



US008679069B2

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

(10) **Patent No.:** **US 8,679,069 B2**
(45) **Date of Patent:** **Mar. 25, 2014**

(54) **PEN-TYPE INJECTOR**

(75) Inventors: **Robert Frederick Veasey**, Warwickshire (GB); **Robert Perkins**, Oxfordshire (GB); **David Aubrey Plumptre**, Worcestershire (GB)

(73) Assignee: **DCA Design International, Ltd.**, Warwick (GB)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 406 days.

(21) Appl. No.: **12/944,544**

(22) Filed: **Nov. 11, 2010**

(65) **Prior Publication Data**
US 2012/0089100 A1 Apr. 12, 2012

Related U.S. Application Data

(63) Continuation of application No. 11/483,546, filed on Jul. 11, 2006, now Pat. No. 7,918,833, and a continuation of application No. 10/790,225, filed on Mar. 2, 2004, now abandoned.

(30) **Foreign Application Priority Data**
Mar. 3, 2003 (GB) 0304822.0

(51) **Int. Cl.**
A61M 5/00 (2006.01)

(52) **U.S. Cl.**
USPC **604/209; 604/207**

(58) **Field of Classification Search**
USPC 604/187, 207-211, 218, 221, 224, 232
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,304,152 A	4/1994	Sams
5,320,609 A	6/1994	Haber et al.
5,480,387 A	1/1996	Gabriel et al.
5,505,704 A	4/1996	Pawelka et al.
5,626,566 A	5/1997	Petersen et al.
5,674,204 A	10/1997	Chanoch
5,688,251 A	11/1997	Chanoch

(Continued)

FOREIGN PATENT DOCUMENTS

EP	0937471 A2	8/1999
EP	0937476	8/1999

(Continued)

OTHER PUBLICATIONS

EP 0937471A2, Walters et al., date of publication: Aug. 25, 1999.*

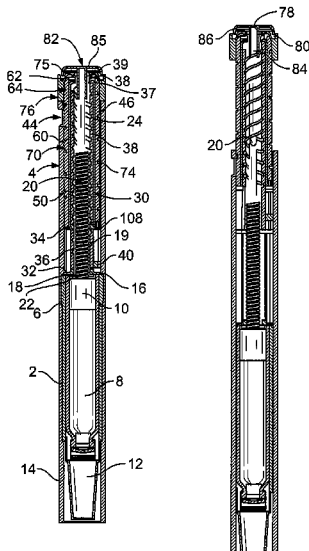
Primary Examiner — Manuel Mendez

(74) *Attorney, Agent, or Firm* — McDonnell Boehnen Hulbert & Berghoff LLP

(57) **ABSTRACT**

A housing for a dispensing apparatus. The housing comprising a main housing and a dose dial sleeve. The dose dial sleeve comprising a helical groove configured to engage a threading provided by the housing. A dose knob is disposed near a proximal end of the dose dial sleeve and a piston rod is provided within the housing. The piston rod is non-rotatable during a dose setting step. A driver comprises an internal threading near a distal portion of the driver and is adapted to engage an external thread of the piston rod. A tubular clutch is located adjacent a distal end of the dose knob and operatively coupled to the dose knob. The dose dial sleeve may extend circumferentially around at least a portion of the tubular clutch.

3 Claims, 7 Drawing Sheets



(56)

References Cited

2002/0052578 A1 5/2002 Moller
2004/0059299 A1 3/2004 Moller

U.S. PATENT DOCUMENTS

6,083,197 A 7/2000 Umbaugh
6,193,698 B1 2/2001 Kirchofer et al.
6,221,046 B1 4/2001 Burroughs et al.
6,248,095 B1 6/2001 Giambattista et al.
6,899,698 B2 5/2005 Sams
7,241,278 B2 7/2007 Moller
7,918,833 B2* 4/2011 Veasey et al. 604/209

