(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 April 2010 (15.04.2010)

PCT

(10) International Publication Number
WO 2010/040350 A1

(51) International Patent Classification:
H04R 1/10 (2006.01) *H04R 25/00* (2006.01)

(21) International Application Number:
PCT/DK2008/000355

(22) International Filing Date:
10 October 2008 (10.10.2008)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant *(for all designated States except US)*: **WIDEX A/S** [DK/DK]; Nymoellevej 6, DK-3540 Lynge (DK).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **LARSEN, Tina, Ahlberg** [DK/DK]; Sjaelsoevef 24B, DK-3460 Birkeroed (DK). **OLSEN, Jorgen, Mejner** [DK/DK]; Slotsgade 29, 1st Floor, DK-3400 Hillerød (DK).

(74) Agents: **NIELSEN, Kim, Garsdal** et al.; Awapatent A/S, Rigensgade 11, DK-1316 København K (DK).

(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, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, 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 (Art. 21(3))*

WO 2010/040350 A1

(54) **Title**: A RETAINING MODULE FOR THE EARPIECE OF A HEARING AID

(57) **Abstract**: A retaining module (5) for retaining an earpiece in an ear. The retaining module (5) comprises an annular sleeve (6) having a central aperture (7) adapted for receiving and holding at least a part of the earpiece. The retaining module (5) further comprises a first retaining member (8) adapted for engaging at least a part of the concha of the ear and having a proximal end (9) connected to said annular member (6) at a first location, and a strut member (10) having a proximal end (11) con- nected to said annular member (6) at a second location, and a distal end connected (13) to the distal end (12) of said first retaining member (8).

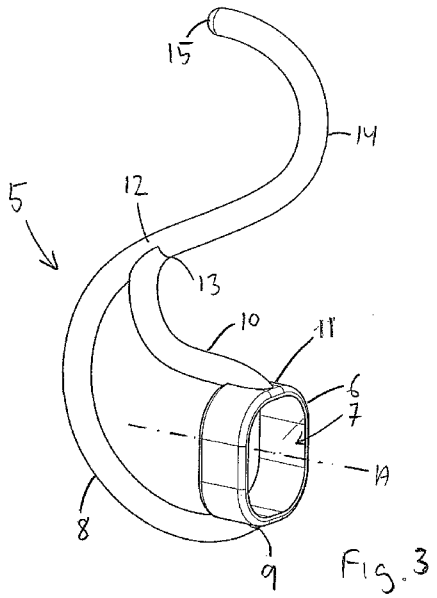

Fig. 3

A retaining module for the earpiece of a hearing aid

The present invention relates to hearing aids. The invention more specifically relates to a retaining module for retaining an earpiece in an ear, as well as to a hearing aid using such a retaining module. In particular, but not exclusively, the present invention relates to a retaining module for holding an earpiece of a hearing aid at an appropriate place in the ear, e.g. in the ear canal or in the concha of the ear.

As the name suggests, Behind-The-Ear (BTE) hearing aids are worn behind the ear. To be more precise an electronics unit comprising a housing containing the major electronics parts thereof, is worn behind the ear. An earpiece for emitting sound to the hearing aid user is worn in the ear, e.g. in the concha or the ear canal thereof. In a traditional BTE hearing aid, a sound tube is used because the output transducer, which in hearing aid terminology is normally referred to as the receiver, is located in the housing of the electronics unit. In some modern types of hearing aids a conducting member comprising electrical conductors is used, because the receiver is placed in the earpiece in the ear. Such hearing aids are commonly referred to as Receiver-In-The-Ear (RITE) hearing aids.

In particular when the earpiece is not inserted firmly in the ear canal of the hearing aid user, it is a problem to secure and keep the earpiece in the correct position in the ear.

In this respect, DE-U-29718483 discloses various embodiments of a holding device for earpieces of *inter alia* hearing aids. Generally, the various embodiments are composed of C and T shaped resilient retaining members and combinations thereof, the retaining members engaging various parts of the ear allowing the earpiece to "float" freely in the concha, i.e. with only the retaining members engaging the ear. The various embodiments are interchangeable with respect to the earpiece, but how the earpiece is in fact connected to the holding is not disclosed.

Based on this, it is the object of the present invention to provide a holding device with improved means for engaging the earpiece, improved retaining capabilities with respect to the ear and good wearing

comfort.

According to a first aspect of the invention, this object is achieved by a retaining module for retaining an earpiece in an ear, said retaining module comprising an annular sleeve having a central aperture adapted for receiving and holding at least a part of said earpiece, a first retaining member adapted for engaging at least a part of the concha of the ear, and a strut member, wherein said first retaining member has a proximal end connected to said annular member at a first location, and wherein said strut member has a proximal end connected to said annular member at a second location, and a distal end connected to the distal end of said first retaining member.

Constructing the retaining module in this way creates a closed topology, where the first retaining member and the strut member both support the annular sleeve, and thus the earpiece placed therein, thereby providing an improved resistance against dislocation or twisting of not only the retaining module itself, but also the earpiece as such, with respect to the ear.

According to a preferred embodiment, said retaining module further comprises a second retaining member adapted for engaging at least a part of the ear spaced from the concha. Having a second retaining member further improves the resistance of the retaining module itself as well as the earpiece as such, with respect to the ear.

According to a further preferred embodiment, said second retaining member has a proximal end and a distal end, the proximal end of said second retaining member being connected to the distal end of said first retaining member and to the distal end of said strut member. Thereby it is possible to effectively shape the second member to facilitate an improved engagement with said other part of the ear.

According to yet another preferred embodiment, said proximal end of said first retaining member and the proximal end of said strut member are connected to essentially diametrically opposite sides of said annular sleeve. Having these symmetrically arranged improves resistance of the retaining module against undesired movements and twisting of the earpiece, as the mass of the earpiece may be evenly distributed

on either side of the plane, in which, according to a further embodiment, the first retaining member, said second retaining member and said strut member preferably extend.

