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**Itou et al.**

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(54) **INTRAVASCULAR FOREIGN MATTER SUCTION ASSEMBLY**

(75) Inventors: **Takenari Itou**, Shizuoka (JP); **Tetsuya Fukuoka**, Shizuoka (JP)

(73) Assignee: **Terumo Kabushiki Kaisha**, Shibuya-Ku, Tokyo (JP)

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(30) **Foreign Application Priority Data**

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(51) **Int. Cl.**  
**A61M 25/00** (2006.01)

(52) **U.S. Cl.** ..... **604/523**; 604/264

(58) **Field of Classification Search** ..... 604/19, 604/192, 264, 523, 507, 526, 164.01, 101.03, 604/101.04, 173, 508

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,011,488 A 4/1991 Ginsburg  
5,226,888 A \* 7/1993 Arney ..... 604/103.07  
5,385,562 A \* 1/1995 Adams et al. .... 604/528  
5,527,292 A 6/1996 Adams et al.

5,569,204 A 10/1996 Cramer  
5,938,645 A 8/1999 Gordon  
6,849,068 B1 \* 2/2005 Bagaioisan et al. .... 604/523  
2002/0177800 A1 11/2002 Bagaioisan et al.  
2003/0050600 A1 3/2003 Ressemann et al.

FOREIGN PATENT DOCUMENTS

WO WO 00/69498 11/2000

OTHER PUBLICATIONS

Official Action (Communication Pursuant to Article 96(2) EPC) issued by the European Patent Office in corresponding European Patent Application No. 05 020 435.3, Jul. 25, 2007.

\* cited by examiner

*Primary Examiner*—Nicholas D Lucchesi

*Assistant Examiner*—Christopher D Koharski

(74) *Attorney, Agent, or Firm*—Buchanan Ingersoll & Rooney PC

(57) **ABSTRACT**

An intravascular foreign matter suction assembly is insertable into a blood vessel having a relatively small diameter and exhibits a high suction force. The intravascular foreign matter suction assembly includes a combination of a guiding catheter for being inserted to an ostium of a coronary artery of the aorta and a suction catheter inserted in the lumen of the guiding catheter and extending farther than the distal end of the guiding catheter for removing foreign matter in a blood vessel which exists at a target location in the coronary artery. The suction catheter includes a tubular portion provided on the distal end side and a wire portion provided on the proximal end side of the tubular portion and wherein the wire portion has a distal end embedded in a wall which forms the tubular portion.

