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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, 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, PA, 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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(54) Title: A LARYNGEAL MASK

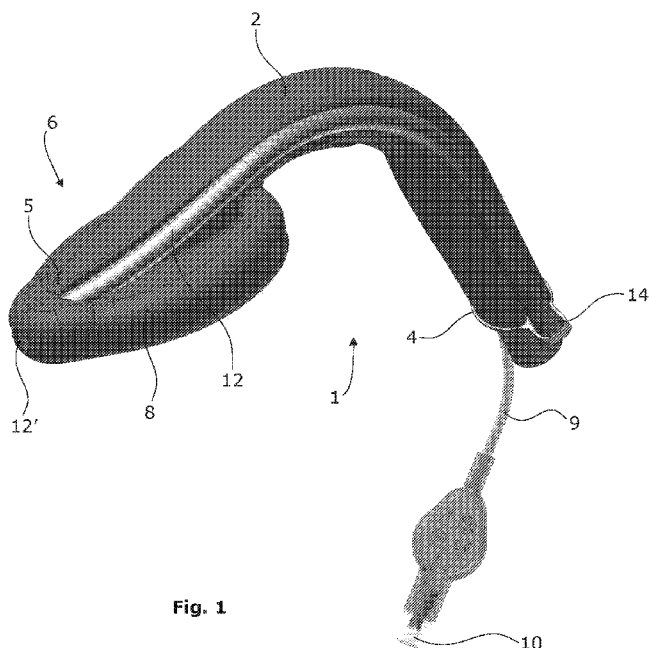


Fig. 1

(57) Abstract: A laryngeal mask (1) comprising an airway tube (2) and a mask portion (6) with an inflatable cuff (8) which is arranged around the airway tube (2) at the distal end thereof. A gastric tube (12) which extends at least partially along the outer surface of the airway tube (2), penetrates through the wall of said inflatable cuff (8) at a first location, extends through said inflatable cuff (8), and ends in a connection to an opening (12) in the wall of the cuff at a second location at the tip part of the laryngeal mask, so as to provide a passage through said circumferential cuff. With respect to a central mirror symmetry plane said gastric tube extends along the outer surface of the airway tube (2) in an asymmetrical manner, through said inflatable cuff (8) at the first location arranged asymmetrically with respect to said central plane, through said inflatable cuff (8), and ends in the connection to the wall of the cuff (8) at the second location at the tip part.



## A LARYNGEAL MASK

The present invention relates to laryngeal masks, in particular a laryngeal mask with gastric access, and more specifically a laryngeal mask comprising  
5 an airway tube having an inner lumen following a predetermined curve in a central mirror symmetry plane about which the inner lumen is generally mirror symmetrical, an outer surface, a proximal end and a distal end, a mask portion being arranged around the airway tube at the distal end thereof, the inner lumen of the airway tube thus communicating with or forming a mask lumen in said  
10 mask portion, said mask portion comprising a circumferential cuff comprising an inflatable inner volume delimited by a closed tubular wall, arranged at the periphery of the mask portion and generally surrounding said mask lumen, the circumferential cuff having a shape presenting a tip part at the distal end of the laryngeal mask, a gastric tube which extends at least partially along the outer  
15 surface of the airway tube, penetrates through said closed tubular wall at a first location, extends through said inflatable volume and ends in a connection to an opening in the closed tubular wall at a second location at the tip part, so as to provide a passage through said circumferential cuff.

Laryngeal masks are used in connection with the establishment of passage of air to the respiratory tracts, while simultaneously blocking the air passage to the oesophagus. The laryngeal mask is shaped such that it has a lumen within a mask portion arranged at the distal end of an airway tube, i.e. the end of the airway tube facing towards the laryngeal opening, when the laryngeal mask is correctly placed in a patient and the cuff inflated. Around that lumen a generally  
25 elliptical, inflatable, peripheral cuff is provided, so as to form a seal around the laryngeal opening when the laryngeal mask is correctly placed in a patient and the cuff inflated. In order to be able to inflate the cuff, an inflation tube is connected to an inflation means, such as a balloon and a valve outside the patient. Operating the inflation means allows the peripheral cuff of the laryngeal mask to  
30 be inflated thereby ensuring a tight abutment of the laryngeal mask. Using the valve, the peripheral cuff may be deflated when the laryngeal mask is no longer needed and has to be removed from the patient.

With the proviso for the generally highly flexible inflation tube the laryngeal mask disclosed in US-A-5241956 discloses a generally mirror symmetrical  
35 laryngeal mask, where the right-hand side and the left-hand side of a central plane are otherwise identical. In the following description the left-hand side and the right-hand side will be understood as corresponding to the left-hand side and

the right-hand side of the patient when the laryngeal mask is correctly inserted into the patient. Similar terms such as front and back are to be understood in corresponding sense, i.e. as they would commonly be used for the patient.

As explained in US-A-5241956 it is advantageous if the laryngeal mask  
5 is fitted with a passage for gastric access, e.g. for allowing gastric content to be evacuated or drained even though the passage to the oesophagus is blocked by the inflated cuff. Since the cuff is adapted to block the oesophagus, the passage provided as a gastric tube must pass through the cuff in order for its distal end to provide an opening in the outer surface of the cuff. In US-A-5241956 different  
10 embodiments of how to arrange the gastric tube with respect to the airway tube and how to pass it through the cuff are disclosed. As mentioned above the laryngeal mask of US-A-5241956 generally exhibits mirror symmetry, and this applies also to the disclosed arrangements of the gastric tube. In one embodiment the gastric tube extends in the central plane along the back of the airway tube all the  
15 way to the back of the inflatable cuff, and passes through the cuff in order to present an opening at the distal end of the laryngeal mask. In another embodiment the gastric tube is bifurcated extending along either side of the airway tube in mirror image symmetry, and joining in the central plane just before the gastric tube passes through the cuff in a manner similar to the first embodiment in order  
20 to present an opening at the distal end of the laryngeal mask.

