

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court _____ for the District of Delaware _____ on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.);

DOCKET NO.	DATE FILED 6/16/2022	U.S. DISTRICT COURT for the District of Delaware
PLAINTIFF Cleveland Medical Devices Inc.		DEFENDANT ResMed Inc.
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 10,028,698 B1	7/24/2018	Cleveland Medical Devices Inc.
2 10,076,269 B1	9/18/2018	Cleveland Medical Devices Inc.
3 10,426,399 B1	10/1/2019	Cleveland Medical Devices Inc.
4 10,478,118 B1	11/19/2019	Cleveland Medical Devices Inc.
5 10,925,535 B1	2/23/2021	Cleveland Medical Devices Inc.
6 11,064,937 B1	7/20/2021	Cleveland Medical Devices Inc.
7 11,202,603 B1	12/21/2021	Cleveland Medical Devices Inc.
8 11,234,637 B1	2/1/2022	Cleveland Medical Devices Inc.

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY			
	El Amendment	El Answer	El Cross Bill	El Other Pleading
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK		
1				
2				
3				
4				
5				

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
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Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
 Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/440,116	09/18/2018	10076269	CMD-087	4463

81177 7590 08/29/2018
Cleveland Medical Devices Inc.
4415 Euclid Ave. Ste. 500
Cleveland, OH 44103

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 1304 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Hani Kayyali, Shaker Heights, OH;
Robert Schmidt, Cleveland, OH;
Mohammad Modarres-Zadeh, Tampa, FL;
Brian Kolkowski, Leroy, OH;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

81177 7590 08/07/2018
Cleveland Medical Devices Inc.
4415 Euclid Ave. Ste. 500
Cleveland, OH 44103

Certificate of Mailing or Transmission *via EFS*
 I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first-class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Madey Pennington (Depositor's name)
[Signature] (Signature)
 2018-08-09 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/440,116	04/05/2012	Hani Kayyali	CMD-087	4463

TITLE OF INVENTION: DEVICES AND METHODS FOR SLEEP DISORDER DIAGNOSIS AND TREATMENT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0	\$0	\$500	11/07/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
NATNITHITHADHA, NAVIN	3735	600-544000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
 (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

Brian Kolkowski
 2
 3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Cleveland Medical Devices Inc.

Cleveland, OH

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☒ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☒ Payment by credit card. *via EFS*
☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
☐ Applicant asserting small entity status. See 37 CFR 1.27
☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.32. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature

Date

Typed or printed name

Registration No.

Brian Kolkowski

8/9/2018

36,847

Electronic Patent Application Fee Transmittal

Application Number:	13440116			
Filing Date:	05-Apr-2012			
Title of Invention:	DEVICES AND METHODS FOR SLEEP DISORDER DIAGNOSIS AND TREATMENT			
First Named Inventor/Applicant Name:	Hani Kayyali			
Filer:	Brian M. Kolkowski			
Attorney Docket Number:	CMD-087			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	500	500

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				500

Electronic Acknowledgement Receipt

EFS ID:	33417922
Application Number:	13440116
International Application Number:	
Confirmation Number:	4463
Title of Invention:	DEVICES AND METHODS FOR SLEEP DISORDER DIAGNOSIS AND TREATMENT
First Named Inventor/Applicant Name:	Hani Kayyali
Customer Number:	81177
Filer:	Brian M. Kolkowski
Filer Authorized By:	
Attorney Docket Number:	CMD-087
Receipt Date:	09-AUG-2018
Filing Date:	05-APR-2012
Time Stamp:	09:17:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 500
RAM confirmation Number	080918INTEFSW09191000
Deposit Account	502704
Authorized User	Mark Pennington

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

ResMed

37 CFR 1.19 (Document supply fees)
 37 CFR 1.20 (Post Issuance fees)
 37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	CMD-087_2018-08-09_issue-fee-transmittal.pdf	73203	no	1
			85693081b2b99160b3a8d4ca2eb0ede4515664f0		

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30270	no	2
			2db1d142536f88ec1fa6604a37f1122571f7d296		

Warnings:

Information:

Total Files Size (in bytes):	103473
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Description: Internet Communications Authorized/Internet Communications Authorization Withdrawn

AUTHORIZATION FOR INTERNET COMMUNICATIONS IN A PATENT APPLICATION OR REQUEST TO WITHDRAW AUTHORIZATION FOR INTERNET COMMUNICATIONS	Application No.	13/440,116
	Filing Date	4/5/2012
	First Named Inventor	Hans Kung'u
	Art Unit	3735
	Examiner Name	Nancy V. Smith
	Practitioner Docket No.	11-03

ResMed
Exhibit 1005 - Page 8

PROPOSED EXAMINER'S AMENDMENT

21. (currently amended) A positive airway pressure (PAP) sleep disorder treatment system comprising:

a signal processing module ~~comprising~~ consisting essentially of an a first input for connecting to a pulse oximeter sensor with a signal, electronics for filtering and processing the signal, and an output for outputting pulse oximetry sensor data;

a PAP device adapted for treating a subject's sleep disorder with separate enclosure from the signal processing module further comprising:

a blower having an air output,

~~an~~ a second input adapted for receiving the pulse oximetry sensor data from the output of the signal processing module,

an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow data of a subject using the PAP device, and

a processor adapted for receiving the pulse oximetry sensor data from ~~both the signal processing module~~ the second input and the respiratory airflow data from the airflow sensor and calculating, based in part on both the respiratory airflow data and the pulse oximetry sensor data of level, sleep disorder symptom data ~~based in part on both the respiratory airflow data and pulse oximetry sensor data of~~ a level of severity and/or an index of a level of severity of the subject's sleep disorder symptoms measured during use of the PAP device; ~~and~~

a mask or a nasal cannula; and

a module transceiver adapted for receiving and transmitting the sleep disorder symptom data of the level of severity and/or ~~the sensor data from both the airflow sensor and pulse oximeter sensor~~ the index of the level of severity of the subject's sleep disorder symptoms to a remote location.

22. (currently amended) The system of claim 21 wherein the ~~inputs on~~ second input in the PAP device and the ~~outputs of~~ output in the signal processing module are in wireless radio frequency bidirectional communication.

23. (currently amended) The system of claim 22 wherein the PAP device is adapted to command the signal processing module to reconfigure the output by improving the gain for the ~~pulse oximeter sensor~~ signal or the A/D conversion of the signal.

24. (currently amended) The system of claim 21 wherein the signals ~~from the pulse oximeter sensors~~ is processed by the signal processing module using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

28. (currently amended) A sleep disorder treatment system comprising:

a data acquisition system[[,]];

a positive airway pressure (PAP) device[.]; and
a processor[.];

the data acquisition system consisting essentially of a data acquisition device having at least one first input adapted for receiving a first signal from a pulse oximeter sensor, an electronic component for filtering and processing the first signal from the pulse oximeter sensor to ~~include~~ remove artifacts, and a first output adapted for transmitting pulse oximeter sensor data based on the first signal from the pulse oximeter sensor to the PAP device;

the PAP device comprising:

a hose,

a blower,

an airflow sensor with a second signal adapted for measuring respiratory airflow of a subject,

a[[n]] second input for receiving pulse oximetry sensor sensor data from the data acquisition device[.]; and

a mask or nasal cannula for treating a subject's sleep disorder symptoms;
and

the processor adapted for receiving pulse oximetry sensor data from the second ~~input pulse oximeter sensor~~, and the ~~air flow sensor~~ respiratory airflow data from the airflow sensor, the processor further adapted for calculating, based in part on both data from the respiratory airflow and pulse oximetry sensors, sleep disorder symptom data ~~based in part on both data from the respiratory airflow and pulse oximetry sensors of a~~

Art Unit: 3735

level of severity and/or index of a level of severity of the subject's symptoms measured during the subject's use of the PAP device, the processor ~~still further~~ adapted to be either part of or external to the PAP device and having a ~~second~~ second output, the second output adapted for providing sleep disorder symptom data and/or the index of the level of severity of the subject's symptoms to a nonvolatile memory to be used for later transmission of the sleep disorder symptom data and/or the index of the level of severity of the subject's symptoms to a remote location.

31. (currently amended) The sleep disorder treatment system of claim 28 wherein the ~~first signals from the sensors are~~ is processed by the signal processing module using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

32. (currently amended) The sleep disorder treatment system of claim 28 wherein the ~~sensor data~~ first output of in the data acquisition system and the second input in the PAP device are in wireless ~~is transmitted wirelessly by bidirectional radio frequency communication between the data acquisition system and the the input on the PAP device.~~

34. (currently amended) A sleep disorder treatment system comprising:

a data acquisition system, the data acquisition system comprising a data acquisition device having inputs for receiving signals from at least one physiological sensor, the data acquisition system for creating an output of the level of severity of a subject's sleep disorder or symptoms based in part on the signals from the at least one physiological sensor[[s]]; and

an positive airway pressure apparatus for ~~both~~ providing pressurized air[[,]] and dosing and chemically treating a subject's sleep disorder or symptoms with a pharmaceutical agent, the positive airway pressure apparatus comprising a controller adapted to adjust the pharmaceutical agent, which can be adjusted at least in part, using the output of the level of severity of the subject's sleep disorder from the data acquisition system.

35. (currently amended) The sleep disorder treatment system of claim 34 wherein the at least one physiological sensor ~~consists essentially of~~ comprises a pulse oximeter sensor.

36. (currently amended) The sleep disorder treatment system of claim 35 wherein the at least one physiological sensor further ~~consists essentially of~~ comprises a respiratory effort sensor.

37. (currently amended) The sleep disorder treatment system of claim 34 wherein the output of the level of severity from the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and a

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receiver in the positive airway pressure apparatus ~~for chemically treating a subject's sleep disorder or symptoms.~~

38. (currently amended) The sleep disorder treatment system of claim 37 wherein the controller ~~positive airway pressure apparatus for chemically treating a subject's sleep disorder or symptoms through the receiver~~ is adapted to command a signal processing module in the data acquisition system to reconfigure the output of the data acquisition system.

39. (currently amended) The sleep disorder treatment system of claim 34 wherein the positive airway pressure apparatus ~~chemically treat a subject's sleep disorder or symptoms uses either~~ comprises a nebulizer or a controlled pump to administer the pharmaceutical agent.

40. (currently amended) The sleep disorder treatment system of claim 34 wherein the signals from the at least one physiological sensor[s] are processed by a signal processing module in the data acquisition system using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

41. (currently amended) A positive airway pressure (PAP) sleep disorder treatment system comprising:

a PAP device with an enclosure further comprising:

a blower having an air output,

an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow of a subject while using the PAP and outputting airflow sensor data[[,]];

a processor adapted for receiving the airflow sensor data ~~from the airflow sensor,~~ and calculating both symptom data of a severity of the subject's sleep disorder symptoms and/or an index of a subject's symptoms measured during use of the PAP device and data of usage of the PAP device[[,]];

a mask or a nasal cannula[[,]];

a first radio frequency wireless module transceiver[[,]]; and

a base station, cellular phone, or PDA[[,]];

the first radio frequency wireless module transceiver adapted for receiving and transmitting the symptom data of the severity of the subject's sleep disorder symptoms and ~~PAP device~~ the data of usage to the base station, cellular phone or PDA;

the base station, cellular phone, or PDA comprising a second radio frequency wireless module transceiver, a processor, the software, and a display, the base station, cellular phone, or PDA ~~further being adapted with the software to both display at least in part~~ the symptom data of the severity of the subject's sleep disorder symptoms and/or the index of the subject's symptoms, and to retransmit sensor the symptom data of the severity of the subject's sleep disorder symptoms and/or the index of the subject's symptoms and the data of usage received from the PAP device to a remote internet site.

Art Unit: 3735

42. (currently amended) The system of Claim 41, wherein the first radio frequency wireless module transceiver of the PAP device and the second radio frequency wireless module transceiver of the base station, cellular phone or PDA communicate ~~with~~ using Bluetooth wireless protocol.

44. (currently amended) The system of Claim 41, wherein the PAP device further comprises an electronic component adapted to allow the PAP device to be adjusted remotely based on the ~~sensor~~ symptom data of the severity of the subject's sleep disorder and/or the index of the subject's symptoms transmitted to the remote internet site.

45. (currently amended) The system of Claim 41, wherein ~~the software of~~ the base station, cellular phone or PDA ~~can be reprogrammed~~ is adapted to be reprogrammed or modified remotely.

46. (currently amended) The system of Claim 41, wherein the ~~signals from the sensors are~~ airflow sensor data is processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

Issue Classification 	Application/Control No. 13440116	Applicant(s)/Patent Under Reexamination KAYYALI ET AL.	
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735	

CPC						
Symbol					Type	Version
A61B		5	/	085	F	2013-01-01
A61B		5	/	4815	I	2013-01-01
A61M		16	/	0069	A	2014-02-04
A61M		2230	/	14	A	2013-01-01
A61M		2230	/	04	A	2013-01-01
A61M		2202	/	0208	A	2013-01-01
A61M		2205	/	3561	A	2013-01-01
A61M		2205	/	3592	A	2013-01-01
A61M		16	/	0051	A	2013-01-01
A61M		2205	/	3553	A	2013-01-01
A61M		2230	/	202	A	2013-01-01
A61M		2016	/	0027	A	2013-01-01
A61M		2016	/	0039	A	2013-01-01
A61M		2205	/	3584	A	2013-01-01
A61M		2230	/	205	A	2013-01-01
A61B		5	/	02055	A	2013-01-01
A61M		2230	/	10	A	2013-01-01
A61M		2230	/	60	A	2013-01-01

CPC Combination Sets							
Symbol				Type	Set	Ranking	Version

NONE		Total Claims Allowed:	
		20	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/NAVIN NATNITHITHADHA/ Primary Examiner.Art Unit 3735	07/17/2018	1	8
(Primary Examiner)	(Date)		

Issue Classification 	Application/Control No. 13440116	Applicant(s)/Patent Under Reexamination KAYYALI ET AL.
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735

☐ Claims renumbered in the same order as presented by applicant															
☐ CPA															
☐ T.D.															
☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	21	11	37												
2	22	12	38												
3	23	13	39												
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	33														
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9	35														
10	36														

NONE	Total Claims Allowed: 20	
(Assistant Examiner)	(Date)	
/NAVIN NATNITHITHADHA/ Primary Examiner.Art Unit 3735	07/17/2018	O.G. Print Claim(s) 1
(Primary Examiner)	(Date)	O.G. Print Figure 8



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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NOTICE OF ALLOWANCE AND FEE(S) DUE

81177 7590 08/07/2018
Cleveland Medical Devices Inc.
4415 Euclid Ave. Ste. 500
Cleveland, OH 44103

EXAMINER

NATNITHADHA, NAVIN

ART UNIT

PAPER NUMBER

3735

DATE MAILED: 08/07/2018

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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13/440,116

04/05/2012

Hani Kayyali

CMD-087

4463

TITLE OF INVENTION: DEVICES AND METHODS FOR SLEEP DISORDER DIAGNOSIS AND TREATMENT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0	\$0	\$500	11/07/2018

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

81177 7590 08/07/2018
Cleveland Medical Devices Inc.
4415 Euclid Ave. Ste. 500
Cleveland, OH 44103

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/440,116	04/05/2012	Hani Kayyali	CMD-087	4463

TITLE OF INVENTION: DEVICES AND METHODS FOR SLEEP DISORDER DIAGNOSIS AND TREATMENT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0	\$0	\$500	11/07/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
NATNITHITHADHA, NAVIN	3735	600-544000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.	2. For printing on the patent front page, list (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____ (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____ 3 _____
---	---

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
☐ Applicant asserting small entity status. See 37 CFR 1.27
☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____
Typed or printed name _____ Registration No. _____



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/440,116	04/05/2012	Hani Kayyali	CMD-087	4463
81177	7590	08/07/2018	EXAMINER	
Cleveland Medical Devices Inc. 4415 Euclid Ave. Ste. 500 Cleveland, OH 44103			NATNITHADHA, NAVIN	
			ART UNIT	PAPER NUMBER
			3735	
DATE MAILED: 08/07/2018				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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Notice of Allowability	Application No. 13/440,116	Applicant(s) KAYYALI ET AL.	
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Amendment and Remarks, filed 27 March 2018.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 21-24,28,31,32 and 34-46. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s) 1. ☐ Notice of References Cited (PTO-892) 2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____ 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material 4. ☒ Interview Summary (PTO-413), Paper No./Mail Date ____ . 5. ☒ Examiner's Amendment/Comment 6. ☒ Examiner's Statement of Reasons for Allowance 7. ☐ Other ____ .	
/NAVIN NATNITHITHADHA/ Primary Examiner, Art Unit 3735	

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Brian Kolkowski on 17 July 2018.

The application has been amended as follows:

- -

21. (currently amended) A positive airway pressure (PAP) sleep disorder treatment system comprising:

a signal processing module comprising ~~consisting essentially of an~~ a first input adapted for connecting to a pulse oximeter sensor with a signal, electronics adapted for filtering and processing the signal, and an output adapted for outputting pulse oximetry sensor data;

a PAP device adapted for treating a subject's sleep disorder, the PAP device with a separate enclosure from the signal processing module further comprising:

a blower having an air output,

~~an~~ a second input adapted for receiving the pulse oximetry sensor data from the output of the signal processing module,

an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow data of a subject using the PAP device, and

a processor adapted for receiving the pulse oximetry sensor data from ~~both the signal processing module~~ the second input and the respiratory airflow data from the airflow sensor and calculating, based in part on both the respiratory airflow data and the pulse oximetry sensor data, sleep disorder symptom data based in part on both the respiratory airflow data and pulse oximetry sensor data of a level of severity and/or an index of a level of severity of the subject's sleep disorder symptoms measured during use of the PAP device; and

a mask or a nasal cannula; and

a module transceiver adapted for receiving and transmitting the sleep disorder symptom data of the level of severity and/or ~~the sensor data from both the airflow sensor and pulse oximeter sensor~~ the index of the level of severity of the subject's sleep disorder symptoms to a remote location.

22. (currently amended) The system of claim 21 wherein the ~~inputs on~~ second input in the PAP device and the ~~outputs of~~ output in the signal processing module are in wireless radio frequency bidirectional communication.

23. (currently amended) The system of claim 22 wherein the PAP device is adapted to command the signal processing module to reconfigure the output in the signal processing module by improving the gain for the ~~pulse oximeter sensor~~ signal or the A/D conversion of the signal.

24. (currently amended) The system of claim 21 wherein the signals ~~from the pulse oximeter sensors~~ is processed by the signal processing module using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time ~~[[f]]~~ Fourier transform technique, a time-frequency signal analysis with a variety of different kernels ~~kernals~~, and a wavelet analysis.

28. (currently amended) A sleep disorder treatment system comprising:

a data acquisition system~~[[,]]~~;

a positive airway pressure (PAP) device~~[[,]]~~; and

a processor~~[[,]]~~;

the data acquisition system consisting essentially of a data acquisition device having at least one first input adapted for receiving a first signal from a pulse oximeter sensor, an electronic component adapted for filtering and processing the first signal from the pulse oximeter sensor to ~~include~~ remove artifacts, and a first output adapted for transmitting pulse oximeter sensor data based on the first signal from the pulse oximeter sensor to the PAP device;

the PAP device comprising:

a hose,

a blower,

an airflow sensor with a second signal adapted for measuring respiratory airflow of a subject,

a[[n]] second input for receiving pulse oximetry sensor data from the data acquisition device[[,]]; and

a mask or nasal cannula for treating a subject's sleep disorder symptoms;
and

the processor adapted for receiving pulse oximetry sensor data from the second input ~~pulse oximeter sensor~~, and the ~~air flow sensor~~ respiratory airflow data from the airflow sensor, the processor further adapted for calculating, based in part on both data from the respiratory airflow and pulse oximetry sensors, sleep disorder symptom data based in part on both data from the respiratory airflow and pulse oximetry sensors of a level of severity and/or index of a level of severity of the subject's symptoms measured during the subject's use of the PAP device, the processor ~~still further~~ adapted to be either part of or external to the PAP device and having a[[n]] second output, the second output adapted for providing sleep disorder symptom data and/or the index of the level of severity of the subject's symptoms to a nonvolatile memory to be used for later transmission of the sleep disorder symptom data and/or the index of the level of severity of the subject's symptoms to a remote location.

31. (currently amended) The sleep disorder treatment system of claim 28 wherein the first signals from the sensors are is processed by the signal processing module using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time

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[[f]]Fourier transform technique, a time-frequency signal analysis with a variety of different kernels~~kernel~~s, and a wavelet analysis.

32. (currently amended) The sleep disorder treatment system of claim 28 wherein the ~~sensor data~~ first output of in the data acquisition system and the second input in the PAP device are in wireless ~~is transmitted wirelessly by bidirectional radio frequency communication between the data acquisition system and the the input on the PAP device.~~

34. (currently amended) A sleep disorder treatment system comprising:

a data acquisition system, the data acquisition system comprising a data acquisition device having inputs for receiving signals from at least one physiological sensor, the data acquisition system for creating an output of the level of severity of a subject's sleep disorder or symptoms based in part on the signals from the at least one physiological sensor[[s]]; and

a[[n]] positive airway pressure apparatus for ~~both~~ providing pressurized air[[.]] and dosing and chemically treating a subject's sleep disorder or symptoms with a pharmaceutical agent, the positive airway pressure apparatus comprising a controller adapted to adjust the pharmaceutical agent, which can be adjusted at least in part, using the output of the level of severity of the subject's sleep disorder from the data acquisition system.

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35. (currently amended) The sleep disorder treatment system of claim 34 wherein the at least one physiological sensor ~~consists essentially of~~ comprises a pulse oximeter sensor.

36. (currently amended) The sleep disorder treatment system of claim 35 wherein the at least one physiological sensor further ~~consists essentially of~~ comprises a respiratory effort sensor.

37. (currently amended) The sleep disorder treatment system of claim 34 wherein the output of the level of severity from the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and a receiver in the positive airway pressure apparatus ~~for chemically treating a subject's sleep disorder or symptoms~~.

38. (currently amended) The sleep disorder treatment system of claim 37 wherein the controller ~~positive airway pressure apparatus for chemically treating a subject's sleep disorder or symptoms through the receiver~~ is adapted to command a signal processing module in the data acquisition system to reconfigure the output of the data acquisition system.

39. (currently amended) The sleep disorder treatment system of claim 34 wherein the positive airway pressure apparatus ~~chemically treat a subject's sleep disorder or symptoms uses either~~ comprises a nebulizer or a controlled pump to administer the pharmaceutical agent.

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40. (currently amended) The sleep disorder treatment system of claim 34 wherein the signals from the at least one physiological sensor[s] are processed by a signal processing module in the data acquisition system using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time ~~[[f]]~~Fourier transform technique, a time-frequency signal analysis with a variety of different kernels-kernals, and a wavelet analysis.

41. (currently amended) A positive airway pressure (PAP) sleep disorder treatment system comprising:

a PAP device with an enclosure further comprising:

a blower having an air output,

an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow of a subject while using the PAP and outputting airflow sensor data[[,]];

a processor adapted for receiving the airflow sensor data ~~from the airflow sensor~~, and calculating both symptom data of a severity of the subject's sleep disorder symptoms and/or an index of a subject's symptoms measured during use of the PAP device and data of usage of the PAP device[[,]];

a mask or a nasal cannula[[,]];

a first radio frequency wireless module transceiver[[,]];

a base station, cellular phone, or PDA[[,]];

the first radio frequency wireless module transceiver adapted for receiving and transmitting the symptom data of the severity of the subject's sleep disorder symptoms and/or an index of a subject's symptoms measured during use of the PAP device and ~~PAP device~~ the data of usage to the base station, cellular phone or PDA;

the base station, cellular phone, or PDA comprising a second radio frequency wireless module transceiver, a processor, ~~the~~ a software, and a display, the base station, cellular phone, or PDA ~~further being adapted with the software to both display at least in part the~~ symptom data of the severity of the subject's sleep disorder symptoms and/or the index of the subject's symptoms, and to retransmit ~~sensor~~ the symptom data of the severity of the subject's sleep disorder symptoms and/or the index of the subject's symptoms and the data of usage received from the PAP device to a remote internet site.

42. (currently amended) The system of Claim 41, wherein the first radio frequency wireless module transceiver of the PAP device and the second radio frequency wireless module transceiver of the base station, cellular phone or PDA communicate ~~with~~ using Bluetooth wireless protocol.

44. (currently amended) The system of Claim 41, wherein the PAP device further comprises an electronic component adapted to allow the PAP device to be adjusted remotely based on the ~~sensor~~ symptom data of the severity of the subject's sleep disorder and/or the index of the subject's symptoms transmitted to the remote internet site.

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45. (currently amended) The system of Claim 41, wherein ~~the software of~~
the base station, cellular phone or PDA ~~can be reprogrammed~~ is adapted to be
reprogrammed or modified remotely.

46. (currently amended) The system of Claim 41, wherein the ~~signals from~~
~~the sensors are~~ airflow sensor data is processed using one or more of the signal
processing techniques from the group consisting of a standard deviation technique, a
recursively fit ARMAX system identification model, a short-time ~~[[f]]~~ Fourier transform
technique, a time-frequency signal analysis with a variety of different ~~kernels~~ kernels,
and a wavelet analysis.

--.

REASONS FOR ALLOWANCE

2. The present application is being examined under the pre-AIA first to invent provisions.

3. According to the Amendment, filed 27 March 2018, the status of the claims is as follows:

Claims 21, 23, 28, 32, 34-39, 41, 42, and 45 are currently amended;

Claims 22, 24, 31, 40, 43, 44, and 46 are previously presented; and

Claims 1-20, 25-27, 29, 30, and 33 are cancelled.

4. The objection of claims 21, 23, and 41 because of a minor informality is withdrawn in view of the Amendment, filed 27 March 2018.

5. The rejection of claims 23, 28, 31, 32, and 37-39 under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention, are withdrawn in view of the Amendment, filed 27 March 2018.

6. Applicant's arguments, see Remarks, pp. 10-13, filed 27 March 2018, with respect to the rejection of claims 21, 26-29, and 33-36 under pre-AIA 35 U.S.C. 102 as being anticipated by Wright et al, U.S. Patent Application Publication No. 2002/0185130 A ("Wright"), have been fully considered, and are persuasive. Therefore, the rejection has been withdrawn.

7. Applicant's arguments, see Remarks, pp. 15-17, filed 27 March 2018, with respect to the rejection of claims 22 and 23 under pre-AIA 35 U.S.C. 103(a) as being

unpatentable over Wright, as applied to claim 21 above, and further in view of Khair et al, U.S. Patent No. 6,533,729 B1, have been fully considered, and are persuasive.

Therefore, the rejection has been withdrawn.

8. Applicant's arguments, see Remarks, pp. 17-19, filed 27 March 2018, with respect to the rejection of claim 28 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wright in view of Mumford et al, U.S. Patent No. 7,575,005 B2 ("Mumford"), have been fully considered, and are persuasive. Therefore, the rejection has been withdrawn.

9. Applicant's arguments, see Remarks, pp. 19-21, filed 27 March 2018, with respect to the rejection of claim 32 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wright in view of Mumford, as applied to claim 28 above, and further in view of Bowen et al, U.S. Patent No. 7,225,809 B1 ("Bowen"), have been fully considered, and are persuasive. Therefore, the rejection has been withdrawn.

10. Applicant's arguments, see Remarks, pp. 21-22, filed 27 March 2018, with respect to the rejection of claims 41-45 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Bowen in view of Wright, have been fully considered, and are persuasive. Therefore, the rejection has been withdrawn.

11. In an Interview, on 17 July 2018, Examiner and Applicant's Representative, Brian Kolkowski, agreed on amending claims 21-24, 28, 31, 32, and 34-46 by the Examiner's Amendment above to overcome the rejection of claims 21-24, 28, 31, 32, 34-42, and 44-46 under 35 U.S.C. 112(b), objections to claims for minor informalities, and to place

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the Application in condition for allowance. See Interview Summary, mailed with the present Office Action.

12. Claims 21-24, 28, 31, 32, and 34-46 are allowed.

13. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NAVIN NATNITHITHADHA whose telephone number is (571)272-4732. The examiner can normally be reached on Monday-Friday, 9:00 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia Mallari can be reached on (571) 272-4729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

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information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Navin Natnithithadha/
Primary Examiner, Art Unit 3735
07/30/2018

Search Notes 	Application/Control No. 13440116	Applicant(s)/Patent Under Reexamination KAYYALI ET AL.
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735

CPC- SEARCHED		
Symbol	Date	Examiner
A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592	2/24/2016	/NN/
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A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051	7/12/2018	/NN/

	/N.N./ Primary Examiner.Art Unit 3735
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OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592		
A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60	7/12/2018	/NN/

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, CPC, Keyword searches	2/24/2016	/NN/
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	8/23/2016	/NN/
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	12/28/2016	/NN/
EAST (updated search): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	6/28/2017	/NN/
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	11/5/2017	/NN/
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword, Interference searches	7/12/2018	/NN/

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592	7/16/2018	/NN/

	/N.N./ Primary Examiner.Art Unit 3735
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INTERFERENCE SEARCH

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60	7/16/2018	/NN/

/N.N./
Primary Examiner.Art Unit 3735

Bibliographic Data

Application No: 13/440,116

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged:

/NAVIN NATNITHITHADHA/ Examiner's Signature	/NN/ Initials
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Title:

Devices and Methods for Sleep Disorder Diagnosis and Treatment
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FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
04/05/2012	600	3735	CMD-087
RULE			

APPLICANTS

INVENTORS

Hani Kayyali Shaker Heights, OH, UNITED STATES

Robert Schmidt Cleveland, OH, UNITED STATES

Mohammad Modarres-Zadeh Tampa, FL, UNITED STATES

Brian Kolkowski Leroy, OH, UNITED STATES

CONTINUING DATA

This application is a CON of 11266899 11/04/2005 PAT 8172766

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

04/17/2012

** SMALL ENTITY **

STATE OR COUNTRY

UNITED STATES

ADDRESS

Cleveland Medical Devices Inc.

4415 Euclid Ave. Ste. 500

Cleveland, OH 44103

UNITED STATES

FILING FEE RECEIVED

\$530

From: Brian Kolkowski
To: Natnithithadha_Navin: 'bkolkowski@clevemed.com'
Cc: [Mark Pennington](#)
Subject: Re: U.S. Patent Application Serial No. 13/440,116 (Attorney Docket No. CMD-087)
Date: Tuesday, July 17, 2018 4:31:31 PM
Attachments: [CMD-087 internet communications authorization.pdf](#)

Dear Mr. Natnithithadha,

Thank you for the proposed amendment to correct 112(b) and non-formal issues. We are in agreement with these amendments. Attached is an authorization (signed) to correspond in this case via the internet.

Regards,

Brian Kolkowski
Reg. No. 36,847
Counsel for the Applicants

From: "Natnithithadha, Navin" <Navin.Natnithithadha@USPTO.GOV>
Date: Tuesday, July 17, 2018 at 3:20 PM
To: Brian Kolkowski <bkolkowski@clevemed.com>
Subject: U.S. Patent Application Serial No. 13/440,116 (Attorney Docket No. CMD-087)
Resent-From: Brian Kolkowski <bkolkowski@clevemed.com>

Mr. Kolkowski,

Attached is my proposed amendment to the claims to overcome 35 U.S.C. 112(b) and non-formal, i.e. grammatical and typographical errors, and clarification, issues. Upon agreement of an amendment to overcome these issues, the proposed amendment would be incorporated in an Examiner's Amendment and Notice of Allowance since the current claims overcome all prior art issues.

Please fill out and sign the attached SB0439 Form authorizing communication via internet (e-mail).

Feel free to call back or email back your input on these proposed amendments.

Thank you for your cooperation.

