

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2019/047271

A. CLASSIFICATION OF SUBJECT MATTER

C22C 9/04(2006.01)i; C22F 1/00(2006.01)i; C22F 1/08(2006.01)i

FI: C22C9/04; C22F1/08 K; C22F1/00 604; C22F1/00 640A; C22F1/00 661A;
C22F1/00 682; C22F1/00 683; C22F1/00 691B; C22F1/00 691C;
C22F1/00 694A

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)

C22C9/04; C22F1/00; C22F1/08

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 A	JP 7-116925 A (HITACHI ALLOY, LTD.) 09.05.1995 (1995-05-09) paragraph [0001], fig. 7	1, 4-5 2-3, 6
X A	JP 2000-129376 A (MITSUI MINING & SMELTING CO., LTD.) 09.05.2000 (2000-05-09) fig. 2	1, 4 2-3, 5-6
A	JP 54-47823 A (DIEHL GMBH UND CO.) 14.04.1979 (1979-04-14)	1-6
A	JP 2003-277856 A (TOTO KIKI KABUSHIKI KAISHA) 02.10.2003 (2003-10-02)	1-6
A	JP 2002-363718 A (SUMITOMO LIGHT METAL INDUSTRIES, LTD.) 18.12.2002 (2002-12-18)	1-6
A	JP 2013-129876 A (FURUKAWA ELECTRIC CO., LTD.) 04.07.2013 (2013-07-04)	1-6

Further documents are listed in the continuation of Box C.

See patent family 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 application or patent but published on or after the international filing date

“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)

“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
26 February 2020 (26.02.2020)

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10 March 2020 (10.03.2020)

Name and mailing address of the ISA/
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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.
P, A	WO 2019/097846 A1 (JX NIPPON MINING & METALS CORPORATION) 23.05.2019 (2019-05-23)	1-6

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2019/047271

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
JP 7-116925 A	09 May 1995	(Family: none)	
JP 2000-129376 A	09 May 2000	(Family: none)	
JP 54-47823 A	14 Apr. 1979	US 4226621 A US 4288257 A GB 2004912 A DE 27 42008 A1 FR 2403394 A1 SE 7808214 A IT 1099055 A SE 445048 B IT 7827583 AO	
JP 2003-277856 A	02 Oct. 2003	(Family: none)	
JP 2002-363718 A	18 Dec. 2002	(Family: none)	
JP 2013-129876 A	04 Jul. 2013	(Family: none)	
WO 2019/097846 A1	23 May 2019	EP 3524701 A1 KR 10-2019-0082267 A CN 110050079 A TW 201923101 A	