Other prior art laryngeal masks, such as disclosed in US-A-4995338, US-A-5391248, US-4509514 and WO-A2004/089453, exhibit similar mirror symmetry, at least as far as the parts inserted into the patient is concerned.

Though this mirror symmetry is largely desired because the parts of the  
25 human body where the laryngeal mask is used is generally also mirror symmetrical, it does present some drawbacks in terms of manufacturing the laryngeal mask.

Based on the above it is the object of the present invention to provide a laryngeal mask overcoming the above drawbacks, while still exhibiting a large  
30 degree of symmetry.

According to a first aspect of the invention this object is achieved by a laryngeal mask comprising an airway tube having an inner lumen following a pre-determined curve in a central mirror symmetry plane about which the inner lumen is generally mirror symmetrical, an outer surface, a proximal end and a dis-  
35 tal end, a mask portion being arranged around the airway tube at the distal end thereof, the inner lumen of the airway tube thus communicating with or forming

a mask lumen in said mask portion, said mask portion comprising an circumferential cuff comprising an inflatable inner volume delimited by a closed tubular wall, arranged at the periphery of the mask portion and generally surrounding said mask lumen, the circumferential cuff having a shape presenting a tip part at the distal end of the laryngeal mask, a gastric tube which extends at least partially along the outer surface of the airway tube, penetrates through said closed tubular wall at a first location, extends through said inflatable volume, and ends in a connection to an opening the closed tubular wall at a second location at the tip part so as to provide a passage through said circumferential cuff, characterized in that, with respect to said central mirror symmetry plane, said gastric tube extends along the outer surface of the airway tube in an asymmetrical manner, through said closed tubular wall at a first location arranged asymmetrically with respect to said central plane, through said inflatable volume, and ends in a connection to the closed tubular wall at a second location at the tip part so as to provide a passage through said circumferential cuff.

With this arrangement it becomes easier to manufacture the laryngeal mask. The airway tube and the mask portion with the cuff may be moulded in one single piece. Mounting the gastric tube in this single piece is facilitated because the access to the sites where the two parts are to be joined together is improved. Moreover, this asymmetry is advantageous because even though the human body, as mentioned above, exhibits a great deal of symmetry it is not entirely symmetrical, and the entry to the esophagus is slightly off-set towards the left-hand side of the body. Consequently the asymmetry facilitates the insertion of a catheter or the like via the gastric tube into the esophagus because during insertion, the catheter is guided by the gastric tube and will therefore have a tendency to exit pointing to the left corresponding to the asymmetry of the human body at the entry of the esophagus.

According to a first preferred embodiment, said first location is arranged at the back of the tubular cuff, i.e. the part of the cuff facing towards the back of the patient, when the laryngeal mask is correctly inserted in the patient.

This allows easy insertion of the gastric tube into the cuff before it is joined with the cuff, and provides good access to the first and second locations when joining the gastric tube to the cuff by e.g. gluing.

According to another preferred embodiment, said outer surface comprises a recess adapted to accommodate the gastric tube. This allows the preservation of a great deal of overall symmetry while at the same time arranging the

gastric tube in a location where it does not press against and irritate the pharynx.

This may be further improved if, according to a further preferred embodiment, the depth of the recess varies along the length of the airway tube.

According to yet a further embodiment, the outer surface of the airway  
5 tube presents a protrusion adjacent said recess so as to increase the depth of  
said recess. This allows the relative deviations from symmetry compared to the  
dimensions of the laryngeal mask perpendicular to the mirror symmetry plane to  
be kept small where the dimensions perpendicular to the mirror symmetry plane  
are small.

10 According to a preferred embodiment, the depth variation of the recess  
comprises a salient shelf provided in an area on the outer surface of the airway  
tube corresponding to an area where the inner lumen of the airway tube transi-  
tions into the mask lumen. Using a salient shelf provides additional support of the  
gastric tube in selected places. With the additional support for the gastric tube  
15 from the salient shelf, the gastric tube itself becomes capable of providing sup-  
port for other parts of the outer wall of the airway tube. This, in turn, means the  
outer wall of the airway tube may be made much thinner. When the distal end of  
the airway tube has a taper towards the mask portion, this means that the gas-  
tric tube may be located closer to the mirror image symmetry plane, thus allow-  
20 ing the laryngeal mask to present a higher degree of symmetry even where the  
airway tube has a taper.

According to another embodiment, the short stub is provided at an angle  
adapted to point towards the side of the plane in which the aperture is off-set,  
preferably towards the aperture and recess leading to the aperture. This allows  
25 easy connection of the short stub to the gastric tube. Furthermore, this configu-  
ration ensures a better guiding of the catheter towards the entrance of esopha-  
gus.

The present invention will now be described in greater detail based on  
non-limiting exemplary embodiments and with reference to the appended draw-  
30 ings on which

fig. 1 is a perspective view of a laryngeal mask according to the inven-  
tion,

fig. 2 is a perspective view of the main body of the laryngeal mask of  
fig. 1 before assembly with the gastric tube,

35 fig. 3 is a front view of the main body of the laryngeal mask of fig. 2,

fig. 4 is a rear view of the main body of the laryngeal mask of fig. 2,

fig. 5 is a right-hand side view of the main body of the laryngeal mask of fig. 2, and

fig. 6 is a longitudinal cross section of the laryngeal mask taken along the mirror image symmetry plane indicated by line A-A in fig. 3.

