

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
8 December 2005 (08.12.2005)

PCT

(10) International Publication Number  
**WO 2005/115266 A3**

(51) International Patent Classification:  
A61C 3/00 (2006.01)

(21) International Application Number:  
PCT/US2005/018327

(22) International Filing Date: 24 May 2005 (24.05.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/573,690 24 May 2004 (24.05.2004) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

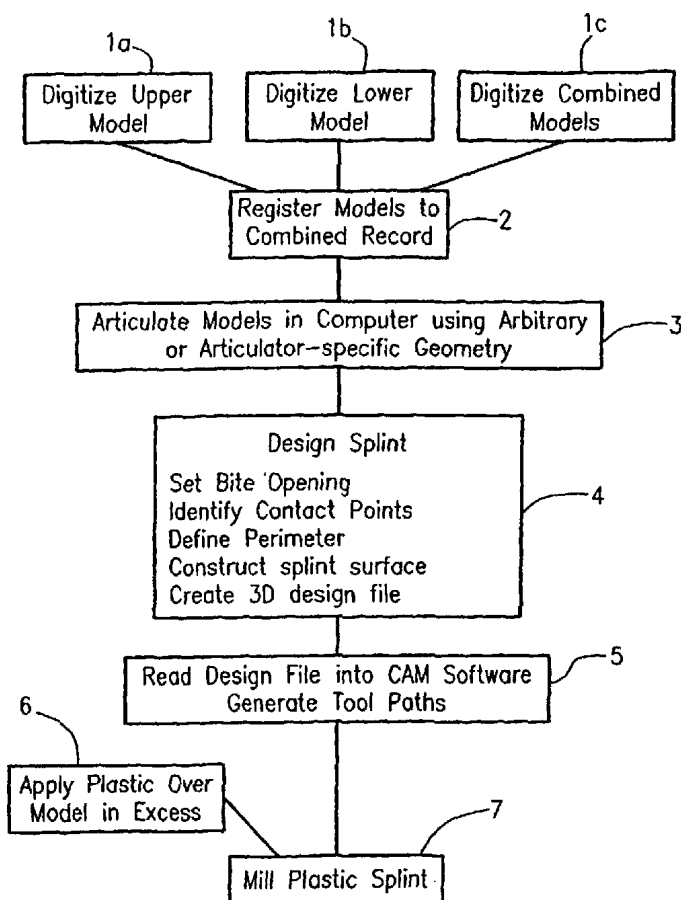
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, 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).

Published:

— with international search report

[Continued on next page]

(54) Title: DIGITAL MANUFACTURING OF REMOVABLE ORAL APPLIANCES



(57) Abstract: A digitally-based method is described for the design and production of customized removable dental appliances. The plastic component of custom appliances is designed using software, and milled directly over a plaster model of the dentition. A patient's upper, lower, and bite-registered arches are digitized, registered to a bite or centric occlusion position, and articulated in software using either an average geometry or the geometry of a specific articulator. Appliance design is performed by defining the desired plastic surfaces and margins as dictated by the relative movement and positions of the arches as functionally required for a specific appliance. Standard CAM software is used to read the design file and command a multiaxis machine center to mill the plastic while directly on a plaster model.

WO 2005/115266 A3



**(88) Date of publication of the international search report:**

2 April 2009

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/18327

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC: <b>A61C 3/00( 2006.01)</b>  USPC: <b>433/24</b> According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>  Minimum documentation searched (classification system followed by classification symbols) U.S. : 433/24  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)				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X --- Y	US 6,318,994 B1 (CHISHTI et al ) 20 November 2001 (20.11.2001), see entire document.	3, 16 ----- 1, 2, 4-15		
Y	US 6,632,089 A (RUBBERT et al) 14 October 2003 (14.10.2003), see column 29, lines 1-3)	1, 2, 4-15		
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">           * 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 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         </td> <td style="width: 50%; vertical-align: top;">           "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             "&amp;" document member of the same patent family         </td> </tr> </table>			* 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 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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Date of the actual completion of the international search 23 April 2008 (23.04.2008)		Date of mailing of the international search report <div style="text-align: center; font-weight: bold; font-size: 1.2em;">08 MAY 2008</div>		
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer Ralph Lewis Telephone No. (703) 308-0858		