

04-20-2004



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To the Honorable Commissioner of Patents

Please Record the attached original documents or copy thereof.

1. Name of conveying party(ies) **2004 APR 15 AM 9:03**
Mark G. Frei
Ivan Osorio
Jonathan C. Werder
David L. Carlson **4/15/04**

FINANCE SECTION

Additional name of conveying party(ies) attached? ☐ Yes ☒ No

2. Name and address of receiving party(ies)

Name: Medtronic, Inc.

Internal Address: _____

Street Address: 710 Medtronic Parkway

City: Minneapolis State: MN Zip: 55432

Additional Name(s) & address(es) attached? ☐ Yes ☒ No

3. Nature of conveyance:

☒ Assignment

☐ Merger

☐ Security Agreement

☐ Change of Name

☐ Other _____

Execution Date: 03/01/04; 03/01/04; 02/17/04; 02/17/04

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is: _____

A. Patent Application No.(s)

10/687,557

B. Patent No.(s)

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning this document should be mailed:

Name: Binal J. Patel

Internal Address: Banner & Witcoff, Ltd.

Street Address: 10 South Wacker Drive

Suite 3000

City: Chicago State: IL Zip: 60606

6. Total number of applications and patents involved:

7. Total fee (37 CFR 3.41) \$ 40.00

☐ Enclosed

☒ Authorized to be charged to deposit account

8. Deposit account number:

19-0733

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Binal J. Patel

Name of Person Signing

[Signature]
Signature

April 15, 2004

Date

Total number of pages including cover sheet, attachments, and documents: 15

Mail documents to be recorded with required cover sheet information to:

Mail Stop Assignment, Recordation Services, Director of the US Patent and Trademark Office,
PO Box 1450, Alexandria, VA 22313-1450

04/19/2004 8TDH11 00000003 190733 10687357

01 FC:0021

40.00 BA

PATENT
REEL: 015219 FRAME: 0490

ASSIGNMENT

Inventors: Mark G. Frei
Ivan Osorio
Jonathan C. Werder
David L. Carlson

Date of Execution of Application: _____

Application Nos. US Non-provisional - 10/687,557
PCT/US03/32938
US Provisional - 60/503,803
US Provisional - 60/418,580

Filing Date: October 15, 2003
Filing Date: October 15, 2003
Filing Date: September 19, 2003
Filing Date: October 15, 2002

In consideration of One Dollar (\$1.00) and other good and valuable considerations in hand paid, the receipt and sufficiency whereof are hereby acknowledged, the undersigned hereby assign to:

MEDTRONIC, INC., a corporation of the State of Minnesota

its successors and assigns, the entire right, title and interest in the invention or improvements of the undersigned disclosed in an application for Letters Patent of the United States, entitled:

SIGNAL QUALITY MONITORING AND CONTROL FOR A MEDICAL DEVICE SYSTEM

and identified as:

Attorney Docket No. 11738.00209

in the offices of Banner & Witcoff, Ltd. and in said application and any and all other applications, both United States and foreign, which the undersigned may file, either solely or jointly with others, on said invention or improvements, and in any and all Letters Patent of the United States and foreign countries, which may be obtained on any of said applications, and in any reissue or extension of such patents, and further assigns to said assignee the priority right provided by the International Convention.

The undersigned hereby authorize and request the Commissioner of Patents and Trademarks to issue said Letters Patent to said assignee.

The undersigned hereby authorize and request the attorneys of record in said application to insert in this assignment the filing date and serial number of said application when officially known, and the date of execution of the application.

The undersigned warrant themselves to be the owners of the entire right, title and interest in said invention or improvements and to have the right to make this assignment, and further warrant that there are no outstanding prior assignments, licenses, or other encumbrances on the interest herein assigned.

