

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
16 September 2021 (16.09.2021)



(10) International Publication Number
WO 2021/183307 A1

(51) International Patent Classification:

A61B 5/15 (2006.01) A61M 25/00 (2006.01)
A61B 5/154 (2006.01) A61M 25/06 (2006.01)
A61B 5/155 (2006.01)

(21) International Application Number:

PCT/US2021/020059

(22) International Filing Date:

26 February 2021 (26.02.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/987,231 09 March 2020 (09.03.2020) US
17/183,098 23 February 2021 (23.02.2021) US

(71) Applicant: **BECTON, DICKINSON AND COMPANY**
[US/US]: 1 Becton Drive, Franklin Lakes, New Jersey
07417 (US).

(72) Inventors: **MA, Yiping**; 2220 North 2300 East, Layton,
Utah 84040 (US). **CICILIANO, Jordan**; 1155 East 2100
South, Apt. 335, Salt Lake City, Utah 84106 (US). **BURK-
HOLZ, Jonathan Karl**; 1971 South Wasatch Drive, Salt
Lake City, Utah 84108 (US).

(74) Agent: **MILES, Kirk M.**; The Webb Law Firm, One Gate-
way Center, 420 Ft. Duquesne Blvd., Suite 1200, Pittsburgh,
Pennsylvania 15222 (US).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,

(54) Title: INSTRUMENT DELIVERY DEVICES, SYSTEMS, AND METHODS TO EXTEND THROUGH A THROMBUS

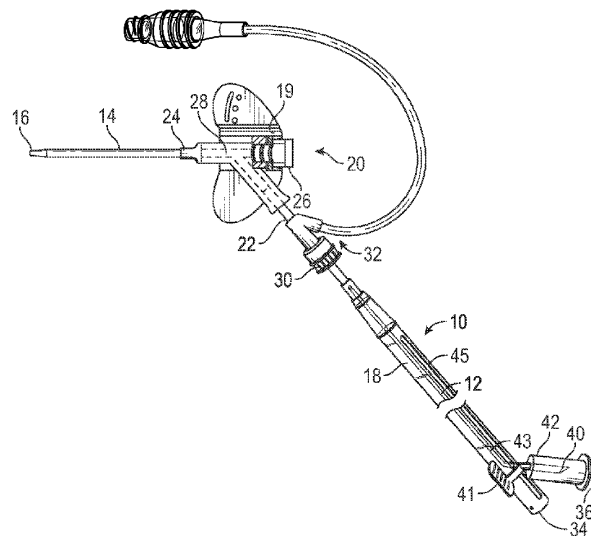


FIG. 1A

(57) Abstract: A method may include coupling a first delivery device to a catheter assembly, which may include a catheter dwelling within vasculature of a patient. The first delivery device may include a first tubular instrument. In response to the first tubular instrument being in a distal position, a distal surface of the first tubular instrument may be disposed at a first distance beyond the distal tip of the catheter. The method may include coupling a second delivery device to the catheter assembly after uncoupling the first delivery device from the catheter assembly. The second delivery device may include a second tubular instrument. In response to the second tubular instrument being in the distal position, a distal surface of the second tubular instrument may be disposed at a second distance beyond the distal tip of the catheter. The second distance may be greater than the first distance.

[Continued on next page]

HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *with international search report (Art. 21(3))*