PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A61M 5/20, 5/315, 5/46, 5/31, 5/32 — A3

(11) International Publication Number: **WO 97/41907**

(43) International Publication Date: 13 November 1997 (13.11.97)

(21) International Application Number: PCT/IT97/00082

(22) International Filing Date: 14 April 1997 (14.04.97)

(30) Priority Data:
RM96A000297 2 May 1996 (02.05.96) IT

(71)(72) Applicant and Inventor: GRECO, Ermanno [IT/IT]; Viale Liegi, 6, I-00198 Roma (IT).

(74) Agent: SNEIDER, Massimo; Studio Tecnico Lenzi, Via Lucania, 13, I-00187 Roma (IT).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

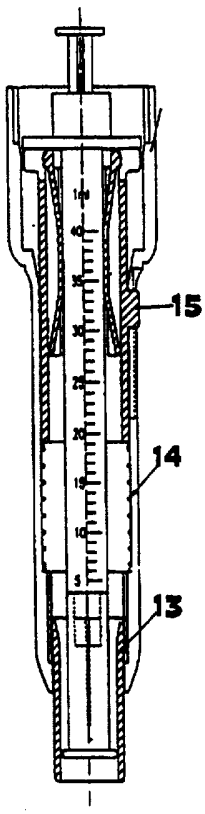
Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

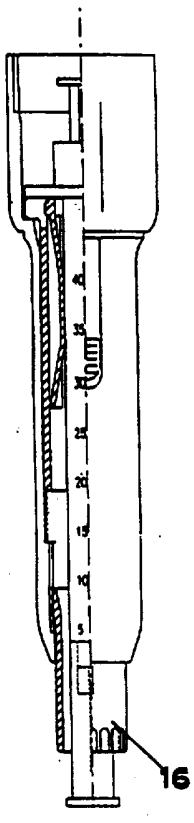
(88) Date of publication of the international search report:
29 January 1998 (29.01.98)

(54) Title: AUTOMATIC INJECTION DEVICE

(57) Abstract

The present invention relates to improvements on automatic injection devices, in particular for self-administered drug therapies, providing for a high degree of internal stability of the syringe and, therefore, of the associated needle, thanks to a series of elastic wasp-waisted elements and a mobile tip made of a transparent material in the preferred embodiment, which besides enabling the regulation of the length of projection of the needle during the injection also allows the user to see the exact spot where the needle will enter the flesh.





FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	**ES**	Spain	**LS**	Lesotho	**SI**	Slovenia
AM	Armenia	**FI**	Finland	**LT**	Lithuania	**SK**	Slovakia
AT	Austria	**FR**	France	**LU**	Luxembourg	**SN**	Senegal
AU	Australia	**GA**	Gabon	**LV**	Latvia	**SZ**	Swaziland
AZ	Azerbaijan	**GB**	United Kingdom	**MC**	Monaco	**TD**	Chad
BA	Bosnia and Herzegovina	**GE**	Georgia	**MD**	Republic of Moldova	**TG**	Togo
BB	Barbados	**GH**	Ghana	**MG**	Madagascar	**TJ**	Tajikistan
BE	Belgium	**GN**	Guinea	**MK**	The former Yugoslav Republic of Macedonia	**TM**	Turkmenistan
BF	Burkina Faso	**GR**	Greece			**TR**	Turkey
BG	Bulgaria	**HU**	Hungary	**ML**	Mali	**TT**	Trinidad and Tobago
BJ	Benin	**IE**	Ireland	**MN**	Mongolia	**UA**	Ukraine
BR	Brazil	**IL**	Israel	**MR**	Mauritania	**UG**	Uganda
BY	Belarus	**IS**	Iceland	**MW**	Malawi	**US**	United States of America
CA	Canada	**IT**	Italy	**MX**	Mexico	**UZ**	Uzbekistan
CF	Central African Republic	**JP**	Japan	**NE**	Niger	**VN**	Viet Nam
CG	Congo	**KE**	Kenya	**NL**	Netherlands	**YU**	Yugoslavia
CH	Switzerland	**KG**	Kyrgyzstan	**NO**	Norway	**ZW**	Zimbabwe
CI	Côte d'Ivoire	**KP**	Democratic People's Republic of Korea	**NZ**	New Zealand		
CM	Cameroon			**PL**	Poland		
CN	China	**KR**	Republic of Korea	**PT**	Portugal		
CU	Cuba	**KZ**	Kazakstan	**RO**	Romania		
CZ	Czech Republic	**LC**	Saint Lucia	**RU**	Russian Federation		
DE	Germany	**LI**	Liechtenstein	**SD**	Sudan		
DK	Denmark	**LK**	Sri Lanka	**SE**	Sweden		
EE	Estonia	**LR**	Liberia	**SG**	Singapore		