5 Turning first to fig. 1, a perspective view of a laryngeal mask 1 according to the invention is shown. The laryngeal mask comprises an airway tube 2 with a predetermined curvature. As best seen in figs. 3 and 6 the airway tube 2 has an inner lumen 3 extending from the proximal end 4 of the airway tube 2 to the distal end 5 of the airway tube 2. At the distal end 5 of the airway tube 2, the  
10 airway tube 2, and hence the inner lumen 3, terminates in a somewhat acute angle and possibly flares out to form part of a mask portion 6. As can be seen in e.g. fig. 3, the inner lumen 3 of the airway tube 2 thus communicates with or forms a mask lumen 7 in the mask portion 6. Both the mask lumen 7 at the distal end of the airway tube 2 and the inner lumen 3 at the proximal end 4 of the air-  
15 way tube 2 are open, the airway tube 2 thus providing a through passage via which air may be supplied to and removed from the lungs during respiration. More specifically, the airway tube and the mask portion are configured to allow intubation of an endotracheal tube while the laryngeal mask is positioned in a patient. At the mask portion 6 a circumferential, inflatable cuff 8 is arranged so  
20 as to surround and delimit the mask lumen 7. The airway tube 2 and the mask portion 6 including the inflatable cuff 8 are preferably moulded as a single piece, the inflatable cuff 8 being formed by gluing parts thereof together subsequent to moulding. Fig. 6 shows such a single piece as moulded, i.e. before the parts thereof are glued together. As can be seen, one part of the cuff 8 has a circum-  
25 ferential bead 19. This bead 19 is adapted to be accommodated in and glued to the cuff 8 in a circumferential groove 20 so as to form an inflatable inner volume 13, which will be described below.

The inflatable cuff 8 thus comprises an inflatable inner volume 13 delimited by a closed tubular member with a closed tubular wall so as to define a generally ring shaped or toroidal inflatable inner volume, i.e. a closed tubular loop.  
30 As can be seen from e.g. fig 3, in the relaxed state, i.e. as moulded and glued, but not inflated, the cuff 8, and hence the inner volume 13, is not toroidal in a strict sense as it is neither circular in cross section of the tubular member nor in the extension along the loop formed by the tubular member. As can be seen from  
35 fig. 6, the cross-section of the inflatable cuff varies along the length of the closed loop. Moreover, as can be seen in fig. 3, the closed tubular loop is not circular,

but generally elliptical or oval, the oval taken in its literal meaning actually being pointed as an egg towards the distal end of the laryngeal mask 1. The pointed distal end of the laryngeal mask 1 thus presents a tip.

The inflatable cuff 8 may be inflated (and deflated) via an inflation tube 9 extending along one side of airway tube 2, in fig. 1 the invisible left-hand side of the airway tube 2, i.e. as explained above the side towards the left-hand side of the patient when the laryngeal mask 1 is correctly inserted into the patient. The inflation tube thus extends along the outer surface of the airway tube 2. At the distal end (not visible) of the inflation tube 9 the inflation tube 9 is in communication with the inflatable cuff 8. At the proximal end of the inflation tube 9 attachment means 10 are provided. The attachment means 10 allows suitable inflation means (not shown), such as a syringe, for inflating the cuff 8 with a suitable amount of air, to be attached to the inflation tube 9.

On the visible right-hand side of the airway tube 2 in fig. 1 a gastric tube 12 extends along the outer surface of the airway tube 2, preferably but not necessarily along the entire length thereof. At a first location towards the distal end 5 of the airway tube 2 the gastric tube 12 penetrates the tubular wall of the circumferential cuff 8. It extends through the inflatable volume 13 and ends in a connection arrangement with the tubular wall of the circumferential cuff 8 at a second location, at the tip of the laryngeal mask 1, so as to present an opening 12' at the distal end of the gastric tube 12. The connection engagement is preferably provided as a short tubular stub 15, which in assembly is inverted from the position shown in figs. 2-6 and glued to the outside of gastric tube 12 at the distal end of the gastric tube 12. The tip of the laryngeal mask 1 is adapted to engage into the oesophagus of the patient when the laryngeal mask 1 is correctly positioned in a patient. Gastric access is possible by inserting a probe, a catheter or other relevant means from the proximal end 14 of the gastric tube 12, passing it all the way through the gastric tube 12, and out of the opening 12' provided by the gastric tube 12 in the cuff 8.

The gastric tube 12 is accommodated in a recess 16 in order to maintain as much symmetry as possible. Symmetry is to be understood as mirror symmetry with respect to a central plane in about which the inner lumen 3 is generally mirror symmetric. This central plane corresponds to the longitudinal cross section in fig. 6 taken along the axis A-A in fig. 3 and fig. 4. As can be seen the airway tube 2 has an overall curvature in that central plane so as to preferably fit the anatomy of a patient and allowing correct insertion of the laryngeal mask into the

patient. The airway tube thus has an inner lumen following a predetermined curve in a central mirror symmetry plane about which the inner lumen is generally mirror symmetrical. The desire for symmetry reflects the fact that the human body generally also exhibits a large degree of mirror symmetry. Though the predetermined curvature is preferably to fit the anatomy, the skilled person will understand that the actual shape of the predetermined curvature is not of importance for the symmetry considerations of the present invention. The predetermined curvature may therefore include a straight line, e.g. if the airway tube 2 of the laryngeal mask 1 is provided with a high degree of flexibility allowing the airway tube 2 to adapt to the anatomy of the patient.