Regards,

Navin Natnithithadha
Primary Examiner
Group Art Unit 3735 - Technology Center 3700
U.S. Patent & Trademark Office
Department of Commerce
(o) 571-272-4732
(f) 571-273-4732

POTENTIAL CONFIDENTIAL INFORMATION ENCLOSED

Cleveland Medical Devices Inc. is committed to pioneering innovative technologies for sleep disorders, positively impacting quality of life for people around the world. Through development of compact, portable equipment and fast, reliable monitoring applications, CleveMed has reinvented patient-centered care for sleep apnea. Our wireless sleep monitoring equipment use gold standard sleep lab methodology, and are designed for patient's homes, sleep labs, and hospitals. (Follow us on CleveMed Blogs, youtube, twitter, linkedin, and facebook). This information and any files transmitted with it are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you have received this email in error please notify the sender and delete and destroy this message and its attachments. All health information MUST be protected.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	(brian ADJ2 kolkowski).inv. AND (navin NEAR2 natnithithadha) AND severity.clm.	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 13:14
L2	1	(brian NEAR2 kolkowski).inv. AND (navin NEAR2 natnithithadha) AND severity.clm.	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 13:27
L3	1	(cleveland ADJ2 medical).AS. AND (navin NEAR2 natnithithadha) AND severity.clm.	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 13:27
L4	0	(brian ADJ2 kolkowski).inv. AND (navin NEAR2 natnithithadha)	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 13:29
L5	9	((brian NEAR2 kolkowski).inv. OR (cleveland ADJ2 medical).AS.) AND (navin NEAR2 natnithithadha)	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 13:29
L6	1	(cleveland ADJ2 medical).AS. AND severity.clm.	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 13:30
L7	1	(brian NEAR2 kolkowski).inv. AND severity.clm.	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 13:31
L8	7153	((KAYYALI NEAR2 HANI) OR (SCHMIDT NEAR2 ROBERT) OR (((("MODARRES-ZADEH") OR (MODARRES ADJ2 ZADEH)) NEAR2 MOHAMMAD) OR (KOLKOWSKI NEAR2 BRIAN)).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2018/07/16 14:17
L9	1601	("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND ("EEG" OR electroencephal\$6 OR ((brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3))) AND ((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) AND (("600"/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17

ResMed

Exhibit 1005 - Page 45

L10	998	("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3)) AND (((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) SAME (treat\$5 OR therap\$6)) AND (("600"/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L11	620	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) AND (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3)) AND (((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) SAME (treat\$5 OR therap\$6)) AND (("600"/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L12	131	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3))) AND (((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) SAME (treat\$5 OR therap\$6)) AND (("600"/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L13	131	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17

		monitor\$3))) AND L12				
L14	141	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3 OR signal\$3 OR wave OR waveform OR data OR value))) AND (((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) SAME (treat\$5 OR therap\$6)) AND (("600"/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L15	141	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3 OR signal\$3 OR wave OR waveform OR data OR value))) AND L14	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L16	5	("20050217674" "5645043" "6029664" "6138675" "6229581").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:17
L17	460	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3 OR signal\$3 OR wave OR waveform OR data OR value))) AND (("600"/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L18	244	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3 OR signal\$3 OR wave OR waveform OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17

		data OR value))) AND ((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) AND ((("600"/\$) OR ("128"/\$)).ccls.				
L19	244	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3 OR signal\$3 OR wave OR waveform OR data OR value))) AND L18	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L20	20	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L21	0	(quantitative\$3) AND (realtime OR (real ADJ2 time)) AND L20	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L22	7	(realtime OR (real ADJ2 time)) AND L20	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L23	4	(quantitative\$3) AND L20	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L24	5	("20050217674" "5645043" "6029664" "6138675" "6229581").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:17
L25	20	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L26	15	L25 NOT L24	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:17
L27	183	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME (adjust\$4 OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17

		control\$4 OR regulat\$4 OR chang\$3)) AND ((respir\$6 OR breath\$3 OR thorac\$3 OR chest OR lung OR breast OR torso OR abdom\$5) WITH (belt OR strap OR vest OR garment OR cloth\$3)) AND ((pulse OR oximet\$4 OR oxymet\$4) WITH (sensor\$3 OR sensing OR measur\$6 OR detect\$5 OR monitor\$3 OR transducer OR probe)) AND (sleep\$3 WITH (disorder OR condition OR disease OR illness OR apne\$3 OR symptom)) AND ((600/529-543,484) OR ("128"/\$)).ccls.				
L28	183	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) AND ((pulse OR oximet\$4 OR oxymet\$4) WITH (sensor\$3 OR sensing OR measur\$6 OR detect\$5 OR monitor\$3 OR transducer OR probe)) AND L27	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L29	169	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) AND ((respir\$6 OR breath\$3 OR thorac\$3 OR chest OR lung OR breast OR torso OR abdom\$5) SAME (belt OR strap OR vest OR garment OR cloth\$3)) AND ((pulse OR oximet\$4 OR oxymet\$4 OR saturation) WITH (sensor\$3 OR sensing OR measur\$6 OR detect\$5 OR monitor\$3 OR transducer OR probe)) AND (sleep\$3 WITH (disorder OR condition OR disease OR illness OR apne\$3 OR symptom)) AND ((600/529-543,484) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L30	169	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) AND ((pulse OR oximet\$4 OR oxymet\$4 OR saturation) WITH (sensor\$3 OR sensing OR measur\$6 OR detect\$5 OR monitor\$3 OR transducer OR probe)) AND (sleep\$3 WITH (disorder OR condition OR disease OR illness OR apne\$3 OR symptom)) AND L29	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L31	1	(US-20050115561-\$).did.	US-PGPUB	OR	ON	2018/07/16 14:17
L32	1	L31 AND ((respir\$6 OR breath\$3 OR thorac\$3 OR chest OR lung OR breast OR torso OR abdom\$5) SAME (belt OR strap OR vest OR garment OR cloth\$3))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L33	1	L31 AND ((respir\$6 OR breath\$3 OR thorac\$3 OR chest OR lung OR breast OR torso OR abdom\$5) WITH (sensor\$3 OR sensing OR detector OR probe OR monitor OR transducer))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L34	1	(US-20050115561-\$).did.	US-PGPUB	OR	ON	2018/07/16 14:17

L35	1	L34 AND ((pulse OR oximet\$4 OR oxymet\$4 OR saturation) WITH (sensor\$3 OR sensing OR measur\$6 OR detect\$5 OR monitor\$3 OR transducer OR probe))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L36	1	L34 AND (realtime OR (real ADJ2 time))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L37	1	L34 AND (wireless\$3 OR transmi\$6 OR transceiver OR communicat\$5)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L38	1	L34 AND (wireless\$3)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L39	1	L34 AND ("EEG" OR electroenceph\$ OR brain OR brainwave\$5)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L40	1	L34 AND ("ECG" OR "EKG" OR electrocardiograph\$)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L41	5	("20050217674" "5645043" "6029664" "6138675" "6229581").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:17
L42	35	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L43	18	("20030000528" "20040163648" "20040254493" "20050081847" "20050165323" "20050217674" "20050268916" "20050188991" "20060247546" "5645043" "6029664" "6138675" "6229581" "6431171" "6889691" "7190995" "7204250" "7575005").PN.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L44	18	L42 NOT L43	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:17
L45	27	("20030000528" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050217674" "20050268916" "20050188991"	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:17

		"20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6889691" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7668579" "7670295").PN.				
L46	35	(US-20080276939-\$ or US- 20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US- 20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US- 20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US- 20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US- 20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US- 20070209662-\$ or US-20040200474-\$ or US-20050115561-\$).did. or (US- 7575005-\$ or US-7190995-\$ or US- 6889691-\$ or US-6229581-\$ or US- 6138675-\$ or US-6029664-\$ or US- 5645043-\$ or US-6431171-\$ or US- 7204250-\$ or US-6551252-\$ or US- 7225809-\$ or US-7670295-\$ or US- 5961447-\$ or US-7195013-\$ or US- 7309314-\$ or US-7668579-\$).did.	US- PGPUB; USPAT	OR	ON	2018/07/16 14:17
L47	36	L45 OR L46	US- PGPUB; USPAT	OR	OFF	2018/07/16 14:17
L48	27	("20030000528" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050217674" "20050268916" "20050188991" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6889691" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7668579" "7670295").PN.	US- PGPUB; USPAT	OR	OFF	2018/07/16 14:17
L49	35	(US-20080276939-\$ or US- 20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US- 20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US- 20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US- 20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US- 20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US- 20070209662-\$ or US-20040200474-\$ or US-20050115561-\$).did. or (US- 7575005-\$ or US-7190995-\$ or US- 6889691-\$ or US-6229581-\$ or US- 6138675-\$ or US-6029664-\$ or US- 5645043-\$ or US-6431171-\$ or US- 7204250-\$ or US-6551252-\$ or US- 7225809-\$ or US-7670295-\$ or US- 5961447-\$ or US-7195013-\$ or US-	US- PGPUB; USPAT	OR	ON	2018/07/16 14:17

		7309314-\$ or US-7668579-\$).did.				
L50	36	L48 OR L49	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:17
L51	30	L50 AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) AND (pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6) WITH (belt OR strap OR piezoelect\$5 OR sensor\$3 OR sensing OR transducer OR electrode OR detect\$4 OR biosensor\$3 OR biosensing OR biotransducer OR bioelectrode OR biodetect\$4))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L52	30	L51 AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6) WITH (belt OR strap OR piezoelect\$5 OR sensor\$3 OR sensing OR transducer OR electrode OR detect\$4 OR biosensor\$3 OR biosensing OR biotransducer OR bioelectrode OR biodetect\$4))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:17
L53	702	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) AND (pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L54	642	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L55	352	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18

		OR respirator) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biotdetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))				
L56	352	L55 AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biotdetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L57	171	((("600"/\$) OR ("128"/\$)).cccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biotdetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L58	171	L57 AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biotdetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18

		pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))				
L59	31	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (((("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) SAME (pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) SAME (respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L60	31	L59 AND (((("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) SAME (pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) SAME (respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L61	13	L50 AND (((("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L62	412	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (((("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18

		OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))				
L63	412	L62 AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L64	45	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L65	26	((diagnosis OR diagnose OR diagnosing OR sever\$6 OR evaluat\$5 OR output\$5) WITH sleep\$4 WITH (disorder OR symptoms OR abnormal\$5 OR illness OR apnea OR apneic OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND L64	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18

L66	37	((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) AND L64	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L67	18	((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator)) AND L64	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L68	1003	((("600"/\$) OR ("128"/\$)).ccls. AND ((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator)) AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L69	301	((("600"/\$) OR ("128"/\$)).ccls. AND ((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator)) AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L70	301	((("600"/\$) OR ("128"/\$)).ccls. AND ((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator)) AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18

		biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))				
L71	301	L70 AND ((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L72	301	L70 AND ((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L73	433	((("600"/\$) OR ("128"/\$)).ccls. AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L74	681	((("600"/\$) OR ("128"/\$)).ccls. AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L75	681	L74 AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18

		sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))				
L76	1	("20020185130").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:18
L77	27	("20030000528" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050217674" "20050268916" "20050188991" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6889691" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7668579" "7670295").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:18
L78	14	((jonathan NEAR2 wright) OR (anthony NEAR2 ujhazy)).inv. AND CPAP AND pulse AND (respiratory ADJ2 movement)	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:18
L79	14	L78 AND (sleep\$3 WITH (disorder OR symptom OR condition OR illness))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L80	0	L78 AND (realtime OR (real ADJ2 time))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L81	14	L78 AND (nebuliz\$3 OR medication OR medicine OR drug OR agent)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L82	50	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18

		6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$).did.				
L83	24	L82 NOT L77	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:18
L84	50	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L85	34	("20020185130" "20030000528" "20040138576" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050217674" "20050268916" "20050188991" "20060084877" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6832609" "6889691" "7018341" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7662101" "7668579" "7670295" "7878198").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:18
L86	51	L84 OR L85	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:18
L87	31	((severit\$4 OR level OR depth OR stag\$3) WITH (apne\$4 OR hypopne\$5 OR hypoapne\$5 OR hyperapne\$5)) AND L86	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L88	31	((("CPAP" OR "PAP" OR (positive ADJ2	US-	OR	ON	2018/07/16

		airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (signal\$3 OR data OR sens\$5 OR information OR parameter)) AND (apne\$4 OR hypopne\$5 OR hypoapne\$5 OR hyperapne\$5) AND L86	US- PGPUB; USPAT			14:18
L89	31	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (signal\$3 OR data OR sens\$5 OR information OR parameter)) AND L88	US- PGPUB; USPAT	OR	ON	2018/07/16 14:18
L90	9	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (signal\$3 OR data OR sens\$5 OR information OR parameter)) AND ((apne\$4 OR hypopne\$5 OR hypoapne\$5 OR hyperapne\$5) WITH (index OR indices)) AND L86	US- PGPUB; USPAT	OR	ON	2018/07/16 14:18
L91	6	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME ((radio OR radiofrequenc\$3 OR "RF" OR wireless\$3) WITH (transmi\$6 OR transceiv\$3 OR telemet\$5 OR communicat\$5 OR receiv\$3 OR antenna))) AND L86	US- PGPUB; USPAT	OR	ON	2018/07/16 14:18
L92	0	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME ((radio OR radiofrequenc\$3 OR "RF" OR wireless\$3) WITH (transmi\$6 OR transceiv\$3 OR telemet\$5 OR communicat\$5 OR receiv\$3 OR antenna)) SAME acquisition) AND (600/484,529-543).ccls.	US- PGPUB; USPAT	OR	ON	2018/07/16 14:18
L93	180	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME ((radio OR radiofrequenc\$3 OR "RF" OR wireless\$3) WITH (transmi\$6 OR transceiv\$3 OR telemet\$5 OR communicat\$5 OR receiv\$3 OR antenna))) AND (apne\$4 OR hypopne\$5 OR hypoapne\$5 OR hyperapne\$5) AND ((600/484,529-543) OR (128/204.21- 204.26)).ccls.	US- PGPUB; USPAT	OR	ON	2018/07/16 14:18
L94	180	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME ((radio OR radiofrequenc\$3 OR "RF" OR wireless\$3) WITH (transmi\$6 OR transceiv\$3 OR telemet\$5 OR communicat\$5 OR receiv\$3 OR antenna))) AND L93	US- PGPUB; USPAT	OR	ON	2018/07/16 14:18
L95	7153	((KAYYALI NEAR2 HANI) OR (SCHMIDT NEAR2 ROBERT) OR (((("MODARRES- ZADEH") OR (MODARRES ADJ2 ZADEH)) NEAR2 MOHAMMAD) OR	US- PGPUB; USPAT; USOCR;	OR	OFF	2018/07/16 14:18

		(KOLKOWSKI NEAR2 BRIAN)).INV.	FPRS; EPO; JPO; DERWENT			
L96	1601	("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND (("EEG" OR electroencephal\$6 OR ((brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3))) AND (((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) AND (("600"/\$) OR ("128"/\$)).ccls.	US- PGPUB; USPAT	OR	ON	2018/07/16 14:18
L97	998	("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3)) AND (((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) SAME (treat\$5 OR therap\$6)) AND (("600"/\$) OR ("128"/\$)).ccls.	US- PGPUB; USPAT	OR	ON	2018/07/16 14:18
L98	620	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) AND (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3)) AND (((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) SAME (treat\$5 OR therap\$6)) AND (("600"/\$) OR ("128"/\$)).ccls.	US- PGPUB; USPAT	OR	ON	2018/07/16 14:18
L99	131	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR	US- PGPUB; USPAT	OR	ON	2018/07/16 14:18

		monitor\$3))) AND (((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) SAME (treat\$5 OR therap\$6)) AND (("600"/\$) OR ("128"/\$)).ccls.				
L100	131	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3))) AND L99	US-PGPUB; USPAT	OR	ON	2018/07/16 14:18
L101	141	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3 OR signal\$3 OR wave OR waveform OR data OR value))) AND (((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) SAME (treat\$5 OR therap\$6)) AND (("600"/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L102	141	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3 OR signal\$3 OR wave OR waveform OR data OR value))) AND L101	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L103	5	("20050217674" "5645043" "6029664" "6138675" "6229581").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:19
L104	460	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19

		meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3 OR signal\$3 OR wave OR waveform OR data OR value))) AND (("600"/\$) OR ("128"/\$)).ccls.				
L105	244	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3 OR signal\$3 OR wave OR waveform OR data OR value))) AND ((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) AND (("600"/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L106	244	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (("EEG" OR electroencephal\$6 OR brain OR scalp OR head OR brainwave\$5) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3 OR signal\$3 OR wave OR waveform OR data OR value))) AND L105	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L107	20	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L108	0	(quantitative\$3) AND (realtime OR (real ADJ2 time)) AND L107	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L109	7	(realtime OR (real ADJ2 time)) AND L107	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L110	4	(quantitative\$3) AND L107	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L111	5	("20050217674" "5645043" "6029664" "6138675" "6229581").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:19

L112	20	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L113	15	L112 NOT L111	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:19
L114	183	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) AND ((respir\$6 OR breath\$3 OR thorac\$3 OR chest OR lung OR breast OR torso OR abdom\$5) WITH (belt OR strap OR vest OR garment OR cloth\$3)) AND ((pulse OR oximet\$4 OR oxymet\$4) WITH (sensor\$3 OR sensing OR measur\$6 OR detect\$5 OR monitor\$3 OR transducer OR probe)) AND (sleep\$3 WITH (disorder OR condition OR disease OR illness OR apne\$3 OR symptom)) AND ((600/529-543,484) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L115	183	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) AND ((pulse OR oximet\$4 OR oxymet\$4) WITH (sensor\$3 OR sensing OR measur\$6 OR detect\$5 OR monitor\$3 OR transducer OR probe)) AND L114	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L116	169	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) AND ((respir\$6 OR breath\$3 OR thorac\$3 OR chest OR lung OR breast OR torso OR abdom\$5) SAME (belt OR strap OR vest OR garment OR cloth\$3)) AND ((pulse OR oximet\$4 OR oxymet\$4 OR saturation) WITH (sensor\$3 OR sensing OR measur\$6 OR detect\$5 OR monitor\$3 OR transducer OR probe)) AND (sleep\$3 WITH (disorder OR condition OR disease OR illness OR apne\$3 OR symptom)) AND ((600/529-543,484) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L117	169	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) AND ((pulse OR oximet\$4 OR oxymet\$4 OR saturation) WITH (sensor\$3 OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19

		sensing OR measur\$6 OR detect\$5 OR monitor\$3 OR transducer OR probe)) AND (sleep\$3 WITH (disorder OR condition OR disease OR illness OR apne\$3 OR symptom)) AND L116				
L118	1	(US-20050115561-\$).did.	US-PGPUB	OR	ON	2018/07/16 14:19
L119	1	L118 AND ((respir\$6 OR breath\$3 OR thorac\$3 OR chest OR lung OR breast OR torso OR abdom\$5) SAME (belt OR strap OR vest OR garment OR cloth\$3))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L120	1	L118 AND ((respir\$6 OR breath\$3 OR thorac\$3 OR chest OR lung OR breast OR torso OR abdom\$5) WITH (sensor\$3 OR sensing OR detector OR probe OR monitor OR transducer))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L121	1	(US-20050115561-\$).did.	US-PGPUB	OR	ON	2018/07/16 14:19
L122	1	L121 AND ((pulse OR oximet\$4 OR oxymet\$4 OR saturation) WITH (sensor\$3 OR sensing OR measur\$6 OR detect\$5 OR monitor\$3 OR transducer OR probe))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L123	1	L121 AND (realtime OR (real ADJ2 time))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L124	1	L121 AND (wireless\$3 OR transmi\$6 OR transceiver OR communicat\$5)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L125	1	L121 AND (wireless\$3)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L126	1	L121 AND ("EEG" OR electroenceph\$ OR brain OR brainwave\$5)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L127	1	L121 AND ("ECG" OR "EKG" OR electrocardiograph\$)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L128	5	("20050217674" "5645043" "6029664" "6138675" "6229581").FN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:19
L129	35	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19

		5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$).did.				
L130	18	("20030000528" "20040163648" "20040254493" "20050081847" "20050165323" "20050217674" "20050268916" "20050188991" "20060247546" "5645043" "6029664" "6138675" "6229581" "6431171" "6889691" "7190995" "7204250" "7575005").PN.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L131	18	L129 NOT L130	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:19
L132	27	("20030000528" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050217674" "20050268916" "20050188991" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6889691" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7668579" "7670295").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:19
L133	35	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L134	36	L132 OR L133	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:19
L135	27	("20030000528" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050217674" "20050268916" "20050188991" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6889691" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7668579" "7670295").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:19
L136	35	(US-20080276939-\$ or US-	US-	OR	ON	2018/07/16

		20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$).did.	PGPUB; USPAT			14:19
L137	36	L135 OR L136	US- PGPUB; USPAT	OR	OFF	2018/07/16 14:19
L138	30	L137 AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) AND (pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6) WITH (belt OR strap OR piezoelect\$5 OR sensor\$3 OR sensing OR transducer OR electrode OR detect\$4 OR biosensor\$3 OR biosensing OR biotransducer OR bioelectrode OR biodetect\$4))	US- PGPUB; USPAT	OR	ON	2018/07/16 14:19
L139	30	L138 AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6) WITH (belt OR strap OR piezoelect\$5 OR sensor\$3 OR sensing OR transducer OR electrode OR detect\$4 OR biosensor\$3 OR biosensing OR biotransducer OR bioelectrode OR biodetect\$4))	US- PGPUB; USPAT	OR	ON	2018/07/16 14:19
L140	702	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) AND (pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6) SAME (belt OR strap OR piezoelect\$5))	US- PGPUB; USPAT	OR	ON	2018/07/16 14:19
L141	642	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND ("CPAP" OR	US- PGPUB; USPAT	OR	ON	2018/07/16 14:19

		"PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6) SAME (belt OR strap OR piezoelect\$5))				
L142	352	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L143	352	L142 AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L144	171	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19

		breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))				
L145	171	L144 AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biotdetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L146	31	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) SAME (pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) SAME (respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:19
L147	31	L146 AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) SAME (pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) SAME (respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (movement OR moving OR motion OR expansion OR expand\$3 OR compress\$4) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L148	13	L137 AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20

		(detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5))				
L149	412	((("600"/\$) OR ("128"/\$)).ccls. AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L150	412	L149 AND (("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L151	45	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20

		or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$).did.				
L152	26	((diagnosis OR diagnose OR diagnosing OR sever\$6 OR evaluat\$5 OR output\$5) WITH sleep\$4 WITH (disorder OR symptoms OR abnormal\$5 OR illness OR apnea OR apneic OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND L151	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L153	37	(transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) AND L151	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L154	18	((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator)) AND L151	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L155	1003	((("600"/\$) OR ("128"/\$)).ccls. AND ((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator)) AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L156	301	((("600"/\$) OR ("128"/\$)).ccls. AND ((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator)) AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20

		(belt OR strap OR piezoelect\$5 OR vest OR band))				
L157	301	((("600"/\$) OR ("128"/\$)).ccls. AND ((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator)) AND (sleep\$4 WITH (disorder OR abnormal\$5 OR apne\$4 OR hypoapne\$5 OR hyperapne\$5 OR illness OR disease OR condition\$3)) AND (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biotdetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L158	301	L157 AND ((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L159	301	L157 AND ((transmi\$6 OR transceiv\$5 OR wireless\$3 OR radio OR radiofrequenc\$3 OR antenna OR telemet\$4) SAME ("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L160	433	((("600"/\$) OR ("128"/\$)).ccls. AND ((("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biotdetect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L161	681	((("600"/\$) OR ("128"/\$)).ccls. AND	US-	OR	ON	2018/07/16

		((("CPAP" OR "PAP" OR (positiv\$4 ADJ2 airway ADJ2 pressure) OR ventilation OR ventilator OR respirator) WITH (adjust\$6 OR regulat\$5 OR control\$5 OR set\$5)) AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodelect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band)))	PGPUB; USPAT			14:20
L162	681	L161 AND ((pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR saturation) WITH (detect\$5 OR sensor\$3 OR sensing OR transducer OR meter\$3 OR probe OR monitor\$3 OR biodelect\$5 OR biosensor\$3 OR biosensing OR biotransducer OR biometer\$3)) AND ((respir\$6 OR breath\$3 OR exhal\$6 OR expir\$6 OR pulmonar\$3 OR lung OR chest OR torso OR abdomen) SAME (belt OR strap OR piezoelect\$5 OR vest OR band)))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L163	1	("20020185130").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:20
L164	27	("20030000528" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050217674" "20050268916" "20050188991" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6889691" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7668579" "7670295").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:20
L165	14	((jonathan NEAR2 wright) OR (anthony NEAR2 ujhazy)).inv. AND CPAP AND pulse AND (respiratory ADJ2 movement)	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:20
L166	14	L165 AND (sleep\$3 WITH (disorder OR symptom OR condition OR illness))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L167	0	L165 AND (realtime OR (real ADJ2 time))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L168	14	L165 AND (nebuliz\$3 OR medication OR medicine OR drug OR agent)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L169	50	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20

		or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$).did.				
L170	24	L169 NOT L164	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:20
L171	50	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L172	34	("20020185130" "20030000528" "20040138576" "20040163648"	US-PGPUB;	OR	OFF	2018/07/16 14:20

		"20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050217674" "20050268916" "20050188991" "20060084877" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6832609" "6889691" "7018341" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7662101" "7668579" "7670295" "7878198").PN.	USPAT			
L173	51	L171 OR L172	US- PGPUB; USPAT	OR	OFF	2018/07/16 14:20
L174	31	((severit\$4 OR level OR depth OR stag\$3) WITH (apne\$4 OR hypopne\$5 OR hypoapne\$5 OR hyperapne\$5)) AND L173	US- PGPUB; USPAT	OR	ON	2018/07/16 14:20
L175	31	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (signal\$3 OR data OR sens\$5 OR information OR parameter)) AND (apne\$4 OR hypopne\$5 OR hypoapne\$5 OR hyperapne\$5) AND L173	US- PGPUB; USPAT	OR	ON	2018/07/16 14:20
L176	31	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (signal\$3 OR data OR sens\$5 OR information OR parameter)) AND L175	US- PGPUB; USPAT	OR	ON	2018/07/16 14:20
L177	9	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (adjust\$4 OR control\$4 OR regulat\$4 OR chang\$3)) SAME (signal\$3 OR data OR sens\$5 OR information OR parameter)) AND ((apne\$4 OR hypopne\$5 OR hypoapne\$5 OR hyperapne\$5) WITH (index OR indices)) AND L173	US- PGPUB; USPAT	OR	ON	2018/07/16 14:20
L178	6	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME ((radio OR radiofrequenc\$3 OR "RF" OR wireless\$3) WITH (transmi\$6 OR transceiv\$3 OR telemet\$5 OR communicat\$5 OR receiv\$3 OR antenna))) AND L173	US- PGPUB; USPAT	OR	ON	2018/07/16 14:20
L179	0	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME ((radio OR radiofrequenc\$3 OR "RF" OR wireless\$3) WITH (transmi\$6 OR transceiv\$3 OR telemet\$5 OR communicat\$5 OR receiv\$3 OR antenna)) SAME acquisition) AND (600/484,529-543).ccls.	US- PGPUB; USPAT	OR	ON	2018/07/16 14:20
L180	180	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR	US- PGPUB;	OR	ON	2018/07/16 14:20

		respirator) SAME ((radio OR radiofrequenc\$3 OR "RF" OR wireless\$3) WITH (transmi\$6 OR transceiv\$3 OR telemet\$5 OR communicat\$5 OR receiv\$3 OR antenna))) AND (apne\$4 OR hypopne\$5 OR hypoapne\$5 OR hyperapne\$5) AND ((600/484,529-543) OR (128/204.21-204.26)).ccls.	USPAT			
L181	180	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) SAME ((radio OR radiofrequenc\$3 OR "RF" OR wireless\$3) WITH (transmi\$6 OR transceiv\$3 OR telemet\$5 OR communicat\$5 OR receiv\$3 OR antenna))) AND L180	US-PGPUB; USPAT	OR	ON	2018/07/16 14:20
L182	35	("20050165323" "6889691" "7204250" "20050085738" "6551252" "7309314" "6029664" "20040254493" "7575005" "7670295" "7662101" "7101341" "6138675" "20050217674" "20040163648" "20050081847" "20040138576" "20060084877" "7878198" "5645043" "20030000528" "20050268916" "20060247546" "7190995" "20050188991" "7668579" "7018341" "20050115561" "5961447" "7195013" "7225809" "20020185130" "6229581" "6431171" "6832609").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:20
L183	5	((("7190995") or ("20050115561") or ("20020185130") or ("7878198") or ("7101341")).PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L184	1	(US-7878198-\$).did.	USPAT	OR	ON	2018/07/16 14:21
L185	1	L184 AND ((determin\$6 OR calculat\$4 OR compute OR computing OR output\$4 OR derive OR deriving) WITH pressure)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L186	0	L184 AND ("FFT" OR fourier)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L187	1	L183 AND ("FFT" OR fourier)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L188	0	L184 AND ((atmospher\$5 OR environment OR baromet\$5) WITH (level OR pressure OR concentration))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L189	1	L184 AND (oxygen OR carbon OR "O2" OR "CO2")	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L190	50	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21

		or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$).did.				
L191	35	("20050165323" "6889691" "7204250" "20050085738" "6551252" "7309314" "6029664" "20040254493" "7575005" "7670295" "7662101" "7101341" "6138675" "20050217674" "20040163648" "20050081847" "20040138576" "20060084877" "7878198" "5645043" "20030000528" "20050268916" "20060247546" "7190995" "20050188991" "7668579" "7018341" "20050115561" "5961447" "7195013" "7225809" "20020185130" "6229581" "6431171" "6832609").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L192	52	L190 OR L191	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L193	15	L192 AND ("FFT" OR fourier)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L194	0	L184 AND (burton)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L195	1	L184 AND (berthon)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L196	1	("11165705").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L197	3	((("5704345") or ("6152129") or ("6532959"))).PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L198	1	L197 AND ("FFT" OR fourier)	US-PGPUB;	OR	ON	2018/07/16 14:21

			USPAT			
L199	0	L197 AND ((oxygen OR carbon OR "O2" OR "CO2") WITH (deliver\$4 OR administer\$4 OR administrat\$4 OR provid\$4 OR pump\$3))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L200	15	L192 AND ((oxygen OR carbon OR "O2" OR "CO2") WITH (deliver\$4 OR administer\$4 OR administrat\$4 OR provid\$4 OR pump\$3))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L201	12	L192 AND (((oxygen OR carbon OR "O2" OR "CO2") WITH (deliver\$4 OR administer\$4 OR administrat\$4 OR provid\$4 OR pump\$3)) SAME ("CPAP" OR "PAP" OR (positive\$3 ADJ4 pressure))))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L202	11	L192 AND (((oxygen OR carbon OR "O2" OR "CO2") WITH (deliver\$4 OR administer\$4 OR administrat\$4 OR provid\$4 OR pump\$3)) AND ("CPAP" OR "PAP" OR (positive\$3 ADJ2 airway ADJ2 pressure))))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L203	1	(US-20050217674-\$.did.	US-PGPUB	OR	ON	2018/07/16 14:21
L204	1	L203 AND ((oxygen OR gas OR carbon OR "O2" OR "CO2") WITH (deliver\$4 OR administer\$4 OR administrat\$4 OR provid\$4 OR pump\$3 OR pressuriz\$6))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L205	35	("20050165323" "6889691" "7204250" "20050085738" "6551252" "7309314" "6029664" "20040254493" "7575005" "7670295" "7662101" "7101341" "6138675" "20050217674" "20040163648" "20050081847" "20040138576" "20060084877" "7878198" "5645043" "20030000528" "20050268916" "20060247546" "7190995" "20050188991" "7668579" "7018341" "20050115561" "5961447" "7195013" "7225809" "20020185130" "6229581" "6431171" "6832609").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L206	5	"11266899"	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L207	1	("11266899").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L208	36	L205 OR L207	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L209	1	((("11266899") or ("13440116")).PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L210	1	(US-8172766-\$.did.	USPAT	OR	ON	2018/07/16 14:21
L211	17368	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR	US-PGPUB;	OR	OFF	2018/07/16 14:21

		A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC.	USPAT			
L212	2	((("7878198") or ("20020185130")).PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L213	51	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:21
L214	36	("20020185130" "20030000528" "20040138576" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050188991" "20050217674" "20050268916" "20060084877" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6832609" "6889691" "7018341" "7101341" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7662101" "7668579" "7670295" "7878198" "8172766").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L215	53	L213 OR L214	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L216	2	((("7878198") or ("20020185130")).PN.	US-PGPUB;	OR	OFF	2018/07/16 14:21

			USPAT			
L217	53	L213 OR L214 OR L216	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:21
L218	17368	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:22
L219	698	((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) AND ("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3)) AND ((band OR belt OR vest OR strap OR effort) WITH (inducti\$4 OR respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)) AND L218	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L220	39	((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) AND ("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3)) AND ((band OR belt OR vest OR strap OR effort) WITH (inducti\$4 OR respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)) AND L217	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L221	39	((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3)) AND ((band OR belt OR vest OR strap OR effort) WITH (inducti\$4 OR respir\$6 OR breath\$3 OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22

		chest OR plethysmograph\$5)) AND L220				
L222	39	((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4) WITH (electrode OR sens\$5 OR detect\$4 OR transducer OR meter\$3 OR bioelectrode OR biosens\$5 OR biodetect\$4 OR biotransducer OR biometer\$3 OR measur\$5 OR monitor\$3)) AND ((band OR belt OR vest OR strap OR effort) WITH (inducti\$4 OR respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)) AND L220	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L223	1	("5704345").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:22
L224	164	((sleep\$3 NEAR8 (disorder OR illness OR condition OR obstructi\$4)) OR apne\$3 OR hypoapne\$3 OR hyperapne\$3 OR hypopne\$3) AND ("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) WITH ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5))) AND L218	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L225	164	((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) WITH ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5))) AND L224	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L226	1	(US-5353788-\$.did.	USPAT	OR	ON	2018/07/16 14:22
L227	0	L226 AND (fourier)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L228	250	("4655213" "4686975" "4807616" "4938212" "4944310" "4957107" "5042478" "5047930" "5065756" "5109839" "5117819" "5134995" "5146918" "5148802").PN. OR ("5353788").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:22
L229	98	L228 AND (fourier OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L230	0	L226 AND (fourier OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L231	198	("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22

		pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) WITH ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5))) AND (fourier OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6))				
L232	198	L231 AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) WITH ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5))) AND (fourier OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L233	1	(US-5353788-\$).did.	USPAT	OR	ON	2018/07/16 14:22
L234	0	L233 AND (wireles\$3)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L235	0	L233 AND (wireles\$3 OR radio OR radiofrequenc\$3 OR "RF")	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L236	0	("13440116").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:22
L237	1	("11266899").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:22
L238	1	L237 AND bidirection\$4	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L239	0	L233 AND (chemical\$4)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L240	1	L237 AND quantitative\$4	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L241	58	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22

		or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$).did.				
L242	5	L241 AND (short NEAR5 fourier)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L243	64	("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) SAME ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5))) AND (short NEAR5 fourier)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L244	64	L243 AND (short NEAR5 fourier)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L245	64	L243 AND (short NEAR5 fourier)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L246	414	("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) SAME ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5))) AND (fourier OR "STFT" OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L247	20	("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) SAME ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)) SAME (fourier OR "STFT" OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6)))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L248	20	L247 AND ((pulse OR oximet\$4 OR	US-	OR	ON	2018/07/16

		oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) SAME ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)) SAME (fourier OR "STFT" OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6)))	PGPUB; USPAT			14:22
L249	10	L247 AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) SAME ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)) SAME (sensor\$4 OR transducer)) AND (fourier OR "STFT" OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L250	166	("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) SAME ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)) SAME (sensor\$4 OR transducer)) AND (fourier OR "STFT" OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:22
L251	166	L250 AND (fourier OR "STFT" OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L252	166	("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) SAME ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)) SAME (sensor\$4 OR transducer)) AND (fourier OR "STFT" OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L253	166	L252 AND (fourier OR "STFT" OR "FFT" OR (standard ADJ2 deviat\$5) OR ARMAX OR (((time ADJ2 frequenc\$3) OR wavelet) NEAR3 analy\$6))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L254	554	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (control\$4 OR regulat\$4 OR set OR setting OR	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23

		automatic\$5)) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) SAME ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)))				
L255	107	((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) SAME ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)) SAME ("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (control\$4 OR regulat\$4 OR set OR setting OR automatic\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L256	58	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L257	8	(bidirection\$5 WITH (communicat\$4 OR telemet\$4 OR command\$4 OR signal\$3 OR wireless\$4 OR transmi\$6 OR receiv\$4)) AND L256	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L258	39	(bidirection\$5 WITH (communicat\$4 OR telemet\$4 OR command\$4 OR signal\$3 OR wireless\$4 OR transmi\$6 OR receiv\$4)) AND (("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23

