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Briee et al.

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(54) **SOLAR TRACKING REFLECTOR SYSTEM FOR STRUCTURE LIGHTING**

(56) **References Cited**

U.S. PATENT DOCUMENTS

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4,340,812	A	7/1982	Mori
4,368,962	A	1/1983	Hultberg
4,429,178	A	1/1984	Prideaux et al.
4,440,150	A	4/1984	Kachler
4,586,488	A	5/1986	Noto
4,625,709	A	12/1986	Brandstätter
4,628,142	A	12/1986	Hashizume
4,720,170	A	1/1988	Learn, Jr.
4,742,813	A	5/1988	Richl et al.
4,794,909	A	1/1989	Eiden
4,883,340	A	11/1989	Dominguez
5,493,824	A	2/1996	Webster et al.
5,517,358	A	5/1996	Dominguez
5,729,387	A	3/1998	Takahashi et al.
5,999,323	A	12/1999	Wood
6,433,932	B1	8/2002	Aoki et al.
6,465,725	B1	10/2002	Shibata et al.
6,493,145	B1	12/2002	Aoki et al.
6,801,361	B2	10/2004	Aoki et al.
6,827,445	B2	12/2004	Abe et al.

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(52) **U.S. Cl.** **359/591**; 359/597

(58) **Field of Classification Search** 359/591, 359/592, 596, 597; 126/574-575; 353/3

See application file for complete search history.

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(57) **ABSTRACT**

A solar tracking device is mounted above a skylight of a building. An array of mirrors is rotated at a rate of one revolution per day to reflect sunlight through the skylight. A control circuit intermittently adjusts the angular position of the tracking device so that the mirrors face the sun. A solar array charges an internal energy storage system so that no external power source is needed. The control circuit within the tracking device reduces the power requirements at night and when not moving the tracking device during the daytime to conserve electrical energy.

16 Claims, 24 Drawing Sheets