In an especially preferred embodiment, the central aperture of said annular sleeve has a longitudinal axis extending essentially in parallel with said common plane. This *inter alia* facilitates the achievement of a proper location of the mass distribution of the ear piece, but also allows the sound output port to be directed towards, but not into, the ear canal.

According to yet another preferred embodiment, said strut member has an arched section adapted for avoiding contact with the crus helicis of the ear. Avoiding contact with the crus helicis is important from a user viewpoint, as the retaining module may otherwise be uncomfortable to wear. Moreover, such curvature turns out to be advantageous when it comes to the rigidity of the retaining module in the plane.

According to a further preferred embodiment, said second retaining member is adapted for engaging at least a part of the crus antihelix of the ear. Using crus antihelix for engagement provides further resistance of the retaining module against dislocation and also allows for a simple construction of the retaining module as the second retaining member can be made as a natural extension of the first retaining member.

According to yet another preferred embodiment, said second retaining member is adapted for engaging at least a part of the fossa of helix of the ear. Using the fossa of helix for engagement provides further resistance of the retaining module against dislocation and also allows for a simple construction of the retaining module as the second retaining member can be made as a further natural extension of the second retaining member in the direction away from the first retaining member.

According to a further preferred embodiment, said second retaining member is adapted for engaging at least a part of the helix of the ear. Using the helix of the ear for engagement provides further resistance of the retaining module against dislocation and also allows for a simple construction of the retaining module as the second retaining

member can be made as a further natural extension of the second retaining member in the direction away from the first retaining member.

In yet a further preferred embodiment, the first retaining member and the second retaining member are adapted to provide a smooth transition without any discontinuity at the point where the proximal end of said second retaining member is connected to the distal end of said first retaining member. This improves wearing comfort and fits the natural curvature of those parts of the ear, which the retaining members engage.

According to a preferred embodiment, at least one of the first retaining member, the second retaining member and the strut has an essentially oval or elliptical cross-section. Having an oval or elliptical cross-section, rather than e.g. a circular one, imparts in the retaining member a propensity to flex in one plane, which stabilizes the seating and improves wearing comfort. The wearing comfort is even further improved when the distal end of the second retaining member is rounded.

Preferably, the cross-sectional dimensions of at least one of the first retaining member, the second retaining member and the strut is essentially constant over the length thereof, the largest dimension of said cross section being at least 0.5 mm, not more than 2 mm, and preferably approximately 1.5 mm. This allows the retaining members and thus the entire retaining module to appear inconspicuous.

According to another preferred embodiment, the retaining module is manufactured in one integral piece of material. This is advantageous as it furthermore allows the retaining module to be manufactured by injection moulding or transfer moulding.

According to a further preferred embodiment, the material is an elastic material with a Shore A hardness in the interval from 50 to 90, preferably approximately 80. This ensures sufficient retaining capabilities of the retaining module without compromising wearing comfort.

The invention will now be described in greater detail based on non-limiting exemplary embodiments and the appended drawings. In the drawings

fig. 1 shows a RITE hearing aid with a retaining module accord-

ing to the invention mounted on the earpiece,

fig. 2 shows a first embodiment of the retaining module according to the invention,

fig. 3 shows a second embodiment of the retaining module of the invention,

fig. 4 shows the first embodiment of the invention placed in an ear,

fig. 5 shows the second embodiment of the invention placed in an ear,

fig. 6 shows a third embodiment of the invention placed in an ear,

fig. 7 shows a fourth embodiment of the invention,

fig. 8 shows a fifth embodiment of the invention,

fig. 9 shows a RITE hearing aid with the retaining module according of fig. 7 mounted on the earpiece.

Figs. 1 and 9 both show a hearing aid 1 of the RITE type. The hearing aid 1 of Fig. 1 has a housing 2, which is shaped to be placed behind an ear. The illustrated hearing aid is of the RITE type, and it has an earpiece 3, which is connected to the electronics in the housing 1 by means of a conductor 4. The earpiece 3 is a part adapted to be placed at the auditory meatus, mainly in the concha and partially extending into the ear canal. For this purpose the earpiece 3 of Fig. 1 has a bent tubular portion leading to an ear bud. Likewise, the hearing aid 1 of Fig. 9 has a housing 2, which is shaped to be placed behind an ear. The illustrated hearing aid is of the RITE type, and it has an earpiece 3, which is connected to the electronics in the housing 1 by means of a conductor 4. The earpiece 3 is a part adapted to be placed at the auditory meatus, mainly in the concha and partially extending into the ear canal. For this purpose the earpiece 3 of Fig. 9 is held at an angle differing from that of Fig. an does thus not have a bent tubular portion, but leads instead directly into an ear bud.

The present invention, however, does not relate to these parts but to a retaining module 5 mounted on the earpiece 3. The skilled person will thus understand that it is not important whether the earpiece is

an earpiece of a BTE hearing aid 1 or a self contained hearing aid, i.e. the earpiece containing the entire hearing aid.

The retaining module 5 will now be described in greater detail with reference to various embodiments shown in the subsequent figures, where corresponding parts of different embodiments have same reference numerals.

Fig. 2 shows a first preferred embodiment of the retaining module 5 according to the invention. The retaining module 5 has an annular sleeve 6 adapted for receiving and holding at least a part of the earpiece 3 as seen in fig. 1. The annular sleeve has a central aperture 7 extending in the direction of a longitudinal axis A. The sleeve 6 receives the earpiece 3 and holds it by resilience and friction.

In a modified embodiment the sleeve is permanently joined with the earpiece by gluing or welding. In another modified embodiment the sleeve is cast integrally with an outer portion of the earpiece.

A first retaining member 8 extends from one side of the outer surface of the annular sleeve 6, the proximal end 9 of the first retaining member 8 being connected to the annular sleeve 6. Also, from the outer surface of the annular sleeve 6, a strut member 10 extends, the proximal end 11 of the strut member 10 being connected to the annular sleeve 6. Preferably, the proximal end 9 of the first retaining member 8 and the proximal end 11 of the strut member are located diametrically opposite each other on the annular sleeve 6.

