

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
27 October 2022 (27.10.2022)



(10) International Publication Number
WO 2022/226506 A1

(51) International Patent Classification:

A61B 17/16 (2006.01) A61B 90/00 (2016.01)
A61B 34/30 (2016.01)

(21) International Application Number:

PCT/US2022/071815

(22) International Filing Date:

20 April 2022 (20.04.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/177,268 20 April 2021 (20.04.2021) US

(71) Applicant: **WYSS CENTER FOR BIO AND NEURO ENGINEERING** [CH/CH]; Chemin des Mines 9, 1202 Genève (CH).

(72) Inventors: **RODRIGUES, Samuel, G.**; 251 Little Falls Drive, Wilmington, DE 19801 (US). **SEGAR, David, J.**; 251 Little Falls Drive, Wilmington, DE 19801 (US). **BETTS-LACROIX, Jonathan**; 251 Little Falls Drive, Wilmington, DE 19801 (US). **GANDAR, Jérôme**; c/o Wyss Center for Bio and Neuro Engineering, Chemin des Mines 9, 1202 Genève (CH). **LAPINSKI, Matthew**; c/o Wyss Cen-

ter for Bio and Neuro Engineering, Chemin des Mines 9, 1202 Genève (CH).

(74) Agent: **COGSWELL, Lawrence, P., III** et al.; Hamilton, Brook, Smith & Reynolds, P.C., 530 Virginia Rd, P.O. Box 9133, Concord, MA 01742-9133 (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, IT, JM, 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,

(54) Title: AUTOMATED DRILLING DEVICE AND METHOD

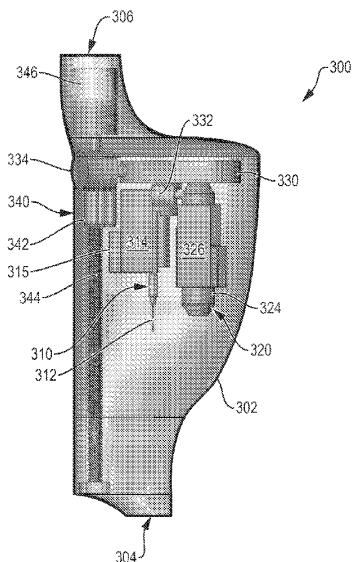


FIG. 2

(57) Abstract: A surgical device for automated drilling includes a drill comprising a drill bit configured to bore through bone and a detector comprising a tissue detection sensor. The drill and detector are independently actuatable for insertion and removal of the drill bit and the tissue detection sensor in a bore generated by the drill bit. A surgical system can include the surgical device and a controller configured to actuate the drill to bore through bone, actuate the drill to retract the drill bit from the bore, actuate the detector to insert the tissue detection sensor into the bore, and determine a tissue characteristic at a distal location of the bore based on a sensed signal from the tissue detection sensor.

WO 2022/226506 A1

[Continued on next page]

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

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