		((control\$4 OR regulat\$4 OR set OR setting OR automatic\$5)) AND ((pulse OR oximet\$4 OR oxymet\$4 OR pulseox OR pulseoximet\$4 OR pulseoxymet\$4 OR ((oxygen OR "O2") ADJ2 saturation)) SAME ((effort OR inductiv\$4) WITH (respir\$6 OR breath\$3 OR chest OR plethysmograph\$5)))				
L259	39	((bidirection\$5 WITH (communicat\$4 OR telemet\$4 OR command\$4 OR signal\$3 OR wireless\$4 OR transmi\$6 OR receiv\$4)) AND L258	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L260	282	((((bidirection\$5 OR ((two OR "2") ADJ2 way)) WITH (communicat\$4 OR telemet\$4 OR command\$4 OR signal\$3 OR wireless\$4 OR transmi\$6 OR receiv\$4)) SAME ((data ADJ2 acquisit\$5) OR sensor OR transducer OR monitor\$3) SAME ("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator) WITH (control\$4 OR regulat\$4 OR set OR setting OR automatic\$5))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L261	1	(US-5237990-\$).did.	USPAT	OR	ON	2018/07/16 14:23
L262	0	L261 AND (wireless\$3 OR "RF" OR radio OR radiofrequenc\$3)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L263	249	((((bidirection\$5 OR ((two OR "2") ADJ2 way)) WITH (communicat\$4 OR telemet\$4 OR command\$4 OR signal\$3 OR transmi\$6 OR receiv\$4)) SAME (wireless\$4 OR "RF" OR radio OR radiofrequenc\$3 OR bluetooth) SAME ("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L264	18	((((bidirection\$5 OR ((two OR "2") ADJ2 way)) WITH (communicat\$4 OR telemet\$4 OR command\$4 OR signal\$3 OR transmi\$6 OR receiv\$4)) SAME (wireless\$4 OR "RF" OR radio OR radiofrequenc\$3 OR bluetooth) SAME ("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure)))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L265	665	((((bidirection\$5 OR ((two OR "2") ADJ2 way)) WITH (communicat\$4 OR telemet\$4 OR command\$4 OR signal\$3 OR transmi\$6 OR receiv\$4)) SAME (wireless\$4 OR "RF" OR radio OR radiofrequenc\$3 OR bluetooth)) AND ("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure))	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L266	196	((((bidirection\$5 OR ((two OR "2") ADJ2 way)) WITH (communicat\$4 OR telemet\$4 OR command\$4 OR signal\$3 OR transmi\$6 OR receiv\$4)) SAME (wireless\$4 OR "RF" OR radio OR radiofrequenc\$3 OR bluetooth)) AND ("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure)) AND ((128/\$)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23

		OR (600/\$)).CCLS.				
L267	16	((bidirection\$5 OR ((two OR "2") ADJ2 way)) SAME (wireless\$4 OR "RF" OR radio OR radiofrequenc\$3 OR bluetooth)) SAME ("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure))) AND ((128/\$) OR (600/\$)).CCLS.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L268	36	("20020185130" "20030000528" "20040138576" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050188991" "20050217674" "20050268916" "20060084877" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6832609" "6889691" "7018341" "7101341" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7662101" "7668579" "7670295" "7878198" "8172766").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:23
L269	60	L256 OR L268	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:23
L270	11	((bidirection\$5 OR ((two OR "2") ADJ2 way)) SAME (wireless\$4 OR "RF" OR radio OR radiofrequenc\$3 OR bluetooth)) AND L269	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L271	173	((bidirection\$5 OR ((two OR "2") ADJ2 way)) SAME (wireless\$4 OR "RF" OR radio OR radiofrequenc\$3 OR bluetooth)) AND ("CPAP" OR (positive ADJ2 airway ADJ2 pressure))) AND ((128/\$) OR (600/\$)).CCLS.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L272	173	((bidirection\$5 OR ((two OR "2") ADJ2 way)) SAME (wireless\$4 OR "RF" OR radio OR radiofrequenc\$3 OR bluetooth)) AND L271	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23
L273	1	(US-7757690-\$).did.	USPAT	OR	ON	2018/07/16 14:23
L274	1	(US-5353788-\$).did.	USPAT	OR	ON	2018/07/16 14:23
L275	1	(US-5237990-\$).did.	USPAT	OR	ON	2018/07/16 14:23
L276	3	L273 OR L274 OR L275	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:23
L277	2	L276 NOT L256	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:23
L278	60	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-	US-PGPUB; USPAT	OR	ON	2018/07/16 14:23

		20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$ or US-5237990-\$ or US-7757690-\$).did.				
L279	36	("20020185130" "20030000528" "20040138576" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050188991" "20050217674" "20050268916" "20060084877" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6832609" "6889691" "7018341" "7101341" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7662101" "7668579" "7670295" "7878198" "8172766").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:23
L280	17368	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:23
L281	38	("20040138576" "20050165323" "6029664" "7190995" "7204250" "7225809" "7878198" "5237990" "20020185130" "20060084877" "6229581" "7101341" "7668579" "20040254493" "20050085738" "7018341" "7670295" "20040163648" "5961447" "6431171" "8172766" "20050115561" "6138675" "20050188991" "20050217674"	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:23

		"20050268916" "20060247546" "5645043" "6832609" "7195013" "7757690" "20030000528" "6551252" "6889691" "7575005" "20050081847" "7309314" "7662101").PN.				
L282	62	L278 OR L279 OR L281	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:23
L283	7153	((KAYYALI NEAR2 HANI) OR (SCHMIDT NEAR2 ROBERT) OR (((MODARRES-ZADEH) OR (MODARRES ADJ2 ZADEH)) NEAR2 MOHAMMAD) OR (KOLKOWSKI NEAR2 BRIAN)).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2018/07/16 14:23
L284	1	((("11266899") or ("13440116")).PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:24
L285	0	L284 AND enclosure	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L286	1	L284 AND blower	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L287	1	("5353788").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:24
L288	60	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24

		US-8356594-\$ or US-5237990-\$ or US-7757690-\$).did.				
L289	36	("20020185130" "20030000528" "20040138576" "20040163648" "20040254493" "20050081847" "20050085738" "20050115561" "20050165323" "20050188991" "20050217674" "20050268916" "20060084877" "20060247546" "5645043" "5961447" "6029664" "6138675" "6229581" "6431171" "6551252" "6832609" "6889691" "7018341" "7101341" "7190995" "7195013" "7204250" "7225809" "7309314" "7575005" "7662101" "7668579" "7670295" "7878198" "8172766").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:24
L290	38	("20040138576" "20050165323" "6029664" "7190995" "7204250" "7225809" "7878198" "5237990" "20020185130" "20060084877" "6229581" "7101341" "7668579" "20040254493" "20050085738" "7018341" "7670295" "20040163648" "5961447" "6431171" "8172766" "20050115561" "6138675" "20050188991" "20050217674" "20050268916" "20060247546" "5645043" "6832609" "7195013" "7757690" "20030000528" "6551252" "6889691" "7575005" "20050081847" "7309314" "7662101").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:24
L291	62	L288 OR L289 OR L290	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:24
L292	2	((("20120245447") or ("8920332"))).PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:24
L293	7153	((KAYYALI NEAR2 HANI) OR (SCHMIDT NEAR2 ROBERT) OR (((("MODARRES-ZADEH") OR (MODARRES ADJ2 ZADEH)) NEAR2 MOHAMMAD) OR (KOLKOWSKI NEAR2 BRIAN)).INV.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2018/07/16 14:24
L294	2	(differentiat\$4 WITH central WITH obstructive WITH (apnea OR apneic OR hypopne\$3 OR hypopne\$3)).clm. AND L293	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L295	7243	((KAYYALI NEAR2 HANI) OR (SCHMIDT NEAR2 ROBERT) OR (((("MODARRES-ZADEH") OR (MODARRES ADJ2 ZADEH)) NEAR2 MOHAMMAD) OR (KOLKOWSKI NEAR2 BRIAN)).INV. OR (cleveland ADJ2 medical).as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2018/07/16 14:24
L296	2	(differentiat\$4 WITH central WITH obstructive WITH (apnea OR apneic OR hypopne\$3 OR hypopne\$3)).clm. AND	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24

		L295				
L297	2	(differentiat\$4 WITH (apnea OR apneic OR hypoapnea\$3 OR hypopnea\$3)).clm. AND L295	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L298	74125	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC. OR ((600/484,529-543) OR ("128"/\$)).ccls.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:24
L299	285	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator)) AND (central WITH (obstructiv\$4 OR hypoapnea\$5 OR hypoapnea\$5) WITH (distinguish\$5 OR determin\$6 OR differentiat\$5)) AND L298	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L300	285	(central WITH (obstructiv\$4 OR hypoapnea\$5 OR hypoapnea\$5) WITH (distinguish\$5 OR determin\$6 OR differentiat\$5)) AND L299	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L301	207	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator)) AND (central WITH (obstructiv\$4 OR hypoapnea\$5 OR hypoapnea\$5) WITH (distinguish\$5 OR identify\$3 OR identification OR differentiat\$5)) AND L298	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L302	207	(central WITH (obstructiv\$4 OR hypoapnea\$5 OR hypoapnea\$5) WITH (distinguish\$5 OR identify\$3 OR identification OR differentiat\$5)) AND L301	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L303	1	((("11266899") or ("13440116")).PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:24
L304	0	(central WITH (obstructiv\$4 OR hypoapnea\$5 OR hypoapnea\$5) WITH (distinguish\$5 OR identify\$3 OR identification OR differentiat\$5)) AND L303	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L305	1	(central WITH obstructiv\$4 WITH (apnea\$3 OR hypoapnea\$5 OR hypoapnea\$5)) AND L303	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L306	1	(central SAME obstructiv\$4 SAME (apnea\$3 OR hypoapnea\$5 OR hypoapnea\$5)) AND L303	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L307	1	((central OR complex OR obstructiv\$4) SAME (apnea\$3 OR hypoapnea\$5 OR hypoapnea\$5)) AND L303	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L308	74125	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:24

		A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC. OR ((600/484,529-543) OR ("128"/\$)).ccls.				
L309	207	((("CPAP" OR "PAP" OR (positive ADJ2 airway ADJ2 pressure) OR ventilat\$4 OR respirator)) AND (central WITH (obstructiv\$4 OR hypopne\$5 OR hypoapne\$5) WITH (distinguish\$5 OR identify\$3 OR identification OR differentiat\$5)) AND L308	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L310	207	(central WITH (obstructiv\$4 OR hypopne\$5 OR hypoapne\$5) WITH (distinguish\$5 OR identify\$3 OR identification OR differentiat\$5)) AND L309	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L311	1	((("11266899") or ("13440116")).PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:24
L312	1	((central OR complex OR obstructiv\$4) SAME (apne\$3 OR hypopne\$5 OR hypoapne\$5)) AND L311	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L313	1	(atmospher\$3) AND L311	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L314	1	(severity) AND L311	US-PGPUB; USPAT	OR	ON	2018/07/16 14:24
L315	1	(carbon) AND L311	US-PGPUB; USPAT	OR	ON	2018/07/16 14:25
L316	0	("13440116").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:25
L317	2	("14540623").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:25
L318	2	(side ADJ2 effect ADJ4 dosing) AND L317	US-PGPUB; USPAT	OR	ON	2018/07/16 14:25
L319	0	(display\$3) AND L317	US-PGPUB; USPAT	OR	ON	2018/07/16 14:25
L320	2	(alert\$4) AND L317	US-PGPUB; USPAT	OR	ON	2018/07/16 14:25
L321	2	(alert\$4 OR warn\$3 OR alarm\$4) AND L317	US-PGPUB; USPAT	OR	ON	2018/07/16 14:25
L322	216973	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR	US-PGPUB; USPAT; USOCR	OR	OFF	2018/07/16 14:25

		A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC. OR ((600/\$) OR ("128"/\$)).ccls.				
L323	845	((((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) WITH (wireless\$3 OR communicat\$4 OR send\$3 OR telemet\$4 OR transmiss\$4 OR transmit\$4 OR send\$3 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF")) SAME ((command\$3 OR instruct\$4 OR control\$4) WITH (reconfigur\$6 OR configur\$6 OR set OR setting OR profile))) AND ((pulseox OR pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR ("O2" OR oxygen) ADJ2 saturat\$4)) WITH (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)) AND L322	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:25
L324	845	((((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) WITH (wireless\$3 OR communicat\$4 OR send\$3 OR telemet\$4 OR transmiss\$4 OR transmit\$4 OR send\$3 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF")) SAME ((command\$3 OR instruct\$4 OR control\$4) WITH (reconfigur\$6 OR configur\$6 OR set OR setting OR profile))) AND ((pulseox OR pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR ("O2" OR oxygen) ADJ2 saturat\$4)) WITH (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)) AND L322	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:25
L325	256	((((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) WITH (wireless\$3 OR communicat\$4 OR send\$3 OR telemet\$4 OR transmiss\$4 OR transmit\$4 OR send\$3 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF")) SAME ((reconfigur\$6 OR configur\$6 OR set OR setting OR profile) WITH ((command\$3 OR instruct\$4 OR control\$4) NEAR5 (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)))) AND ((pulseox OR pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR ("O2" OR oxygen) ADJ2 saturat\$4))) AND L322	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:25
L326	256	((((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) WITH (wireless\$3 OR communicat\$4 OR send\$3 OR telemet\$4 OR transmiss\$4 OR transmit\$4 OR send\$3 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF")) SAME ((reconfigur\$6 OR configur\$6 OR set OR setting OR profile) WITH ((command\$3 OR instruct\$4 OR control\$4) NEAR5 (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)))) AND L325	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:25
L327	2	(US-6533729-\$ or US-6475153-\$).did.	USPAT	OR	ON	2018/07/16 14:25

L328	2	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) SAME (wireless\$3 OR communicat\$4 OR send\$3 OR telemet\$4 OR transmiss\$4 OR transmit\$4 OR send\$3 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF")) SAME ((reconfigur\$6 OR configur\$6 OR set OR setting OR profile) WITH ((command\$3 OR instruct\$4 OR control\$4)))) AND L327	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:25
L329	216973	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC. OR ((600/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/07/16 14:25
L330	148	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) SAME (wireless\$3 OR communicat\$4 OR telemet\$4 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF" OR antenna OR coil) SAME ((reconfigur\$6 OR configure OR configuring OR set OR setting OR profile) WITH ((command\$3 OR instruct\$4 OR control\$4 OR receiv\$3) NEAR5 (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)))) AND ((pulseox OR pulse OR pulswave\$5 OR oximet\$3 OR oxymet\$3 OR ("O2" OR oxygen) ADJ2 saturat\$3)) WITH (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)) AND L329	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:25
L331	148	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) SAME (wireless\$3 OR communicat\$4 OR telemet\$4 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF" OR antenna OR coil) SAME ((reconfigur\$6 OR configure OR configuring OR set OR setting OR profile))) AND L330	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:25
L332	216973	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC. OR ((600/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/07/16 14:25
L333	148	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) SAME (wireless\$3 OR communicat\$4 OR telemet\$4 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF" OR antenna OR coil) SAME	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:25

		((reconfigur\$6 OR configure OR configuring OR set OR setting OR profile) WITH ((command\$3 OR instruct\$4 OR control\$4 OR receiv\$3) NEAR5 (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)))) AND ((pulseox OR pulse OR pulsewave\$5 OR oximet\$3 OR oxymet\$3 OR ("O2" OR oxygen) ADJ2 saturat\$3)) WITH (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)) AND L332				
L334	148	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) SAME (wireless\$3 OR communicat\$4 OR telemet\$4 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF" OR antenna OR coil) SAME ((reconfigur\$6 OR configure OR configuring OR set OR setting OR profile))) AND L333	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:25
L335	63	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$ or US-5237990-\$ or US-7757690-\$ or US-6475153-\$ or US-6533729-\$ or US-8308641-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:25
L336	0	("11130221").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:25
L337	0	("11130221").PN.	US-PGPUB; USPAT;	OR	OFF	2018/07/16 14:25

			USOCR			
L338	0	"11130221".pn.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:25
L339	2	"11130221"	US-PGPUB; USPAT	OR	ON	2018/07/16 14:25
L340	1	("7575005").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:25
L341	1	L340 AND (bidirection\$4 OR (two ADJ2 way) OR transceiv\$5)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:25
L342	0	L340 AND (bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) AND (radio OR "RF" OR radiofrequenc\$3)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:25
L343	15	L335 AND (bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) AND (radio OR "RF" OR radiofrequenc\$3)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L344	1	("7225809").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:26
L345	1	L344 AND (bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) AND (radio OR "RF" OR radiofrequenc\$3)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L346	63	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$ or US-5237990-\$ or US-7757690-\$ or US-6475153-\$ or US-	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26

		6533729-\$ or US-8308641-\$).did.				
L347	63	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$ or US-5237990-\$ or US-7757690-\$ or US-6475153-\$ or US-6533729-\$ or US-8308641-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L348	17	internet AND L347	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L349	9	(PDA) AND L347	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L350	16	(PDA OR cellphone OR cellular OR phone OR telephone) AND L347	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L351	56	(usage OR operational OR operation) AND L347	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L352	21	((usage OR operational OR operation) WITH (data OR information OR duration OR interval OR period)) AND L347	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L353	45	(symptom or severit\$3) AND L347	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L354	1	("7225809").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:26
L355	0	L354 AND (data WITH sens\$5)	US-PGPUB;	OR	ON	2018/07/16 14:26

			USPAT			
L356	1	("7225809").PN.	US-PGPUB; USPAT	OR	OFF	2018/07/16 14:26
L357	1	L356 AND (wireless\$3 OR transceiver)	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L358	63	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$ or US-5237990-\$ or US-7757690-\$ or US-6475153-\$ or US-6533729-\$ or US-8308641-\$).did.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L359	14	bluetooth AND L358	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L360	15	((("CPAP" OR "PAP" OR (positive\$4 ADJ2 airway ADJ2 pressure)) SAME ((chemical\$4 OR medicat\$4 OR medicine OR agent OR drug) WITH (treat\$5 OR therap\$4 OR administer\$4 OR administrat\$4))) AND L358	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L361	15	((("CPAP" OR "PAP" OR (positive\$4 ADJ2 airway ADJ2 pressure)) SAME ((chemical\$4 OR medicat\$4 OR medicine OR agent OR drug OR pharmaceutical\$3) WITH (treat\$5 OR therap\$4 OR administer\$4 OR administrat\$4))) AND L358	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L362	16	((("CPAP" OR "PAP" OR (positive\$4 ADJ2 airway ADJ2 pressure)) SAME	US-PGPUB;	OR	ON	2018/07/16 14:26

		((chemical\$4 OR medicat\$4 OR medicine OR agent OR drug OR pharmaceutical\$3) WITH (deliver\$4 OR treat\$5 OR therap\$4 OR administer\$4 OR administrat\$4))) AND L358	USPAT			
L363	1	(US-20020185130-\$).did.	US-PGPUB	OR	ON	2018/07/16 14:26
L364	1	(chemical\$4 OR medicat\$4 OR medicine OR agent OR drug OR pharmaceutical\$3) AND L363	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L365	216973	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC. OR ((600/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/07/16 14:26
L366	27	((("CPAP" OR "PAP" OR (positive\$4 ADJ2 airway ADJ2 pressure)) SAME ((chemical\$4 OR medicat\$4 OR medicine OR agent OR drug OR pharmaceutical\$3) WITH (deliver\$4 OR treat\$5 OR therap\$4 OR administer\$4 OR administrat\$4)) SAME ((adjust\$4 OR modification OR modify\$3 OR chang\$4 OR control\$4 OR manag\$5) WITH severit\$3)) AND L365	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:26
L367	134	((("CPAP" OR "PAP" OR (positive\$4 ADJ2 airway ADJ2 pressure)) SAME ((chemical\$4 OR medicat\$4 OR medicine OR agent OR drug OR pharmaceutical\$3) WITH (deliver\$4 OR treat\$5 OR therap\$4 OR administer\$4 OR administrat\$4) WITH (adjust\$4 OR modification OR modify\$3 OR chang\$4 OR manag\$5))) AND L365	US-PGPUB; USPAT; USOCR	OR	ON	2018/07/16 14:26
L368	38	("20040138576" "20050165323" "6029664" "7190995" "7204250" "7225809" "7878198" "5237990" "20020185130" "20060084877" "6229581" "7101341" "7668579" "20040254493" "20050085738" "7018341" "7670295" "20040163648" "5961447" "6431171" "8172766" "20050115561" "6138675" "20050188991" "20050217674" "20050268916" "20060247546" "5645043" "6832609" "7195013" "7757690" "20030000528" "6551252" "6889691" "7575005" "20050081847" "7309314" "7662101").PN.	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L369	27	L358 NOT L368	US-PGPUB; USPAT	OR	ON	2018/07/16 14:26
L370	4	((("20020185130") or ("6533729") or	US-	OR	OFF	2018/07/16

		("7575005") or ("7225809")).PN.	PGPUB; USPAT			14:27
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/440,116	04/05/2012	Hani Kayyali	CMD-087	4463

81177 7590 04/19/2018
Cleveland Medical Devices Inc.
4415 Euclid Ave. Ste. 500
Cleveland, OH 44103

EXAMINER

NATNITHADHA, NAVIN

ART UNIT	PAPER NUMBER
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3735

MAIL DATE	DELIVERY MODE
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04/19/2018

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<i>Applicant-Initiated Interview Summary</i>	Application No. 13/440,116	Applicant(s) KAYYALI ET AL.	
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735	

All participants (applicant, applicant's representative, PTO personnel):

(1) NAVIN NATNITHITHADHA. (3) ____.

(2) Brian Kolkowski (Applicant's Representative). (4) ____.

Date of Interview: 17 April 2018.

Type: ☒ Telephonic ☐ Video Conference
 ☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
 If Yes, brief description: ____.

Issues Discussed ☐101 ☒112 ☒102 ☒103 ☐Others
 (For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 21,28,32,34-36 and 41.

Identification of prior art discussed: Wright et al, U.S. Patent Application Publication No. 2002/0185130 A1 ("Wright"); and Bowen et al, U.S. Patent No. 7,225,809 B1 ("Bowen").

Substance of Interview
 (For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

1) Applicant's Representative and Examiner briefly discussed the Amendment, filed 27 March 2018.
2) Examiner proposed further amendments to correct grammatical/typographical errors and indefinite issues with claims 28, 32, and 34-36.
3) Applicant's Representative and Examiner briefly discussed the added features in independent claims 21, 28, 34, and 41, and how these claims distinguish over the 35 U.S.C. 102 and 103 rejections in the prior Office action.
4) Examiner agreed that these amendments do overcome the prior 35 U.S.C. 102 and 103 rejections.
3) No agreement was reached as to allowability at this time, as further search and consideration is required.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/NAVIN NATNITHITHADHA/ Primary Examiner, Art Unit 3735	
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Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 13/440,116		Filing Date 04/05/2012		☐ To be Mailed	
ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO									
APPLICATION AS FILED - PART I									
		(Column 1)	(Column 2)						
FOR		NUMBER FILED	NUMBER EXTRA	RATE (\$)		FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A	N/A	N/A					
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))		N/A	N/A	N/A					
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		N/A	N/A	N/A					
TOTAL CLAIMS (37 CFR 1.16(i))		minus 20 = *		x \$30 =					
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 = *		x \$125 =					
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).							
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL					
APPLICATION AS AMENDED - PART II									
		(Column 1)		(Column 2)	(Column 3)				
AMENDMENT	03/27/2018	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	x \$50 =		0	
	Independent (37 CFR 1.16(h))	* 4	Minus	*** 4	= 0	x \$230 =		0	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE		0	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=	x \$0 =			
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x \$0 =			
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.						LIE			
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".						Moliki I May			
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".									
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.									

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REMARKS

Claims 21-23, 28, 32, 34-39 and 41-45 were rejected in the Office Action issued November 27, 2017. The Applicants have amended claims 21, 23, 28, 32, 34, 35-39, 41-42, and 45. The Applicants respectfully traverse the Examiner's objections and rejections for the reasons set forth below.

Claim Objections

Claims 21, 23 and 41 were objected to due to an informalities. The Applicants thank the Examiner for his helpful comments and submit the claims as amended now overcomes this objections.

35 U.S.C. §112

Claims 23, 28, 31, 32, and 37-39 were rejected under 35 U.S.C. §112(b) or 35 U.S.C. §112 (pre-AIA) second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or joint inventor, or for pre-AIA the applicant regards as the invention.

The Applicants submit this rejection is moot in light of the claim amendments and urge the Examiner to withdraw this rejection.

Anticipation under 35 U.S.C. § 102

To provide legal context as well as an analytical framework for the Applicants' remarks, the Applicants wish, as an initial point, to respectfully remind the Examiner that a proper finding of anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. *W.L. Gore & Associates v. Garlock*, 721 F.2d 1540, 202 USPTO 202 (Fed Cir. 1983). It is not enough that the prior art reference disclose all of the claimed elements in isolation, but rather anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim. *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984). Further, anticipation requires that the prior art reference must be enabling, thus placing the

allegedly disclosed matter in the possession of the public. *Akzo N.V. v. U.S. Int'l Trade Comm'n*, 808 F.2d 1471, 1 USPQ 2d 1241 (Fed Cir. 1986). The standard of anticipation is identity of invention. *Glaverbel Societe Anonyme v. Northlake Mktg. & Supply, Inc.*, 45 F.3d 1550, 33 U.S.P.Q.2d 1496, 1500 (Fed.Cir.1995). Identity of invention is a question of fact that requires a showing that each element of the claim in issue is found in a prior patent or publication, either expressly or inherently. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771, 218 USPQ 781, 789 (Fed.Cir.1983), cert. denied, 465 U.S. 1026, 104 S.Ct. 1284, 79 L.Ed.2d 687 (1984). Inherency may not be established by probabilities or possibilities. *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1269 (Fed. Cir. 1991). Before burden is shifted to the applicant to disprove inherency, the examiner is required provide evidence or scientific reasoning to establish the reasonableness of the examiner's belief that a functional limitation is an inherent characteristic of the prior art. *Ex parte Skinner*, 2 USPQ 2d 1788, 1789 (BPAI 1986).

Thus, to reach a proper finding of anticipation, the examiner must show that each and every claim limitation is present in a single prior art reference (the identity of invention requirement) and that the same prior art reference enables the claimed invention so as to place the invention in the possession of a person having ordinary skill in the art (the anticipatory enablement requirement). If the examiner falls short in meeting any of these requirements then the examiner has failed to establish a *prima facie* case and the Applicants are entitled to the patent. *See In re Glaug*, 283 F.3d 1335 at 1338 (Fed. Cir. 2002) ("If the PTO fails to meet this burden [to establish a *prima facie* case], then the applicant is entitled to the patent"). Further, refusal by the USPTO to issue the patent in the face of an examiner's failure to properly establish a *prima facie* case of anticipation or some other proper grounds for rejection places the examiner and the USPTO in contravention of 35 U.S.C. § 131, which dictates that if after examination of an application "it appears that the applicant is entitled to a patent under the law, the Director shall issue a patent therefor" (emphasis added).

Claims 21, 26-29, and 33-36 were rejected under pre-AIA 35 U.S.C. 102 as being anticipated by Wright et al., U.S. Pat. Appln. No. 2002/0185130 ("Wright"). The

Applicants traverse the rejection and submit the claims as amended are not anticipated by Wright.

With respect to Claim 21, Wright does not teach or disclose a positive airway pressure (PAP) sleep disorder treatment system comprising a signal processing module consisting essentially of an input for connecting to a pulse oximeter sensor with a signal, *electronics adapted for filtering and processing the signal*, and *an output*; a PAP device adapted for treating a subject's sleep disorder ~~with~~ comprising a separate enclosure from the signal processing module further comprising a blower having an air output, an input adapted for receiving pulse oximetry sensor data from the output of the signal processing module, *an airflow sensor internal to the PAP device* adapted for measuring the respiratory airflow data of a subject using the PAP device, *a processor adapted for receiving sensor data from both the signal processing module and the airflow sensor and calculating symptom data based in part on both the respiratory airflow data and pulse oximetry sensor data of level of severity* and/or an index of a level of severity of the subject's sleep disorder symptoms measured during use of the PAP device, and a mask or a nasal cannula; and *a module transceiver adapted for receiving and transmitting the sleep disorder symptom data and/or the sensor data from both the airflow sensor and pulse oximeter sensor to a remote location* as claimed.

Wright instead teaches of a *method and apparatus for stroke patient treatment* not sleep disordered breathing as claimed. See Title and Abstract of Wright. Wright uses the data collected with its system to calculate and analyze stroke indicators not to calculate a level of severity or an index of a level of severity of the subject's sleep disorder breathing symptoms as claimed. Id. The diagnostic unit in Wright *includes a pulse oximeter 20, respiratory movement sensors 22, EEG & ECG 24 [sensors]* does not consist essentially of a pulse oximeter input, electronics for filtering and processing the signal, and an output as claimed. Pg. 2, para. 29, Wright. In fact there is no mention as to whether the diagnostic unit in Wright provides electronics for filtering and processing its sensor data or whether those functions are performed (if at all) elsewhere in Wright's system. The system further does not teach of *a processor adapted for receiving sensor data from both the signal processing module and the airflow sensor and calculating symptom data based in part on both the respiratory airflow data and pulse oximetry sensor data of level of*

severity and/or an index of a level of severity of the subject's sleep disorder symptoms as claimed, but rather calculates and stores stroke recovery information. Paras. [0030] – [0045], Wright. Finally, the wireless communication transceiver in Wright is for *communication with other devices or computers such as hand-held display and control devices* 12 not for transmitting data to a remote location as claimed.

With respect to Claims 26-27, 29, and 33 these claims were previously cancelled so it is clear this is a mistake and the rejection should be removed as to this claim.

With respect to Claim 28, Wright does not teach or disclose a sleep disorder treatment system comprising a data acquisition system, a positive airway pressure (PAP) device, and a processor, the data acquisition system comprising a data acquisition device having at least one input adapted for receiving a signals from a pulse oximeter sensor, an electronic component for filtering and processing the signal from the pulse oximeter sensor to remove artifacts, and a output adapted for transmitting sensor data based on the signal from the pulse oximeter sensor to the PAP device; the PAP device comprising: a hose, a blower, an airflow sensor with a signal adapted for measuring respiratory airflow of a subject, an input for receiving sensor data from the data acquisition device, and a mask or nasal cannula for treating a subject's sleep disorder symptoms; and the processor adapted for receiving sensor data from the pulse oximeter sensor, and the air flow sensor, the processor further adapted for calculating symptom data based in part on both data from the respiratory airflow and pulse oximetry sensors of a level of severity and/or index of a level of severity of the subject's symptoms measured during the subject's use of the PAP device, the processor still further either part of or external to the PAP device and having an output, the output adapted for providing symptom data to a nonvolatile memory to be used for later transmission of the symptom data to a remote location as claimed.

Wright instead teaches of a *method and apparatus for stroke patient treatment* not sleep disordered breathing as claimed. See Title and Abstract of Wright. Wright uses the data collected with its system to *calculate and analyze stroke indicators* not to calculate a level of severity or an index of a level of severity of the subject's sleep disorder breathing symptoms as claimed. Id. In Wright there is no mention as to whether the diagnostic unit in Wright provides electronics for filtering and processing it's sensor data or whether

those functions are performed (if at all) elsewhere in Wright's system. The system further does not teach of *a processor adapted for receiving sensor data from both the signal processing module and the airflow sensor and calculating symptom data based in part on both the respiratory airflow data and pulse oximetry sensor data of level of severity and/or an index of a level of severity of the subject's sleep disorder symptoms* as claimed, but rather calculates and stores stroke recovery information. Paras. [0030] – [0045], Wright. Finally, the wireless communication transceiver in Wright is for *communication with other devices or computers such as hand-held display and control devices 12* not for transmitting data to a remote location as claimed.

With respect to Claim 34, Wright does not teach or disclose a sleep disorder treatment system comprising a data acquisition system, the data acquisition system comprising a data acquisition device having inputs for receiving signals from at least one physiological sensor, the data acquisition system for creating an output of the level of severity of a subject's sleep disorder or symptoms based in part on the signals from the sensors; and a positive airway pressure apparatus for both providing pressurized air and dosing and chemically treating a subject's sleep disorder or symptoms with a pharmaceutical agent, which can be adjusted at least in part using the output of the level of severity of the subject's sleep disorder from the data acquisition system.

Wright instead teaches of a *method and apparatus for stroke patient treatment* not sleep disordered breathing as claimed. See Title and Abstract of Wright. Wright uses the data collected with its system to *calculate and analyze stroke indicators* not to calculate a level of severity or an index of a level of severity of the subject's sleep disorder breathing symptoms as claimed. Id. In Wright the diagnostic unit *does not calculate or create a level of severity of the subject's sleep disorder based on signals from the sensors*. The system further does not teach of *a positive airway pressure apparatus for both providing pressurized air and dosing and chemically treating a subject's sleep disorder or symptoms with a pharmaceutical agent, which can be adjusted at least in part using the output of the level of severity of the subject's sleep disorder from the data acquisition system*, but provides an index to a physician to change dosages of pharmaceutical agents that can be manually/orally administered. Paras. [0030] – [0045], Wright. Nothing in

Wright teaches both the administration of gas and pharmaceutical agents with a PAP device for stroke – let alone sleep disordered breathing as claimed.

