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[Continued on next page]

(54) **Title:** PROCESS FOR FORMING FLEXIBLE SUBSTRATES USING PUNCH PRESS TYPE TECHNIQUES

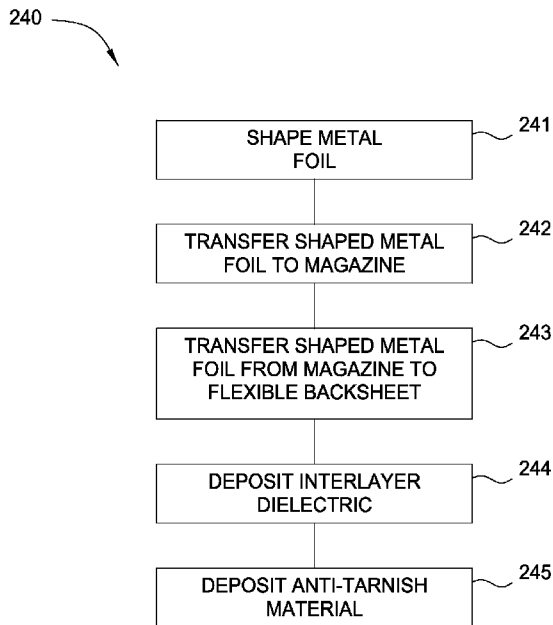


FIG. 2

(57) **Abstract:** Embodiments of the invention generally relate to methods of forming flexible substrates for use in photovoltaic modules. The methods include shaping a metal foil and adhering the metal foil to a flexible backsheet. An optional interlayer dielectric and anti-tarnish material may then be applied to the upper surface of the shaped metal foil disposed on the flexible backsheet. The metal foil may be shaped using die cutting, roller cutting, or laser cutting techniques. The die cutting, roller cutting, and laser cutting techniques simplify the flexible substrate formation processes by eliminating resist-printing and etching steps previously used to pattern metal foils. Additionally, the die cutting, roller cutting, and laser cutting techniques reduce the consumption of consumable materials previously used in the patterning of metal foils.

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SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
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INTERNATIONAL SEARCH REPORT

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PCT/US2012/027246**A. CLASSIFICATION OF SUBJECT MATTER***H01L 31/18(2006.01)i, H01L 31/042(2006.01)i, B26F 1/40(2006.01)i*

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 31/18; H01L 21/50; H01L 23/00; B32B 38/10; B32B 38/06; B32B 38/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords:metal foil, backsheet, adhesive

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008/0173390 A1 (MUKUNDAN NARASIMHAN et al.) 24 July 2008 See paragraphs [21]-[28] and figures 2A-2E.	1-15
A	US 2009/0189265 A1 (HANNES MIO et al) 30 July 2009 See paragraphs [19]-[30] and figures 1-6.	1-15
A	US 2011/0048619 A1 (ERWIN RINALDO MEINDERS et al.) 3 March 2011 See paragraphs [33]-[34] and figures 4-6.	1-15

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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"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

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008-0173390 A1	24.07.2008	US 8066840 B2	29.11.2011
US 2009-0189265 A1	30.07.2009	DE 102008061165 A1 US 7999362 B2	30.07.2009 16.08.2011
US 2011-0048619 A1	03.03.2011	EP 2076099 A1 EP 2236017 A1 WO 2009-084958 A1	01.07.2009 06.10.2010 09.07.2009