Resmed

Petitioner's Demonstratives

Resmed Corp. v. Cleveland Medical Devices, Inc.

March 19, 2026

IPR2025-00159

U.S. Patent No. 11,375,921

IPR2025-00160

U.S. Patent No. 11,786,680

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Agenda

Overview

The ’921 and ’680 Patents

State of the Art

Asserted Prior Art

Disputed Limitations

“Remote Internet Site” (’921/’680)

“Retransmit” Data
(’921, Independent Claims 1 and 7)

“Independently Receive” the Data
(’921, Independent Claim 12)

Motivation to Combine

“Patient Cell Phone” (’680 Patent)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Overview

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The ’921 and ’680 Patents

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 4

The Purported Invention

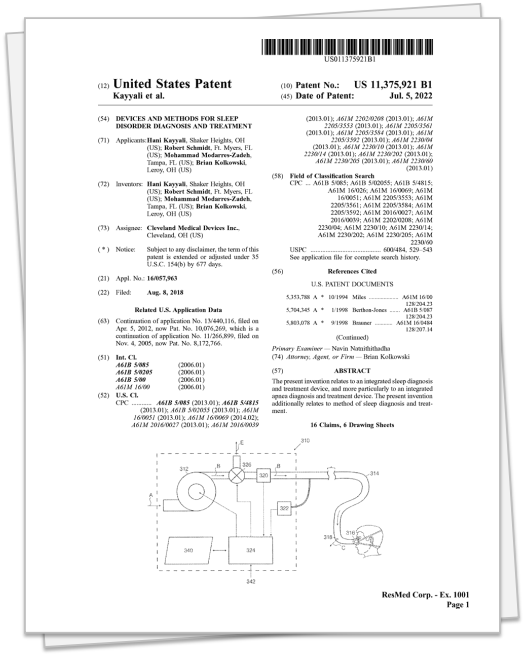
"[A] networked PAP system that transmits symptom and usage data to a cell phone and remote internet site"

'921 Pet., 1; '680 Pet., 1

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The ’921 Patent



US011375921B1

(12) **United States Patent**
Kayyali et al.

(10) **Patent No.: US 11,375,921 B1**
(45) **Date of Patent: Jul. 5, 2022**

(54) **DEVICES AND METHODS FOR SLEEP DISORDER DIAGNOSIS AND TREATMENT**

(71) Applicants: **Hani Kayyali**, Shaker Heights, OH (US); **Robert Schmidt**, Ft. Myers, FL (US); **Mohammad Modarres-Zadeh**, Tampa, FL (US); **Brian Kolkowski**, Leroy, OH (US)

(72) Inventors: **Hani Kayyali**, Shaker Heights, OH (US); **Robert Schmidt**, Ft. Myers, FL (US); **Mohammad Modarres-Zadeh**, Tampa, FL (US); **Brian Kolkowski**, Leroy, OH (US)

(73) Assignee: **Cleveland Medical Devices Inc.**, Cleveland, OH (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 677 days.

(21) Appl. No.: **16/057,963**

(22) Filed: **Aug. 8, 2018**

Related U.S. Application Data

(63) Continuation of application No. 13/440,116, filed on Apr. 5, 2012, now Pat. No. 10,076,269, which is a continuation of application No. 11/266,899, filed on Nov. 4, 2005, now Pat. No. 8,172,766.

(51) **Int. Cl.**
A61B 5/085 (2006.01)
A61B 5/0205 (2006.01)
A61B 5/00 (2006.01)
A61M 16/00 (2006.01)

(52) **U.S. Cl.**
CPC ***A61B 5/085*** (2013.01); ***A61B 5/4815*** (2013.01); *A61B 5/02055* (2013.01); *A61M 16/0051* (2013.01); *A61M 16/0069* (2014.02); *A61M 2016/0027* (2013.01); *A61M 2016/0039* (2013.01); *A61M 2202/0208* (2013.01); *A61M 2205/3553* (2013.01); *A61M 2205/3561* (2013.01); *A61M 2205/3584* (2013.01); *A61M 2205/3592* (2013.01); *A61M 2230/04* (2013.01); *A61M 2230/10* (2013.01); *A61M 2230/14* (2013.01); *A61M 2230/202* (2013.01); *A61M 2230/205* (2013.01); *A61M 2230/60* (2013.01)

(58) **Field of Classification Search**
CPC ... A61B 5/085; A61B 5/02055; A61B 5/4815; A61M 16/026; A61M 16/0069; A61M 16/0051; A61M 2205/3553; A61M 2205/3561; A61M 2205/3584; A61M 2205/3592; A61M 2016/0027; A61M 2016/0039; A61M 2202/0208; A61M 2230/04; A61M 2230/10; A61M 2230/14; A61M 2230/202; A61M 2230/205; A61M 2230/60
USPC 600/484, 529–543
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,353,788 A * 10/1994 Miles A61M 16/00 128/204.23
5,704,345 A * 1/1998 Berthon-Jones A61B 5/087 128/204.23
5,803,078 A * 9/1998 Brunner A61M 16/0484 128/207.14

(Continued)

Primary Examiner — Navin Natarhithadha
(74) *Attorney, Agent, or Firm* — Brian Kolkowski

(57) **ABSTRACT**

The present invention relates to an integrated sleep diagnosis and treatment device, and more particularly to an integrated apnea diagnosis and treatment device. The present invention additionally relates to method of sleep diagnosis and treatment.