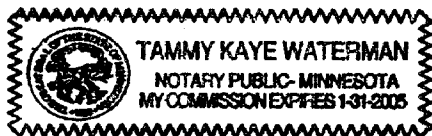
For said considerations the undersigned hereby agree, upon the request and at the expense of said assignee, its successors and assigns, to execute any and all divisional, continuation and substitute applications for said invention or improvements, and any necessary oath, affidavit or declaration relating thereto, and any application for the reissue or extension of any Letters Patent that may be granted upon said application and any and all applications and other documents for Letters Patent in foreign countries on said invention or improvements, that said assignee, its successors or assigns may deem necessary or expedient, and for the said considerations the undersigned authorize said assignee to apply for patents for said invention or improvements in its own name in such countries where such procedure is proper and further agree, upon the request of said assignees, its successors and assigns, to cooperate to

Feb. 17, 2004
Date

Jonathan C. Werder
Jonathan C. Werder

State of Minnesota)
County of Anoka) ss:

This 17 day of Feb, 2004, before me personally came the above-named, Jonathan C. Werder, came to me personally know as the individual who executed the foregoing assignment, who acknowledged to me that he executed the same of his own free will for the purposes herein set forth.



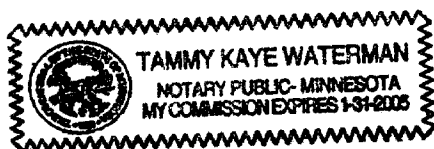
Tammy Kaye Waterman
Notary Public
My Commission Expires: 1-31-05

02/17, 2004
Date

David L. Carlson
David L. Carlson

State of Minnesota)
County of Anoka) ss:

This 17 day of Feb, 2004, before me personally came the above-named, David L. Carlson, came to me personally know as the individual who executed the foregoing assignment, who acknowledged to me that he executed the same of his own free will for the purposes herein set forth.



Tammy Kaye Waterman
Notary Public
My Commission Expires: 1-31-05

ASSIGNMENT

This Agreement is by and between Flint Hills Scientific, L.L.C., a for-profit limited liability company, with offices at 5020 West 15th Street, Suite A, Lawrence, Kansas, 66049 (hereinafter "FHS"), and Ivan Osorio, Mark G. Frei, Naresh C. Bhavaraju, Thomas E. Peters ("Inventors") (FHS and the Inventors collectively constituting the "Assignors"), and MEDTRONIC, INC. a corporation organized and existing under the laws of the State of Minnesota and having a principal place of business at 710 Medtronic Parkway, Minneapolis, Minnesota 55432-5604 ("Medtronic").

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Assignors hereby sell and assign to Medtronic, its successors and assigns, any and all right title and interest the Assignors may have in and to the patent applications identified in the attached Schedule 11.2 and any invention described or claimed in such patent applications, and any non-provisional, foreign or international patent applications claiming priority to the applications set forth in Schedule 11.2, including any continuation, divisional, continuation-in-part, or reissue applications, or any patent applications or patents claiming any of the inventions set forth in the claims or specifications of the applications in Schedule 11.2, and any patents issuing from any of the above patent applications, the same to be held and enjoyed by Medtronic for its own use and benefit and use and benefit of its successors and assigns to the full end of the term for which the patent may be granted, as fully and entirely as the same would have been held and enjoyed by Assignors had this assignment and sale not been made, including without limitation the right to enforce the patent and collect damages for past or future infringement.

And, for the consideration aforesaid, Assignors represent and warrant to Medtronic, its successors and assigns, that at the time of the execution and delivery of these presents, Assignors are the lawful owners of our full interests as inventors of the inventions, applications and patents mentioned above.

For the consideration aforesaid, the Assignors hereby individually covenant and agree to and with Medtronic, its successors and assigns, that whenever Medtronic's counsel or the counsel of its successors or assigns, learned in the law, shall advise that an amendment or division of, or continuation or any continuation-in-part thereof, or any other proceeding in connection with the filing or prosecution of said domestic or foreign patent applications, including interference proceedings, is lawful and desirable, or that a reissue or extension is lawful and desirable, we, or our executors, administrators or assigns will render assistance as Medtronic may require to perfect assignments, and to publish, patent or protect such in any Patent Office or in litigation.

