



US007215412B2

(12) **United States Patent**
O'Loughlin et al.

(10) **Patent No.:** **US 7,215,412 B2**
(45) **Date of Patent:** **May 8, 2007**

- (54) **FLAGPOLE REFLECTORS FOR LASER RANGE FINDERS**
- (75) **Inventors:** **Robert F. O'Loughlin**, Madison, WI (US); **Michael D. Plitman**, Minneapolis, MN (US); **Daniel Steiner**, Waunakee, WI (US); **Wayne Timberman**, Carmel, IN (US)

6,062,985 A	5/2000	Rege	
6,185,055 B1 *	2/2001	Feist	359/831
6,266,628 B1 *	7/2001	Huep et al.	702/150
6,346,055 B1	2/2002	Rege	
D465,174 S	11/2002	Ursprung	
2004/0223139 A1 *	11/2004	Vogel	356/141.1
2005/0272515 A1	12/2005	Hurley et al.	

- (73) **Assignee:** **Golf Solutions 1, L.L.C.**, Madison, WI (US)
- (*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 258 days.

OTHER PUBLICATIONS

Internet World Wide Web Page, <http://www.laserlinkgolf.com/main.htm>, printed Nov. 23, 2004.
 Internet World Wide Web Page, http://www.mosquitocreekoutdoors.com/cgi-bin/SoftCart.exe/golf_gps.htm?E+scstore, printed Aug. 4, 2004.

* cited by examiner

Primary Examiner—Thomas H. Tarcza
Assistant Examiner—Luke D. Ratcliffe
 (74) *Attorney, Agent, or Firm*—Foley & Lardner, LLP

- (21) **Appl. No.:** **10/931,947**
- (22) **Filed:** **Sep. 1, 2004**

- (65) **Prior Publication Data**
US 2006/0044544 A1 Mar. 2, 2006

- (51) **Int. Cl.**
G01C 3/08 (2006.01)
- (52) **U.S. Cl.** **356/4.01; 356/4.02; 356/4.03; 356/5.01**
- (58) **Field of Classification Search** 356/4.01
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,362,131 A *	11/1944	Haggart, Jr.	340/321
D242,775 S	12/1976	Williams, Jr.	
4,136,394 A	1/1979	Jones et al.	
4,813,494 A *	3/1989	Beard et al.	173/91
5,723,840 A *	3/1998	Bojic et al.	218/60
5,760,909 A *	6/1998	Nichols	356/4.08
5,841,392 A *	11/1998	Kishimoto	342/125

(57) **ABSTRACT**

A system and method are provided for determining a distance to a target. The method includes sending light, at a first time, to a light reflector mounted in a reflector device, receiving light reflected from the light reflector at a second time, and determining the distance to the reflector device using the difference between the first time and the second time. The reflector device has a first lateral surface, a second lateral surface parallel to the first lateral surface, and a rod surface extending from the first lateral surface to the second lateral surface. The reflector device includes sockets arranged in the rod surface with a light reflector mounted in each socket. The sockets may be arranged in a plurality of rows with possibly a plurality of sockets in each row. The reflector device may be mounted as an insert to or at the top of a target to determine the distance to the target.

24 Claims, 10 Drawing Sheets