16 Claims, 6 Drawing Sheets

ResMed Corp. - Ex. 1001
Page 1

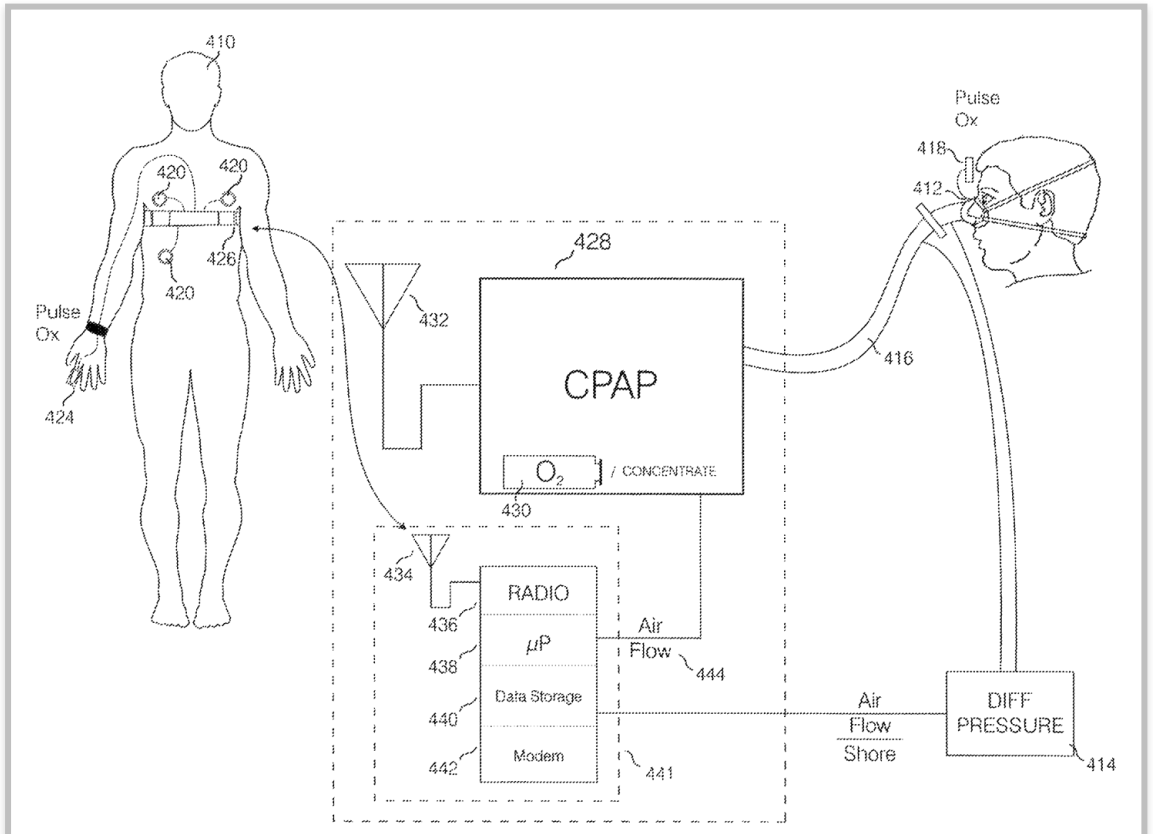


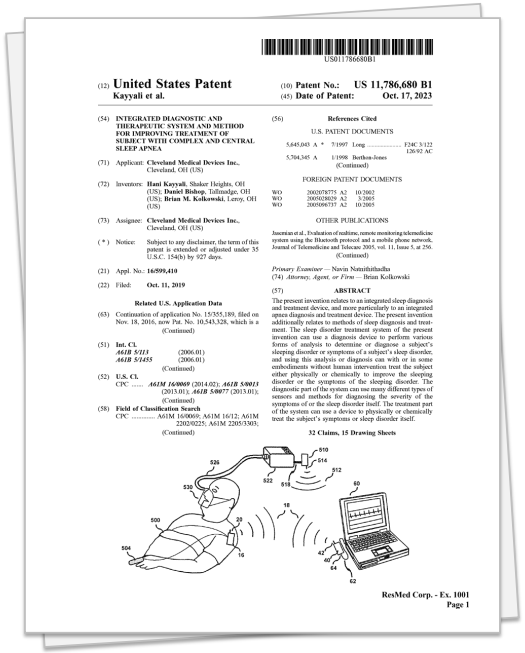
Fig. 8

EX1001 (’921 Patent), Fig. 8
921 Pet., 4-6

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 6

The ’680 Patent



US011786680B1

(12) **United States Patent**
Kayyali et al.

(10) **Patent No.: US 11,786,680 B1**
(45) **Date of Patent: Oct. 17, 2023**

(54) **INTEGRATED DIAGNOSTIC AND THERAPEUTIC SYSTEM AND METHOD FOR IMPROVING TREATMENT OF SUBJECT WITH COMPLEX AND CENTRAL SLEEP APNEA**

(71) Applicant: **Cleveland Medical Devices Inc.**, Cleveland, OH (US)

(72) Inventors: **Hani Kayyali**, Shaker Heights, OH (US); **Daniel Bishop**, Tallmadge, OH (US); **Brian M. Kolkowski**, Lorain, OH (US)

(73) Assignee: **Cleveland Medical Devices Inc.**, Cleveland, OH (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 927 days.

(21) Appl. No.: **16/599,410**

(22) Filed: **Oct. 11, 2019**

Related U.S. Application Data

(63) Continuation of application No. 15/355,189, filed on Nov. 18, 2016, now Pat. No. 10,543,328, which is a (Continued)

(51) **Int. Cl.**
A61B 5/113 (2006.01)
A61B 5/1455 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***A61M 16/0069*** (2014.02); ***A61B 5/0011*** (2013.01); ***A61B 5/0077*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC A61M 16/0069; A61M 16/12; A61M 2202/0225; A61M 2205/3305;
(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,645,043 A * 7/1997 Long ..... F24C 3/122 126/92 AC
5,704,345 A 1/1998 Berthon-Jones
(Continued)

FOREIGN PATENT DOCUMENTS

WO 2002/078775 A2 10/2002
WO 2005/028029 A2 3/2005
WO 2005/086737 A2 10/2005

OTHER PUBLICATIONS

Jasemian et al., Evaluation of realtime, remote monitoring telemedicine system using the Bluetooth protocol and a mobile phone network, Journal of Telemedicine and Telecare 2005, vol. 11, Issue 5, at 250.
(Continued)

Primary Examiner — Navin Natnithithadha
(74) *Attorney, Agent, or Firm* — Brian Kolkowski

(57) **ABSTRACT**

The present invention relates to an integrated sleep diagnosis and treatment device, and more particularly to an integrated apnea diagnosis and treatment device. The present invention additionally relates to methods of sleep diagnosis and treatment. The sleep disorder treatment system of the present invention can use a diagnosis device to perform various forms of analysis to determine or diagnose a subject’s sleeping disorder or symptoms of a subject’s sleep disorder, and using this analysis or diagnosis can with or in some embodiments without human intervention treat the subject either physically or chemically to improve the sleeping disorder or the symptoms of the sleeping disorder. The diagnostic part of the system can use many different types of sensors and methods for diagnosing the severity of the symptoms of or the sleep disorder itself. The treatment part of the system can use a device to physically or chemically treat the subject’s symptoms or sleep disorder itself.

32 Claims, 15 Drawing Sheets

ResMed Corp. - Ex. 1001
Page 1

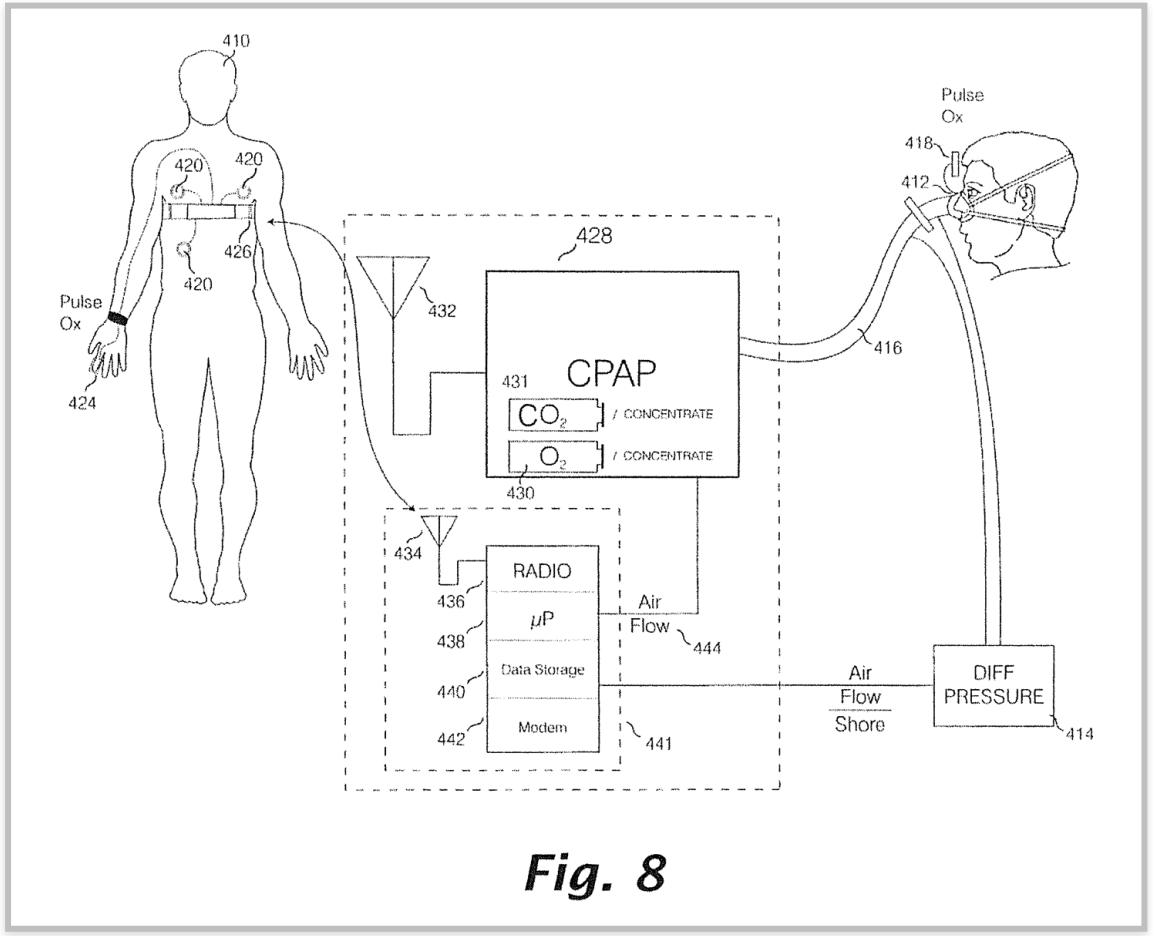


Fig. 8

EX1001 (’680 Patent), Fig. 8
680 Pet., 5-7

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

State of the Art

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 8

A Number of Auto-Adjusting PAPs Were Available at the Time

Table 1
Comparison of parameters detected by automatic positive airway devices

Device	Manufacturer	Parameters detected			
		Sn	A/H (flow)	A/H (FOT)	FL
Autoset Autoset Clinical Autoset Portable Autoset T Autoset Spirit	ResCare/ResMed, Sydney, Australia, San Diego, CA, Saint Priest, France	+	+		+
Eclipse Auto	Taema, Antony, France	+	+		
Goodknight TM418A	Puritan Benett, Pleasanton, CA/Mallinckrodt, Les Ulis, France	+	+		
Goodknight TM418P	Puritan Benett, Pleasanton, CA/Mallincrodt, Les Ulis, France	+	+		+
Horizon AutoAdjust	DeVilbiss Healthcare,Inc./Sunrise Medical, Somerset, PA, Parcay Meslay, France	+	+		
Morphee Plus Cloudnine	Pierre Medical, Verrieres-Le-Buisson, France/Nellcor-Puritan Benett, Minneapolis, MN		+		
REM + with MC + REM + Auto	SEFAM/Nellcor-Puritan Benett, Nancy, France	+	+		
REMstar Auto	Respironics Inc., Murrysville, PA	+	+		+
Somnosmart	Weiman, Hamburg,Germany			+	
Tranquility Auto	Respironics Inc., Murrysville, PA		+		+
Virtuoso LX	Respironics Inc., Murrysville,PA	+			

Abbreviations: Sn, snoring (detected by mask pressure vibration); A, apnea; H, hypopnea; flow, airflow detected by pneumotachograph, nasal pressure, or changes in compressor speed; FOT, forced oscillation technique; FL, flow limitation (detected by flow versus time profile).

