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Nielson et al.

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(54) **METHOD FOR FABRICATING PIXELATED SILICON DEVICE CELLS**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2013/0291940 A1* 11/2013 Manning 136/256
* cited by examiner

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(57) **ABSTRACT**

A method, apparatus and system for flexible, ultra-thin, and high efficiency pixelated silicon or other semiconductor photovoltaic solar cell array fabrication is disclosed. A structure and method of creation for a pixelated silicon or other semiconductor photovoltaic solar cell array with interconnects is described using a manufacturing method that is simplified compared to previous versions of pixelated silicon photovoltaic cells that require more microfabrication steps.

13 Claims, 7 Drawing Sheets

