



(11) **EP 4 361 687 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**19.06.2024 Bulletin 2024/25**

(51) International Patent Classification (IPC):  
**G02B 5/26 (2006.01) G02B 5/28 (2006.01)**  
**G02B 5/30 (2006.01)**

(43) Date of publication A2:  
**01.05.2024 Bulletin 2024/18**

(52) Cooperative Patent Classification (CPC):  
**G02B 5/289; G02B 5/26; G02B 5/287;**  
**G02B 5/3016; G02B 5/3083**

(21) Application number: **23205279.5**

(22) Date of filing: **23.10.2023**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR**  
Designated Extension States:  
**BA**  
Designated Validation States:  
**KH MA MD TN**

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(30) Priority: **28.10.2022 US 202263381446 P**  
**09.10.2023 US 202318483141**

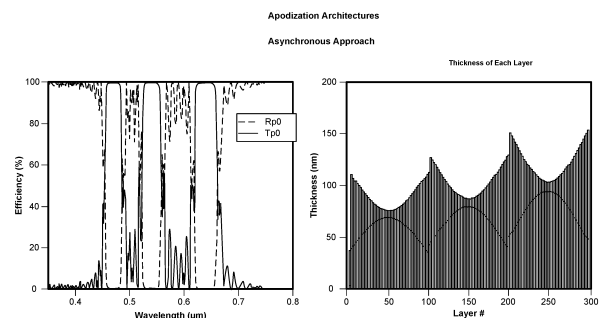
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(54) **WAVELENGTH BAND SELECTIVE FILTERS FOR AR/VR SYSTEMS**

(57) A notched filter includes a multilayer having alternating first and second polymer layers, the first polymer layers each including an isotropic polymer thin film having in-plane refractive indices  $n_{1x}$  and  $n_{1y}$ , and the second polymer layers each including an isotropic or anisotropic polymer thin film having in-plane refractive indices  $n_{2x}$  and  $n_{2y}$ , where a thickness of each successive first polymer layer decreases with increasing distance from a centerline of the multilayer, and a thickness of each successive second polymer layer increases with increasing distance from the centerline. Such a filter may be configured to reflect incident light having a desired polarization state within a predetermined and relatively narrow band.



**FIG. 36**

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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)
A	US 5 238 738 A (MILLER ROBERT H [US]) 24 August 1993 (1993-08-24) * column 2, lines 7-24; figures 1,2,4 * -----	1-6	INV. G02B5/26 G02B5/28 G02B5/30
A	US 2018/074331 A1 (OUDERKIRK ANDREW J [US] ET AL) 15 March 2018 (2018-03-15) * paragraphs [0063], [0064]; figures 4a, 4b *	1-6	
X	US 6 967 778 B1 (WHEATLEY JOHN A [US] ET AL) 22 November 2005 (2005-11-22) * figure 10a; example 4; table 1 *	1-6	
A	US 2005/243425 A1 (WHEATLEY JOHN A [US] ET AL) 3 November 2005 (2005-11-03) * paragraphs [0083], [0087] - [0089]; figures 10-13 *	1-6	
			TECHNICAL FIELDS SEARCHED (IPC)
			G02B
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>19 February 2024</b>	Examiner <b>Mollenhauer, Ralf</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 03:82 (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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**1-6**

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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**

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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: 1-6**

notch filter spectrum obtained with a smoothly changing  
layer thickness design

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**2. claims: 7-12**

notch filter spectrum obtained with a layer thickness design  
having different discontinuous portions, each of the regions  
may be configured to reflect a selected wavelength of light

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**3. claims: 13-15**

notch filter with reduced phase shift due to the higher  
average refractive index in the multilayer

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

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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.

19-02-2024

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