



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**20.09.2006 Bulletin 2006/38**

(51) Int Cl.:  
**G01N 29/24** <sup>(2006.01)</sup> **B06B 1/06** <sup>(2006.01)</sup>  
**G10K 11/02** <sup>(2006.01)</sup> **B29C 35/08** <sup>(2006.01)</sup>  
**A61B 8/14** <sup>(2006.01)</sup>

(43) Date of publication A2:  
**26.03.2003 Bulletin 2003/13**

(21) Application number: **02010157.2**

(22) Date of filing: **13.05.2002**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE TR**  
Designated Extension States:  
**AL LT LV MK RO SI**

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(30) Priority: **19.09.2001 JP 2001285456**

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(54) **Ultrasonic search unit and method for producing the same**

(57) An ultrasonic search unit (20) includes a piezoelectric element for transmitting/receiving an ultrasonic wave, and an acoustic matching layer (4) for transmitting the ultrasonic wave transmitted/received by the piezoelectric element to a subject to be measured, wherein the acoustic matching layer (4) is formed of a cured layer obtained by irradiating a resin for optical forming with laser light. It also may be possible that the acoustic matching layer (4) is formed of a plurality of stacked layers, and different fillers are mixed in the respective layers, whereby the acoustic impedance of the respective layers is changed. A liquid resin for optical forming is supplied to a tank, and is cured to a predetermined shape by irradiation with laser light. Accordingly, an ultrasonic search unit (20) and a method for producing the same are provided, in which an acoustic matching layer (4) with a required thickness is formed with good precision without being bonded, whereby a variation in thickness of adhesive layers, a variation in characteristics caused by air bubbles, and degradation are unlikely to occur.

