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(54) **NEAR INFRARED LIGHT IN HEARING AID APPLIANCES**

(57) A cochlear implant hearing aid system is disclosed. The cochlear implant hearing aid system comprises an external part. The external part includes a sound pickup unit configured to pick up sound from the environment and a sound processing unit configured to process said sound. The cochlear implant hearing aid system further comprises an implant part. The implant part includes an implant processing unit and a plurality of cochlea stimulation electrodes for stimulation of a cochlea of a user. The cochlear implant hearing aid system further comprises a near-infrared transmitter configured to transmit a near-infrared wave. The cochlear implant hearing aid system further comprises a near-infrared receiver configured to receive said near-infrared wave.

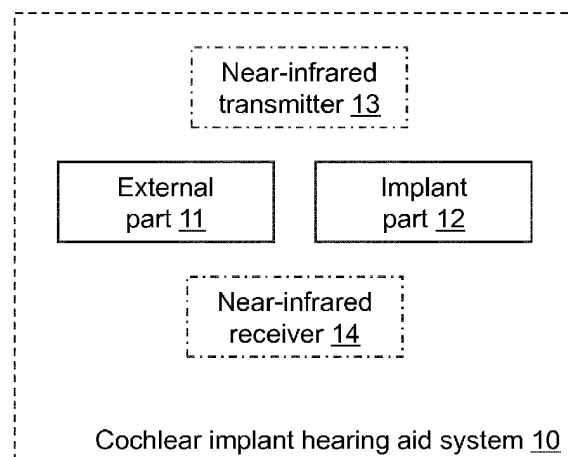


Fig. 1



EUROPEAN SEARCH REPORT

Application Number  
EP 19 16 8100

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	SALIBA JOE ET AL: "Functional near-infrared spectroscopy for neuroimaging in cochlear implant recipients", HEARING RESEARCH, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 338, 13 February 2016 (2016-02-13), pages 64-75, XP029661503, ISSN: 0378-5955, DOI: 10.1016/J.HEARES.2016.02.005	1,16	INV. A61B5/00 A61B5/12 A61N1/05 A61N1/36 A61B5/0478
Y	* the whole document *	2,4,5, 7-10, 12-14	
A		3,6,11, 15	
Y	----- WO 2018/009905 A2 (UNIV CALIFORNIA [US]) 11 January 2018 (2018-01-11) * paragraph [0124] *	2,4,5, 8-10	
Y	----- US 2011/144749 A1 (KIM I SUNG JUNE [KR] ET AL) 16 June 2011 (2011-06-16)	7	TECHNICAL FIELDS SEARCHED (IPC)
A	* paragraph [0006] - paragraph [0007] * * paragraph [0040] - paragraph [0043]; figure 3 * * paragraph [0049] - paragraph [0052]; figures 7, 8 *	3,6,11	A61B A61N
Y	----- US 2015/372493 A1 (SANKAR GANAPATHY [US]) 24 December 2015 (2015-12-24)	12-14	
A	* paragraph [0003] * * paragraph [0012] * * paragraph [0018] *	15	
The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>5 February 2020</b>	Examiner <b>Weiss-Schaber, C</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

EPO FORM 1503 03.02 (P04C01)



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**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing claims for which payment was due.

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Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

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No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

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**LACK OF UNITY OF INVENTION**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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see sheet B

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All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

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As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

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Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

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None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



LACK OF UNITY OF INVENTION  
SHEET B

Application Number  
EP 19 16 8100

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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1. claims: 4, 8-10, 16(completely); 1, 2, 5(partially)

Hearing aid with implanted infrared transmitter

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2. claims: 3, 6, 7, 11(completely); 1, 2, 5(partially)

Hearing aid with infrared data communication

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3. claims: 12-15(completely); 1(partially)

Hearing aid remotely powered by electromagnetic power

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ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 19 16 8100

