



- (51) **International Patent Classification:**  
A61F 2/01 (2006.01) A61F 2/24 (2006.01)
- (21) **International Application Number:**  
PCT/US2013/035346
- (22) **International Filing Date:**  
5 April 2013 (05.04.2013)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
61/621,005 6 April 2012 (06.04.2012) US  
61/639,929 29 April 2012 (29.04.2012) US
- (71) **Applicant: PI-R-SQUARED LTD.** [IL/IL]; 10 Plaut Street, 76706 Rehovot (IL).
- (71) **Applicant (for NA only): KLEIN, David** [US/IL]; 18 Menuha VeNahala Street, 76209 Rehovot (IL).
- (72) **Inventor: GOLAN, Erez;** 10c Mohliver Street, 76304 Rehovot (IL).
- (74) **Agent: KLEIN, David;** 18 Menuha VeNahala Street, 76209 Rehovot (IL).
- (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, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, 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, 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, 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, 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:**

12 December 2013

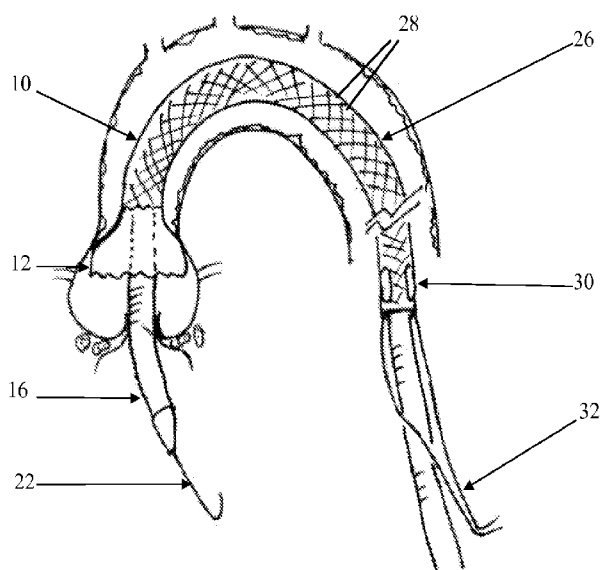
**(54) Title:** PERCUTANEOUS EMBOLI PROTECTION SLEEVE

FIG. 4

**(57) Abstract:** A device includes a protection sleeve (10) and a retractable sheath (14) operatively connected to the protection sleeve (10), and a catheter (16) that passes through a main lumen (26) of the sleeve (10). The catheter (16) includes a heart valve treatment device arranged to pass into a lumen of the catheter (16).

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2013/035346

A. CLASSIFICATION OF SUBJECT MATTER  
INV. A61F2/01 A61F2/24  
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)  
A61F

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. |
|-----------|----------------------------------------------------------------------------------------------------------|-----------------------|
| X         | US 2011/130657 A1 (CHOMAS JAMES E [US] ET AL) 2 June 2011 (2011-06-02) paragraph [0055]; figure 5        | 1-6                   |
| X         | WO 2004/043293 A2 (VIACOR INC [US]) 27 May 2004 (2004-05-27) page 20, line 3 - page 25, line 3; figure 1 | 1-6                   |



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

13 August 2013

Date of mailing of the international search report

21/10/2013

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

Skorovs, Peteris

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2013/035346

## 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.:

1-6

### 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: 1-6

A device comprising: a protection sleeve; and a retractable sheath operatively connected to said protection sleeve; and a catheter that passes through a main lumen of said sleeve, wherein said catheter comprises a heart valve treatment device arranged to pass into a lumen of said catheter.

---

2. claims: 7-13(partially)

A device comprising: a protection sleeve; proximal and distal end caps attached to proximal and distal ends, respectively, of said protection sleeve; a catheter, wherein said proximal end cap and said distal end cap are movable one with respect to the other along an outer perimeter of said catheter; and one or more manipulation elements which are attached to said protection sleeve, wherein manipulation of said one or more manipulation elements is operative to radially expand or contract said protection sleeve.

---

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/035346

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date         |
|-------------------------------------------|---------------------|----------------------------|-----------------------------|
| US 2011130657                             | A1                  | 02-06-2011                 | NONE                        |
| -----                                     |                     |                            |                             |
| WO 2004043293                             | A2                  | 27-05-2004                 | AU 2003294293 A1 03-06-2004 |
|                                           |                     |                            | EP 1583581 A2 12-10-2005    |
|                                           |                     |                            | EP 2345380 A2 20-07-2011    |
|                                           |                     |                            | JP 4568116 B2 27-10-2010    |
|                                           |                     |                            | JP 2006507862 A 09-03-2006  |
|                                           |                     |                            | WO 2004043293 A2 27-05-2004 |
| -----                                     |                     |                            |                             |