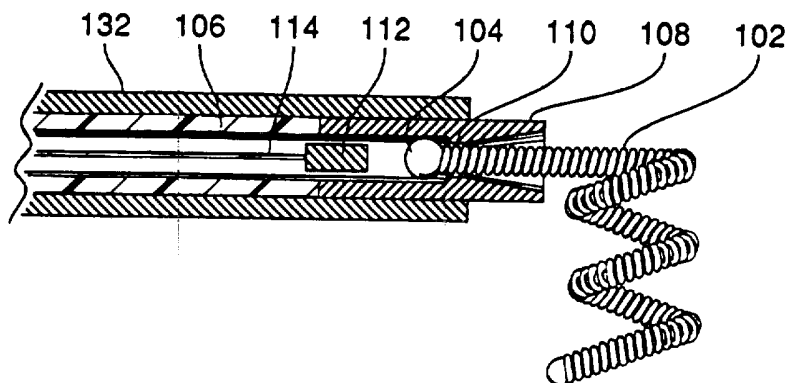




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification 5 :</b>  <b>A61M 29/00</b>	<b>A3</b>	<b>(11) International Publication Number:</b> <b>WO 94/06502</b>  <b>(43) International Publication Date:</b> 31 March 1994 (31.03.94)
<b>(21) International Application Number:</b> PCT/US93/08346 <b>(22) International Filing Date:</b> 3 September 1993 (03.09.93)  <b>(30) Priority data:</b> 07/949,095                      22 September 1992 (22.09.92) US 07/975,376                      13 November 1992 (13.11.92) US  <b>(71) Applicant:</b> TARGET THERAPEUTICS, INC. [US/US]; 47201 Lakeview Boulevard, P.O. Box 5120, Fremont, CA 94537-5120 (US).  <b>(72) Inventors:</b> PALERMO, Thomas, J. ; 916 Moreno Avenue, Palo Alto, CA 94303 (US). PHAM, Phong ; 2338 Summer Court, San Jose, CA 95116 (US).  <b>(74) Agents:</b> WHEELLOCK, E., Thomas et al.; Morrison & Fo- erster, 755 Page Mill Road, Palo Alto, CA 94304-1018 (US).		<b>(81) Designated States:</b> AU, CA, CZ, FI, HU, JP, KR, NO, NZ, SK, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i>  <b>(88) Date of publication of the international search report:</b> 28 April 1994 (28.04.94)

**(54) Title:** DETACHABLE EMBOLIC COIL ASSEMBLY**(57) Abstract**

This invention is a surgical instrument and specifically is a device for delivering embolic coils to a selected site within the vasculature of the human body via use of a catheter. In particular, the device (100) involves an embolic coil (102) having a radially enlarged member (104) attached to one end, which coil is released by forcing the radially enlarged member axially through a distensible aperture (108) situated on the distal end of a pusher assembly (100). Alternatively, the embolic coils (208) may be mounted on a guide wire (206) and a pusher sheath (210) within the catheter sheath (202) used to push through the coils (208) through the end (204) of the catheter sheath (202). The catheter (202) has a constricted distal tip (204) or other means of frictionally controlling the release of embolic coils (208). Additionally (or alternatively), the guide wire tip (207) may engage the embolic coils (208) from their interior to allow precise placement of the coils (208).

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## INTERNATIONAL SEARCH REPORT

 International application No.  
 PCT/US93/08346

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(5) : A61M 29/00

US CL : 606/108, 191; 128/898

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. : 606/1, 108, 151, 159, 190, 191, 194, 195, 198, 200; 604/11-15, 159, 164; 623/1; 128/772, 898

 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 ---, P Y	US, A, 5,217,484 (Marks) 08 June 1993. See Figs. 2 and 4.	1-5 ----- 6-13
X	US, A, 5,109,867, (Twyford, Sr), 05 May 1992. See Figs. 3 and 4.	1-5
Y	US, A, 4,512,338 (Balko et al) 23 April 1985. See column 4, lines 38-47.	6-13
X	US, A, 4,830,003 (Wolff et al.) 16 May 1989. See Figs. 7 and 8.	14, 20-23
X --- Y	US, A, 5,037,427 (Harada et al.) 06 August 1991.	16, 17 ----- 15, 18, 19

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

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*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		

Date of the actual completion of the international search

14 December 1993

Date of mailing of the international search report

MAR 10 1994

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US93/08346

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO, A, 91/17789 (Stack et al.) 28 November 1991.	1-23
A	US, A, 5,122,136 (Guglielmi et al) 16 June 1992.	1-23

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US93/08346

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

This international 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:

Group I, claims 1-13, drawn to the product of Figs. 1-8 and the method of using the product.

Group II, claims 14-23, drawn to the product of Figs. 10-12.

The claims of these two groups are directed to different products which are not so linked as to form a single inventive concept. The claims are drawn to mutually exclusive characteristics of each of the two groups. There are currently no claims drawn to the product of Fig. 9.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims. (Telephone Practice)
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.:
  
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.