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**Steenfeldt-Jensen et al.**

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(54) **INJECTION SYRINGE**

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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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(22) Filed: **Oct. 28, 1999**

**Related U.S. Application Data**

(63) Continuation of application No. 09/238,849, filed on Jan. 28, 1999, now Pat. No. 6,004,297.

(60) Provisional application No. 60/073,820, filed on Feb. 5, 1998.

**(30) Foreign Application Priority Data**

Jan. 30, 1998 (DK) ..... 1998 00130

(51) **Int. Cl.<sup>7</sup>** ..... **A61M 5/00**

(52) **U.S. Cl.** ..... **604/207; 604/211**

(58) **Field of Search** ..... 604/207, 208,  
604/210, 211, 218, 187, 232

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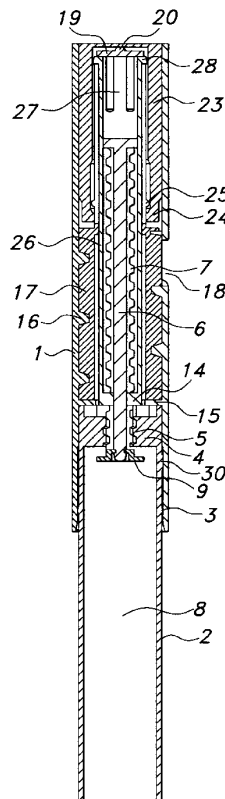
*Primary Examiner*—John D. Yasko

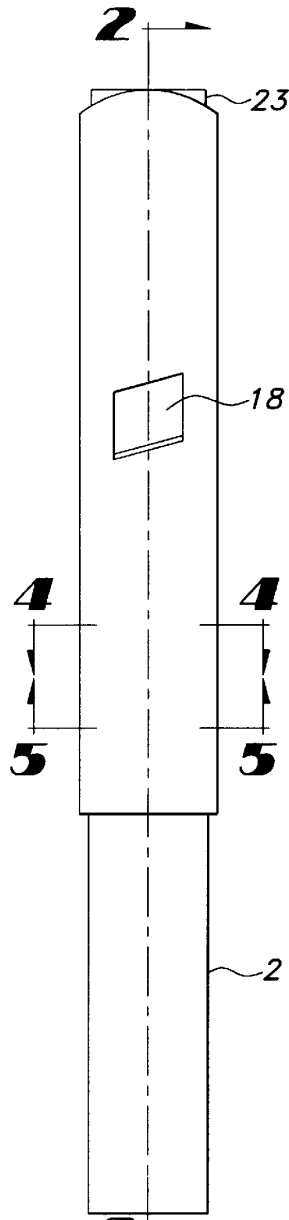
(74) *Attorney, Agent, or Firm*—Steve T. Zelson, Esq

(57) **ABSTRACT**

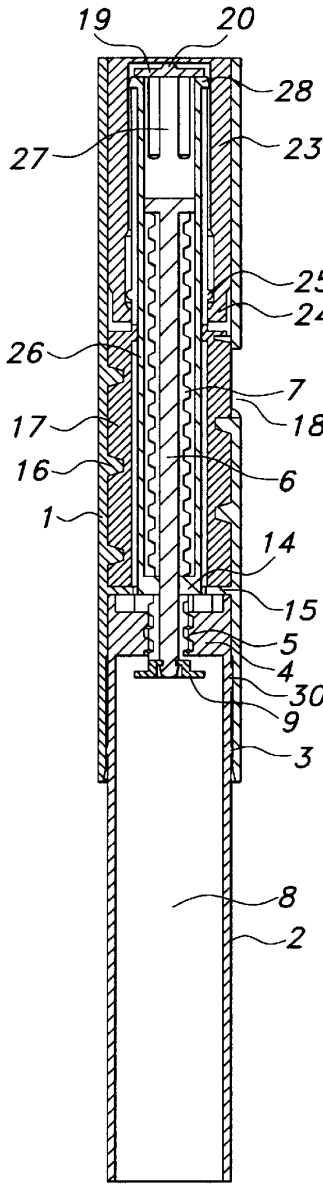
The present invention provides an injection syringe comprises a housing including a holder for containing a cartridge of medicine, a piston rod with a non-circular cross-section having an outer thread, a piston rod drive, a one way coupling having an annular ring of internal ratchet notches, which annular ring can be integral with the housing, and a pawl having at least a pair of resilient arms each having a free end.