The distal end 12 of the first retaining member 8 and the distal end 13 of the strut member 10 are connected to each other, so as to form a closed loop including the annular sleeve 6. In the illustrated embodiment a second retaining member 14 extends from the closed loop, the proximal end of the second retaining member being connected to both the distal end 12 of the first retaining member 8 and the distal end of the strut member. The distal end 15 of the second retaining member is free. Preferably the distal end 15 of the second retaining member is rounded to improve wearing comfort.

The first retaining member 8, the strut member 10 and the second retaining member 14, preferably all lie in the same plane. Prefera-

bly, the axis A also lies in this plane. When, as described above, the proximal end 9 of the first retaining member 8 and the proximal end 11 of the strut member 10 are located diametrically opposite each other on the annular sleeve 6, the annular sleeve 6 extends symmetrically out of the plane. Thus, the mass of the earpiece to be held in the central aperture 7 will also largely be evenly distributed on either side of the plane and thus have a reduced tendency to wobble.

Preferably the entire retaining module 5 is made as one integral piece by a suitable process such as injection moulding or transfer moulding.

The material is an elastic biocompatible material such as silicone, fluorosilicone or thermoplastic elastomere (TPE), but the skilled person will know alternative materials to these. Elastic in this context means that the material has a Shore A hardness in the interval from 50 to 90, preferably approximately 80. Lower hardness gives a softer retainer and lower bias in the seat in the ear.

Preferably, the cross-sections of the first retaining member 8, the strut member 10 and the second retaining member 14 are identical. The cross-section may be circular but is preferably oval or elliptical as this turns out to improve wearing comfort. The largest cross sectional dimension is at least 0.5 mm, at most 2 mm, and preferably approximately 1.5 mm. This renders the appearance of the retaining member quite inconspicuous, in particular when the retaining module is made of a transparent material such as silicone.

The particular dimension will be selected depending on the material and as appropriate to achieve the desired flexibility, larger cross sections yielding a sturdier retainer. One preferred embodiment has a retainer with a cross section of 1.5 mm and a material with a hardness of 80 Shore A. Another preferred embodiment has a retainer with a cross section of 2.0 mm and a material with a hardness of 40 Shore A. Still another preferred embodiment has a retainer with a cross section of 1.0 mm and a material with a hardness of 65 Shore D, equivalent to more than 90 Shore A. In still other embodiments the cross section could be varied along the length to adapt the bias force on the ear.

Fig. 3 illustrates a second embodiment of the retaining module according to the invention. It differs however only from the embodiment of fig. 2 in that the second retaining member is longer. The reason for this will be explained further below.

Turning now to Fig. 4, it can be seen that the first retaining member 8 has a curvature, which adapts it for engaging the concha 16 of the ear, more specifically the edge thereof. It can also be seen that the strut member 10 has a curvature in the same direction. The curvature of the strut member has two functions. One is to provide a spring bias for keeping the distal end 9 and proximal end 12 of the first retaining member at fixed positions with respect to each other. Thus, when inserting the retaining module 5 in the concha 16 the distal end 12 and the proximal end 9 are pressed towards each other. At the same time the distal end 12 and the proximal end 11 of the strut member 10 are also pressed towards each other. When released in the ear, the inherent elastic properties of the first retaining member 8 will try to return it to its natural relaxed shape, thereby forcing it into engagement with the concha 16 of the ear. The same happens for the strut member 10, which creates a bias because the distal end 13 is connected to the distal end 12 of the first retaining member 8, and because the proximal end 11 is connected to the proximal end 9 of the first retaining member 8 via the annular sleeve 6, which in comparison is rigid, because of the earpiece inserted therein. The strut member 10 thus aids in forcing the first retaining member 8 into engagement with the concha 16 of the ear. The other reason for the curvature is to avoid contact between the strut member 10 and the crus helicis 17 of the ear, so as improve wearing comfort.

To further improve the engagement with the concha 16, the second retaining member 14 is adapted to provide a smooth extension of the first retaining member 8, and has a curvature allowing it to press slightly against the concha 16 in the inserted position.

As can be seen from fig. 5, the second retaining member 14 may extend further allowing it to engage the helix 18 of the ear or the adapted for engaging at least a part of the crus antihelix 19 of the ear, preferably in the fossa of helix 20 of the ear, where it can lie in an incon-

spicuous way.

As can be seen in fig. 6, the second retaining member 14 may be bent backwardly in shape, so as to point in the opposite direction when it is in engagement with the concha 16 of the ear, as compared to fig. 4.

In a further variant (not shown), the second retaining member 14 may also have a backwardly bent shape so as to emerge from the fossa of helix 19 into the fossa triangularis 21.

Figs. 7 and 8 show different embodiments of the invention suited for earpieces that are adapted for a seat somewhat deeper in the auditory canal. The embodiments of figs. 7 and 8 essentially differ only from the previously described embodiments in that the annular sleeve 6 has been turned 90 degrees, that is the central axis A of the annular sleeve is perpendicular to the plane in which the first retaining member 8, the second retaining member 14 and the strut member 10 lie. Accordingly, all other features of the previously described embodiments may freely be implemented in these embodiments too.

Having the central axis A at a different angle facilitates the use of other types of earpieces than the above-mentioned "floating" earpieces, e.g. earpieces 3 comprising earplugs as illustrated in fig. 9 adapted to be inserted into the ear canal of the user.

The present invention has now been explained based on illustrative exemplary embodiments. The skilled person will know, however, that numerous modifications are possible within the scope of invention as set out in the claims, e.g. in terms of shapes and dimensions but also choice of materials and material properties.

PATENT CLAIMS

1. A retaining module for retaining an earpiece in an ear,

said retaining module comprising

an annular sleeve having a central aperture adapted for receiving and holding at least a part of said earpiece,

a first retaining member adapted for engaging at least a part of the concha of the ear, and

a strut member,

wherein said first retaining member has a proximal end connected to said annular member at a first location, and

wherein said strut member has a proximal end connected to said annular member at a second location, and a distal end connected to the distal end of said first retaining member.

2. A retaining module according to claim 1, further comprising a second retaining member adapted for engaging at least a part of the ear spaced from the concha.

