

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5587642

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
SHANTANU SARKAR	05/15/2019
ERIC M. CHRISTENSEN	06/21/2019
DEBORAH ANN JAYE	05/14/2019
NIRANJAN CHAKRAVARTHY	05/14/2019
GEERT MORREN	06/12/2019
JERRY D. REILAND	05/29/2019
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	MEDTRONIC, INC.
<b>Street Address:</b>	710 MEDTRONIC PARKWAY NE
<b>City:</b>	MINNEAPOLIS
<b>State/Country:</b>	MINNESOTA
<b>Postal Code:</b>	55432-9924
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	16450250
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	763-526-3539
<b>Email:</b>	rs.patents.five@medtronic.com
<b>Correspondent Name:</b>	MEDTRONIC, INC. (CVG)
<b>Address Line 1:</b>	8200 CORAL SEA STREET NE.
<b>Address Line 2:</b>	MS: MVC22
<b>Address Line 4:</b>	MINNEAPOLIS, MINNESOTA 55112
<b>ATTORNEY DOCKET NUMBER:</b>	C0019908.US01/1111-687US1
<b>NAME OF SUBMITTER:</b>	KAREN SORENSEN
<b>SIGNATURE:</b>	/Karen Sorensen/
<b>DATE SIGNED:</b>	06/24/2019

**Total Attachments: 42**

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ASSIGNMENT OF APPLICATION(S)

Whereas I/we, the below named inventor(s), with residence and citizenship as indicated below, have made an invention in

SENSING RESPIRATION PARAMETERS BASED ON AN IMPEDANCE SIGNAL

- for which an application for a United States Patent or a U.S. Provisional Application is being filed contemporaneously herewith;
- for which an application for a United States Patent identified as U.S. Patent Application No. \_\_\_\_\_; was filed on \_\_\_\_\_;
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- for which above application claims priority to U.S. Provisional Patent Application No. \_\_\_\_\_, filed on \_\_\_\_\_;
- which application is identified as PCT International Patent Application No. \_\_\_\_\_; filed \_\_\_\_\_;

Whereas, 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 N.E., Minneapolis, Minnesota 55432-5604, hereinafter referred to as "Corporation," is desirous of acquiring the entire right, title and interest in and to said invention for the United States and for all foreign countries and in and to any and all foreign and domestic Letters Patent which may be granted therefore;

NOW, Therefore, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, we have sold, assigned, transferred and set over and by these presents do sell, assign, transfer and set over unto Corporation, its successors and assigns, the entire right, title and interest in and to said invention and the application(s) identified above and in and to any application claiming benefit thereto and the entire right, title and interest in and to any and all Letters Patent of the United States and any foreign countries which may be granted therefore including our rights under the International Convention for the Protection of Industrial Property, which include the right to claim priority based on the filing date of said application(s), and in and to any and all extensions, divisions, continuations, continuations-in-part or reissues of said Letters Patent that may be granted, the same to be held and enjoyed by Corporation for its own use and benefit and use and benefit of its successors and assigns to the full end of the term for which said Letters Patent may be granted, as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made, including the right to enforce such Letters Patent as fully and entirely as the same would have been held and enjoyed by the assignors if this assignment had not been made; together with all claims by assignors for damages by reason of past infringement or for provisional rights and including the right to sue for, and collect the same for its own use and benefit, and for the use and benefit of its successors, assigns, and other legal representatives;

AND, for the consideration aforesaid, we materially represent to Corporation, its successors and assigns, that at the time of the execution and delivery of these presents, we are the sole lawful owners of the entire right, title and interest in and to the invention, application and Letters Patent above mentioned, and that the same are unencumbered, and that we have good right and lawful authority to sell and convey the same in the manner herein set forth;

AND, for the consideration aforesaid, we hereby individually covenant and agree to and with Corporation, its successors and assigns, that whenever its 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 of said Letters Patent is lawful and desirable, we, or our executors, administrators or assigns will sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for the procurement of valid Letters Patent for said invention, or for the reissue or extension of the same, without charge to Corporation, its successors or assigns, but at Corporation's expense.

