US009408352B2

(12) **United States Patent**
Schiltz et al.

(10) **Patent No.: US 9,408,352 B2**
(45) **Date of Patent: *Aug. 9, 2016**

(54) **SYSTEM AND METHOD FOR ADJUSTING MOVEMENT OF AN IRRIGATION APPARATUS**

(71) Applicant: **AgSense, LLC**, Huron, SD (US)

(72) Inventors: **Terry D. Schiltz**, Huron, SD (US); **Michael D. Meyer**, Huron, SD (US); **Jesse L. Hohm**, Huron, SD (US)

(73) Assignee: **AgSense, LLC**, Huron, SD (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/564,866**

(22) Filed: **Dec. 9, 2014**

(65) **Prior Publication Data**

US 2015/0164007 A1 Jun. 18, 2015

Related U.S. Application Data

(63) Continuation of application No. 14/104,429, filed on Dec. 12, 2013, now Pat. No. 8,924,101.

(51) **Int. Cl.**

G06F 19/00	(2011.01)
A01G 25/09	(2006.01)
A01G 25/16	(2006.01)
G05B 15/02	(2006.01)
A61M 1/00	(2006.01)
A61B 1/00	(2006.01)
A61B 17/00	(2006.01)

(52) **U.S. Cl.**

CPC ***A01G 25/092*** (2013.01); ***A01G 25/16*** (2013.01); ***G05B 15/02*** (2013.01); *A61B 1/00039* (2013.01); *A61B 17/00234* (2013.01); *A61M 1/0058* (2013.01); *A61M 2205/12* (2013.01); *A61M 2205/3351* (2013.01)

(58) **Field of Classification Search**

CPC A61M 1/0058; A61M 2205/12; A61M 2205/3351; A61B 17/00234; A61B 1/00039

USPC 701/50; 700/283; 417/44.2, 477.2; 137/78.3

See application file for complete search history.

(56) **References Cited**

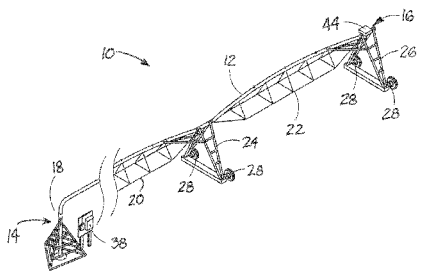
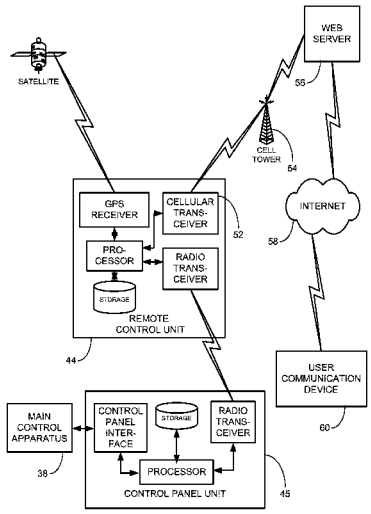
U.S. PATENT DOCUMENTS

5,255,857	A *	10/1993	Hunt	239/731
6,007,004	A *	12/1999	Unruh	239/729
7,203,576	B1	4/2007	Wilson	
7,295,898	B2	11/2007	Lovett	
7,309,035	B2 *	12/2007	Korus	239/730
7,584,053	B2 *	9/2009	Abts	701/485
7,953,550	B1	5/2011	Weiting	
8,185,303	B1	5/2012	Wieting	
8,494,763	B1	7/2013	Wieting	
8,924,101	B1 *	12/2014	Schiltz et al.	701/50
2006/0027677	A1 *	2/2006	Abts	239/67
2006/0289676	A1 *	12/2006	Korus	239/159
2011/0015587	A1	1/2011	Tumey	
2011/0062888	A1 *	3/2011	Bondy et al.	315/294
2013/0211717	A1 *	8/2013	Abts	701/485

* cited by examiner

Primary Examiner — McDieunel Marc
(74) *Attorney, Agent, or Firm* — Fredrikson & Byron, P.A.

(57) **ABSTRACT**

A system and method for adjusting movement of an irrigation apparatus to help compensate for transient conditions occurring during operation of the apparatus to accomplish a substantially uniform fluid application rate, and including transient conditions such as a detected actual speed of movement of the span across the field is lesser or greater than expected or such as a detected actual flow rate of fluid to the irrigation system is lesser or greater than expected.

20 Claims, 10 Drawing Sheets