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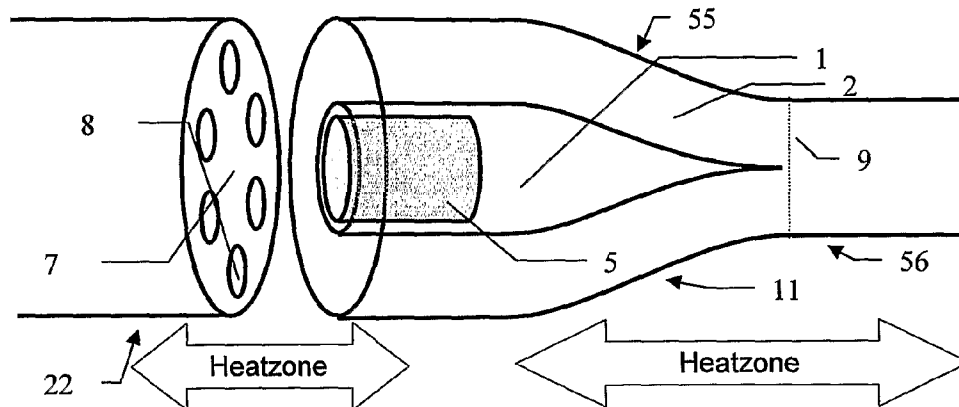
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[Continued on next page]

(54) Title: A TAPERED FIBRE OPTICAL COUPLER COMPRISING AN ANNULAR GUIDING REGION

Figure 5



(57) Abstract: The present invention relates to an optical coupler having at least one longitudinal axis, said optical coupler comprising a first segment having first cross sections perpendicular to the longitudinal axis and a second segment having second cross sections perpendicular to the longitudinal axis said first and second segments sharing a common border interface, whereinsaid said first segment comprises an internal volume with refractive index n, selected from the group of a filling material, a void or a combination thereof, where said internal volume is tapered whereby it is possible to combine light from multiple fiber with reduced loss of brightness.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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## INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER  
INV. G02B6/28

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)  
G02B

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,L	WO 2005/091029 A (CRYSTAL FIBRE AS [DK]; NIELSEN MARTIN DYBENDAL [DK]; SKOVGAARD PETER M) 29 September 2005 (2005-09-29) figures 1,16,21 page 39 page 46 - page 48	1,2,7, 49,72
X,P, L	WO 2007/107163 A (CRYSTAL FIBRE AS [DK]; NIELSEN MARTIN DYBENDAL [DK]; SKOVGAARD PETER M) 27 September 2007 (2007-09-27) figures 2,4,14,24-27	1,7,49
A	WO 2007/006317 A (CRYSTAL FIBRE AS [DK]; NIKOLAJSSEN THOMAS [DK]) 18 January 2007 (2007-01-18) figure 6b	1

 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.

\*G\* document member of the same patent family

Date of the actual completion of the international search

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Date of mailing of the international search report

06/02/2009

Name and mailing address of the ISA/

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/DK2008/000256

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

see annex

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7, 36, 49, and 72

define the cladding surrounding the volume region and the guide region.  
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2. claims: 8, 9, 17-21, 28, 29, 51 and 52

define the border interface between the two segments.  
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3. claims: 10-16, 22-24, and 37

define the second segment.  
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4. claims: 25-27 and 54

define the taper in the first segment.  
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5. claims: 30-32, 40, 53, 55-59, and 62-68

define the volume region.  
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6. claims: 33-35, and 69-71

define the guide region in the first segment.  
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7. claims: 38, 41-48, 60, and 61

define the ends of the optical connector.  
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/DK2008/000256

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
WO 2005091029	A	29-09-2005	EP	1725899 A2	29-11-2006
WO 2007107163	A	27-09-2007	EP	2005228 A1	24-12-2008
WO 2007006317	A	18-01-2007	CA	2613137 A1	18-01-2007
			CN	101283491 A	08-10-2008
			EP	1902336 A2	26-03-2008