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

05-02-2020

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2018009905 A2	11-01-2018	AU 2017292924 A1	14-02-2019
		AU 2017292929 A1	24-01-2019
		AU 2017292931 A1	24-01-2019
		BR 112018077435 A2	02-04-2019
		BR 112019000287 A2	16-04-2019
		CA 3029019 A1	11-01-2018
		CA 3029822 A1	11-01-2018
		CA 3029899 A1	11-01-2018
		CN 109475299 A	15-03-2019
		CN 109890267 A	14-06-2019
		CN 109982629 A	05-07-2019
		EP 3481284 A1	15-05-2019
		EP 3481285 A1	15-05-2019
		EP 3481287 A2	15-05-2019
		JP 2019524224 A	05-09-2019
		JP 2019524230 A	05-09-2019
		JP 2019527568 A	03-10-2019
		US 2018085605 A1	29-03-2018
		US 2019022427 A1	24-01-2019
		US 2019022428 A1	24-01-2019
		US 2019150881 A1	23-05-2019
		US 2019150882 A1	23-05-2019
		US 2019150883 A1	23-05-2019
US 2019150884 A1	23-05-2019		
US 2020023208 A1	23-01-2020		
US 2020023209 A1	23-01-2020		
WO 2018009905 A2	11-01-2018		
WO 2018009908 A1	11-01-2018		
WO 2018009910 A1	11-01-2018		
WO 2018009911 A1	11-01-2018		
WO 2018009912 A1	11-01-2018		
-----	-----	-----	-----
US 2011144749 A1	16-06-2011	AU 2008354445 A1	15-10-2009
		BR PI0822604 A2	16-06-2015
		CA 2720560 A1	15-10-2009
		CN 102027757 A	20-04-2011
		EP 2274923 A1	19-01-2011
		JP 2011516198 A	26-05-2011
		KR 20090108373 A	15-10-2009
		RU 2010144410 A	20-05-2012
		TW 200946084 A	16-11-2009
		US 2011144749 A1	16-06-2011
		WO 2009125903 A1	15-10-2009
-----	-----	-----	-----
US 2015372493 A1	24-12-2015	NONE	
-----	-----	-----	-----

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	近红外光助听器		
公开(公告)号	<a href="#">EP3556279A3</a>	公开(公告)日	2020-03-18
申请号	EP2019168100	申请日	2019-04-09
[标]申请(专利权)人(译)	奥迪康医疗有限公司		
申请(专利权)人(译)	OTICON MEDICAL A / S		
当前申请(专利权)人(译)	OTICON MEDICAL A / S		
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发明人	RIIS, SØREN KAMARIC LUNNER, THOMAS WENDT, DOROTHEA BACKUS, BRADFORD		
IPC分类号	A61B5/00 A61B5/12 A61N1/05 A61N1/36 A61B5/0478		
CPC分类号	A61N1/0541 A61N1/36038 A61N1/37288 H04R25/00 A61B5/0017 A61B5/0031 A61B5/0075 A61B5/0478 A61B5/125 A61B5/4836 A61B2560/0219 A61B2560/0242 A61B5/04001 A61N5/0603 A61N5/0622 A61N2005/0605 A61N2005/0626 A61N2005/0659		
代理机构(译)	德芒		
优先权	2018168222 2018-04-19 EP		
其他公开文献	EP3556279A2		
外部链接	<a href="#">Espacenet</a>		

摘要(译)

公开了一种耳蜗植入助听器系统。耳蜗植入助听器系统包括外部。外部包括：声音拾取单元，被配置为从环境中拾取声音；声音处理单元，被配置为处理所述声音。耳蜗植入物助听器系统还包括植入物部分。植入物部分包括植入物处理单元和用于刺激使用者的耳蜗的多个耳蜗刺激电极。耳蜗植入助听器系统还包括被配置为发送近红外波的近红外发送器。耳蜗植入助听器系统还包括配置成接收所述近红外波的近红外接收器。

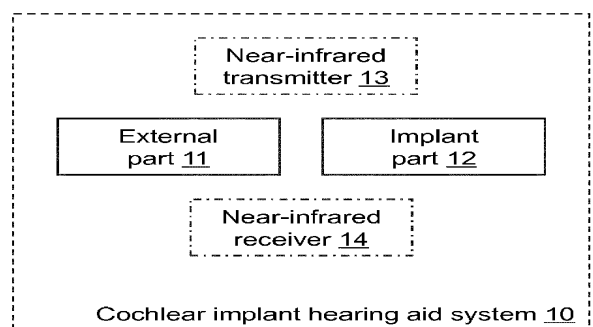


Fig. 1