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[Continued on next page]

(54) Title: CONCENTRATING PHOTOVOLTAIC SOLAR PANEL

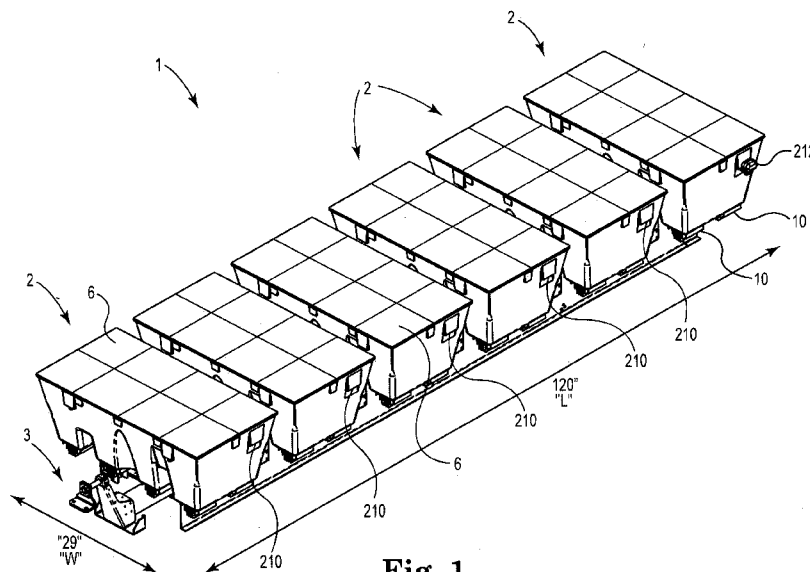


Fig. 1

(57) Abstract: The present invention relates to photovoltaic power systems, photovoltaic concentrator modules, and related methods. In particular, the present invention features concentrator modules having interior points of attachment for an articulating mechanism and/or an articulating mechanism that has a unique arrangement of chassis members so as to isolate bending, etc. from being transferred among the chassis members. The present invention also features adjustable solar panel mounting features and/or mounting features with two or more degrees of freedom. The present invention also features a mechanical fastener for secondary optics in a concentrator module.



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MR, NE, SN, TD, TG).

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**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/US2009/003022

**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

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/070425 A1 (ENEA [IT]; ENITECNOLOGIE SPA [IT]; AVITABILE MARINO [IT]; ROCA FRANCES) 6 July 2006 (2006-07-06) pages 6,7; figures 1,2,4,5	1,2,6-9, 15, 27-29, 33,37
X	EP 1 895 597 A1 (SHARP KK [JP]) 5 March 2008 (2008-03-05)  figures 1,9	1,9, 17-33, 35-39
X	WO 2007/041018 A2 (LU ZHENGHAO JASON [US]) 12 April 2007 (2007-04-12)  figure 1b	1,3-5,9, 27-29, 33,37
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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	"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
"E" earlier document but published on or after the international filing date	"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
"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)	"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.
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Chao, Oscar

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/003022

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2005/090873 A1 (MENOVA ENGINEERING INC [CA]; GERWING DAVE [CA]; GRANT NEIL C [CA]; KOU) 29 September 2005 (2005-09-29)  claims 29, 31; figures 2, 8a -----	1,9-14, 16, 27-29, 33,34,37
A	WO 2007/093422 A1 (FRAUNHOFER GES FORSCHUNG [DE]; CONCENTRIX SOLAR GMBH [DE]; ARNOLD GLAS) 23 August 2007 (2007-08-23) the whole document -----	1,9, 27-29, 33,37
A	US 2003/000564 A1 (SHINGLETON JEFFERSON G [US] ET AL) 2 January 2003 (2003-01-02)  the whole document -----	1,9, 27-29, 33,37
A	DE 20 2007 001865 U1 (WANG PEI CHOA [TW]; LIN SHU LI [TW]) 10 May 2007 (2007-05-10)  the whole document -----	1,9, 27-29, 33,37
A	WO 2008/038522 A1 (SHARP KK [JP]; YOSHIDA HIROYUKI [JP]) 3 April 2008 (2008-04-03)  the whole document -----	1,9, 27-29, 33,37

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2009/003022

## 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.:

1-39

### 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: 1-39

A photovoltaic concentrator module comprising a main body portion having attachment means to securely fix said body portion to a tracking system  
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2. claim: 40

A heat sink assembly for use in a photovoltaic concentrator  
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3. claim: 41

A manufacturing method for making the main body portion of a photovoltaic concentrator module using thermosetting polymer molding  
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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/003022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006070425 A1	06-07-2006	EP 1834362 A1	19-09-2007
EP 1895597 A1	05-03-2008	AU 2006256136 A1 WO 2006132265 A1 US 2009133737 A1	14-12-2006 14-12-2006 28-05-2009
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