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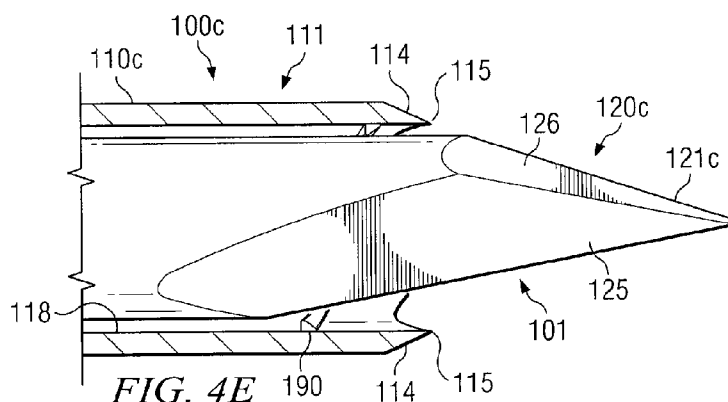
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[Continued on next page]

(54) Title: BIOPSY DEVICES AND RELATED METHODS



(57) Abstract: Apparatus and methods provided to remove biopsy specimens from bone and/or associated bone marrow. A powered driver may rotate a biopsy needle at an optimum speed to obtain the biopsy specimen. A thread or a groove may be disposed on interior portions of the biopsy needle. The thread or groove may engage a biopsy specimen and enhance removal of a bone marrow core from cancellous bone. Manufacturing procedures are provided for bonding a single helical thread with interior portions of the biopsy needle. The apparatus may also include a biopsy sample ejector and/or ejector funnel. A biopsy needle set may include a cannula and a trocar with respective tips having optimum configurations, dimensions and/or orientations relative to each other to optimize penetration of a bone and/or bone marrow with minimum patient trauma and enhanced reliability of obtaining a biopsy specimen.

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FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL,
PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM,
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2007/078204

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61B 17/16 (2008.04)

USPC - 606/80

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)

IPC(8) - A61B 17/16, 17/17, 17/24, 17/32, 17/34, 17/56; A61M 15/00 (2008.04)

USPC - 600/566, 567, 568; 604/48, 264, 506; 606/79, 80, 185

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)

PatBase

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US 2006/0036212 A1 (MILLER) 16 February 2006 (16.02.2006) entire document	15, 24 ----- 16-21, 23
X -- Y	US 2005/0165404 A1 (MILLER) 28 July 2005 (28.07.2005) entire document	22 ----- 23
X -- Y	US 6,890,308 B2 (ISLAM) 10 May 2005 (10.05.2005) entire document	25, 27, 28 ----- 26, 29
Y	US 2006/0167378 A1 (MILLER) 27 July 2006 (27.07.2006) entire document	1-14
Y	US 5,556,399 A (HUEBNER) 17 September 1996 (17.09.1996) entire document	1-9
Y	US 6,716,215 B1 (DAVID et al) 06 April 2004 (06.04.2004) entire document	5, 6
Y	US 5,558,737 A (BROWN et al) 24 September 1996 (24.09.1996) entire document	10-14
Y	US 4,543,966 A (ISLAM et al) 01 October 1985 (01.10.1985) entire document	16

☒ Further documents are listed in the continuation of Box C.

* 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 application or patent 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

"T" 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

23 April 2008

Date of mailing of the international search report

15 MAY 2008

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2007/078204

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 4,099,518 A (BAYLIS et al) 11 July 1978 (11.07.1978) entire document	17-19, 21
Y	US 5,357,979 A (IMRAN) 25 October 1994 (25.10.1994) entire document	20
Y	US 4,883,470 A (HAINDL) 28 November 1989 (28.11.1989) entire document	26, 29

INTERNATIONAL SEARCH REPORT

International application No.

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Box No. 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.:
because they relate to subject matter not required to be searched by this Authority, namely:

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 No. 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:

Group I, claims 1-14 and 22-23, drawn to an apparatus operable to obtain a biopsy sample of a bone comprising a powered driver.
Group II, claims 15-21 and 24, drawn to a biopsy needle comprising a hub having a passageway disposed in and extending from a second end of the hub toward the first end of the hub.

Group III, claims 25-29, drawn to an apparatus operable to remove a biopsy specimen comprising a funnel having a second end sized to receive the first end of an ejector.

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 additional fees, this Authority did not invite payment of additional fees.
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.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.