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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
13 October 2005 (13.10.2005)

PCT

(10) International Publication Number
WO 2005/094728 A1

(51) International Patent Classification[7]: A61F 2/06, C12M 3/00

(21) International Application Number: PCT/US2005/007296

(22) International Filing Date: 4 March 2005 (04.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/806,828 22 March 2004 (22.03.2004) US

(71) Applicant *(for all designated States except US)*: **ADVANCED CARDIOVASCULAR SYSTEMS, INC.** [US/US]; 3200 Lakeside Drive, Santa Clara, CA 95054-2807 (US).

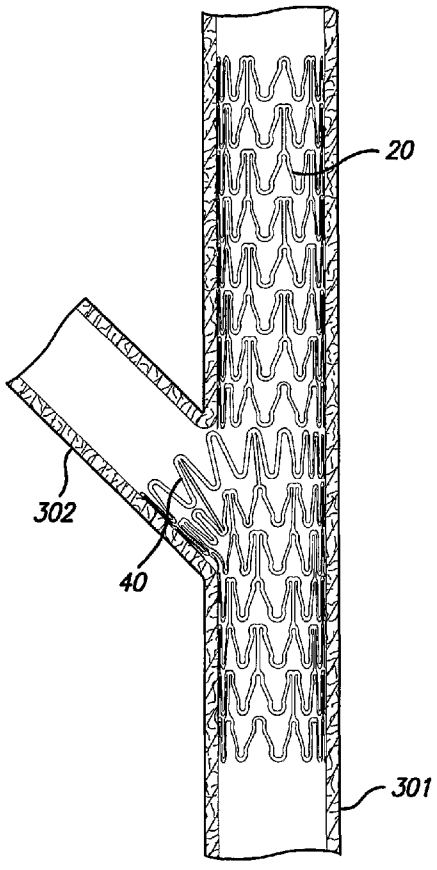
(72) Inventors: **ATLADOTTIR, Svava, Maria**; 1008 Carolina Street, San Francisco, CA 94107 (US). **CHI, David**; 1687 32d Street, San Francisco, CA 94122 (US). **MATIN, Nazanine**; 1212 East Ogden Avenue, Apt. 302, Milwaukee, WI 53202 (US). **PRABHU, Santosh**; 1650 Nantucket Circle, No. 221, Santa Clara, CA 95054 (US). **QUEE, Shawn, Chin**; 880 East Freemont Avenue, No. 635, Sunnyvale, CA 94087 (US). **VALENCIA, Hans, F.**; 41 Quincy street, Holbrook, MA 02343 (US).

(74) Agents: **HANKE, Gunther, O.** et al.; Fulwider Patton Lee & Utecht, LLP, Howard Hughes Center, 6060 Center Drive, Tenth Floor, Los Angeles, CA 90045 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,

[Continued on next page]

(54) Title: SELF-EXPANDING STENT AND CATHETER ASSEMBLY AND METHOD FOR TREATING BIFURCATIONS



(57) Abstract: The present invention provides for an improved stent design and stent delivery catheter assembly for repairing a main vessel and a side branch vessel forming a bifurcation. The present invention includes a trap door stent design, a stent delivery catheter assembly, an apparatus for crimping the stent and the method for crimping the stent onto the catheter assembly, and the method for delivering and implanting the stent in a bifurcated vessel. The stent (20) is implanted at a bifurcation so that the proximal section (26) and distal section (29) are in the main vessel, and the central section covers (28) at least a portion of the opening to the side branch vessel. A second stent (320) can be implanted in the side branch vessel and abut the expanded central section to provide full coverage of the bifurcated area in the main vessel and the side branch vessel.

WO 2005/094728 A1