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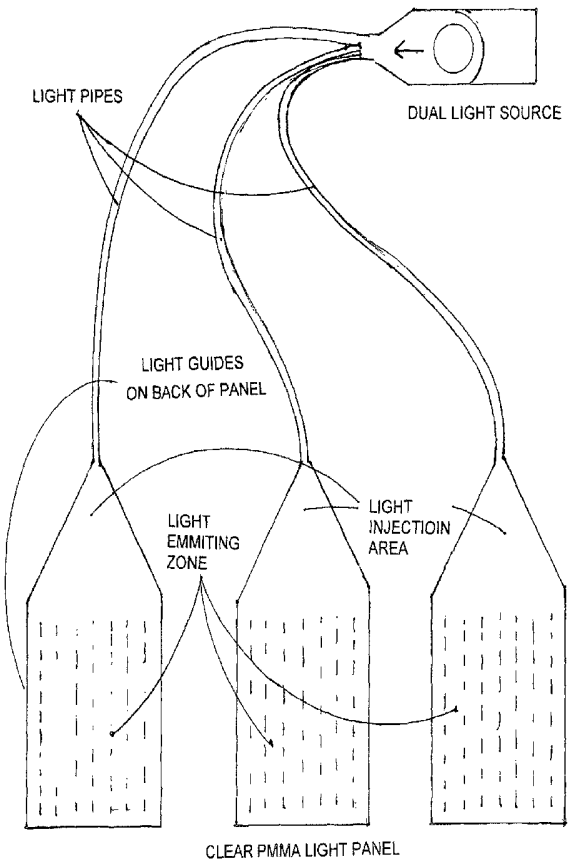
[Continued on next page]

(54) Title: LIGHT EMITTING FLAT PANEL WITH EMBEDDED LIGHT GUIDES FOR GENERAL LIGHTING LUMINAIRE



(57) Abstract: A unique solid flat panel lighting emitting luminaire (light panel) has been created that utilizes a light source remote from the luminaire. The light panel luminaire is fed light flux via a light pipe and/or a fiber optic system into one or two edges of the flat panel. The light panel has imbedded irregular tapered tetrahedron shaped light guides that emit light in a uniform controlled fashion over the length of the emitting surface. The subject lighting luminaire provides light without generating heat. The luminaire is unaffected by environmental temperatures and pressures within the boundaries of the base construction materials utilized. The luminaire is specifically designed to provide general or task lighting in any application that would normally use a fluorescent, filament or arc type light bulb without the inherent limitations of usual light sources such as space requirements, access, heat generation, environmental temperature, moisture sensitivity, possible explosive ignition and/or crush or explosion due to hypo or hyper baric pressures.

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11 December 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Int[redacted]tional Application No
PCT/US 03/03173

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G02B6/00 F21V8/00

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)
IPC 7 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, PAJ, WPI Data, COMPENDEX, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 005 108 A (PARKER JEFFERY R ET AL) 2 April 1991 (1991-04-02) column 1, line 43-49 column 4, line 23 -column 5, line 5 column 7, line 9 -column 8, line 31 figures 4-6,9,16-19	1
X	"FIBER-OPTIC PANEL THROWS LIGHT EVENLY" MACHINE DESIGN, PENTON,INC. CLEVELAND, US, vol. 70, no. 7, 16 April 1998 (1998-04-16), page 62 XP000824104 ISSN: 0024-9114 the whole document	1

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in 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.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 August 2003	18/08/2003

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Verdrager, V

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INTERNATIONAL SEARCH REPORT

Int[redacted]ti[redacted] Application No
PCT/US 03/03173

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 836 669 A (HED AHARON ZEEV) 17 November 1998 (1998-11-17) cited in the application column 3, line 14-24 column 4, line 63 -column 5, line 4 figure 4A	1
A	EP 0 544 332 A (ENPLAS CORP) 2 June 1993 (1993-06-02) column 1, line 29-36	1
A	EP 0 534 140 A (TOSOH CORP) 31 March 1993 (1993-03-31) column 3, line 35-48 column 10, line 5-29	1
A	WO 01 51851 A (3M INNOVATIVE PROPERTIES CO) 19 July 2001 (2001-07-19) page 8, line 28-31	1
A	US 5 695 583 A (MIZERET JEROME ET AL) 9 December 1997 (1997-12-09) column 5, line 63 -column 6, line 20	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/03173

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 2-8
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:
see FURTHER INFORMATION sheet PCT/ISA/210

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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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

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 fee, this Authority did not invite payment of any additional fee.

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.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 2-8

In view of the wording of the claims 2-4 presently on file, which render it difficult, if not impossible, to determine the matter for which protection is sought, the present application fails to comply with the clarity and conciseness requirements of Article 6 PCT (see also Rule 6.1(a) PCT) to such an extent that a meaningful search is impossible.

Claims 5-8 are merely statements which do not contain clear technical features but rather results to be achieved by the invention, so that their subject-matter is undefined. As a consequence, these claims are unclear to such an extent that a meaningful search is impossible.

Therefore, only claim 1 has been completely searched.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int[illegible] Application No
PCT/US 03/03173

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