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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.

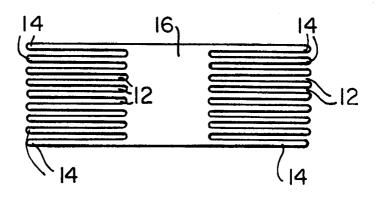
(88) Date of publication of the international search report:

7 October 1999 (07.10.99)

(54) Title: MEDICAL GRAFT CONNECTOR OR PLUG STRUCTURES, AND METHODS OF MAKING AND INSTALLING SAME

(57) Abstract

A medical graft connector or plug is made, for example, by cutting end portions of a tube of highly elastic material axially at numerous locations spaced circumferentially around the tube to produce a plurality of fingers which extend axially from each end of an uncut medial portion of the tube. The fingers are deflected radially outwardly from the medial portion and set in that condition. For a graft connector, the medial portion is coaxially connected to an end portion of a tubular graft. The connector is then installed through an aperture in the side wall of a patient's tubular body conduit, for example, by using a delivery tube in which the fingers are elastically deflected back to approximately their initial positions. When the delivery



conduit is withdrawn from the connector, the fingers spring out to engage the inner and outer surfaces of the body conduit wall. For a plug, the medial portion is occluded and then the structure is installed through the aperture to be plugged in a manner similar to installation of the connector.

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International Application No PCT/US 98/26845

A. CLASSIFICATION OF SUBJECT MATTER IPC 6 A61F2/06 A61E A61B17/11 A61B17/34 A61B17/00 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 A61F A61B 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 Relevant to claim No. Citation of document, with indication, where appropriate, of the relevant passages Category ' 1-12,14,WO 98 02099 A (HEARTPORT INC) χ 16,17, 22 January 1998 (1998-01-22) 19,25, 26,59, 69,74 page 25, line 3 - page 27, line 3; figures page 76, line 3 - line 7 page 106, line 20 - page 107, line 29 page 112, line 20 - line 36 15,29, Α 30, 65-67, 70,75,76 -/--Patent family members are listed in annex. Further documents are listed in the continuation of box C. X Special categories of cited documents: *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 "A" document defining the general state of the art which is not considered to be of particular relevance 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 "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 publication date of another citation or other special reason (as specified) "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. *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 "&" document member of the same patent family Date of mailing of the international search report Date of the actual completion of the international search 1 8 08 1999 10 May 1999 **Authorized officer** Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo ni, NEUMANN, E

Fax: (+31-70) 340-3016

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C.(Continua Category	ation) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
∪ategory *	Onzagon of Goodinesis, with indication, where appropriately of the forest page 2500	
Х	US 5 234 447 A (KASTER ROBERT L ET AL) 10 August 1993 (1993-08-10)	1,3-6, 11,12, 14,16, 17,25, 26,29,30
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	figures	

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International application No. PCT/US 98/26845

Box i	Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
This Inte	ernational Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. X	Claims Nos.: 61-63,77,79-82,86,89,100 because they relate to subject matter not required to be searched by this Authority, namely:
	Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
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 Inte	ernational Searching Authority found multiple inventions in this international application, as follows:
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.:
4. X	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.: 1-39, 59-60, 64-76, 78
Remark	The additional search fees were accompanied by the applicant's protest.
	No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-39,59-60,64-76,78

A connector to connect a tubular graft conduit to a side wall of a tubular body conduit having a medial tubular portion, a plurality of resilient fingers integral and extending from the medial portion

2. Claims: 40-58,83-85,87,88,90-99,101

A plug for use in plugging an aperture through a body structure having a medial tubular portion, a plurality of resilient fingers integral and extending from the medial portion and a plugging structure occluding the tubular portion

'nformation on patent family members

International Application No
PCT/US 98/26845

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