

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2019/114526

A. CLASSIFICATION OF SUBJECT MATTER

B21D 22/16(2006.01)i; B21D 43/00(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)

B21C; B21D

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

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

CNABS, DWPI, SIPOABS, CNKI: 滚轧, 滚压, 旋压, 齿形, 齿型, 齿状, 齿轮, 模, 轴, 滚轮, 辊, 同步, roll+, spinning, gear, wheel, die, mould, mold, shaft, mandrel, synchronous

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 110076230 A (SOUTH CHINA UNIVERSITY OF TECHNOLOGY et al.) 02 August 2019 (2019-08-02) claims 1-10	1-10
A	CN 103191964 A (XI'AN JIAOTONG UNIVERSITY) 10 July 2013 (2013-07-10) description, paragraphs [0024]-[0030], and figure 1	1-10
A	CN 108160793 A (AEROSPACE RESEARCH INSTITUTE OF SPECIAL MATERIAL AND PROCESS TECHNOLOGY) 15 June 2018 (2018-06-15) entire document	1-10
A	CN 104942151 A (TRANS-MATIC PRECISION METAL FORMING SUZHOU CO., LTD.) 30 September 2015 (2015-09-30) entire document	1-10
A	US 2464658 A (JIRI STIVIN) 15 March 1949 (1949-03-15) entire document	1-10
A	JP 10193023 A (FUJI KIKO K. K.) 28 July 1998 (1998-07-28) entire document	1-10

 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 January 2020

Date of mailing of the international search report

06 February 2020

Name and mailing address of the ISA/CN

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2019/114526

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 110076230 A	02 August 2019	None	
CN 103191964 A	10 July 2013	CN 103191964 B	14 January 2015
CN 108160793 A	15 June 2018	CN 108160793 B	21 May 2019
CN 104942151 A	30 September 2015	CN 104942151 B	11 January 2017
US 2464658 A	15 March 1949	FR 899724 A	08 June 1945
		GB 622839 A	09 May 1949
		CH 248047 A	15 April 1947
JP 10193023 A	28 July 1998	None	