

(51) International Patent Classification:
A61F 9/00 (2006.01)(21) International Application Number:
PCT/US2015/049425(22) International Filing Date:
10 September 2015 (10.09.2015)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/049,079 11 September 2014 (11.09.2014) US
14/842,035 1 September 2015 (01.09.2015) US(71) Applicant: **ETHICON ENDO-SURGERY, INC.**
[US/US]; 4545 Creek Road, Cincinnati, Ohio 45242 (US).(72) Inventors: **PRICE, Daniel W.**; 4545 Creek Road, Cincinnati, Ohio 45242 (US). **OBERKIRCHER, Brendan J.**; 4545 Creek Road, Cincinnati, Ohio 45242 (US). **SOKHANVAR, Saeed**; One Broadway, 14th Floor, Cambridge, Massachusetts 02142 (US). **YASEVAC, Daniel J.**; One Broadway, 14th Floor, Cambridge, Massachusetts 02142 (US). **BRUEHWILER, Michel**; One Broadway, 14th Floor, Cambridge, Massachusetts 02142 (US). **SOFFER, Leah R.**; One Broadway, 14th Floor, Cambridge, Massachusetts 02142 (US). **JOHNSON, Gregory W.**; 4545 Creek Road, Cincinnati, Ohio 45242 (US). **DANNAHER, William D.**; 4545 Creek Road, Cincinnati, Ohio 45242 (US). **TROLLER, Stefan**; Auweg 33, CH-4450Sissach (CH). **SCHNELL, Urban G.**; Eichgutweg 16, CH-3053 Munchenbuschsee (CH). **ROULET, Jean-Christophe**; Planches 17, CH-2523 Ligni res (CH). **SAURER, Alain**; Rue du Puits 2, CH-2014 Bole (CH). **KEANE, Michael F.**; 920 US Route 202, Raritan, New Jersey 08869 (US). **RIEMANN, Christopher D.**; 10440 Carriage Trail, Cincinnati, Ohio 45242 (US).(74) Agents: **PLANTZ, Bernard F.** et al.; Johnson & Johnson, One Johnson & Johnson Plaza, New Brunswick, New Jersey 08933 (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, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, 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, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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,

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR SENSING POSITION BETWEEN LAYERS OF AN EYE

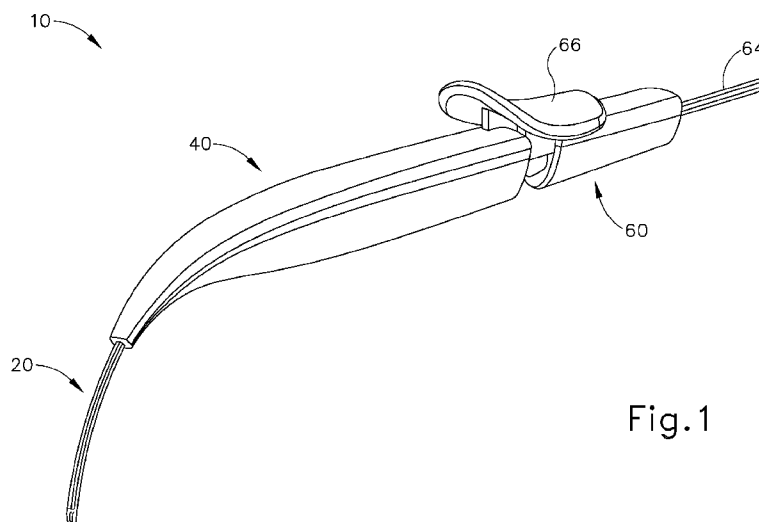


Fig. 1

(57) Abstract: An apparatus (10) for delivering therapeutic agent to an eye comprises a body (40), a cannula (20), a hollow needle (30), an actuation assembly (60), and a detection/visualization system. The cannula extends distally from the body and is sized and configured to be insertable between a choroid and a sclera of a patient's eye. The actuation assembly is operable to actuate the needle relative to the cannula to thereby drive a distal portion of the needle along an exit axis. The cannula may be inserted through a sclerotomy incision and advanced through the choroid to deliver the therapeutic agent adjacent to the potential space between the neurosensory retina and the retinal pigment epithelium layer. The detection/visualization system is operable to detect or visualize penetration of the choroid of a patient's eye and provide feedback to the operator and/or automatic control of the apparatus based on penetration of the choroid.





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

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

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*