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(54) **Heart rate monitor and strap**

(57) A heart rate monitor comprising an optical heart rate (OHR) sensor and a strap for mounting the sensor to a limb of a user is described. The OHR sensor comprises a sensing unit including at least one light emitter arranged to emit light into the skin of a user and a photodetector arranged to sense light reflected through the skin of the user. The sensing unit is arranged substan-

tially centrally in the strap and the strap comprises compressible edge portions that run along opposite sides of the sensing unit such that, when the strap is mounted to a limb of a user, the edge portions are compressed against the skin to prevent or reduce the ingress of ambient light to the sensing unit.

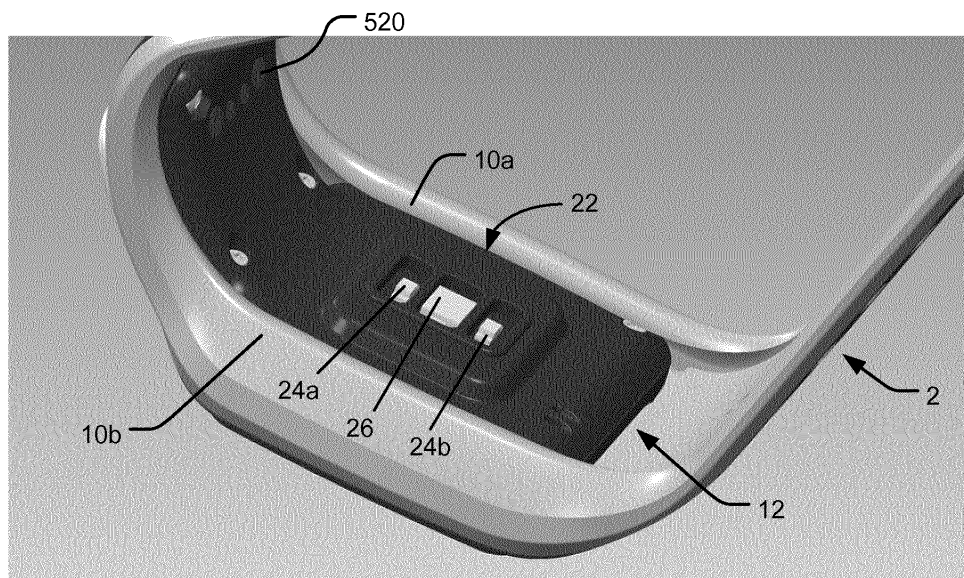


Figure 4A



EUROPEAN SEARCH REPORT

Application Number
EP 15 16 1649

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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 A	GB 2 494 622 A (OXITONE MEDICAL LTD [IL]) 20 March 2013 (2013-03-20) * abstract; figures 2-5 * * paragraphs [0030], [0031], [0035] - [0037] *	1-8, 10-13 9,14	INV. A61B5/024 A61B5/00
X,P	----- WO 2014/070560 A1 (MICROSOFT CORP [US]) 8 May 2014 (2014-05-08) * paragraphs [0017], [0027], [0028], [0037]; figures 1,2,5 *	1	
A	----- US 2012/271121 A1 (DELLA TORRE MARCO KENNETH [US] ET AL) 25 October 2012 (2012-10-25) * abstract; figures 1,6 * * paragraphs [0021], [0026] *	1-14	
A	----- CA 2 883 852 A1 (WHOOOP INC [US]) 13 March 2014 (2014-03-13) * page 14, line 12 - page 15, line 11; figures 1,7A,7B * * page 18, line 23 - page 20, line 5 *	1-14	
			TECHNICAL FIELDS SEARCHED (IPC)
			A61B
----- The present search report has been drawn up for all claims			
Place of search Berlin		Date of completion of the search 24 September 2015	Examiner Jonsson, P.O.
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)



Application Number

EP 15 16 1649

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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 15 16 1649

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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: 1-14

A heart rate monitor, comprising an optical heart rate (OHR) sensor and a strap for mounting the sensor to a limb of a user wherein the strap comprises compressible edge portions, wherein each compressible edge portion forms a flange extending over an edge of the OHR sensor.

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2. claim: 15

A strap for mounting a device to a limb of a user, the strap comprising a central mount to hold the device against the skin of a user, in use, and compressible edge portions that run along opposite sides of the central mount, the compressible edge portions made of a material having a compression set at 23 degrees Celsius, measured according to ISO 815, in the range of 20%-40%.

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

EP 15 16 1649

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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
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24-09-2015

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		WO 2014039567 A1	13-03-2014

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)	心率监测器和皮带		
公开(公告)号	EP2926726A3	公开(公告)日	2016-02-17
申请号	EP2015161649	申请日	2015-03-30
[标]申请(专利权)人(译)	通腾国际私有有限公司		
申请(专利权)人(译)	TOMTOM国际B.V.		
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[标]发明人	MAGNIEZ CLEMENT ALBERT ANNE JACKSON STEPHEN		
发明人	MAGNIEZ, CLEMENT ALBERT ANNE JACKSON, STEPHEN		
IPC分类号	A61B5/024 A61B5/00		
CPC分类号	A61B5/02438 A61B5/02416 A61B5/681 A61B5/6824 A61B5/6831 A61B2562/185		
优先权	2014005673 2014-03-28 GB		
其他公开文献	EP2926726B1 EP2926726A2		
外部链接	Espacenet		

摘要(译)

描述了一种心率监测器，其包括光学心率（OHR）传感器和用于将传感器安装到用户肢体的带子。OHR传感器包括感测单元和光电检测器，感测单元包括至少一个光发射器，光发射器设置成将光发射到用户的皮肤中，光电检测器设置成感测通过用户皮肤反射的光。传感单元基本上布置在带子的中央，并且带子包括沿着传感单元的相对侧延伸的可压缩边缘部分，使得当带子安装到使用者的肢体时，边缘部分被压靠在皮肤上防止或减少环境光进入传感单元。

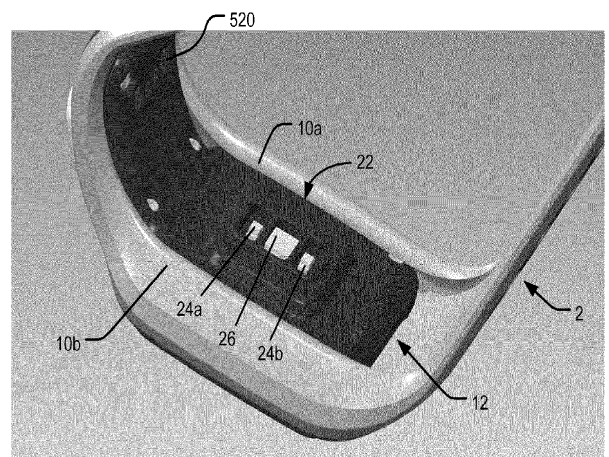


Figure 4A