FOREIGN PATENT DOCUMENTS

WO 91/14467 10/1991
WO 99/38554 8/1999
WO 9938554 A1 8/1999

* cited by examiner

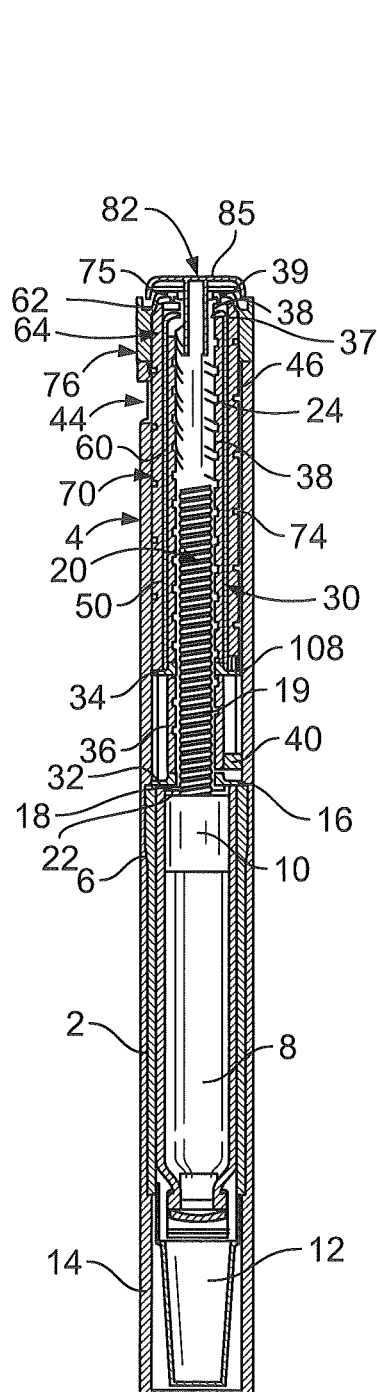


FIG. 1

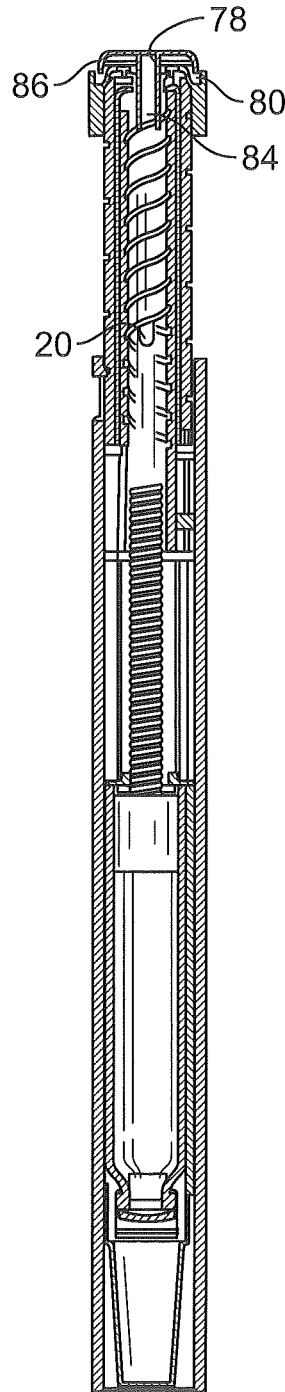


