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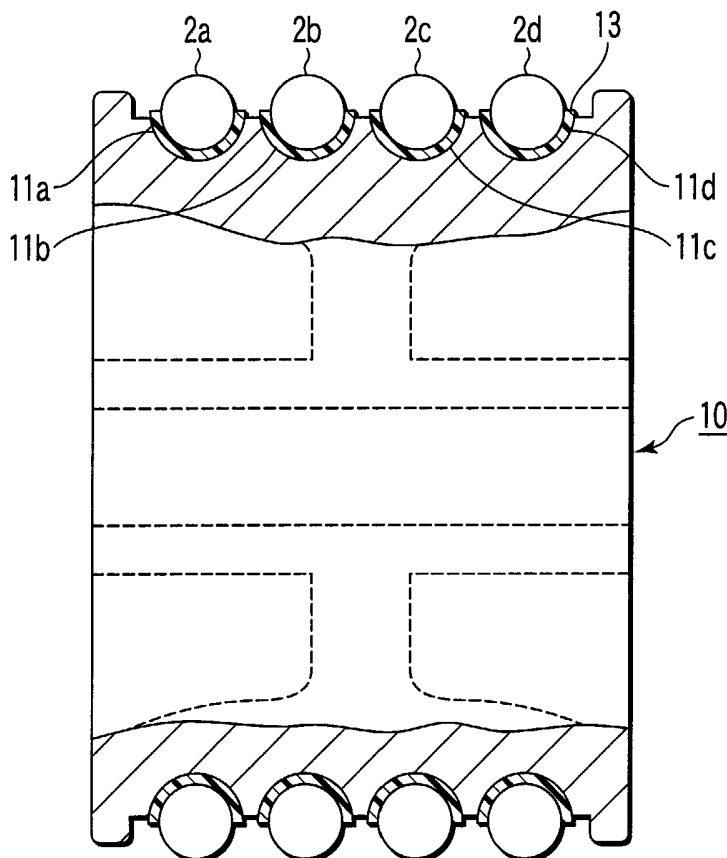
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[Continued on next page]

(54) Title: SHEAVE FOR ELEVATOR



(57) Abstract: Coating layers of low-friction coating materials helping a rotating action generated on ropes are provided on surfaces of grooves formed on an outer peripheral surface of a base of a sheave. Thus, difference in tension between the ropes can be solved, generation of twist on the ropes can be prevented, and deterioration of portions of the ropes which are in contact with the sheave can be prevented to extend the lifetime of the ropes.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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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)

EP0-Internal, PAJ, 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	PATENT ABSTRACTS OF JAPAN vol. 009, no. 018 (M-353), 25 January 1985 (1985-01-25) & JP 59 164450 A (TOSHIBA KK), 17 September 1984 (1984-09-17) abstract	1
X	PATENT ABSTRACTS OF JAPAN vol. 006, no. 240 (M-174), 27 November 1982 (1982-11-27) & JP 57 138501 A (TOKYO SHIBAURA DENKI KK), 26 August 1982 (1982-08-26) abstract ----- -/--	1-5

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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.
X	PATENT ABSTRACTS OF JAPAN vol. 2003, no. 08, 6 August 2003 (2003-08-06) & JP 2003 104667 A (TOSHIBA ELEVATOR CO LTD), 9 April 2003 (2003-04-09) abstract	1-5
X	EP 0 638 511 A (NIHON BISO CO., LTD) 15 February 1995 (1995-02-15) column 8; figure 1	1
X	EP 0 578 237 A (KONE ELEVATOR GMBH) 12 January 1994 (1994-01-12) figures 7,8	1-5
X	GB 2 271 544 A (* GOLDSTAR INDUSTRIAL SYSTEMS CO LTD; * LG INDUSTRIAL SYSTEMS CO LTD) 20 April 1994 (1994-04-20) column 3; figures 1,3	6
X	EP 0 837 025 A (INVENTIO AG) 22 April 1998 (1998-04-22) column 3; figures 1,3	6
X	US 4 756 388 A (HEIKKINEN ET AL) 12 July 1988 (1988-07-12) the whole document	6

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP2004/008672

Information on patent family members

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 59164450	A	17-09-1984	NONE	
JP 57138501	A	26-08-1982	JP 1452826 C JP 62060356 B	10-08-1988 16-12-1987
JP 2003104667	A	09-04-2003	NONE	
EP 0638511	A	15-02-1995	JP 7033391 A JP 8018795 B CA 2127431 A1 DE 69413767 D1 DE 69413767 T2 EP 0638511 A1 US 5515790 A US 5638756 A US 5626081 A	03-02-1995 28-02-1996 17-01-1995 12-11-1998 27-05-1999 15-02-1995 14-05-1996 17-06-1997 06-05-1997
EP 0578237	A	12-01-1994	FI 923113 A AU 4175793 A BR 9302786 A CA 2099858 A1 CN 1086788 A ,C EP 0578237 A1 JP 2664619 B2 JP 6156952 A US 5370205 A	08-01-1994 13-01-1994 16-02-1994 08-01-1994 18-05-1994 12-01-1994 15-10-1997 03-06-1994 06-12-1994
GB 2271544	A	20-04-1994	NONE	
EP 0837025	A	22-04-1998	EP 0837025 A1	22-04-1998
US 4756388	A	12-07-1988	FI 862293 A BR 8606310 A CA 1266239 A1 DE 3634859 A1 FR 2599351 A1 GB 2190891 A ,B JP 1682744 C JP 3043196 B JP 62280179 A NZ 218097 A	30-11-1987 12-01-1988 27-02-1990 03-12-1987 04-12-1987 02-12-1987 31-07-1992 01-07-1991 05-12-1987 30-08-1988