP]; Fuji Photo Film Co., Ltd. 12-1, Ogicho 2-chome, Odawara-shi, Kanagawa 250-0001 (JP). (74) Agents: HAGINO, Taira et al.; Eikoh Patent Office, ARK Mori Building, 28th floor, 12-32, Akasaka 1-chome, Minato-ku, Tokyo 107-6028 (JP). (81) Designated States: CN, KR, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report. (88) Date of publication of the international search report: 2 March 2000 (02.03.00)

(54) Title: MAGNETIC TAPE CASSETTE AND TAPE REEL

(57) Abstract

The magnetic tape cassette comprises a lid for covering magnetic tape in a freely opening and closing manner, a lid lock for locking the lid in its closed state, and a lid spring (71) not only for energizing the lid lock in its locking direction but also for energizing the lid in its closing direction. The lid spring (71) is structured such that a coil portion (71c) thereof is mounted on a support shaft pin (61a) of the side plate (55a) of an outer lid (51) in a loose fit manner, one leg portion (71a) thereof is secured to a projection (65) provided on the side plate (55a), and the other leg portion (71b) thereof is secured to a projection (6) provided on the side surface of an upper half (2) and can be engaged with the lid lock from the upper half (2) side to thereby energize the lid lock in the locking direction of the lid. On the upper half (2), there is provided position restrict means (5) which can be contacted with the coil portion (71c) of the lid spring (71) to thereby restrict the position of the coil portion (71c). Accordingly, it is possible to provide a magnetic tape cassette which can prevent the shaving of a support shaft pin caused by mutual contact between the support shaft pin and the coil portion of a lid spring.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 99/03120

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G11B23/087 G11B23/037

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 6 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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 596 464 A (SAWADA TAKASHI) 21 January 1997 (1997-01-21)	1
A	column 7, line 24 -column 10, line 42; figures 2-7	2-5
X	EP 0 488 599 A (MATSUSHITA ELECTRIC IND CO LTD) 3 June 1992 (1992-06-03)	1
A	column 15, line 57 -column 17, line 32; figures 23-26B	2
A	EP 0 697 697 A (SONY CORP) 21 February 1996 (1996-02-21)	1,2
	column 11, line 20 -column 14, line 38; figures 14-21	
A	GB 2 187 711 A (SONY CORP) 16 September 1987 (1987-09-16)	1
	abstract; figures	
	-/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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Date of the actual completion of the international search

1 December 1999

Date of mailing of the international search report

14. 12. 1999

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INTERNATIONAL SEARCH REPORT

Inter. .onal Application No
PCT/JP 99/03120

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 0 663 663 A (SONY CORP) 19 July 1995 (1995-07-19) abstract; figures ---	1,17,28
A	GB 2 055 756 A (TDK ELECTRONICS CO LTD) 11 March 1981 (1981-03-11) abstract; figures page 1, line 27 - line 86 ---	1,6-8,20
A	US 4 382 523 A (SEKINE MASAOKI ET AL) 10 May 1983 (1983-05-10) abstract; figures ---	1,6,20
X	EP 0 142 807 A (HITACHI MAXELL) 29 May 1985 (1985-05-29) abstract; claims 1-6; figures ---	21
A	EP 0 142 807 A (HITACHI MAXELL) 29 May 1985 (1985-05-29) abstract; claims 1-6; figures ---	1,9-11
X	EP 0 078 696 A (MATSUSHITA ELECTRIC IND CO LTD) 11 May 1983 (1983-05-11) page 14, line 1 -page 15, line 17; figures 8-16 ---	21
A	EP 0 078 696 A (MATSUSHITA ELECTRIC IND CO LTD) 11 May 1983 (1983-05-11) page 14, line 1 -page 15, line 17; figures 8-16 ---	1,9-11
A	EP 0 088 437 A (HITACHI MAXELL ;HITACHI LTD (JP)) 14 September 1983 (1983-09-14) abstract; figures ---	1,9,21
X	DE 43 12 204 A (SONY CORP) 21 October 1993 (1993-10-21) column 3, line 30 -column 5, line 20; figures ---	22
A	DE 43 12 204 A (SONY CORP) 21 October 1993 (1993-10-21) column 3, line 30 -column 5, line 20; figures ---	1,12
X	EP 0 841 662 A (TDK CORP) 13 May 1998 (1998-05-13) abstract; figures 4A-5,9A-10 ---	22
A	EP 0 841 662 A (TDK CORP) 13 May 1998 (1998-05-13) abstract; figures 4A-5,9A-10 ---	1,12
A	EP 0 452 149 A (SONY CORP) 16 October 1991 (1991-10-16) column 6, line 11 - line 39; figure 11 ---	1,12,22
A	EP 0 542 244 A (FUJI PHOTO FILM CO LTD) 19 May 1993 (1993-05-19) abstract; figures ---	1,12,22
A	US 5 434 736 A (KANEDA HIROSHI ET AL) 18 July 1995 (1995-07-18) abstract; figures ---	1,12,22
X	US 4 831 482 A (SATO AKIHIKO) 16 May 1989 (1989-05-16) column 5, line 11 -column 6, line 55; figures ---	23,25
A	US 4 831 482 A (SATO AKIHIKO) 16 May 1989 (1989-05-16) column 5, line 11 -column 6, line 55; figures ---	1,13,14,24
	-/--	

