

**INTERNATIONAL SEARCH REPORT**

International application No. PCT/JP2020/029202
--

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
Int.Cl. B01J23/63(2006.01)i, B01D53/94(2006.01)i, B01J35/04(2006.01)i, B01J37/02(2006.01)i, F01N3/10(2006.01)i FI: B01J23/63AZAB, B01D53/94222, B01D53/94245, B01D53/94280, B01J35/04301L, B01J37/02301C, F01N3/10A According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) Int.Cl. B01J21/00-38/74, B01D53/86-53/96, F01N3/10-3/38		
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) DWPI (Derwent Innovation)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	WO 2010/119904 A1 (CATALER CORPORATION) 21.10.2010 (2010-10-21), claims, paragraphs [0001], [0002], [0006], [0012]-[0037], [0055], [0118], [0119], fig. 1-3, examples	1-7 2, 8-11
X Y	JP 2014-200714 A (CATALER CORPORATION) 27.10.2014 (2014-10-27), claims, paragraphs [0001], [0004]-[0045], [0103], [0104], [0114], fig. 1, table 1, examples 1-11, 13-24	1, 3-7 2, 8-11
Y	WO 2017/204008 A1 (CATALER CORPORATION) 30.11.2017 (2017-11-30), claims, fig. 2, examples, paragraphs [0001], [0006]-[0060], [0076], [0077]	8-10
Y	JP 2019-136695 A (MITSUI MINING AND SMELTING CO., LTD.) 22.08.2019 (2019-08-22), claims, paragraphs [0006]-[0009], [0065], fig. 2	8-11
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> 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 24.09.2020		Date of mailing of the international search report 06.10.2020
Name and mailing address of the ISA/ Japan Patent Office 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan		Authorized officer  Telephone No.

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/JP2020/029202

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 6-099069 A (CATALER KOGYO KK) 12.04.1994 (1994-04-12), comparative example 2	1-10
A	WO 2014/002667 A1 (NE CHEMCAT CORP.) 03.01.2014 (2014-01-03), examples	1-11
A	JP 2017-189735 A (TOYOTA MOTOR CORPORATION) 19.10.2017 (2017-10-19), entire text, all drawings	1-11

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
PCT/JP2020/029202

WO 2010/119904 A1	21.10.2010	US 2012/0094827 A1 claims, paragraphs [0003]-[0005], [0008], [0025]-[0050], [0069], [0134]-[0136], fig. 1-3, examples EP 2431092 A1 CN 102395428 A
JP 2014-200714 A	27.10.2014	(Family: none)
WO 2017/204008 A1	30.11.2017	EP 3466541 A1 claims, fig. 2, examples paragraphs [0001], [0006]-[0061], [0077], [0078] CN 109153014 A
JP 2019-136695 A	22.08.2019	(Family: none)
JP 6-099069 A	12.04.1994	(Family: none)
WO 2014/002667 A1	03.01.2014	US 2015/0111727 A1 examples CN 104364011 A
JP 2017-189735 A	19.10.2017	US 2017/0291163 A1 entire text, all drawings CN 107282043 A