On page 13 of the Office Action the Examiner has mistakenly cited Miles (which isn't part of the rejection) against Claims 35 and 36. The Applicants believe the Examiner meant to state Wright instead of Miles and responds as if Wright was the reference.

With respect to Claim 35, Wright doesn't teach or disclose wherein the at least one physiological sensor consists essentially of a pulse oximeter sensor as claimed.

With respect to Claim 36, Wright wherein the at least one physiological sensor further including consists essentially of a respiratory effort sensor and a pulse oximeter sensor as claimed.

Given these differences between Wright and the claimed invention, the Applicants request the Examiner withdraw this rejection.

Obviousness under 35 U.S.C. § 103

To provide legal context as well as an analytical framework for the remarks that follow, the Applicant wishes at the outset to respectfully point out that obviousness under 35 U.S.C. § 103(a) is a question of law based on underlying findings of fact, and that the Examiner bears the initial burden of factually supporting any conclusion of obviousness by establishing a *prima facie* case based on the facts. *See* MPEP 2142. Additionally, if the Examiner does not produce a *prima facie* case, the Applicant is under no obligation to submit evidence of nonobviousness. *Id.* To provide the proper factual support for an assertion of *prima facie* obviousness the Examiner must perform the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, (1966). These factual inquiries include (1) determining the scope and content of the prior art, (2) ascertaining the differences between the claimed invention and the prior art, and (3) determining the level of ordinary skill in the art at the time of the claimed invention. *Graham* also indicates that “secondary considerations” such as commercial success, long-felt but unsolved needs, failure of others and unexpected results may be considered in determining obviousness. Importantly, “the *Graham* factors, including secondary considerations when present, are the controlling inquiries in any obviousness analysis.” MPEP 2141(II) (emphasis added).

Against this backdrop it becomes clear that if the Examiner errs in performing any of the *Graham* factual inquiries, the Examiner cannot be deemed to have established a *prima facie* case of obviousness since such a conclusion would be unsupported by the factual foundation required by *Graham*. Examples of the Examiner committing error in performing the *Graham* factual inquiries include, among other things, failure to appreciate the differences between the claimed invention and the prior art (leading to a flawed conclusion under the second *Graham* factor), as well as a failure to determine the level of ordinary skill in the art (resulting in failure based on the third *Graham* factor).

With specific regard to the Examiner's obligation under the third *Graham* factor to determine the level of ordinary skill in the art at the time of the claimed invention, the Applicant would direct particular attention to the requirement that “[a]ny obviousness rejection should include, either explicitly or implicitly in view of the prior art applied, an indication of the level of ordinary skill.” See MPEP 2141(II)(C) (emphasis added).

In addition, it is important to recognize that merely setting forth what the Examiner believes the level of ordinary skill should be or merely making the blanket assertion that the level of ordinary skill in the pertinent art is set forth in the references is insufficient to meet the Examiner's burden under the third *Graham* factor and 35 U.S.C. § 103(a) if the Examiner is relying on a combination of references to demonstrate obviousness. This is because in addition to providing an “indication of the level of ordinary skill,” MPEP 2141(II)(C), the Examiner must also provide an explanation of how and why the person of ordinary skill in the art at the time of the invention would have deemed it obvious to select and combine various references relied upon by the Examiner in such a way as to render the claimed invention obvious. See *In re Vaidyanathan*, Appeal No. 2009-1404, Fed. Cir., May 19, 2010 (nonprecedential) (faulting both the BPAI and Examiner for failing to provide “any evidentiary support or reasoning for why a person of ordinary skill in the field of the invention would have deemed it obvious to select and combine various steps from different references, in the manner of the applicant” and further noting that *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) “did not remove the need to anchor the analysis [of obviousness] in explanation of how a person of ordinary skill would select and apply the teachings of the references”).

Thus, in order for the Examiner to properly establish a *prima facie* case of obviousness the Examiner must first make the factual inquiries required by *Graham* and, if relying on a combination of references, must further provide some motivation to combine the references from the perspective of one of ordinary skill in the art. If the Examiner falls short in meeting any of these requirements then the Examiner has failed to establish a *prima facie* case and the applicant is entitled to the patent. *See In re Glaug*, 283 F.3d 1335 at 1338 (Fed. Cir. 2002) (“If the PTO fails to meet this burden [to establish a *prima facie* case], then the applicant is entitled to the patent”). As stated in the United States Patent and Trademark Office’s own rules, “[a] *prima facie* case of unpatentability is established when the information *compels* a conclusion that a claim is unpatentable under the *preponderance of evidence*, burden-of-proof standard...” *See* 37 C.F.R. § 1.56(b)(2)(ii) (emphasis added). Further, refusal to issue the patent in the face of failure to properly establish a *prima facie* case of obviousness or some other proper grounds for rejection places the Examiner and the USPTO in controversion of 35 U.S.C. § 131, which dictates that if after examination “it appears that the applicant is entitled to a patent under the law, the Director shall issue a patent therefor” (emphasis added).

In all of the above, the Applicants wish to emphasize the high bar to which the Examiner is held during the examination process and hereby respectfully request that in the ongoing prosecution of the present application that the Examiner provide explicit and detailed analysis of any grounds of rejection relied upon. *See, e.g., KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) (“[an obviousness] analysis should be made explicit,” citing *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006)).

Claims 22 and 23 were rejected under pre-AIA 35 USC 103(a) as being unpatentable over Wright in view of Khair et al., U.S. Pat. No. 6,533,729 (“Khair”). The Applicants traverse and submit that claims 22 and 23 as amended are patentable over Wright in view of Khair.

The Applicants incorporate their comments with respect to Claim 21 above. In addition, Khair does not teach or disclose the system of claim 21 wherein the inputs on the PAP device and the outputs of the signal processing module are in wireless radio frequency bidirectional communication, and the PAP is adapted to command the signal

processing module to reconfigure the output by improving the gain for ~~of~~ the pulse oximeter sensor signal or the A/D conversion of the signal as claimed.

The Khair reference and the Wright reference are non-analogous art to the present invention. Furthermore, in an attempt to explain the purported combination of these references, the Examiner cites to passages in both the Khair and the Wright references that are inconsistent and do not provide the motivation required to combine. In Wright the Examiner cites to para. [0030] which specifically indicates that different communication methods can be used to accomplish the goal of the invention, which is then defined as to allow the physician to monitor and analyze *the record* of the stroke patient – not to improve the data being received by the auxiliary sensors as in the present invention.

Furthermore, since these diverse references do not establish on their face the level of skill of a person in the art then the Examiner must either define such himself or cite to that which defines the level of skill in the art. As such, a person having ordinary skill in the art would find no motivation in any of the references to combine them, and would understand that such combination would fail to teach all the limitations of the present claims. Further, the Examiner fails to provide any valid reasoning or support for the conclusory statement of what a person of skill in the art would have found obvious at the time the invention was made. Further still, the Examiner has failed to explicitly define or establish the level of ordinary skill in the art, and neither reference adequately provides the level implicitly. Additionally under a proper Graham analysis numerous questions remain unasked, and unanswered, as to what the level of ordinary skill in the art is, and why a person having ordinary skill in the art would find it obvious to combine these references. For example, what are the scope and content of the Wright and Khair references? What are the similarities between the claimed invention and Wright and Khair? What are the differences? What exactly is the level of ordinary skill in the art, and why is that pertinent to the problem at hand? Instead, the Examiner relies upon a conclusory statement purporting to explain what a person of ordinary skill in the art would understand, without providing the required factual reasoning behind his flawed conclusion. As noted above, the Examiner has the burden of providing evidence to support his analysis of the Graham factors, but has failed to do so. The Applicants

therefore again respectfully request the Examiner provide an explicit statement as to what the level of ordinary skill in the art is, or what in the references points to the level of ordinary skill in the art. The Applicants further suggest that what would have been obvious to a person of ordinary skill in the art at the time of the invention must be in the personal knowledge of the Examiner, and requested that he therefore submit an affidavit detailing as specifically as possible the personal knowledge upon which his rejection is based. *See* 37 C.F.R. § 1.104(d) (2). The Examiner noted that it appears the above arguments did not reference any particular claim limitation, but instead merely address the construction of the rejection.

Given these differences between the reference and the claimed invention, the Applicants request the Examiner withdraw this rejection.

Claim 28 was rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wright in view of Mumford et al. U.S. Pat. No. 7,575,005 (“Mumford”). The Applicants incorporate their comments above with respect Wright. With respect to Claim 28, Mumford further does not teach or disclose a sleep disorder treatment system comprising a data acquisition system, a positive airway pressure (PAP) device, and a processor, *the data acquisition system consisting essentially of a data acquisition device having at least one input adapted for receiving a signals from a pulse oximeter sensor, an electronic component for filtering and processing the signal from the pulse oximeter sensor to include removing artifacts, and an output adapted for transmitting sensor data based on the signal from the pulse oximeter sensor to the PAP device; the PAP device comprising: a hose, a blower, an airflow sensor with a signal adapted for measuring respiratory airflow of a subject, an input for receiving sensor data from the data acquisition device, and a mask or nasal cannula for treating a subject’s sleep disorder symptoms; and the processor adapted for receiving sensor data from the pulse oximeter sensor, and the air flow sensor, the processor further adapted for calculating symptom data based in part on both data from the respiratory airflow and pulse oximetry sensors of a level of severity and/or index of a level of severity of the subject’s symptoms measured during the subject’s use of the PAP device, the processor still further either part of or external to the PAP device and having an output, the output adapted for providing*

symptom data to a nonvolatile memory to be used for later transmission of the symptom data to a remote location as claimed.

Instead Mumford involves collecting EEG, EOG or EMG data along with other optionally additional integrated sensors including “an oximeter sensor 314, a pressure transducer 316, and a position sensor 318. It should be noted that not all three additional sensors 314, 316 and 318 are needed and that additional and that additional embodiments are possible in which various subsets of these additional sensors are integrated into the mask assembly 312.” *Emphasis added.* Col. 12, ll. 2-7, Mumford. In addition in Mumford while all the sensor signals including the pulse oximeter signals are processed – there is no indication that the signals from the pulse oximeter are filtered and processed to include removing artifacts.

Again the Wright reference are non-analogous art to the present invention. Furthermore, in an attempt to explain the purported combination of these references, the Examiner cites to a passage the Mumford reference. This passage states that “...the remote processing unit 414 which processes the signals provided by these *sensors* prior to transmitting the signals to the monitoring unit 16 via the cable 34. This results in better quality signals with reduced noise and lest contamination caused by motion and electromagnetic interference.” *Emphasis added.* Col. 12, l. 65 to Col. 13, l. 5, Mumford. Clearly the motivation to pre-process the signals in Mumford is based on the electric interference as a result of the cable being used to power the remote unit (which attaches the remote processing unit with the main unit and provides a source of power). The present invention is not subject to these problems but instead provides for the signal processing to simplify not only production demands on the system manufacturer, but to provide for ease of use of the signal processing module with a PAP device.

Furthermore, since these diverse references do not establish on their face the level of skill of a person in the art then the Examiner must either define such himself or cite to that which defines the level of skill in the art. As such, a person having ordinary skill in the art would find no motivation in any of the references to combine them, and would understand that such combination would fail to teach all the limitations of the present claims. Further, the Examiner fails to provide any valid reasoning or support for the conclusory statement of what a person of skill in the art would have found obvious at the

time the invention was made. Further still, the Examiner has failed to explicitly define or establish the level of ordinary skill in the art, and neither reference adequately provides the level implicitly. Additionally under a proper Graham analysis numerous questions remain unasked, and unanswered, as to what the level of ordinary skill in the art is, and why a person having ordinary skill in the art would find it obvious to combine these references. For example, what are the scope and content of the Wright and Mumford references? What are the similarities between the claimed invention and Wright and Mumford? What are the differences? What exactly is the level of ordinary skill in the art, and why is that pertinent to the problem at hand? Instead, the Examiner relies upon a conclusory statement purporting to explain what a person of ordinary skill in the art would understand, without providing the required factual reasoning behind his flawed conclusion. As noted above, the Examiner has the burden of providing evidence to support his analysis of the Graham factors, but has failed to do so. The Applicants therefore again respectfully request the Examiner provide an explicit statement as to what the level of ordinary skill in the art is, or what in the references points to the level of ordinary skill in the art. The Applicants further suggest that what would have been obvious to a person of ordinary skill in the art at the time of the invention must be in the personal knowledge of the Examiner, and requested that he therefore submit an affidavit detailing as specifically as possible the personal knowledge upon which his rejection is based. *See* 37 C.F.R. § 1.104(d) (2). The Examiner noted that it appears the above arguments did not reference any particular claim limitation, but instead merely address the construction of the rejection.

Given these differences between the references and the claimed invention, the Applicants request the Examiner withdraw this rejection.

Claim 32 was rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wright in view of Mumford as applied to Claim 28 above, and further in view of Bowen et al., U.S. Pat. No. 7,255,809 (“Bowen”).

The Applicants incorporate their comments above with respect Wright and Mumford. With respect to Claim 32, Bowen further does not teach or disclose a sleep disorder treatment system wherein the sensor data output of the data acquisition system is

transmitted wirelessly by bidirectional radio frequency between the data acquisition system and the *input on the PAP device* as claimed.

Instead Bowen teaches of a contactless data storage device – this data storage device is not a data acquisition system and is not specifically taught to be radio frequency.

Again the Wright reference are non-analogous art to the present invention. Furthermore, in an attempt to explain the purported combination of these references, the Examiner claims it would have been “obvious for one of ordinary skill in the art at the time the invention was made to use a wireless bidirectional transceiver 154 as taught by Bowne to transmit sensor data between Wright’s” diagnosis unit 18 and main blower housing because it would have been a mere substitution of one form of communication with another but if this is the case then the original motivation for combining Mumford with Wright no longer would exist. Clearly one skilled in the art would not perform this type of “zig-zag analysis”. Further clearly the motivation to combine is also a hind sight conclusion of the Examiner.

Furthermore, since these diverse references do not establish on their face the level of skill of a person in the art then the Examiner must either define such himself or cite to that which defines the level of skill in the art. As such, a person having ordinary skill in the art would find no motivation in any of the references to combine them, and would understand that such combination would fail to teach all the limitations of the present claims. Further, the Examiner fails to provide any valid reasoning or support for the conclusory statement of what a person of skill in the art would have found obvious at the time the invention was made. Further still, the Examiner has failed to explicitly define or establish the level of ordinary skill in the art, and neither reference adequately provides the level implicitly. Additionally under a proper Graham analysis numerous questions remain unasked, and unanswered, as to what the level of ordinary skill in the art is, and why a person having ordinary skill in the art would find it obvious to combine these references. For example, what are the scope and content of the Wright, Mumford and Bowen references? What are the similarities between the claimed invention and Wright, Mumford and Bowen? What are the differences? What exactly is the level of ordinary skill in the art, and why is that pertinent to the problem at hand? Instead, the Examiner

relies upon a conclusory statement purporting to explain what a person of ordinary skill in the art would understand, without providing the required factual reasoning behind his flawed conclusion. As noted above, the Examiner has the burden of providing evidence to support his analysis of the Graham factors, but has failed to do so. The Applicants therefore again respectfully request the Examiner provide an explicit statement as to what the level of ordinary skill in the art is, or what in the references points to the level of ordinary skill in the art. The Applicants further suggest that what would have been obvious to a person of ordinary skill in the art at the time of the invention must be in the personal knowledge of the Examiner as well as the motivation to combine, and therefore request that he therefore submit an affidavit detailing as specifically as possible the personal knowledge upon which these areas of his rejection are based. *See* 37 C.F.R. § 1.104(d) (2). The Examiner noted that it appears the above arguments did not reference any particular claim limitation, but instead merely address the construction of the rejection.

Given these differences between the reference and the claimed invention, the Applicants request the Examiner withdraw this rejection.

Claims 41-45 were rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Bowen in view of Wright. The Applicants submit that the claims as amended are unobvious over Bowen in view of Wright.

The Applicants incorporate their previous comments regarding both Bowen and Wright. In addition, both Bowen and Wright do not teach a positive airway pressure (PAP) sleep disorder treatment system comprising a PAP device with an enclosure further comprising a blower having an air output, an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow of a subject while using the PAP, a processor adapted for receiving sensor data from the airflow sensor, and calculating both symptom data of a severity and/or an index of a subject's symptoms measured during use of the PAP device and data of usage of the PAP device, a mask or a nasal cannula, a first radio frequency wireless module transceiver, and a base station, cellular phone or PDA, the radio frequency wireless module transceiver adapted for receiving and transmitting the symptom data and PAP device usage to the base station, cellular phone

or PDA; the base station, cellular phone, or PDA comprising a second transceiver, a processor, the software, and a display, the base station, cellular phone, or PDA further being adapted with the software *to both display at least in part the data, and to retransmit sensor data and/or data of usage received from the PAP device to a remote internet site* as claimed.

Furthermore, Bowen does not teach or disclose integrating external sensors with the internal sensors of the PAP device – thereby failing to teach the crux of the present invention, and neither Bowen nor Wright teach the incorporation of pulse oximetry data and internal flow sensors to develop a level of severity or an index of a level of severity of the sleep disorder breathing symptoms of the present invention. Finally, the motivation combine a sleep apnea treatment system with a stroke rehabilitation system of Wright fails for the numerous reasons alluded to above.

Given these differences between the reference and the claimed invention, the Applicants request the Examiner withdraw this rejection.

CONCLUSION:

The Applicant respectfully submits that this application is in condition for allowance and that action is earnestly solicited.

Respectfully submitted,

03/27/2018

Dated

/Brian M. Kolkowski/

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CLAIM AMENDMENTS:

Please amend claims 21, 23, 28, 32, 34, 35-39, 41-42, and 45 as follows:

1-20. (Canceled)

21. (currently amended) A positive airway pressure (PAP) sleep disorder treatment system comprising:

a signal processing module consisting essentially of~~having~~ an input for connecting to a pulse oximeter sensor with a signal, electronics for filtering and processing the signal, and an output;

a PAP device adapted for treating a subject's sleep disorder with a~~separate~~ enclosure from the signal processing module further comprising:

a blower having an air output,

an input adapted for receiving pulse oximetry sensor data from the output of the signal processing module,

an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow data of a subject using the PAP device,

a processor adapted for receiving sensor data from both the signal processing module and the airflow sensor and calculating symptom data based in part on both the respiratory airflow data and pulse oximetry sensor data of level of severity and/or an index of a level of severity of the subject's sleep disorder symptoms measured during use of the PAP device, and

a mask or a nasal cannula; and

a module transceiver adapted for receiving and transmitting the sleep disorder symptom data and/or the sensor data from both the airflow sensor and pulse oximeter sensor to a remote location.

22. (previously presented) The system of claim 21 wherein the inputs on the PAP device and the outputs of the signal processing module are in wireless radio frequency bidirectional communication.

23. (currently amended) The system of claim 22 wherein the PAP ~~can~~is adapted to command the signal processing module to reconfigure the output by improving the gain for ~~of~~ the pulse oximeter sensor signal or the A/D conversion of the signal.

24. (previously presented) The system of claim 21 wherein the signals from the pulse oximeter sensors is processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernels, and a wavelet analysis.

25. (cancelled)

26. (cancelled)

27. (cancelled)

28. (currently amended) A sleep disorder treatment system comprising:

a data acquisition system, a positive airway pressure (PAP) device, and a processor, the data acquisition system ~~comprising~~consisting essentially of a data acquisition device having at least one input adapted for receiving a signals from a pulse oximeter sensor, an electronic component for filtering and processing the signal from the pulse oximeter sensor to include remove artifacts, and a output adapted for transmitting sensor data

based on the signal from the pulse oximeter sensor to a ~~positive airway pressure (the~~ PAP) device;

the PAP device comprising: a hose, a blower, an airflow sensor with a signal adapted for measuring respiratory airflow of a subject, an input for receiving sensor data from the data acquisition device, and a mask or nasal cannula for treating a subject's sleep disorder symptoms; and

thea processor adapted for receiving sensor data from the pulse oximeter sensor, and the air flow sensor, the processor further adapted for calculating symptom data based in part on both data from the respiratory airflow and pulse oximetry sensors of a level of severity and/or index of a level of severity of the subject's symptoms measured during the subject's use of the PAP device, the processor still further either part of or external to the PAP device and having an output, the output adapted for providing symptom data to a nonvolatile memory to be used for later transmission of the symptom data to a remote location.

29. (cancelled)

30. (cancelled)

31. (previously presented) The sleep disorder treatment system of claim 28 wherein the signals from the sensors are processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

32. (currently amended) The sleep disorder treatment system of claim 28 wherein the sensor data output of the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and the ~~processor~~the input on the PAP device.

33. (cancelled)

34. (currently amended) A sleep disorder treatment system comprising:

a data acquisition system, the data acquisition system comprising a data acquisition device having inputs for receiving signals from at least one physiological sensor, the data acquisition system for creating an output of the level of severity of a subject's sleep disorder or symptoms based in part on the signals from the sensors; and

an positive airway pressure apparatus for both providing pressurized air, and dosing and chemically treating a subject's sleep disorder or symptoms with a pharmaceutical agent, which can be adjusted at least in part using the output of the level of severity of the subject's sleep disorder from the data acquisition system.

35. (currently amended) The sleep disorder treatment system of claim 34 wherein the at least one physiological sensor is~~consists essentially of~~ a pulse oximeter sensor.

36. (currently amended) The sleep disorder treatment system of claim 35 wherein the at least one physiological sensor further including~~consists essentially of~~ a respiratory effort sensor.

37. (currently amended) The sleep disorder treatment system of claim 34 wherein the output the level of severity from the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and a receiver on the positive airway pressure apparatus for chemically treating a subject's sleep disorder or symptoms.

38. (currently amended) The sleep disorder treatment system of claim 37 wherein the positive airway pressure apparatus for chemically treating a subject's sleep disorder or

symptoms through the receiver ~~can~~ is adapted to command a signal processing module to reconfigure the output of the data acquisition system.

39. (currently amended) The sleep disorder treatment system of claim 34 wherein the positive airway pressure apparatus or method for chemically treating a subject's sleep disorder or symptoms ~~is selected from the group consisting of~~ uses either a nebulizer and/or a controlled pump.

40. (previously presented) The sleep disorder treatment system of claim 34 wherein the signals from the sensors are processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

41. (currently amended) A positive airway pressure (PAP) sleep disorder treatment system comprising:

a PAP device with an enclosure further comprising:

a blower having an air output,

an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow of a subject while using the PAP,

a processor adapted for receiving sensor data from the airflow sensor, and calculating both symptom data of a severity and/or an index of a subject's symptoms measured during use of the PAP device and data of usage of the PAP device, ~~and~~

a mask or a nasal cannula, ~~and~~

a first radio frequency wireless module transceiver, and

a base station, cellular phone or PDA,

the radio frequency wireless module transceiver adapted for receiving and transmitting the symptom data and PAP device usage to ~~at~~ the base station, cellular phone or PDA; the base station, cellular phone, or PDA ~~being adapted with~~ comprising a second transceiver, a processor, the software ~~or an algorithm~~, and a display, the base station, cellular phone, or PDA further being adapted with the software to both display at least in part the data, and to retransmit sensor data and/or data of usage ~~received from~~ ~~of~~ the PAP device to a remote internet site.

42. (currently amended) The system of Claim 41, wherein the first transceiver of the PAP device and the second transceiver of the base station, cellular phone or PDA communicate with using Bluetooth wireless protocol.

43. (previously presented) The system of Claim 41, wherein the index of the subject's symptoms is a respiratory disturbance index.

44. (previously presented) The system of Claim 41, wherein the PAP device further comprises an electronic component adapted to allow the PAP device to be adjusted remotely based on the sensor data transmitted to the remote internet site.

45. (currently amended) The system of Claim 41, wherein the software of the base station, cellular phone or PDA can be reprogrammed or modified remotely.

46. (previously presented) The system of Claim 41, wherein the signals from the sensors are processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re:	Application of Kayyali et al.	)	
		)	
Serial No.:	13/440,116	)	
		)	Art Unit: 3735
Filed:	April 5, 2012	)	
		)	
For:	Devices and Methods for	)	
	Sleep Disorder Diagnosis	)	
	and Treatment	)	
		)	Attorney Docket No.: CMD-087
Examiner:	Navin Natnithithadha	)	
		)	

March 27, 2018

AMENDMENT

Commissioner of Patents and Trademarks
Alexandria, VA 22313-1450

Dear Mam:

This amendment is being filed in response to an Office Action dated November 27, 2017 with a due date of response of February 27, 2018. The Applicants petition for a 1-month extension of time and submit a credit card form PTO-2038 for payment of the fee. The Applicants believe no further extension of time is needed but if this is not the case the Applicant contingently petition for an extension of time and authorize the USPTO to deduct any fees from their deposit account 502704. The following amendments to the specification and claims are respectfully submitted.

Electronic Patent Application Fee Transmittal

Application Number:	13440116			
Filing Date:	05-Apr-2012			
Title of Invention:	Devices and Methods for Sleep Disorder Diagnosis and Treatment			
First Named Inventor/Applicant Name:	Hani Kayyali			
Filer:	Brian M. Kolkowski			
Attorney Docket Number:	CMD-087			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 1 month with \$0 paid	2251	1	100	100
Miscellaneous:				
Total in USD (\$)				100

Electronic Acknowledgement Receipt

EFS ID:	32169443
Application Number:	13440116
International Application Number:	
Confirmation Number:	4463
Title of Invention:	Devices and Methods for Sleep Disorder Diagnosis and Treatment
First Named Inventor/Applicant Name:	Hani Kayyali
Customer Number:	81177
Filer:	Brian M. Kolkowski
Filer Authorized By:	
Attorney Docket Number:	CMD-087
Receipt Date:	27-MAR-2018
Filing Date:	05-APR-2012
Time Stamp:	14:16:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 100
RAM confirmation Number	032818INTEFSW14192300
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

ResMed

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		CMD_087_amendment_march_27_2018.pdf	188524	yes	22
			70472bd005d72503e5f4048b78d8b9c3e57b6a39		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment/Req. Reconsideration-After Non-Final Reject		8	22	
	Claims		2	7	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30265	no	2
			b7631c2c3a273c768dc5c307df4cc11c13260e6a		
Warnings:					
Information:					
Total Files Size (in bytes):			218789		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/440,116	04/05/2012	Hani Kayyali	CMD-087	4463

81177 7590 11/27/2017
Cleveland Medical Devices Inc.
4415 Euclid Ave. Ste. 500
Cleveland, OH 44103

EXAMINER

NATNITHADHA, NAVIN

ART UNIT	PAPER NUMBER
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3735

MAIL DATE	DELIVERY MODE
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11/27/2017

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 13/440,116	Applicant(s) KAYYALI ET AL.	
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2017.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

- 5) ☒ Claim(s) 21-24,28,31,32 and 34-46 is/are pending in the application.
 5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) _____ is/are allowed.
- 7) ☒ Claim(s) 21-23,28,32,34-39 and 41-45 is/are rejected.
- 8) ☒ Claim(s) 24,31,40 and 46 is/are objected to.
- 9) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some** c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date _____ | 4) ☐ Other: _____ |

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 October 2017 has been entered.

Response to Amendment

3. According to the Amendment, filed 12 October 2017, the status of the claims is as follows:

Claims 21-24, 28 are currently amended;

Claims 31, 32, and 34-40 are previously presented;

Claims 41-46 are new; and

Claims 1-20, 25-27, 29, 30, and 33 are cancelled.

4. The objection of claim 28 because of a minor informality is withdrawn in view of the Amendment, filed 12 October 2017.

5. The rejection of claims 25-27, 29, and 30 under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description

requirement, and the rejection of claims 25-27 under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention, are rendered moot in view of the Amendment, filed 12 October 2017, which cancelled these claims.

6. The rejection of claims 21-24, 28, and 31-33 under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement, is rendered moot in view of the Amendment, filed 12 October 2017, which deleted the limitations at issue in the amendment of claim 21.

7. The rejection of claims 21-24 under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention, is rendered moot in view of the Amendment, filed 12 October 2017, which deleted the limitations at issue in the amendment of claim 21.

Response to Arguments

8. Applicant's arguments, see Remarks, p. 8, filed 12 October 2017, with respect to the rejection of claims 34-40 under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement, have been fully considered, and are persuasive. Therefore, the rejection has been withdrawn.

9. Applicant's arguments, see Remarks, pp. 11-14, filed 12 October 2017, with respect to the rejection of claims 21, 26-29, and 33 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Miles, U.S. Patent No. 5,353,788 A ("Miles"), in view of Hedner

et al, U.S. Patent Application Publication No. 2008/0257349 A1 ("Hedner"), and further in view of Wright et al, U.S. Patent No. 6,832,609 B2 ("Wright"), have been fully considered, but are moot in view of the new ground(s) of rejection, which was necessitated by amendment, as discussed below.

10. Applicant's arguments, see Remarks, pp. 14-17, filed 12 October 2017, with respect to the rejection of claims 22, 23, 30, and 32 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Miles in view of Wright, as applied to claims 21 and 28, respectively, above, and further in view of Stahmann et al, U.S. Patent No. 7,757,690 B2, have been fully considered, but are moot in view of the new ground(s) of rejection, which was necessitated by amendment, as discussed below.

Claim Objections

11. Claims 21, 23, and 41 are objected to because of the following informalities:

in claim 21, line 11, claim 23, line 1, and claim 41, line 6, "the PAP" lacks proper antecedent basis and is a typographical error, and should be amended to "the PAP device";

in claim 41, line 9, "and" is a grammatical/typographical error as there is already an "and" in line 10, and should be deleted; and

in line 41 line, 11-13, the ";" and the new line for the limitation "the base station, cellular phone or PDA being..." are grammatical/typographical errors, and should be replaced by a "," and the limitation "the base station, cellular phone or PDA being..." should be combined in the same paragraph as the limitation "a radio frequency wireless..."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):

(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. **Claims 23, 28, 31, 32, and 37-39 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.**

Claim 23 recites the limitation "wherein the PAP can command the signal processing module to configure the output of the pulse oximeter sensor". Since the limitation uses the word "can", the part of the limitation succeeding the word ("command the signal processing module to configure the output of the pulse oximeter sensor") is indefinite as to whether this part is required by the claim.

Claim 28 recites the limitations "... an output adapted for transmitting sensor data based on the signal from the pulse oximeter sensor to a positive airway pressure (PAP) device;", and then "the PAP device comprising: ..." However, the claimed "sleep disorder treatment system" merely comprises only the structural elements of "a data acquisition system" and "a processor" as recited. Thus, it is not clear whether the "positive airway pressure (PAP) device" is part of the claimed system or merely the intended use of the functional limitation of the "output". For examination purposes, the

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PAP device and the limitations directed to the PAP device will be interpreted as part of the claimed system.

Claims 31 and 32 are rejected due to their dependencies to claim 28.

Claim 37 recites the limitation “a receiver on the apparatus for chemically treating a subject’s sleep disorder or symptoms”, claim 38 recites the limitation “wherein the apparatus for...”, and claim 39 recites the limitation “wherein the apparatus or method for...” The phrases “the apparatus” and “the apparatus or method” lacks antecedent basis. Furthermore, it is not clear from this limitation whether “the apparatus” or “the apparatus or method” for chemically treating a subject's sleep disorder or symptoms is the same as the "positive airway pressure apparatus" recited in base claim 34, or a separate apparatus not recited in base claim 34. Even further, it is not clear how “the apparatus” is arranged within the system of base claim 34. Because it is not clear what the scope is for dependent claims 37-39, i.e. whether “the apparatus for chemically treating a subject's sleep disorder or symptoms” is part of the system of base claim 34 or whether claim 37 omits structural elements, as stated above, examination of these claims with respect to prior art cannot be performed. Thus, claims 37-39 are not treated on the merits under 35 U.S.C. 102 and 103.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 21, 26-29, and 33-36 are rejected under pre-AIA 35 U.S.C. 102 as being anticipated by Wright et al, U.S. Patent Application Publication No. 2002/0185130 A1 (“Wright”).