I/We do hereby authorize and request the Commissioner of Patents to issue any and all Letters Patent which may be granted upon any of the said applications, to said Medtronic, Inc., as the assignee of the entire right, title, and interest therein.

In witness whereof, I/we have signed my/our name(s) on the day and year set forth below.

Given Name (first and middle initial [if any]): Shantanu	Family Name or Surname (last name): Sarkar	
Inventor's Signature: 	Date: 15-MAY-2019	
City and State: Roseville, MN	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Eric M.	Family Name or Surname (last name): Christensen	
Inventor's Signature:	Date:	
City and State: Gilbert, AZ	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Deborah Ann	Family Name or Surname (last name): Jaye	
Inventor's Signature:	Date:	
City and State: Lino Lakes, MN	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Niranjan	Family Name or Surname (last name): Chakravarthy	
Inventor's Signature:	Date:	
City and State: Singapore	Country: Singapore	Citizenship: US

Given Name (first and middle initial [if any]): Geert	Family Name or Surname (last name): Morren	
Inventor's Signature:	Date:	
City and State: Vissenaken	Country: Belgium	Citizenship: BE

Given Name (first and middle initial [if any]): Jerry D.	Family Name or Surname (last name): Reiland	
Inventor's Signature:	Date:	
City and State: Coon Rapids, MN	Country: USA	Citizenship: US

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NOW, Therefore, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, we have sold, assigned, transferred and set over and by these presents do sell, assign, transfer and set over unto Corporation, its successors and assigns, the entire right, title and interest in and to said invention and the application(s) identified above and in and to any application claiming benefit thereto and the entire right, title and interest in and to any and all Letters Patent of the United States and any foreign countries which may be granted therefore including our rights under the International Convention for the Protection of Industrial Property, which include the right to claim priority based on the filing date of said application(s), and in and to any and all extensions, divisions, continuations, continuations-in-part or reissues of said Letters Patent that may be granted, the same to be held and enjoyed by Corporation for its own use and benefit and use and benefit of its successors and assigns to the full end of the term for which said Letters Patent may be granted, as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made, including the right to enforce such Letters Patent as fully and entirely as the same would have been held and enjoyed by the assignors if this assignment had not been made; together with all claims by assignors for damages by reason of past infringement or for provisional rights and including the right to sue for, and collect the same for its own use and benefit, and for the use and benefit of its successors, assigns, and other legal representatives;

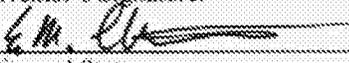
AND, for the consideration aforesaid, we materially represent to Corporation, its successors and assigns, that at the time of the execution and delivery of these presents, we are the sole lawful owners of the entire right, title and interest in and to the invention, application and Letters Patent above mentioned, and that the same are unencumbered, and that we have good right and lawful authority to sell and convey the same in the manner herein set forth;

AND, for the consideration aforesaid, we hereby individually covenant and agree to and with Corporation, its successors and assigns, that whenever its 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 of extension of said Letters Patent is lawful and desirable, we, or our executors, administrators or assigns will sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for the procurement of valid Letters Patent for said invention, or for the reissue or extension of the same, without charge to Corporation, its successors or assigns, but at Corporation's expense.

I/We do hereby authorize and request the Commissioner of Patents to issue any and all Letters Patent which may be granted upon any of the said applications, to said Medtronic, Inc., as the assignee of the entire right, title, and interest therein.

In witness whereof, I/we have signed my/our name(s) on the day and year set forth below.

Given Name (first and middle initial [if any]): Shantanu	Family Name or Surname (last name): Sarkar	
Inventor's Signature:	Date:	
City and State: Roseville, MN	Country: USA	Citizenship: US

Given Name (first and middle initial (if any)): Eric M.	Family Name or Surname (last name): Christensen	
Inventor's Signature: 	Date: 6/21/2019	
City and State: Gilbert, AZ	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Deborah Ann	Family Name or Surname (last name): Jaye	
Inventor's Signature:	Date:	
City and State: Lino Lakes, MN	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Niranjan	Family Name or Surname (last name): Chakravarthy	
Inventor's Signature:	Date:	
City and State: Singapore	Country: Singapore	Citizenship: US