We hereby request the Honorable Commissioner of Patents and Trademarks to issue any and all patents assigned herein to Medtronic in accordance with this instrument.

ACCORDINGLY, each of the parties has caused this Agreement to be executed, in the manner appropriate for each, as of the date indicated.

Address:

Mark G. Frei
2513 Via Linda Drive
Lawrence, Kansas 66047

Flint Hills Scientific, L.L.C.
Mark G. Frei, Ph.D.

Mark G. Frei

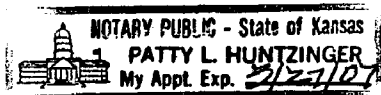
Mark G. Frei, Ph.D.
Individually and as Manager of Flint Hills Scientific, L.L.C.

STATE OF KANSAS

COUNTY OF Douglas ss.

On this 1st day of March, 2004, before me personally appeared Mark G. Frei, to me known to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same as his free act and deed.

IN WITNESS WHEREOF, I have hereunto affixed my official signature with the seal of my office, the day and year above written.



Patty L. Huntzinger
Notary Public

Address:

Ivan Osorio
4005 W. 124th Street
Leawood, Kansas 66209

I. Osorio
Ivan Osorio, M.D.

STATE OF KANSAS

COUNTY OF _____ ss.

On this 1st day of March, 2004, before me personally appeared Ivan Osorio, to me known to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same as his free act and deed.

IN WITNESS WHEREOF, I have hereunto affixed my official signature with the seal of my office, the day and year above written.



Cheryl L. Barnes
Notary Public

Patent Applications

DOCKET NO.	APP. NO.	FILED	INVENTORS	TITLE
P-10933.00 US	60/418,580	October 15, 2002	Mark G. Frei Ivan Osorio	Signal Quality Monitoring and Control for a Medical Device System
P-10933.00 US	10/687,348	October 15, 2003	Mark G. Frei Ivan Osorio	Signal Quality Monitoring and Control for a Medical Device System
P-10933.01 US	60/503,803	September 19, 2003	Mark G. Frei Ivan Osorio	Signal Quality Monitoring and Control for a Medical Device System
P-10933.02 WO	PCT/US03/33002	October 15, 2003	Mark G. Frei Ivan Osorio	Signal Quality Monitoring and Control for a Medical Device System
P-10933.03 US	10/687,557	October 15, 2003	Mark G. Frei Ivan Osorio Jonathan C. Werder David L. Carlson	Signal Quality Monitoring and Control for a Medical Device System
P-10933.04 WO	PCT/US03/32938	October 15, 2003	Mark G. Frei Ivan Osorio Jonathan C. Werder David L. Carlson	Signal Quality Monitoring and Control for a Medical Device System
P-10935.00 US	60/418,553	October 15, 2002	Ivan Osorio Mark G. Frei Mark T. Rise Scott F. Schaffner Nina M. Graves	Multi-Modal Operation of a Medical Device System

DOCKET NO.	APP. NO.	FILED	INVENTORS	TITLE
P-10935.00 US	10/687,289	October 15, 2003	Ivan Osorio Mark G. Frei Mark T. Rise Scott F. Schaffner Nina M. Graves	Multi-Modal Operation of a Medical Device System
P-10935.01 US	60/503,998	September 19, 2003	Ivan Osorio Mark G. Frei Mark T. Rise Scott F. Schaffner Nina M. Graves	Multi-Modal Operation of a Medical Device System
P-10935.02 WO	PCT/US03/32997	October 15, 2003	Ivan Osorio Mark G. Frei Mark T. Rise Scott F. Schaffner Nina M. Graves	Multi-Modal Operation of a Medical Device System
P-10936.00 US	60/418,383	October 15, 2002	Mark G. Frei Ivan Osorio Mark T. Rise Jonathon E. Giftakis Nina M. Graves	Channel-Selective Blanking for a Medical Device System
P-10936.00 US	10/687,133	October 15, 2003	Mark G. Frei Ivan Osorio Mark T. Rise Jonathon E. Giftakis Nina M. Graves	Channel-Selective Blanking for a Medical Device System
P-10936.01 US	60/504,141	September 19, 2003	Mark G. Frei Ivan Osorio Mark T. Rise Jonathon E. Giftakis Nina M. Graves	Channel-Selective Blanking for a Medical Device System

