

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
25 November 2021 (25.11.2021)



(10) International Publication Number
WO 2021/233826 A1

(51) International Patent Classification:

A61N 1/37 (2006.01) A61N 1/08 (2006.01)
A61N 1/362 (2006.01) A61B 5/024 (2006.01)
A61N 1/365 (2006.01) A61B 5/349 (2021.01)
A61N 1/05 (2006.01) A61B 5/00 (2006.01)

(21) International Application Number:

PCT/EP2021/062994

(22) International Filing Date:

17 May 2021 (17.05.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

20175429.8 19 May 2020 (19.05.2020) EP

(71) Applicant: **BIOTRONIK SE & CO. KG** [DE/DE]; Wernermannkehre 1, 12359 Berlin (DE).

(72) Inventor: **BECKER, Frank**; Greifswalder Strasse 161, 10409 Berlin (DE).

(74) Agent: **GALANDER, Marcus**; BIOTRONIK Corporate Services SE, Sieversufer 7-9, 12359 Berlin (DE).

(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, 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,

(54) Title: IMPLANTABLE MEDICAL DEVICE FOR STIMULATING A HUMAN OR ANIMAL HEART EMPLOYING AN EVALUATION OF SIGNALS BETWEEN A HIS ELECTRODE AND A FURTHER ELECTRODE

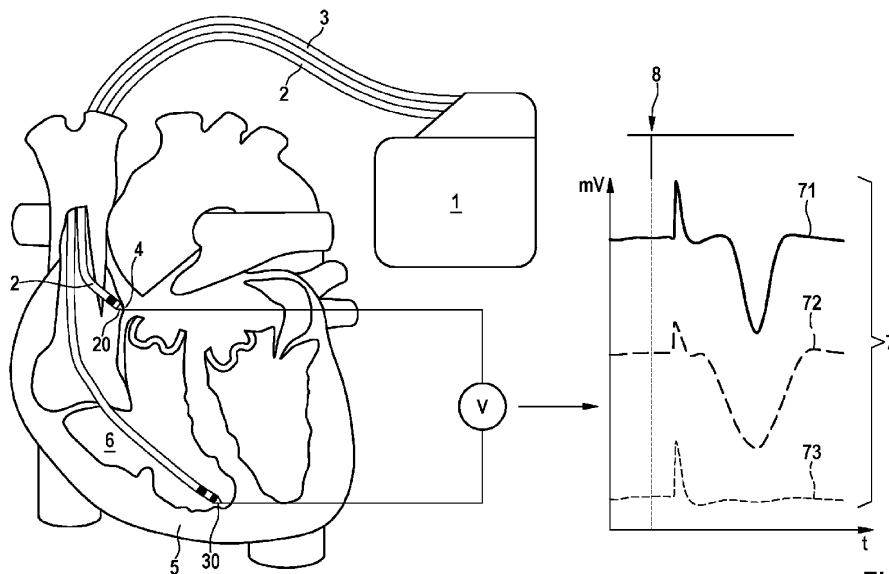


FIG. 1

(57) Abstract: The present invention relates to an implantable medical device for stimulating a human or animal heart, comprising a processor, a memory unit, a His electrode (2) having a first electrode pole (20) configured to detect an electrical signal at a His bundle (4) of a human or animal heart (5), at least one further electrode (3, 9) having at least one further electrode pole (30, 91, 92, 93, 94) configured to detect an electrical signal at a cardiac region (6, 10) of the same heart (5) different from the His bundle (4). During operation of the device, the following steps are carried out: measuring electric signals at a His bundle (4) of a human or animal heart (5) with the first electrode pole (20); measuring electric signals at a cardiac region (6, 10) of the same heart (5) different from the His bundle (4) with the at least one further electrode pole (30, 91, 92, 93, 94); and evaluating intracardiac electrogram signals and/or impedance

[Continued on next page]

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).

Published:

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

signals measured between the first electrode pole (20) and the at least one further electrode pole (30, 91, 92, 93, 94), with the provision that this evaluating does not only comprise a determination of an atrial-His bundle transition time.