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(54) Title: SKIN ANALYSIS METHODS

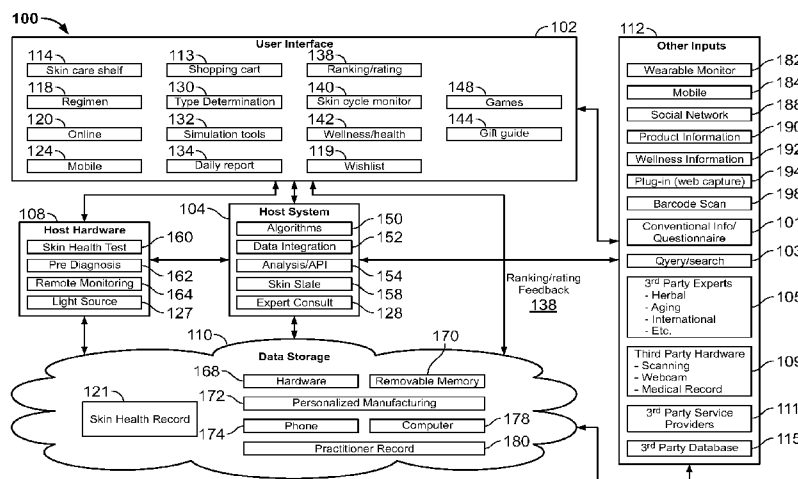


FIG. 1

(57) Abstract: The present invention generally relates to a skin care device comprising an electromagnetic radiation source capable of directing incident electromagnetic radiation to a location on the skin of a user, a radiation detector for measuring various parameters of radiation re-emitted from the location and a skin condition analysis module coupled to the detector, the analysis module capable of generating a skin condition assessment in real-time, based partly on at least one of RGB analysis and diffused reflectance analysis of the radiation parameters. In accordance with the described embodiments of the present technique, the device provides a mirror or a reflecting surface for capturing an image of desired body part and gets product recommendations. The recommended products are brought up on to the screen of the mirror to facilitate the consumer to choose there from. The device may be further connected to a computer and a database to get desired results for the consumer.

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— *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))*

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2010/021529

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G01N 21/21 (2010.01)

USPC - 600/306

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 5/00; G01N 21/17, 21/21, 21/47, 33/483 (2010.01)

USPC - 356/364, 369; 382/128; 600/306, 407, 473, 476, 556

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, Google Patents

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008/0194928 A1 (BANDIC et al) 14 August 2008 (14.08.2008) entire document	1, 5, 10, 16
X	WO 2008/086311 A2 (BANDIC et al) 17 July 2008 (17.07.2008) entire document	11-13, 15
Y	US 6,993,167 B1 (SKLADNEV et al) 31 January 2006 (31.01.2006) entire document	6
Y	US 2004/0097812 A1 (ANGILELLA) 20 May 2004 (20.05.2004) entire document	6
A	US 5,016,173 A (KENET et al) 14 May 1991 (14.05.1991) entire document	1-3, 5, 6, 10-13, 15, 16
A	US 6,622,033 B2 (MESSERSCHMIDT et al) 16 September 2003 (16.09.2003) entire document	1-3, 5, 6, 10-13, 15, 16
A	US 2007/0178067 A1 (MAIER et al) 02 August 2007 (02.08.2007) entire document	1-3, 5, 6, 10-13, 15, 16
A	US 2006/0227137 A1 (WEYRICH et al) 12 October 2006 (12.10.2006) entire document	1-3, 5, 6, 10-13, 15, 16
A	US 2002/0084417 A1 (KHALIL et al) 04 July 2002 (04.07.2002) entire document	1-3, 5, 6, 10-13, 15, 16
A	US 2008/0294012 A1 (KURTZ et al) 27 November 2008 (27.11.2008) entire document	1-3, 5, 6, 10-13, 15, 16
A	US 2007/0249913 A1 (FREEMAN et al) 25 October 2007 (25.10.2007) entire document	1-3, 5, 6, 10-13, 15, 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

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2010/021529

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:

See extra 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 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.:
1-3, 5, 6, 10-13, 15-16

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.