DOCKET NO.	APP. NO.	FILED	INVENTORS	TITLE
P-10936.02 WO	PCT/US03/32908	October 15, 2003	Mark G. Frei Ivan Osorio Mark T. Rise Jonathon E. Giftakis Nina M. Graves	Channel-Selective Blanking for a Medical Device System
P-10947.00 US	60/418,623	October 15, 2002	Ivan Osorio Mark G. Frei Naresh C. Bhavaraju Thomas E. Peters Randy M. Jensen	Configuring and Testing Treatment Therapy Parameters for a Medical Device System
P-10947.00 US	10/687,135	October 15, 2003	Ivan Osorio Mark G. Frei Naresh C. Bhavaraju Thomas E. Peters Randy M. Jensen	Configuring and Testing Treatment Therapy Parameters for a Medical Device System
P-10947.01 US	60/503,817	September 19, 2003	Ivan Osorio Mark G. Frei Naresh C. Bhavaraju Thomas E. Peters Randy M. Jensen	Configuring and Testing Treatment Therapy Parameters for a Medical Device System
P-10947.02 WO	PCT/US03/33000	October 15, 2003	Ivan Osorio Mark G. Frei Naresh C. Bhavaraju Thomas E. Peters Randy M. Jensen	Configuring and Testing Treatment Therapy Parameters for a Medical Device System

DOCKET NO.	APP. NO.	FILED	INVENTORS	TITLE
P-10948.00 US	60/418,476	October 15, 2002	Ivan Osorio Mark G. Frei Naresh C. Bhavaraju Thomas E. Peters Nina M. Graves Scott F. Schaffner Jonathon E. Giftakis Mark T. Rise Jonathan C. Werder	Screening Techniques for Management of a Nervous System Disorder
P-10948.00 US	10/687,344	October 15, 2003	Ivan Osorio Mark G. Frei Naresh C. Bhavaraju Thomas E. Peters Nina M. Graves Scott F. Schaffner Jonathon E. Giftakis Mark T. Rise Jonathan C. Werder	Screening Techniques for Management of a Nervous System Disorder
P-10948.01 US	60/503,963	September 19, 2003	Ivan Osorio Mark G. Frei Naresh C. Bhavaraju Thomas E. Peters Nina M. Graves Scott F. Schaffner Jonathon E. Giftakis Mark T. Rise Jonathan C. Werder	Screening Techniques for Management of a Nervous System Disorder

DOCKET NO.	APP. NO.	FILED	INVENTORS	TITLE
P-10948.02 WO	PCT/US03/32906	October 15, 2003	Ivan Osorio Mark G. Frei Naresh C. Bhavaraju Thomas E. Peters Nina M. Graves Scott F. Schaffner Jonathon E. Giftakis Mark T. Rise Jonathan C. Werder	Screening Techniques for Management of a Nervous System Disorder
P-10949.00 US	60/418,496	October 15, 2002	Mark G. Frei Ivan Osorio Nina M. Graves Scott F. Schaffner Mark T. Rise Jonathon E. Giftakis David L. Carlson	Clustering of Recorded Patient Neurological Activity to Determine Length of a Neurological Event
P-10949.00 US	10/687,571	October 15, 2003	Mark G. Frei Ivan Osorio Nina M. Graves Scott F. Schaffner Mark T. Rise Jonathon E. Giftakis David L. Carlson	Clustering of Recorded Patient Neurological Activity to Determine Length of a Neurological Event
P-10949.01 US	60/503,794	September 19, 2003	Mark G. Frei Ivan Osorio Nina M. Graves Scott F. Schaffner Mark T. Rise Jonathon E. Giftakis David L. Carlson	Clustering of Recorded Patient Neurological Activity to Determine Length of a Neurological Event

