



- (51) **International Patent Classification:**
A61B 18/18 (2006.01) *A61M 37/00* (2006.01)
A61B 18/20 (2006.01) *A61L 31/02* (2006.01)
- (21) **International Application Number:**
PCT/US2010/037950
- (22) **International Filing Date:**
9 June 2010 (09.06.2010)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/185,495 9 June 2009 (09.06.2009) US
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- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published: — with international search report (Art. 21(3))

[Continued on next page]

(54) **Title:** METHOD AND APPARATUS FOR DERMATOLOGICAL TREATMENT AND TISSUE RESHAPING

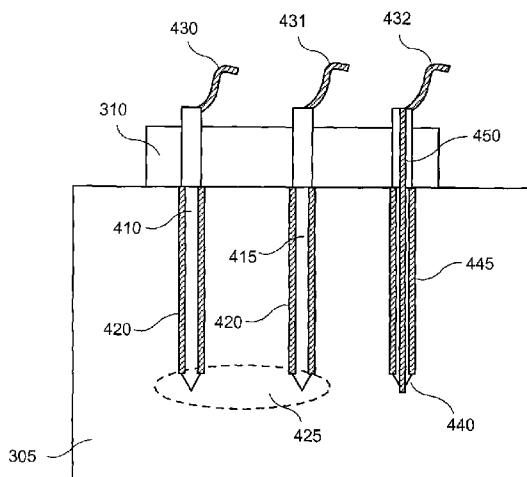


FIG. 4

(57) **Abstract:** A method and apparatus can be provided for directing a substance and electromagnetic radiation to a particular location in a biological tissue, for example, to inject and cure a cosmetic filler in situ. The apparatus can include a needle configured to be inserted into the tissue, and a waveguide configured to direct the electromagnetic radiation, such as optical energy, to a location proximal to the needle tip. The substance can be injected into the tissue through the needle and irradiated by the optical energy. In addition, the exemplary method and apparatus can be provided for determining the location of the needle tip in a biological tissue based on characteristics of light directed through the waveguide and emitted proximal to the needle tip. For example, intensity of the emitted light can indicate whether the needle tip is located inside or outside of a blood vessel.

WO 2010/144560 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
31 March 2011

A. CLASSIFICATION OF SUBJECT MATTER*A61B 18/18(2006.01)i, A61B 18/20(2006.01)i, A61M 37/00(2006.01)i, A61L 31/02(2006.01)i*

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 18/18; A61B 5/04; A61H 33/00; A61B 18/14; A61B 18/20; A61N 5/067; A61N 1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: dermatological treatment, optical energy, needle arrangement, waveguide

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	US 2009-0124958 A1 (LI KASEY K. et al.) 14 May 2009 See paragraphs 46, 47, 50, 53-56, 61, 64, claims 1, 22, figs. 8-10	1, 8, 12 14, 15 1-7, 9-11, 13, 16, 17
Y A	US 2008-0082090 A1 (DIETER MANSTEIN) 03 April 2008 See abstract, paragraphs 21, 33, 61, claims 1, 5, 16, 20, figs. 4, 5	14, 15 1-12, 16-17
A	US 2008-0312647 A1 (KNOPP PETER G. et al.) 18 December 2008 See paragraphs 62, 63, 88, 89, claims 2, 15-17, 39, figs. 2A, 4A	1-17
A	US 2007-0106143 A1 (J. FLAHERTY) 10 May 2007 See paragraphs 123, 169, 170, 172, 178, 180-182, claims 1, 4, 5, figs. 1, 2	1-17
A	US 6277116 B1 (UTELY; DAVID et al.) 21 August 2001 See abstract, col. 7 line 40-col. 9 line 45, claims 7, 8, figs. 6-8	1-17

 Further documents are listed in the continuation of Box C. 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 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 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

31 JANUARY 2011 (31.01.2011)

Date of mailing of the international search report

01 FEBRUARY 2011 (01.02.2011)

Name and mailing address of the ISA/KR


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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.: 18-23
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 18-23 are directed to a method including the steps for inserting a needle or a needle arrangement into the biological tissue. This method falls into the category of a method for treatment of the human body by surgery, therapy or diagnostic methods [Article 17(2)(a)(i), Rule 39.1(iv) PCT].
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:

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.:

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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2010/037950

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