**11 Claims, 5 Drawing Sheets**

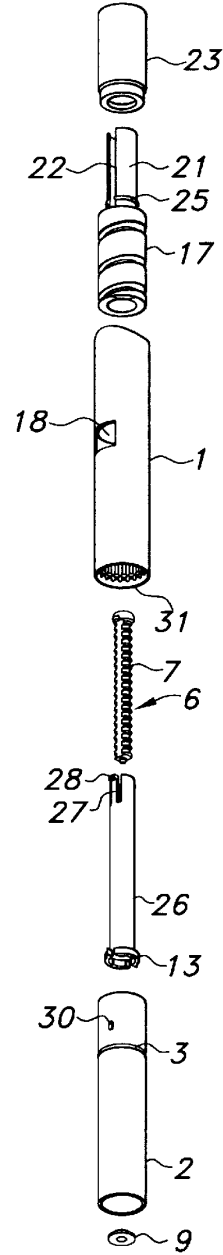




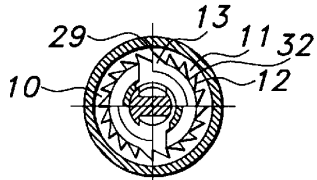
**FIG 1**



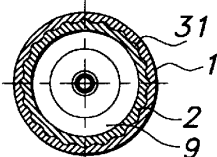
**FIG 2**



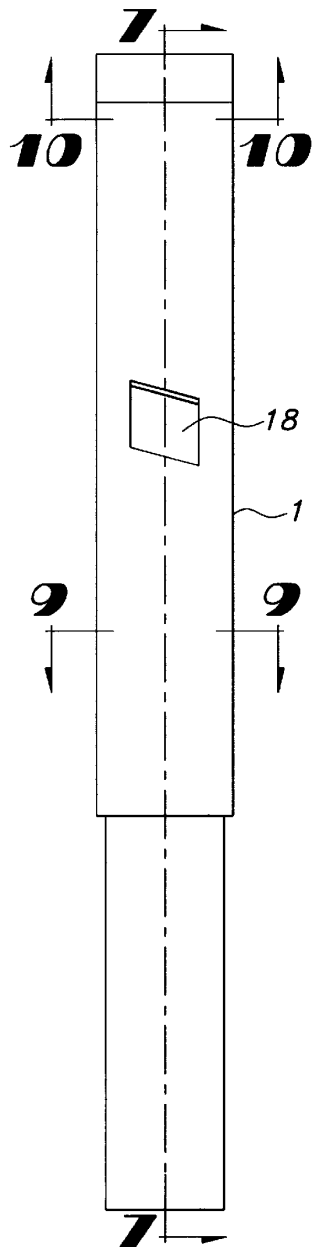