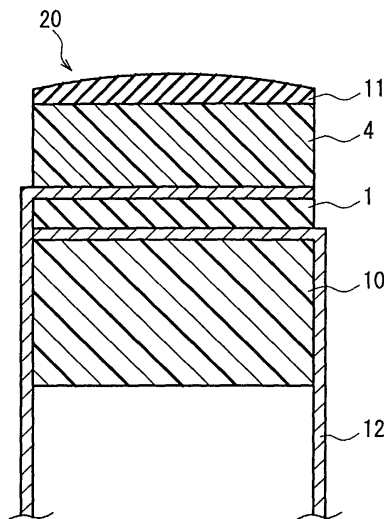


FIG. 1A

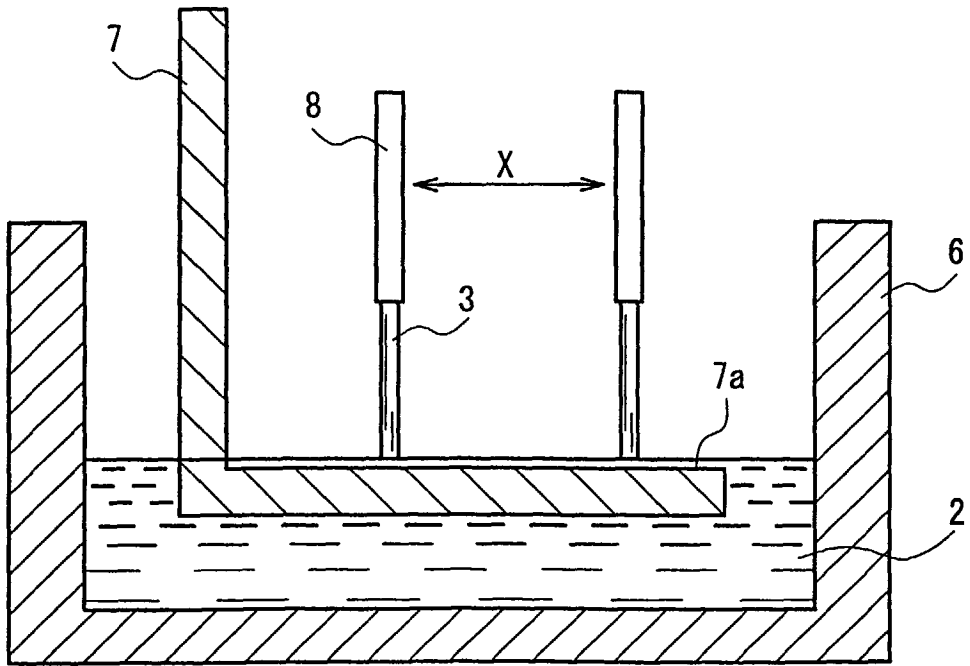


FIG. 1B



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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 974 884 A (SANO ET AL) 2 November 1999 (1999-11-02)	1-15	INV. G01N29/24 B06B1/06 G10K11/02 B29C35/08 A61B8/14
Y	* abstract; claims 1,2; figures 1,10-14C * * column 2, line 10 - column 7, line 6 * * column 10, line 50 - column 12, line 27 * *	16-20	
X	----- PATENT ABSTRACTS OF JAPAN vol. 015, no. 238 (C-0841), 19 June 1991 (1991-06-19) -& JP 03 073137 A (OLYMPUS OPTICAL CO LTD), 28 March 1991 (1991-03-28)	1-3	
Y	* abstract *	4-12	
D,X	----- PATENT ABSTRACTS OF JAPAN vol. 017, no. 285 (C-1066), 2 June 1993 (1993-06-02) -& JP 05 015530 A (TOSHIBA CORP), 26 January 1993 (1993-01-26)	1-3	
Y	* abstract *	4-12	
Y	----- US 4 523 122 A (TONE ET AL) 11 June 1985 (1985-06-11) * abstract; figures 1-12 * * column 3, line 27 - column 10, line 49 *	4-12, 16-20	TECHNICAL FIELDS SEARCHED (IPC) G01N G10K B29C A61B H04R
Y	----- PATENT ABSTRACTS OF JAPAN vol. 2000, no. 19, 5 June 2001 (2001-06-05) -& JP 2001 045596 A (OLYMPUS OPTICAL CO LTD), 16 February 2001 (2001-02-16) * abstract *	4,5	
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The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>11 August 2006</b>	Examiner <b>Uttenthaler, E</b>
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	

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EPO FORM 1503 03/02 (P04C01)

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

EP 02 01 0157

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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

11-08-2006

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	超声波搜索单元及其制造方法		
公开(公告)号	<a href="#">EP1296136A3</a>	公开(公告)日	2006-09-20
申请号	EP2002010157	申请日	2002-05-13
申请(专利权)人(译)	松下电器产业有限公司.		
当前申请(专利权)人(译)	松下电器产业株式会社		
[标]发明人	FUJI KIYOSHI KOISHIHARA YASUSHI		
发明人	FUJI, KIYOSHI KOISHIHARA, YASUSHI		
IPC分类号	G01N29/24 B06B1/06 G10K11/02 B29C35/08 A61B8/14 B29C35/02 B29C37/00 B29C67/00 G10K11/30		
CPC分类号	A61B8/14 B06B1/067 B29C35/0266 B29C35/0805 B29C37/006 B29C64/135 B29C2035/0838 B29K2105/16 B29K2995/0001 B29K2995/0064 G01N29/2437 G01N2291/02466 G01N2291/02475 G10K11/30		
代理机构(译)	法思博事务所		
优先权	2001285456 2001-09-19 JP		
其他公开文献	EP1296136A2 EP1296136B1		
外部链接	<a href="#">Espacenet</a>		

摘要(译)

超声波搜索单元 ( 20 ) 包括用于发送/接收超声波的压电元件, 以及用于将由压电元件发送/接收的超声波发送到待测对象的声学匹配层 ( 4 ), 其中声学匹配层 ( 4 ) 由通过用激光照射用于光学成形的树脂而获得的固化层形成。声匹配层 ( 4 ) 也可以由多个堆叠层形成, 并且在各个层中混合不同的填充物, 由此改变各个层的声阻抗。将用于光学成形的液态树脂供应到罐, 并通过用激光照射固化成预定形状。因此, 提供了一种超声波搜索单元 ( 20 ) 及其制造方法, 其中具有所需厚度的声匹配层 ( 4 ) 以良好的精度形成而不粘合, 由此粘合剂层的厚度变化, 由气泡引起的特性变化和降解不太可能发生。

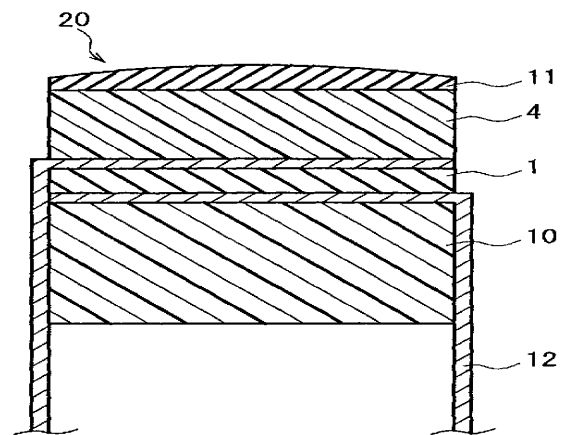


FIG. 1A