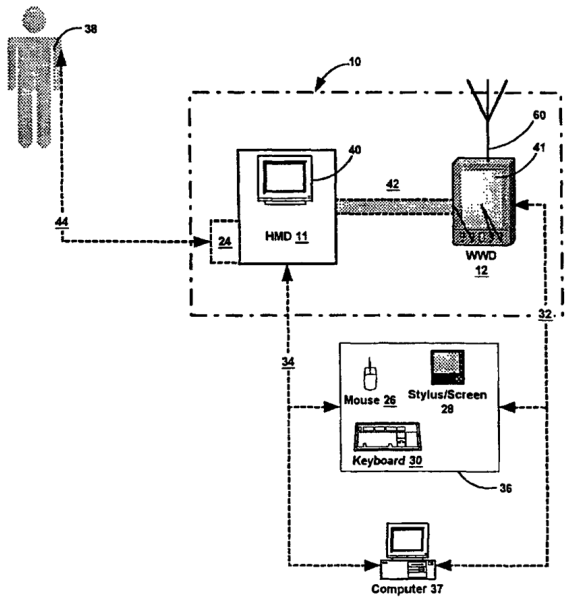
921 Pet., 1-2; 921 EX1003 (Kirkness Decl.), ¶83;
680 Pet., 2-3; 680 EX1003 (Kirkness Decl.) ¶82

EX1032, 2-3

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Mobile Computer Developments in Early 2000s Spurred Networking of Consumer Devices

(54) Title: METHOD AND APPARATUS FOR PATIENT MONITORING WITH WIRELESS INTERNET CONNECTIVITY



(57) Abstract: Embodiments of the invention provide a method and apparatus for a wireless health monitoring system for interactively monitoring a disease or health condition of a patient (38) by connecting an internet-enabled wireless web device ("WWD") (12) to a health monitoring device (11) which may be a medical device or other health related device such as an exercise machine. The WWD (12) may be connected to the health monitoring device directly by a wired connection (42) to a generic input/output device port of the WWD (12) using an optional adaptor if necessary. Alternatively, the WWD (12) may be wirelessly connected (16) to the health-monitoring device, such as via an infrared or radio frequency connection, including using protocols such as Bluetooth or 802.11. The wireless connection (16) may also employ an adaptor if necessary. The user may also input data to the WWD (12) manually, such as by a keypad, keyboard, stylus, or optionally by voice command (36). The health related data is transmitted from the WWD (12) to a server (37) using standard internet protocols. The server (37) calculates a response using a software program which may include an algorithm or artificial intelligence system, and may further provide for review by a physician or health specialist. The user may interact with the server (37). For example, the server (37) transmits a response to the WWD (12), and the user may answer the response or provide other information.

EX1049, Abstract

Dr. Chatterjee:

"At least as of 2002, wireless networks of smart sensors had become feasible for many applications because of technological advances in semiconductors, energy-efficient wireless communications, and reduced power budgets for computational devices, as well as the development of novel sensing materials."

921 EX1005 (Chatterjee Decl.), ¶48
680 EX1005 (Chatterjee Decl.), ¶48

constantly distracted by these numerous devices. The aim of ubiquitous computing is to design computing infrastructures in such a manner that they integrate seamlessly with the environment and become almost invisible. This is analogous to the "profound technologies," such as the

EX1048, 112

921 Pet., 4; 921 EX1005 ¶¶48-54
680 Pet., 4; 680 EX1005 ¶¶48-54

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc., IPR2025-00159
Ex. 1087 - Page 10

PAP Data Was Being Collected From Patients in Their Homes

Downloaded Data

Abstract
***Background*—Continuous positive airway pressure (CPAP) with fixed mask pressure is the current standard treatment for obstructive sleep apnoea (OSA). Auto-CPAP devices apply at any time the minimally required pressure to normalise breathing and may improve patient comfort and compliance. We present an open descriptive study of auto-CPAP treatment at home in patients previously managed with conventional CPAP.**

For this study we used the REM+ Auto device (Version 1.6, Sefam, Villers Les Nancy, France). This device adapts mask pressure after detection of respiratory pauses or acoustic vibrations. The pressure range was set from 5 to 15 cm H_2O. Data on effective CPAP use and the amount of time spent at different levels of nasal pressure were downloaded from the device after one and two months of treatment.

EX1042, 1-2

Networked Data

ABSTRACT

The objective of this study was to evaluate the accuracy and reproducibility of a novel method for transmitting continuous positive airway pressure treatment (CPAP) compliance and usage data. Using wireless and Internet technology to transmit/receive clinical data, we examined and compared these data to the same data collected using a traditional flow generator-to-PC interface. Previously diagnosed patients were given commercially available flow generators to use in the home setting for a 30-day period. They then returned to transmit these data to a base site as well as to download the same data to a floppy disk for comparative purposes. The

EX1043, 1

921 Pet., 3-4; 921 EX1003 (Kirkness Decl.), ¶¶99-100;
680 Pet., 3-4; 680 EX1003 (Kirkness Decl.), ¶¶99-100

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 11

Internet-Connected Graphical Mobile Phones Available to Consumers

The Nokia 9000 Communicator

921 EX1005 ¶26
680 EX1005 ¶26

921 Pet., 3-4; 921 EX1005 ¶¶25-31
680 Pet., 3-4; 680 EX1005 ¶¶25-31

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

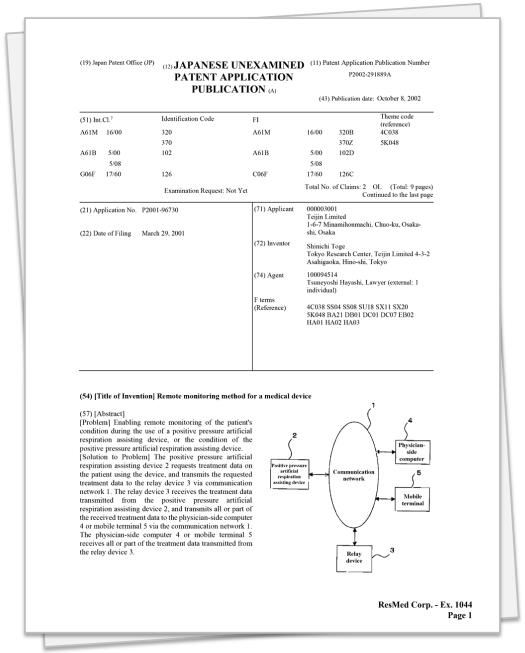
Resmed

Asserted Prior Art

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 13

Toge Discloses a Networked PAP Telemedicine System



(19) Japan Patent Office (JP) (12) **JAPANESE UNEXAMINED PATENT APPLICATION PUBLICATION** (A)

(11) Patent Application Publication Number P2002-291889A

(43) Publication date: October 8, 2002

(51) Int.Cl.7		Identification Code	FI			Theme code (reference)
A61M	16/00	320	A61M	16/00	320B	4C038
		370			370Z	5K048
A61B	5/00	102	A61B	5/00	102D	
	5/08			5/08		
G06F	17/60	126	C06F	17/60	126C	

Examination Request: Not Yet

Total No. of Claims: 2 OL (Total: 9 pages) Continued to the last page

(21) Application No. P2001-96730

(22) Date of Filing March 29, 2001

(71) Applicant 000003001 Teijin Limited 1-6-7 Minamihonmachi, Chuo-ku, Osaka-shi, Osaka

