

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/JP2019/048091

**A. CLASSIFICATION OF SUBJECT MATTER**

B23K 26/53 (2014.01) i; H01L 21/02 (2006.01) i; H01L 21/304 (2006.01) i  
 FI: H01L21/304 611Z; H01L21/02 B; H01L21/304 601B; B23K26/53

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)  
 B23K26/53; H01L21/02; H01L21/304

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.
Y	JP 2006-108532 A (DISCO CORPORATION) 20.04.2006 (2006-04-20) paragraphs [0012]-[0030], fig. 1-12,	1, 12-15
A	paragraphs [0012]-[0030], fig. 1-12	2-11, 16-18
Y	JP 2016-043401 A (SHIN-ETSU POLYMER CO., LTD.) 04.04.2016 (2016-04-04) paragraphs [0019]-[0065], fig. 1-10,	1, 12-15
A	paragraphs [0019]-[0065], fig. 1-10	2-11, 16-18
Y	JP 2012-109341 A (SHIBUYA KOGYO CO., LTD.) 07.06.2012 (2012-06-07) paragraphs [0008]-[0031], fig. 1-7	1, 12-15
A	paragraphs [0008]-[0031], fig. 1-7	2-11, 16-18
A	JP 2017-204626 A (SAITAMA UNIVERSITY) 16.11.2017 (2017-11-16) entire text, all drawings	1-18

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  
 20 January 2020 (20.01.2020)

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 04 February 2020 (04.02.2020)

Name and mailing address of the ISA/  
 Japan Patent Office  
 3-4-3, Kasumigaseki, Chiyoda-ku,  
 Tokyo 100-8915, Japan

Authorized officer  
  
 Telephone No.

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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 2012-028646 A (HAMAMATSU PHOTONICS K.K.) 09.02.2012 (2012-02-09) entire text, all drawings	1-18
A	JP 2017-195244 A (DISCO CORPORATION) 26.10.2017 (2017-10-26) entire text, all drawings	1-18
A	JP 2004-111606 A (TOKYO SEIMITSU CO., LTD.) 08.04.2004 (2004-04-08) entire text, all drawings	1-18

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

International application No.  
PCT/JP2019/048091

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
JP 2006-108532 A	20 Apr. 2006	US 2006/0079155 A1 paragraphs [0027]- [0066], fig. 1-12 (Family: none)	
JP 2016-043401 A	04 Apr. 2016	(Family: none)	
JP 2012-109341 A	07 Jun. 2012	(Family: none)	
JP 2017-204626 A	16 Nov. 2017	(Family: none)	
JP 2012-028646 A	09 Feb. 2012	US 2012/0135585 A1 entire text, all drawings EP 2600390 A1 TW 201220378 A CN 103026468 A KR 10-2013- 0088746 A (Family: none)	
JP 2017-195244 A	26 Oct. 2017	(Family: none)	
JP 2004-111606 A	08 Apr. 2004	(Family: none)	