3. A retaining module according to claim 2, wherein said second retaining member has a proximal end and a distal end, the proximal end of said second retaining member being connected to the distal end of said first retaining member and to the distal end of said strut member.

4. A retaining module according to any one of the preceding claims, wherein said proximal end of said first retaining member and the proximal end of said strut member are connected to essentially diametrically opposite sides of said annular sleeve.

5. A retaining module according to any one of the preceding claims, wherein said first retaining member, said second retaining member and said strut member essentially extend in one common plane.

6. A retaining module according to claim 5, wherein said central aperture of said annular sleeve has a longitudinal axis extending essentially in parallel with said common plane.

7. A retaining module according to any one of the preceding claims, wherein said strut member has an arched section adapted for avoiding contact with the crus helicis of the ear.

8. A retaining module according to any one of claims 3 to 7,

wherein said second retaining member is adapted for engaging at least a part of the crus antihelix of the ear.

9. A retaining module according to any one of claims 3 to 8, wherein said second retaining member is adapted for engaging at least a part of the fossa of helix of the ear.

10. A retaining module according to any one of claims 3 to 9, wherein said second retaining member is adapted for engaging at least a part of the helix of the ear.

11. A retaining module according to any one claims 3 to 10, wherein the first retaining member and the second retaining member are adapted to provide a smooth transition without any discontinuity at the point where the proximal end of said second retaining member is connected to the distal end of said first retaining member.

12. A retaining module according to any one of the preceding claims, wherein at least one of the first retaining member, the second retaining member and the strut has an essentially oval or elliptical cross-section.

13. A retaining module according to any one of the preceding claims, wherein the cross sectional dimensions of at least one of the first retaining member, the second retaining member and the strut is essentially constant over the length thereof, the largest dimension of said cross section being at least 1 mm, at most 2 mm, and preferably approximately 1.5 mm.

14. A retaining module according to any one of claims 3 to 13, wherein the distal end of the second retaining member is rounded.

15. A retaining module according to any one of the preceding claims, wherein the retaining module is manufactured in one integral piece of material.

16. A retaining module according to any one of the preceding claims wherein the retaining module is manufactured by injection moulding or transfer moulding.

17. A retaining module according to any one of the preceding claims, wherein the retaining module is permanently joined with at least an outer part of the earpiece.

18. A retaining module according to claim 12 or 14, wherein the material is an elastic material with a Shore A hardness in the interval from 50 to 90, preferably approximately 80.