**11 Claims, 10 Drawing Sheets**

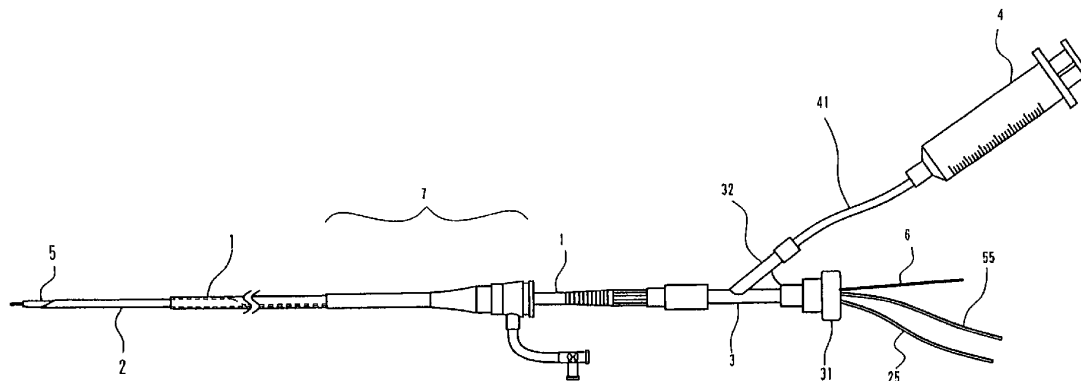


FIG. 1A

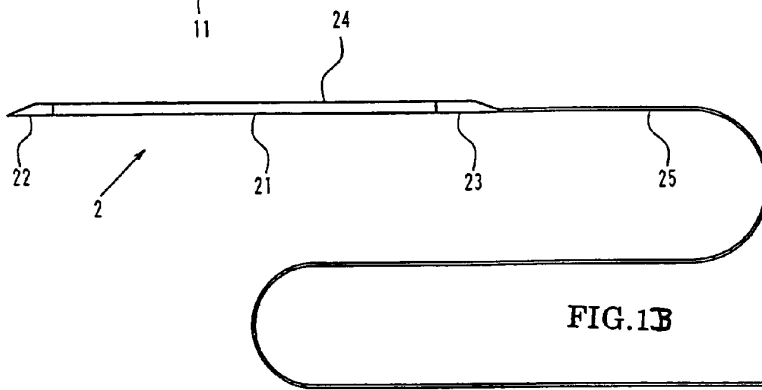
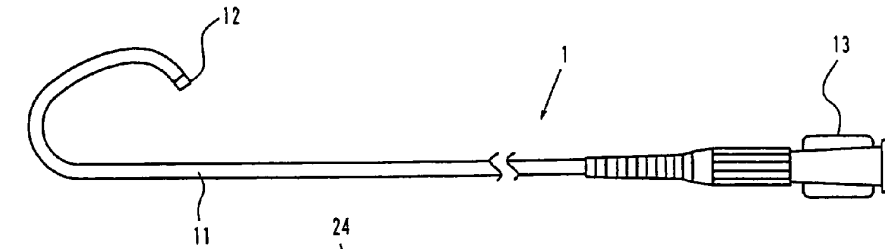


