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(54) **Ultrasonic probe and method of producing same**

(57) An ultrasonic probe comprising a housing (4), a driven shaft (2) rotatably supported by the housing (4), a transducer (1) supported by the driven shaft (2) to be swingable on one side of the driven shaft (2), a drive shaft (7) rotatably supported by the housing (4) spaced apart from and in parallel relationship with the driven shaft (2) in the predetermined direction; a drive motor (6) supported on the housing (11) and drivably connected to the drive shaft (7); and a drive belt (10) intervening between the driven shaft (2) and the drive shaft (7). The transducer (1) emits and receives ultrasound through the housing (12) in a predetermined direction. It is possible to reduce the rotation radius of the transducer independently of the size of the electric motor by spacing the rotation axes of the drive motor and the transducer in order to provide an ultrasonic probe smaller in size.

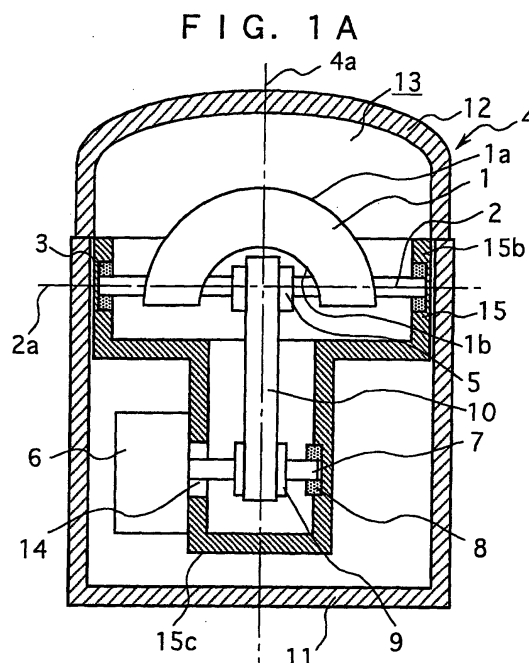
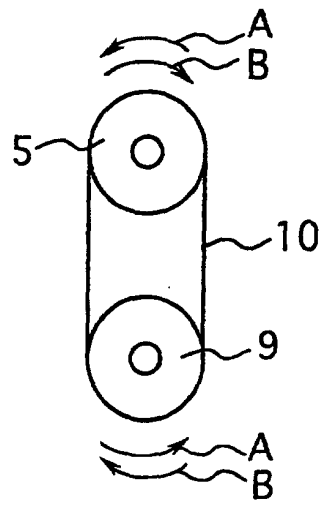


FIG. 1 B





European Patent  
Office

# EUROPEAN SEARCH REPORT

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EP 01 12 5307

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                               |                                                  |                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim                                | CLASSIFICATION OF THE APPLICATION (Int.Cl.7) |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US 4 913 158 A (KIKUCHI KOH ET AL)<br>3 April 1990 (1990-04-03)               | 1-5,12                                           | A61B8/12<br>G10K11/35                        |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | * column 2, line 61 - column 3, line 64;<br>claim 12; figures 4,5,6B *        | 13,16                                            |                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ---                                                                           |                                                  |                                              |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US 5 097 838 A (SHIMIZU YOSHIHITO ET AL)<br>24 March 1992 (1992-03-24)        | 13,16                                            |                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | * column 3, line 62 - column 4, line 37;<br>figure 5 *                        |                                                  |                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -----                                                                         |                                                  |                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                               |                                                  | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.7)      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                               |                                                  | A61B<br>G10K<br>G01S                         |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                               |                                                  |                                              |
| Place of search<br>MUNICH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                               | Date of completion of the search<br>16 July 2003 | Examiner<br>Artikis, T                       |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                               |                                                  |                                              |

EPO FORM 1503 03 82 (P04C01)

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

EP 01 12 5307

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.

16-07-2003

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|               |                                                                       |         |            |
|---------------|-----------------------------------------------------------------------|---------|------------|
| 专利名称(译)       | 超声波探头及其制造方法                                                           |         |            |
| 公开(公告)号       | <a href="#">EP1208800A3</a>                                           | 公开(公告)日 | 2003-09-10 |
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| CPC分类号        | A61B8/4461 A61B8/12                                                   |         |            |
| 优先权           | 2000350748 2000-11-17 JP                                              |         |            |
| 其他公开文献        | EP1208800B1<br>EP1208800A2                                            |         |            |
| 外部链接          | <a href="#">Espacenet</a>                                             |         |            |

#### 摘要(译)

一种超声波探头，包括壳体（4），由壳体（4）可旋转地支撑的从动轴（2），由从动轴（2）支撑的可在从动轴（2）的一侧上摆动的换能器（1），由壳体（4）可旋转地支撑的驱动轴（7）在预定方向上与从动轴（2）间隔开并平行关系；驱动电动机（6），其支撑在壳体（11）上并可驱动地连接到驱动轴（7）；传动带（10）介于从动轴（2）和驱动轴（7）之间。换能器（1）沿预定方向通过壳体（12）发射和接收超声波。通过间隔驱动电动机和换能器的旋转轴，可以与电动机的尺寸无关地减小换能器的旋转半径，以便提供尺寸更小的超声波探头。