(72) Inventor Shinichi Toge Tokyo Research Center, Teijin Limited 4-3-2 Asahigaoka, Hino-shi, Tokyo

(74) Agent 100094514 Tsuneyoshi Hayashi, Lawyer (external: 1 individual)

F terms (Reference) 4C038 SS04 SS08 SU18 SX11 SX20 5K048 BA21 DB01 DC01 DC07 EB02 HA01 HA02 HA03

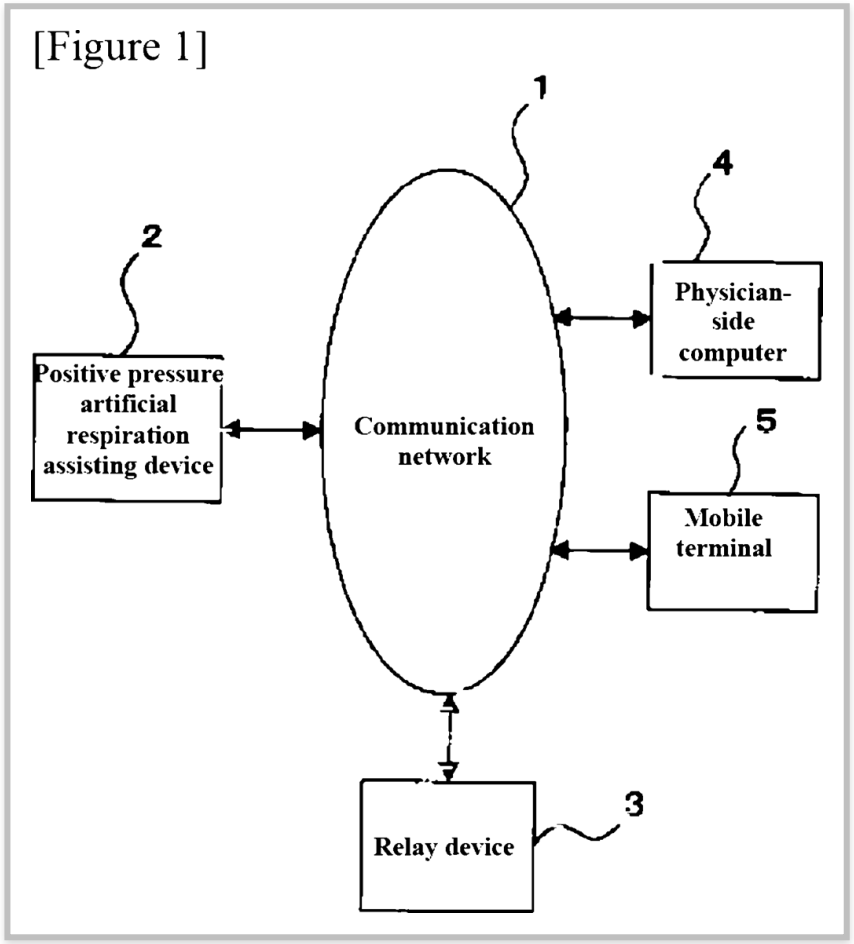
(54) [Title of Invention] Remote monitoring method for a medical device

(57) [Abstract]

[Problem] Enabling remote monitoring of the patient's condition during the use of a positive pressure artificial respiration assisting device, or the condition of the positive pressure artificial respiration assisting device.

[Solution to Problem] The positive pressure artificial respiration assisting device 2 requests treatment data on the patient using the device, and transmits the requested treatment data to the relay device 3 via communication network 1. The relay device 3 receives the treatment data transmitted from the positive pressure artificial respiration assisting device 2, and transmits all or part of the received treatment data to the physician-side computer 4 or mobile terminal 5 via the communication network 1. The physician-side computer 4 or mobile terminal 5 receives all or part of the treatment data transmitted from the relay device 3.

ResMed Corp. - Ex. 1044
Page 1

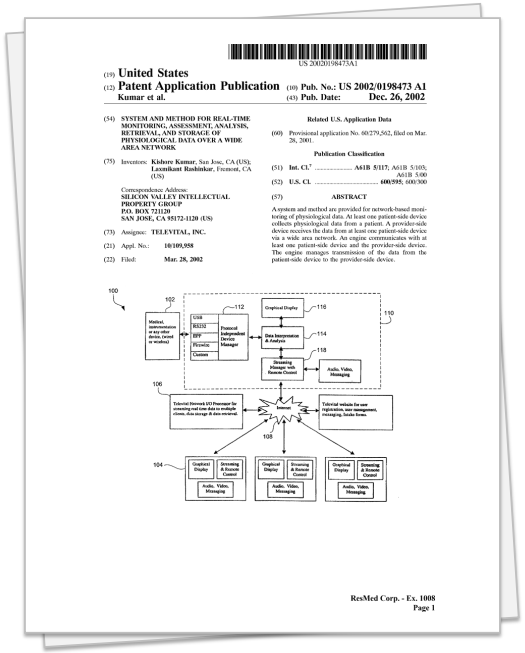


921 Pet., 8-9; EX1003 ¶¶109-119; EX1005 ¶¶60-62
680 Pet., 25-27; EX1003 ¶¶107-116; EX1005 ¶¶58-60

EX1044 (Toge), Fig. 1

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Kumar Discloses a Networked Multi-Purpose Telemedicine System



US 2002/0198473A1

(19) United States
(12) Patent Application Publication
Kumar et al.
(10) Pub. No.: US 2002/0198473 A1
(43) Pub. Date: Dec. 26, 2002

(54) SYSTEM AND METHOD FOR REAL-TIME MONITORING, ASSESSMENT, ANALYSIS, RETRIEVAL, AND STORAGE OF PHYSIOLOGICAL DATA OVER A WIDE AREA NETWORK

(75) Inventors: Kishore Kumar, San Jose, CA (US); Laxmikant Rashinkar, Fremont, CA (US)

Correspondence Address:
SILICON VALLEY INTELLECTUAL PROPERTY GROUP
P.O. BOX 721120
SAN JOSE, CA 95172-1120 (US)

(73) Assignee: TELEVITAL, INC.

(21) Appl. No.: 10/109,958

(22) Filed: Mar. 28, 2002

Related U.S. Application Data

(60) Provisional application No. 60/279,562, filed on Mar. 28, 2001.

Publication Classification

(51) Int. Cl.[7] A61B 5/117; A61B 5/103; A61B 5/00

(52) U.S. Cl. 600/595; 600/300

(57) ABSTRACT

A system and method are provided for network-based monitoring of physiological data. At least one patient-side device collects physiological data from a patient. A provider-side device receives the data from at least one patient-side device via a wide area network. An engine communicates with at least one patient-side device and the provider-side device. The engine manages transmission of the data from the patient-side device to the provider-side device.