Despite this desire for symmetry it has been found that minor deviations, some of which have already been described above, will provide major advantages for the manufacturing process without compromising the overall function of the laryngeal mask 1. Thus, as described above, according to the invention, said gastric tube 12 extends along the outer surface of the airway tube 2 in an asymmetrical manner, through said closed tubular wall at a first location arranged asymmetrally with respect to said central plane, through said inflatable volume 13, and ends in a connection to the closed tubular wall at a second location at the tip part so as to provide a passage through said circumferential cuff 8.

As can best be seen in fig. 4, the cuff 8 has been manufactured with an aperture 17 in the mask portion 6. The aperture 17 is preferably provided directly in the moulding process, but evidently it would also be possible to cut it afterwards. The aperture 17 preferably has a crescent shape, i.e. like the blade of a scythe or a sickle. As can be seen, the aperture 17 is off-set with respect to the central plane, in fig. 4 to the right of the central plane. The off-set is preferably so large that the central plane does not intersect the aperture 17. Having this off-set greatly facilitates the assembly where the gastric tube 12 is inserted through the aperture 17 and glued to the short tubular stub 15 which has been inverted into the inner volume 13. Subsequently, the cuff 8 is sealed by gluing the edges of the cuff 8 at the back to the cuff 8 itself around the mask lumen 7, and by gluing the edges of the aperture 17 to the gastric tube 12. As to the stub 15 it should be noted that it is generally co-incident with the tip part of the mask portion 6 of the laryngeal mask 1, but is moulded with a slight angle with respect to the central axis A-A, as can best be seen in fig. 4. This angle is selected in such a way that when inverted, the short stub 15 points towards the side of the plane in which the aperture 17 is off-set, preferably towards the aperture and recess 16

leading to the aperture 17.

However, since for symmetry reasons the off-set of the aperture 17 should be kept small, the recess 16 cuts quite deeply into the outer surface of the airway tube 2 close to the aperture 17. Accordingly, the wall thickness of the airway tube 2 becomes very small in the area close to the aperture 17, and will not support the gastric tube 12 as well as could be desired. It has, however been found that this can be mitigated by increasing the support of the gastric tube 12 along a length of the airway tube 2 away from the aperture 17 towards the proximal end of the airway tube 2. Preferably this is done by widening the recess 16 adjacent the aperture 17 so as to form a protrusion, such as a salient shelf 18 or ledge, on which the gastric tube 17 may rest and be supported. The gastric tube 17 may be secured to the salient shelf 18 or ledge by gluing. The depth of the recess 16 varies along the length of the airway tube 2. The protrusion preferably only stretches over a relatively short length of the airway tube 2, preferably only in an area on the outer surface of the airway tube 2 corresponding to an area where the inner lumen 3 of the airway tube 2 transitions into the mask lumen 7, i.e. where the airway tube 2 has a taper towards the tip of the mask portion 6 of the laryngeal mask 1. In particular, in the area 18' adjacent the aperture 17, where the outer wall of the airway tube 2 becomes really thin, the salient shelf 18 may be made extra wide for even better support.

As a final remark, it should be noted that the present invention has been described with reference to exemplary embodiments only. The skilled person will know that numerous modifications and variations are possible without deviating from the scope of the invention.

## P A T E N T C L A I M S

1. A laryngeal mask comprising  
an airway tube having an inner lumen following a predetermined curve  
in a central mirror symmetry plane about which the inner lumen is generally mir-  
5 ror symmetrical, an outer surface, a proximal end and a distal end,  
a mask portion being arranged around the airway tube at the distal end  
thereof, the inner lumen of the airway tube thus communicating with or forming  
a mask lumen in said mask portion, said mask portion comprising a circumferen-  
tial cuff comprising an inflatable inner volume delimited by a closed tubular wall,  
10 arranged at the periphery of the mask portion and generally surrounding said  
mask lumen, the circumferential cuff having a shape presenting a tip part at the  
distal end of laryngeal mask,  
a gastric tube which extends at least partially along the outer surface of  
the airway tube, penetrates through said closed tubular wall at a first location,  
15 extends through said inflatable volume, and ends in a connection to an opening  
in the closed tubular wall at a second location at the tip part so as to provide a  
passage through said circumferential cuff, c h a r a c t e r i z e d in that  
with respect to said central mirror symmetry plane said gastric tube ex-  
tends along the outer surface of the airway tube in an asymmetrical manner,  
20 through said closed tubular wall at a first location arranged asymmetrically with  
respect to said central plane, through said inflatable volume, and ends in a con-  
nection to the closed tubular wall at a second location at the tip part so as to  
provide a passage through said circumferential cuff.
2. A laryngeal mask according to claim 1, wherein said first location is  
25 arranged at the back of the tubular cuff.
3. A laryngeal mask according to any one of the preceding claims,  
wherein said outer surface comprises a recess adapted to accommodate the gas-  
tric tube.
4. A laryngeal mask according to any one of the preceding claims,  
30 wherein the depth of the recess varies along the length of the airway tube.
5. A laryngeal mask according to any one of the preceding claims,  
wherein the outer surface of the airway tube presents a protrusion adjacent said  
recess so as to increase the depth of said recess.
6. A laryngeal mask according to any one of the preceding claims,  
35 wherein the depth variation of the recess comprises a salient shelf provided in an  
area on the outer surface of the airway tube corresponding to an area where the

inner lumen of the airway tube transitions into the mask lumen.

7. A laryngeal mask according to any one of the preceding claims, wherein the short stub is provided at an angle adapted to point towards the side of the plane in which the aperture is off-set, preferably towards the aperture and
- 5 recess leading to the aperture.

