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Veasey et al.

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- (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 0 days.

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- (52) **U.S. Cl.**
CPC **A61M 5/31551** (2013.01); **A61M 5/24** (2013.01); **A61M 5/3157** (2013.01);
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Reissue U.S. Appl. No. 10/442,855, "Injection Syringe", filed May 21, 2003.
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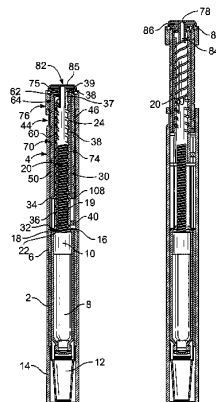
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(57) **ABSTRACT**

The present invention relates to injectors, such as pen-type injectors, that provide for administration of medicinal products from a multidose-cartridge and permit a user to set the delivery dose. The injector may include a housing, a piston rod adapted to operate through the housing, a dose dial sleeve located between the housing and the piston rod, and a drive sleeve located between the dose dial sleeve and the piston rod. The dose dial sleeve may have a helical thread of first lead and the drive sleeve may have a helical groove of second lead. The first lead of the helical thread and the second lead of the helical groove may be the same.

30 Claims, 7 Drawing Sheets



Related U.S. Application Data

continuation of application No. 14/635,573, filed on Mar. 2, 2015, now Pat. No. 9,233,211, which is a continuation of application No. 13/919,251, filed on Jun. 17, 2013, now Pat. No. 9,011,391, which is a division of application No. 13/040,198, filed on Mar. 3, 2011, now Pat. No. 8,512,297, which is a continuation of application No. 11/483,546, filed on Jul. 11, 2006, now Pat. No. 7,918,833, which is a continuation of application No. 10/790,225, filed on Mar. 2, 2004, now abandoned.

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- (58) **Field of Classification Search**
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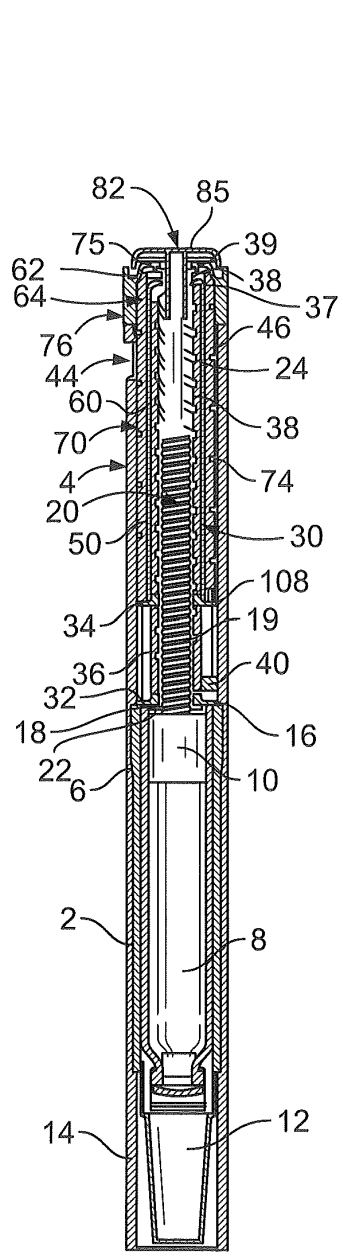


FIG. 1

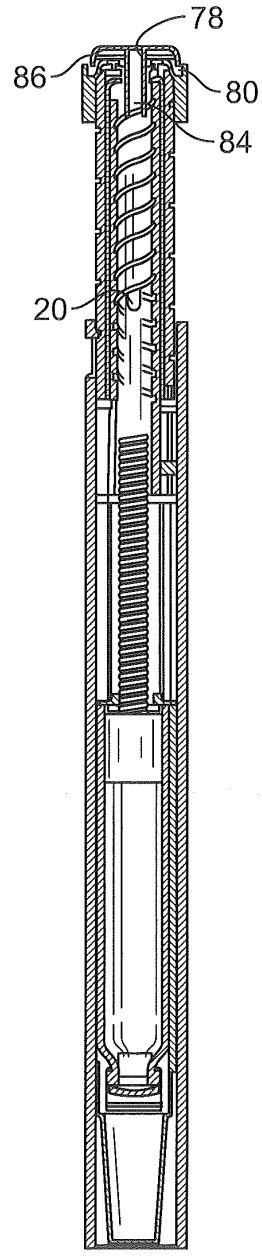


FIG. 2

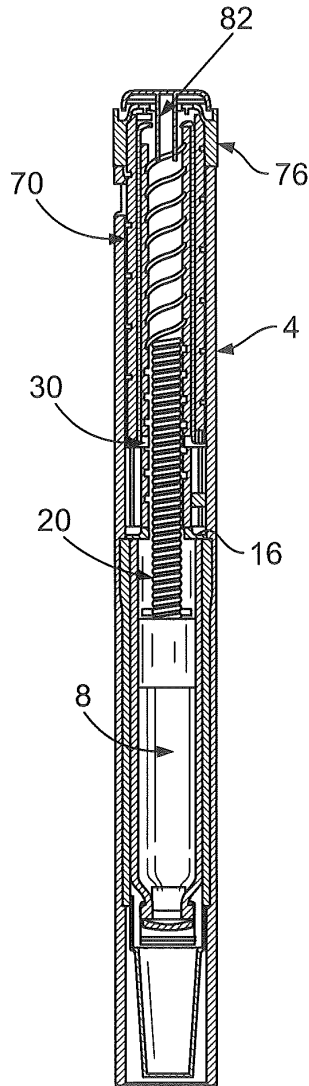


FIG. 3

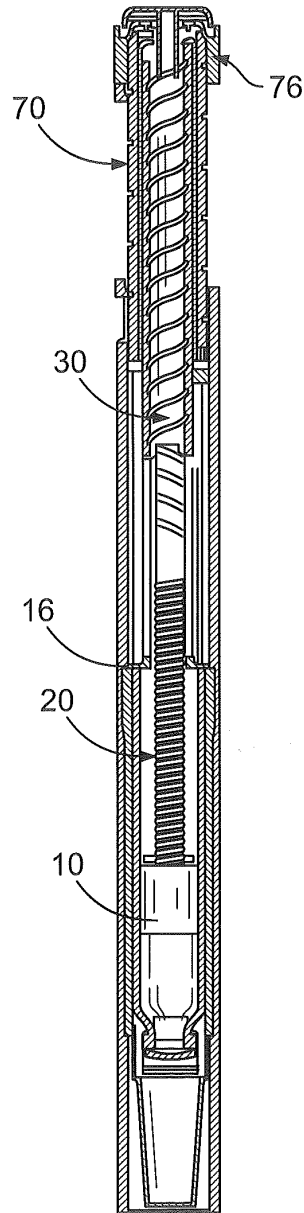


FIG. 4

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