DOCKET NO.	APP. NO.	FILED	INVENTORS	TITLE
P-10949.02 WO	PCT/US03/32940	October 15, 2003	Mark G. Frei Ivan Osorio Nina M. Graves Scott F. Schaffner Mark T. Rise Jonathon E. Giftakis David L. Carlson	Clustering of Recorded Patient Neurological Activity to Determine Length of a Neurological Event
P-10950.00 US	60/418,446	October 15, 2002	Ivan Osorio Naresh C. Bhavaraju Thomas E. Peters Mark G. Frei Jonathan C. Werder	Synchronization and Calibration Clocks for a Medical Device and Calibrated Clock
P-10950.00 US	10/687,566	October 15, 2003	Ivan Osorio Naresh C. Bhavaraju Thomas E. Peters Mark G. Frei Jonathan C. Werder	Synchronization and Calibration Clocks for a Medical Device and Calibrated Clock
P-10950.01 US	60/503,795	September 19, 2003	Ivan Osorio Naresh C. Bhavaraju Thomas E. Peters Mark G. Frei Jonathan C. Werder	Synchronization and Calibration Clocks for a Medical Device and Calibrated Clock
P-10950.02 WO	PCT/US03/32941	October 15, 2003	Ivan Osorio Naresh C. Bhavaraju Thomas E. Peters Mark G. Frei Jonathan C. Werder	Synchronization and Calibration Clocks for a Medical Device and Calibrated Clock
P-10951.00 US	60/418,638	October 15, 2002	Ivan Osorio Mark G. Frei David L. Carlson	Control of Treatment Therapy During Start-up and During Operation of a Medical Device System

DOCKET NO.	APP. NO.	FILED	INVENTORS	TITLE
P-10951.00 US	10/687,290	October 15, 2003	Ivan Osorio Mark G. Frei David L. Carlson	Control of Treatment Therapy During Start-up and During Operation of a Medical Device System
P-10951.01 US	60/503,793	September 19, 2003	Ivan Osorio Mark G. Frei David L. Carlson	Control of Treatment Therapy During Start-up and During Operation of a Medical Device System
P-10951.02 WO	PCT/US03/32868	October 15, 2003	Ivan Osorio Mark G. Frei David L. Carlson	Control of Treatment Therapy During Start-up and During Operation of a Medical Device System
P-10952.00 US	60/418,666	October 15, 2002	Mark G. Frei Ivan Osorio Naresh C. Bhavaraju David L. Carlson Jonathon E. Giftakis Nina M. Graves	Timed Delay for Redelivery of Treatment Therapy for a Medical Device System
P-10952.00 US	10/687,567	October 15, 2003	Mark G. Frei Ivan Osorio Naresh C. Bhavaraju David L. Carlson Jonathon E. Giftakis Nina M. Graves	Timed Delay for Redelivery of Treatment Therapy for a Medical Device System
P-10952.01 US	60/504,000	September 19, 2003	Mark G. Frei Ivan Osorio Naresh C. Bhavaraju David L. Carlson Jonathon E. Giftakis Nina M. Graves	Timed Delay for Redelivery of Treatment Therapy for a Medical Device System

