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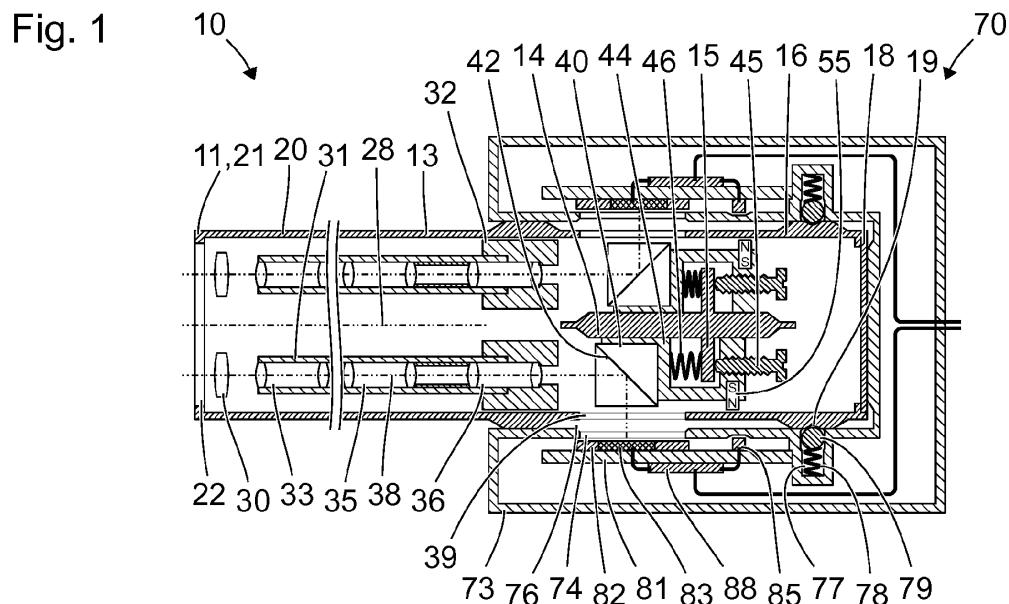
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(54) **IMAGE RELAYING DEVICE AND IMAGE DETECTING DEVICE**

(57) An image relaying device (10), comprises a shaft (20), an objective lens (30) at a distal end (21) of the shaft (20), an optically transparent window region (39) in a proximal end region (16) of the image re-laying device (10), an optical system (33, 35, 36, 42) in the shaft (20), the optical system (33, 35, 36, 42) re-laying an image produced by the objective lens (30) to the proximal end

region (16) in a way that the relayed image can be captured through the window region (39). The optical system's (33, 35, 36, 42) optical axis (38) at the window region (39) is orthogonal or substantially orthogonal to the optical system's (33, 35, 36, 42) optical axis (38) in the shaft (20).





EUROPEAN SEARCH REPORT

Application Number
EP 18 16 1704

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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Y	* figures 3,9,10 * * paragraph [0035] * * paragraph [0045]; figures 8,8a * * paragraph [0057] * * paragraph [0060] * * paragraph [0061] * * paragraph [0062] * * paragraph [0063] * * paragraph [0064] * * paragraph [0065] * * paragraph [0067] * * paragraph [0042] * * paragraph [0059] * * paragraph [0066] * * paragraph [0021] * * paragraph [0036] * * paragraph [0044] * * paragraph [0056] *	2-5,7	
X	US 2009/292170 A1 (BOEBEL MANFRED [DE] ET AL) 26 November 2009 (2009-11-26)	1,6,8	TECHNICAL FIELDS SEARCHED (IPC) G02B A61B
Y	* figures * * paragraph [0028] * * paragraph [0030] * * paragraph [0031] * * paragraph [0032] * * paragraph [0033] * * paragraph [0034] * * paragraph [0036] *	1-5,7, 9-15	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 September 2018	Examiner Rodríguez Cosío, J
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	



EUROPEAN SEARCH REPORT

 Application Number
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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)	
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Y	* figures * * paragraph [0023] * * paragraph [0024] * * paragraph [0025] * * paragraph [0026] * * paragraph [0028] * * paragraph [0031] * * paragraph [0034] * * paragraph [0041] * * paragraph [0033] *	2-5,7, 10-15		
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Y	* figures 8,9 * * paragraph [0134] * * paragraph [0112] *	1-8, 10-13		
The present search report has been drawn up for all claims				
Place of search Munich		Date of completion of the search 19 September 2018	Examiner Rodríguez Cosío, J	
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				

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 EPO FORM 1503 03.82 (P04C01)



Application Number

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CLAIMS INCURRING FEES

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

☐ 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):

☐ 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.

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:

see sheet B

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

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

☐ 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:

☐ 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:

☐ 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

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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:

1. claims: 1-8

An image relaying device, comprising: a shaft; an objective lens at a distal end of the shaft; an optically transparent window region in a proximal end region of the image relaying device; an optical system in the shaft, the optical system relaying an image produced by the objective lens to the proximal end region in a way that the relayed image can be captured through the window region; a reflecting interface bending the optical system's optical axis, wherein the optical system's optical axis at the window region is orthogonal or substantially orthogonal to the optical system's optical axis in the shaft.

2. claims: 9-15

An image detecting device for an image relaying device, the image detecting device comprising: an image sensor; a window element, wherein light passing the window element is detected by the image sensor; a coupling mechanism for a separable mechanical coupling of the image detecting device to an image relaying device.

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

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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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19-09-2018

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专利名称(译)	图像中继设备和图像检测设备		
公开(公告)号	EP3376273A3	公开(公告)日	2018-10-31
申请号	EP2018161704	申请日	2018-03-14
[标]申请(专利权)人(译)	卡尔史托斯股份有限公司		
[标]发明人	KUPFERSCHMID MARKUS ULMSCHNEIDER DANIEL HENI ANDREAS NATUSCH LAWRENCE		
发明人	KUPFERSCHMID, MARKUS ULMSCHNEIDER, DANIEL HENI, ANDREAS NATUSCH, LAWRENCE		
IPC分类号	G02B13/00 G02B23/24 A61B1/002 A61B1/00 G02B26/08 A61B1/04		
CPC分类号	A61B1/00009 A61B1/00059 A61B1/00096 A61B1/00188 A61B1/00193 A61B1/002 A61B1/042 A61B1/055 G02B23/2415 G02B23/2446 G02B23/2453 G02B23/2484 H04N7/181 H04N13/243		
代理机构(译)	WIMMER, STEPHAN		
优先权	102017105354 2017-03-14 DE		
其他公开文献	EP3376273A2		
外部链接	Espacenet		

摘要(译)

一种图像中继装置(10),包括轴(20),位于轴(20)远端(21)的物镜(30),近端区域(16)中的光学透明窗口区域(39))图像重新铺设装置(10),轴(20)中的光学系统(33,35,36,42),光学系统(33,35,36,42)重新铺设由物镜(30)到近端区域(16)的方式是通过窗口区域(39)捕获中继图像。窗口区域(39)处的光学系统(33,35,36,42)光轴(38)与轴中的光学系统(33,35,36,42)光轴(38)正交或基本正交(20)。

