

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
13 January 2005 (13.01.2005)

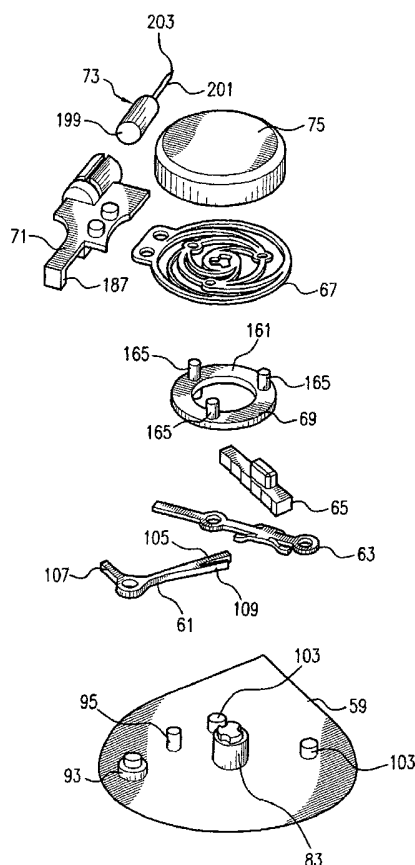
PCT

(10) International Publication Number  
WO 2005/002442 A3

- (51) International Patent Classification<sup>7</sup>: A61B 5/15
- (21) International Application Number: PCT/US2004/019804
- (22) International Filing Date: 21 June 2004 (21.06.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 10/607,957 27 June 2003 (27.06.2003) US
- (71) Applicant (for all designated States except US): ABBOTT LABORATORIES [US/US]; Dept. 377 Bldg. AP6A-1, 100 Abbott Park Road, Abbott Park, IL 60064-6008 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): MACE, Chad, H. [US/US]; 162 Greeley Street, Hudson, NH 06051 (US).
- (74) Agents: WEINSTEIN, David et al.; ABBOTT LABORATORIES, Dept. 377 Bldg. AP6A-1, 100 Abbott Park Road, Abbott Park, IL 60064-6008 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

[Continued on next page]

(54) Title: LANCING DEVICE



(57) Abstract: A lancing device is adapted for use in firing a lancet into the skin of a patient to acquire a blood sample and, subsequent thereto, calculating and displaying the concentration of glucose in the acquired sample. In one embodiment, the device comprises a lancet and a torsion spring coupled to the lancet through a lancet holder. The torsion spring includes inner, middle and outer rings which are concentrically configured, a plurality of activation spring arms which connect the middle and outer rings and a plurality of return spring arms which connect the inner and middle rings. In use, the plurality of activation and return spring arms can be independently transformed between energized and de-energized states using a single, button-shaped mechanism. Rotation of the mechanism is used to energize the activation and return spring arms. With the return spring arms maintained in their energized state, depression of the mechanism transforms the activation spring arms from their energized state to their de-energized state which drives the lancet from a retracted position to an extended position. Once the activation spring arms reach their de-energized state, the return spring arms transform from their energized state to their de-energized state which pulls the lancet back from its extended position to its retracted position.

WO 2005/002442 A3



FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:  
31 March 2005

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/019804

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61B5/15

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 7 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, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 984 940 A (DAVIS RICHARD M ET AL) 16 November 1999 (1999-11-16)	21
A	column 4, line 36 - line 42 column 6, line 26 - line 32 column 10, line 26 - column 12, line 4	1
A	----- US 5 514 152 A (SMITH ROGER E) 7 May 1996 (1996-05-07) column 3, line 55 - line 58 column 5, line 63 - column 6, line 3 column 6, line 31 - column 7, line 22 -----	1,21

 Further documents are listed in the continuation of box C. Patent family members are listed in 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

- "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

29 October 2004

Date of mailing of the international search report

10.02.2005

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

Martelli, L

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2004/019804

## 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.:  
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 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.:

1-21

Remark on Protest

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

No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No  
PCT/US2004/019804

Patent document cited in search report	A	Publication date	US	Patent family member(s)	Publication date
US 5984940	A	16-11-1999	US	6156050 A	05-12-2000
US 5514152	A	07-05-1996	AU	3323895 A	07-03-1996
			BR	9509471 A	16-09-1997
			CA	2194441 A1	22-02-1996
			EP	0777444 A1	11-06-1997
			JP	10505258 T	26-05-1998
			WO	9604857 A1	22-02-1996

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-21

lancing device comprising a torsion spring with two concentric rings  
---

2. claims: 22-25

lancing device with actuating mechanism for energising and de-energising a torsion spring  
---

3. claims: 26-37

device for analysing concentration of a blood analyte  
---