ResMed Corp. - Ex. 1008
Page 1

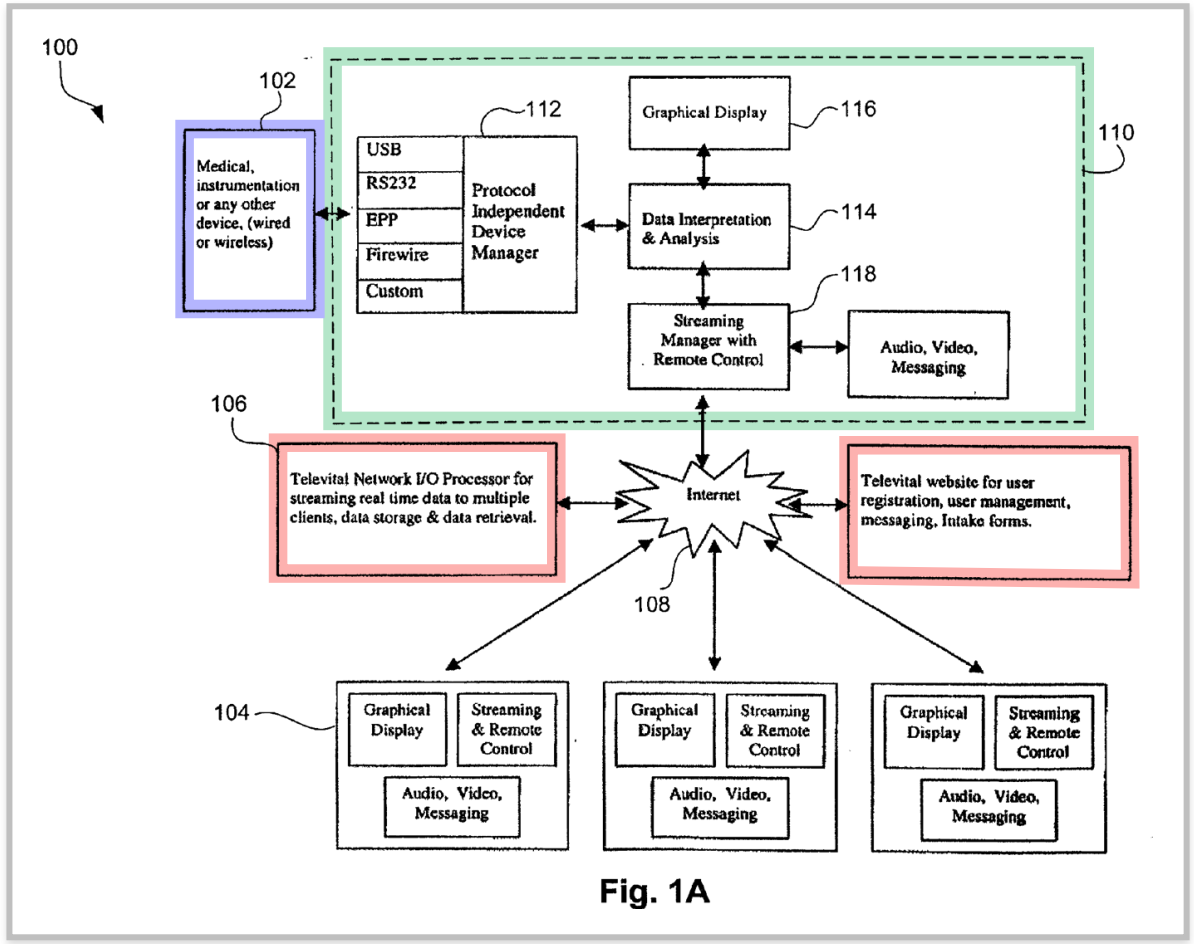


Fig. 1A

921 Pet., 10-11; EX1003 ¶¶20-122; EX1005 ¶¶66-68
680 Pet., 12-15; EX1003 ¶¶117-119; EX1005 ¶¶64-66

EX1008 (Kumar), Fig .1A (annotated)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Disputed Limitations

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 16

“Remote Internet Site” (’921/’680)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 17

"Remote Internet Site"

'921 Patent

1. A sleeping disorder treatment system comprising:
a PAP device configured to be a single enclosure, the PAP device comprising:

* * *

a remote internet site, the remote internet site adapted to receive the data relate to the subject's treatment and the treatment's efficacy, in whole or part, generated by the PAP device and transmitted via the first radio frequency wireless transceiver,
wherein the software is further adapted to retransmit a data related to the subject's treatment and the treatment's efficacy received by the software from the first radio frequency wireless transceiver of the PAP device, in whole or part, to the remote internet site, and

EX1001 ('921 Patent), Claim 1

'680 Patent

1. A system for remote internet server-based diagnostic monitoring with one or more positive airway pressure (PAP) device(s) for sleep disorder treatment comprising

* * *

C. a second non-transitory computer readable medium comprising at least one second software for a remote internet site and a database, the remote internet site and the database stored on a non-transitory computer readable medium and adapted to:
1) Be hosted on at least one server, and
2) be used for remote monitoring of multiple subjects receiving PAP therapy;

* * *

the at least one second software for the remote internet site and the database is further adapted to receive the PAP therapy efficacy data, in whole or in part, generated by the PAP device and transmitted via the at least one second radio frequency wireless transceiver.

EX1001 ('680 Patent), Claim 1

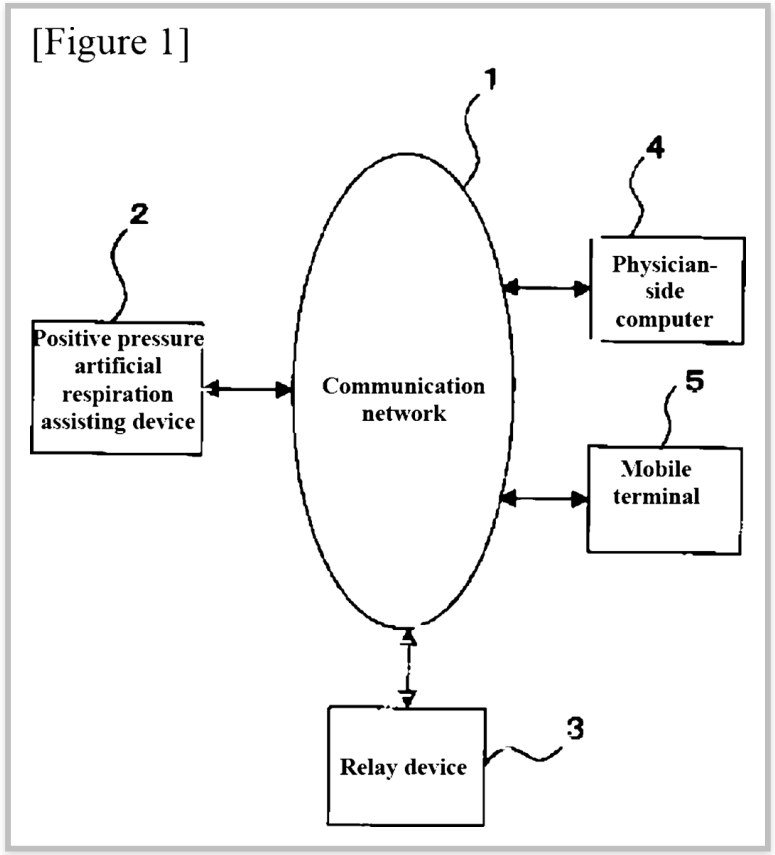
921 Pet., 6, 78-79; 680 Pet., 6, 79-80

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 18

Toge in View of the Knowledge of a POSITA Renders Obvious a "Remote Internet Site"



[0009] The communication network 1 may be any of a public telephone network, the Internet, a mobile communication network, or a dedicated line network; alternatively, it may also be a combination of these networks.

EX1044, Fig 1, [0009]

921 Pet., 9, 48-49; 921 Rep., 1-3

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Toge in View of Kumar Renders Obvious a "Remote Internet Site"

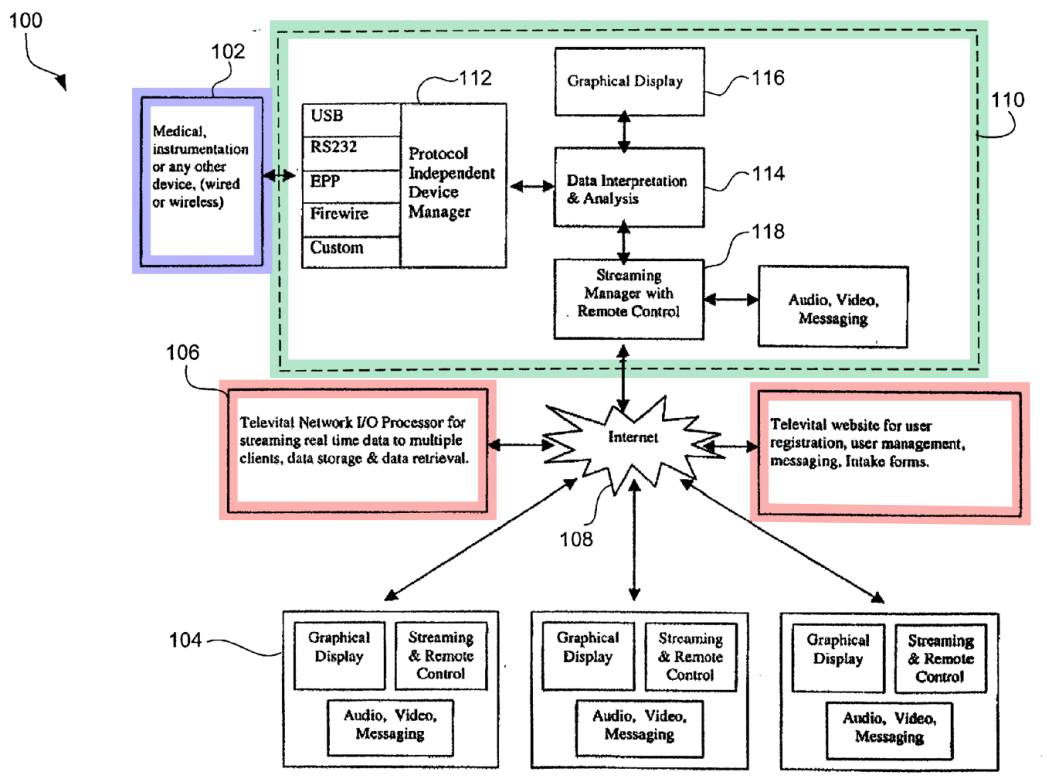


Fig. 1A

EX1008, Fig. 1A (annotated)