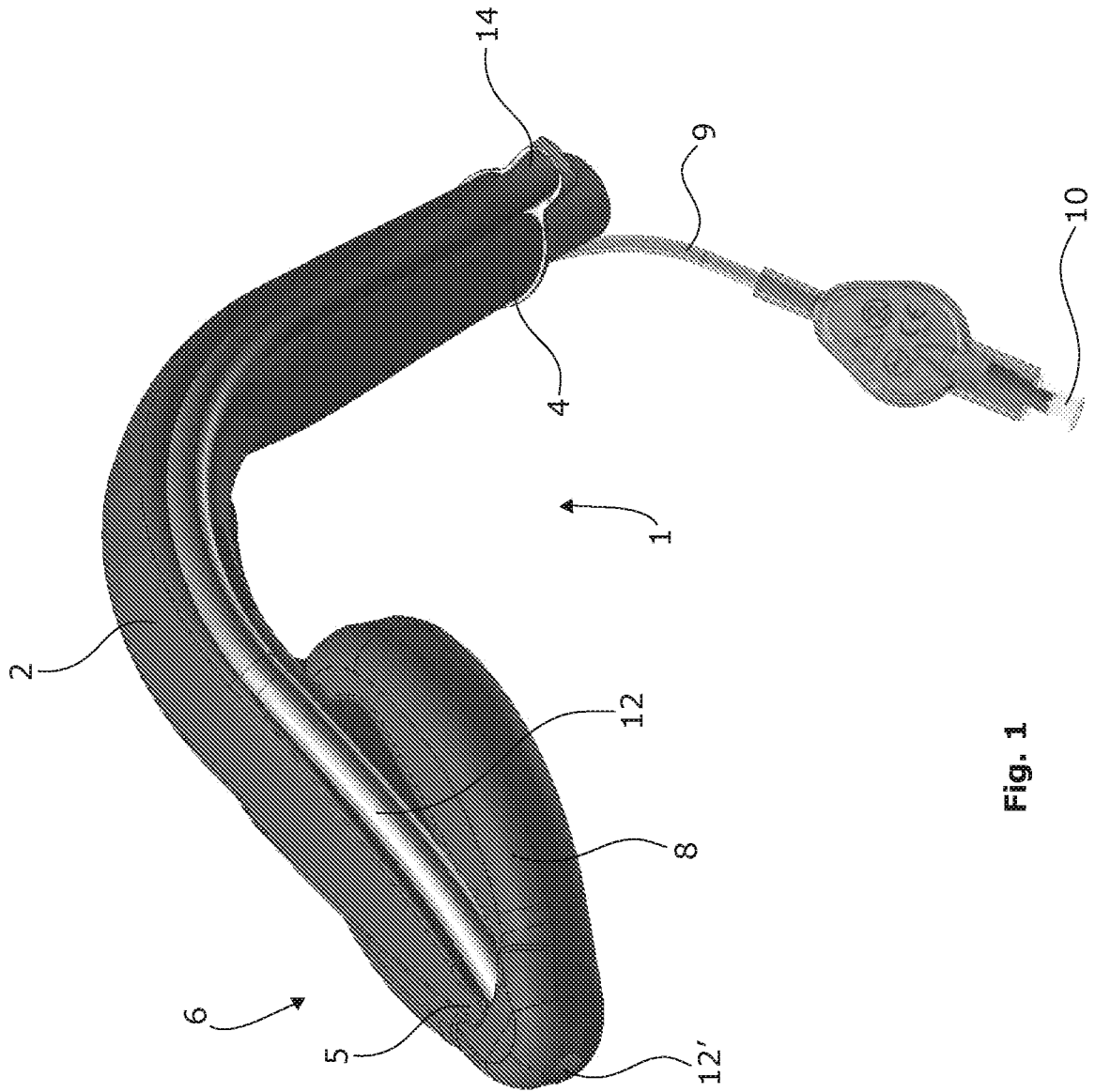


Fig. 1

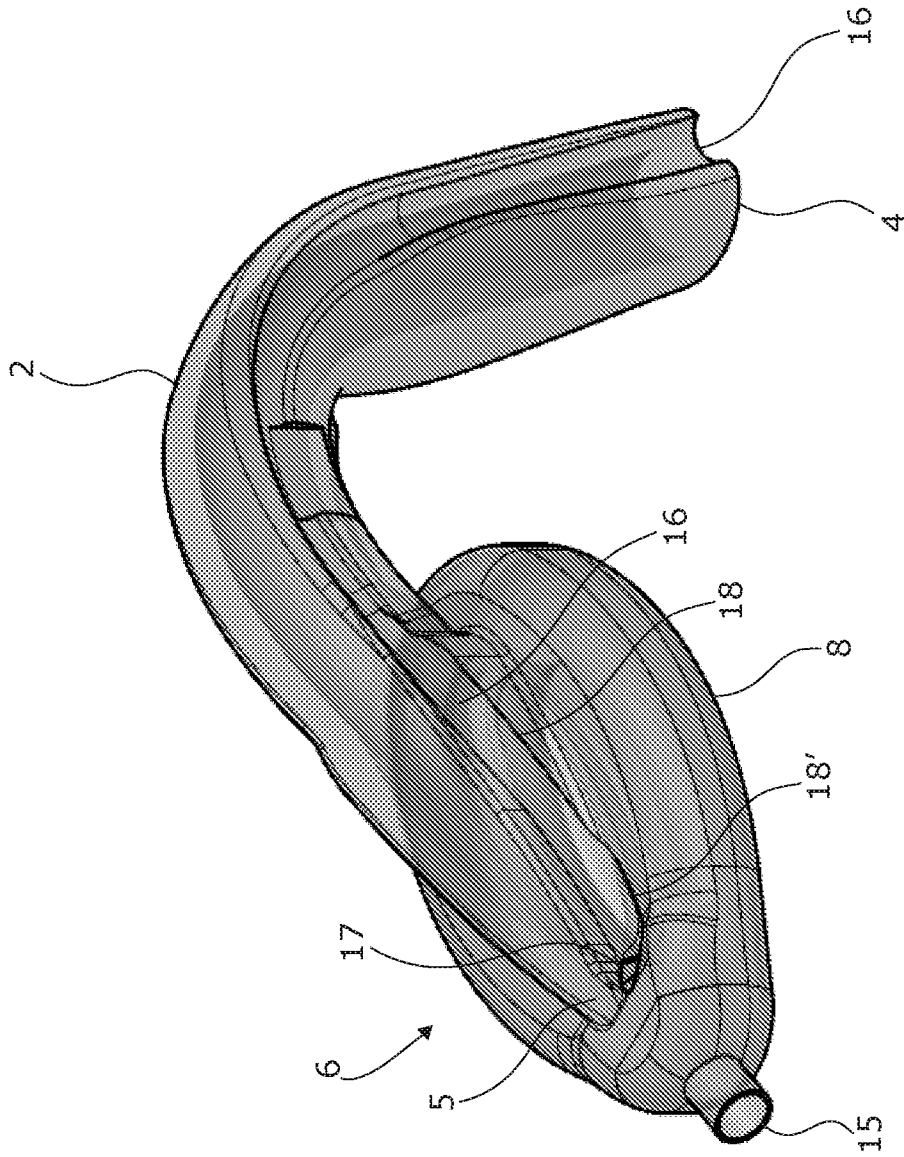


FIG. 2

