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**(88) Date of publication of the international search report:**  
16 January 2014

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2012/045425

## A. CLASSIFICATION OF SUBJECT MATTER

INV. F03G6/06 F24J2/07 F24J2/24  
ADD.

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)

F03G F24J

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 practicable, search terms used)

EP0-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 727 930 A (BRUCKNER ADAM P [US] ET AL) 1 March 1988 (1988-03-01)	1-6, 9-11,14, 16-18, 27, 29-32,34
Y	the whole document -----	12,13,15
X	US 2011/067398 A1 (SLOCUM ALEXANDER H [US] ET AL) 24 March 2011 (2011-03-24)	1,2,5, 16,17, 29,30,32
	the whole document -----	
X	DE 10 2008 048655 A1 (FRAUNHOFER GES FORSCHUNG [DE]) 25 March 2010 (2010-03-25)	1,7,8, 11,29, 33,34
	the whole document ----- -/--	



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 application or patent 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

7 November 2013

Date of mailing of the international search report

18/11/2013

Name and mailing address of the ISA/

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# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2012/045425

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2011/001546 A1 (MITSUBISHI HEAVY IND LTD [JP]; KOBAYASHI KAZUTA [JP]; TAGAWA MASASHI []) 6 January 2011 (2011-01-06) abstract; figures 2,4,5 -----	12,13,15
X,P	FR 2 966 567 A1 (CENTRE NAT RECH SCIENT [FR]; TOULOUSE INST NAT POLYTECH [FR]) 27 April 2012 (2012-04-27)  the whole document -----	1-4,9, 12-14, 16, 18-23, 25-27, 29-32
X	WO 2010/029411 A2 (INTERNEW ELECTRONICS S R L [IT]; STMG S R L [IT]; DE MARTINO PASQUALE) 18 March 2010 (2010-03-18) abstract; figures 1,2 -----	18-20, 25-27
Y	US 2004/086021 A1 (LITWIN ROBERT ZACHARY [US]) 6 May 2004 (2004-05-06) abstract; figures 1-3 -----	21-24
Y	US 2004/086021 A1 (LITWIN ROBERT ZACHARY [US]) 6 May 2004 (2004-05-06) abstract; figures 1-3 -----	21-24
A	DE 28 47 989 A1 (SOELCH ROLAND) 14 May 1980 (1980-05-14) the whole document -----	1-34
A	US 4 586 334 A (NILSSON SR JACK E [US] ET AL) 6 May 1986 (1986-05-06) the whole document -----	1-34
A	US 2011/083436 A1 (WHITE MAURICE [US] ET AL) 14 April 2011 (2011-04-14) the whole document -----	1-34
A	US 4 441 318 A (THECKSTON ALEXANDER [AU]) 10 April 1984 (1984-04-10) the whole document -----	1-34
A	WO 2010/093235 A2 (NEM B V [NL]; DE BRUIJN JACOBUS JOHANNES [NL]; MEERKERK ARIE [NL]; ROP) 19 August 2010 (2010-08-19) the whole document -----	1-34

## INTERNATIONAL SEARCH REPORT

International application No.  
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### 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.:

#### 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: 1-17, 29-34

Relating to a concentrating solar power system provided with a heat exchanger for heat exchange between a heat transfer material and a working fluid of a power cycle and a hot storage tank for thermal energy storage using the heat transfer material as thermal energy storage medium. The technical effect can be considered to use the heat transfer material directly as thermal energy storage, thereby reducing the overall cost of the solar power system.

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2. claims: 18-28

Relating to a solar receiver provided with multiple receiver tubes oriented vertically. The technical effect can be considered to improve the heat absorption efficiency of the solar receiver.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/045425

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4727930	A	01-03-1988	NONE
US 2011067398	A1	24-03-2011	AU 2010295374 A1 05-04-2012 CN 102792022 A 21-11-2012 KR 20120083425 A 25-07-2012 US 2011067398 A1 24-03-2011 US 2011067690 A1 24-03-2011 WO 2011035232 A2 24-03-2011
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