US008167168B2

(12) **United States Patent**
Reynolds

(10) **Patent No.: US 8,167,168 B2**
(45) **Date of Patent: May 1, 2012**

(54) **DISPENSER WITH AN AUTOMATIC PUMP OUTPUT DETECTION SYSTEM**

(75) Inventor: **Aaron R. Reynolds**, North Canton, OH (US)

(73) Assignee: **GOJO Industries, Inc.**, Akron, OH (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 289 days.

(21) Appl. No.: **12/561,392**

(22) Filed: **Sep. 17, 2009**

(65) **Prior Publication Data**

US 2011/0062182 A1 Mar. 17, 2011

(51) **Int. Cl.**
B67D 5/08 (2006.01)

(52) **U.S. Cl.** **222/1**; 222/63; 222/333

(58) **Field of Classification Search** 222/1, 23, 222/52, 63, 333, 642, 282
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,509,903	A	4/1985	Fram	
4,884,013	A *	11/1989	Jackson et al.	318/481
5,295,807	A	3/1994	Wiley et al.	
5,305,915	A	4/1994	Kamysz et al.	
5,605,251	A	2/1997	Retti	
5,730,819	A	3/1998	Retti	
6,012,903	A	1/2000	Boelkins	
6,039,212	A	3/2000	Singh	
6,161,733	A	12/2000	King	
7,111,762	B2 *	9/2006	Saunders et al.	222/382
7,267,531	B2 *	9/2007	Anderson et al.	417/44.11
2005/0211729	A1	9/2005	Bassett et al.	
2005/0254979	A1	11/2005	Fuqua	
2006/0243740	A1 *	11/2006	Reynolds et al.	222/52
2006/0263513	A1	11/2006	Romanin	
2008/0185396	A1	8/2008	Yang et al.	
2008/0223479	A1	9/2008	Bassett et al.	
2009/0061368	A1	3/2009	Caves et al.	
2010/0308076	A1 *	12/2010	Snodgrass	222/52

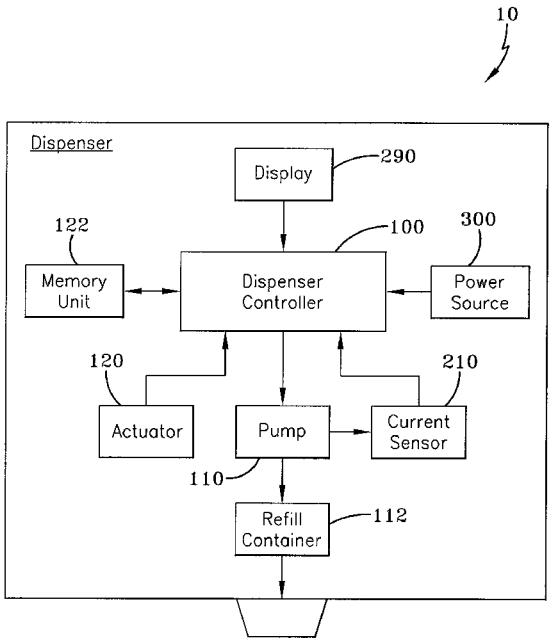
FOREIGN PATENT DOCUMENTS

CA	923759		4/1973
EP	1475491	A2	11/2004
WO	03104754	A1	12/2003
WO	2004086731	A2	10/2004
WO	2005112724	A1	12/2005

* cited by examiner

Primary Examiner — Kevin P Shaver
Assistant Examiner — Donnell Long
(74) *Attorney, Agent, or Firm* — Renner, Kenner, Greive, Bobak, Taylor & Weber

(57) **ABSTRACT**

A dispenser with an automatic pump output detection system provides a pump with an adjustable output. The pump is coupled to a current sensor that generates an operating profile based on the electrical current consumed during each dispensement of material by the pump. A controller that includes one or more previously-stored reference profiles that correspond to discrete pump output amount values that are compared with each generated operating profile, whereby the discrete pump output amounts associated with the matching reference profile is used to compute various usage data associated with the operation of the dispenser.

6 Claims, 2 Drawing Sheets