

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
02 December 2021 (02.12.2021)



(10) International Publication Number
WO 2021/239543 A1

(51) International Patent Classification:

A61B 5/08 (2006.01) A61N 1/37 (2006.01)
A61B 5/053 (2021.01) A61B 5/113 (2006.01)
A61B 5/00 (2006.01)

12437 Berlin (DE). **GUHANIYOGI, Shayan**; 2199 NW
Everett St, Apt 401, Portland, OR 97210 (US).

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

(21) International Application Number:

PCT/EP2021/063313

(22) International Filing Date:

19 May 2021 (19.05.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/029,722 26 May 2020 (26.05.2020) US
20196096.0 15 September 2020 (15.09.2020) EP

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

(72) Inventors: **MUESSIG, Dirk**; 3053 Roxbury Drive, West
Linn, Oregon 97068 (US). **REDDY, Ravi Kiran Kon-**
dama; 5635 SW Boundary St., Portland, OR 97221 (US).
WHITTINGTON, R. Hollis; 7631 SE 11th Ave., Portland,
OR 97202 (US). **DOERR, Thomas**; Alpenrosenweg 43a,

(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,
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: ACTIVE MEDICAL DEVICE CAPABLE OF IDENTIFYING COUGHING

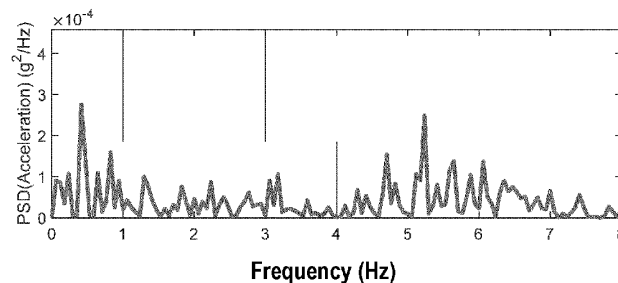


FIG. 7A

(57) Abstract: The invention relates to an active medical device, comprising a processor, a memory unit, and at least one of an accelerometer and a detection unit configured to detect a body impedance. During operation, the active medical device carries out the following steps: a) measuring a body impedance of a patient with the detection unit during a first period of time to obtain time-dependent impedance data and calculating a power spectral density of the impedance data; b) alternatively or additionally to step a), measuring an acceleration of a body of the patient with the accelerometer during the first period of time to obtain time-dependent acceleration data and calculating a power spectral density of the acceleration data; c) identifying coughing of the patient on the basis of the calculated power spectral density if at least 1% of all values of the power spectral density have a frequency of at least 1 Hz.

[Continued on next page]

WO 2021/239543 A1

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))*