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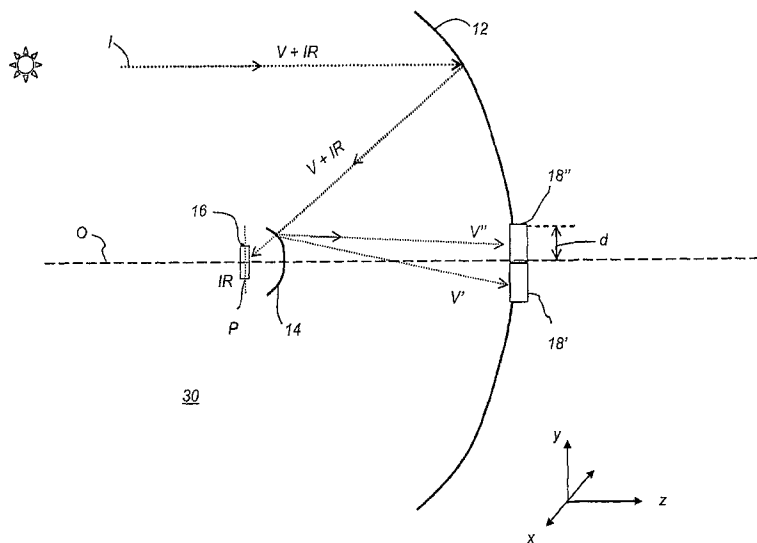
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[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR CONCENTRATING LIGHT



(57) Abstract: An apparatus for obtaining radiant energy has first and second photovoltaic receivers. A primary curved reflective surface is disposed to reflect incident polychromatic radiation toward a first focal plane. A spectral separator is disposed between the first focal plane and the primary curved reflective surface. The spectral separator has a dichroic separating surface, convex with respect to the incident reflected polychromatic radiation and treated to reflect a first spectral band toward the first photovoltaic receiver and to transmit reflected polychromatic radiation outside the first spectral band. The spectral separator also has a curved separator reflective surface, convex with respect to the light transmitted through the dichroic separating surface and treated to reflect at least a portion of the light transmitted through the dichroic separating surface toward the second photovoltaic receiver.

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INTERNATIONAL SEARCH REPORT

International application No PCT/US2006/047407

A. CLASSIFICATION OF SUBJECT MATTER INV. H01L31/052		
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) H01L		
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, INSPEC		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>FRAAS L M ET AL: "Toward 40% and higher solar cells in a new Cassegrainian PV module"</p> <p>3 January 2005 (2005-01-03), PHOTOVOLTAIC SPECIALISTS CONFERENCE, 2005. CONFERENCE RECORD OF THE THIRTY-FIRST IEEE LAKE BUENA VISTA, FL, USA 3-7 JAN. 2005, PISCATAWAY, NJ, USA, IEEE, US, PAGE(S) 751-753 , XP010822819</p> <p>ISBN: 0-7803-8707-4</p> <p>figure 2</p> <p style="text-align: center;">----- -/--</p>	1-7
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
<p>* Special categories of cited documents :</p> <p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*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)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p> <p>*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</p> <p>*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</p> <p>*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.</p> <p>*G* document member of the same patent family</p>		
Date of the actual completion of the international search	Date of mailing of the international search report	
11 April 2007	11/07/2007	
Name and mailing address of the ISA/ European Patent Office, P.B. 5618 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer LE MEUR, M	

INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	YEHEZKEL N ET AL: "PHOTOVOLTAIC CONVERSION IN A COMMON SOLAR CONCENTRATING AND SPECTRALLY SPLITTING SYSTEM" WORLD CONFERENCE ON PHOTOVOLTAIC ENERGY. WAIKOLOA, DEC. 5 - 9, 1994, NEW YORK, IEEE, US, vol. VOL. 2 CONF. 1, 5 December 1994 (1994-12-05), pages 1811-1813, XP000680153 ISBN: 0-7803-1460-3 figure 1	1-7
A	----- US 6 020 553 A (YOGEV AMNON [IL]) 1 February 2000 (2000-02-01) figures 5,13 -----	1-7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/047407

Box 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 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 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.:

1-7

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

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

1. claims: 1-7

Use of a dichroic mirror and further treated curved reflecting surface which reflects a portion of the light transmitted by the dichroic surface toward a photovoltaic receiver

2. claims: 8-9

First photovoltaic receiver near a first focal plane gets the light which is transmitted through second and third curved reflecting surfaces of a spectral separator, each reflecting first and second spectral band toward second and third photovoltaic receivers respectively.

3. claims: 10-18

A dispersion element allows the secondary curved reflective surface to reflect a first spectral band toward a first photovoltaic receiver while reflecting a second spectral band toward a second photovoltaic receiver, both receivers being disposed near the second focal plane

4. claim: 19

A dispersion element allows a dispersed polychromatic radiation to be reflected by a first reflective element toward a first photovoltaic receiver near a first focal plane while second spectral band and third spectral band are reflected respectively toward second and third photovoltaic receivers near the second focal plane.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/047407

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6020553	A	NONE	