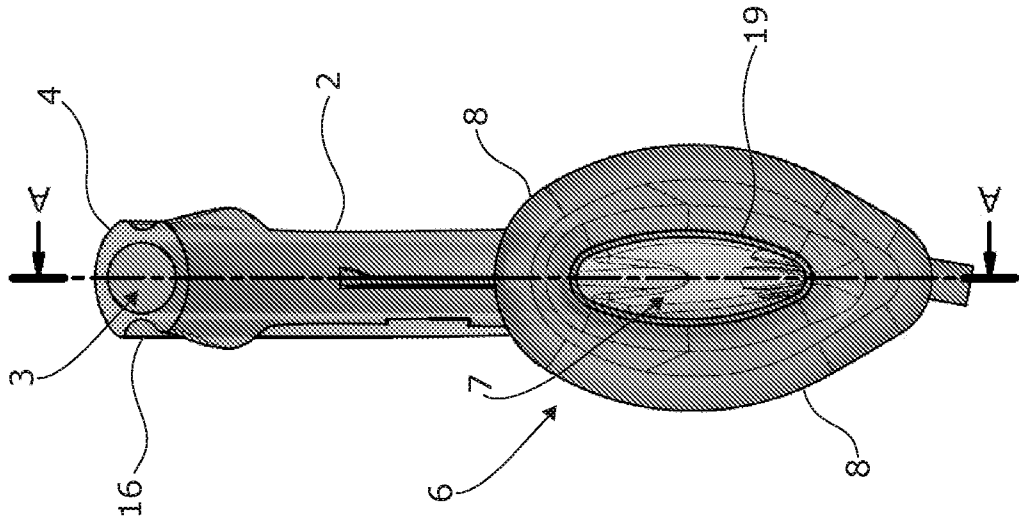


Fig. 3

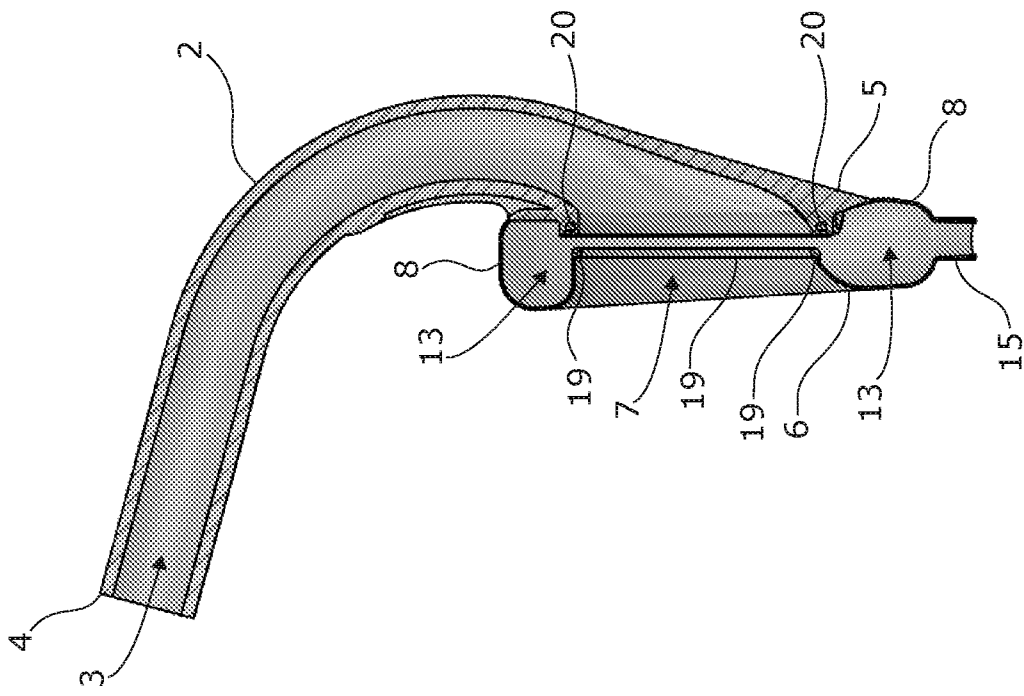


