

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
18 August 2005 (18.08.2005)

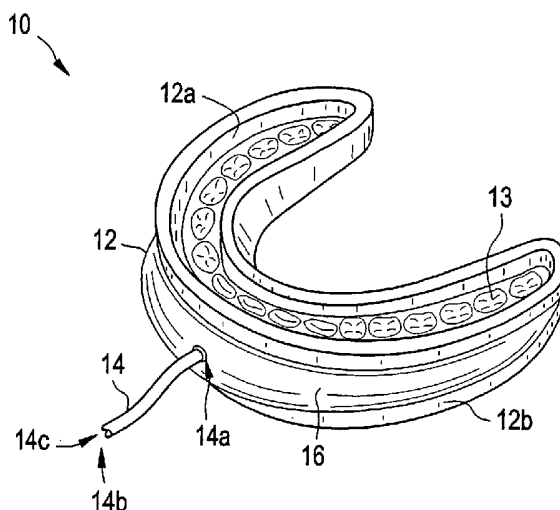
PCT

(10) International Publication Number  
WO 2005/074480 A3

- (51) International Patent Classification<sup>7</sup>: A61F 5/56
- (21) International Application Number: PCT/US2005/001339
- (22) International Filing Date: 13 January 2005 (13.01.2005)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
10/769,180 30 January 2004 (30.01.2004) US  
11/021,157 22 December 2004 (22.12.2004) US
- (71) Applicant (for all designated States except US): THE GENERAL HOSPITAL CORPORATION d/b/a MASSACHUSETTS GENERAL HOSPITAL [US/US]; 55 Fruit Street, Boston, MA 02114 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): JIANG, Yandong [CN/US]; 42 Park Street, North Reading, MA 01864 (US).
- (74) Agents: GEARY, William, C., III et al.; Nutter, McClen- nen & Fish LLP, World Trade Center West, 155 Seaport Boulevard, Boston, MA 02210-2604 (US).
- (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, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, 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: METHODS AND DEVICES FOR RELIEVING UPPER AIRWAY OBSTRUCTIONS



(57) Abstract: Methods and devices are provided that are effective to remove an obstruction in a human airway related to snoring and/or OSA. In one embodiment, the device includes a mouthpiece that is adapted to form a sealed cavity within a human mouth, and a hollow elongate member having a first end that is coupled to the mouthpiece and that is in communication with the sealed cavity, and a second end that is adapted to be coupled to a negative pressure generator. In use, a negative pressure generator can be attached to the hollow elongate member to create a negative pressure in a human mouth in response to an obstructed airway, thereby removing the obstruction. In particular, this device is effective to pull a patient's tongue and/or soft tissues of the upper airway up and away from the posterior pharyngeal wall to reopen the airway.

WO 2005/074480 A3



---

**(88) Date of publication of the international search report:**  
22 December 2005

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/01339

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(7) : A61F 5/56 US CL : 128/846, 848, 859-862 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. : 128/846, 848, 859-862 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) EAST		
<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	X US 6,494,209 (KULIK) 17 December 2002 (17.12.2002), Abstract, Figs. 1, 7 and col. 3, lines 49-67 and col. 4, lines 36-44).	1, 9-14, 17-20, 24, and 26-34
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> 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 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	Date of mailing of the international search report	
25 July 2005 (25.07.2005)	<b>18 AUG 2005</b>	
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. (703) 305-3230	Authorized officer Henry Bennett <i>Opward Bennett</i> Telephone No. 571-727-3700 <i>JS</i>	