Given Name (first and middle initial [if any]): Geert	Family Name or Surname (last name): Morren	
Inventor's Signature:	Date:	
City and State: Vissenaken	Country: Belgium	Citizenship: <b>BE</b>

Given Name (first and middle initial [if any]): Jerry D.	Family Name or Surname (last name): Reiland	
Inventor's Signature:	Date:	
City and State: Coon Rapids, MN	Country: USA	Citizenship: US

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Given Name (first and middle initial [if any]): Deborah Ann	Family Name or Surname (last name): Jaye	
Inventor's Signature: <i>Deborah Ann Jaye</i>	Date: <i>14 May 2019</i>	
City and State: Lino Lakes, MN	Country: USA	Citizenship: US

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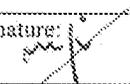
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NOW, Therefore, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, we have sold, assigned, transferred and set over and by these presents do sell, assign, transfer and set over unto Corporation, its successors and assigns, the entire right, title and interest in and to said invention and the application(s) identified above and in and to any application claiming benefit thereto and the entire right, title and interest in and to any and all Letters Patent of the United States and any foreign countries which may be granted therefore including our rights under the International Convention for the Protection of Industrial Property, which include the right to claim priority based on the filing date of said application(s), and in and to any and all extensions, divisions, continuations, continuations-in-part or reissues of said Letters Patent that may be granted, the same to be held and enjoyed by Corporation for its own use and benefit and use and benefit of its successors and assigns to the full end of the term for which said Letters Patent may be granted, as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made, including the right to enforce such Letters Patent as fully and entirely as the same would have been held and enjoyed by the assignors if this assignment had not been made; together with all claims by assignors for damages by reason of past infringement or for provisional rights and including the right to sue for, and collect the same for its own use and benefit, and for the use and benefit of its successors, assigns, and other legal representatives;

AND, for the consideration aforesaid, we materially represent to Corporation, its successors and assigns, that at the time of the execution and delivery of these presents, we are the sole lawful owners of the entire right, title and interest in and to the invention, application and Letters Patent above mentioned, and that the same are unencumbered, and that we have good right and lawful authority to sell and convey the same in the manner herein set forth;

AND, for the consideration aforesaid, we hereby individually covenant and agree to and with Corporation, its successors and assigns, that whenever its 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 of extension of said Letters Patent is lawful and desirable, we, or our executors, administrators or assigns will sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for the procurement of valid Letters Patent for said invention, or for the reissue or extension of the same, without charge to Corporation, its successors or assigns, but at Corporation's expense.

I/We do hereby authorize and request the Commissioner of Patents to issue any and all Letters Patent which may be granted upon any of the said applications, to said Medtronic, Inc., as the assignee of the entire right, title, and interest therein.

In witness whereof, I/we have signed my/our name(s) on the day and year set forth below.

Given Name (first and middle initial [if any]): Shantanu	Family Name or Surname (last name): Sarkar	
Inventor's Signature:	Date:	
City and State: Roseville, MN	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Eric M.	Family Name or Surname (last name): Christensen	
Inventor's Signature:	Date:	
City and State: Gilbert, AZ	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Deborah Ann	Family Name or Surname (last name): Jaye	
Inventor's Signature:	Date:	
City and State: Lino Lakes, MN	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Niranjan	Family Name or Surname (last name): Chakravarthy	
Inventor's Signature:	Date:	
City and State: Singapore	Country: Singapore	Citizenship: US

Given Name (first and middle initial [if any]): Geert	Family Name or Surname (last name): Morren	
Inventor's Signature: 	Date: 12 JUNE 2019	
City and State: Vissenaken	Country: Belgium	Citizenship: BE

Given Name (first and middle initial [if any]): Jerry D.	Family Name or Surname (last name): Reiland	
Inventor's Signature:	Date:	
City and State: Coon Rapids, MN	Country: USA	Citizenship: US

**ASSIGNMENT OF APPLICATION(S)**

Whereas I/we, the below named inventor(s), with residence and citizenship as indicated below, have made an invention in

