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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

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(54) Title: APPARATUS AND METHOD FOR OPERATING A PERSONAL GROOMING APPLIANCE OR HOUSEHOLD CLEANING APPLIANCE

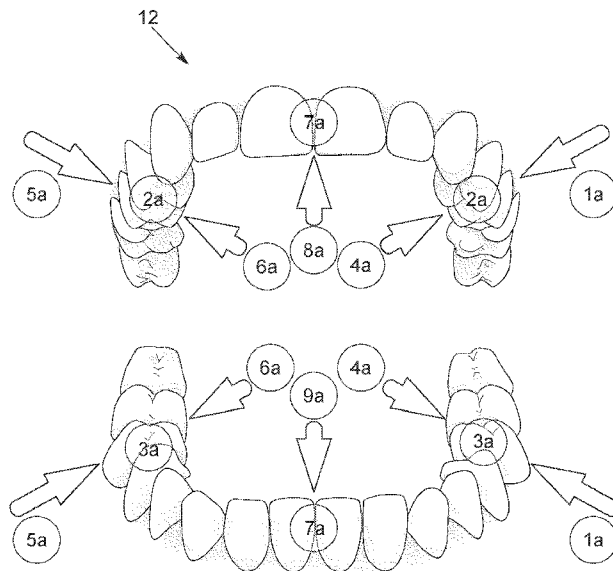


FIG. 2

(57) Abstract: A system and method for operating a personal grooming/household appliance, including: providing a personal grooming/household appliance including at least one physical sensor taken from a group consisting of: an orientation sensor, an acceleration sensor, an inertial sensor, a global positioning sensor, a pressure sensor, and a load sensor, audio sensor, humidity sensor, and a temperature sensor; providing a camera associated with the personal grooming/household appliance; classifying data received from the physical sensor and from the camera using at least one trained machine learning classifier to generate an augmented classification; and providing user feedback information based upon the augmented classification or modifying operation of the grooming/household appliance based upon the augmented classification.



HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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.

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- *with international search report (Art. 21(3))*
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2019/065320

A. CLASSIFICATION OF SUBJECT MATTER
INV. G16H20/40 G06Q10/00 G16H40/63 G16H50/20 A46B15/00
ADD.
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)
G16H G06Q A46B A61D
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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	"Method and System for Measuring Effectiveness of Tooth Brushing", IP.COM JOURNAL, IP.COM INC., WEST HENRIETTA, NY, US, 6 December 2018 (2018-12-06), XP013181263, ISSN: 1533-0001 page 1, paragraph 1 - page 2, paragraph 4 -----	1-12,14, 15
X	TAKUMA YOSHITANI ET AL: "Lumi0", PERVASIVE AND UBIQUITOUS COMPUTING, ACM, 2 PENN PLAZA, SUITE 701 NEW YORK NY 10121-0701 USA, 12 September 2016 (2016-09-12), pages 605-615, XP058279124, DOI: 10.1145/2971648.2971704 ISBN: 978-1-4503-4461-6 figures 1,2,3,7 page 605, column 2 - page 611, column 2 ----- -/--	1-12,14, 15

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	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 27 March 2020	Date of mailing of the international search report 23/06/2020
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Menschner, Philipp
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2019/065320

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2018/087627 A1 (KONINKLIJKE PHILIPS NV [NL]) 17 May 2018 (2018-05-17) paragraph [0006] - paragraph [0015] paragraph [0026] - paragraph [0065] -----	1-12,14, 15
X	US 2018/132602 A1 (GATZEMEYER JOHN [US]) 17 May 2018 (2018-05-17) paragraph [0002] - paragraph [0007] paragraph [0032] - paragraph [0071] -----	1-12,14, 15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2019/065320

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 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 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.:

1-12, 14, 15

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-12, 14, 15

A method for operating a grooming device, in particular a dental appliance

2. claim: 13

A method for operating a grooming device, in particular a shaving appliance

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2019/065320

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2018087627 A1	17-05-2018	CN 109936991 A	25-06-2019
		EP 3537929 A1	18-09-2019
		JP 2019534094 A	28-11-2019
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		WO 2018087627 A1	17-05-2018

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		CA 3037374 A1	17-05-2018
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