FIG. 2

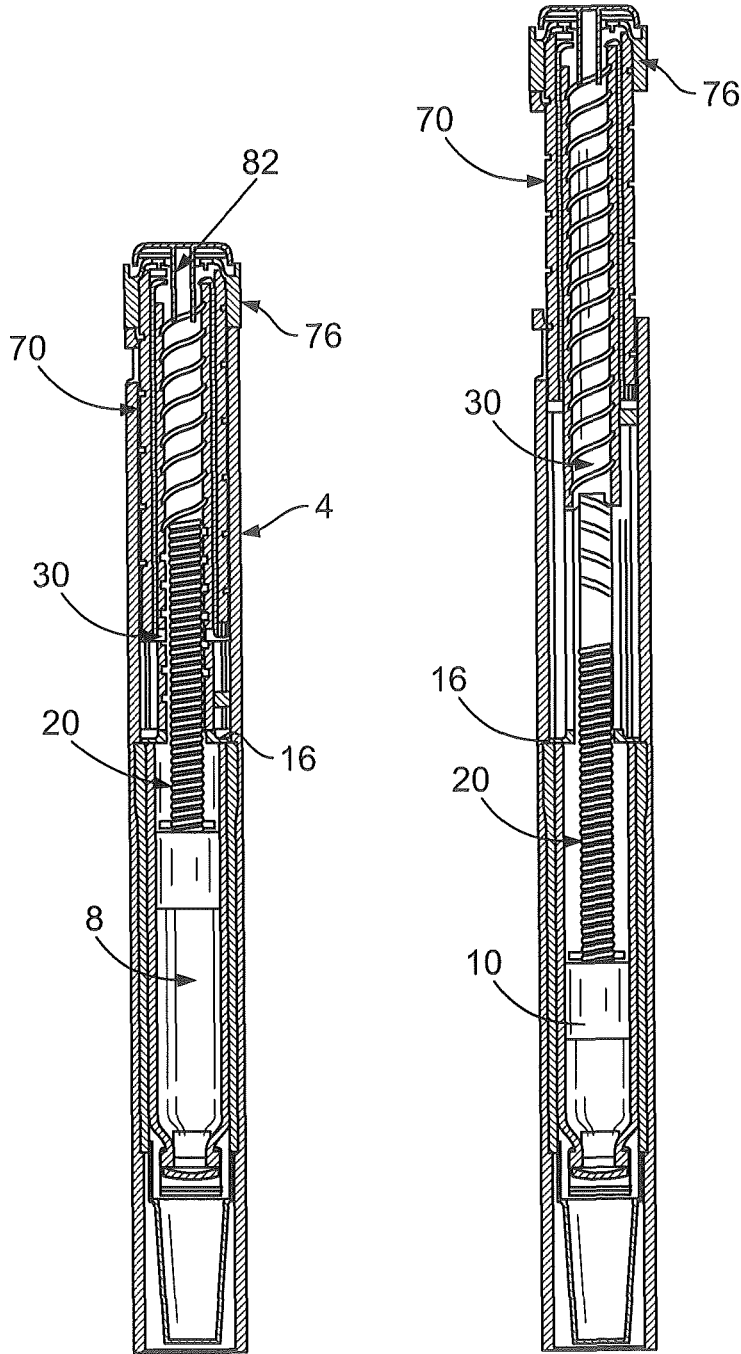


FIG. 3

FIG. 4

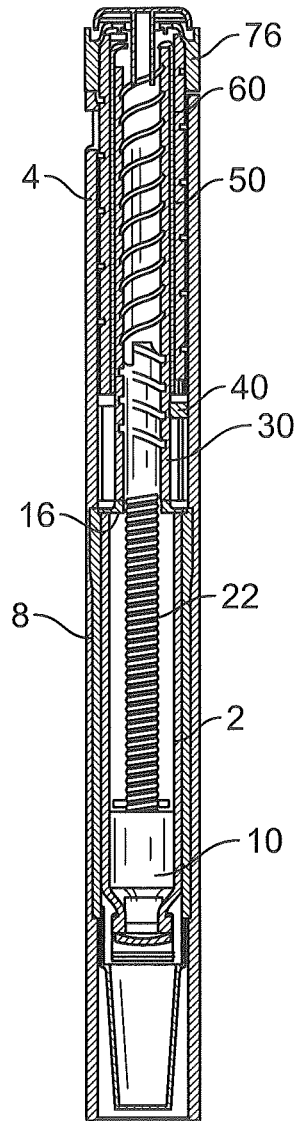


FIG. 5

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.