(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
5 February 2004 (05.02.2004)

PCT

(10) International Publication Number
WO 2004/011056 A3

(51) International Patent Classification[7]: A61M 5/20

(21) International Application Number:
PCT/IL2003/000625

(22) International Filing Date: 29 July 2003 (29.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/206,116 29 July 2002 (29.07.2002) US

(71) Applicant *(for all designated States except US)*: **MEDRIP LTD.** [IL/IL]; P.O.Box 5666, 23513 Migdal Haemek (IL).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **SHEKALIM, Avraham** [IL/IL]; 24 Hashoshanim Street, Ramat Yitzhak, 36842 Nesher (IL).

(74) Agent: **FRIEDMAN, Mark, M.**; DR. MARK FRIEDMAN LTD., 7 Haomanim Street, 67897 Tel Aviv (IL).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

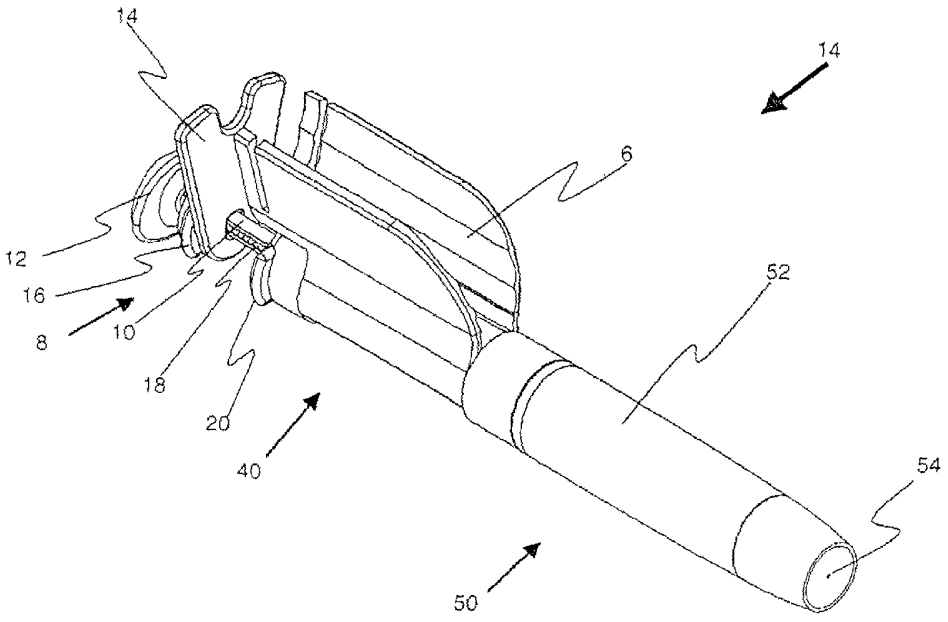
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
16 September 2004

*[Continued on next page]*

(54) Title: SYRINGE PUMP




(57) Abstract: An adjustable re-usable syringe actuator (50) that delivers liquid at substantially constant rate that is unaffected by a change in the viscosity of the liquid being pumped. The disposable syringe actuator (50) is suited for the infusion of small to medium volumes of liquid medication at low flow rates. A preferred embodiment includes a purely mechanical device (40) with no need for electricity, thereby providing a high level of patient mobility. The spring-powered device (40) uses a variable length flow regulation regulation passageway to regulate the rate at which the spring (44) depresses the syringe plunger (8). Thus, the rate of medication infusion is regulated by varying the length of the flow regulation passageway (60).

WO 2004/011056 A3

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL03/00625

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : A61M 5/20
US CL : 604/135

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 604/135

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
None

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
None

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 2,295,849 A (KAYDEN) 15 September 1942 (15.09.1942), See fig. 1 and col. 4, lines 25-61. | 1-4, 7-14, 17-19 |
| A | US 5,807,337 A (YAMADA et al.) 15 September 1998 (15.09.1998), See entire document | 1-19 |
| A | US 4,608,042 A (VANDERVEEN et al.) 26 August 1986 (26.08.1986), See entire document. | 1-19 |

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 21 July 2004 (21.07.2004) | 11 AUG 2004 |
| Name and mailing address of the ISA/US<br>Mail Stop PCT, Attn: ISA/US<br>Commissioner for Patents<br>P.O. Box 1450<br>Alexandria, Virginia 22313-1450<br>Facsimile No. (703) 305-3230 | Authorized officer<br>Michael J Hayes<br>Telephone No. 703-308-0858 |

Form PCT/ISA/210 (second sheet) (July 1998)