DOCKET NO.	APP. NO.	FILED	INVENTORS	TITLE
P-10952.02 WO	PCT/US03/32909	October 15, 2003	Mark G. Frei Ivan Osorio Naresh C. Bhavaraju David L. Carlson Jonathon E. Giftakis Nina M. Graves	Timed Delay for Redelivery of Treatment Therapy for a Medical Device System
P-10953.00 US	60/418,628	October 15, 2002	Mark T. Rise Adrianus P. Donders Scott F. Schaffner	Medical Device System With Relaying Module for Treatment of Nervous System Disorders
P-10953.00 US	10/687,306	October 15, 2003	Mark T. Rise Adrianus P. Donders Scott F. Schaffner	Medical Device System With Relaying Module for Treatment of Nervous System Disorders
P-10953.01 US	60/503,792	September 19, 2003	Mark T. Rise Adrianus P. Donders Scott F. Schaffner	Medical Device System With Relaying Module for Treatment of Nervous System Disorders
P-10953.02 WO	PCT/US03/32867	October 15, 2003	Mark T. Rise Adrianus P. Donders Scott F. Schaffner	Medical Device System With Relaying Module for Treatment of Nervous System Disorders
P-10954.00 US	60/418,609	October 15, 2002	Ivan Osorio Naresh C. Bhavaraju David L. Carlson Randy M. Jensen	Cycle Mode Providing Redundant Back-up to Ensure Termination of Treatment Therapy in a Medical Device System
P-10954.00 US	10/688,214	October 15, 2003	Ivan Osorio Naresh C. Bhavaraju David L. Carlson Randy M. Jensen	Cycle Mode Providing Redundant Back-up to Ensure Termination of Treatment Therapy in a Medical Device System

DOCKET NO.	APP. NO.	FILED	INVENTORS	TITLE
P-10954.01 US	60/504,447	September 19, 2003	Ivan Osorio Naresh C. Bhavaraju David L. Carlson Randy M. Jensen	Cycle Mode Providing Redundant Back-up to Ensure Termination of Treatment Therapy in a Medical Device System
P-10954.02 WO	PCT/US03/32572	October 15, 2003	Ivan Osorio Naresh C. Bhavaraju David L. Carlson Randy M. Jensen	Cycle Mode Providing Redundant Back-up to Ensure Termination of Treatment Therapy in a Medical Device System
P-111107.00 US	60/418,527	October 15, 2002	Mark G. Frei Jonathan C. Werder David L. Carlson	Phase Shifting of Neurological Signals in a Medical Device System
P-111107.00 US	10/687,570	October 15, 2003	Mark G. Frei Jonathan C. Werder David L. Carlson	Phase Shifting of Neurological Signals in a Medical Device System
P-111107.01 US	60/503,985	September 19, 2003	Mark G. Frei Jonathan C. Werder David L. Carlson	Phase Shifting of Neurological Signals in a Medical Device System
P-111107.02 WO	PCT/US03/33047	October 15, 2003	Mark G. Frei Jonathan C. Werder David L. Carlson	Phase Shifting of Neurological Signals in a Medical Device System

DOCKET NO.	APP. NO.	FILED	INVENTORS	TITLE
P-111108.00 US	60/418,372	October 15, 2002	Mark T. Rise Nina M. Graves Jonathon E. Giftakis Jonathan C. Werder David L. Carlson Randy M. Jensen Scott F. Schaffner Naresh C. Bhavaraju Mark G. Frei Ivan Osorio Thomas E. Peters	Programmer Software Requirement Specification
P-111109.00 US	60/418,506	October 15, 2002	Ivan Osorio Mark G. Frei Nina M. Graves Jonathon E. Giftakis	Scoring of Sensed Neurological Signals for Use With a Medical Device System
P-111109.00 US	10/687,389	October 15, 2003	Ivan Osorio Mark G. Frei Nina M. Graves Jonathon E. Giftakis	Scoring of Sensed Neurological Signals for Use With a Medical Device System
P-111109.01 US	60/503,999	September 19, 2003	Ivan Osorio Mark G. Frei Nina M. Graves Jonathon E. Giftakis	Scoring of Sensed Neurological Signals for Use With a Medical Device System
P-111109.02 WO	PCT/US03/32944	October 15, 2003	Ivan Osorio Mark G. Frei Nina M. Graves Jonathon E. Giftakis	Scoring of Sensed Neurological Signals for Use With a Medical Device System