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(54) **DIAL-DOWN MECHANISM FOR WIND-UP PEN**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,104,380 A	4/1992	Holman et al.	
6,221,046 B1	4/2001	Burroughs et al.	
2002/0173752 A1 *	11/2002	Polzin	604/233
2004/0199117 A1	10/2004	Giambattista et al.	
2005/0090782 A1 *	4/2005	Marshall et al.	604/211

FOREIGN PATENT DOCUMENTS

EP	0615762 A1	9/1994
EP	0937476 A2	8/1999
WO	WO 02/053214 A1	7/2002
WO	WO 2004054644 A1 *	7/2004

* cited by examiner

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(57) **ABSTRACT**

The present invention relates to a dial-down mechanism for an injection device comprising a torsion spring for assisting injection of a dose of medicament from the injection device, the dial-down mechanism comprising dial-up cam arranged to receive and engage with a dial-up key, wherein the dial-up cam and the dial-up key are adapted to, upon rotation of a dose setting member in a first direction, cooperate to strain the torsion spring of the injection device, and a dial-down cam arranged to receive and engage with a dial-down key, wherein the dial-down cam and the dial-down key are adapted to, upon rotation of the dose setting member in a second direction, cooperate to release the torsion spring of the injection device, the second rotation direction being opposite to the first rotation direction.

10 Claims, 5 Drawing Sheets