Fig. 6

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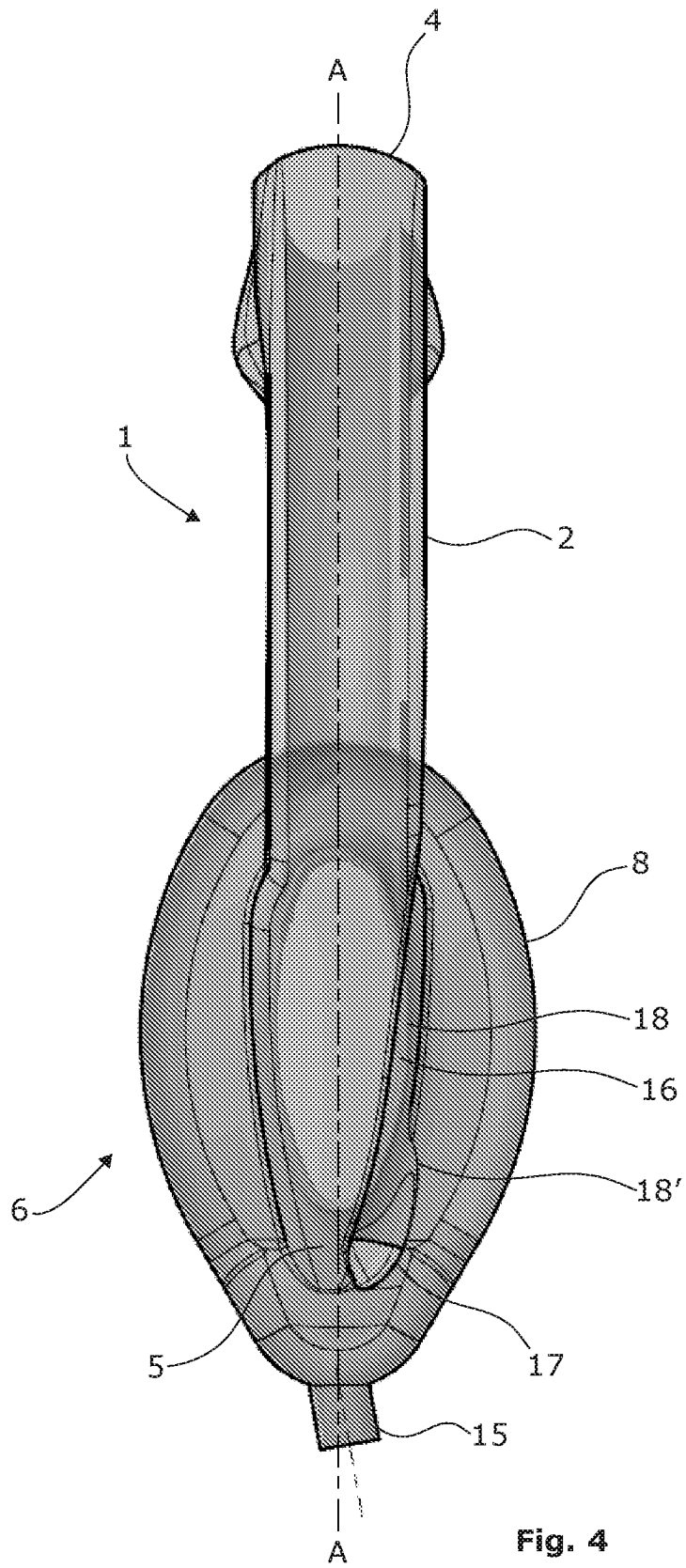