INTERNATIONAL SEARCH REPORT

Inter onal Application No
PCT/IT 97/00082

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61M5/20 A61M5/315 A61M5/46 A61M5/31 A61M5/32

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)
IPC 6 A61M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 457 135 A (NOTHDURFT) 21 November 1991 see column 4, line 10 - line 15 see figures 1,2	1
Y	DE 90 02 220 U (NOTHDURFT) 28 March 1991 see page 4, paragraph 1; figures	1
X	US 3 880 163 A (RITTERSKAMP) 29 April 1975 see column 3, line 13 - line 15 see column 6, line 4 - line 5 see column 6, line 20 - line 22 see column 6, line 41 - line 44 see figures 5,6	4
Y		2

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in 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 document but 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 publicationdate 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 theinternational search	Date of mailing of the international search report
26 November 1997	03. 12. 97

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Sedy, R

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inter onal Application No
PCT/IT 97/00082

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 006 849 A (VAN VROENHOVEN) 8 February 1977 see abstract; figures	2
A	FR 2 138 157 A (ETIMEX G.M.B.H.) 29 December 1972 see page 9, line 19 - line 24 see page 10, line 4 - line 18 see figure 5	2
A	US 5 324 272 A (SMEDLEY ET AL.) 28 June 1994 see column 3, line 6 - line 8 see column 5, line 11 - line 20 see figure 4	2
A	EP 0 577 448 A (SOCIETE D'ETUDES ET APPLICATIONS TECHNIQUES (S.E.D.A.T.)) 5 January 1994 see column 3, line 48 - line 50; figure 1	2
A	EP 0 268 191 A (WILHELM HASELMEIER GMBH & CO.) 25 May 1988 cited in the application see column 5, line 4 - line 9 see figure 1	5

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inte .tional application No.
PCT/IT 97/00082

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. Claim: 1
2. Claim: 2
3. Claim: 3
4. Claims: 4,5

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

Claims 1,2,4 and 5.

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter onal Application No
PCT/IT 97/00082

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 457135 A	21-11-91	DE 9005419 U	19-07-90
DE 9002220 U	28-03-91	NONE	
US 3880163 A	29-04-75	NONE	
US 4006849 A	08-02-77	NL 7414218 A	04-05-76
		BE 835010 A	29-04-76
		CH 595109 A	31-01-78
		DE 2547259 A	06-05-76
		FR 2289209 A	28-05-76
		GB 1522855 A	31-08-78
		JP 51067688 A	11-06-76
FR 2138157 A	29-12-72	BE 783753 A	18-09-72
		DE 2125041 A	30-11-72
		NL 7206708 A	21-11-72
		DE 2137405 A	08-02-73
		DE 2212778 A	20-09-73
US 5324272 A	28-06-94	US 5380296 A	10-01-95
		US 5372590 A	13-12-94
EP 577448 A	05-01-94	FR 2691904 A	10-12-93
EP 268191 A	25-05-88	DE 3638984 A	26-05-88
		DE 3715337 A	17-11-88
		DK 597087 A	15-05-88
		JP 2620608 B	18-06-97
		JP 63139563 A	11-06-88
		US 5114406 A	19-05-92