[0010] The present invention provides a system and method for remote monitoring of medical and/or biofeedback devices over a wide area network (WAN) such as the Internet. In a preferred embodiment, a browser-based engine supports real-time streaming of information over the WAN.

engine, each coupled to the WAN. The engine manages transmission of the data from the patient-side device to the provider-side device. This means that the engine may con-

and an engine implemented on a central server **106**. The

[0086] Preferably, the entire system runs in the context of an Internet browser. Integration of the client-side device

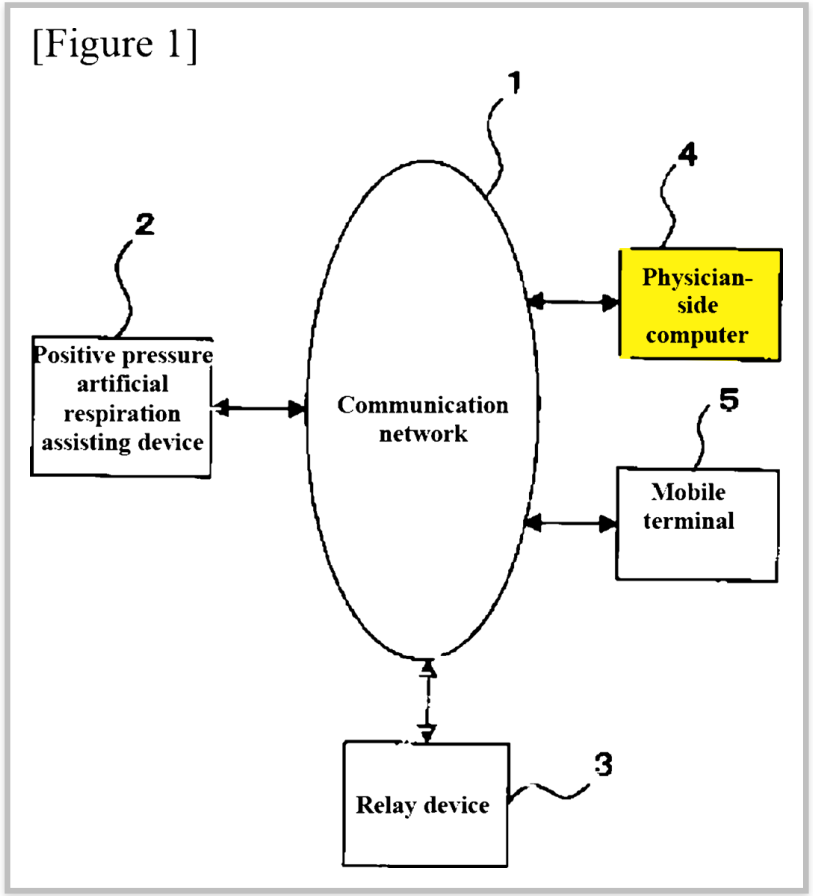
[0239] Sleep Apnea-Hypopnea Syndrome

EX1008, [0010], [0011], [0067], [0086], [0239]

921 Pet., 10-11, 48-53; 921 Rep., 3-7
680 Pet., 8-15, 45-48; 680 Rep., 1-2

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Toge's Physician-Side Computer Implemented With Kumar's Remote Internet Site



EX1044, Fig. 1 (annotated)

921 EX1005 ¶¶147-155;
680 EX1005 ¶¶70, 85-86, 90

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

A POSITA Would Have Been Motivated to Implement a Remote Internet Site With Toge's PAP System

- Growth in telemedicine and market trend to network consumer/medical devices
- Improve remote patient PAP treatment
- Convenience and efficacy of sleep apnea treatment
- Provide treatment to more people
- Provide greater patient access to physicians

- Store in database at a central server to aggregate and analyze patient data
- Give physicians broad access to data collection and analysis
- Analyze disease trends in large sets of aggregated patient data
- Allow physicians to share data to seek expert consultation

921 Pet., 15-17, 52-53; 921 Rep., 3-12; 680 Pet., 18-20, 29; 680 Rep., 8-15

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

A POSITA Would Have Been Motivated to Implement a Remote Internet Site With Toge's PAP System

Increase Treatment Efficacy

[0004] As a result, physicians often lacked sufficient knowledge about the specific treatment conditions at home, particularly regarding the patient's condition and the status of the positive pressure artificial respiration assisting device during its actual usage.

EX1044, [0004]

Provide Better Patient Access

[0003] Telemedicine, also known as telehealth, is the communication over distance through text, audio or video media for the education, evaluation and treatment of disease and illness. Telehealth is the use of information technology and telecommunication for providing access to health assessments, diagnoses, interventions, supervision, consultations, education, and information across a distance.

EX1008, [0003]

Better Analyze Aggregate Data

[0083] Whether or not the provider is currently accessing real-time streamed information, the data may be stored in a secured storage device at the central server for later access, replay, and/or analysis. The storage device may also be used to store all patient data or information, and integrate the data, whether as raw data, trended data, or summary data, into any electronic medical records system, for example. Thus, the exemplary embodiment may allow for simultaneous storage, retrieval, print, analysis, and play back from anywhere in the world with access to the storage device. This beneficially allows a provider to seek expert consultation for clinically difficult cases, by sharing the patient history and medical test results online. Further, storage of the data allows for the creation of statistical databases, including development of a database of biomedical test results, for example. For example the results of routine medical tests may be stored from the biomedical device directly into the patient's electronic medical record. Further, personal health information can be stored in smart-cards that can be carried by a patient, and which may also carry other personal information such as credit card and bank account data.

EX1008, [0083]

Improve Data Acquisition

Various approaches have been developed to expedite the collection and analysis of these data. Current CPAP devices can be interfaced with a computer in the office or home setting to download data. Newer modems can interface with the CPAP unit and the integrated chip to facilitate the reporting of remote data and reduce the need for face-to-face visits. Also, smart cards can be inserted into slots in the CPAP units to imprint the data. These cards are then transported to the appropriate professional in a variety of ways, including the use of mail carriers or other modes, to reduce the need for direct patient travel for regular compliance reporting. However, these methods may be inadequate when the physical presence of the patient is required in the reporting process. Examples include patients losing or failing to mail data cards as well as problems in connecting and operating modems. Compliance reporting has become increasingly important in view of

The present study evaluates a further innovative and evolutionary development in the collection and reporting of compliance data, using wireless and Internet technologies to transmit clinical data. Several parameters of this

EX1043, 2

921 Pet., 15-17, 52-53; 921 Rep., 3-12; 921 EX1003 ¶140; EX1005 ¶¶76-87, 146-155
680 Pet., 18-20, 29, 45-46; 680 Rep., 8-15; 680 EX1003 ¶141; 680 EX1005 ¶¶70-81, 89

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 23

A POSITA Would Have Been Motivated to Implement Toge's Physician-Side Computer as a Remote Internet Site for the Same Reasons

146. Toge discloses that "communication network 1 may be any of a public telephone network, ***the Internet***, a mobile communication network, or a dedicated line network; alternatively, it may also be a combination of these networks." Ex. 1044, [0009]. A person of ordinary skill in the art would have understood that if data can be transmitted through the Internet to and from the physician-side computer, the physician-side computer could be implemented as a web server. As I discussed in Section V.A, web content lives on a web server. It was well within the skill of a person of ordinary skill in the art to host data on the physician-side computer to allow others to access the data through the Internet. *See* Section V.A.

921 EX1005 ¶146

148. Third, the modifications would simply be a change of programming. Toge already discloses a telemedicine system (including a PAP device, mobile phone, and physician-side computer, all of which are connected to a network). Ex. 1044, [0008] (The remote "telemedicine system comprises a positive pressure artificial respiration assisting device 2, a relay device 3, and…a physician-side computer 4 and a mobile terminal 5, all connected to communication network 1."), Fig. 1. The modifications would simply be a change of programming to the control unit 250 of Toge to output the efficacy and severity data of Burton, and a change of programming on the physician-side computer to allow it to host web pages. Given this, a POSITA would have had a reasonable expectation of success in implementing the system resulting from the combination of the teachings of Toge, Burton, and Kumar.

