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- (71) **Applicant:** LOCKHEED MARTIN CORPORATION
[US/US]; 6801 Rockledge Drive, Bethesda, Maryland
20817 (US).
- (72) **Inventors:** ZINN, Alfred A.; 1073 Maddux Drive, Palo
Alto, California 94303 (US). FRIED, Andrew; 1963
Sheridan Avenue, Saint Paul, Minnesota 55116 (US). HU,
Sidney; 892 Mango Avenue, Sunnyvale, California 94087
(US).
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- (54) **Title:** PHOTOVOLTAIC CELLS HAVING ELECTRICAL CONTACTS FORMED FROM METAL NANOPARTICLES
AND METHODS FOR PRODUCTION THEREOF

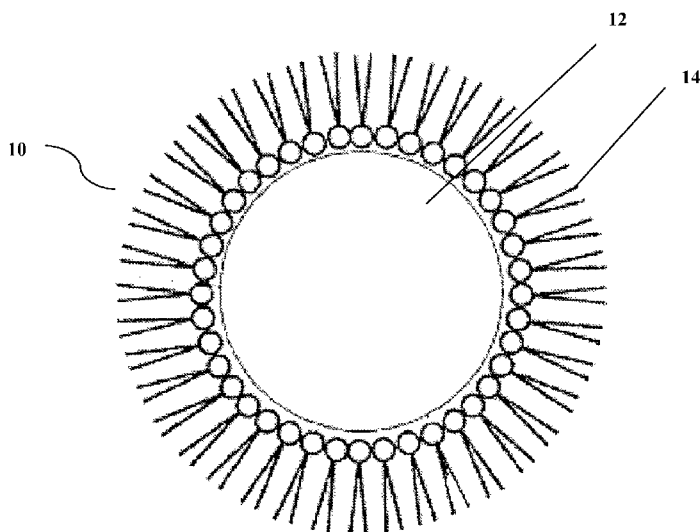


FIGURE 1

- (57) **Abstract:** Photovoltaic cells having copper contacts can be made by using copper nanoparticles during their fabrication. Such photovoltaic cells can include a copper-based current collector located on a semiconductor substrate having an n-doped region and a p-doped region. The semiconductor substrate is configured for receipt of electromagnetic radiation and generation of an electrical current therefrom. The copper-based current collector includes an electrically conductive diffusion barrier disposed on the semiconductor substrate and a copper contact disposed on the electrically conductive diffusion barrier. The copper contact is formed from copper nanoparticles that have been at least partially fused together. The electrically conductive diffusion barrier limits the passage of copper therethrough.