

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/JP2019/031990

**A. CLASSIFICATION OF SUBJECT MATTER**

Int. Cl. C22C19/00 (2006.01) i, B22F1/00 (2006.01) i, B22F1/02 (2006.01) i, H01M4/38 (2006.01) i

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)

Int. Cl. C22C19/00-19/07, B22F1/00-1/02, H01M4/38-4/46

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 1971-2019  
 Registered utility model specifications of Japan 1996-2019  
 Published registered utility model applications of Japan 1994-2019

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

JSTplus/JMEDplus/JST7580 (JDreamIII)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 102569754 A (BEIJING GENERAL RESEARCH INSTITUTE FOR NONFERROUS METALS) 11 July 2012, paragraph [0008], example 1, fig. 1 (Family: none)	1-8
X	CN 101599545 A (CENTRAL IRON & STEEL RESEARCH INSTITUTE) 09 December 2009, example 2, fig. 1 (Family: none)	1-8
X	CN 1754972 A (INNER MONGOLIA XIAOKE NI-H BATTERY) 05 April 2006, example 4, fig. 4 (Family: none)	1-4, 6-8
X	JP 2004-273261 A (SANYO ELECTRIC CO., LTD.) 30 September 2004, example 4, comparative examples 1, 2, fig. 3-5 (Family: none)	1, 3, 4-8

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 21.10.2019	Date of mailing of the international search report 29.10.2019
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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.
A	JP 2007-87886 A (SANYO ELECTRIC CO., LTD.) 05 April 2007, claim 1 & US 2007/0105018 A1, claim 1 & CN 1941464 A	1-8
A	JP 2010-50011 A (GS YUASA CORP.) 04 March 2010, claim 1 (Family: none)	1-8
A	LI, Rongfeng et al., Study on the phase structures and electrochemical performances of $\text{La}_{0.6}\text{Gd}_{0.2}\text{Mg}_{0.2}\text{Ni}_{3.15-x}\text{Co}_{0.25}\text{Al}_{0.1}\text{Mn}_x$ ( $x = 0 - 0.3$ ) alloys as negative electrode material for nickel/metal hydride batteries, <i>Electrochimica Acta</i> , 10 March 2015, vol. 158, pages 89-95	1-8