



US009408982B2

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

(10) **Patent No.:** **US 9,408,982 B2**  
(45) **Date of Patent:** **Aug. 9, 2016**

(54) **SAFETY SYRINGE PREVENTING THE NEEDLE STORAGE MECHANISM FROM BEING OPERATED BEFORE USE**

(75) Inventors: **Minoru Sano**, Osaka (JP); **Yoshihisa Hama**, Osaka (JP)

(73) Assignee: **Nipro Corporation**, Osaka (JP)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1259 days.

(21) Appl. No.: **11/991,807**

(22) PCT Filed: **Sep. 12, 2006**

(86) PCT No.: **PCT/JP2006/318072**

§ 371 (c)(1),  
(2), (4) Date: **May 10, 2010**

(87) PCT Pub. No.: **WO2007/032352**

PCT Pub. Date: **Mar. 22, 2007**

(65) **Prior Publication Data**

US 2010/0312197 A1 Dec. 9, 2010

(30) **Foreign Application Priority Data**

Sep. 13, 2005 (JP) ..... 2005-265815

(51) **Int. Cl.**  
**A61M 5/32** (2006.01)  
**A61M 5/315** (2006.01)  
**A61M 5/50** (2006.01)

(52) **U.S. Cl.**  
CPC ..... **A61M 5/322** (2013.01); **A61M 5/31501** (2013.01); **A61M 5/31505** (2013.01); **A61M 2005/31506** (2013.01); **A61M 2005/31508** (2013.01); **A61M 2005/3231** (2013.01); **A61M 2005/5073** (2013.01)

(58) **Field of Classification Search**  
CPC ..... **A61M 2005/3224**; **A61M 5/322**; **A61M 2005/31508**; **A61M 2005/3231**; **A61M 2005/3223**; **A61M 5/5066**; **A61M 2005/31506**; **A61M 2005/5073**; **A61M 5/31501**; **A61M 5/31505**  
USPC ..... **604/220**, **110**, **240**, **195**, **187**, **111**, **181**, **604/192**, **197**, **198**, **218**, **228**  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,533,970 A \* 7/1996 Berger et al. .... 604/110  
6,796,969 B1 \* 9/2004 Andersson ..... 604/198  
6,821,266 B2 \* 11/2004 Knepshield et al. .... 604/110  
2001/0021821 A1 \* 9/2001 Wang et al. .... 604/110  
2006/0052748 A1 \* 3/2006 Coelho et al. .... 604/110

\* cited by examiner

*Primary Examiner* — Bhisma Mehta

*Assistant Examiner* — Brandy S Lee

(74) *Attorney, Agent, or Firm* — Kubovcik & Kubovcik

(57) **ABSTRACT**

To provide a syringe with a needle storage mechanism in which the needle storage mechanism is not activated before use. A safety syringe including an injection barrel 1 having a connecting portion 11 at the distal end and an opening at the proximal end thereof, a needle assembly B having an injection needle 5 and a needle base 6 fixed to the proximal end of the injection needle 5 and being connected to the connecting portion 11, a gasket 2 provided liquid-tightly and slidably in the injection barrel, a plunger 3 being connected to the proximal end of the gasket 2 and joining means 21 provided at the distal portion of the gasket 2 or the plunger 3, and joined means 61 provided at the proximal portion of the needle base 6, wherein a joint preventing means 90 which prevents the joining means 21 and the joined means 61 from being joined unintentionally before use, and allows joining to each other when in use is provided.

**1 Claim, 5 Drawing Sheets**