As to Claim 21, Wright teaches the following:

A positive airway pressure (PAP) sleep disorder treatment system (see “Methods and apparatus for assessing the condition of and treating patients for stroke during the delivery of continuous positive airway pressure (CPAP) are disclosed.” in Abstract) comprising:

a signal processing module (“diagnosis unit”) 18 having an input for connecting to a pulse oximeter sensor (see “The diagnosis unit includes a pulse oximeter 20, respiratory movement sensors 22, EEG & ECG 24.” in para. [0029]) and an output (“connection”, which is represented by a line, not labeled, in fig. 1, see “The apparatus further includes a communications interface 16 for connection to a diagnosis unit.” in para. [0029], in which “connection” is interpreted to be the output of the “diagnosis unit”);

a PAP device (“main blower housing”, not labeled in fig. 1, see “...in the main blower housing...” and “...the main housing of the blower” in para. [0029]) with an enclosure (enclosure, not labeled, shown in fig. 1 that encases/surrounds “main blower housing”) further comprising:

a blower ("blower") 2 having an air output ("air delivery conduit") 8 ("...air delivery conduit 8 for connection between the blower 2 and the mask 6...", see para. [0029], and fig. 1),

an input ("communications interface") 16 adapted for receiving sensor data from the output of the signal processing module 18 (see "The apparatus further includes a communications interface 16 for connection to a diagnosis unit." in para. [0029]),

an airflow sensor (one of the "flow and pressure sensors") 4 internal to the PAP device (see "flow and pressure sensors 4" being internal to "main blower housing" in fig. 1) adapted for measuring the respiratory airflow data of a subject using the PAP [device] (see para. [0029]),

a processor ("controller", see label in fig. 1, although there is no label number, and see "computer-controlled" in para. [0029]) adapted for receiving sensor data from both the signal processing module 18 and the airflow sensor 4 and calculating symptom data ("patient health characteristics") of level of severity ("level of severity") and/or an index ("Apnea Hypopnea Index ("AHI")") of a level of severity ("which is an indicator of the level of severity") of the subject's symptoms measured during use of the PAP device (see "The apparatus according to the invention may be used to monitor patient health characteristics including, for example, oral and/or nasal airflow, snore, abdominal movement, chest wall movement,

oximetry, pulse rate, body position and flattening index via the diagnosis unit and sensors in the blower. As an alternative to the diagnosis unit apparatus according to the invention may be used in conjunction with a portable diagnosis system, for example, the EMBLETTA portable diagnosis system (FLAGA, Iceland), or the MESAM system (MAP, Germany). In a preferred embodiment, the flattening index is measured according to the method described in U.S. Pat. No. 5,704,345 (Berthon-Jones). The contents of U.S. Pat. No. 5,704,345 are hereby incorporated by cross-reference." in para. [0034], and see "Another index is an Apnea Hypopnea Index ("AHI") which is an indicator of the level of severity of a patient's sleep disordered breathing." in para. [0045]), and

a mask ("mask") 6 or a nasal cannula (see "In reference to FIG. 1, the invention provides apparatus that includes a computer-controlled blower 2, flow and pressure sensors 4, a mask 6..." in para. [0029]); and

a module transceiver ("communication port or module... for example, a wireless communication transceiver") 10 adapted for receiving and transmitting the symptom data and/or the sensor data to a remote location ("other devices or computers such as hand-held display and control

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devices”) 12 (see “The apparatus further includes a communication port or module 10, for example, a wireless communication transceiver and/or a network card, for communication with other devices or computers such as hand-held display and control devices 12.” in para. [0029]; since the claim recites “system comprising: a module transceiver”, the module transceiver merely needs to be included within the overall system, and thus, Wright having the “communication port or module 10”, i.e. module transceiver, as included within the “main blower housing”, i.e. PAP device, is still included in the overall system).

As to Claim 34, Wright teaches the following:

A sleep disorder treatment system (see “Methods and apparatus for assessing the condition of and treating patients for stroke during the delivery of continuous positive airway pressure (CPAP) are disclosed.” in Abstract) comprising:

a data acquisition system (“diagnosis unit”) 18 (see fig. 1), the data acquisition system 18 comprising

a data acquisition device having inputs (see the line, not labeled, connecting the “pulse oximeter 20” to “diagnosis unit 18”) for receiving signals from at least one physiological sensor (“pulse oximeter”) 20, the data acquisition system 18 for creating an output (“Apnea Hypopnea Index (“AHI”)”) of the level of severity (“which is an indicator of the level of severity”) of a subject’s sleep disorder or symptoms based

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in part on the signals from the sensors 20 (see “The apparatus according to the invention may be used to monitor patient health characteristics including, for example, oral and/or nasal airflow, snore, abdominal movement, chest wall movement, oximetry, pulse rate, body position and flattening index via the diagnosis unit and sensors in the blower. As an alternative to the diagnosis unit apparatus according to the invention may be used in conjunction with a portable diagnosis system, for example, the EMBLETTA portable diagnosis system (FLAGA, Iceland), or the MESAM system (MAP, Germany). In a preferred embodiment, the flattening index is measured according to the method described in U.S. Pat. No. 5,704,345 (Berthon-Jones). The contents of U.S. Pat. No. 5,704,345 are hereby incorporated by cross-reference.” in para. [0034], and see “Another index is an Apnea Hypopnea Index (“AHI”) which is an indicator of the level of severity of a patient's sleep disordered breathing.” in para. [0045]); and

an positive airway pressure apparatus (“main blower housing”, not labeled in fig. 1, see “...in the main blower housing...” and “...the main housing of the blower” in para. [0029]) for providing pressurized air and chemically treating a subject's sleep disorder or symptoms with a pharmaceutical agent (see “The

changing value of the index may also provide an indication to the physician that the dosage of pharmacological agents given to the patient ought to be changed. For example, if the index indicated that neuro-recovery was occurring, then it may be appropriate to reduce the dose of the agent. Alternatively, the index may be used to monitor the efficacy or effectiveness of a drug protocol. For example, by monitoring the index for one or more patients, which may include the storing of multiple indices in a database of patient information, and by an analysis of such data, it may be determined that a drug is safe and/or appropriate as a treatment for stroke in general. Additionally, monitoring and analysis may indicate that a particular treatment is working for a particular patient.”, see para. [0041]), which can be adjusted at least in part using the output of the level of severity of the subject’s sleep disorder from the data acquisition system (see “The apparatus has two treatment modes, a first mode for treating obstructive apneas and a second mode for treating central apneas. In the first mode, the device provides a generally constant pressure throughout a breathing cycle, but may vary the pressure in accordance with indications of partial or complete obstruction of the airway. One technique for accomplishing this using a combination of flow limitation and snore measurements is described in U.S. Pat. No. 5,704,345 (Berthon-Jones). One

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apparatus embodying aspects of the invention described in the '345 patent is AUTOSET T.TM. (ResMed Ltd). Other known alternative methods to vary the pressure for delivering CPAP treatment to a patient to treat obstructive apneas would be recognized by those skilled in the art and may be utilized as modes in the device.”, para. [0031]).

As to Claim 35, Miles teaches the following:

wherein the at least one physiological sensor is a pulse oximeter sensor (“pulse oximeter”) 20.

As to Claim 36, Miles teaches the following:

a respiratory effort sensor (“respiratory movement sensors”) 22.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under pre-AIA 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under pre-AIA 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of pre-AIA 35 U.S.C. 103(c) and potential pre-AIA 35 U.S.C. 102(e), (f) or (g) prior art under pre-AIA 35 U.S.C. 103(a).

14. **Claims 22 and 23 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wright et al, U.S. Patent Application Publication No. 20020185130 A1 (“Wright”), as applied to claim 21 above, and further in view of Khair et al, U.S. Patent No. 6,533,729 B1 (“Khair”).**

As to Claims 22 and 23, Wright teaches the subject matter of claim 21 above. Wright does not teach the following:

wherein the input on the PAP device and the output of the signal processing module are in wireless radio frequency bidirectional communication, and

wherein the PAP [device] can command the signal processing module 18 to reconfigure the output of the pulse oximeter sensor.

However, Khair teaches the following:

an input ("wireless transceiver") 202 of a device ("base unit") 20 (see fig. 13) and an output ("wireless transceiver") 122 of a signal processing module ("microcontroller and Digital Signal Processor (DSP)") 112 (see fig. 12) of a sensor ("sensor") 12 are in wireless radio frequency bidirectional communication ("The blood pressure sensor may also include a wireless transceiver for sending blood pressure data to a base unit and for receiving configuration or data acquisition commands from the base unit. The sensor may also include a microcontroller and Digital Signal Processor (DSP) or other type of computing platform and a memory storing a set of instructions.", see col. 4, ll. 4-22; and "Together, the blood pressure sensor of FIG. 1 and the base unit comprise a noninvasive wireless blood pressure data acquisition system. The sensor has a wireless transceiver for transmitting blood pressure data to the base unit, and receives data acquisition or configuration commands from the base unit.", see col. 14, ll. 26-35), and

wherein the device 20 can command the signal processing module 112 to reconfigure the output of the sensor 12 ("An embodiment in which the sensor assembly works in conjunction with a wireless base unit can allow the sensor assembly to be remotely managed and configured by the base unit. The wireless arrangement makes possible communications protocols, including command and message

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procedures, to be employed between the base unit and the wireless sensor. These commands can include start data acquisition commands, data transmission commands, error recovery and retransmission commands, and many others. The patent application of Mohammad Khair, et al., Ser. No. 09/551,719, filed Apr. 18, 2000, which is incorporated by reference herein, sets forth a wireless communication protocol that is particularly well suited for a wireless implementation of the invention.”, see col. 13, l. 56, to col. 14, l. 2).

Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Wright’s “communications interface 16” to provide bidirectional communication and “to be remotely managed and configured” by Wright’s “main blower housing” because, as explained by Khair (see Khair, col. 13, ll. 59-62):

The wireless arrangement makes possible communications protocols, including command and message procedures, to be employed between the base unit and the wireless sensor. These commands can include start data acquisition commands, data transmission commands, error recovery and retransmission commands, and many others.

This advantage would support Wright's goals and suggested modification, as explained below, by allowing further the sensor to be remotely controlled to performed desired monitoring functions (see Wright, para. [0030], emphasis added by Examiner):

While this apparatus is described as a single unit, it is understood that a combination of devices

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and/or computers linked by any available communications method may be used to accomplish the goals of the invention. For example, the apparatus can interface with a variety of hand-held devices such as a Palm Pilot via wireless communication. With such a device, a physician may, for example, remotely monitor, analyze or record the status or data history of a patient or diagnose the patient's condition using the device. For example, remote devices may store stroke indicators, such as in a database of patient stroke recovery information for one or more patients, from data generated by use of the apparatus. Furthermore, the treatment program which is being run on the patient can be monitored and changed remotely. In the event patient data is transmitted over open networks, the data may be encrypted for purposes of patient confidentiality.

15. Claim 28 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wright et al, U.S. Patent Application Publication No. 20020185130 A1 ("Wright"), in view of Mumford et al, U.S. Patent No. 7,575,005 B2 ("Mumford").

As to Claim 28, Wright teaches the following:

A sleep disorder treatment system (see "Methods and apparatus for assessing the condition of and treating patients for stroke during the delivery of continuous positive airway pressure (CPAP) are disclosed." in Abstract) comprising:

a data acquisition system ("diagnosis unit") 18 (see fig. 1), the data acquisition system 18 comprising a data acquisition device having at least one input (see the line, not labeled, connecting the "pulse oximeter 20" to "diagnosis unit 18") adapted for receiving a signal from a pulse oximeter sensor ("pulse oximeter") 20, and an output ("connection", which is represented by a line, not

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labeled, in fig. 1, see "The apparatus further includes a communications interface 16 for connection to a diagnosis unit." in para. [0029], in which "connection" is interpreted to be the output of the "diagnosis unit") adapted for transmitting sensor data based on the signal from the pulse oximeter sensor 20 to a positive airway pressure (PAP) device ("main blower housing", not labeled in fig. 1, see "...in the main blower housing..." and "...the main housing of the blower" in para. [0029]);

the PAP device comprising:

a hose ("air delivery conduit") 8,

a blower ("blower") 2,

an airflow sensor (one of the "flow and pressure sensors") 4 with a signal adapted for measuring respiratory airflow of a subject (see para. [0029]),

an input ("communications interface") 16 for receiving sensor data from the data acquisition device 18 (see "The apparatus further includes a communications interface 16 for connection to a diagnosis unit." in para. [0029]), and

a mask ("mask") 6 or nasal cannula for treating a subject's sleep disorder symptoms (see "In reference to FIG. 1, the invention provides apparatus that includes a computer-controlled blower 2, flow and pressure sensors 4, a mask 6..." in para. [0029]); and a processor ("controller", see label in fig. 1, although there is no label number, and see "computer-controlled" in para. [0029]) for receiving sensor data

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from the pulse oximeter sensor 20, and the air flow sensor 4, the processor further adapted for calculating symptom data ("patient health characteristics") of a level of severity ("level of severity") and/or index ("Apnea Hypopnea Index ("AHI")") of a level of severity ("which is an indicator of the level of severity") of the subject's symptoms measured during the subject's use of the PAP device (see "The apparatus according to the invention may be used to monitor patient health characteristics including, for example, oral and/or nasal airflow, snore, abdominal movement, chest wall movement, oximetry, pulse rate, body position and flattening index via the diagnosis unit and sensors in the blower. As an alternative to the diagnosis unit apparatus according to the invention may be used in conjunction with a portable diagnosis system, for example, the EMBLETTA portable diagnosis system (FLAGA, Iceland), or the MESAM system (MAP, Germany). In a preferred embodiment, the flattening index is measured according to the method described in U.S. Pat. No. 5,704,345 (Berthon-Jones). The contents of U.S. Pat. No. 5,704,345 are hereby incorporated by cross-reference." in para. [0034], and see "Another index is an Apnea Hypopnea Index ("AHI") which is an indicator of the level of severity of a patient's sleep disordered breathing." in para. [0045]), the processor still further either part of or external to the PAP device (see the "controller" within the "main blower housing") and having an output

("communication port or module... for example, a wireless communication transceiver") 10, the output 10 adapted for providing symptom data to a nonvolatile memory ("network card") to be used for later transmission of the symptom data to a remote location ("other devices or computers such as hand-held display and control devices") 12 (see "The apparatus further includes a communication port or module 10, for example, a wireless communication transceiver and/or a network card, for communication with other devices or computers such as hand-held display and control devices 12." in para. [0029]).

Wright does not explicitly teach the following:

the data acquisition system ("diagnosis unit") 18 comprising ... an electronic component for processing the signal from the pulse oximeter sensor 20.

However, this is well-known in the art at the time the invention was made. For example, Mumford teaches the following:

a data acquisition system ("remote processing unit") 414 (see fig. 5a) comprising an electronic component ("control unit") 426 for processing the signal from the pulse oximeter sensor (see "The control unit 426 directs the activity of the remote processing unit 414 and processes each of the signals provided by the sensors. The control unit 426 may be a digital signal processor." in col. 13, ll. 25-28).

Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to include a "control unit 426", as taught by Mumford, within

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Wright's "diagnosis unit 18" because, as explained by Mumford (see Mumford, col. 12, l. 65, to col. 13, l. 5):

...the remote processing unit 414 which processes the signals provided by these sensors prior to transmitting the signals to the monitoring unit 16 via the cable 34. This results in better quality signals with reduced noise and less contamination caused by motion and electromagnetic interference.

16. Claim 32 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Wright et al, U.S. Patent Application Publication No. 20020185130 A1 ("Wright"), in view of Mumford et al, U.S. Patent No. 7,575,005 B2 ("Mumford"), as applied to claim 28 above, and further in view of Bowen et al, U.S. Patent No. 7,225,809 B1 ("Bowen").

As to Claim 32, Wright in view of Mumford teaches the subject matter of claim 28 above. Mumford teaches the following:

wherein the sensor data output of the data acquisition system ("remote processing unit") 414 is transmitted wirelessly between the data acquisition system 414 and a processor ("control unit") 600 of a PAP device ("CPAP device") 14 (see "Referring now to FIG. 5c, shown therein is a block diagram of an alternate embodiment of a remote processing unit 514 incorporating a wireless communications unit 516 and an antenna 518 in accordance with the invention. The wireless communication unit 516 runs a suitable wireless protocol such as the BLUETOOTH.TM. protocol which is suitable for short-range

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communication. For longer-range communication, the wireless communication unit 516 may employ another communications protocol such as CDMA.”, col. 14, ll. 32-40; and see “Referring now to FIG. 6, shown therein is a block diagram of an exemplary embodiment of the monitoring unit 16 of FIG. 1. The monitoring unit 16 may be directly integrated within the CPAP device 14 or it may be separate and works alongside the CPAP device 14.”, col. 14, ll. 53-57).

Wright in view of Mumford does not teach the following:

wherein the sensor data output of the data acquisition system is transmitted wirelessly by bidirectional radio frequency....

However, this is well-known in the art. For example, Bowen teaches the following:

sensor data output of a data acquisition system (“information storage device”) 152 is transmitted wirelessly by bidirectional (via “transceiver 154”) radio frequency (“RF”) between the data acquisition system 152 and a processor (“controller”) 36 of a PAP device (“pressure support system”) 30.

Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use a wireless bidirectional “transceiver 154”, as taught by Bowen to transmit sensor data between Wright's “diagnosis unit 18” and “main blower housing” because it would be a mere substitution of one form of communication for another to yield the same predictable result, i.e. communication of sensor data. Besides, Wright already teaches a “wireless communication

transceiver” for the “communication port or module 10” (see Wright, para. [0029]), and thus, it would obvious to use such a form of communication with the “communication interface 16” to provide the same wireless capability and be more user-friendly without an obstructive wire, which is a well-known advantage in the prior art.

17. Claims 41-45 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Bowen et al, U.S. Patent No. 7,225,809 B1 (“Bowen”), in view of Wright et al, U.S. Patent Application Publication No. 20020185130 A1 (“Wright”).

As to Claim 41, Bowen teaches the following:

A positive airway pressure (PAP) sleep disorder treatment system (see “FIG. 1 schematically illustrates an exemplary embodiment of a pressure support system 30 according to the principles of the present invention.”, see col. 8, ll. 35-37) comprising:

a PAP device (“pressure support device”) 32 with an enclosure (“housing”) 66 (see “Pressure support system 30 includes a pressure support device 32 that generates a flow of breathing gas at an elevated pressure and an information storage device 34 that communicates with a controller 36 in pressure support device 32.”, col. 8, ll. 67-41, and fig. 1) further comprising:

a blower (“centrifugal blower” or “pressure generator”) 38
having an air output (“exit conduit”) 42 (see “An exit conduit 42

communicates the flow of breathing gas from pressure generator 38 to a patient circuit 44...", col. 8, ll. 61-63, and fig. 1),

an airflow sensor ("flow sensor") 56 internal to the PAP device 32 adapted for measuring the respiratory airflow of a subject while using the PAP [device] 32 (see "The present invention contemplates that pressure support system 30 can, if needed, include at least one sensor capable of measuring a characteristic associated with the flow of breathing gas, the pressure of the breathing gas, a condition of a patient using the pressure support system, a condition of the pressure support system, or any combination thereof. For example, FIG. 1 schematically illustrates a flow sensor 56 associated with exit conduit 42 and a pressure sensor 58 associated with patient circuit 44.", col. 9, ll. 58-66),

a processor ("controller") 36 adapted for receiving sensor data from the airflow sensor 56 (see "The output from such sensors are provided to controller 36 and used to control the rate of flow and/or pressure of the breathing gas delivered to the patient.", col. 9, l. 66, to col. 10, l. 2), and calculating data of usage of the PAP device (see "The present invention further contemplates that modem 174 monitor certain exception criteria and call the receiving station based on an exception call parameter,

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e.g., immediately, with the next automatic call, first after hours opportunity, etc. Examples of exceptions that are monitored include: 1) Pressure support device usage over a desired time period; 2) Number of pressure support device on/off cycles over a desired time period; 3) Number of pressure support device failures over a desired time period; 4) Number of alarms, per type of alarm, over a desired time period; 5) Number of device alerts, per type of alert, over a desired time period; and 6) Survey or test scores presented to the patient on the pressure support device, as discussed above, falling outside a desired threshold.”, col. 21, l. 58, to col. 22, l. 9), and

a mask or a nasal cannula (“patient interface device”) 50 (see “Patient interface 50 connects the conduit with the airway of the patient so that the elevated pressure gas flow is delivered to the patient's airway. Examples of patient interface devices include a nasal mask, nasal and oral mask, full face mask, nasal cannula, oral mouthpiece, tracheal tube, endotracheal tube, or hood.”, col. 9, ll. 10-15), and

a radio frequency wireless module transceiver (“transceiver”) 154 adapted for receiving and transmitting the data and PAP device usage to a base station (“information storage device”) 152, cellular phone or PDA (see

“The present invention contemplates that transceiver 154 can be any conventional device for transmitting data, information or commands to the information storage device, receiving data, information or commands, from the information storage device, or both. For example, transceiver 154 can be an RF, infrared, sonic, ultrasonic, or optical transmitter.”, col. 20, ll. 62-67);

the base station, cellular phone or PDA being adapted with software or an algorithm to retransmit sensor data and data of usage of the PAP device to a remote internet site (see “In the embodiment illustrated in FIG. 8, external device 160 is a modem 174 so that data, information, and/or instructions can be transmitted between a receiving station (not shown) and pressure support device 160. The data transmission link can be a dedicated telephone connection, internet, LAN, WAN, or any other data communication technique. This allows compliance information, for example, to be downloaded to a receiving station directly, and operating parameters, such as, new prescription pressures, to be uploaded to the pressure support device, with a minimal amount of effort on the part of the patient or caregiver, while still providing the flexibility to use an information storage device to control

the pressure support device and/or monitor its operation.”,
col. 22, ll. 19-30).

Bowen does not teach the following:

a processor adapted for... calculating... symptom data of a severity and/or an
index of a subject's symptoms measured during use of the PAP device.

However, Wright teaches the following:

a processor (“controller”, see label in fig. 1, although there is no label
number, and see “computer-controlled” in para. [0029]) adapted for calculating
symptom data (“patient health characteristics”) of level of severity (“level
of severity”) and/or an index (“Apnea Hypopnea Index (“AHI”)”) of a level of
severity (“which is an indicator of the level of severity”) of the
subject's symptoms measured during use of the PAP device (see “The apparatus
according to the invention may be used to monitor patient health
characteristics including, for example, oral and/or nasal
airflow, snore, abdominal movement, chest wall movement,
oximetry, pulse rate, body position and flattening index via the
diagnosis unit and sensors in the blower. As an alternative to
the diagnosis unit apparatus according to the invention may be
used in conjunction with a portable diagnosis system, for
example, the EMBLETTA portable diagnosis system (FLAGA,
Iceland), or the MESAM system (MAP, Germany). In a preferred
embodiment, the flattening index is measured according to the

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method described in U.S. Pat. No. 5,704,345 (Berthon-Jones). The contents of U.S. Pat. No. 5,704,345 are hereby incorporated by cross-reference.” In para. [0034], and see “Another index is an Apnea Hypopnea Index (“AHI”) which is an indicator of the level of severity of a patient’s sleep disordered breathing.” in para. [0045])

Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Bowen’s “controller 36” to calculate “patient health characteristics of level of severity” and “Apnea Hypopnea Index (“AHI”)”, as taught by Wright in order to provide better management of ventilator treatment of a patient’s respiratory disorder, in which both Bowen (see Bowen, col. 1, ll. 7-28) and Wright (see Wright, para. [0017]) are concerned with.

As to Claim 42, Bowen teaches the following:

wherein the transceiver 154 and the base station 160, cellular phone or PDA communicate with Bluetooth wireless (“The present invention contemplates that transceiver 154 can be any conventional device for transmitting data, information or commands to the information storage device, receiving data, information or commands, from the information storage device, or both. For example, transceiver 154 can be an RF, infrared, sonic, ultrasonic, or optical transmitter.”, col. 20, ll. 61-67, in which Bluetooth wireless is an example of a conventional protocol for transmitting data, and thus would be within the scope of Bowen’s teaching).

As to Claim 43, Wright teaches the following:

wherein the index of the subject's symptoms is a respiratory disturbance index (see para. [0045]).

As to Claim 44, Bowen teaches the following:

wherein the PAP device 32 further comprises an electronic component ("modem") 174 adapted to allow the PAP device 32 to be adjusted remotely based on the sensor data transmitted to the remote internet site (see col. 21, ll. 33-57).

As to Claim 45, Bowen teaches the following:

wherein the base station 160, cellular phone or PDA can be reprogrammed remotely (see col. 21, ll. 33-57).

Allowable Subject Matter

18. Claims 24, 31, 40, and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter:

As to Claims 24, 31, 40, and 46, neither Wright, nor the prior art of record teaches the following, in combination with all other limitations of the base claims 21, 38, 34, or 41:

wherein the signals from the sensors are processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier

transform technique, a time-frequency signal analysis with a variety of different kernels, and a wavelet analysis.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NAVIN NATNITHITHADHA whose telephone number is (571)272-4732. The examiner can normally be reached on Monday-Friday, 9:00 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia Mallari can be reached on (571) 272-4729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

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Customer Service Representative or access to the automated information system, call
800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Navin Natnithithadha/
Primary Examiner, Art Unit 3735
11/22/2017

Notice of References Cited	Application/Control No. 13/440,116		Applicant(s)/Patent Under Reexamination KAYYALI ET AL.	
	Examiner NAVIN NATNITHITHADHA		Art Unit 3735	Page 1 of 3

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*	D	US-6,475,153 B1	11-2002	Khair; Mohammad	A61B5/02007	600/485
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	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 13/440,116		Applicant(s)/Patent Under Reexamination KAYYALI ET AL.	
	Examiner NAVIN NATNITHITHADHA		Art Unit 3735	Page 2 of 3

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*	C	US-2008/0066753 A1	03-2008	Martin; Dion Charles Chewe	A61M16/0051	128/204.23
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*	K	US-8,308,641 B2	11-2012	Moroney, III; Richard M.	G06F19/3406	600/300
*	L	US-8,356,594 B2	01-2013	Ujhazy; Anthony John	A61M16/0051	128/204.18
*	M	US-8,365,730 B2	02-2013	Baker, Jr.; Clark R.	A61B5/0205	128/200.24

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 13/440,116		Applicant(s)/Patent Under Reexamination KAYYALI ET AL.	
	Examiner NAVIN NATNITHITHADHA		Art Unit 3735	Page 3 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-8,545,416 B1	10-2013	Kayyali; Hani	A61B5/085	128/204.23
	B	US-				
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes 	Application/Control No. 13440116	Applicant(s)/Patent Under Reexamination KAYYALI ET AL.
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735

CPC- SEARCHED		
Symbol	Date	Examiner
A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592	2/24/2016	/NN/
A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60	2/24/2016	/NN/
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CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

	/N.N./ Primary Examiner.Art Unit 3735
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US CLASSIFICATION SEARCHED

Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES

Search Notes	Date	Examiner
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, CPC, Keyword searches	2/24/2016	/NN/
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	8/23/2016	/NN/
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	12/28/2016	/NN/
EAST (updated search): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	6/28/2017	/NN/
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	11/5/2017	/NN/

INTERFERENCE SEARCH

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592		/NN/
	A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60		/NN/

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Primary Examiner.Art Unit 3735

EAST Search History

EAST Search History (Prior Art)

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L4	63	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$ or US-5237990-\$ or US-7757690-\$ or US-6475153-\$ or US-6533729-\$ or US-8308641-\$).did.	US-PGPUB; USPAT	OR	ON	2017/11/22 12:52
L5	14	bluetooth AND L4	US-PGPUB; USPAT	OR	ON	2017/11/22 12:52
L6	15	((("CPAP" OR "PAP" OR (positive\$4 ADJ2 airway ADJ2 pressure)) SAME ((chemical\$4 OR medicat\$4 OR medicine OR agent OR drug) WITH (treat\$5 OR therap\$4 OR administer\$4 OR administrat\$4))) AND 4	US-PGPUB; USPAT	OR	ON	2017/11/22 12:57
L7	15	((("CPAP" OR "PAP" OR (positive\$4 ADJ2 airway ADJ2 pressure)) SAME ((chemical\$4 OR medicat\$4 OR medicine OR agent OR	US-PGPUB; USPAT	OR	ON	2017/11/22 12:57

		drug OR pharmaceutical\$3) WITH (treat\$5 OR therap\$4 OR administer\$4 OR administrat\$4))) AND 4				
L8	16	((("CPAP" OR "PAP" OR (positive\$4 ADJ2 airway ADJ2 pressure)) SAME ((chemical\$4 OR medicat\$4 OR medicine OR agent OR drug OR pharmaceutical\$3) WITH (deliver\$4 OR treat\$5 OR therap\$4 OR administer\$4 OR administrat\$4))) AND 4	US-PGPUB; USPAT	OR	ON	2017/11/22 13:01
L9	1	(US-20020185130-\$).did.	US-PGPUB	OR	ON	2017/11/22 13:02
L10	1	(chemical\$4 OR medicat\$4 OR medicine OR agent OR drug OR pharmaceutical\$3) AND 9	US-PGPUB; USPAT	OR	ON	2017/11/22 13:02
L11	215236	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC. OR ((600/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/11/22 13:22
L12	26	((("CPAP" OR "PAP" OR (positive\$4 ADJ2 airway ADJ2 pressure)) SAME ((chemical\$4 OR medicat\$4 OR medicine OR agent OR drug OR pharmaceutical\$3) WITH (deliver\$4 OR treat\$5 OR therap\$4 OR administer\$4 OR administrat\$4)) SAME ((adjust\$4 OR modification OR modify\$3 OR chang\$4 OR control\$4 OR manag\$5) WITH severit\$3)) AND 11	US-PGPUB; USPAT; USOCR	OR	ON	2017/11/22 13:24
L13	130	((("CPAP" OR "PAP" OR (positive\$4 ADJ2 airway ADJ2 pressure)) SAME ((chemical\$4 OR medicat\$4 OR medicine OR agent OR drug OR pharmaceutical\$3) WITH (deliver\$4 OR treat\$5 OR therap\$4 OR administer\$4 OR administrat\$4) WITH (adjust\$4 OR modification OR modify\$3 OR chang\$4 OR manag\$5))) AND 11	US-PGPUB; USPAT; USOCR	OR	ON	2017/11/22 13:39
L14	38	("20040138576" "20050165323" "6029664" "7190995" "7204250" "7225809" "7878198" "5237990" "20020185130" "20060084877" "6229581" "7101341" "7668579" "20040254493" "20050085738" "7018341" "7670295" "20040163648" "5961447" "6431171" "8172766" "20050115561" "6138675" "20050188991" "20050217674" "20050268916" "20060247546" "5645043" "6832609" "7195013" "7757690" "20030000528" "6551252" "6889691" "7575005" "20050081847" "7309314" "7662101").PN.	US-PGPUB; USPAT	OR	ON	2017/11/22 14:45
L15	27	4 NOT 14	US-PGPUB; USPAT	OR	ON	2017/11/22 14:45
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		A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC. OR ((600/\$) OR ("128"/\$)).ccls.	USPAT; USOCR			
S321	805	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) WITH (wireless\$3 OR communicat\$4 OR send\$3 OR telemet\$4 OR transmiss\$4 OR transmit\$4 OR send\$3 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF")) SAME ((command\$3 OR instruct\$4 OR control\$4) WITH (reconfigur\$6 OR configur\$6 OR set OR setting OR profile))) AND ((pulseox OR pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR ("O2" OR oxygen) ADJ2 saturat\$4)) WITH (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)) AND S320	US- PGPUB; USPAT; USOCR	OR	ON	2017/11/21 10:50
S322	805	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) WITH (wireless\$3 OR communicat\$4 OR send\$3 OR telemet\$4 OR transmiss\$4 OR transmit\$4 OR send\$3 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF")) SAME ((command\$3 OR instruct\$4 OR control\$4) WITH (reconfigur\$6 OR configur\$6 OR set OR setting OR profile))) AND ((pulseox OR pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR ("O2" OR oxygen) ADJ2 saturat\$4)) WITH (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)) AND S320	US- PGPUB; USPAT; USOCR	OR	ON	2017/11/21 10:57
S323	241	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) WITH (wireless\$3 OR communicat\$4 OR send\$3 OR telemet\$4 OR transmiss\$4 OR transmit\$4 OR send\$3 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF")) SAME ((reconfigur\$6 OR configur\$6 OR set OR setting OR profile) WITH ((command\$3 OR instruct\$4 OR control\$4) NEAR5 (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)))) AND ((pulseox OR pulse OR pulsewave\$5 OR oximet\$4 OR oxymet\$4 OR ("O2" OR oxygen) ADJ2 saturat\$4))) AND S320	US- PGPUB; USPAT; USOCR	OR	ON	2017/11/21 11:02
S324	241	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) WITH (wireless\$3 OR communicat\$4 OR send\$3 OR telemet\$4 OR transmiss\$4 OR transmit\$4 OR send\$3 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF")) SAME ((reconfigur\$6 OR configur\$6 OR set OR setting OR profile) WITH ((command\$3 OR instruct\$4 OR control\$4) NEAR5 (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)))) AND S323	US- PGPUB; USPAT; USOCR	OR	ON	2017/11/21 11:03
S325	2	(US-6533729-\$ or US-6475153-\$).did.	USPAT	OR	ON	2017/11/21

						13:20
S326	2	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) SAME (wireless\$3 OR communicat\$4 OR send\$3 OR telemet\$4 OR transmiss\$4 OR transmit\$4 OR send\$3 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF")) SAME ((reconfigur\$6 OR configur\$6 OR set OR setting OR profile) WITH ((command\$3 OR instruct\$4 OR control\$4)))) AND S325	US-PGPUB; USPAT; USOCR	OR	ON	2017/11/21 13:22
S327	215236	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC. OR ((600/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/11/21 13:29
S328	141	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) SAME (wireless\$3 OR communicat\$4 OR telemet\$4 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF" OR antenna OR coil) SAME ((reconfigur\$6 OR configure OR configuring OR set OR setting OR profile) WITH ((command\$3 OR instruct\$4 OR control\$4 OR receiv\$3) NEAR5 (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)))) AND ((pulseox OR pulse OR pulsewave\$5 OR oximet\$3 OR oxymet\$3 OR ("O2" OR oxygen) ADJ2 saturat\$3)) WITH (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)) AND S327	US-PGPUB; USPAT; USOCR	OR	ON	2017/11/21 13:29
S329	141	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) SAME (wireless\$3 OR communicat\$4 OR telemet\$4 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF" OR antenna OR coil) SAME ((reconfigur\$6 OR configure OR configuring OR set OR setting OR profile))) AND S328	US-PGPUB; USPAT; USOCR	OR	ON	2017/11/21 13:33
S330	215236	(A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592 OR A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60).CPC. OR ((600/\$) OR ("128"/\$)).ccls.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/11/21 13:44
S331	141	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) SAME (wireless\$3 OR communicat\$4 OR telemet\$4 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF" OR antenna OR coil) SAME ((reconfigur\$6 OR configure OR configuring OR set OR setting OR profile) WITH ((command\$3 OR instruct\$4 OR control\$4 OR receiv\$3) NEAR5 (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3))))	US-PGPUB; USPAT; USOCR	OR	ON	2017/11/21 13:44

