



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

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(54) **DUAL-CHAMBERED DRUG DELIVERY DEVICE FOR HIGH PRESSURE INJECTIONS**

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A61M 2005/3128 (2013.01)

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(58) **Field of Classification Search**
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See application file for complete search history.

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(56) **References Cited**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1105 days.

U.S. PATENT DOCUMENTS

3,572,556 A * 3/1971 Pogacar A61M 5/484
222/309
4,643,723 A * 2/1987 Smit A61M 5/204
604/207

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(Continued)

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FOREIGN PATENT DOCUMENTS

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JP 2001501504 A 2/2001
JP 2006526467 A 11/2006
WO WO-9811926 A1 3/1998

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OTHER PUBLICATIONS

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(57) **ABSTRACT**

(51) **Int. Cl.**
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(Continued)

A dual-chambered drug delivery device (201) includes a first chamber (205) in which a medicament is stored. A dose setting member (213) is rotated to set a medicament dose. The dose setting member (213) being rotatable to set the medicament dose. The dose setting member (213) is not axially moveable. A second chamber (221) is in fluid communication with the first chamber (205). The medicament dose is transferred to the second chamber (221) from the first chamber (205) prior to injecting the medicament dose. A needle (203) communicates with the second chamber (221) to inject the medicament dose into an injection site.

(52) **U.S. Cl.**
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