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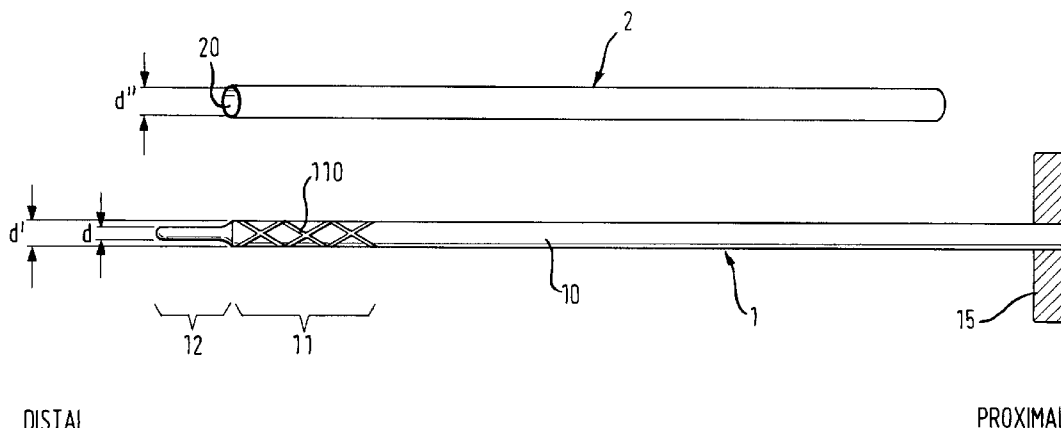
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(54) Title: A SURGICAL DRILL, A SET OF SURGICAL DRILLS, A SYSTEM FOR CUTTING BONE AND A METHOD FOR REMOVING BONE



(57) Abstract: The present invention relates to a surgical drill (1, 1') including a drill member (10) having a cutting section (11, 11', 11'') for cutting bone, said cutting section being situated at a distal end of the drill member, whereas the drill member comprises a non-cutting protection tip (12) for protecting nerves, tissue or dura from being cut, the non-cutting protection tip being situated distally of the cutting section.

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# INTERNATIONAL SEARCH REPORT

International application No PCT/EP2006/009227
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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. A61B17/16 ADD. A61B17/17            A61B17/00				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols) A61B				
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 practical, search terms used) EPO-Internal				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 5 931 841 A (RALPH CHRISTOPHER R [US]) 3 August 1999 (1999-08-03) cited in the application column 3, line 31 - line 36; figure 6	1,2,6,7, 9,10,15, 17,24,25		
Y	-----	8		
X	US 5 573 537 A (ROGOZINSKI CHAIM [US]) 12 November 1996 (1996-11-12)  column 7, line 27 - line 33; figure 16 figure 5	1-3,6,9, 10,15, 24,25		
A	-----	16		
X	EP 1 402 843 A (G C DENTAL IND CORP [JP]) 31 March 2004 (2004-03-31)  figure 3	1,2,4-6, 9,10,15, 24,25		
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<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.</td> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> See patent family annex.</td> </tr> </table>			<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.			
* Special categories of cited documents :				
*A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the International filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	** later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family			
Date of the actual completion of the international search	Date of mailing of the international search report			
10 November 2006	17/04/2007			
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  FERNANDEZ ARILLO, J			

## INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 689 125 B1 (KEITH PETER T [US] ET AL) 10 February 2004 (2004-02-10) column 21, line 56 - line 60	8
X	US 2004/131993 A1 (ROUILLER JEAN-CLAUDE [CH] ET AL) 8 July 2004 (2004-07-08)  figure 1	1,2,6, 10,16, 24,25
X	US 5 342 366 A (WHITESIDE LEO A [US] ET AL) 30 August 1994 (1994-08-30)  figure 7f	1,2,6,9, 10,15, 17,24
X	FR 2 828 397 A (AFRIAT JACQUES [FR]) 14 February 2003 (2003-02-14)  figure 7	1,2,6,9, 10,15, 24,25
X	US 5 505 732 A (MICHELSON GARY K [US]) 9 April 1996 (1996-04-09)  figures 11c,12	1,2,6,7, 15-17, 24,25
A	US 6 224 607 B1 (MICHELSON GARY K [US]) 1 May 2001 (2001-05-01) figures 35,35a,35b	1

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2006/009227

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: 34-44  
because they relate to subject matter not required to be searched by this Authority, namely:  
Pursuant to Rule 39.1(iv) PCT, the subject-matter of claims 34-44 has not been searched, since it is directed to a method for treatment of the human body by surgery (they all contain the step of introducing a pilot channel of a starting diameter into the bone, referred to as step a in claim 34).
2.  Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-10, 15-17, 24, 25

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10, 15-17, 24 and 25

A surgical drill including a non-cutting protection tip having one tapered section situated distally of one cylindrical section for enabling a good centring about the longitudinal axis of the surgical drill and helping to insert the non-cutting protection tip into a readily drilled channel in the bone structure.

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2. claims: claims 1, 11 and 12

A surgical drill including a non-cutting protection tip and a sleeve having a sleeve channel and an inner threading for engaging an outer threading of the drill member, for enabling the surgeon advance the drill member relative to the sleeve in a controlled fashion.

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3. claims: claims 1, 13, 14, 26-28

A surgical drill including a drill member having a non-cutting protection tip, said drill member comprising a guide channel in the axial direction of the drill member such that a guide wire can be inserted into the guide channel for guiding the drill member into the target position (pilot notch) in the bone.

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4. claims: claims 18-23

A set of surgical drills of different sizes, each having a diameter of the cutting section 1mm or 2 mm smaller than the next biggest one and/or 1mm or 2 mm bigger than the next smallest one for providing a progressive way of drilling in several steps.

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5. claims: claims 29-33

A system for cutting bone comprising a surgical drill including a non-cutting protection tip, specific type of needles and a working cannula for deploying surgical instruments in a controlled way.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2006/009227

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5931841	A	03-08-1999	NONE
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