921 EX1003 ¶148

921 Pet., 15-20, 52-53; 921 Rep., 3-12; 921 EX1005 ¶¶76-87, 146-155
680 Pet., 18-22, 29; 680 Rep., 8-15; 680 EX1005 ¶¶70-81, 89

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Implementing Kumar's Remote Internet Site With Toge's PAP System Would Not Have Destroyed Toge's "purpose"

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Both the Toge and Kumar Systems Transmit Data in Real-Time or Periodically

Toge

[0007] Furthermore, the positive pressure artificial respiration assisting device, which delivers positive pressure air containing atmospheric air or air containing more oxygen than atmospheric air mixed with atmospheric air to assist the patient's breathing, is characterized by comprising: a treatment data acquisition means for requesting treatment data on a patient using the device, a memory means for storing treatment data obtained by the treatment data acquisition means, and a transmitting means connected to a wireless or wired communication network for transmitting treatment data stored in the memory means via the communication network.

[0044] By transmitting the minute breathing rate N almost in real-time or at regular intervals, physicians can also know the real-time or periodic condition of the patient.

EX1044, [0007], [0044]

[0047] By transmitting the oxygen saturation measured by the oxygen saturation monitor almost in real-time or at regular intervals, physicians can almost instantly or periodically know the patient's oxygen saturation level. Then, if the oxygen saturation, for example, falls below 90%, physicians can take emergency measures such as adjusting the prescription pressure to a higher level remotely from the physician-side computer 4 or mobile terminal 5, operating the positive pressure artificial respiration assisting device 2 in conjunction with an oxygen concentrator, or adjusting the flow rate from the oxygen concentrator if one is being used in conjunction.

EX1044, [0047]

Kumar

[0010] The present invention provides a system and method for remote monitoring of medical and/or biofeedback devices over a wide area network (WAN) such as the Internet. In a preferred embodiment, a browser-based engine supports real-time streaming of information over the WAN. In an exemplary embodiment, the system allows for the real-time streaming of raw, interpreted, and processed physiological data as well as textual/audio/video data from a patient/client to a health care provider. However, other embodiments may contemplate non-medical/non-biofeedback devices and non-human monitoring.

[0014] By receiving data from the patient-side device, a provider is able to monitor the patient/client's physiology for research, keeping track of documentation, performing analysis, managing and maintaining records, diagnosing the patient/client, providing treatment in real-time to the patient/client, etc. Additionally, the patient/client may be remotely "examined" by an expert or other medical personnel when one is not physically available or accessible. Such situations may occur, for example, when a patient/client or provider is in or on an airplane or ship, or when the patient/client or provider is located in a different part of the world. The present invention also allows for daily or periodic monitoring of patients without the need for the patient/client to travel to the provider's location. This is ideal for nursing homes and home care patients.

EX1008, [0010], [0014]

921 Pet., 39, 50-54; 921 Rep., 6-7

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 26

The Toge-Kumar PAP System Provides for Real-Time Data Transmission

19. It is my opinion that incorporation of Kumar's web-based engine into Toge's PAP system would still enable the PAP to "push" data to physician-side devices as needed. As a threshold matter, Dr. Goodrich does not explain why the system would necessarily require the web clients to pull the information. There is nothing inherent about a machine serving as both a client and server that prevents it from pushing data as soon as it is received. If anything, because the physician-side computer and the web server are on one machine, the physician will receive the data at the same time as the web server, communicating the data to the physician more quickly.

921 EX1069 (Chatterjee Rep. Decl.), ¶19
680 EX1069 (Chatterjee Rep. Decl.), ¶19

921 Rep., 7; 680 Rep., 6-7

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The Toge-Kumar PAP System Provides for Real-Time Data Transmission Even if the Data Is Requested

Long-Polling Technology

Q. Did web servers in the 2005 time frame have a push application available to them to push the data to a client device on another machine?

A. I'm not sure what you mean by "push application available to them." But the technology, like I just explained to you, where you're -- the client is making a request to the server, then that connection remains open, and then as soon as new data comes into the server, the server immediately provides that new data to the client. And that certainly existed at HTTP/1.0.

EX2033 (Chatterjee Rep. Tr.), 56:21-57:24

921 Rep., 7; 921 EX1069 ¶¶18-20
680 Rep., 7, 680 EX1069 ¶¶18-20; EX2033 55:14-61:16

Continuous Query

20. Even if the web clients could only pull information, the design of the system could always be implemented in a way to address emergency situations. If the server identifies an emergency, the server could automatically push out such data. Further, when the physician's web client is active, it could continuously query the server to see if new data has been received.

921 EX1069 ¶20
680 EX1069 ¶20

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

A POSITA Would Have Implemented Toge's Physician-Side Computer as a Remote Internet Site/Web Server

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 29

"[O]ur case law does not require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide motivation for the current invention."

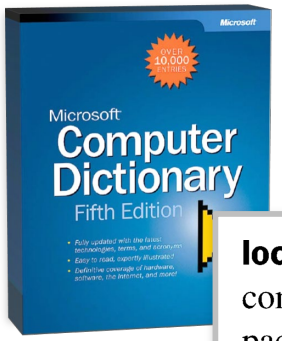
In re Fulton, 391 F.3d 1195, 1200 (Fed. Cir. 2004)

921 Rep., 12; 680 Rep., 8

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The Physician-Side Computer Implemented as the Web Server Was a Well-Known Design Choice



localhost *n.* The name that is used to represent the same computer on which a TCP/IP message originates. An IP packet sent to localhost has the IP address 127.0.0.1 and does not actually go out to the Internet. *See also* IP address, packet (definition 1), TCP/IP.

EX1070

A. … But in general, you can have a client on the same machine as the server.

921 EX2018 (Chatterjee Tr.), 10:14-16;
680 EX2018 (Chatterjee Tr.), 10:14-16

Q. And the combination we're talking about in which Toge's physician-side computer is operating as a web client, as well as a web server; is that correct?

A. Yes. But like I explained, that's not what this is talking about. This is talking about the situation where you don't have or cannot have other clients that are accessing the server.

With the web client, a web browser can be run on multiple devices, and by putting in the URL for the physician-side computer, which is running the server, any of those devices can access the data from the physician-side computer. So in the combination, the benefits of distributed computing directly come into play. And I talked about that throughout my original declaration, and I talked about it additionally in my reply declarations.

EX2033, 25:14-26:7 (discussing EX2020)

921 Rep., 4-5; 921 EX1069 ¶¶4-9;
680 Rep., 2-3; 680 EX1069 ¶¶4-9; EX2033, 23:1-27:23

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The Physician-Side Computer Implemented as the Web Server Is Not Limited to Single-Tier Architecture

> In a typical client/server based application, the client process and server process can be on the same computer, or distributed in two or more computers. A single-tier client/server application consists of a single layer that supports the user interface, the business rules, and the data manipulation processes all on one computer. This kind of application is rarely used today because it will not take advantage of the distributed computing environment.

EX2020, 4

680 Sur-Reply at 4 (citing EX2020, 4)
921 Sur-Reply at 6-7 (citing EX2020 , 4)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The Physician-Side Computer Implemented as the Web Server Would Be the Same Computer but Not Limited to One Computer

> In a typical client/server based application, the client process and server process can be on the same computer, or distributed in two or more computers. A single-tier client/server application consists of a single layer that supports the user interface, the business rules, and the data manipulation processes all on one computer. This kind of application is rarely used today because it will not take advantage of the distributed computing environment.

EX2020, 4

680 Sur-Rep., 4 (citing EX2020 at 4)
921 Sur-Rep., 6-7 (citing EX2020 at 4)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The Physician-Side Computer Implemented as the Web Server Is Not a Personal Computer

[0017] The physician-side computer 4 is a computer installed at a medical institution (hospital, clinic, medical office, etc.) that receives data from a relay device 3 (namely, all or part of the data transmitted from the positive pressure artificial respiration assisting device 2 to the relay device 3).

EX1044, [0017]

680 Pet., 10 (citing EX1044, [0017])
921 Pet., 22 (citing EX1044, [0017]-[0018])

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The Physician-Side Computer Implemented as the Web Server Can Be Multiple Computers

[0069] The embodiments presented herein contemplate connection of multiple patient-side devices, provider-side devices, and engines/central servers. Because a plurality of devices and engines may be in operation, the system may be capable of networking the numerous devices and/or engines into individual, group, clinic, hospital, or other electronic record systems. For simplicity, the discussion will proceed with description of a system having a single patient-side device, provider-side device, and engine/central server; it being understood that one skilled in the art would be able to use the system with multiple devices connected without undue experimentation.

