



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**

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(*) 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.*

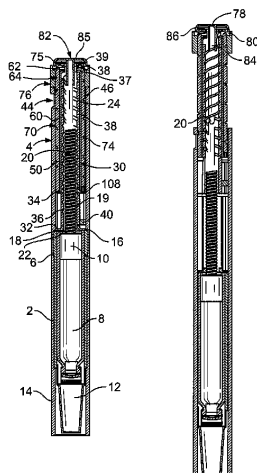
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(57) **ABSTRACT**

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

FOREIGN 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 Giambaitista 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

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

* cited by examiner

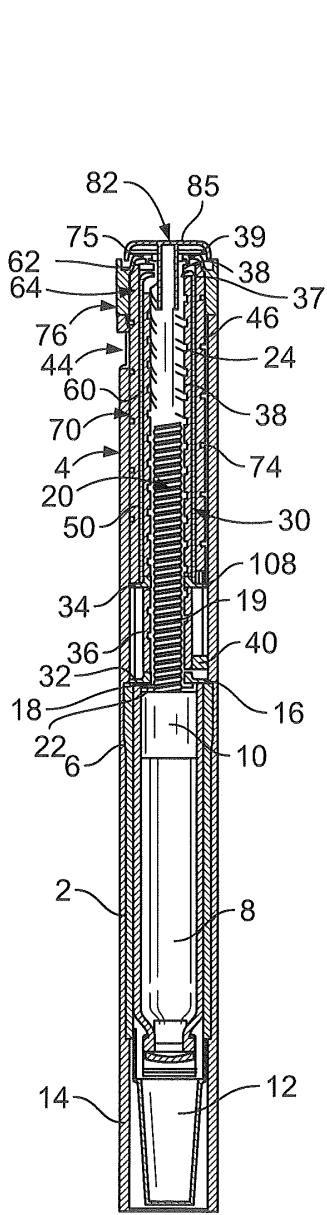


FIG. 1

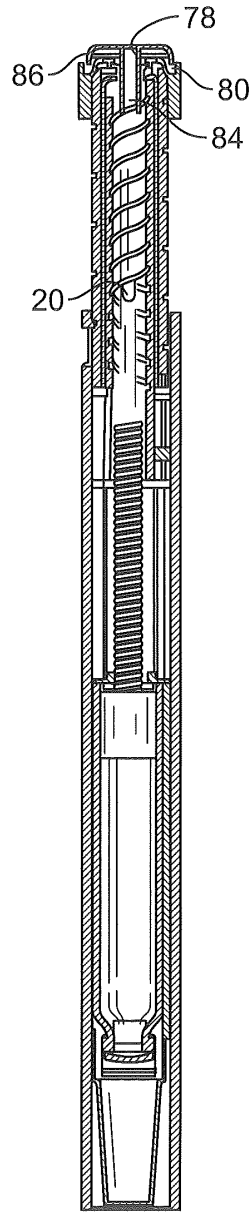


FIG. 2

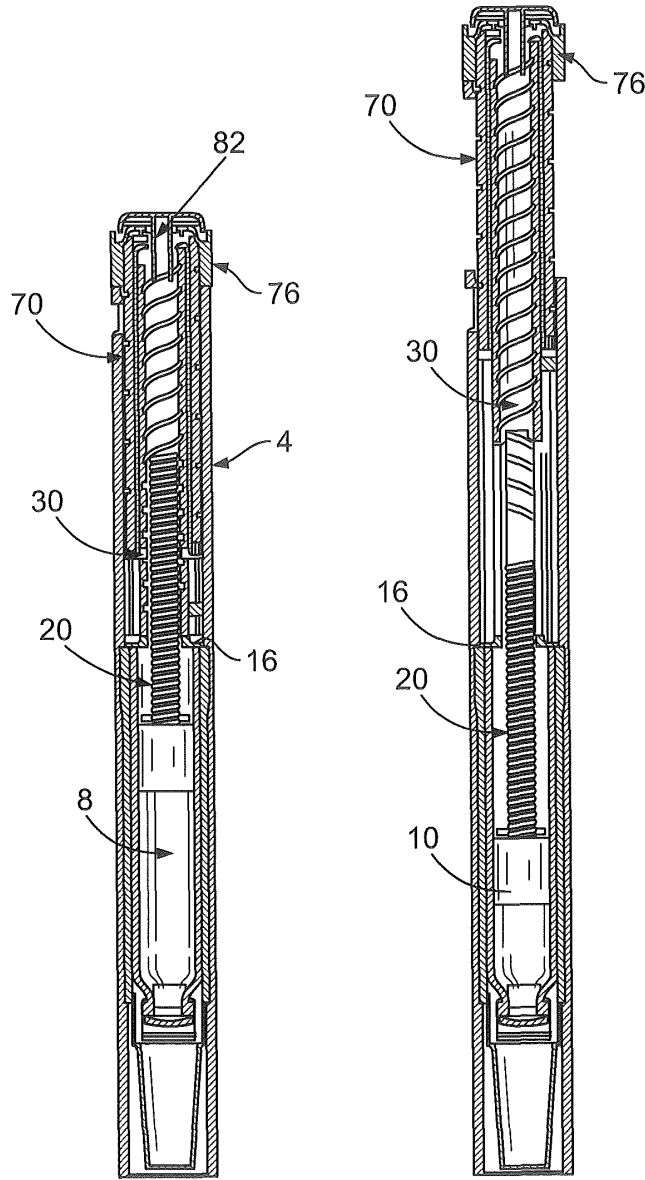


FIG. 3

FIG. 4

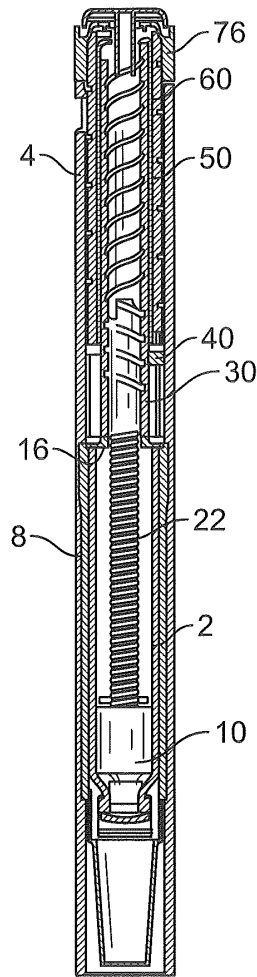


FIG. 5

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