INTERNATIONAL SEARCH REPORT

Inter. Appl. Application No
PCT/JP 99/03120

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 5 708 546 A (TAGUCHI OSAMU) 13 January 1998 (1998-01-13) column 7, line 57 - line 64; figures	23 1,12-14, 22,24
A	EP 0 071 996 A (HITACHI MAXELL) 16 February 1983 (1983-02-16) abstract; figures	1,13,14, 23-25
X A	EP 0 189 257 A (SONY CORP) 30 July 1986 (1986-07-30) page 12, line 10 - line 25; figure 2	26 1,15,16, 27
A	EP 0 221 758 A (SONY CORP) 13 May 1987 (1987-05-13) page 7, line 11 -page 8, line 21; figures	1,15,16, 26,27
A	US 4 664 328 A (YAMADA TAKUZI) 12 May 1987 (1987-05-12) abstract; figure 2	1,15,16, 26,27
A	DE 31 08 585 A (NIFCO INC) 4 February 1982 (1982-02-04) abstract; claims 1,2; figures	1,15,16, 26,27
A	EP 0 657 886 A (HITACHI MAXELL ;HITACHI LTD (JP)) 14 June 1995 (1995-06-14) column 14, line 26 -column 17, line 50; figures 8A-11	1,17,28
A	EP 0 620 554 A (HITACHI LTD ;HITACHI MAXELL (JP)) 19 October 1994 (1994-10-19) column 17, line 35 -column 19, line 26; figures	1,17,28
A	US 4 680 660 A (UEDA MASAKI) 14 July 1987 (1987-07-14) abstract; figures	1,17,28
A	EP 0 573 058 A (MATSUSHITA ELECTRIC IND CO LTD) 8 December 1993 (1993-12-08) column 7, line 20 -column 9, line 21; figures	1,17,28
A	FR 2 537 763 A (VICTOR COMPANY OF JAPAN) 15 June 1984 (1984-06-15) claims 1,2,6-9; figures	1,17,28

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP 99/03120

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.:
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:

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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:

see additional sheet

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.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/JP 99/03120

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-19

Magnetic tape cassette comprising a cassette case with upper and lower halves, a pair of reels, a lid, a lid lock, a lid spring with a coil portion mounted in a loose fit manner on a support shaft pin, and a position restrict means contacted with an outer periphery of the coil portion.

2. Claim : 20

Magnetic tape cassette comprising upper and lower half cases, wherein the upper half case includes two eaves portions, two extension portions, two screw bosses, two gate marks, and two increased thickness portions respectively formed on the two eaves portions.

3. Claim : 21

Magnetic tape cassette comprising a cassette case including upper and lower halves, wherein the lower half includes a pair of magnetic tape height restricting ribs, and a position restrict means having at least one vertical portion for restricting a push-in depth of the cassette.

4. Claim : 22

Magnetic tape cassette comprising a cassette main body including upper and lower halves, a lid including outer, top and inner lid parts, the lower half comprising inner lid cam grooves, a pair of reference hole portions, and thickness reducing portions forming stepped parts.

5. Claims: 23-25

Magnetic tape cassette comprising an upper cassette half having upper bosses and a lower cassette half having lower bosses, wherein the lower bosses include a front center lower boss and a rear center lower boss, the upper bosses including a front center upper boss and a rear center upper boss.

6. Claims: 26-27

Tape reel comprising an upper reel part including a plurality of welding boss holes and a lower reel part including a boss portion, wherein the boss portion includes a boss center portion, a side wall, a plurality of welding

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

bosses, and a plurality of ribs.