**SENSING RESPIRATION PARAMETERS BASED ON AN IMPEDANCE SIGNAL**

- for which an application for a United States Patent or a U.S. Provisional Application is being filed contemporaneously herewith;
- for which an application for a United States Patent identified as U.S. Patent Application No. \_\_\_\_\_; was filed on \_\_\_\_\_;
- for which an application for a U.S. Provisional Application No. \_\_\_\_\_; was filed on \_\_\_\_\_;
- for which above application claims priority to U.S. Provisional Patent Application No. \_\_\_\_\_, filed on \_\_\_\_\_;
- which application is identified as PCT International Patent Application No. \_\_\_\_\_; filed \_\_\_\_\_;

Whereas, 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 N.E., Minneapolis, Minnesota 55432-5604, hereinafter referred to as "Corporation," is desirous of acquiring the entire right, title and interest in and to said invention for the United States and for all foreign countries and in and to any and all foreign and domestic Letters Patent which may be granted therefore;

NOW, Therefore, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, we have sold, assigned, transferred and set over and by these presents do sell, assign, transfer and set over unto Corporation, its successors and assigns, the entire right, title and interest in and to said invention and the application(s) identified above and in and to any application claiming benefit thereto and the entire right, title and interest in and to any and all Letters Patent of the United States and any foreign countries which may be granted therefore including our rights under the International Convention for the Protection of Industrial Property, which include the right to claim priority based on the filing date of said application(s), and in and to any and all extensions, divisions, continuations, continuations-in-part or reissues of said Letters Patent that may be granted, the same to be held and enjoyed by Corporation for its own use and benefit and use and benefit of its successors and assigns to the full end of the term for which said Letters Patent may be granted, as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made, including the right to enforce such Letters Patent as fully and entirely as the same would have been held and enjoyed by the assignors if this assignment had not been made; together with all claims by assignors for damages by reason of past infringement or for provisional rights and including the right to sue for, and collect the same for its own use and benefit, and for the use and benefit of its successors, assigns, and other legal representatives;

AND, for the consideration aforesaid, we materially represent to Corporation, its successors and assigns, that at the time of the execution and delivery of these presents, we are the sole lawful owners of the entire right, title and interest in and to the invention, application and Letters Patent above mentioned, and that the same are unencumbered, and that we have good right and lawful authority to sell and convey the same in the manner herein set forth;

AND, for the consideration aforesaid, we hereby individually covenant and agree to and with Corporation, its successors and assigns, that whenever its 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 of extension of said Letters Patent is lawful and desirable, we, or our executors, administrators or assigns will sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for the procurement of valid Letters Patent for said invention, or for the reissue or extension of the same, without charge to Corporation, its successors or assigns, but at Corporation's expense.

I/We do hereby authorize and request the Commissioner of Patents to issue any and all Letters Patent which may be granted upon any of the said applications, to said Medtronic, Inc., as the assignee of the entire right, title, and interest therein.

In witness whereof, I/we have signed my/our name(s) on the day and year set forth below.

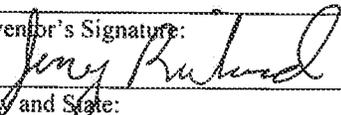
Given Name (first and middle initial [if any]): Shantanu	Family Name or Surname (last name): Sarkar	
Inventor's Signature:	Date:	
City and State: Roseville, MN	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Eric M.	Family Name or Surname (last name): Christensen	
Inventor's Signature:	Date:	
City and State: Gilbert, AZ	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Deborah Ann	Family Name or Surname (last name): Jaye	
Inventor's Signature:	Date:	
City and State: Lino Lakes, MN	Country: USA	Citizenship: US

Given Name (first and middle initial [if any]): Niranjan	Family Name or Surname (last name): Chakravarthy	
Inventor's Signature:	Date:	
City and State: Singapore	Country: Singapore	Citizenship: US

Given Name (first and middle initial [if any]): Geert	Family Name or Surname (last name): Morren	
Inventor's Signature:	Date:	
City and State: Vissenaken	Country: Belgium	Citizenship: BE

Given Name (first and middle initial [if any]): Jerry D.	Family Name or Surname (last name): Reiland	
Inventor's Signature: 	Date: May 29, 2019	
City and State: Coon Rapids, MN	Country: USA	Citizenship: US