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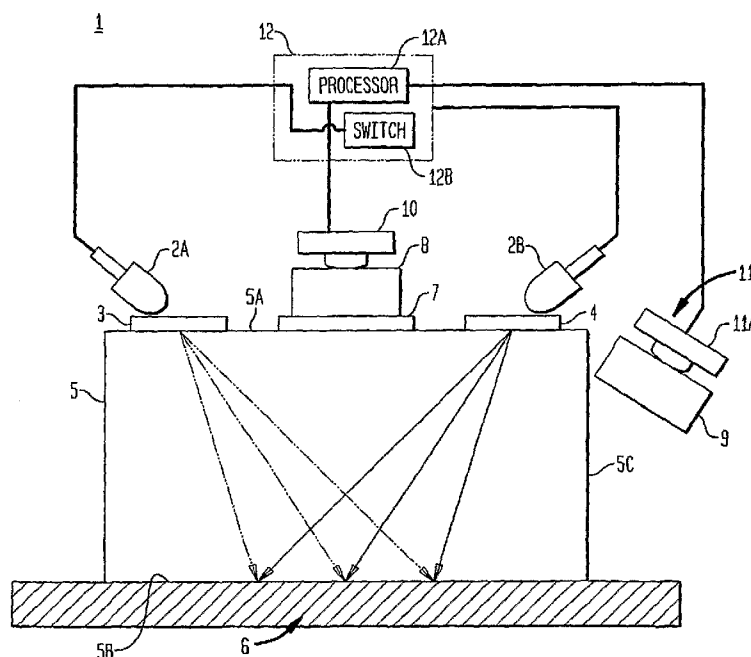
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(54) Title: SKIN OPTICAL CHARACTERIZATION DEVICE



(57) Abstract: The present invention is generally directed to dermatological devices and methods in which one or more skin characteristics, such as the melanin index, are determined by analyzing radiation backscattered from a skin region illuminated by at least one, and preferably, two or more wavelengths, e.g., in a range of about 600 nm to about 900 nm. In many embodiments, the radiation is coupled to the skin via a waveguide, and an optical sensor is employed to ascertain contact between the waveguide (e.g., a waveguide surface adapted for contact with the skin) and the skin.

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# INTERNATIONAL SEARCH REPORT

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## B. FIELDS SEARCHED

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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 A	US 6 230 044 B1 (AFANASSIEVA NATALIA I [US] ET AL) 8 May 2001 (2001-05-08)  column 2, line 31 - line 65  column 6, line 15 - column 7, line 52 figures 1,2	1-17, 24-33, 47-63 18-21, 34-46
X A	US 4 213 462 A (SATO NOBUHIRO [JP]) 22 July 1980 (1980-07-22)  column 4, line 60 - column 7, line 34  figures 2-4	1-17, 24-33, 47-63 18-21, 34-46

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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.
X	GB 2 059 054 A (OREAL) 15 April 1981 (1981-04-15) page 1, line 102 - line 110 page 3, line 68 - page 4, line 120 figure 3 -----	1,47,56, 57
X	GB 2 364 376 A (ASTRON CLINICA LTD [GB]) 23 January 2002 (2002-01-23) -----	1,12,13, 34,46, 47,56,57
A	page 2, line 7 - line 15 ----- page 4, line 20 - page 5, line 13 -----	16,17, 22-24, 43,60,61
X	EP 1 512 373 A (JOHNSON & JOHNSON CONSUMER [US]) 9 March 2005 (2005-03-09) -----	1,31-33, 47,56,57
A	page 2, paragraph 8 - page 3, paragraph 11 ----- page 4, paragraph 22 - page 5, paragraph 23 -----	8-11,23, 24, 35-40, 50,51
A	US 6 317 624 B1 (KOLLIAS NIKIFOROS [US] ET AL) 13 November 2001 (2001-11-13) ----- column 3, line 23 - line 60 -----	8-11, 35-40, 50,51
A	EP 1 535 582 A (ESPANSIONE MARKETING S P A [IT]) 1 June 2005 (2005-06-01) ----- page 3, paragraph 25 -----	8-11, 35-40, 50,51
A	GB 2 059 053 A (AIR SHIELDS) 15 April 1981 (1981-04-15) ----- page 1, line 41 - line 51 page 1, line 117 - line 130 -----	16,17, 22-24, 46,60,61
A	US 6 240 306 B1 (ROHRSCHEIB MARK [US] ET AL) 29 May 2001 (2001-05-29) ----- column 7, line 31 - line 52 -----	14,15

# INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/US2006/035927

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6230044	B1	08-05-2001	US 2002072676 A1 US 2001048077 A1	13-06-2002 06-12-2001
US 4213462	A	22-07-1980	JP 1319213 C JP 54036085 A JP 60043134 B	29-05-1986 16-03-1979 26-09-1985
GB 2059054	A	15-04-1981	DE 3034544 A1 FR 2465213 A1 US 4616933 A	02-04-1981 20-03-1981 14-10-1986
GB 2364376	A	23-01-2002	NONE	
EP 1512373	A	09-03-2005	CA 2479456 A1 US 2005049467 A1	28-02-2005 03-03-2005
US 6317624	B1	13-11-2001	NONE	
EP 1535582	A	01-06-2005	NONE	
GB 2059053	A	15-04-1981	DE 3034526 A1 JP 1182534 C JP 56052036 A JP 58014218 B US 4294263 A	02-04-1981 27-12-1983 09-05-1981 17-03-1983 13-10-1981
US 6240306	B1	29-05-2001	NONE	