Continuation of Box III.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-3, 5, 6, 10-13, 15-16, drawn to a skin care device, system, computer readable medium and method comprising a skin condition analysis module coupled to a radiation detector, the analysis module capable of generating a skin condition assessment in real-time, based partly on at least one of RGB analysis and diffused reflectance analysis of the radiation parameters.

Group II, claim 4, drawn to a system comprising an antenna subsystem for transmitting electromagnetic signals and capturing images of materials illuminated with polarized and unpolarized electromagnetic signals; a first signal processing subsystem for processing the captured images and generating unique identifiers for the materials; a second signal processing subsystem for processing the electromagnetic signals transmitted from the antenna subsystem; and a combiner subsystem for combining the processed electromagnetic signals and images to generate enhanced signals.

Group III, claims 7-8, drawn to an automated location tracking and data storage system and method, comprising an image processing unit for enabling a frame by frame comparison of the captured image and for enabling the imaging device to capture three or more distinct points to triangulate a location of the imaging device to identify a direction of movement of the imaging device.

Group IV, claims 9, drawn to a method comprising obtaining a baseline skin state assessment; recommending a monitoring interval based on at least one of the skin care goal, product, and regimen; obtaining a second skin state assessment; comparing the second assessment to the baseline assessment to determine progress towards a skin care goal; and optionally, optimizing the regimen or product in order to improve a skin state.

Group V, claims 14, drawn to a method comprising obtaining the answers to a series of subjective questions regarding the skin; obtaining an objective skin analysis using a dermal imaging device; and combining the subjective and objective results algorithmically to obtain a skin state.

The inventions listed as Groups I, II, III, IV and V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention: generating a skin condition assessment in real-time, based partly on at least one of RGB analysis and diffused reflectance analysis of the radiation parameters as claimed therein is not present in the invention of Groups II, III, IV or V. The special technical feature of the Group II invention: an antenna subsystem for transmitting electromagnetic signals and capturing images of

materials illuminated with polarized and unpolarized electromagnetic signals; a first signal processing subsystem for processing the captured images and generating unique identifiers for the materials; a second signal processing subsystem for processing the electromagnetic signals transmitted from the antenna subsystem; and a combiner subsystem for combining the processed electromagnetic signals and images to generate enhanced signals as claimed therein is not present in the invention of Groups I, III, IV or V. The special technical feature of the Group III invention: capturing three or more distinct points to triangulate a location of the imaging device to identify a direction of movement of the imaging device as claimed therein is not present in the invention of Groups I, II, IV or V. The special technical feature of the Group IV invention: a baseline skin state assessment; recommending a monitoring interval based on at least one of the skin care goal, product, and regimen; obtaining a second skin state assessment; comparing the second assessment to the baseline assessment to determine progress towards a skin care goal as claimed therein is not present in the invention of Groups I, II, III or V. The special technical feature of the Group V invention: obtaining the answers to a series of subjective questions regarding the skin; obtaining an objective skin analysis using a dermal imaging device; and combining the subjective and objective results algorithmically as claimed therein is not present in the invention of Groups I, II, III or IV.

Groups I, II, III, IV and V lack unity of invention because even though the inventions of these groups require the technical feature of a skin analysis device having a dermal imaging system with an electromagnetic radiation source capable of directing radiation to a skin location, a radiation detector, a processor and a controller to image the data and analyze the results, this technical feature is not a special technical feature as it does not make a contribution over the prior art in view of WO2008/086311 A2 (BANDIC et al) 17 July 2008 (17.07.2008) paragraph [0009].

Since none of the special technical features of the Group I, II, III, IV or V inventions are found in more than one of the inventions, unity of invention is lacking.