19. A hearing aid comprising a retaining module according to any one of the preceding claims.

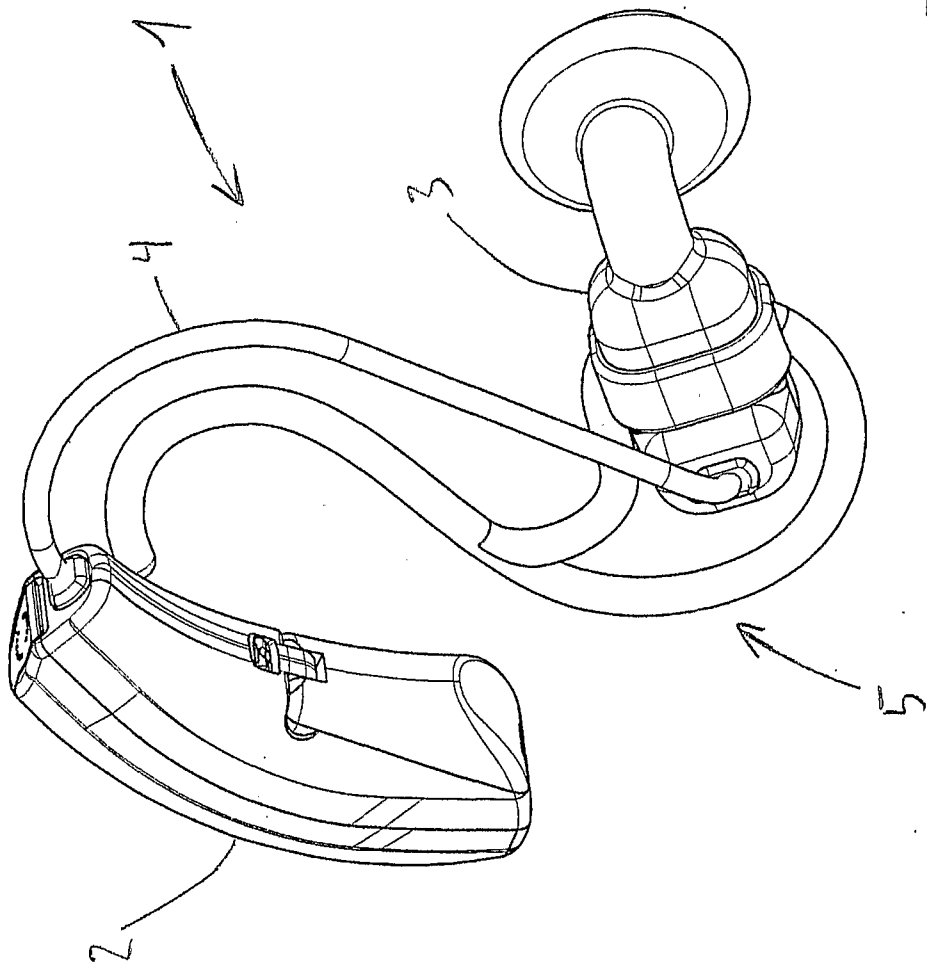

Fig 1

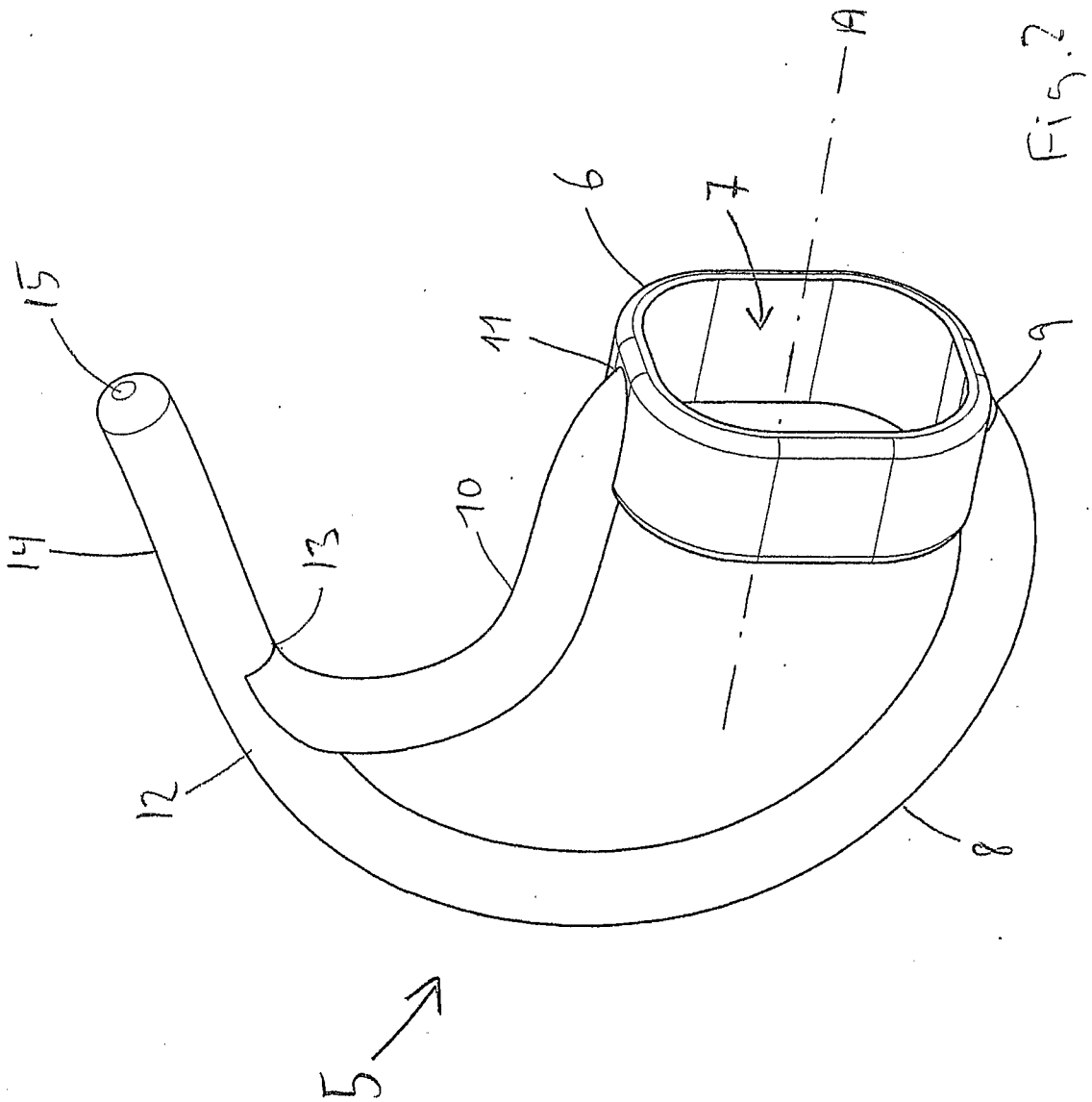

Fig. 2

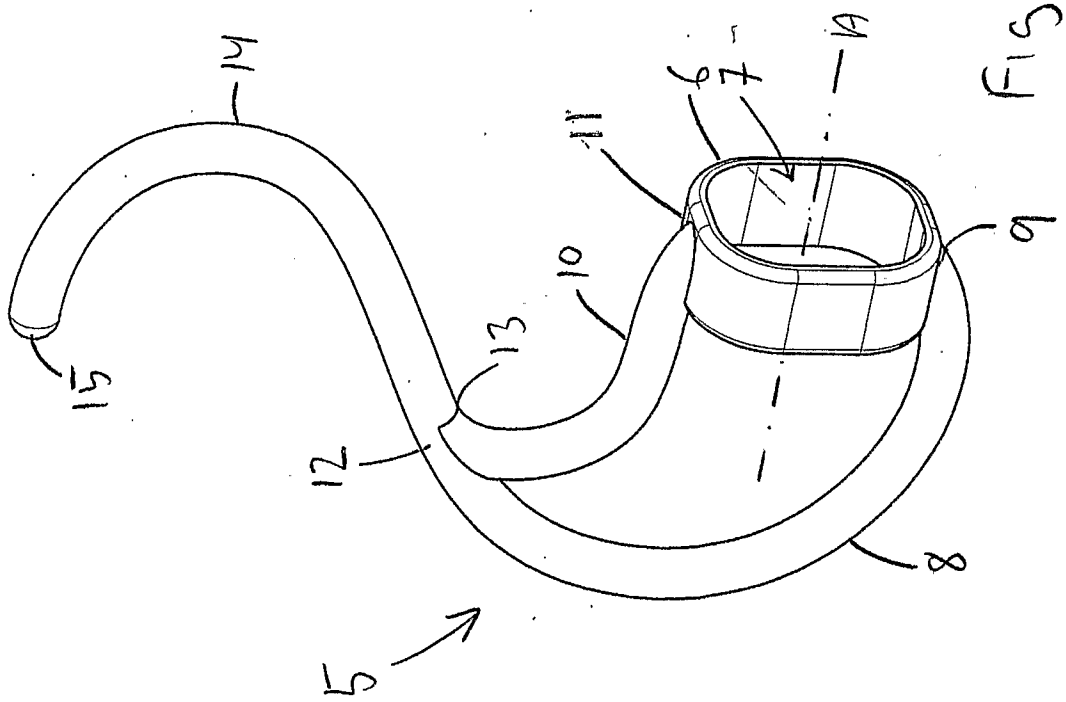

Fig. 3

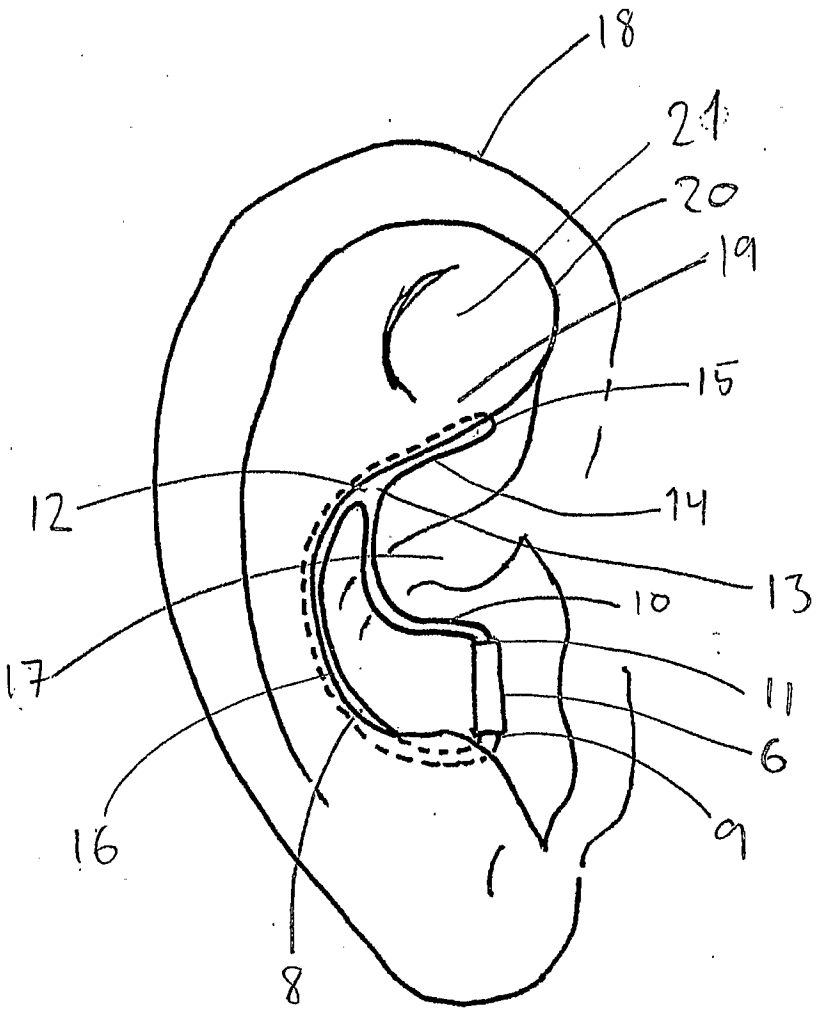

Fig. 4

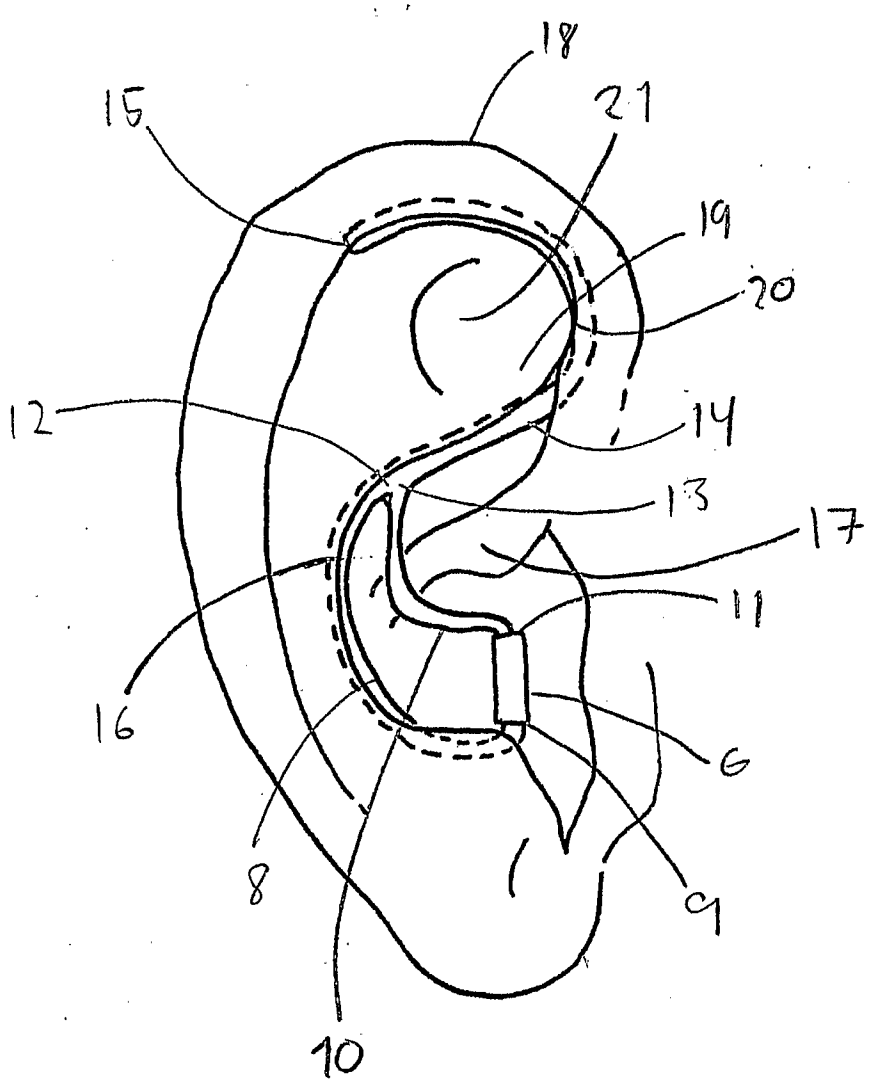

Fig. 5

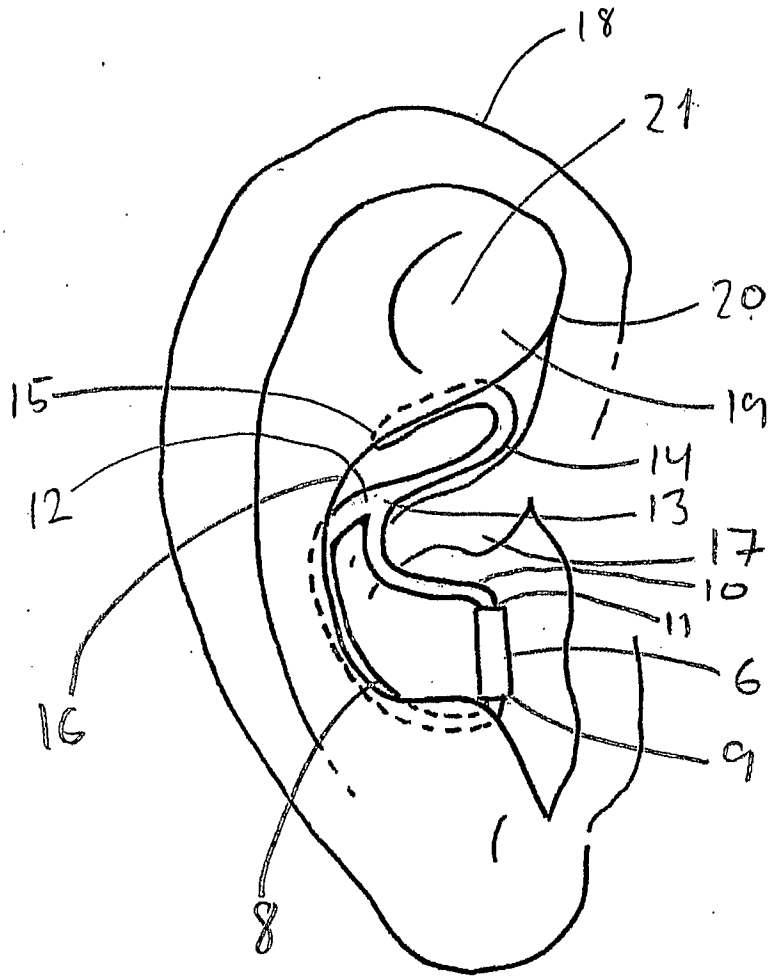

Fig. 6

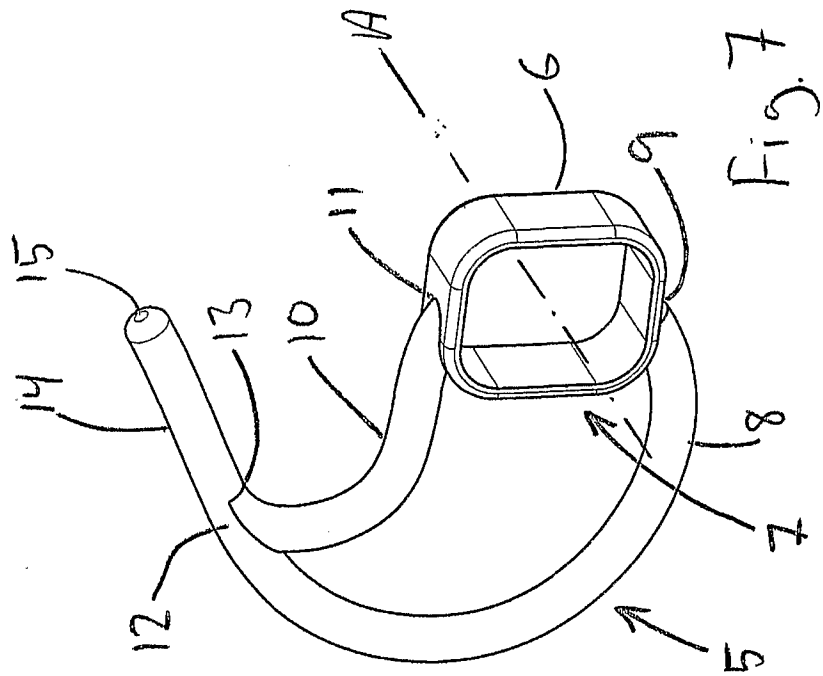

Fig. 7

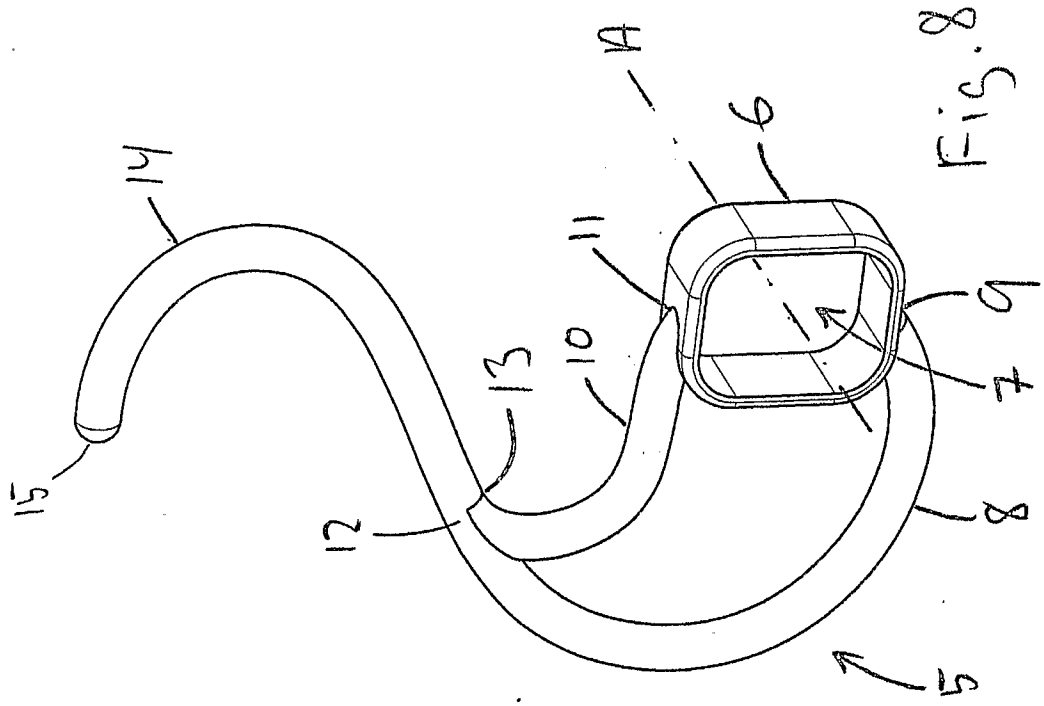

Fig. 8

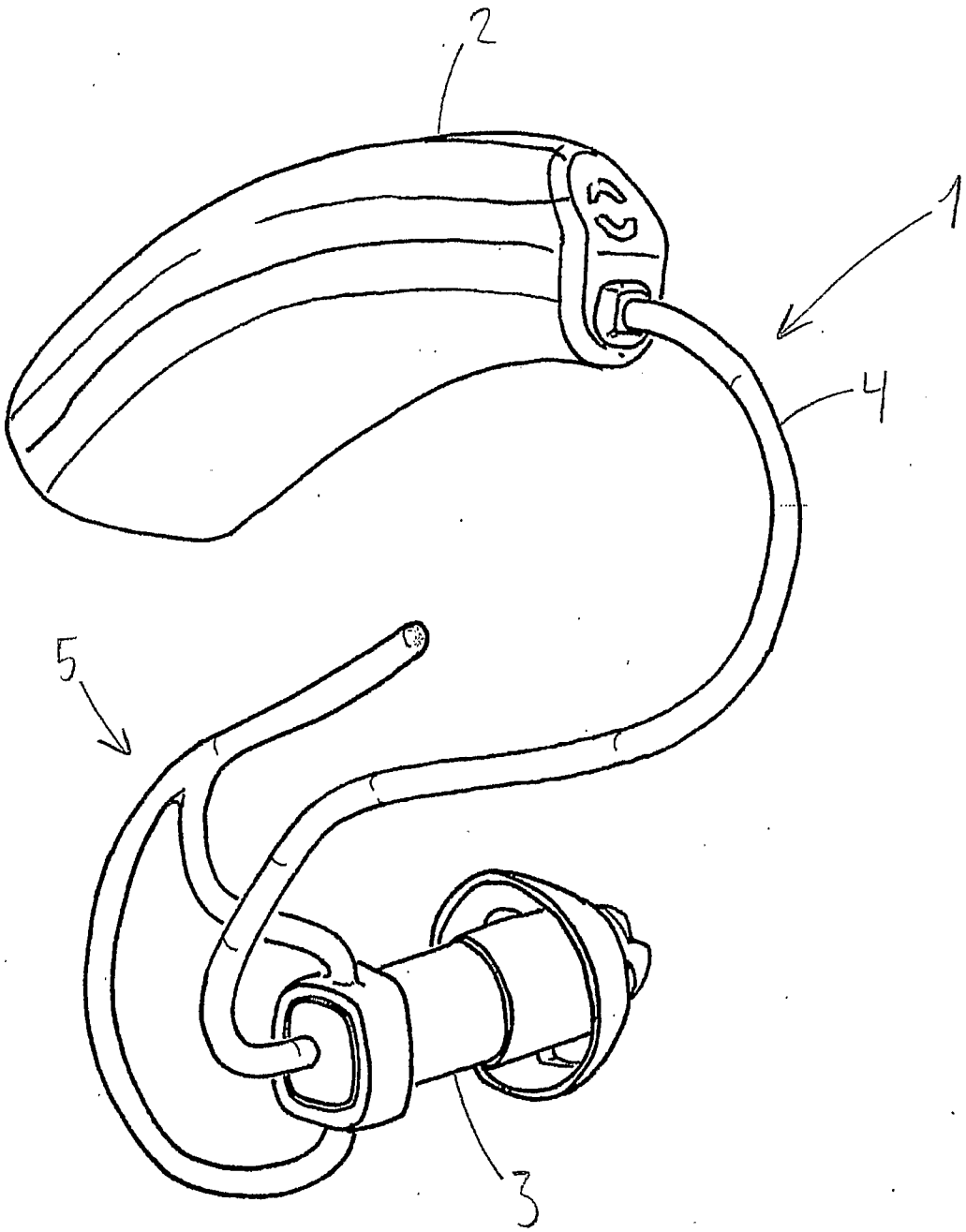

