United States Patent [19]

Weslow et al.

[11] **4,215,410**

[45] **Jul. 29, 1980**

[54] **SOLAR TRACKER**

[75] Inventors: **Jerome H. Weslow**, Rte. 4, St. Pat's Dr., Green Bay, Wis. 54303; **James A. Rodrian**, Menomonee Falls, Wis.

[73] Assignees: **Jerome H. Weslow; Harold J. Weslow; Thomas A. Weslow**, all of Green Bay; **Paul R. Netzow; Roland Weslow**, both of Hartland, all of Wis.

[21] Appl. No.: **10,660**

[22] Filed: **Feb. 9, 1979**

[51] **Int. Cl.**[2] **G06F 15/46**; F24J 3/02; G05D 1/12

[52] **U.S. Cl.** **364/516**; 126/424; 318/567; 364/107; 364/420

[58] **Field of Search** ..... 364/107, 420, 516, 518, 364/900; 318/575, 582, 567; 136/89 PC; 126/424, 425

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,492,148	12/1949	Herbold	318/582
3,007,097	10/1961	Shelley et al.	318/575
3,571,567	3/1971	Eckerman	364/460
4,031,385	6/1977	Zerlaut et al.	126/425
4,034,194	7/1977	Thomas et al.	364/900
4,111,184	9/1978	Perkins	126/425
4,135,489	1/1979	Jarvinen	126/425
4,137,897	2/1979	Moore	126/425
4,147,414	4/1979	Raser	126/425

FOREIGN PATENT DOCUMENTS

2340576	9/1977	France	126/425

OTHER PUBLICATIONS

WALRAVEN: Calculating the Position of the Sun Solar Energy, vol. 20, pp. 393–397, Pergamon Press, 1978.

CARDEN: Steering a Field of Mirrors Using a Shared Computer Based Controller, Solar Energy, vol. 20, pp. 343–355, 1978.

EDWARDS: Computer Based Sun Following System, Solar Energy, vol. 21, pp. 491–496, 1978.

SEIM: Numerical Interpolation for Microprocessor-Based Systems.

Primary Examiner—Felix D. Gruber
Attorney, Agent, or Firm—Ralph G. Hohenfeldt

[57] **ABSTRACT**

An open loop servo controller for controlling motors which drive a solar energy utilizing device about its azimuth and altitude axis to track the sun. The controller has a central processor and elements for inputting data corresponding with the present day of the year, the hour of the day, the minute of the hour and with the latitude and longitude of the device installation. Memories store program data, and tables of data corresponding with the declination of the sun on any day and of other mathematical functions. The processor uses the data to calculate the azimuth and altitude angles of the sun itself within every minute of the day and causes signals to be produced which result in motor controllers causing the motors to turn the device through azimuth and altitude axes angles corresponding with the calculated angles.

16 Claims, 29 Drawing Figures