

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2019/046115

A. CLASSIFICATION OF SUBJECT MATTER
H05K 3/20 (2006.01) i; H05K 3/44 (2006.01) i
FI : H05K3/20 Z; H05K3/44 Z
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)
H05K3/20; H05K3/44; H05K3/00

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

Published examined utility model applications of Japan	1922-1996
Published unexamined utility model applications of Japan	1971-2020
Registered utility model specifications of Japan	1996-2020
Published registered utility model applications of Japan	1994-2020

Electronic data base consulted during the international search (name of data base and, where practicable, 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	JP 4001112 B2 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.) 31.10.2007 (2007-10-31) paragraphs [0017], [0018], [0020]-[0022], [0024], [0026], fig. 1	1-4
Y	paragraphs [0017], [0018], [0020]-[0022], [0024], [0026], fig. 1	6
A	paragraphs [0017], [0018], [0020]-[0022], [0024], [0026], fig. 1	5
Y	WO 2016/080519 A1 (NSK LTD.) 26.05.2016 (2016-05-26) paragraph [0060]	6
X	JP 7-86704 A (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.) 31.03.1995 (1995-03-31) paragraphs [0009]-[0010], [0016]-[0018], [0020], fig. 1, 2, 5	1-3, 6
Y	paragraphs [0009]-[0010], [0016]-[0018], [0020], fig. 1, 2, 5	4
A	paragraphs [0009]-[0010], [0016]-[0018], [0020], fig. 1, 2, 5	5

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search 03 February 2020 (03.02.2020)	Date of mailing of the international search report 18 February 2020 (18.02.2020)
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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.
Y	JP 2002-305366 A (TDK CORPORATION) 18.10.2002 (2002-10-18) paragraphs [0090]-[0094]	4
A	JP 2002-26475 A (MITSUI MINING & SMELTING CO., LTD.) 25.01.2002 (2002-01-25) entire text, all drawings	1-6

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/JP2019/046115

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
JP 4001112 B2	31 Oct. 2007	US 2005/0037543 A1 paragraphs [0035], [0036], [0038]- [0040], [0042], [0044], fig. 1 WO 2003/083940 A1 EP 1492164 A1 CN 1565056 A	
WO 2016/080519 A1	26 May 2016	EP 3196931 A paragraph [0059] CN 107004649 A (Family: none)	
JP 7-86704 A	31 Mar. 1995	US 2003/0029830 A1 paragraphs [0190]- [0194] WO 2002/054420 A1 EP 1347475 A1 CN 1406385 A	
JP 2002-305366 A	18 Oct. 2002	US 2002/0004124 A1 entire text, all drawings WO 2002/005605 A1 EP 1229769 A1 TW 250835 B CN 1383705 A	
JP 2002-26475 A	25 Jan. 2002		