



US009409001B2

(12) **United States Patent**
Aggerholm et al.

(10) **Patent No.:** **US 9,409,001 B2**
(45) **Date of Patent:** **Aug. 9, 2016**

(54) **MEDICAL BALLOON WITH PARTICLES THEREIN**

USPC 606/191
See application file for complete search history.

(71) Applicant: **Cook Medical Technologies LLC**,
Bloomington, IN (US)

(56) **References Cited**

(72) Inventors: **Steen Aggerholm**, St. Heddinge (DK);
Anders Scheel Klausen, Naestved (DK);
Thomas Lysgaard, Solroed Strand (DK);
Anne-Mette Hoppe Sønnichsen, Soroe (DK);
Allan Torp, Bjaeverskov (DK)

U.S. PATENT DOCUMENTS

5,081,997 A * 1/1992 Bosley et al. 600/458
5,289,831 A * 3/1994 Bosley A01K 85/00
128/899

5,290,306 A 3/1994 Trotta et al.

(Continued)

(73) Assignee: **Cook Medical Technologies LLC**,
Bloomington, IN (US)

FOREIGN PATENT DOCUMENTS

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 100 days.

EP 2 561 898 A1 2/2013
WO WO 97/27894 8/1997

(Continued)

(21) Appl. No.: **13/786,690**

OTHER PUBLICATIONS

(22) Filed: **Mar. 6, 2013**

Communication from EPO with European Search Report and Annex
for corresponding European Patent Application No. EP 13 27 5052,
dated Aug. 13, 2013, 8p.

(65) **Prior Publication Data**

US 2013/0261548 A1 Oct. 3, 2013

(Continued)

(30) **Foreign Application Priority Data**

Mar. 27, 2012 (GB) 1205367.4

Primary Examiner — Robert Lynch

(74) *Attorney, Agent, or Firm* — Brinks Gilson & Lione

(51) **Int. Cl.**
A61M 29/00 (2006.01)
A61M 25/10 (2013.01)
(Continued)

(57) **ABSTRACT**

A balloon catheter includes a balloon having a plurality of layers. The inner layer acts as a support layer to the outer layer. Embedded within the outer layer is a plurality of particles or pellets which in one embodiment provide roughening of the outer surface of the balloon. The particles or pellets, particularly in conjunction with an inner support layer, ensure maintenance of the roughened outer surface of the balloon during inflation of the balloon. In another embodiment, the particles or pellets may be radiopaque and/or echogenic with or without creating surface roughening of the balloon.

(52) **U.S. Cl.**
CPC **A61M 25/10** (2013.01); **A61L 29/126**
(2013.01); **A61L 29/18** (2013.01); **A61M**
25/1029 (2013.01); **A61M 25/1027** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC A61M 25/10; A61M 25/1027; A61M
25/1029; A61M 2025/1031; A61M
2025/1043; A61M 2025/1075; A61M
2025/1086

16 Claims, 5 Drawing Sheets