**FIG 3**



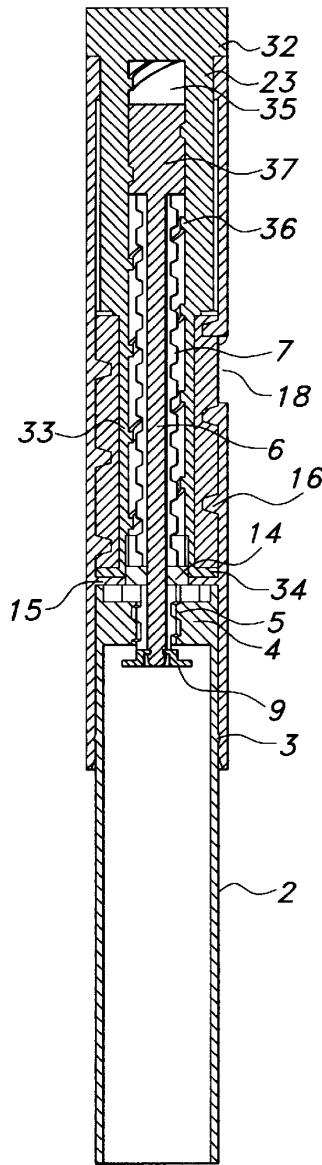
**FIG 4**



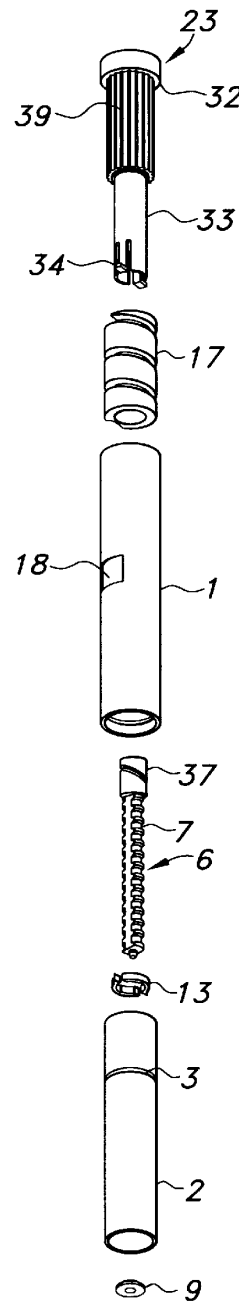
**FIG 5**



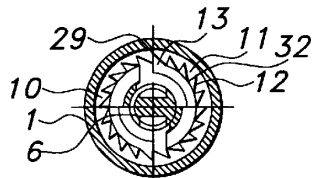
**FIG 6**



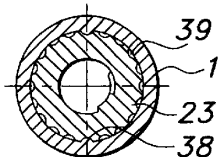
