

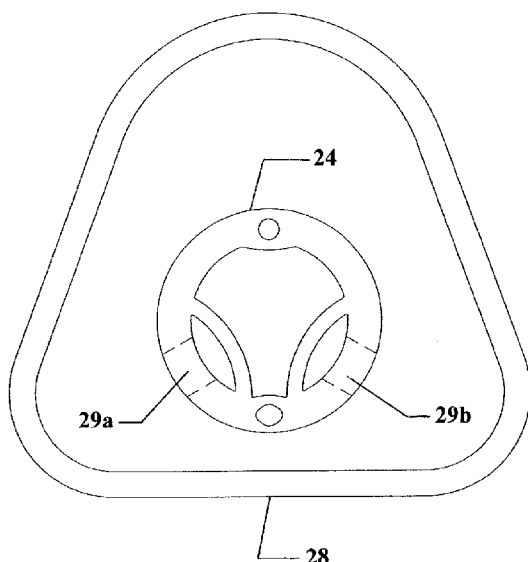


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- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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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[Continued on next page]

- (54) **Title:** ENDOTRACHEAL TUBE HAVING ONE OR MORE ANGULARLY OFFSET SUCTION APERTURES

FIG. 7



(57) **Abstract:** An endotracheal tube including a main tube with a proximal end and a distal end. An inflatable cuff is arranged on the main tube. The inflatable cuff includes a base and angled sides and is configured to generally match an anatomical shape of a trachea. At least one suction aperture is arranged in an area that is adjacent a proximal end of the cuff. At least one of the at least one suction aperture is angularly offset with respect to a plane passing through a center axis of the main tube when the main tube is bent in use configuration and the at least one suction aperture is angularly offset with respect to a plane passing through a center axis of the cuff and being perpendicular to the base of the cuff.





SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

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**INTERNATIONAL SEARCH REPORT**

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<p><b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8) - A61M 16/04 (2012.01) USPC - 128/207.15 According to International Patent Classification (IPC) or to both national classification and IPC</p>																							
<p><b>B. FIELDS SEARCHED</b></p> <p>Minimum documentation searched (classification system followed by classification symbols) IPC8 : A61M 16/04 (2012.01) USPC : 128/207.15</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched IPC8 : A61M 16/00 (2012.01) USPC : 128/200.24, 207.14</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST(PGPB,USPT,EPAB,JPAB), Google: endotracheal, ett, balloon, cuff, inflate, noncircular, noncylinder, polygon, polyhedral, triangular, tri, three, side, lobe, lumen, plural, multi, several, two, dual, aperture, opening, hole, nozzle, offset, angle, angular, radial, side, suction, vacuum, negative pressure, aspirate, evacuate, intubation</p>																							
<p><b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b></p> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>US 2008/0283052 A1 (YOUNG) 20 November 2008 (20.11.2008) see especially para [0033], [0036]-[0038], [0040], [0043]-[0046], [0048], [0056], [0059], [0063], figs 1a, 2, 3, 4, 7a-d, 8a-d, 9,10</td> <td>1-50</td> </tr> <tr> <td>Y</td> <td>US 6,722,368 B1 (SHAIKH) 20 April 2004 (20.04.2004) see especially col 2, ln 63 to col 3, ln 65, fig 1a-b</td> <td>1-50</td> </tr> <tr> <td>Y</td> <td>US 2009/0071484 A1 (BLACK et al) 19 March 2009 (19.03.2009) see especially para [0021], [0022], fig 1, 2</td> <td>10, 11, 41, 42, 43/(10, 11, 41, 42)-45/(10, 11, 41, 42), 48, 50</td> </tr> <tr> <td>Y</td> <td>US 4,607,635 A (HEYDEN) 26 August 1986 (26.08.1986) see especially col 2, ln 46-56; col 3, ln 11-23; col 3, ln 38 to col 4, ln 3, fig 1, 3</td> <td>22-38, 43/(22-38)-45/(22-38)</td> </tr> <tr> <td>A</td> <td>US 2008/0110468 A1 (NELSON et al) 15 May 2008 (15.05.2008) see whole document</td> <td>1-50</td> </tr> <tr> <td>A</td> <td>US 4,762,125 A (LEIMAN et al) 9 August 1988 (09.08.1988) see whole document</td> <td>1-50</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	Y	US 2008/0283052 A1 (YOUNG) 20 November 2008 (20.11.2008) see especially para [0033], [0036]-[0038], [0040], [0043]-[0046], [0048], [0056], [0059], [0063], figs 1a, 2, 3, 4, 7a-d, 8a-d, 9,10	1-50	Y	US 6,722,368 B1 (SHAIKH) 20 April 2004 (20.04.2004) see especially col 2, ln 63 to col 3, ln 65, fig 1a-b	1-50	Y	US 2009/0071484 A1 (BLACK et al) 19 March 2009 (19.03.2009) see especially para [0021], [0022], fig 1, 2	10, 11, 41, 42, 43/(10, 11, 41, 42)-45/(10, 11, 41, 42), 48, 50	Y	US 4,607,635 A (HEYDEN) 26 August 1986 (26.08.1986) see especially col 2, ln 46-56; col 3, ln 11-23; col 3, ln 38 to col 4, ln 3, fig 1, 3	22-38, 43/(22-38)-45/(22-38)	A	US 2008/0110468 A1 (NELSON et al) 15 May 2008 (15.05.2008) see whole document	1-50	A	US 4,762,125 A (LEIMAN et al) 9 August 1988 (09.08.1988) see whole document	1-50
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<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/></p>																							
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td style="vertical-align: top;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="vertical-align: top;"> <p>"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</p> <p>"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</p> <p>"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</p> <p>"&amp;" document member of the same patent family</p> </td> </tr> </table>			<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&amp;" document member of the same patent family</p>																			
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<p>Date of the actual completion of the international search 28 March 2012 (28.03.2012)</p>		<p>Date of mailing of the international search report <b>10 APR 2012</b></p>																					
<p>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</p>		<p>Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774</p>																					