FIG. 1B

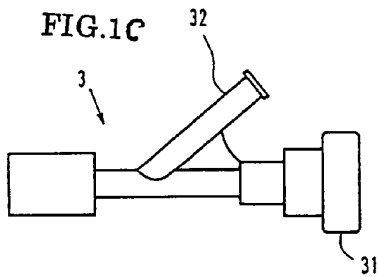


FIG. 1C

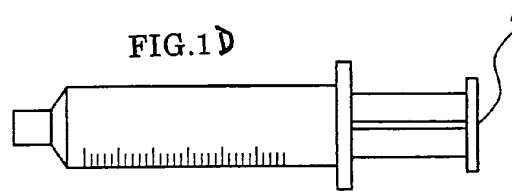


FIG. 1D

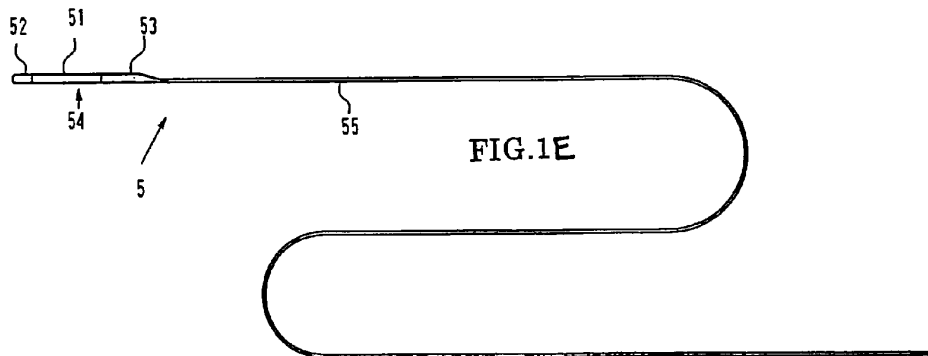


FIG. 1E

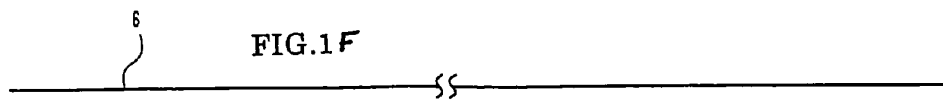


FIG. 1F

# FIG. 2

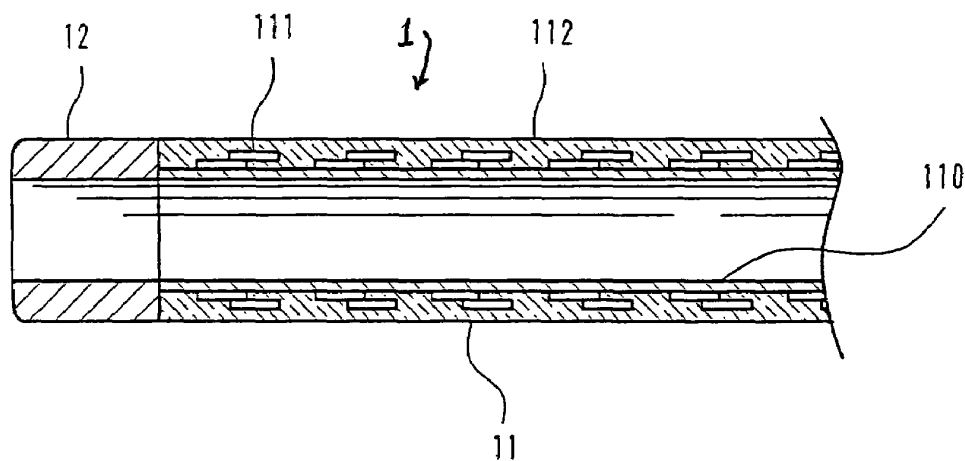


FIG. 3

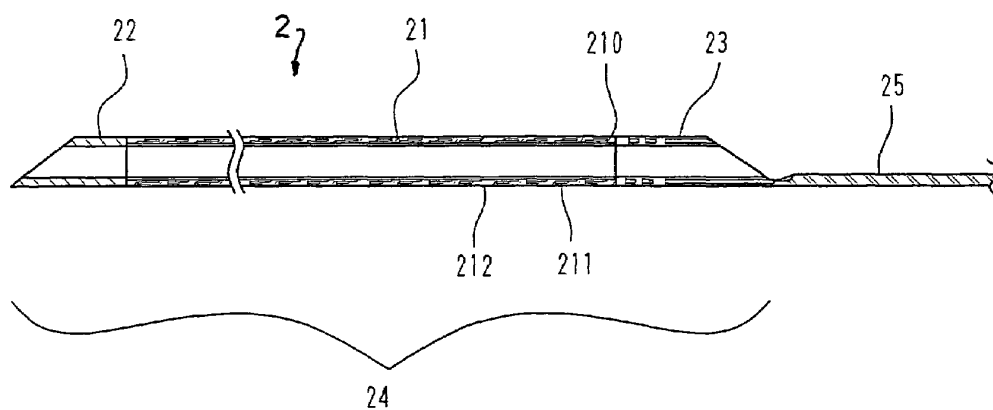
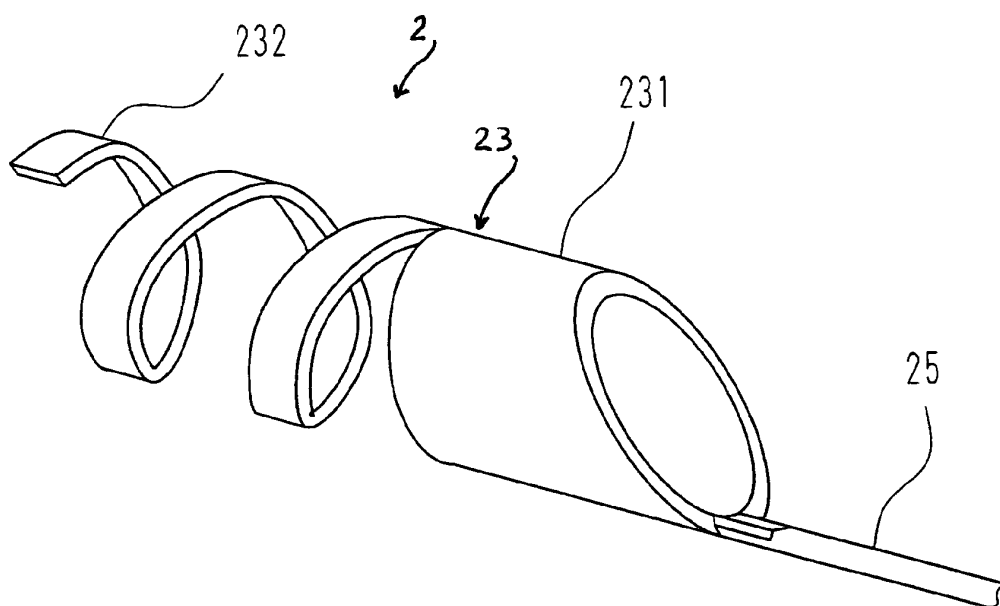


FIG. 4



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