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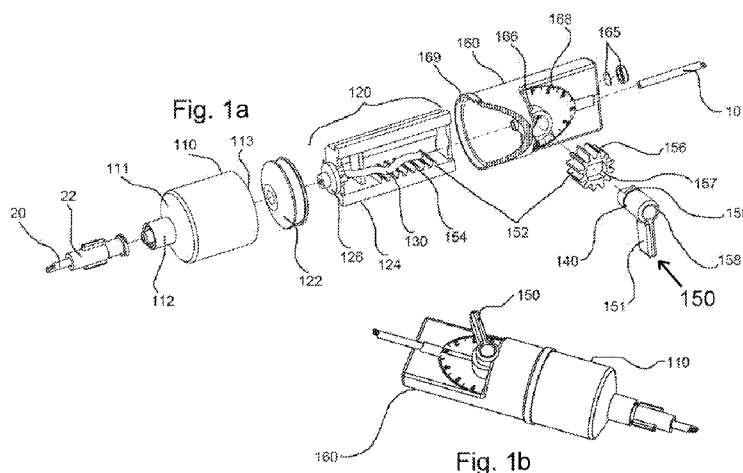
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[Continued on next page]

(54) Title: A CLOSED IN-LINE APPARATUS AND METHOD FOR FLUID ASPIRATION



(57) Abstract: An in-line sampling apparatus and method for selectively introducing a fluid to and aspirating a fluid from a downstream fluid conduit connected to a catheterized patient. The apparatus consists of syringe that has a fluid chamber into which fluid is aspirated. A volume regulator adjusts the volume of the fluid chamber. A fluid line passes through the syringe to a downstream fluid conduit. A valve mechanism selectively allows fluid flow along the fluid line or prevents fluid flow along the fluid line while simultaneously aspirating a fluid and selectively shifts the volume regulator to adjust the volume of the fluid chamber. A housing joins the fluid chamber, the fluid line, the valve mechanism, the volume regulator and the control mechanism. An electronic control apparatus operates the valve mechanism. The method includes the capability of determining occlusions in the line.



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**B. FIELDS SEARCHED**

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Korean utility models and applications for utility models

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: syringe, aspirating a fluid, conduit, volume,

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005-0096627 A1 (MARK HOWARD) 05 May 2005 See abstract, claims 1,8 and figure 1	1-56
A	US 2007-0255167 A1 (MARK A. CHRISTENSEN et al.) 01 November 2007 See abstract, claims 1,4-8 and figure 2	1-56
A	US 2003-0135165 A1 (MILTON CHERNACK) 17 July 2003 See abstract, claims 1-2 and figure 1	1-56

 Further documents are listed in the continuation of Box C. See patent family annex.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005-0096627 A1	05.05.2005	None	
US 2007-0255167 A1	01.11.2007	CA 2517776-A1 EP 1605986 A2 EP 1605986 A4 EP 1605986 B1 JP 2007-524434 A US 2004-0176703 A1 US 2006-0058702 A1 US 7112177 B2 WO 2004-078235 A2 WO 2004-078235 A3	16.09.2004 21.12.2005 25.06.2008 27.10.2010 30.08.2007 09.09.2004 16.03.2006 26.09.2006 16.09.2004 16.09.2004
US 2003-0135165 A1	17.07.2003	AU 2003-210487 A1 AU 2003-210487 A8 EP 1471956 A2 EP 1471956 A4 US 6579263 B1 US 7618412 B2 WO 03-059415 A2 WO 03-059415 A3 WO 0305-9415A2 WO 0305-9415A3	30.07.2003 30.07.2003 03.11.2004 09.05.2007 17.06.2003 17.11.2009 24.07.2003 24.07.2003 24.07.2003 04.12.2003