



Europäisches  
Patentamt  
European  
Patent Office  
Office européen  
des brevets

## SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number:  
EP 18 91 19 06

**Classification of the application (IPC):**  
A46B 9/02, A46B 9/04, A46B 15/00, A46D 1/00, A46B 5/02, A46B 3/22

**Technical fields searched (IPC):**  
A46B, A46D

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
X	US 2017151045 A1 (OKAI TAKAHIDE [US]) 01 June 2017 (2017-06-01) * figures 1-13, 34, 46-54, 65-73 *	1-12
X	WO 2015098695 A1 (LION CORP [JP]) 02 July 2015 (2015-07-02) * the whole document *	1-12
X	JP 2017094183 A (LEBEN HANBAI:KK) 01 June 2017 (2017-06-01) * the whole document *	1-12
X	US 2017318947 A1 (KIRCHHOFER ROGER [CH] ET AL) 09 November 2017 (2017-11-09) * the whole document *	1-12
X	JP 2003009953 A (TAIHEI KOGYO KK) 14 January 2003 (2003-01-14) * the whole document *	1-12
X	US 2006026784 A1 (MOSKOVICH ROBERT [US] ET AL) 09 February 2006 (2006-02-09) * the whole document *	1-12
A	CN 2867992 Y (ZHONG ZHAOTIAN [CN]) 14 February 2007 (2007-02-14) * the whole document *	1-12
A	US 4373541 A (NISHIOKA GARY J [US]) 15 February 1983 (1983-02-15) * the whole document *	1-12
A	US 2016015163 A1 (NEWMAN MATTHEW LLOYD [US] ET AL) 21 January 2016 (2016-01-21) * the whole document *	1-12
A	US 7503093 B2 (GEKA BRUSH GMBH [DE]) 17 March 2009 (2009-03-17)	1-12

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

Place of search The Hague	Date of completion of the search 19 October 2021	Examiner Horrix, Doerte
------------------------------	---	----------------------------

### CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone	P: intermediate document
Y: particularly relevant if combined with another document of the same category	T: theory or principle underlying the invention
A: technological background	E: earlier patent document, but published on, or after the filing date
O: non-written disclosure	D: document cited in the application
& : member of the same patent family, corresponding document	L: document cited for other reasons

Disclaimer: this document has been automatically generated using data structured in accordance with WIPO standard ST.36 from the database of search reports of the European Patent Office. For technical reasons, its content and layout may differ from that of the original publication. Only the original published information is legally binding.


**ANNEX TO SUPPLEMENTARY EUROPEAN  
SEARCH REPORT**

 Application number:  
EP 18 91 19 06

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on 19-10-2021  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2017151045	A1	01-06-2017	AU 2016362984 A1	17-05-2018
			BR 112018010448 A2	21-11-2018
			CN 108366665 A	03-08-2018
			EP 3367842 A1	05-09-2018
			JP 2018535783 A	06-12-2018
			US 2017151045 A1	01-06-2017
			US 2019380817 A1	19-12-2019
			WO 2017095735 A1	08-06-2017
WO 2015098695	A1	02-07-2015	CN 105828746 A	03-08-2016
			JP 6170835 B2	26-07-2017
			JP 2015123245 A	06-07-2015
			KR 20160103982 A	02-09-2016
			WO 2015098695 A1	02-07-2015
JP 2017094183	A	01-06-2017	JP 6239795 B2	29-11-2017
			JP 2017094183 A	01-06-2017
US 2017318947	A1	09-11-2017	BR 112013016681 A2	04-10-2016
			CN 103327847 A	25-09-2013
			CN 105495987 A	20-04-2016
			CN 105661863 A	15-06-2016
			CN 105661864 A	15-06-2016
			EP 2661191 A2	13-11-2013
			EP 3539417 A1	18-09-2019
			EP 3831242 A1	09-06-2021
			US 2013291320 A1	07-11-2013
			US 2017318947 A1	09-11-2017
			WO 2012093085 A2	12-07-2012
			JP 2003009953	A
US 2006026784	A1	09-02-2006	AU 2005307860 A1	26-05-2006
			AU 2011253542 A1	08-12-2011
			BR PI0517761 A	21-10-2008
			CA 2587840 A1	26-05-2006
			EP 1827168 A1	05-09-2007
			KR 20070086253 A	27-08-2007
			MX 349683 B	09-08-2017
			MY 150079 A	29-11-2013
			TW 200630074 A	01-09-2006
			US 2006026784 A1	09-02-2006
			US 2010275397 A1	04-11-2010
			US 2012073072 A1	29-03-2012
			WO 2006055572 A1	26-05-2006
			CN 2867992	Y



## ANNEX TO SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number:  
EP 18 91 19 06

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on 19-10-2021  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4373541	A	15-02-1983	NONE
US 2016015163	A1	21-01-2016	CA 2953250 A1 21-01-2016 CN 106488724 A 08-03-2017 EP 3169185 A1 24-05-2017 JP 6275917 B2 07-02-2018 JP 2017520330 A 27-07-2017 US 2016015163 A1 21-01-2016 US 2019014898 A1 17-01-2019 WO 2016010945 A1 21-01-2016
US 7503093	B2	17-03-2009	AP 1605 A 02-05-2006 AT 446697 T 15-11-2009 AU 8191601 A 21-01-2002 BR 0112332 A 02-09-2003 CA 2415140 A1 09-01-2003 CN 1441644 A 10-09-2003 DE 10033256 A1 24-01-2002 EP 1299017 A1 09-04-2003 ES 2333101 T3 17-02-2010 HK 1057461 A1 08-04-2004 HR P20020985 A2 28-02-2005 HU 0302917 A2 29-12-2003 JP 4674034 B2 20-04-2011 JP 2004502481 A 29-01-2004 KR 20030011927 A 11-02-2003 MA 25759 A1 01-04-2003 MX PA02012600 A 14-05-2003 PL 365630 A1 10-01-2005 SK 1722003 A3 03-06-2003 UA 73593 C2 15-08-2005 US 2003163884 A1 04-09-2003 WO 0203831 A1 17-01-2002 YU 1003 A 03-09-2004 ZA 200210090 B 12-12-2003