



- (51) **International Patent Classification:**  
A61M 5/32 (2006.01)
- (21) **International Application Number:**  
PCT/GB2017/050180
- (22) **International Filing Date:**  
25 January 2017 (25.01.2017)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
1601289.0 25 January 2016 (25.01.2016) GB  
1621266.4 14 December 2016 (14.12.2016) GB
- (71) **Applicant:** STAR SYRINGE LIMITED [GB/GB]; First Floor Thavies Inn House, 3 - 4 Holborn Circus, London EC1N 2HA (GB).
- (72) **Inventors:** MADIN, Graham John; Kieler Strasse 70, 24247 Mielkendorf (DE). KRAMER, Steffen; Schwager Strasse 24, 24808 Jevenstedt (DE). RUDOLF, Norbert; Marderweg 28, D24539 Neumunster (DE).
- (74) **Agent:** BARKER BRETTELL LLP; 100 Hagley Road, Edgbaston, Birmingham West Midlands B16 8QQ (GB).
- (81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

- (88) **Date of publication of the international search report:**  
14 September 2017

(54) **Title:** NEEDLESTICK PREVENTION DEVICE

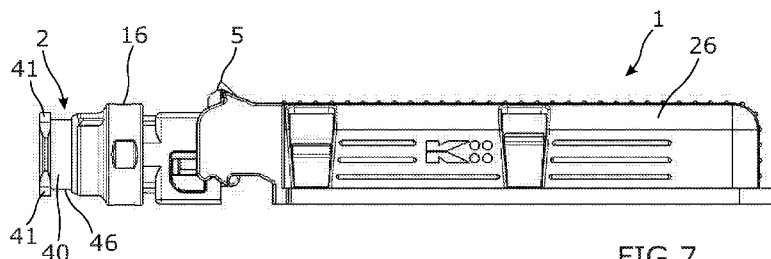


FIG 7

(57) **Abstract:** A needlestick prevention device (1, 100) for an injection needle carried by a needle-bearing member (2, 102) of a syringe (102) is formed as a one-piece moulding and comprises a first part (3, 103) adapted to be attached to the needle-bearing member (2, 1) and a second part (4, 104) providing a shield for the needle and pivotally movable relative to the first part to expose the needle for use. The device is adapted to adopt a first position in which the needle is protected for transport of the device prior to use, a second position in which the needle is exposed for filling of the syringe and injection, a third position in which the needle is protected after filling of the syringe but before injection and a fourth position in which the needle is locked in the device following injection. In one embodiment the shield (104) has a transport recess (124) and a locking recess (125) connected by a gate device (126) at least at the base of the needle (130), the arrangement being such that in the third position the needle (130) is in the transport recess (124) and is able to move into the second position, and in the fourth position the needle moves through the gate device (126) into the locking recess (125), with the gate device (126) preventing movement out of the fourth position.



INTERNATIONAL SEARCH REPORT

International application No  
PCT/GB2017/050180

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A61M5/32  
ADD.  
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)  
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 practicable, search terms used)  
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	US 2012/029441 A1 (MADIN GRAHAM JOHN [DE] ET AL) 2 February 2012 (2012-02-02) paragraph [0046] - paragraph [0056]	1-6,9, 12-23 7,8,10, 11,24,25
Y	----- US 2014/135713 A1 (DOMONKOS ROBERT [SE]) 15 May 2014 (2014-05-15) paragraph [0056] - paragraph [0058]; figures 1,2,9,10	1
Y	----- US 2012/323216 A1 (KOH LAWRENCE R [US]) 20 December 2012 (2012-12-20) paragraph [0061] - paragraph [0065]	1,20
Y	----- WO 2010/059345 A2 (BRAUN MELSUNGEN AG [DE]; HARMS VOLKER [DE]; FUCHS JUERGEN [DE]; KAEMER) 27 May 2010 (2010-05-27) paragraph [0024] - paragraph [0029]	1-6,9, 12-19, 21-23
	----- -/--	

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 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 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  24 July 2017	Date of mailing of the international search report  03/08/2017
---	--