		AND ((pulseox OR pulse OR pulsewave\$5 OR oximet\$3 OR oxymet\$3 OR ("O2" OR oxygen) ADJ2 saturat\$3)) WITH (sens\$5 OR detect\$4 OR meter\$4 OR probe OR transducer OR monitor\$3)) AND S330				
S332	141	((bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) SAME (wireless\$3 OR communicat\$4 OR telemet\$4 OR receiv\$3 OR radio OR radiofrequenc\$3 OR "RF" OR antenna OR coil) SAME ((reconfigur\$6 OR configure OR configuring OR set OR setting OR profile))) AND S331	US-PGPUB; USPAT; USOCR	OR	ON	2017/11/21 13:44
S333	63	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$ or US-5237990-\$ or US-7757690-\$ or US-6475153-\$ or US-6533729-\$ or US-8308641-\$).did.	US-PGPUB; USPAT	OR	ON	2017/11/22 08:05
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S336	0	"11130221".pn.	US-PGPUB; USPAT	OR	ON	2017/11/22 08:45
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S339	1	S338 AND (bidirection\$4 OR (two ADJ2 way) OR transceiv\$5)	US-PGPUB; USPAT	OR	ON	2017/11/22 08:47
S340	0	S338 AND (bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) AND (radio OR "RF" OR radiofrequenc\$3)	US-PGPUB; USPAT	OR	ON	2017/11/22 08:48
S342	15	S333 AND (bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) AND (radio OR "RF" OR radiofrequenc\$3)	US-PGPUB; USPAT	OR	ON	2017/11/22 08:48
S345	1	("7225809").PN.	US-PGPUB; USPAT	OR	OFF	2017/11/22 08:52
S346	1	S345 AND (bidirection\$4 OR (two ADJ2 way) OR transceiv\$5) AND (radio OR "RF" OR radiofrequenc\$3)	US-PGPUB; USPAT	OR	ON	2017/11/22 08:52
S347	63	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$ or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$ or US-5237990-\$ or US-7757690-\$ or US-6475153-\$ or US-6533729-\$ or US-8308641-\$).did.	US-PGPUB; USPAT	OR	ON	2017/11/22 10:00
S348	63	(US-20080276939-\$ or US-20080257349-\$ or US-20060247546-\$ or US-20050268916-\$ or US-20050165323-\$ or US-20040254493-\$ or US-20040163648-\$ or US-20050217674-\$ or US-20030000528-\$ or US-20050081847-\$ or US-20050085738-\$ or US-20020032386-\$ or US-20030135127-\$ or US-20050197588-\$ or US-20060042627-\$ or US-20060070624-\$ or US-20070209662-\$ or US-20040200474-\$ or US-20050115561-\$ or US-20080269583-\$ or US-20080066753-\$ or US-20070161913-\$ or US-20070135724-\$	US-PGPUB; USPAT	OR	ON	2017/11/22 10:00

		or US-20060135878-\$ or US-20060084877-\$ or US-20040138576-\$).did. or (US-20020185130-\$ or US-20040116784-\$ or US-20100043795-\$ or US-20100258126-\$).did. or (US-7575005-\$ or US-7190995-\$ or US-6889691-\$ or US-6229581-\$ or US-6138675-\$ or US-6029664-\$ or US-5645043-\$ or US-6431171-\$ or US-7204250-\$ or US-6551252-\$ or US-7225809-\$ or US-7670295-\$ or US-5961447-\$ or US-7195013-\$ or US-7309314-\$ or US-7668579-\$ or US-7018341-\$ or US-6832609-\$ or US-7662101-\$ or US-7878198-\$ or US-8172766-\$ or US-5704345-\$ or US-5353788-\$ or US-8069852-\$ or US-7942824-\$ or US-8365730-\$).did. or (US-8545416-\$ or US-8356594-\$ or US-5237990-\$ or US-7757690-\$ or US-6475153-\$ or US-6533729-\$ or US-8308641-\$).did.				
S349	17	internet AND S348	US-PGPUB; USPAT	OR	ON	2017/11/22 10:01
S350	9	(PDA) AND S348	US-PGPUB; USPAT	OR	ON	2017/11/22 10:06
S351	16	(PDA OR cellphone OR cellular OR phone OR telephone) AND S348	US-PGPUB; USPAT	OR	ON	2017/11/22 10:07
S352	56	(usage OR operational OR operation) AND S348	US-PGPUB; USPAT	OR	ON	2017/11/22 11:08
S353	21	((usage OR operational OR operation) WITH (data OR information OR duration OR interval OR period)) AND S348	US-PGPUB; USPAT	OR	ON	2017/11/22 11:09
S354	45	(symptom or severit\$3) AND S348	US-PGPUB; USPAT	OR	ON	2017/11/22 11:15
S355	1	("7225809").PN.	US-PGPUB; USPAT	OR	OFF	2017/11/22 11:17
S356	0	S355 AND (data WITH sens\$5)	US-PGPUB; USPAT	OR	ON	2017/11/22 11:17

11/ 22/ 2017 2:51:51 PM
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<i>Index of Claims</i> 	Application/Control No. 13440116	Applicant(s)/Patent Under Reexamination KAYYALI ET AL.
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE							
Final	Original	06/16/2015	03/01/2016	09/01/2016	01/04/2017	07/11/2017	11/11/2017		
	1	-	-	-	-	-	-		
	2	-	-	-	-	-	-		
	3	-	-	-	-	-	-		
	4	-	-	-	-	-	-		
	5	-	-	-	-	-	-		
	6	-	-	-	-	-	-		
	7	-	-	-	-	-	-		
	8	-	-	-	-	-	-		
	9	-	-	-	-	-	-		
	10	-	-	-	-	-	-		
	11	-	-	-	-	-	-		
	12	-	-	-	-	-	-		
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	14	-	-	-	-	-	-		
	15	-	-	-	-	-	-		
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	18	-	-	-	-	-	-		
	19	-	-	-	-	-	-		
	20	-	-	-	-	-	-		
	21	÷	✓	✓	✓	✓	✓		
	22	÷	✓	✓	✓	✓	✓		
	23	÷	✓	✓	✓	✓	✓		
	24	÷	✓	○	○	✓	○		
	25	÷	✓	○	○	✓	-		
	26	÷	✓	✓	✓	✓	-		
	27	÷	✓	✓	✓	✓	-		
	28	÷	✓	✓	✓	✓	✓		
	29	÷	✓	✓	✓	✓	-		
	30	÷	✓	✓	✓	✓	-		
	31	÷	✓	○	✓	✓	○		
	32	÷	✓	✓	✓	✓	✓		
	33	÷	✓	✓	✓	✓	-		
	34	÷	✓	✓	✓	✓	✓		
	35	÷	✓	✓	✓	✓	✓		
	36	÷	✓	✓	✓	✓	✓		

<i>Index of Claims</i> 	Application/Control No. 13440116	Applicant(s)/Patent Under Reexamination KAYYALI ET AL.
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE							
Final	Original	06/16/2015	03/01/2016	09/01/2016	01/04/2017	07/11/2017	11/11/2017		
	37	÷	✓	✓	✓	✓	✓		
	38	÷	✓	✓	✓	✓	✓		
	39	÷	✓	○	✓	✓	✓		
	40	÷	✓	○	✓	✓	○		
	41						✓		
	42						✓		
	43						✓		
	44						✓		
	45						✓		
	46						○		

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Request for Continued Examination (RCE) Transmittal

Address to:
Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Application Number	13/440,116
Filing Date	2012-04-05
First Named Inventor	Hani Kayyali
Art Unit	3735
Examiner Name	Navin Natnithithadha
Attorney Docket Number	CMD-087

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.

Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 CFR 1.114** Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

a. ☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

i. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

ii. ☐ Other _____

b. ☒ Enclosed

i. ☒ Amendment/Reply

iii. ☐ Information Disclosure Statement (IDS)

ii. ☐ Affidavit(s)/ Declaration(s)

iv. ☐ Other _____

2. Miscellaneous

a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

b. ☐ Other _____

3. Fees

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

The Director is hereby authorized to charge the following fees, any underpayment of fees, or credit any overpayments, to

a. ☐ Deposit Account No. _____

i. ☐ RCE fee required under 37 CFR 1.17(e)

ii. ☐ Extension of time fee (37 CFR 1.136 and 1.17)

iii. ☐ Other _____

b. ☐ Check in the amount of \$ _____ enclosed

c. ☒ Payment by credit card (Form PTO-2038 enclosed)

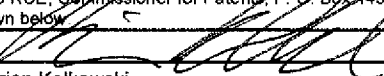
WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Signature		Date	10/12/2017
Name (Print/Type)	Brian Kolkowski	Registration No.	36,847

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below

Signature		Date	10/12/2017
Name (Print/Type)	Brian Kolkowski		

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re:	Application of Kayyali et al.	)	
		)	
Serial No.:	13/440,116	)	
		)	Art Unit: 3735
Filed:	April 5, 2012	)	
		)	
For:	Devices and Methods for	)	
	Sleep Disorder Diagnosis	)	
	and Treatment	)	
		)	Attorney Docket No.: CMD-087
Examiner:	Navin Natnithithadha	)	
		)	

October 12, 2017

AMENDMENT AND RCE

Commissioner of Patents and Trademarks
Alexandria, VA 22313-1450

Dear Mam:

This amendment is being filed in response to an Office Action dated July 12, 2017 with a due date of response of October 12, 2017. The Applicants request continued examination, add one extra independent claim (4 independent and 16 dependent claims) and submit a credit card form PTO-2038 for payment of the fee. The Applicants believe no extension of time is needed but if this is not the case the Applicant contingently petition for an extension of time and authorize the USPTO to deduct any fees from their deposit account 502704. The following amendments to the specification and claims are respectfully submitted.

CLAIM AMENDMENTS:

Please amend claims 21-24, and 28, cancel claims 25-27, 29-30, and 33, and add new claims 41-46 as follows:

1-20. (Canceled)

21. (currently amended) A positive airway pressure (PAP) sleep disorder treatment ~~device~~system comprising:

a signal processing module having an input for connecting to a pulse oximeter sensor and an output;

a PAP device with an enclosure further comprising:

a blower having an air output;

an inputs adapted for receiving sensor data from the output of the signal processing module;
~~signals directly from outputs of at least two sensors including a respiratory effort sensor and a pulse oximeter sensor;~~ and

an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow data of a subject using the PAP;

a processor adapted for receiving sensor data from both the signal processing module and the airflow sensor and calculating symptom data of level of severity and/or an index of a level of severity of the subject's symptoms measured during use of the PAP device,
~~and processing signals from the respiratory effort belt and pulse oximeter sensors into data, for identifying central apneas and hypopneas from the data and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas, and further for determining an output pressure level of the PAP device and adjusting the blower output~~

~~based at least in part on the identified and differentiated central and obstructive apneas and hypopneas~~

a mask or a nasal cannula; and

a module transceiver adapted for receiving and transmitting the symptom data and/or the sensor data to a remote location.

22. (currently amended) The ~~device~~system of claim 21 wherein the inputs on the PAP device and the outputs of the signal processing module~~at least two sensors~~ are in wireless radio frequency bidirectional communication.

23. (currently amended) The ~~device~~system of claim 22 wherein the PAP ~~through the inputs~~ can command ~~at the~~ signal processing module to reconfigure the output of ~~at least one of the at least two sensors~~the pulse oximeter sensor.

24. (currently amended) The ~~device~~system of claim 21 wherein the signals from the ~~respiratory effort and pulse oximeter sensors are~~is processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

25. (cancelled)

26. (cancelled)

27. (cancelled)

28. (currently amended) A sleep disorder treatment system comprising:

a data acquisition system, the data acquisition system comprising a data acquisition device having at least ~~two~~ one inputs adapted for receiving a signals from sensors ~~including a respiratory effort belt sensor and a pulse oximeter sensor, an electronic component for processing the signal from the pulse oximeter sensor, and an separate input/output adapted for receiving~~ transmitting sensor data based on the signal from the pulse oximeter sensor to a positive airway pressure (PAP) device ~~signal from a sensor from a PAP device;~~

the PAP device ~~separate and in a different enclosure from the data acquisition device, the PAP device comprising:~~ a hose, a blower, ~~the~~ an airflow sensor with a signal adapted for measuring air flow and/or pressure respiratory airflow of a subject, an output input for providing the PAP device signal derived in part on the airflow and/or pressure signal for receiving sensor data from the data acquisition device, and a mask or nasal cannula for treating a subject's sleep disorder symptoms; and

a processor adapted for receiving sensor data from the ~~respiratory effort sensor and pulse oximeter sensor, and directly from the PAP device based on the sensor for measuring the~~ air flow and/or pressure sensor, the processor further adapted for identifying central apneas and hypopneas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas for calculating symptom data of a level of severity and/or index of a level of severity of the subject's symptoms measured during the subject's use of the PAP device, the processor still further either part of or external to the data acquisition PAP device and having an output, the output adapted for providing symptom data to a nonvolatile memory to be used for later transmission of the symptom data to a remote location ~~of the identified and differentiated apneas and hypopneas in order to adjust a treatment performed by the PAP device.~~

29. (cancelled)

30. (cancelled)

31. (previously presented) The sleep disorder treatment system of claim 28 wherein the signals from the sensors are processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

32. (previously presented) The sleep disorder treatment system of claim 28 wherein the sensor data output of the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and the processor.

33. (cancelled)

34. (previously presented) A sleep disorder treatment system comprising:

a data acquisition system, the data acquisition system comprising a data acquisition device having inputs for receiving signals from at least one physiological sensor, the data acquisition system for creating an output of the level of severity of a subject's sleep disorder or symptoms based in part on the signals from the sensors; and

an positive airway pressure apparatus for providing pressurized air and chemically treating a subject's sleep disorder or symptoms with a pharmaceutical agent, which can be adjusted at least in part using the output of the level of severity of the subject's sleep disorder from the data acquisition system.

35. (previously presented) The sleep disorder treatment system of claim 34 wherein the at least one physiological sensor is a pulse oximeter sensor.

36. (previously presented) The sleep disorder treatment system of claim 35 further including a respiratory effort sensor.

37. (previously presented) The sleep disorder treatment system of claim 34 wherein the output the level of severity from the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and a receiver on the apparatus for chemically treating a subject's sleep disorder or symptoms.

38. (previously presented) The sleep disorder treatment system of claim 37 wherein the apparatus for chemically treating a subject's sleep disorder or symptoms through the receiver can command a signal processing module to reconfigure the output of the data acquisition system.

39. (previously presented) The sleep disorder treatment system of claim 34 wherein the apparatus or method for chemically treating a subject's sleep disorder or symptoms is selected from the group consisting of a nebulizer and a controlled pump.

40. (previously presented) The sleep disorder treatment system of claim 34 wherein the signals from the sensors are processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

41. (new) A positive airway pressure (PAP) sleep disorder treatment system comprising:

a PAP device with an enclosure further comprising:

a blower having an air output,

an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow of a subject while using the PAP,

a processor adapted for receiving sensor data from the airflow sensor, and calculating both symptom data of a severity and/or an index of a subject's symptoms measured during use of the PAP device and data of usage of the PAP device, and

a mask or a nasal cannula, and

a radio frequency wireless module transceiver adapted for receiving and transmitting the symptom data and PAP device usage to a base station, cellular phone or PDA;

the base station, cellular phone or PDA being adapted with software or an algorithm to retransmit sensor data and data of usage of the PAP device to a remote internet site.

42. (new) The system of Claim 41, wherein the transceiver and the base station, cellular phone or PDA communicate with Bluetooth wireless.

43. (new) The system of Claim 41, wherein the index of the subject's symptoms is a respiratory disturbance index.

44. (new) The system of Claim 41, wherein the PAP device further comprises an electronic component adapted to allow the PAP device to be adjusted remotely based on the sensor data transmitted to the remote internet site.

45. (new) The system of Claim 41, wherein the base station, cellular phone or PDA can be reprogrammed remotely.

46. (new) The system of Claim 41, wherein the signals from the sensors are processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

REMARKS

Claims 21-40 were rejected in the Office Action issued July 12, 2017. The Applicants have amended claims 21-24, and 28, cancelled claims 25-27, 29-30, and 33, and added new claims 41-46. The Applicants respectfully traverse the Examiner's objections and rejections for the reasons set forth below.

Claim Objections

Claim 28 was objected to due to an informality. The Applicants thank the Examiner for his helpful comments and submit the claims as amended now overcomes this objections.

35 U.S.C. §112

Claims 21-40 were rejected under 35 U.S.C. §112(a) or 35 U.S.C. §112 (pre-AIA) first paragraph, as failing to comply with the written description requirement.

While the Applicants have addressed this rejection (they believe adequately) in their April 2017 amendment. Due to amendments to the claim the Applicants believe this rejection is moot. The Applicants would point out that Claim 34 has not been further amended but the Examiner's rejection was based on language that was taken out in the April 2017 amendment.

Given this explanation and the Applicants further amendments, the Applicants urge the Examiner to withdraw this rejection.

Claims 21-27 were rejected under 35 U.S.C. §112(b) or 35 U.S.C. §112 (pre-AIA) second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor regards as the invention.

The Applicants submit this rejection is moot in light of the claim amendments and urge the Examiner to withdraw this rejection.

Obviousness under 35 U.S.C. § 103

To provide legal context as well as an analytical framework for the remarks that follow, the Applicant wishes at the outset to respectfully point out that obviousness under

35 U.S.C. § 103(a) is a question of law based on underlying findings of fact, and that the Examiner bears the initial burden of factually supporting any conclusion of obviousness by establishing a *prima facie* case based on the facts. *See* MPEP 2142. Additionally, if the Examiner does not produce a *prima facie* case, the Applicant is under no obligation to submit evidence of nonobviousness. *Id.* To provide the proper factual support for an assertion of *prima facie* obviousness the Examiner must perform the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, (1966). These factual inquiries include (1) determining the scope and content of the prior art, (2) ascertaining the differences between the claimed invention and the prior art, and (3) determining the level of ordinary skill in the art at the time of the claimed invention. *Graham* also indicates that “secondary considerations” such as commercial success, long-felt but unsolved needs, failure of others and unexpected results may be considered in determining obviousness. Importantly, “the *Graham* factors, including secondary considerations when present, are the controlling inquiries in any obviousness analysis.” MPEP 2141(II) (emphasis added).

Against this backdrop it becomes clear that if the Examiner errs in performing any of the *Graham* factual inquiries, the Examiner cannot be deemed to have established a *prima facie* case of obviousness since such a conclusion would be unsupported by the factual foundation required by *Graham*. Examples of the Examiner committing error in performing the *Graham* factual inquiries include, among other things, failure to appreciate the differences between the claimed invention and the prior art (leading to a flawed conclusion under the second *Graham* factor), as well as a failure to determine the level of ordinary skill in the art (resulting in failure based on the third *Graham* factor).

With specific regard to the Examiner’s obligation under the third *Graham* factor to determine the level of ordinary skill in the art at the time of the claimed invention, the Applicant would direct particular attention to the requirement that “[a]ny obviousness rejection should include, either explicitly or implicitly in view of the prior art applied, an indication of the level of ordinary skill.” *See* MPEP 2141(II)(C) (emphasis added).

In addition, it is important to recognize that merely setting forth what the Examiner believes the level of ordinary skill should be or merely making the blanket assertion that the level of ordinary skill in the pertinent art is set forth in the references is insufficient to meet the Examiner’s burden under the third *Graham* factor and 35 U.S.C.

§ 103(a) if the Examiner is relying on a combination of references to demonstrate obviousness. This is because in addition to providing an “indication of the level of ordinary skill,” *MPEP 2141(II)(C)*, the Examiner must also provide an explanation of how and why the person of ordinary skill in the art at the time of the invention would have deemed it obvious to select and combine various references relied upon by the Examiner in such a way as to render the claimed invention obvious. *See In re Vaidyanathan*, Appeal No. 2009-1404, Fed. Cir., May 19, 2010 (nonprecedential) (faulting both the BPAI and Examiner for failing to provide “any evidentiary support or reasoning for why a person of ordinary skill in the field of the invention would have deemed it obvious to select and combine various steps from different references, in the manner of the applicant” and further noting that *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) “did not remove the need to anchor the analysis [of obviousness] in explanation of how a person of ordinary skill would select and apply the teachings of the references”).

Thus, in order for the Examiner to properly establish a *prima facie* case of obviousness the Examiner must first make the factual inquiries required by *Graham* and, if relying on a combination of references, must further provide some motivation to combine the references from the perspective of one of ordinary skill in the art. If the Examiner falls short in meeting any of these requirements then the Examiner has failed to establish a *prima facie* case and the applicant is entitled to the patent. *See In re Glaug*, 283 F.3d 1335 at 1338 (Fed. Cir. 2002) (“If the PTO fails to meet this burden [to establish a *prima facie* case], then the applicant is entitled to the patent”). As stated in the United States Patent and Trademark Office’s own rules, “[a] *prima facie* case of unpatentability is established when the information *compels* a conclusion that a claim is unpatentable under the *preponderance of evidence*, burden-of-proof standard...” *See* 37 C.F.R. § 1.56(b)(2)(ii) (emphasis added). Further, refusal to issue the patent in the face of failure to properly establish a *prima facie* case of obviousness or some other proper grounds for rejection places the Examiner and the USPTO in controversion of 35 U.S.C. § 131, which dictates that if after examination “it appears that the applicant is entitled to a patent under the law, the Director shall issue a patent therefor” (emphasis added).

In all of the above, the Applicants wish to emphasize the high bar to which the Examiner is held during the examination process and hereby respectfully request that in the ongoing prosecution of the present application that the Examiner provide explicit and detailed analysis of any grounds of rejection relied upon. *See, e.g., KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) (“[an obviousness] analysis should be made explicit,” citing *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006)).

Claims 21, 26-29, and 33 were rejected under pre-AIA 35 USC 103(a) as being unpatentable over Miles, U.S. Pat. No. 5,353,788 (“Miles”) in view of Hedner et al., U.S. Pat. Appln. 2008/0257349 (“Hedner”) and further in view of Wright et al., U.S. Pat. No. 6,832,609 (“Wright”). The Applicants traverse and submit that claims 21-23, 26 and 27 as amended are patentable over Miles in view of Hedner and further in view of Wright.

With respect to claim 21, Miles does not teach or disclose a positive airway pressure (PAP) sleep disorder treatment system comprising a signal processing module having an input for connecting to a pulse oximeter sensor and an output; a PAP device with an enclosure further comprising a blower having an air output, an input adapted for receiving sensor data from the output of the signal processing module, an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow data of a subject using the PAP, a processor adapted for receiving sensor data from both the signal processing module and the airflow sensor and calculating symptom data of level of severity and/or an index of a level of severity of the subject’s symptoms measured during use of the PAP device, and a mask or a nasal cannula; and a module transceiver adapted for receiving and transmitting the symptom data and/or the sensor data to a remote location as claimed.

Miles instead teaches of CPAP device with an airflow generator tethered to a physiological monitoring and actuating (“PMA”) device manufactured by Vitalog Monitoring Inc. The physiological monitoring device for monitoring 7 different physiological signals including a respiratory effort and pulse oximeter sensor. The only sensor on the CPAP device being an airflow sensor, the signal being feed through the tether 13 to the PMA device. The tether further being used to adjust the airflow of the CPAP when the patient is being tested. At the end of the testing procedure the raw data

is transferred from the PMA device to an external computer, the computer analyzes “the data, prepare[s] a report, and help[s] determine the final airflow pressure to be used in the long-term treatment of the patient.” Miles, Col. 5, lines 1-36. Miles does not teach or disclose a processor [on the PAP device] adapted for receiving sensor data from both the signal processing module and the airflow sensor and calculating symptom data of level of severity and/or an index of a level of severity of the subject’s symptoms measured during use of the PAP device as claimed. Instead Miles transfers the data from all of the sensors to a computer after the patient has brought the device back to the laboratory.

There is no indication that the pulse oximeter in Miles is feed through a signal processing module prior to being provided to a processor on the PAP device for performing calculations of [specific] symptom data of the claims. In addition, in Miles all of the data is feed to an external computer to help determine the final airflow pressure, and does not use a processor on the PAP device as claimed. In addition the claimed invention pulse oximeter and airflow sensors are the only sensors required for performing the calculations as claimed.

Hedner does not teach or disclose a positive airway pressure (PAP) sleep disorder treatment system comprising a signal processing module having an input for connecting to a pulse oximeter sensor and an output; a PAP device with an enclosure further comprising a blower having an air output, an input adapted for receiving sensor data from the output of the signal processing module, an airflow sensor internal to the PAP device adapted for measuring the respiratory airflow data of a subject using the PAP, a processor adapted for receiving sensor data from both the signal processing module and the airflow sensor and calculating symptom data of level of severity and/or an index of a level of severity of the subject’s symptoms measured during use of the PAP device, and a mask or a nasal cannula; and a module transceiver adapted for receiving and transmitting the symptom data and/or the sensor data to a remote location as claimed.

Hednar further does not teach a blower to ventilate with the ventilator of Hednar. Hednar further does not use a separate processing module for the input and output of the pulse oximeter, nor the calculation of level of severity of a subject’s sleep disorder symptoms. Finally, Hednar does not teach of a module transceiver for receiving and transmitting the symptom data/and or the sensor data to a remote location.

Finally Wright does not teach the claimed components.

The Applicants incorporate their above statements with respect to claim 21. In addition with respect to claim 28, Miles, Hedner and Wright also do not teach or disclose storing [specific] symptom data to a nonvolatile memory to be used for later transmission of the symptom data to a remote location as claimed.

In an attempt to explain the purported combination of these references, the Examiner merely makes a number of conclusory statements without the proper underlying factual support. However, the Applicants respectfully submit that this supposed motivation is flawed and does not sufficiently meet the Examiner's required burden of proof. As such, a person having ordinary skill in the art would find no motivation in any of the references to combine them, and would understand that such combination would fail to teach all the limitations of the present claims. Further, the Examiner fails to provide any valid reasoning or support for the conclusory statement of what a person of skill in the art would have found obvious at the time the invention was made. Further still, the Examiner has failed to explicitly define or establish the level of ordinary skill in the art, and neither reference adequately provides the level implicitly. Numerous questions remain unasked, and unanswered, as to what the level of ordinary skill in the art is, and why a person having ordinary skill in the art would find it obvious to combine these references. For example, what are the scope and content of the Miles, Hednar and Wright references? What are the similarities between the claimed invention and Miles, Hednar and Wright? What are the differences? What exactly is the level of ordinary skill in the art, and why is that pertinent to the problem at hand? Instead, the Examiner relies upon a conclusory statement purporting to explain what a person of ordinary skill in the art would understand, without providing the required factual reasoning behind his flawed conclusion. As noted above, the Examiner has the burden of providing evidence to support his analysis of the Graham factors, but has failed to do so. The Applicants therefore again respectfully request the Examiner provide an explicit statement as to what the level of ordinary skill in the art is, or what in the references points to the level of ordinary skill in the art. The Applicants further suggest that what would have been obvious to a person of ordinary skill in the art at the time of the invention must be in the personal knowledge of the Examiner, and requested that he

therefore submit an affidavit detailing as specifically as possible the personal knowledge upon which his rejection is based. *See* 37 C.F.R. § 1.104(d) (2). The Examiner noted that it appears the above arguments did not reference any particular claim limitation, but instead merely address the construction of the rejection.

The Applicants further respectfully submit that the Examiner has not given any valid teaching, suggestion, or motivation in or external to the references, or from the references cited as a whole, for the person of ordinary skill to have modified the reference of John to include the systems of Mile, Hednar and Wright. The Applicants respectfully request that the Examiner either support the conclusions of motivation with references or, if such allegation is based on personal knowledge, provide an affidavit as to such including the factual underpinning for such conclusions. *See* 37 C.F.R. § 2144.03. *In re Eynde* states that “[t]he facts constituting the state of the art are normally subject to the possibility of rational disagreement among reasonable men [and women] and are not amenable to the taking of [judicial] notice.” *In re Eynde*, 480 F.2d 1364, 1370; 178 USPQ 470, 474 (CCPA 1973). Similarly, *KSR Int’l Co. v. Teleflex, Inc.* requires that “[obviousness] analysis should be made explicit.” *KSR Int’l Co. v. Teleflex, Inc.* No. 04-1350 at 14 (U.S. Apr.30, 2007). *KSR* goes on to explain that “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning.” It is often “important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* at 15.

Given these differences between the reference and the claimed invention, the Applicants request the Examiner withdraw this rejection.

Claims 22, 23, 30 and 32 were rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Miles in view of Wright et al. U.S. Pat. No. 6,832,609 (“Wright”), as applied to claims 21 and 28, respectively, above, and further in view of Stahmann et al., U.S. Pat. No. 7,757,690 (“Stahmann”).

The Applicants incorporate their comments above with respect Miles and Wright. With respect to claims 22 and 32, Stahmann does not teach or disclose wherein the signal processing module output of the data acquisition system is transmitted wirelessly by

bidirectional radio frequency between the data acquisition system and a receiver on the PAP device as claimed. The Examiner instead cites to a bidirectional wireless communication between a fully or partially “implantable device” and an external medical device. The present invention does not claim an “implantable” medical device nor communications with such a device. Furthermore, Stahmann teaches moderating therapy during sleep using “physiologic data acquired during non-sleep”. The present invention in contrast adjusts therapy for sleep using physiological data acquired during sleep. The Examiner appears to be comparing systems that function differently or somewhat in an opposite fashion.

With respect to claim 23, Miles does not teach or disclose wherein the data acquisition system through a receiver can command a signal processing module to reconfigure the data output based on the sensor signal of the PAP as claimed. The Examiner cites to Miles Col. 4, lines 40-43 for this teaching, but as the Examiner admits this “control[s] breathing air pressure at the breathing mask 26.” One skilled in the art would understand controlling breathing pressure of the CPAP is not the same as controlling the output of the data one of the sensors output from a separate signal processing module to a PAP device.

In an attempt to explain the purported combination of these references, the Examiner merely makes a number of conclusory statements without the proper underlying factual support. However, the Applicants respectfully submit that this supposed motivation is flawed and does not sufficiently meet the Examiner’s required burden of proof. As such, a person having ordinary skill in the art would find no motivation in any of the references to combine them, and would understand that such combination would fail to teach all the limitations of the present claims. Further, the Examiner fails to provide any valid reasoning or support for the conclusory statement of what a person of skill in the art would have found obvious at the time the invention was made. Further still, the Examiner has failed to explicitly define or establish the level of ordinary skill in the art, and neither reference adequately provides the level implicitly. Numerous questions remain unasked, and unanswered, as to what the level of ordinary skill in the art is, and why a person having ordinary skill in the art would find it obvious to combine these references. For example, what are the scope and content of the Miles,

Wright and Stahmann references? What are the similarities between the claimed invention and Miles, Wright and Stahmann? What are the differences? What exactly is the level of ordinary skill in the art, and why is that pertinent to the problem at hand? Instead, the Examiner relies upon a conclusory statement purporting to explain what a person of ordinary skill in the art would understand, without providing the required factual reasoning behind his flawed conclusion. As noted above, the Examiner has the burden of providing evidence to support his analysis of the Graham factors, but has failed to do so. The Applicants therefore again respectfully request the Examiner provide an explicit statement as to what the level of ordinary skill in the art is, or what in the references points to the level of ordinary skill in the art. The Applicants further suggest that what would have been obvious to a person of ordinary skill in the art at the time of the invention must be in the personal knowledge of the Examiner, and requested that he therefore submit an affidavit detailing as specifically as possible the personal knowledge upon which his rejection is based. *See* 37 C.F.R. § 1.104(d) (2). The Examiner noted that it appears the above arguments did not reference any particular claim limitation, but instead merely address the construction of the rejection.

The Applicants further respectfully submit that the Examiner has not given any valid teaching, suggestion, or motivation in or external to the references, or from the references cited as a whole, for the person of ordinary skill to have modified the reference of John to include the systems of Miles, Wright and Stahmann. The Applicants respectfully request that the Examiner either support the conclusions of motivation with references or, if such allegation is based on personal knowledge, provide an affidavit as to such including the factual underpinning for such conclusions. *See* 37 C.F.R. § 2144.03. *In re Eynde* states that “[t]he facts constituting the state of the art are normally subject to the possibility of rational disagreement among reasonable men [and women] and are not amenable to the taking of [judicial] notice.” *In re Eynde*, 480 F.2d 1364, 1370; 178 USPQ 470, 474 (CCPA 1973). Similarly, *KSR Int’l Co. v. Teleflex, Inc.* requires that “[obviousness] analysis should be made explicit.” *KSR Int’l Co. v. Teleflex, Inc.* No. 04-1350 at 14 (U.S. Apr.30, 2007). *KSR* goes on to explain that “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning.” It is often “important to identify a reason that

would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* at 15.

Given these differences between the reference and the claimed invention, the Applicants request the Examiner withdraw this rejection.

CONCLUSION:

The Applicant respectfully submits that this application is in condition for allowance and that action is earnestly solicited.