Fig. 9

INTERNATIONAL SEARCH REPORT

International application No
PCT/DK2008/000355

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04R1/10 H04R25/00

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)
H04R

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 practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2007/116309 A1 (SMITH RICHARD C [US]) 24 May 2007 (2007-05-24) paragraphs [0047] - [0050], [0067], [0073] figures 6,7	1-5, 7-12, 14-19
Y		6,13
Y	DE 100 50 766 A1 (HOERGERAETE SEIFERT GMBH [DE]) 3 May 2001 (2001-05-03) column 3, line 14 - column 4, line 5	6
Y	WO 2006/056198 A (GN RESOUND AS [DK]; IPSEN KLAUS SOMMER [DK]; ANDERSEN DENNIS NORMANN [) 1 June 2006 (2006-06-01) page 5, lines 8,9	13

☐ 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 document but 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

Date of the actual completion of the international search	Date of mailing of the international search report
9 June 2009	23/06/2009

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Fruhmann, Markus

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/DK2008/000355

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007116309 A1	24-05-2007	NONE	
DE 10050766 A1	03-05-2001	AT 262769 T	15-04-2004
		AT 372657 T	15-09-2007
		DK 1224839 T3	17-05-2004
		WO 0128289 A1	19-04-2001
		EP 1224839 A1	24-07-2002
		JP 2003511940 T	25-03-2003
		JP 2007082256 A	29-03-2007
WO 2006056198 A	01-06-2006	EP 1819500 A2	22-08-2007
		JP 2008522465 T	26-06-2008
		US 2009121386 A1	14-05-2009