**FIG 7**



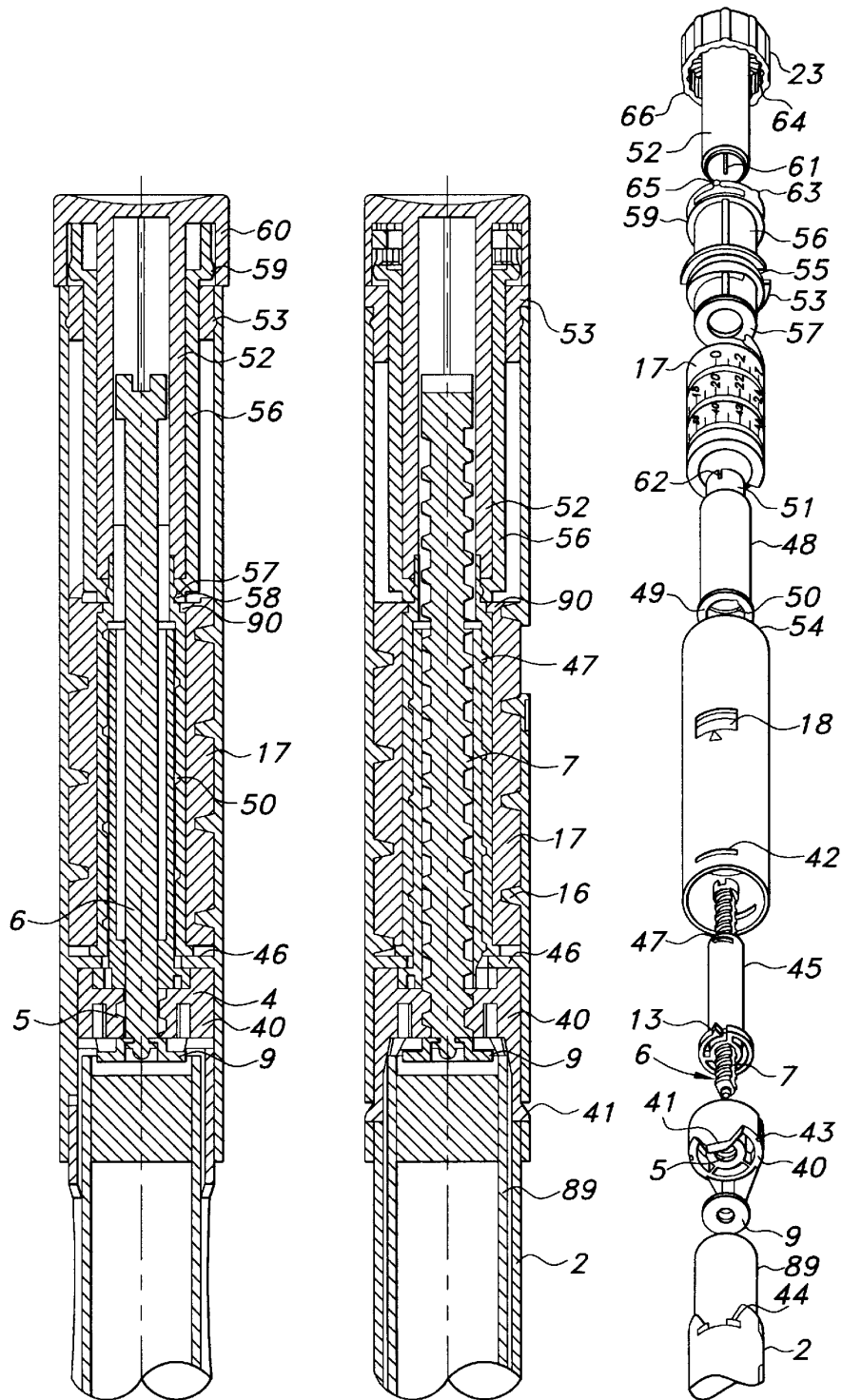
**FIG 8**



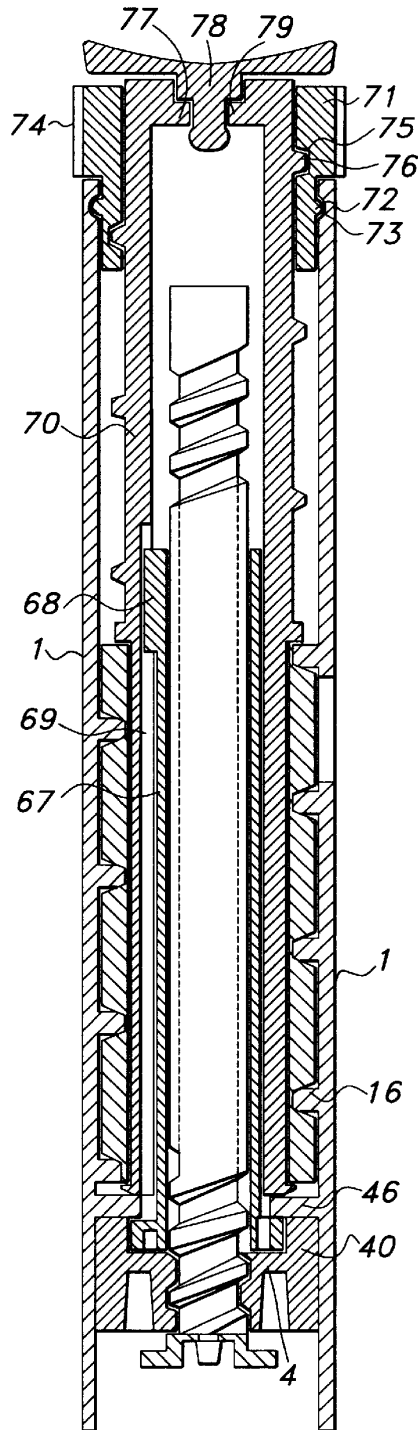
**FIG 9**



**FIG 10**



**FIG 11 FIG 12 FIG 13**



**FIG 14**

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