Respectfully submitted,

10/12/2017

Dated

/Brian M. Kolkowski/

Brian M. Kolkowski

Reg. No.: 36,847

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Electronic Patent Application Fee Transmittal

Application Number:	13440116			
Filing Date:	05-Apr-2012			
Title of Invention:	Devices and Methods for Sleep Disorder Diagnosis and Treatment			
First Named Inventor/Applicant Name:	Hani Kayyali			
Filer:	Brian M. Kolkowski			
Attorney Docket Number:	CMD-087			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
INDEPENDENT CLAIMS IN EXCESS OF 3	2201	1	210	210
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
RCE- 2ND AND SUBSEQUENT REQUEST	2820	1	850	850
Total in USD (\$)				1060

Electronic Acknowledgement Receipt

EFS ID:	30635868
Application Number:	13440116
International Application Number:	
Confirmation Number:	4463
Title of Invention:	Devices and Methods for Sleep Disorder Diagnosis and Treatment
First Named Inventor/Applicant Name:	Hani Kayyali
Customer Number:	81177
Filer:	Brian M. Kolkowski
Filer Authorized By:	
Attorney Docket Number:	CMD-087
Receipt Date:	12-OCT-2017
Filing Date:	05-APR-2012
Time Stamp:	12:34:07
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 1060
RAM confirmation Number	101217INTEFSW12370400
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

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File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	CMD_087_RCE_Form_Oct_12_2017.pdf	63526	no	1
			4e5974591a68aae1290ba112a4451bc682b73620		
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
2		CMD_087_amendment_and_RCE_oct12_2017.pdf	161653	yes	17
			c03b1d54c66f990f03f5887b9b3bffd4cd7e6005		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment Submitted/Entered with Filing of CPA/RCE		1	1	
	Claims		2	7	
	Response After Final Action		8	17	
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32341	no	2
			e303f8ab83d44fe0a8ff51bc59100e97e6871f8bd		
Warnings:					
Information:					
Total Files Size (in bytes):			257520		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/440,116	Filing Date 04/05/2012	☐ To be Mailed
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 ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	(Column 1)	(Column 2)	(Column 3)	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	10/12/2017	CLAIMS REMAINING AFTER AMENDMENT					
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X \$40 =	0
	Independent (37 CFR 1.16(h))	* 4	Minus	*** 3	= 1	X \$210 =	210
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
TOTAL ADD'L FEE							210

AMENDMENT	(Column 1)	(Column 2)	(Column 3)	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
		CLAIMS REMAINING AFTER AMENDMENT					
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
TOTAL ADD'L FEE							

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

 SLIE
KIMBERLY WHITE

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/440,116	04/05/2012	Hani Kayyali	CMD-087	4463

81177 7590 07/12/2017
Cleveland Medical Devices Inc.
4415 Euclid Ave. Ste. 500
Cleveland, OH 44103

EXAMINER

NATNITHADHA, NAVIN

ART UNIT	PAPER NUMBER
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3735

MAIL DATE	DELIVERY MODE
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07/12/2017

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 13/440,116	Applicant(s) KAYYALI ET AL.	
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2017.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

- 5) ☒ Claim(s) 21-40 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 21-40 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some** c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☐ Notice of References Cited (PTO-892) | 3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____. | 4) ☐ Other: ____. |

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application is being examined under the pre-AIA first to invent provisions.

Response to Amendment

2. According to the Amendment, filed 03 April 2017, the status of the claims is as follows:

Claims 21, 28, 30, 34, and 39 are currently amended;

Claims 22-27, 29, 31-33, 35-38, and 40 are previously presented; and

Claims 1-20 are cancelled.

3. The objection of claims 21 and 28 are withdrawn in view of the Amendment, filed 03 April 2017.

Response to Arguments

4. Applicant's arguments, see Remarks, pp. 7-8, filed 03 April 2017, with respect to the rejection of claims 28-40 under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement, have been fully considered, but they are not persuasive.

Applicant contends, see Remarks, pp. 7-8, the following:

...The Applicants Specification is filled with examples and description of how the processor and output of the claimed invention are intended to work. The description of central and obstructive sleep apneas on pages-9 and 10 of the Specification make it clear that, obstructive and central sleep apneas can. be measure by looking at blockage and cessation of respiratory effort respectively. Pages 10-14 of the specification, make it clear these symptoms can be measured by various sensors including respiratory effort, belts, air flow and pressure sensors, as well as with

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pulse oximeters. Example pg. % Hoes 12-13 of the Specification states the “present Invention includes devices and sensors for diagnosing a subject’s symptoms”.

The Specification, pgs. 14-35, further describes in great detail how these sensors signals are processed with a processor and provide data from the processor to an output. The Specification of pg. 35 further states “[v]arious sleeping disorders have symptoms that can be predicted based on various combinations of physiological signals or data. Various embodiments of the present invention include the approach to identifying various characteristics shifts in the power spectrum of the sensors being sued to monitor these physiological conditions. This characteristic shift in these signals or data can be identified and used to trigger an actuator on the physical or chemical treatment device(s) to provide for delivery of a certain level of treatment/”, and pg. 39 states “physical methods of treating sleeping disorders and symptoms include continuous positive airway pressure (CPAP)...”.

The Specification, pgs. 39-41, further describe the processor determining a level of severity of the symptoms or disease state and outputting a signal to adjust the physical or chemical treatment, specifically including the PAP or chemical methods.

Given the more than adequate description as to these various elements of claims 28 and 34 as now amended and previously rejected to by the Examiner as indefinite the Applicants urge the Examiner to withdraw this rejection.

However, these arguments are not persuasive. Examiner closely inspected the above cited portions (i.e. pages 10-35 and 39-41) of Applicant’s original disclosure, filed 05 April 2015. Nowhere in these cited portions does the original disclosure specifically provide support for “***differentiating the central apneas and hyponeas from obstructive apneas and hypopneas***”. At best, the cited portions merely provide support for predictively identifying symptoms of central apneas and obstructive apneas from data (“Various sleeping disorders have symptoms that can be predicted based on various combinations of physiological signals or data. Various embodiments of the present invention include the approach to identifying these symptoms prior to onset by

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identifying various characteristic shifts in the power spectrum of the 20 sensors being used to monitor these physiological conditions.”, see page 35, lines 16-20) and determining a quantitative level of severity of the sleeping disorder and/or symptom using at least EEG data (“One or more sensors are used to develop the data or signals used in the present invention for determining a quantitative level of severity of a subject’s sleeping disorder and/or symptoms. In various embodiments, preferably at least two EEG electrodes are used to develop this data. In other embodiments, preferably, at least two ECG electrodes are used. In still other embodiments, preferably a pulse oximeter is used. In still even other embodiments, preferably, either an O² or CO² blood gas monitor is used.”, see page 33, lines 4-10). Furthermore, the original disclosure fails to even mention “hyponeas”, “hypopneas”, or “differentiating” (or the synonymous term “distinguishing”).

5. Applicant’s arguments, see Remarks, pp. 11-12, filed 03 April 2017, with respect to the rejection of claims 21, 26, and 27 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Miles, U.S. Patent No. 5,353,788 A (“Miles”), in view of Hedner et al, U.S. Patent Application Publication No. 2008/0257349 A1 (“Hedner”), have been fully considered, but they are not persuasive.

Applicant contends, see Remarks, pp. 11-12, the following:

With respect to claim 21, Miles does not teach or disclose a positive airway pressure (PAP) sleep disorder treatment device comprising an

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enclosure comprising a blower, inputs for receiving signals directly from outputs of at least two sensors including a respiratory effort belt sensor and a pulse oximeter sensor; and a processor for receiving and processing signals from the respiratory effort and pulse oximeter sensors into data, for identifying central apneas and hypopneas from the data and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas, and further for determining an output pressure level of the PAP device based at least in part on the signals from the respiratory effort and pulse oximeter sensors as claimed.

Miles instead teaches of CPAP device with an airflow generator tethered to a physiological monitoring and actuating ("PMA") device manufactured by Vitalog Monitoring Inc. The physiological monitoring device for monitoring 7 different physiological signals including a respiratory effort and pulse oximeter sensor. The only sensor on the CPAP device being an airflow sensor, the signal being feed through the tether 13 to the PMA device. The tether further being used to adjust the airflow of the CPAP when the patient is being tested. At the end of the testing procedure the raw data is transferred from the PMA device to an external computer, the computer analyzes "the data, prepare[s] a report, and help[s] determine the final airflow pressure to be used in the long-term treatment, of the patient." Miles, Col. 5, lines 1-36.

The pulse oximeter and respiratory belt in Miles are being feed directly into the PMA device 12, and not directly into inputs on the CPAP device as claimed. In addition, in Miles all of the data is feed to an external computer to help determine the final airflow pressure, and does not use a processor on the PAP device as claimed. Further, in Miles at least 8 sensors and their data are used to help determine the airflow pressure for the long term treatment, whereas in the claimed invention the respiratory effort and pulse oximeter sensors are the only sensors required for adjusting the pressure level of the PAP device as claimed.

Hedner does not teach or disclose a positive airway pressure (PAP) sleep disorder treatment device comprising an enclosure comprising a blower, inputs for receiving signals directly from outputs of at least two sensors including a respiratory effort belt sensor and a pulse oximeter sensor; and a processor for receiving, and processing signals from the respiratory effort and pulse oximeter sensors into data, for identifying central apneas and hypopneas from the data and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas, and further for determining an output pressure level, of the PAP device based at least in part on the signals from the respiratory effort and pulse oximeter sensors as claimed.

Hednar further does not teach a blower nor the use of a respiratory effort belt sensor to control the ventilator of Hednar. Further the processor in Hednar does not teaching identification and differentiation of obstructive

and central apneas using these specific sensors and the processor on a PAP.

With respect to claim 22, both Miles and Hednar do not teach wherein the inputs on the PAP device and the outputs of the at least two sensors are in wireless radio frequency bidirectional communication as claimed. The Examiner refers to Col 4, 0. 28-31 of Miles in making his rejection but this has nothing to do with wireless communication between the sensors and the inputs on the PAP device.

With respect to claim 23, both Miles and Hednar do not teach wherein the PAP through the inputs can command a signal processing module to reconfigure the output of at least one of the at least two sensors as claimed. The Examiner refers to Col. 4, ll. 40-43 but this teaching refers to controlling the breathing gas pressure not the providing command signals through the *inputs to the sensors* to control the output of the *sensor*.

Given these differences between the reference and the claimed invention, the Applicants request the Examiner withdraw this rejection.

However, Applicant's arguments are not persuasive.

As to claim 21, Miles teaches a positive airway pressure (PAP) sleep disorder treatment device as "physiological monitor and actuating system 22", and inputs as "PMA-device 12", which receives signals directly from a respiratory effort sensor, i.e. "chest and abdominal respiration sensors 7" and a pulse oximeter sensor, i.e. "pulse oximeter sensor 5", as shown in fig. 2. Thus, Miles does in fact teach the claim 21 as recited. In addition, Applicant's argument "whereas in the claimed invention the respiratory effort and pulse oximeter sensors are the only sensors required for adjusting the pressure level of the PAP device as claimed" is contrary to the claim's limitation which uses the phrase "outputs of **at least two sensors** including a respiratory effort sensor and a pulse oximeter sensor" (emphasis added by Examiner). Thus, Miles teaching of 8 sensors is entirely within the scope of the claimed invention.

As to Applicant's arguments directed to Hednar, these arguments are rendered moot in view of the new grounds of rejection, which are necessitated by amendment, as being unpatentable over Miles in view of Hednar, and further in view of Wright, where Wright teaches the limitations "a processor for... identifying central apneas and hyponeas from the data and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas".

As to claims 22 and 23, Applicant's arguments are persuasive. However, these claims are rejected on new grounds of rejection, which are necessitated by amendment of base claim 21.

6. Applicant's arguments, see Remarks, pp. 13-14, filed 03 April 2017, with respect to the rejection of claims 28, 29, and 33 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Miles, U.S. Patent No. 5,353,788 A ("Miles"), in view of Wright et al, U.S. Patent No. 6,832,609 B2 ("Wright"), have been fully considered, but they are not persuasive.

Applicant contends, see Remarks, pp. 13-14, the following:

With respect to claim 28, Miles does not teach or disclose a sleep disorder treatment system comprising a data acquisition system, the data acquisition system comprising a data acquisition device having inputs adapted for receiving signals from sensors including a respiratory effort sensor and a pulse oximeter sensor, and an input adapted for receiving a treatment device signal from a sensor from a treatment device; a positive airway pressure (PAP) device, the treatment device separate and in a different enclosure from the data acquisition device, that includes a hose, the sensor with a signal for measuring air flow and/or pressure, an output for providing the treatment device signal derived in part on the airflow and/or pressure signal, and a mask for treating a subject's sleep disorder symptoms; and a processor adapted for receiving data from the respiratory effort sensor, pulse oximeter sensor, and the sensor for measuring air flow and/or pressure and further for identifying central

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apneas and hypopneas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas, the processor either part of or external to the data acquisition device and having an output the output adapted for providing data of the identified and differentiated apneas and hypopneas in order to allow for modifying treatment with the FAP device as claimed.

Miles instead teaches of CPAP device with an airflow generator tethered to a physiological monitoring and actuating ("PMA") device manufactured by Vitalog Monitoring Inc. The physiological monitoring device for monitoring 7 different physiological signals including a respiratory effort and pulse oximeter sensor. The only sensor on the CPAP device being an airflow sensor, the signal being feed through the tether 13 to the PMA device. The tether further being used to adjust the airflow of the CPAP when the patient is being tested. At the end of the testing procedure the raw data is transferred from the PMA device to an external computer, the computer analyzes "the data, prepare[s] a report, and help[s] determine the final airflow pressure to be used in the long-term, treatment of the patient." Miles, Col. 5, lines 1-36.

In Miles at least 8 sensors and their data are feed from the PMA device 12 into an external computer and then used to help determine the airflow pressure for the long term treatment of the patient. In the present invention while the processor can be external from the data acquisition device and the PAP, the processor is used for identifying central apneas and hypopneas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas and the output on the processor is adapted for providing data of the Identified and differentiated' apneas and hypopneas in order to allow for modifying treatment with the PAP device. There is no indication that Miles' computer can provide such information and furthermore it is clear this is not inherent in the teachings of Miles.

With respect to claim 28, Wright does not adjust the CFAP treatment based on the identified and differentiated central and obstructive apneas but merely creates an index which is used to determine what type of PAP device the patient should be prescribed. Berthon-Jones further does not teach or disclose identifying and differentiating central and obstructive apneas using the 3 sensors or a combination thereof in the present invention, but rather uses a pressure waveform, or a cardiac signal in snake this determination.

With respect to claim 29, both Miles and Wright do not teach or disclose the sleep disorder treatment system of claim 28 wherein the PAP device further comprises an airflow sensor with a signal, and a processor that receives and processes signals from the airflow sensor in addition to the output from the data acquisition system to determine the output pressure level of the PAP device as claimed.

Given these differences between the reference and the claimed invention, the Applicants request the Examiner withdraw this rejection.

However, these arguments are not persuasive.

As to claim 28, in the prior Office Action, p. 16, mailed 03 January 2017, Examiner stated that Miles' computer did not teach the limitation "for identifying central apneas and hyponeas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas". Wright was used in the rejection to teach this claim limitation. Wright explicitly describes how such identification and differentiating is performed in col. 5, ll. 4-33.

In addition, Wright teaches the limitation "the output adapted for providing data of the identified and differentiated apneas and hypopneas in order to adjust a treatment performed by the PAP device". Please note that "in order to adjust a treatment performed by the PAP device", as written, is not a further limitation of the processor but intended use of the output. Thus, Applicant's argument "Wright does not adjust the CPAP treatment based on the identified and differentiated central and obstructive apneas" is not required by the claim. Besides, Wright teaches "An additional index may be a function of the pressure delivered to the patient. **In a computer controlled CPAP device such as ResMed Ltd.'s AUTOSET T.TM. which can automatically increase the CPAP pressure during an obstructive apnea to stabilize the airway, a record of the pressures used to treat the patient may provide an indication of the changing status of the patient.**", see col. 6, ll. 7-13 (emphasis added by Examiner). Thus, contrary to Applicant's contention, Wright does

adjust CPAP treatment based on identified and differentiated obstructive apnea using the index.

As to claim 29, contrary to Applicant's contention, Miles does teach the PAP device 1 further comprises an airflow sensor ("pressure transducer located in the CPAP device 1") with a signal, and a processor ("Analysis Program") 25 that receives and processes signals from the airflow sensor in addition to the output from the data acquisition system ("collector") 22 to determine the output pressure level of the PAP device 1 (see col. 4, ll. 55-62, and col. 5, ll. 3-36).

7. Applicant's arguments, see Remarks, pp. 14-15, filed 03 April 2017, with respect to the rejection of claims 30 and 32 under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Miles, U.S. Patent No. 5,353,788 A ("Miles"), in view of Wright et al, U.S. Patent No. 6,832,609 B2 ("Wright"), and further in view of Stahmann et al, U.S. Patent No. 7,757,690 B2 ("Stahmann"), have been fully considered, but they are not persuasive.

Applicant contends, see Remarks, pp. 14-15, the following:

The Applicants incorporate their comments above with respect Miles and Wright. With respect to claim 32, Stahmann does not teach or disclose wherein the sensor output of the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and a receiver on the PAP device as claimed.

The Examiner instead cites to a bidirectional wireless communication between a fully or partially "implantable device" and an external medical device. The present invention does not claim an "implantable" medical device nor communications with such a device. Furthermore, Stahmann teaches moderating therapy during sleep using "physiologic data acquired during non-sleep." The present invention in contrast adjusts therapy for sleep using physiological data acquired during sleep. The Examiner appears to be comparing systems that, function differently or somewhat in an opposite fashion.

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With respect to claim 30, Miles does not teach or disclose wherein the data acquisition system through a receiver can command a signal processing module to reconfigure the data output based on the sensor signal of the PAP as claimed. The Examiner cites to Miles Col. 4, lines 40-43 for this teaching, but as the Examiner admits this "control[s] breathing air pressure at the breathing mask 26." One skilled in the art would understanding controlling breathing pressure of the CPAP is not the same as controlling the output of the data one of the sensors output from a PAP device sensor.

However, these arguments are not persuasive.

As to claim 32, the modification of Miles in view of Wright does not incorporate the teaching of an implanted device and an external device nor does it incorporate Stahmann's teaching of moderating therapy during sleep; instead the modification using Stahmann's teaching is solely to modify Miles in view of Wright to incorporate the teaching of bidirectional radio frequency communication between two devices. Furthermore, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

As to claim 30, the claim as amended now recites the limitation "wherein the data acquisition system through a receiver can command a signal processing module to reconfigure the data output based on the sensor signal of the PAP". However, this amended limitation constitutes new matter and is discussed below.

Claim Objections

8. Claim 28 is objected to because of the following informalities:

In line 13, “the respiratory effort sensor” should be amended to “the respiratory effort belt sensor” in order to provide proper antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

(a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of 35 U.S.C. 112(b):

(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 21-40 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites the limitations “a processor adapted for... identifying central apneas and hyponeas from the data and differentiating the central apneas and

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hypopneas from obstructive apneas and hypopneas, and further for determining, an output pressure level of the PAP device and adjusting the blower output, based at least in part on differentiated central and obstructive apneas and hypopneas". Claim 28 recites the limitations "the processor further adapted for identifying central apneas and hyponeas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypoeopneas, the processor still further either part of or external to the data acquisition device and having an output, the output adapted for providing data of the identified and differentiated apneas and hypopneas In order to adjust a treatment performed by the PAP device". The original disclosure, filed 05 April 2012, merely provide support for predictively identifying symptoms of central apneas and obstructive apneas from data ("Various sleeping disorders have symptoms that can be predicted based on various combinations of physiological signals or data. Various embodiments of the present invention include the approach to identifying these symptoms prior to onset by identifying various characteristic shifts in the power spectrum of the 20 sensors being used to monitor these physiological conditions.", see page 35, lines 16-20) and determining a quantitative level of severity of the sleeping disorder and/or symptom using at least EEG data ("One or more sensors are used to develop the data or signals used in the present invention for determining a quantitative level of severity of a subject's sleeping disorder and/or symptoms. In various embodiments, preferably at least two

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EEG electrodes are used to develop this data. In other embodiments, preferably, at least two ECG electrodes are used. In still other embodiments, preferably a pulse oximeter is used. In still even other embodiments, preferably, either an O² or CO² blood gas monitor is used.”, see page 33, lines 4-10). Furthermore, the original disclosure fails to even mention “hyponeas”, “hypopneas”, or “differentiating” (or the synonymous term “distinguishing”). The disclosure is entirely silent on specifically how the processor and output perform the claimed functions above.

Claims 22-27 and 29-33 are rejected due to their dependencies to claims 21 and 28, respectively.

Claim 34 recites the limitations “an positive airway pressure apparatus for providing pressurized air and chemically treating a subject’s sleep disorder or symptoms with additional CO₂ resulting in a concentration higher than atmospheric concentration of carbon dioxide in air, or a pharmaceutical agent, either which can be adjusted at least in part using the output of the level of severity of the subject’s sleep disorder from the data acquisition system”. However, the disclosure is entirely silent on specifically how the positive airway pressure apparatus is able to provide pressurized air and chemically treat a subject’s sleep disorder or symptoms with additional CO₂ resulting in a concentration higher than atmospheric concentration of carbon dioxide in air, or a pharmaceutical agent, either which can be adjusted at least in part using the output of the level of severity.

Claims 35-40 are rejected due to their dependencies to claim 34.

As to claim 30, the claim as amended now recites the limitation “wherein the data acquisition system through a receiver can command a signal processing module to reconfigure the data output based on the sensor signal of the PAP”. However, the original disclosure, filed 05 April 2012, merely supports reconfiguring the pressure level output of the PAP. The disclosure is entirely silent on specifically how the data acquisition system through a receiver can command a signal processing module to reconfigure the data output based on the sensor signal of the PAP. Thus, this claim constitutes new matter.

10. Claims 21-27 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

Claim 21 recites, as amended, the limitation “a blower having an output” in line 4 and then the limitation “for determining an output pressure level of the PAP device and adjusting the blower output based at least in part on the identified and differentiated central and obstructive apneas and hypopneas” in lines 10-13. It is not clear whether the determined output pressure level of the PAP device and the adjusted blower output are the same (as described in the Specification) or distinct parameters (not supported by the Specification, in which Examiner requests Applicant cite support for this teaching in the next response).

Claims 22-27 are rejected due to their dependencies to claim 21.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under pre-AIA 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under pre-AIA 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of pre-AIA 35 U.S.C. 103(c) and potential pre-AIA 35 U.S.C. 102(e), (f) or (g) prior art under pre-AIA 35 U.S.C. 103(a).

11. Claims 21, 26-29, and 33 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Miles, U.S. Patent No. 5,353,788 A ("Miles"), in view of

**Hedner et al, U.S. Patent Application Publication No. 2008/0257349 A1 (“Hedner”),
and further in view of Wright et al, U.S. Patent No. 6,832,609 B2 (“Wright”).**

As to Claim 21, Miles teaches the following:

A positive airway pressure (PAP) sleep disorder treatment device
(“physiological monitor and actuating system”) 22 (“This invention relates to a medical device and method for automatically determining the correct airflow pressure to be used for the treatment of a serious breathing problem during sleep known as obstructive sleep apnea.”, see col. 1, ll. 9-13, “Data from sensors 21 are collected in physiological monitor and actuating system 22. The monitoring and actuating system 22 includes the basic procedure and control program.”, see col. 4, ll. 37-40, and figs. 1 and 2) comprising:

a blower (“nasal-CPAP airflow generator (CPAP device)”) 1 having an output (“passes air at elevated pressure into the nasal passages”, not labeled) (“The nasal-CPAP airflow generator (CPAP device) 1 passes air at elevated pressure into the nasal passages through a large flexible tube 2 and a nasal mask 3.”, see col. 5, l. 1);

inputs (“PMA-device”) 12 for receiving signals directly from outputs of at least two sensors including a respiratory effort sensor (“chest and abdominal respiration sensors”) 7 and a pulse oximeter sensor (“pulse oximeter sensor for measuring the oxygen saturation in the blood”) 5 (see fig. 2 and “The apparatus may further include additional interface 16

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for connection to additional diagnosis or patient information gathering devices.”, see col. 4, ll. 39-41); and

a processor (“physiological monitor and actuating system”) 22

adapted

for receiving and processing signals from the respiratory effort belt and pulse oximeter sensors into data (“Data from sensors 21 are collected in physiological monitor and actuating system 22. The monitoring and actuating system 22 includes the basic procedure and control program.”, see col. 4, ll. 37-40; and “Among the vital signs monitored may be chest and abdominal movement, airflow, airflow pressure, breathing sounds, intrathoracic pressure, blood oxygen saturation, heart rate, overall physical movement, leg movement, eye movement, EEG, and sleeping position. All data gathered from the sensors are stored in the Data Collector 22 for later processing by the Analysis Program 25. One or more of the physiological data sensed are used for modifying the airflow pressure cycle. However, it is within the scope of the present invention to use additional or alternative physiological data in order to modify the airflow pressure cycle.”, see col. 9, ll. 20-28), and further

for determining an output pressure level of the PAP device 1 and adjusting the blower 1 output ("Data from sensors 21 are collected in physiological monitor and actuating system 22. The monitoring and actuating system 22 includes the basic procedure and control program. Depending on time, entered set-up parameters, and data received via sensors 21, system 22 will issue control signals via outputs 24 to control breathing air pressure at breathing mask 26.", see col. 4, ll. 37-43).

Miles does not teach the claimed structural arrangement including the following:

an enclosure comprising

a blower...,

inputs...; and

a processor...

However, Hedner teaches the following:

A positive airway pressure (PAP) sleep disorder treatment device

("ventilation system") ("It is an object of the present invention to provide a system that remedies the above mentioned problems and provides an improved breathing gas ventilator technology for use in conjunction with ventilatory disorders, such as for instance as a continuous positive airway pressure (CPAP) method, such as

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an automatic adaptive CPAP (AACPPAP) .", see para. [0012], and fig. 1)

comprising:

an enclosure ("mechanical ventilator") 4 ("A ventilation system comprise a mechanical ventilator 4 supplying pressurized breathing gas...", see para. [0025]) comprising

a blower ("Pressure/flow regulator") 12 ("12 Pressure/flow regulator", see para. [0096]),

inputs ("The processing unit 11 measures one or several input parameters 5, 6, 7, 8, and 9 obtained from the patient 1 describing the physiological status of the patient. Data indicative of patient status is obtained using sensors 5, 6, 7, 8, and 9 connected to the patient and transferred to the processing unit 11 via connection means 5a, 6a, 7a, 8a, and 9a. These input parameters may be for instance flow or pressure signals, data obtained from EEG, EMG, EOG, and ECG measurements, O.sub.2 and/or CO.sub.2 measurements in relation to the patient, body temperature, blood pressure, SpO2 (oxygen saturation), eye movements, and sound measurements. It should be understood that the invention is not limited to the above mentioned input parameters but other input parameters may be used. In FIG. 1 not all sensors 5, 6, 7, 8, and 9 and sensor

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connection means 5a, 6a, 7a, 8a, and 9a are depicted, only a subset is shown in order to illustrate a schematical view of the system and the depicted locations are only given as examples and are in no way limiting to the invention.”, see para. [0027], and thus, the “ventilator 4” inherently includes inputs as ports, terminals, or interface for “connection means 5a, 6a, 7a, 8a, and 9a” to electrically connect to the “processing unit 11”); and

a processor (“processing unit”) 11 (see para. [0027]).

Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Miles structural components into one enclosure, as exemplified by Hedner, in order to obtain the well-known advantage of a more compact device and is matter of obvious engineering choice. See MPEP 2144.04(V)(B), and *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965) (A claim to a fluid transporting vehicle was rejected as obvious over a prior art reference which differed from the prior art in claiming a brake drum integral with a clamping means, whereas the brake disc and clamp of the prior art comprise several parts rigidly secured together as a single unit. The court affirmed the rejection holding, among other reasons, “that the use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice.”).

Miles in view of Hedner does not teach the following:

for identifying central apneas and hypopneas from the data and
differentiating the central apneas and hypopneas from obstructive apneas and
hypopneas, and further

for adjusting the blower output based at least in part on identified and
differentiated central and obstructive apneas and hypopneas.

However, Wright teaches the following:

for identifying central apneas and hypopneas from the data and
differentiating the central apneas and hypopneas from obstructive apneas and
hypopneas ("One such index is based upon a functional
relationship between the number of central or obstructive
apneas over a particular time period. When the patient is
being treated with CPAP, the device continuously monitors
whether the patient is having an apnea and if so, whether
the apnea is central or obstructive. The apparatus
determines an index from a comparison of the number of
central and obstructive apneas or a function of the ratio
of the number of central to obstructive apneas during a
particular time period.

Methods and apparatus for distinguishing between
central and obstructive apneas are described in U.S. Pat.
No. 5,704,345. In one technique, when an apnea is detected
as occurring, the apparatus applies an oscillatory pressure

waveform of known frequency and magnitude and accesses the patency of the airway from the flow which is induced in the airway. In one form, if the airway is patent during an apnea, then the apnea is judged to be central. However, if the airway is closed during an apnea, then the apnea is judged to be obstructive. In another technique, when an apnea is detected as occurring, the apparatus monitors the airflow for the presence of a signal of cardiac origin. If a cardiac signal is detected, then the airway is judged to be patent and the apnea classified as central. If no cardiac signal is detected, then the airway is judged to be closed and the apnea classified as obstructive.

Other methods for distinguishing between central and obstructive apneas include monitoring chest movement using respiratory bands and monitoring the movement of the suprasternal notch, for example, as taught in International Patent Application WO 01/19433 (Berthon-Jones et al.).", **see** col. 5, ll. 4-33), and further

for adjusting the blower output based at least in part on identified and differentiated central and obstructive apneas and hypopneas (based on broadest reasonable interpretation, "An additional index may be a function of the pressure delivered to the patient. In a computer controlled CPAP device such as ResMed Ltd.'s AUTOSET T.TM.

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which can automatically increase the CPAP pressure during an obstructive apnea to stabilize the airway, a record of the pressures used to treat the patient may provide an indication of the changing status of the patient.”, see col. 6, ll. 7-13).

Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Miles treatment system to include “distinguishing between central and obstructive apneas” as taught by Wright because this is a conventional advantage/approach of using CPAP in assisting stroke rehabilitation (“The advantages of the use of CPAP in assisting stroke rehabilitation are greater than that provided by oxygenation per se. For example, providing oxygen will in itself not prevent the patient from having an apnea. Reducing or eliminating apneas may reduce the damaging side-effects of apnea, such as unnecessary activation of the sympathetic nervous system, surging blood pressure and increases in blood flow. Furthermore, some CPAP devices can detect the presence of apneas, distinguish between central and obstructive apneas and provide an increased pressure if needed to stabilize an obstructed or partially obstructed airway.”, see col. 3, ll. 15-24).

As to Claim 26, Miles teaches the following:

wherein the PAP device 1 further comprises an airflow sensor (“pressure transducer located in the CPAP device 1”) with a signal, and wherein the processor also receives and processes signals from the airflow sensor (see col. 4, ll. 55-59, and col. 5, ll. 3-36).

As to Claim 27, Miles teaches the following:

wherein the respiratory effort sensor is a respiratory inductance plethysmography belt (“chest and abdominal respiration (inductive plethysmography)”, see col. 7, ll. 40-41).

As to Claim 28, Miles teaches the following:

A sleep disorder treatment system (“This invention relates to a medical device and method for automatically determining the correct airflow pressure to be used for the treatment of a serious breathing problem during sleep known as obstructive sleep apnea.”, see col. 1, ll. 9-13, and figs. 1 and 2) comprising:

a data acquisition system (“physiological monitor and actuating system”) 22, the data acquisition system 22 comprising a data acquisition device (“physiological monitoring and actuating device HMS-5000 of Vitalog Monitoring Inc.”, or “PMA-device”) 12 having

at least two inputs (not labeled) adapted for receiving signals from sensors including a respiratory effort belt sensor (“chest and abdominal respiration sensors”) 7 and a pulse oximeter sensor (“pulse oximeter sensor for measuring the oxygen saturation in the blood”) 5

("Patient 4 is connected to the physiological monitoring and actuating device HMS-5000 of Vitalog Monitoring Inc. 12 by a series of sensors 5 through 11 including (but not limited to) a pulse oximeter sensor for measuring the oxygen saturation in the blood 5, ECG leads 6, chest and abdominal respiration sensors 7, sleeping position sensor 8, nasal mask thermistor or thermocouple airflow temperature sensors 9, throat microphone 10 and leg movement sensors 11. The physiological monitoring and actuating device is hereafter referred to as PMA-device. The PMA-device 12 is connected to the CPAP device 1 by an electrical cable 13. Through this cable 13 the PMA-device 12 receives (a) outputs from an air pressure transducer in the CPAP device 1, and (b) a quantitative airflow sensor also contained within the CPAP device 1. That airflow sensor measures the amount of air passed into the nasal mask 3 from the CPAP device 1. The pressure transducer measures the air pressure in the nasal mask 3.", see col. 5, ll. 6-25, and thus, the "PMA-device 12" inherently includes inputs as ports, terminals, or interface for "pulse oximeter sensor for measuring the oxygen saturation in the blood 5, ECG leads 6, chest and abdominal respiration sensors 7, sleeping position sensor 8, nasal mask thermistor or thermocouple airflow temperature sensors 9, throat

microphone 10 and leg movement sensors 11” to electrically connect to the internal electrical circuit of the “PMA-device 12”), and

a separate input (not labeled) adapted for receiving a positive airway pressure (PAP) device signal (“outputs”) from a sensor (“air pressure transducer in the CPAP device” or “quantitative airflow sensor also contained within the CPAP device 1”) from a PAP device (“CPAP device”) 1 (“The PMA-device 12 is connected to the CPAP device 1 by an electrical cable 13. Through this cable 13 the PMA-device 12 receives (a) outputs from an air pressure transducer in the CPAP device 1, and (b) a quantitative airflow sensor also contained within the CPAP device 1. That airflow sensor measures the amount of air passed into the nasal mask 3 from the CPAP device 1. The pressure transducer measures the air pressure in the nasal mask 3.”, see col. 5, ll. 16-25, and thus, the “PMA-device 12” inherently includes an input as a port, terminal, or interface for “receiv[ing] (a) outputs from an air pressure transducer in the CPAP device 1, and (b) a quantitative airflow sensor also contained within the CPAP device 1” to electrically connect to the internal electrical circuit of the “PMA-device 12”).); and

the PAP device ("nasal-CPAP airflow generator (CPAP device)") 1 separate and in a different enclosure from the data acquisition device 12 (see fig. 2), the PAP device 1 comprises:

a hose ("large flexible tube") 2 (see fig. 2),

the sensor ("air pressure transducer in the CPAP device" or "quantitative airflow sensor also contained within the CPAP device 1") with a signal for measuring air flow and/or pressure (see col. 5, ll. 16-25), an output for providing the PAP device signal derived in part on the airflow and/or pressure signal ("The cable 13 also contains a control line through which the PMA-device 12 controls the air pressure and airflow produced by the CPAP device 1.", see col. 5, ll. 25-27), and

a mask ("nasal mask") 3 for treating a subject's sleep disorder symptoms (see col. 4, l. 67, to col. 5, l. 5); and

a processor ("computer") 25 adapted for receiving data from the respiratory effort sensor, pulse oximeter sensor, and directly from the PAP device 1 based on the sensor for measuring air flow and/or pressure ("At the end of the procedure, the recorded information is transferred from the PMA-device 12 to a computer. The computer will analyse the data, prepare a report, and help determine the final nasal-CPAP airflow pressure to be used in the long-term treatment of that patient.", see col. 5, ll. 31-36, and fig. 1),

the processor ("computer") 25 still further either part of or external to the data acquisition device 12 and having an output ("output device") 27 (see fig. 1), and

the output 27 adapted for providing data of the identified and differentiated apneas and hypopneas in order to adjust treatment performed by the PAP device ("At the end of a treatment period, system 22 is connected to a processing system 25, such as a personal computer which may provide evaluation results on an output device 27 such as a printer or a visual display. The results of the treatment, including the recorded data and control signals are unloaded onto system 25 for further evaluation.", see col. 4, ll. 46-54. The limitation "of the identified and differentiated apneas and hypopneas in order to adjust treatment performed by the PAP device" is a matter of intended use of the "output device 27", where the "output device 27" is capable of performing such function if modified to do so. See proposed modification below).

