

INTERNATIONAL SEARCH REPORT

International application No. PCT/JP2020/014582
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A. CLASSIFICATION OF SUBJECT MATTER
 C22C 23/04(2006.01)i; C22F 1/00(2006.01)i; C22F 1/06(2006.01)i
 FI: C22C23/04; C22F1/00 623; C22F1/00 630A; C22F1/00 630K; C22F1/00
 685A; C22F1/00 694A; C22F1/06
 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)
 C22C23/04; C22F1/00; C22F1/06

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	WO 2018/74896 A2 (POSCO) 26.04.2018 (2018-04-26) table 1	1-2, 4-5
X	JP 6-25791 A (MITSUI MINING & SMELTING CO., LTD.) 01.02.1994 (1994-02-01) table 1, claim 2, paragraph [0015]	1-5
X	JP 7-18364 A (TOYOTA CENTRAL R&D LABS., INC.) 20.01.1995 (1995-01-20) tables 1, 2, claim 2, paragraph [0024]	1-5
X	JP 2012-82474 A (SUMITOMO ELECTRIC INDUSTRIES, LTD.) 26.04.2012 (2012-04-26) table 1, paragraphs [0018]-[0019]	1-5
X	JP 2012-122102 A (NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY) 28.06.2012 (2012-06-28) table 2	1, 4-5

<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.
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* Special categories of cited documents:	"I" 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 08 June 2020 (08.06.2020)	Date of mailing of the international search report 23 June 2020 (23.06.2020)
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Name and mailing address of the ISA/ Japan Patent Office 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	Authorized officer Telephone No.
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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	JP 2006-16656 A (SUMITOMO ELECTRIC INDUSTRIES, LTD.) 19.01.2006 (2006-01-19) table 1, paragraph [0030]	1, 4-5
X	JP 40-7651 B1 (THE DOW CHEMICAL COMPANY) 17.04.1965 (1965-04-17) tables 1, 2	1, 4-5
P, X	WO 2019/172047 A1 (NATIONAL INSTITUTE FOR MATERIALS SCIENCE) 12.09.2019 (2019-09-12) table 1	1-2, 4-5
P, X	JP 2019-218577 A (TOBATA SEISAKUSHO CO., LTD.) 26.12.2019 (2019-12-26) paragraphs [0113]-[0134]	1-5

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2020/014582

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
WO 2018/74896 A2	26 Apr. 2018	JP 2019-535893 A table 1 EP 3530766 A2 table 1 CN 109844152 A table 1 KR 10-2018-0044213 A table 1	
JP 6-25791 A	01 Feb. 1994	(Family: none)	
JP 7-18364 A	20 Jan. 1995	(Family: none)	
JP 2012-82474 A	26 Apr. 2012	US 2013/0209195 A1 table 1, paragraphs [0019]-[0020] WO 2012/049990 A1 table 1, paragraphs [0018]-[0019] CN 103180473 A table 1, paragraphs [0023]-[0024]	
JP 2012-122102 A	28 Jun. 2012	(Family: none)	
JP 2006-16656 A	19 Jan. 2006	(Family: none)	
JP 40-7651 B1	17 Apr. 1965	(Family: none)	
WO 2019/172047 A1	12 Sep. 2019	JP 2019-151930 A table 1	
JP 2019-218577 A	26 Dec. 2019	(Family: none)	