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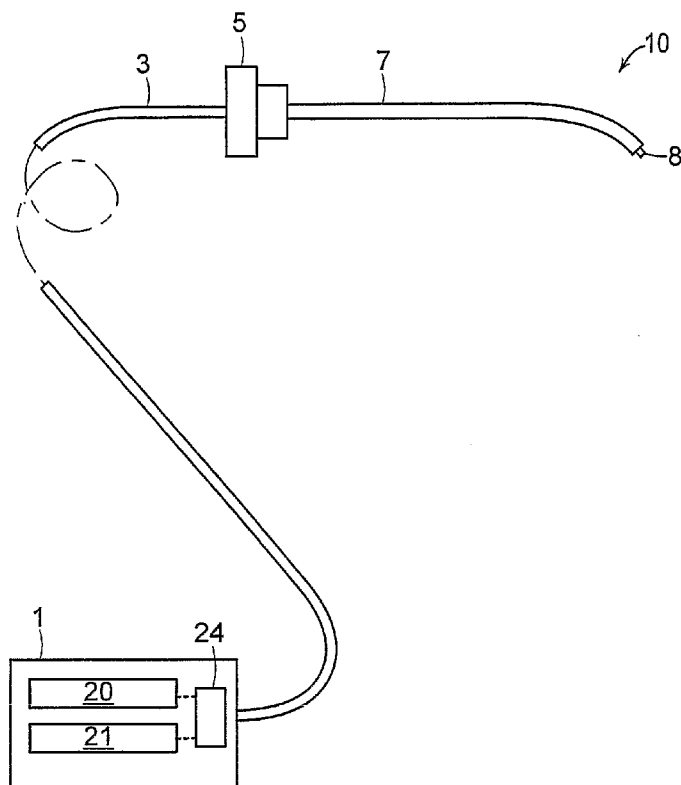
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(54) Title: SYSTEM AND METHOD FOR LASER LIPOLYSIS



(57) Abstract: A device and related method for the removal of subcutaneous adipose layers comprises a laser source; an optical fiber for conveying a laser beam emitted by the laser source; and a hollow cannula for guiding the fiber to the subcutaneous treatment area. The cannula has a curved portion at its distal end, where the curved portion can be shaped to roughly conform to the contour of the patient's body structure. In this way, laser energy from the fiber, applied to the adipose layers, is generally directed away from the lower dermis of the patient, minimizing the risk of non-reversible damage to the dermis, including skin necrosis. In another embodiment, the optical fiber is a side-firing fiber that directs the laser energy away from the dermis. In other embodiments, a radiation detector, such as a thermal or optical sensor, monitors the temperature at the surface of the skin above the treatment area to warn the operator of harmful temperatures in the lower dermis. In another embodiment, a temperature sensitive material is applied to the surface of the skin above the treatment area to warn of harmful dermal temperatures. In another embodiment, a cooling mechanism cools the surface of the skin above the treatment area to prevent damage to the dermis.

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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, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, 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).

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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/US2006/009006

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B18/22

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)
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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 103 20 984 A1 (HARRER, MANUEL) 2 December 2004 (2004-12-02) paragraph [0046] - paragraph [0049]; figure 1c	1,4-8, 13,16, 22,23,30
Y		2,3, 9-12,14, 15
Y	----- US 6 206 873 B1 (PAOLINI CESARE ET AL) 27 March 2001 (2001-03-27) the whole document	2,3,11, 12,14,15
Y	----- US 5 343 543 A (NOVAK, JR. ET AL) 30 August 1994 (1994-08-30) column 3, line 4 - line 25 ----- -/--	9,10

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

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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.</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search	Date of mailing of the international search report
10 August 2006	27 NOV 2006

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 Petter, Erwin
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/009006

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.: 34-68
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
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.:
1-16, 22, 23, 30

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: 1-16, 22, 23, 30

Device for the removal of subcutaneous adipose layers by a laser comprising a cannula with a curved distal end including a visible marker on said cannula.

2. claims: 17-21, 24-29

Device for the removal of subcutaneous adipose layers by a laser including a radiation detector or temperature sensor

3. claims: 31-33

Device for the removal of subcutaneous adipose layers by a laser including cooling means for cooling the skin

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/009006

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 495 541 A (MURRAY ET AL) 27 February 1996 (1996-02-27) column 4, line 64 - column 5, line 17 -----	22,30
A	US 6 106 516 A (MASSENGILL ET AL) 22 August 2000 (2000-08-22) abstract; figures 1,2 -----	1,22

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/009006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 10320984	A1	02-12-2004	NONE

US 6206873	B1	27-03-2001	NONE

US 5343543	A	30-08-1994	NONE

US 5495541	A	27-02-1996	NONE

US 6106516	A	22-08-2000	CA 2308290 A1 14-05-1999
			WO 9922656 A1 14-05-1999
			US 6464694 B1 15-10-2002
