(54) Title: ULTRASONIC SURGICAL INSTRUMENT HAVING AN INCREASED WORKING LENGTH

(57) Abstract: The present invention is an ultrasonic surgical instrument having an altered cross sectional area and/or stiffness of 1/2 wave segments of a waveguide (20) and/or end effector. The waveguide is coupled to an ultrasonic transducer. The 1/2 wave segments of the waveguide or end effector comprise a number of geometries and function to extend or decrease the length of a waveguide and/or end effector without adding or removing wave segments. The present invention is intended to function with conventional ultrasonic transducers at conventional frequencies.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
   IPC(7) : A61B 17/32
   US Cl. : 606/169, 205
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
   Minimum documentation searched (classification system followed by classification symbols)
   U.S. : 606/169, 205
   Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
   Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 6,309,406 B2 (BEAUPRE) 30 OCTOBER 2001 (30.10.2001), COL. 3, LINE 61 TO COL. 4, LINE 2.</td>
<td>1-3</td>
</tr>
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</table>

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search: 11 May 2004 (11.05.2004)

Date of mailing of the international search report: 26 MAY 2004

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