Miles does not explicitly teach the following:

the PAP device comprises:

a blower.

However, Hednar teaches the following:

a (PAP) device ("ventilation system") ("It is an object of the present invention to provide a system that remedies the above

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mentioned problems and provides an improved breathing gas ventilator technology for use in conjunction with ventilatory disorders, such as for instance as a continuous positive airway pressure (CPAP) method, such as an automatic adaptive CPAP (AACPAP) .”, see para. [0012], and fig. 1) comprising:

a blower (“Pressure/flow regulator”) 12 (“12 Pressure/flow regulator”, see para. [0096]).

Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Miles PAP device to include a blower (“12 Pressure/flow regulator”), as taught by Hedner, in order to provide pressurized gas flow to the mask.

Miles in view of Hednar does not teach the following:

the processor further adapted for identifying central apneas and hyponeas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas; and

the output adapted for providing data of the identified and differentiated apneas and hypopneas in order to adjust a treatment performed by the PAP device.

However, Wright teaches the following:

identifying central apneas and hyponeas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas (“One such index is based upon a functional relationship between the number of central or obstructive apneas over a particular time period.

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When the patient is being treated with CPAP, the device continuously monitors whether the patient is having an apnea and if so, whether the apnea is central or obstructive. The apparatus determines an index from a comparison of the number of central and obstructive apneas or a function of the ratio of the number of central to obstructive apneas during a particular time period.

Methods and apparatus for distinguishing between central and obstructive apneas are described in U.S. Pat. No. 5,704,345. In one technique, when an apnea is detected as occurring, the apparatus applies an oscillatory pressure waveform of known frequency and magnitude and accesses the patency of the airway from the flow which is induced in the airway. In one form, if the airway is patent during an apnea, then the apnea is judged to be central. However, if the airway is closed during an apnea, then the apnea is judged to be obstructive. In another technique, when an apnea is detected as occurring, the apparatus monitors the airflow for the presence of a signal of cardiac origin. If a cardiac signal is detected, then the airway is judged to be patent and the apnea classified as central. If no cardiac signal is detected, then the airway is judged to be closed and the apnea classified as obstructive.

Other methods for distinguishing between central and obstructive apneas include monitoring chest movement using respiratory bands and monitoring the movement of the suprasternal notch, for example, as taught in International Patent Application WO 01/19433 (Berthon-Jones et al.).”, see col. 5, ll. 4-33); and

the output adapted for providing data of the identified and differentiated apneas and hypopneas in order to adjust a treatment performed by the PAP device (based on **broadest reasonable interpretation**, “An additional index may be a function of the pressure delivered to the patient. In a computer controlled CPAP device such as ResMed Ltd.'s AUTOSET T.TM. which can automatically increase the CPAP pressure during an obstructive apnea to stabilize the airway, a record of the pressures used to treat the patient may provide an indication of the changing status of the patient.”, see col. 6, ll. 7-13).

Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Miles treatment system to include “distinguishing between central and obstructive apneas” as taught by Wright because this is a conventional advantage/approach of using CPAP in assisting stroke rehabilitation (“The advantages of the use of CPAP in assisting stroke rehabilitation are greater than that provided by oxygenation per se. For example, providing oxygen will in itself not prevent the

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patient from having an apnea. Reducing or eliminating apneas may reduce the damaging side-effects of apnea, such as unnecessary activation of the sympathetic nervous system, surging blood pressure and increases in blood flow. Furthermore, some CPAP devices can detect the presence of apneas, distinguish between central and obstructive apneas and provide an increased pressure if needed to stabilize an obstructed or partially obstructed airway.”, see col. 3, ll. 15-24).

As to Claim 29, Miles teaches the following:

wherein the PAP device 1 further comprises an airflow sensor (“pressure transducer located in the CPAP device 1”) with a signal, and a processor that receives and processes signals from the airflow sensor in addition to the output from the data acquisition system 22 to determine the output pressure level of the PAP device (see col. 4, ll. 55-59, and col. 5, ll. 3-36).

As to Claim 33, Miles teaches the following:

wherein the respiratory effort sensor is a respiratory inductance plethysmography belt (“chest and abdominal respiration (inductive plethysmography)”, see col. 7, ll. 40-41).

12. Claims 22, 23, 30, and 32 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Miles, U.S. Patent No. 5,353,788 A (“Miles”), in view of Wright et al, U.S. Patent No. 6,832,609 B2 (“Wright”), as applied to claims 21 and

28, respectively, above, and further in view of Stahmann et al, U.S. Patent No. 7,757,690 B2 (“Stahmann”).

As to Claims 22 and 32, Miles in view of Wright teaches the subject matter of claims 21 and 28, respectively, above. Miles in view of Wright does not teach the following:

wherein the inputs on the PAP device and the outputs of the at least two sensors are in wireless radio frequency bidirectional communication; and

wherein the sensor data output of the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and the processor.

However, such a form of communication between a data acquisition system and a processor is well-known in the art. For example, Stahmann teaches the following:

output of a data acquisition system (“data acquisition unit”) 104 is transmitted wirelessly by bidirectional radio frequency between the data acquisition system 104 and a processor (“patient-internal 1210 and patient-external 1220 medical devices”) (see fig. 1A and “Referring to FIG. 1A, a system 100 in accordance with an embodiment of the present invention includes a data acquisition unit 104 configured to acquire data associated with a patient while the patient is awake. The data acquisition unit 104 is coupled to a therapy delivery system 106 configured to adjust a therapy delivered to the patient, during patient sleep, using the acquired data. One or more sensor(s)

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102 are used to sense physiological signals useful to the data acquisition unit 104.”, **see col. 5, ll. 21-29; and** “For example, the patient-internal and patient-external devices 1210, 1220 may be coupled through a short-range radio link, such as Bluetooth, IEEE 802.11, and/or a proprietary wireless protocol. The communications link may facilitate unidirectional or bidirectional communication between the patient-internal 1210 and patient-external 1220 medical devices.”, **see col. 16, ll. 8-14).**

Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Miles' wired communication between Miles'

“physiological monitor and actuating system 22” and “computer 25” to be wireless and bidirectional, as taught by Stahmann, in order to enable the eliminate the need of cumbersome wired communication and to allow control and data signals to be communicated between the two devices.

As to Claim 23, Miles teaches the following:

wherein the PAP through the inputs can command a signal processing module to reconfigure the output of at least one of the at least two sensors (“Depending on time, entered set-up parameters, and data received via sensors 21, system 22 will issue control signals via outputs 24 to control breathing air pressure at breathing mask 26.”, **see col. 4, ll. 40-43).**

As to Claim 30, Miles teaches the following:

wherein the data acquisition system through a receiver can command a signal processing module to reconfigure the data output based on the sensor signal of the PAP (“Depending on time, entered set-up parameters, and data received via sensors 21, system 22 will issue control signals via outputs 24 to control breathing air pressure at breathing mask 26.”, see col. 4, ll. 40-43).

Conclusion

13. Applicant's amendment, filed on 03 April 2017, necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NAVIN NATNITHITHADHA whose telephone number is

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(571)272-4732. The examiner can normally be reached on Monday-Friday, 9:00 am - 5:00 pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia Mallari can be reached on (571) 272-4729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Navin Natnithithadha/
Primary Examiner, Art Unit 3735
07/10/2017

Search Notes 	Application/Control No. 13440116	Applicant(s)/Patent Under Reexamination KAYYALI ET AL.
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735

CPC- SEARCHED		
Symbol	Date	Examiner
A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592	2/24/2016	/NN/
A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60	2/24/2016	/NN/
61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592	8/23/2016	/NN/
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A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592	6/28/2017	/NN/
A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60	6/28/2017	/NN/

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

	/N.N./ Primary Examiner.Art Unit 3735
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SEARCH NOTES

Search Notes	Date	Examiner
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, CPC, Keyword searches	2/24/2016	/NN/
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	8/23/2016	/NN/
EAST (enclosed): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	12/28/2016	/NN/
EAST (updated search): USPAT, US-PGPUB, EPO, JPO, Derwent, Inventor, Forward/Backward Citation, Art of Record, CPC, Keyword searches	6/28/2017	/NN/

INTERFERENCE SEARCH

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	A61B5/02055 OR A61B5/085 OR A61B5/4815 OR A61M16/0051 OR A61M16/0069 OR A61M2016/0027 OR A61M2016/0039 OR A61M2202/0208 OR A61M2205/3553 OR A61M2205/3561 OR A61M2205/3584 OR A61M2205/3592		/NN/
	A61M2230/04 OR A61M2230/10 OR A61M2230/14 OR A61M2230/202 OR A61M2230/205 OR A61M2230/60		/NN/

/N.N./
Primary Examiner.Art Unit 3735

<i>Index of Claims</i> 	Application/Control No. 13440116	Applicant(s)/Patent Under Reexamination KAYYALI ET AL.
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE							
Final	Original	06/16/2015	03/01/2016	09/01/2016	01/04/2017	07/11/2017			
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	19	-	-	-	-	-			
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	31	÷	✓	○	✓	✓			
	32	÷	✓	✓	✓	✓			
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	34	÷	✓	✓	✓	✓			
	35	÷	✓	✓	✓	✓			
	36	÷	✓	✓	✓	✓			

<i>Index of Claims</i> 	Application/Control No. 13440116	Applicant(s)/Patent Under Reexamination KAYYALI ET AL.
	Examiner NAVIN NATNITHITHADHA	Art Unit 3735

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
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	38	÷	✓	✓	✓	✓				
	39	÷	✓	○	✓	✓				
	40	÷	✓	○	✓	✓				

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re:	Application of Kayyali et al.	)	
		)	
Serial No.:	13/440,116	)	
		)	Art Unit: 3735
Filed:	April 5, 2012	)	
		)	
For:	Devices and Methods for	)	
	Sleep Disorder Diagnosis	)	
	and Treatment	)	
		)	Attorney Docket No.: CMD-087
Examiner:	Navin Natnithithadha	)	
		)	

April 3, 2017.

AMENDMENT

Commissioner of Patents and Trademarks
Alexandria, VA 22313-1450

Dear Mam:

This amendment is being filed in response to an Office Action date January 3, 2017 with a due date of response of April 3, 2017. The Applicants believe no extension of time is needed but if this is not the case the Applicant contingently petition for an extension of time and authorize the USPTO to deduct any fees from their deposit account 502704. The following amendments to the specification and claims are respectfully submitted.

Electronic Acknowledgement Receipt

EFS ID:	28814189
Application Number:	13440116
International Application Number:	
Confirmation Number:	4463
Title of Invention:	Devices and Methods for Sleep Disorder Diagnosis and Treatment
First Named Inventor/Applicant Name:	Hani Kayyali
Customer Number:	81177
Filer:	Brian M. Kolkowski/Mark Pennington
Filer Authorized By:	Brian M. Kolkowski
Attorney Docket Number:	CMD-087
Receipt Date:	03-APR-2017
Filing Date:	05-APR-2012
Time Stamp:	14:16:17
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		CMD-087_2017-04-03_amendment-after-NFR.pdf	4687858 25ec7653058d7364e546c13b52a4a60a056e0914	yes	15

Multipart Description/PDF files in .zip description			
Document Description		Start	End
Applicant Arguments/Remarks Made in an Amendment		7	15
Claims		2	6
Amendment/Req. Reconsideration-After Non-Final Reject		1	1

Warnings:

Information:

Total Files Size (in bytes):	4687858
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

REMARKS

Claims 21-23 and 26-40 were rejected in the Office Action issued January 3, 2017. The Applicants have amended claims 21, 28, 30, 34, and 39. The Applicants respectfully traverse the Examiner's objections and rejections for the reasons set forth below.

Claim Objections

Claims 21 and 28 were objected to due to a number of informalities. The Applicants thank the Examiner for his helpful comments and submit the claims as amended now overcome these objections.

35 U.S.C. §112

Claims 28-40 were rejected under 35 U.S.C. §112(a) or 35 U.S.C. §112 (pre-AIA) first paragraph, as failing to comply with the written description requirement.

The Examiner states that

Claim 28 recites limitations "and further for identifying central apneas and hypopneas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas [sic]" and "the output adapted for providing data of the identified and differentiated apneas and hypopneas in order to allow for modifying treatment with the PAP device". The original disclosure, pages 9 and 10, filed 05 April 2012, include paragraphs that merely [sic] mention central apneas and hypopneas and obstructive apneas and hypopneas. However, the disclosure is *entirely silent on specifically how the processor and output perform the claim functions above.*

(Emphasis added). This is simply not the case. The Applicants Specification is filled with examples and description of how the processor and output of the claimed invention are intended to work. The description of central and obstructive sleep apneas on pages 9 and 10 of the Specification make it clear that obstructive and central sleep apneas can be measure by looking at blockage and cessation of respiratory effort respectively. Pages 10-14 of the specification, make it clear these symptoms can be measured by various sensors including respiratory effort belts, air flow and pressure sensors, as well as with

pulse oximeters. Example pg. 9, lines 12-13 of the Specification states the “present invention includes devices and sensors for diagnosing a subject’s symptoms”.

The Specification, pgs. 14-35, further describes in great detail how these sensors signals are processed with a processor and provide data from the processor to an output. The Specification of pg. 35 further states “[v]arious sleeping disorders have symptoms that can be predicted based on various combinations of physiological signals or data. Various embodiments of the present invention include the approach to identifying various characteristics shifts in the power spectrum of the sensors being used to monitor these physiological conditions. This characteristic shift in these signals or data can be identified and used to trigger an actuator on they physical or chemical treatment device(s) to provide for delivery of a certain level of treatment.”, and pg. 39 states “physical methods of treating sleeping disorders and symptoms include continuous positive airway pressure (CPAP)...”.

The Specification, pgs. 39-41, further describe the processor determining a level of severity of the symptoms or disease state and outputting a signal to adjust the physical or chemical treatment, specifically including the PAP or chemical methods.

Given the more than adequate description as to these various elements of claims 28 and 34 as now amended and previously rejected to by the Examiner as indefinite the Applicants urge the Examiner to withdraw this rejection.

Obviousness under 35 U.S.C. § 103

To provide legal context as well as an analytical framework for the remarks that follow, the Applicant wishes at the outset to respectfully point out that obviousness under 35 U.S.C. § 103(a) is a question of law based on underlying findings of fact, and that the Examiner bears the initial burden of factually supporting any conclusion of obviousness by establishing a *prima facie* case based on the facts. See MPEP 2142. Additionally, if the Examiner does not produce a *prima facie* case, the Applicant is under no obligation to submit evidence of nonobviousness. *Id.* To provide the proper factual support for an assertion of *prima facie* obviousness the Examiner must perform the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, (1966). These factual inquiries include (1) determining the scope and content of the prior art, (2) ascertaining the differences

between the claimed invention and the prior art, and (3) determining the level of ordinary skill in the art at the time of the claimed invention. *Graham* also indicates that “secondary considerations” such as commercial success, long-felt but unsolved needs, failure of others and unexpected results may be considered in determining obviousness. Importantly, “the *Graham* factors, including secondary considerations when present, are the controlling inquiries in any obviousness analysis.” MPEP 2141(II) (emphasis added).

Against this backdrop it becomes clear that if the Examiner errs in performing any of the *Graham* factual inquiries, the Examiner cannot be deemed to have established a *prima facie* case of obviousness since such a conclusion would be unsupported by the factual foundation required by *Graham*. Examples of the Examiner committing error in performing the *Graham* factual inquiries include, among other things, failure to appreciate the differences between the claimed invention and the prior art (leading to a flawed conclusion under the second *Graham* factor), as well as a failure to determine the level of ordinary skill in the art (resulting in failure based on the third *Graham* factor).

With specific regard to the Examiner’s obligation under the third *Graham* factor to determine the level of ordinary skill in the art at the time of the claimed invention, the Applicant would direct particular attention to the requirement that “[a]ny obviousness rejection should include, either explicitly or implicitly in view of the prior art applied, an indication of the level of ordinary skill.” See MPEP 2141(II)(C) (emphasis added).

In addition, it is important to recognize that merely setting forth what the Examiner believes the level of ordinary skill should be or merely making the blanket assertion that the level of ordinary skill in the pertinent art is set forth in the references is insufficient to meet the Examiner’s burden under the third *Graham* factor and 35 U.S.C. § 103(a) if the Examiner is relying on a combination of references to demonstrate obviousness. This is because in addition to providing an “indication of the level of ordinary skill,” MPEP 2141(II)(C), the Examiner must also provide an explanation of how and why the person of ordinary skill in the art at the time of the invention would have deemed it obvious to select and combine various references relied upon by the Examiner in such a way as to render the claimed invention obvious. See *In re Vaidyanathan*, Appeal No. 2009-1404, Fed. Cir., May 19, 2010 (nonprecedential) (faulting both the BPAI and Examiner for failing to provide “any evidentiary support or

reasoning for why a person of ordinary skill in the field of the invention would have deemed it obvious to select and combine various steps from different references, in the manner of the applicant” and further noting that *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) “did not remove the need to anchor the analysis [of obviousness] in explanation of how a person of ordinary skill would select and apply the teachings of the references”).

Thus, in order for the Examiner to properly establish a *prima facie* case of obviousness the Examiner must first make the factual inquiries required by *Graham* and, if relying on a combination of references, must further provide some motivation to combine the references from the perspective of one of ordinary skill in the art. If the Examiner falls short in meeting any of these requirements then the Examiner has failed to establish a *prima facie* case and the applicant is entitled to the patent. See *In re Glaug*, 283 F.3d 1335 at 1338 (Fed. Cir. 2002) (“If the PTO fails to meet this burden [to establish a *prima facie* case], then the applicant is entitled to the patent”). As stated in the United States Patent and Trademark Office’s own rules, “[a] *prima facie* case of unpatentability is established when the information *compels* a conclusion that a claim is unpatentable under the *preponderance of evidence*, burden-of-proof standard...” See 37 C.F.R. § 1.56(b)(2)(ii) (emphasis added). Further, refusal to issue the patent in the face of failure to properly establish a *prima facie* case of obviousness or some other proper grounds for rejection places the Examiner and the USPTO in controversion of 35 U.S.C. § 131, which dictates that if after examination “it appears that the applicant is entitled to a patent under the law, the Director shall issue a patent therefor” (emphasis added).

In all of the above, the Applicants wish to emphasize the high bar to which the Examiner is held during the examination process and hereby respectfully request that in the ongoing prosecution of the present application that the Examiner provide explicit and detailed analysis of any grounds of rejection relied upon. See, e.g., *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) (“[an obviousness] analysis should be made explicit,” citing *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006)).

Claims 21-23, 26 and 27 were rejected under pre-AIA 35 USC 103(a) as being unpatentable over Miles, U.S. Pat. No. 5,353,788 (“Miles”) in view of Hedner et al., U.S.

Pat. Appln. 2008/0257349 ("Hedner"). The Applicants traverse and submit that claims 21-23, 26 and 27 as amended are patentable over Miles in view of Hedner.

With respect to claim 21, Miles does not teach or disclose a positive airway pressure (PAP) sleep disorder treatment device comprising an enclosure comprising a blower, inputs for receiving signals directly from outputs of at least two sensors including a respiratory effort belt sensor and a pulse oximeter sensor; and a processor for receiving and processing signals from the respiratory effort and pulse oximeter sensors into data, for identifying central apneas and hyponeas from the data and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas, and further for determining an output pressure level of the PAP device based at least in part on the signals from the respiratory effort and pulse oximeter sensors as claimed.

Miles instead teaches of CPAP device with an airflow generator tethered to a physiological monitoring and actuating ("PMA") device manufactured by Vitalog Monitoring Inc. The physiological monitoring device for monitoring 7 different physiological signals including a respiratory effort and pulse oximeter sensor. The only sensor on the CPAP device being an airflow sensor, the signal being feed through the tether 13 to the PMA device. The tether further being used to adjust the airflow of the CPAP when the patient is being tested. At the end of the testing procedure the raw data is transferred from the PMA device to an external computer, the computer analyzes "the data, prepare[s] a report, and help[s] determine the final airflow pressure to be used in the long-term treatment of the patient." Miles, Col. 5, lines 1-36.

The pulse oximeter and respiratory belt in Miles are being feed directly into the PMA device 12, and not directly into inputs on the CPAP device as claimed. In addition, in Miles all of the data is feed to an external computer to help determine the final airflow pressure, and does not use a processor on the PAP device as claimed. Further, in Miles at least 8 sensors and their data are used to help determine the airflow pressure for the long term treatment, whereas in the claimed invention the respiratory effort and pulse oximeter sensors are the only sensors required for adjusting the pressure level of the PAP device as claimed.

Hedner does not teach or disclose a positive airway pressure (PAP) sleep disorder treatment device comprising an enclosure comprising a blower, inputs for receiving signals directly from outputs of at least two sensors including a respiratory effort belt sensor and a pulse oximeter sensor; and a processor for receiving and processing signals from the respiratory effort and pulse oximeter sensors into data, for identifying central apneas and hyponeas from the data and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas, and further for determining an output pressure level of the PAP device based at least in part on the signals from the respiratory effort and pulse oximeter sensors as claimed.

Hednar further does not teach a blower nor the use of a respiratory effort belt sensor to control the ventilator of Hednar. Further the processor in Hednar does not teaching identification and differentiation of obstructive and central apneas using these specific sensors and the processor on a PAP.

With respect to claim 22, both Miles and Hednar do not teach wherein the inputs on the PAP device and the outputs of the at least two sensors are in wireless radio frequency bidirectional communication as claimed. The Examiner refers to Col. 4, ll. 28-31 of Miles in making his rejection but this has nothing to do with wireless communication between the sensors and the inputs on the PAP device.

With respect to claim 23, both Miles and Hednar do not teach wherein the PAP through the inputs can command a signal processing module to reconfigure the output of at least one of the at least two sensors as claimed. The Examiner refers to Col. 4, ll. 40-43 but this teaching refers to controlling the breathing gas pressure not the providing command signals through the *inputs to the sensors* to control the output of the *sensor*.

Given these differences between the reference and the claimed invention, the Applicants request the Examiner withdraw this rejection.

Claims 28, 29 and 33 were rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Miles in view of Wright et al. U.S. Pat. No. 6,832,609 ("Wright"). The Applicants traverse and submit that claims 28, 29 and 33 as amended are patentable over Miles in view of Wright.

With respect to claim 28, Miles does not teach or disclose a sleep disorder treatment system comprising a data acquisition system, the data acquisition system comprising a data acquisition device having inputs adapted for receiving signals from sensors including a respiratory effort sensor and a pulse oximeter sensor, and an input adapted for receiving a treatment device signal from a sensor from a treatment device; a positive airway pressure (PAP) device, the treatment device separate and in a different enclosure from the data acquisition device, that includes a hose, the sensor with a signal for measuring air flow and/or pressure, an output for providing the treatment device signal derived in part on the airflow and/or pressure signal, and a mask for treating a subject's sleep disorder symptoms; and a processor adapted for receiving data from the respiratory effort sensor, pulse oximeter sensor, and the sensor for measuring air flow and/or pressure and further for identifying central apneas and hyponeas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas, the processor either part of or external to the data acquisition device and having an output, the output adapted for providing data of the identified and differentiated apneas and hypopneas in order to allow for modifying treatment with the PAP device as claimed.

Miles instead teaches of CPAP device with an airflow generator tethered to a physiological monitoring and actuating ("PMA") device manufactured by Vitalog Monitoring Inc. The physiological monitoring device for monitoring 7 different physiological signals including a respiratory effort and pulse oximeter sensor. The only sensor on the CPAP device being an airflow sensor, the signal being feed through the tether 13 to the PMA device. The tether further being used to adjust the airflow of the CPAP when the patient is being tested. At the end of the testing procedure the raw data is transferred from the PMA device to an external computer, the computer analyzes "the data, prepare[s] a report, and help[s] determine the final airflow pressure to be used in the long-term treatment of the patient." Miles, Col. 5, lines 1-36.

In Miles at least 8 sensors and their data are feed from the PMA device 12 into an external computer and then used to help determine the airflow pressure for the long term treatment of the patient. In the present invention while the processor can be external from the data acquisition device and the PAP, the processor is used for identifying central

apneas and hyponeas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas and the output on the processor is adapted for providing data of the identified and differentiated apneas and hypopneas in order to allow for modifying treatment with the PAP device. There is no indication that Miles' computer can provide such information and furthermore it is clear this is not inherent in the teachings of Miles.

With respect to claim 28, Wright does not adjust the CPAP treatment based on the identified and differentiated central and obstructive apneas but merely creates an index which is used to determine what type of PAP device the patient should be prescribed. Berthon-Jones further does not teach or disclose identifying and differentiating central and obstructive apneas using the 3 sensors or a combination thereof in the present invention, but rather uses a pressure waveform, or a cardiac signal to make this determination.

With respect to claim 29, both Miles and Wright do not teach or disclose the sleep disorder treatment system of claim 28 wherein the PAP device further comprises an airflow sensor with a signal, and a processor that receives and processes signals from the airflow sensor in addition to the output from the data acquisition system to determine the output pressure level of the PAP device as claimed.

Given these differences between the reference and the claimed invention, the Applicants request the Examiner withdraw this rejection.

Claims 30 and 32 were rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Miles in view of Wright et al. U.S. Pat. No. 6,832,609 ("Wright"), as applied to claim 28 above, and further in view of Stahmann et al., U.S. Pat. No. 7,757,690 ("Stahmann").

The Applicants incorporate their comments above with respect Miles and Wright. With respect to claim 32, Stahmann does not teach or disclose wherein the sensor output of the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and a receiver on the PAP device as claimed. The Examiner instead cites to a bidirectional wireless communication between a fully or partially "implantable device" and an external medical device. The present invention

does not claim an "implantable" medical device nor communications with such a device. Furthermore, Stahmann teaches moderating therapy during sleep using "physiologic data acquired during non-sleep". The present invention in contrast adjusts therapy for sleep using physiological data acquired during sleep. The Examiner appears to be comparing systems that function differently or somewhat in an opposite fashion.

With respect to claim 30, Miles does not teach or disclose wherein the data acquisition system through a receiver can command a signal processing module to reconfigure the data output based on the sensor signal of the PAP as claimed. The Examiner cites to Miles Col. 4, lines 40-43 for this teaching, but as the Examiner admits this "control[s] breathing air pressure at the breathing mask 26." One skilled in the art would understand controlling breathing pressure of the CPAP is not the same as controlling the output of the data one of the sensors output from a PAP device sensor.

Given the above comments, the Applicants urge the Examiner to withdraw this rejection.

CONCLUSION:

The Applicant respectfully submits that this application is in condition for allowance and that action is earnestly solicited.

Respectfully submitted,

04/03/2017

Dated

/Brian M. Kolkowski/

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CLAIM AMENDMENTS:

Please amend claims 21, 28, 30, 34, and 39 as follows:

1-20. (Canceled)

21. (currently amended) A positive airway pressure (PAP) sleep disorder treatment device comprising:

an enclosure comprising:

~~a blower having an output source of pressurized gas;~~

inputs for receiving signals directly from outputs of at least two sensors including a respiratory effort sensor and a pulse oximeter sensor; and

~~a processor adapted for receiving and processing signals from the respiratory effort belt and pulse oximeter sensors into data, for identifying central apneas and hypopneas from the data and differentiating the central apneas and hypopneas from obstructive apneas and hypopneas, and further for determining an output pressure level of the PAP device and adjusting the blower output based at least in part on the signals from the respiratory effort belt and pulse oximeter sensors~~identified and differentiated central and obstructive apneas and hypopneas.

22. (previously presented) The device of claim 21 wherein the inputs on the PAP device and the outputs of the at least two sensors are in wireless radio frequency bidirectional communication.

23. (previously presented) The device of claim 22 wherein the PAP through the inputs can command a signal processing module to reconfigure the output of at least one of the at least two sensors .

24. (previously presented) The device of claim 21 wherein the signals from the respiratory effort and pulse oximeter sensors are processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernels, and a wavelet analysis.

25. (previously presented) The device of claim 24 in which signals from the sensors are processed using a short-time fourier transform technique.

26. (previously presented) The device of claim 21 wherein the PAP device further comprises an airflow sensor with a signal, and wherein the processor also receives and processes signals from the airflow sensor in addition to the signals from the respiratory effort and pulse oximeter sensors to determine the output pressure level of the PAP device.

27. (previously presented) The device of claim 21 wherein the respiratory effort sensor is a respiratory inductance plethysmography belt.

28. (currently amended) A sleep disorder treatment system comprising:

a data acquisition system, the data acquisition system comprising a data acquisition device having at least two inputs adapted for receiving signals from sensors including a respiratory effort belt sensor and a pulse oximeter sensor and an separate input adapted for receiving a treatment positive airway pressure (PAP) device signal from a sensor from a treatment PAP device;

a positive airway pressure (the PAP) device, the treatment device separate and in a different enclosure from the data acquisition device, that includes the PAP device comprises: a hose, a blower, the sensor with a signal for measuring air flow and/or pressure, an output for providing the treatment PAP device signal derived in part on the

airflow and/or pressure signal, and a mask for treating a subject's sleep disorder symptoms; and

a processor adapted for receiving data from the respiratory effort sensor, and pulse oximeter sensor, and directly from the PAP device based on the sensor for measuring air flow and/or pressure, ~~and the processor further adapted~~ for identifying central apneas and hyponeas from the data, and differentiating the central apneas and hypopneas from obstructive apneas and hypoapneas, the processor still further either part of or external to the data acquisition device and having an output, the output adapted for providing data of the identified and differentiated apneas and hypopneas in order to allow for ~~modifying~~ adjust a treatment with performed by the PAP device.

29. (previously presented) The sleep disorder treatment system of claim 28 wherein the PAP device further comprises an airflow sensor with a signal, and a processor that receives and processes signals from the airflow sensor in addition to the output from the data acquisition system to determine the output pressure level of the PAP device.

30. (currently amended) The sleep disorder treatment system of claim 32 wherein the data acquisition system through a receiver can command a signal processing module to reconfigure the data output based on the sensor signal of the PAP.

31. (previously presented) The sleep disorder treatment system of claim 28 wherein the signals from the sensors are processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

32. (previously presented) The sleep disorder treatment system of claim 28 wherein the sensor data output of the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and the processor.

33. (previously presented) The sleep disorder treatment system of claim 28 wherein the respiratory effort sensor is a respiratory inductance plethysmography belt.

34. (currently amended) A sleep disorder treatment system comprising:

a data acquisition system, the data acquisition system comprising a data acquisition device having inputs for receiving signals from at least one physiological sensor, the data acquisition system for creating an output of the level of severity of a subject's sleep disorder or symptoms based in part on the signals from the sensors; and

an positive airway pressure apparatus for providing pressurized air and chemically treating a subject's sleep disorder or symptoms with ~~additional CO₂ resulting in a concentration higher than atmospheric concentration of carbon dioxide in air, or a~~ pharmaceutical agent, ~~either~~ which can be adjusted at least in part using the output of the level of severity of the subject's sleep disorder from the data acquisition system.

35. (previously presented) The sleep disorder treatment system of claim 34 wherein the at least one physiological sensor is a pulse oximeter sensor.

36. (previously presented) The sleep disorder treatment system of claim 35 further including a respiratory effort sensor.

37. (previously presented) The sleep disorder treatment system of claim 34 wherein the output the level of severity from the data acquisition system is transmitted wirelessly by bidirectional radio frequency between the data acquisition system and a receiver on the apparatus for chemically treating a subject's sleep disorder or symptoms.

38. (previously presented) The sleep disorder treatment system of claim 37 wherein the apparatus for chemically treating a subject's sleep disorder or symptoms through the receiver can command a signal processing module to reconfigure the output of the data acquisition system.

39. (currently amended) The sleep disorder treatment system of claim 374 wherein the apparatus or method for chemically treating a subject's sleep disorder or symptoms is ~~used to deliver carbon dioxide to the subject at a concentration higher than atmospheric concentration of carbon dioxide in air~~selected from the group consisting of a nebulizer and a controlled pump.

40. (previously presented) The sleep disorder treatment system of claim 34 wherein the signals from the sensors are processed using one or more of the signal processing techniques from the group consisting of a standard deviation technique, a recursively fit ARMAX system identification model, a short-time fourier transform technique, a time-frequency signal analysis with a variety of different kernals, and a wavelet analysis.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/440,116	Filing Date 04/05/2012	☐ To be Mailed
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ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

(Column 1)

(Column 2)

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

(Column 1)

(Column 2)

(Column 3)

AMENDMENT	04/03/2017	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X \$40 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X \$210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

(Column 1)

(Column 2)

(Column 3)

AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =
	☐ Application Size Fee (37 CFR 1.16(s))					
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
DORRETTA BROOKS

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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