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Daintith, Nichola
--	---

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/GB2017/050180

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 632 732 A (SZABO SANDOR [US] ET AL) 27 May 1997 (1997-05-27) column 5, line 55 - column 6, line 7; figures 1,9,10 -----	26-37
X	EP 0 832 660 A2 (BECTON DICKINSON CO [US]) 1 April 1998 (1998-04-01) column 17, line 40 - column 8, line 10; figures 17,18,20 -----	26-37
A	WO 00/41749 A1 (SIMS PORTEX INC [US]) 20 July 2000 (2000-07-20) the whole document -----	26-37
A	WO 2012/152207 A1 (SHANGHAI SOL MILLENNIUM MEDICAL PRODUCTS CO LTD [CN]; LIN ZUOQIAN [CN]) 15 November 2012 (2012-11-15) the whole document -----	26-37

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB2017/050180

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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 No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

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

see additional sheet

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 fees, this Authority did not invite payment of additional fees.
  
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.:
  
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 and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-25

A needlestick prevention device comprising a first part from attachment to a needle hub and a second part for covering the needle, the two parts connected by a hinge which allows the needle to be covered and uncovered.

---

2. claims: 26-37

A combination of a needlestick prevention device and a needle-bearing member wherein the needlestick prevention member has an internal surface for engaging with an external surface of the needle hub, the attachment means being in the form of a protrusion on one part and a corresponding groove on the other, such that that relative rotation between the needlestick prevention device and the needle hub is possible.

---

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No

PCT/GB2017/050180

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2012029441	A1	02-02-2012	AP 2952 A 31-08-2014
			AR 067515 A1 14-10-2009
			AU 2008273945 A1 15-01-2009
			BR PI0814547 A2 06-01-2015
			CA 2693719 A1 15-01-2009
			CL 2008002035 A1 24-10-2008
			CN 101790396 A 28-07-2010
			EP 2173415 A1 14-04-2010
			IL 203189 A 30-09-2014
			JP 5802228 B2 28-10-2015
			JP 2010533020 A 21-10-2010
			JP 2013135921 A 11-07-2013
			KR 20100051634 A 17-05-2010
			PE 08442009 A1 08-08-2009
			RU 2010104861 A 20-08-2011
			TW 200911314 A 16-03-2009
			US 2009018510 A1 15-01-2009
			US 2012029441 A1 02-02-2012
			UY 31218 A1 30-04-2009
			WO 2009007718 A1 15-01-2009
			ZA 201000842 B 24-11-2010
-----			
US 2014135713	A1	15-05-2014	AU 2012279498 A1 09-01-2014
			BR 112013033048 A2 31-01-2017
			CA 2838600 A1 10-01-2013
			CN 103796698 A 14-05-2014
			EP 2729204 A1 14-05-2014
			JP 6147251 B2 14-06-2017
			JP 2014520590 A 25-08-2014
			KR 20140101717 A 20-08-2014
			RU 2013154503 A 10-08-2015
			US 2014135713 A1 15-05-2014
			WO 2013006134 A1 10-01-2013
-----			
US 2012323216	A1	20-12-2012	US 2012323216 A1 20-12-2012
			WO 2012173691 A1 20-12-2012
-----			
WO 2010059345	A2	27-05-2010	EP 2355871 A2 17-08-2011
			US 2011301546 A1 08-12-2011
			WO 2010059345 A2 27-05-2010
-----			
US 5632732	A	27-05-1997	NONE
-----			
EP 0832660	A2	01-04-1998	CA 2214447 A1 25-03-1998
			DE 69714361 D1 05-09-2002
			DE 69714361 T2 13-03-2003
			EP 0832660 A2 01-04-1998
			JP 2974300 B2 10-11-1999
			JP H10113392 A 06-05-1998
			US 5733265 A 31-03-1998
-----			
WO 0041749	A1	20-07-2000	AT 299722 T 15-08-2005
			CA 2356204 A1 20-07-2000
			DE 60021349 D1 25-08-2005
			DE 60021349 T2 27-04-2006
			EP 1150729 A1 07-11-2001
			JP 4260372 B2 30-04-2009
			JP 5094662 B2 12-12-2012

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2017/050180

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		JP 2002534226 A	15-10-2002
		JP 2009022778 A	05-02-2009
		US 6334857 B1	01-01-2002
		US 2001004970 A1	28-06-2001
		WO 0041749 A1	20-07-2000
-----			
WO 2012152207 A1	15-11-2012	CN 102772840 A	14-11-2012
		CN 202724375 U	13-02-2013
		WO 2012152207 A1	15-11-2012
-----			