7. Claim : 28

Magnetic tape cassette comprising upper and lower halves, tape guides, a lid comprising an inner lid, the inner lid including two slide pins, and slide pin position restrict means.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter. onal Application No

PCT/JP 99/03120

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5596464 A	21-01-1997	JP 7111059 A	25-04-1995
		JP 7220439 A	18-08-1995
		CN 1121629 A	01-05-1996
		US 5717554 A	10-02-1998
EP 0488599 A	03-06-1992	JP 2900623 B	02-06-1999
		JP 4285779 A	09-10-1992
		JP 2639220 B	06-08-1997
		JP 4206082 A	28-07-1992
		JP 2548455 B	30-10-1996
		JP 4206083 A	28-07-1992
		DE 69126847 D	21-08-1997
		DE 69126847 T	12-02-1998
		DE 69130810 D	04-03-1999
		DE 69130810 T	09-09-1999
		DE 69131387 D	29-07-1999
		DE 69131387 T	14-10-1999
		EP 0773546 A	14-05-1997
		EP 0773547 A	14-05-1997
		KR 9616362 B	09-12-1996
		US 5475555 A	12-12-1995
		US 5796563 A	18-08-1998
		US 5654855 A	05-08-1997
EP 0697697 A	21-02-1996	JP 8045233 A	16-02-1996
		JP 8115582 A	07-05-1996
		CN 1128890 A	14-08-1996
		EP 0829877 A	18-03-1998
GB 2187711 A	16-09-1987	FR 2595858 A	18-09-1987
		KR 9611793 B	30-08-1996
		US 4771352 A	13-09-1988
EP 0663663 A	19-07-1995	JP 7169235 A	04-07-1995
		CN 1120227 A	10-04-1996
		DE 69418018 D	27-05-1999
		DE 69418018 T	28-10-1999
		US 5542621 A	06-08-1996
GB 2055756 A	11-03-1981	DE 3026670 A	05-02-1981
		NL 8003733 A	20-01-1981
		US 4349166 A	14-09-1982
US 4382523 A	10-05-1983	JP 1405924 C	27-10-1987
		JP 56077958 A	26-06-1981
		JP 62016465 B	13-04-1987
EP 0142807 A	29-05-1985	JP 60185278 A	20-09-1985
		JP 60106090 A	11-06-1985
		US 4643304 A	17-02-1987
EP 0078696 A	11-05-1983	AT 25782 T	15-03-1987
		AU 539874 B	18-10-1984
		AU 9001082 A	02-06-1983
		BR 8206390 A	27-09-1983
		CA 1184295 A	19-03-1985
		US 4485988 A	04-12-1984

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter. Appl. No.

PCT/JP 99/03120

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0088437 A	14-09-1983	CA 1187172 A CA 1187173 A DE 3375853 T EP 0088438 A US 4485990 A US 4485989 A	14-05-1985 14-05-1985 07-04-1988 14-09-1983 04-12-1984 04-12-1984
DE 4312204 A	21-10-1993	JP 5290541 A US 5407145 A	05-11-1993 18-04-1995
EP 0841662 A	13-05-1998	JP 10144041 A CN 1183618 A US 5797555 A	29-05-1998 03-06-1998 25-08-1998
EP 0452149 A	16-10-1991	JP 3295064 A US 5359477 A	26-12-1991 25-10-1994
EP 0542244 A	19-05-1993	DE 69221077 D DE 69221077 T US 5337973 A	04-09-1997 13-11-1997 16-08-1994
US 5434736 A	18-07-1995	JP 5342807 A	24-12-1993
US 4831482 A	16-05-1989	JP 62275364 A	30-11-1987
US 5708546 A	13-01-1998	JP 9231720 A	05-09-1997
EP 0071996 A	16-02-1983	US 4466585 A	21-08-1984
EP 0189257 A	30-07-1986	AT 71235 T CA 1258527 A US 4747563 A	15-01-1992 15-08-1989 31-05-1988
EP 0221758 A	13-05-1987	AT 71234 T CA 1304060 A US 5101308 A	15-01-1992 23-06-1992 31-03-1992
US 4664328 A	12-05-1987	NONE	
DE 3108585 A	04-02-1982	US 4403749 A	13-09-1983
EP 0657886 A	14-06-1995	JP 7153227 A EP 0935250 A US 5687047 A	16-06-1995 11-08-1999 11-11-1997
EP 0620554 A	19-10-1994	JP 6302144 A JP 6338163 A JP 6342574 A DE 69419650 D EP 0915467 A KR 138724 B US 5497279 A	28-10-1994 06-12-1994 13-12-1994 02-09-1999 12-05-1999 01-06-1998 05-03-1996
US 4680660 A	14-07-1987	NONE	
EP 0573058 A	08-12-1993	JP 2730402 B JP 5342801 A DE 69313183 D	25-03-1998 24-12-1993 25-09-1997

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP 99/03120

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0573058 A		DE 69313183 T US 5541795 A	08-01-1998 30-07-1996
FR 2537763 A	15-06-1984	JP 59107471 A AU 557976 B AU 2184983 A BR 8306778 A DE 3344414 A GB 2133773 A,B HK 6592 A NL 8304222 A	21-06-1984 15-01-1987 14-06-1984 17-07-1984 14-06-1984 01-08-1984 31-01-1992 02-07-1984