(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 882 932 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
13.08.2008 Bulletin 2008/33

(43) Date of publication A2:
30.01.2008 Bulletin 2008/05

(21) Application number: **07252948.0**

(22) Date of filing: **25.07.2007**

(51) Int Cl.:
G01N 29/06 *(2006.01)* ***G01N 29/22*** *(2006.01)*
G01S 15/89 *(2006.01)* ***G10K 11/35*** *(2006.01)*

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(30) Priority: **25.07.2006 JP 2006201513**

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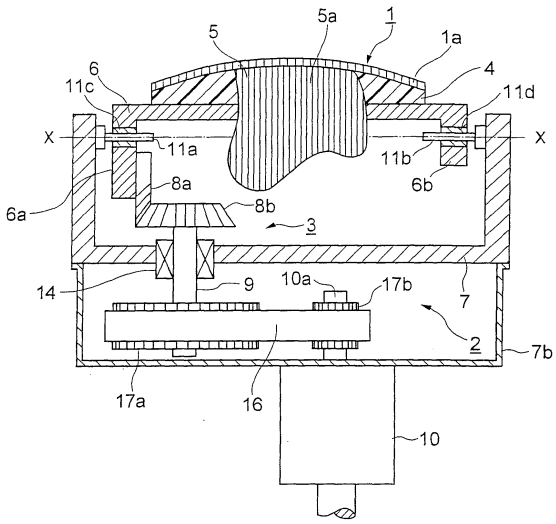
(54) **Ultrasonic probe**

(57) The present invention relates to an ultrasonic probe comprising a group of piezoelectric elements consisting of a plurality of piezoelectric elements of a narrow card shape arrayed in a long-axis direction thereof and a rotational mechanism that rotates and oscillates said group of piezoelectric elements to the left and right in a short-axis direction thereof about the center of said long-axis direction; wherein said rotational mechanism is provided with a first bevel gear having teeth in at least an arc shape, a second bevel gear meshing with said first bevel gear and rotating in the horizontal direction, and a drive motor that rotates said second bevel gear; the rotational axis of said second bevel gear and the rotational axis of said drive motor are linked by a pulley linkage using a belt; and also at least one of said first bevel gear and said second bevel gear is made of a synthetic resin. This ensures that the generation of metallic noise is suppressed, thus removing a source of discomfort, particularly to patients.

FIG. 1



EP 1 882 932 A3

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EUROPEAN SEARCH REPORT

Application Number
EP 07 25 2948

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	DE 34 05 537 A1 (POPP LOTHAR W DR MED) 22 August 1985 (1985-08-22)	2	INV. G01N29/06 G01N29/22 G01S15/89 G10K11/35
Y	* page 8, paragraph 4 - page 10, line 2; figure 2 *	1,3	
Y	US 2003/229287 A1 (FLESCH AIME [FR] ET AL) 11 December 2003 (2003-12-11) * paragraph [0026] *	1,3	
A	EP 0 233 724 A (MATSUSHITA ELECTRIC IND CO LTD [JP]) 26 August 1987 (1987-08-26) * page 2, line 3 - line 19 *	1-3	

TECHNICAL FIELDS SEARCHED (IPC)

G10K
G01S
G01N

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 July 2008	Savage, John

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
O : non-written disclosure
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D : document cited in the application
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EPO FORM 1503 03.82 (P04C01)

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 07 25 2948

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03-07-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3405537 A1	22-08-1985	NONE	
US 2003229287 A1	11-12-2003	US 2004044285 A1	04-03-2004
EP 0233724 A	26-08-1987	DE 3778179 D1	21-05-1992
		US 4913158 A	03-04-1990

EPO FORM P0459

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

专利名称(译)	超声波探头		
公开(公告)号	EP1882932A3	公开(公告)日	2008-08-13
申请号	EP2007252948	申请日	2007-07-25
[标]申请(专利权)人(译)	日本电波工业株式会社		
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IPC分类号	G01N29/06 G01N29/22 G01S15/89 G10K11/35 A61B8/00		
CPC分类号	G01N29/225 A61B8/4461 A61B8/483 G01N29/06 G01N2291/02483 G01S7/52079 G01S15/894 G10K11/355		
优先权	2006201513 2006-07-25 JP		
其他公开文献	EP1882932A2		
外部链接	Espacenet		

摘要(译)

超声波探头技术领域本发明涉及一种超声波探头，该超声波探头包括一组压电元件和一个旋转机构，该压电元件包括沿其长轴方向排列的窄卡形状的多个压电元件，该旋转机构使所述压电元件组向左旋转并振动并且在其短轴方向上绕所述长轴方向的中心;其中，所述旋转机构设置有第一锥齿轮和第二锥齿轮，所述第一锥齿轮具有至少弧形的齿，所述第二锥齿轮与所述第一锥齿轮啮合并沿水平方向旋转，所述第二锥齿轮旋转所述第二锥齿轮;所述第二锥齿轮的旋转轴线和所述驱动电机的旋转轴线通过皮带轮连杆使用皮带连接;并且所述第一锥齿轮和所述第二锥齿轮中的至少一个由合成树脂制成。这确保抑制金属噪声的产生，从而消除不舒适的来源，特别是对患者。

FIG. 1