

SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application Number
EP 15 81 8492

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2014/066778 A1 (NISHIWAKI TSUTOMU [JP]) 6 March 2014 (2014-03-06) * claims 1, 8 * * paragraph [0054] - paragraph [0058] * * paragraph [0060] * * paragraph [0081] - paragraph [0084] * * paragraph [0091] * * paragraph [0098] * * figures 3, 4, 8-11, 13 * -----	1-7	INV. B06B1/06
A	JP 2010 165028 A (SEIKO EPSON CORP) 29 July 2010 (2010-07-29) * abstract * * claim 1 * * paragraph [0066] - paragraph [0068] * * figures 5, 6 * -----	1-7	
A	US 2013/324853 A1 (MATSUDA HIROSHI [JP]) 5 December 2013 (2013-12-05) * the whole document * -----	1-7	
A	US 2008/013405 A1 (MOON WONKYU [KR] ET AL) 17 January 2008 (2008-01-17) * the whole document * -----	1-7	TECHNICAL FIELDS SEARCHED (IPC) B06B
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 5 April 2018	Examiner Tympel, Jens
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

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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
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05-04-2018

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专利名称(译)	超声波传感器及其制造方法		
公开(公告)号	EP3169083A4	公开(公告)日	2018-05-16
申请号	EP2015818492	申请日	2015-07-09
[标]申请(专利权)人(译)	精工爱普生株式会社		
申请(专利权)人(译)	SEIKO EPSON CORPORATION		
当前申请(专利权)人(译)	SEIKO EPSON CORPORATION		
[标]发明人	KOJIMA CHIKARA		
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IPC分类号	H04R17/00 A61B8/00 G01N29/24 H01L41/09 H04R31/00		
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优先权	2014141778 2014-07-09 JP		
其他公开文献	EP3169083A1		
外部链接	Espacenet		

摘要(译)

一种超声波传感器，包括：基板，其具有至少一个开口部分18;隔膜50设置在基板上以阻挡开口部分18;多个第一电极14设置成与隔膜50的开口部分18相对，并且设置在Y方向上，并且在与Y方向正交的X方向上延伸;多个第二电极16设置成与隔膜50的开口部分18相对并且沿X方向布置，并且沿Y方向延伸;多个压电层15设置在第一电极14和第二电极16之间的至少一部分中，其中第一电极14和第二电极16彼此交叉，其中，在Z方向上正交在X方向和Y方向上，第一电极14，压电层15和第二电极16重叠的部分被称为有效部分，并且膜的范围被称为膜片50的范围。当包括一个可移动部分的单元和设置在一个可移动部分内的有源部分在平面图中被称为一个超声元件时，通过驱动有源部分可振荡被称为可移动部分，两种或更多种类型的超声波在平面图中，提供了活动部分的尺寸相对于可移动部分的尺寸彼此不同的元件。



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Category	Citation of document with indication, where appropriate, of relevant passages	Relevance to claims	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2014/056779 A1 (NISHIWAKI TSUTOMU [JP]) 6 March 2014 (2014-03-06) * claims 1, 8 * * paragraph [0054] - paragraph [0058] * * paragraph [0060] * * paragraph [0081] - paragraph [0084] * * paragraph [0098] * * Figures 3, 4, 8-11, 13 *	1-7	182 B06B1/06
A	JP 2010 165028 A (SEIKO EPSON CORP) 29 July 2010 (2010-07-29) * abstract * * claim 1 * * paragraph [0056] - paragraph [0068] * * Figures 5, 6 *	1-7	
A	US 2013/324853 A1 (MATSUDA HIROSHI [JP]) 5 December 2013 (2013-12-05) * the whole document *	1-7	
A	US 2008/013405 A1 (MOON MONKYU [KR] ET AL) 17 January 2008 (2008-01-17) * the whole document *	1-7	B06B
The supplementary search report has been based on the last version of the document available at the time of the search.			
Date of the search: 5 April 2018		Searcher: Type 1, Jens	

CATEGORY OF CITED DOCUMENTS

1	priority or patentable subject matter	1	document cited in the application
2	document cited in the application	2	document cited for other reasons
3	document cited for other reasons	3	document cited in the application
4	document cited for other reasons	4	document cited in the application
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6	document cited for other reasons	6	document cited in the application
7	document cited for other reasons	7	document cited in the application
8	document cited for other reasons	8	document cited in the application
9	document cited for other reasons	9	document cited in the application