Fig. 4

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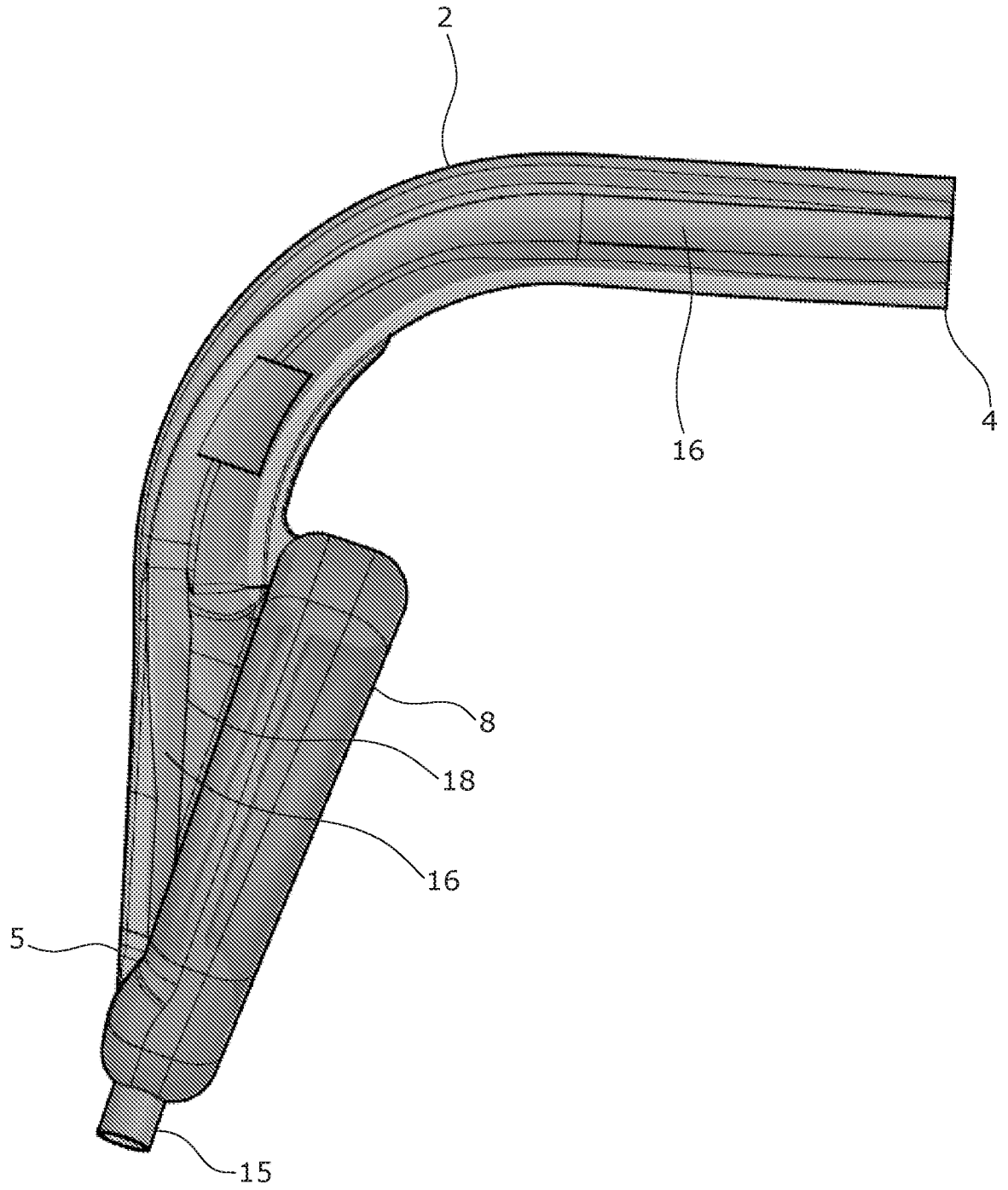


Fig. 5

INTERNATIONAL SEARCH REPORT

International application No  
PCT/DK2013/050201

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A61M16/04  
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)  
A61M

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	WO 2013/079902 A1 (LARYNGEAL MASK CO LTD [SC]; BRAIN ARCHIBALD IAN JEREMY [SC]) 6 June 2013 (2013-06-06) abstract; figures 1-7 page 5, lines 11-20 page 6, lines 7-16 page 16, lines 1-9 page 18, lines 8-22 page 19, lines 17-23	1,6,7
X	WO 2008/001724 A1 (ASAHARA TOMOHIKO [JP]) 3 January 2008 (2008-01-03) abstract; figures 1-8	1-5
A	WO 97/12640 A1 (BRAIN ARCHIBALD IAN JEREMY [GB]) 10 April 1997 (1997-04-10) the whole document	1-7
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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
- "E" earlier application or patent but published on or after the international filing date
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- "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

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- "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
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Date of the actual completion of the international search  18 March 2014	Date of mailing of the international search report  25/03/2014
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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  Moraru, Liviu
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/DK2013/050201

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2012/211010 A1 (BRAIN ARCHIBALD IAN JEREMY [SC]) 23 August 2012 (2012-08-23) the whole document	1-7
A	----- WO 2012/049448 A2 (LARYNGEAL MASK CO LTD [SC]; BRAIN ARCHIBALD IAN JEREMY [SC]) 19 April 2012 (2012-04-19) the whole document -----	1-7

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No  
PCT/DK2013/050201

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2013079902	A1	06-06-2013	NONE
-----			
WO 2008001724	A1	03-01-2008	CN 101057994 A 24-10-2007
			JP 4588789 B2 01-12-2010
			WO 2008001724 A1 03-01-2008
-----			
WO 9712640	A1	10-04-1997	AU 785497 B2 24-07-2008
			BR 9606675 A 21-10-1997
			CA 2206438 A1 10-04-1997
			CN 1166138 A 26-11-1997
			DE 69627981 D1 12-06-2003
			DE 69627981 T2 19-02-2004
			EP 0794807 A1 17-09-1997
			ES 2202473 T3 01-04-2004
			JP 3793927 B2 05-07-2006
			JP H10510462 A 13-10-1998
			MY 138519 A 30-06-2009
			TR 9700456 T1 21-10-1997
			WO 9712640 A1 10-04-1997
-----			
US 2012211010	A1	23-08-2012	AT 255446 T 15-12-2003
			AU 785499 B2 24-07-2008
			AU 5378999 A 06-03-2000
			CA 2340245 A1 24-02-2000
			DE 69913358 D1 15-01-2004
			DE 69913358 T2 09-12-2004
			DK 1104320 T3 13-04-2004
			EP 1104320 A1 06-06-2001
			ES 2214878 T3 16-09-2004
			PT 1104320 E 30-04-2004
			US 6439232 B1 27-08-2002
			US 2003051734 A1 20-03-2003
			US 2006124132 A1 15-06-2006
			US 2008060655 A1 13-03-2008
			US 2012211010 A1 23-08-2012
			WO 0009189 A1 24-02-2000
-----			
WO 2012049448	A2	19-04-2012	AU 2011315319 A1 02-05-2013
			CA 2814446 A1 19-04-2012
			CN 103221087 A 24-07-2013
			EP 2627387 A2 21-08-2013
			JP 2013543408 A 05-12-2013
			TW 201219074 A 16-05-2012
			US 2013269689 A1 17-10-2013
			WO 2012049448 A2 19-04-2012
-----			