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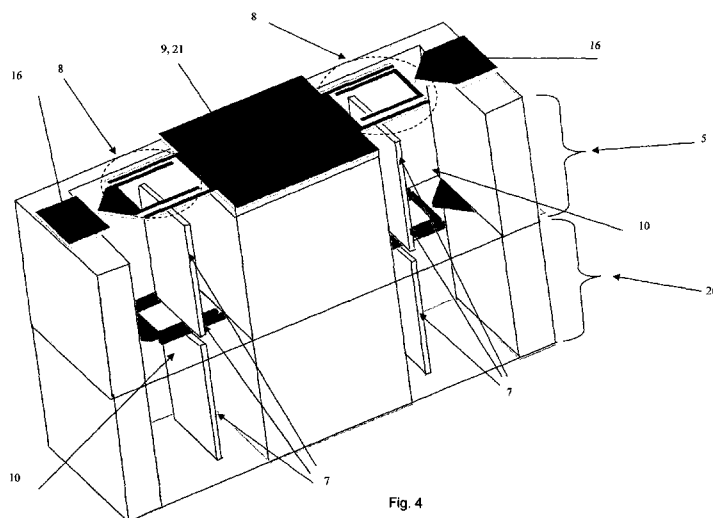


Fig. 4

(57) Abstract: A solar element including a basic resonator arranged on a dielectric structure that is constituted by an area (5) with minimum electromagnetic damping, whose upper plane forms the plane of incidence (3). The area (5) with minimum electromagnetic damping is transparent in relation to the incident electromagnetic wave; the area is limited by the boundaries (6) of variations in material properties, and at least one 2D-3D resonator (4) is surrounded by the dielectric (10) and configured in the dielectric structure. The area (5) with minimum electromagnetic damping is coupled with at least one other area (20) exhibiting a different resonance frequency of the basic resonator, and the system is terminated either in the free space or by a solar element (system) intended to absorb the entire amount of the remaining energy provided by the incident electromagnetic wave.



INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
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B. FIELDS SEARCHED

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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)

EPO-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.
A	WO 2012/100758 A1 (VUT V BRNE [CZ]; PAVEL FIALA [CZ]) 2 August 2012 (2012-08-02) cited in the application the whole document -----	1-5
A	US 7 688 279 B2 (MIYAMOTO YOSHINARI [JP] ET AL) 30 March 2010 (2010-03-30) the whole document -----	1-5
A	US 2012/080073 A1 (KOTTER DALE K [US] ET AL) 5 April 2012 (2012-04-05) the whole document -----	1-5



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INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/CZ2012/000105

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2012100758	A1	02-08-2012	CN 103477552 A 25-12-2013
			CO 6751255 A2 16-09-2013
			CZ 303866 B6 05-06-2013
			EA 201390986 A1 30-12-2013
			EP 2668717 A1 04-12-2013
			MA 34842 B1 02-01-2014
			RS 20130320 A1 28-02-2014
			SG 192189 A1 30-08-2013
			US 2013312830 A1 28-11-2013
			WO 2012100758 A1 02-08-2012

US 7688279	B2	30-03-2010	JP 4440213 B2 24-03-2010
			TW I388087 B 01-03-2013
			US 2007067058 A1 22-03-2007
			WO 2005027611 A1 24-03-2005

US 2012080073	A1	05-04-2012	US 2010284086 A1 11-11-2010
			US 2011277805 A1 17-11-2011
			US 2012080073 A1 05-04-2012
			WO 2009064736 A1 22-05-2009
