



(51) International Patent Classification:
A61B 5/00 (2006.01) *A61B 8/08* (2006.01)

(21) International Application Number:
PCT/US2020/013870

(22) International Filing Date:
16 January 2020 (16.01.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/794,440 18 January 2019 (18.01.2019) US
16/742,676 14 January 2020 (14.01.2020) US

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

(72) Inventors: **BURKHOLZ, Jonathan Karl**; 1971 S.
Wasatch Dr., Salt Lake City, Utah 84108 (US). **MA,
Yiping**; 2220 N. 2300 E., Layton, Utah 84040 (US).
SPATARO, Joseph; 7701 S. Summerhill Circle, Cotton-

wood Heights, Utah 84121 (US). **TRAN, Huy**; 11878 S.
Reeves Lane, Riverton, Utah 84065 (US). **PETERSON,
Bart D.**; 1988 Silver Spur Way, Farmington, Utah 84025
(US). **WILLYBIRO, Kathryn**; 2183 Fenchurch Dr., Park
City, Utah 84060 (US).

(74) Agent: **METCALF, Craig**; Kirton McConkie, 36 S. State
St., Suite 1900, Salt Lake City, Utah 84111 (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,
HR, HU, ID, IL, IN, IR, IS, 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,

(54) Title: INTRAVENOUS THERAPY SYSTEM FOR BLOOD VESSEL DETECTION AND VASCULAR ACCESS DEVICE
PLACEMENT

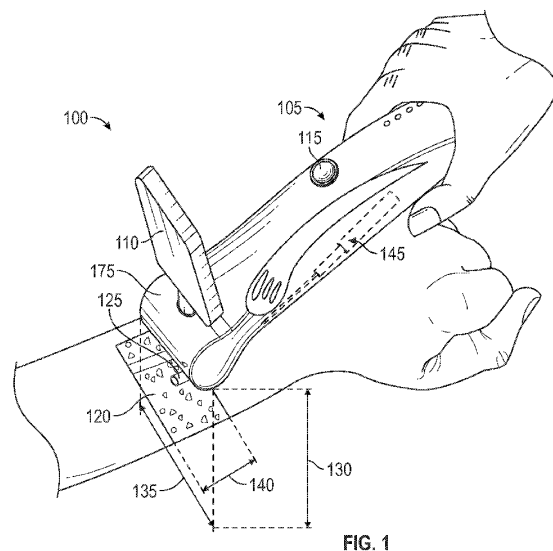


FIG. 1

(57) Abstract: An intravenous therapy system, may include a processor; a data storage device; and a handheld ultrasound probe to detect structures within a patient's body, the handheld ultrasound probe including a video display device physically and operatively coupled to the handheld to display the structures within the patient's body and a magnetic field detector to detect the presence of a vascular access device (VAD) and provide closed-loop feedback to guide the VAD into a blood vessel within the patient's body detected by the ultrasound probe.

[Continued on next page]

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))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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

27 August 2020 (27.08.2020)