EX1008, [0069]

680 Pet., 13 (citing EX1008 at [0069]); see also 921 Rep., 4 n.1

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The Physician-Side Computer Implemented as the Web Server Would Have Been Secure

A. … [T]hen obviously the answer to your question about security limitations is going to be different from if the client and server are implemented in a proper way…

EX2018, 15:3-7

Q. How would a POSITA implement a clients and server that are on the same machine in a proper way such that security vulnerabilities for example, web server vulnerabilities, would be mitigated?

A. I'm not sure I understand the question. If you have the web browser and the web server on the same machine, you have very few, if any, vulnerabilities. And like I've explained, security is handled by, for example, the use of HTTPS. Again, these are all industry standard technologies. The use of web servers and web pages and web browsers was not new or uncommon. There's a reason why there were web pages and websites for millions of companies, banks, because this was all secure, well-built technology if you did it the correct way.

921 Rep., 5; 921 EX1069 ¶¶11- 17;
680 Rep., 3-4 ; 680 EX1069 ¶¶11- 17; EX2033, 28:9-30:9, 32:1-44:4

A. And so, yes, exactly what I'm talking about in my combinations for the patents that we're talking about here, that's precisely what was done in the software industry at that time and even before that time, and I myself, in developing one of the first mobile banking systems in the world, if not the first mobile banking system in the world, used the same secure web technologies to do this.

Q. And with access to the general public network or other devices, doesn't that introduce security issues?

A. It does not. That's my point. If the use of web technologies, even in 2005 or even before that, introduced security issues, then nobody would be -- would have been using web technologies at that time. And so the whole point I'm trying to make is that there are correct ways of using industry standard technologies. And even in the 2005 and earlier time frame a POSITA would have known those best practices, and regardless, whatever issues there are -- and I think I touch on this in other portions of my reply declaration -- that there would not be these fundamental security vulnerabilities.

EX2033, 28:9-25, 30:1-9 , 37:6-22

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The Physician-Side Computer Implemented as the Web Server Would Have Been Secure

12: Physical Database Design and Database Security

- 12.1: Introduction
- 12.2: Background
- 12.3: Physical DB Design Process
- 12.4: Data Partitioning
- 12.5: Describe Three Types of File Organization
- 12.6: Translate a Database Model into Efficient Structures
  - 12.6.1: Designing a Database for Optimal Query Performance
- 12.7: Concise Summary
- 12.8: Extended Resources
- 12.9: References

12: Physical Database Design and Database Security is shared under a not declared license and was authored, remixed, and/or curated by LibreTexts.

EX1071

680 Rep., 4 (citing EX1071); 921 Rep., 5 (citing EX1071)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 37

Motivation to combine "assumes that a skilled artisan is a person of ordinary creativity with common sense, common wisdom, and common knowledge."

Elekta Ltd. v. ZAP Surgical Sys., Inc., 81 F.4th 1368, 1374 (Fed. Cir. 2023)

921 Rep., 12; 680 Rep., 3

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 38

A Physician-Side Computer Implemented as a Web Server Would Have Been Effective

16. Dr. Goodrich further suggests that implementing the physician-side computer as a web server would result in "performance reductions," that would discourage a POSITA from using the configuration. Goodrich Decl. ¶49 ("[I]mplementing multiple services, such as a web server and the client software on the same machine would create contention for the CPU(s), memory, network bandwidth, and input/output resources on that machine"). But, as discussed, different configurations have different tradeoffs. Dr. Goodrich does not demonstrate that the configuration I have described, in which the physician-side computer web server is accessed by, for instance, a physician's cell phone, would have the above described performance issues that have a greater impact than the alternative configuration that Dr. Goodrich suggests. Nor could he, as many performance issues can be addressed by implementing other design enhancements (such as increasing network bandwidth) or using different hardware that are not relevant to this analysis.

17. Regardless, it is my opinion that a POSITA would have been aware of options available to mitigate such issues and improve computing performance of the configuration. Consequently, a POSITA would have been motivated to implement the physician-side computer of Toge as a web server as taught by Kumar.

921 Rep., 4-6; 680 Rep., 3-5

921 EX1069 ¶¶16-17; 680 EX1069 ¶¶16-17

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

"[A] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate a motivation to combine."

Medichem, S.A. v. Rolabo, S.L., 437 F.3d 1157, 1165 (Fed. Cir. 2006)

680 Rep., 4-5, 12-15

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 40

“Retransmit” Data (’921, Independent Claims 1 and 7)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 41

"Retransmit" Should Be Given Its Plain and Ordinary Meaning

retransmit	
Petitioner	Patent Owner
plain and ordinary meaning Rep., 18	"receiving data and then sending data to another device [excluding a transmission in response to a request]" POR, 32

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

"Retransmit" Should Be Given Its Plain and Ordinary Meaning

"[I]f [retransmit] simply means 'receiving data and then sending the data to another device' (POR at 32) as 'opposed to a transmission in response to a request,' then CleveMed agrees that the plain and ordinary meaning of the term is so limited"

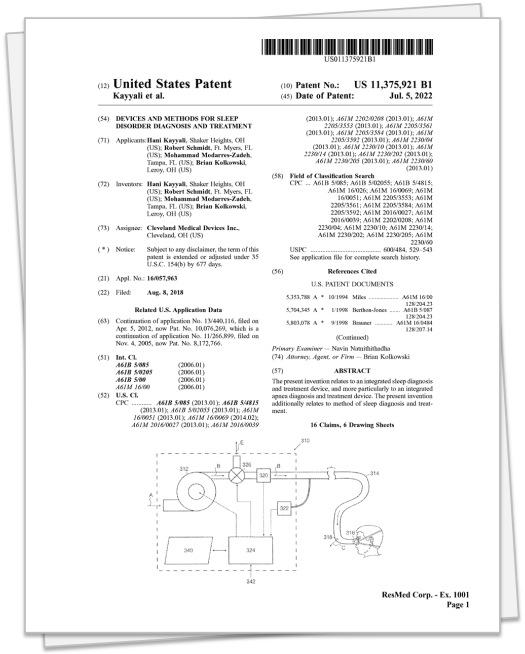
Sur-Reply, 20-21, 22

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

PO's Unprocessed Requirement Is Unsupported by the '921 Specification

The '921 Specification Does Not Define Retransmit



US011375921B1

(12) **United States Patent**
Kayyali et al.

(10) **Patent No.: US 11,375,921 B1**
(45) **Date of Patent: Jul. 5, 2022**

(54) **DEVICES AND METHODS FOR SLEEP DISORDER DIAGNOSIS AND TREATMENT**

(71) Applicants: **Hani Kayyali**, Shaker Heights, OH (US); **Robert Schmidt**, Ft. Myers, FL (US); **Mohammad Modarres-Zadeh**, Tampa, FL (US); **Brian Kolkowski**, Leroy, OH (US)

(72) Inventors: **Hani Kayyali**, Shaker Heights, OH (US); **Robert Schmidt**, Ft. Myers, FL (US); **Mohammad Modarres-Zadeh**, Tampa, FL (US); **Brian Kolkowski**, Leroy, OH (US)

(73) Assignee: **Cleveland Medical Devices Inc.**, Cleveland, OH (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 677 days.

(21) Appl. No.: **16/057,963**

(22) Filed: **Aug. 8, 2018**

Related U.S. Application Data

(63) Continuation of application No. 13/440,116, filed on Apr. 5, 2012, now Pat. No. 10,076,269, which is a continuation of application No. 11/266,899, filed on Nov. 4, 2005, now Pat. No. 8,172,766.

(51) **Int. Cl.**
A61B 5/085 (2006.01)
A61B 5/0205 (2006.01)
A61B 5/00 (2006.01)
A61M 16/00 (2006.01)

(52) **U.S. Cl.**
CPC ***A61B 5/085*** (2013.01); ***A61B 5/4815*** (2013.01); *A61B 5/02055* (2013.01); *A61M 16/0051* (2013.01); *A61M 16/0069* (2014.02); *A61M 2016/0027* (2013.01); *A61M 2016/0039* (2013.01); *A61M 2202/0208* (2013.01); *A61M 2205/3553* (2013.01); *A61M 2205/3561* (2013.01); *A61M 2205/3584* (2013.01); *A61M 2205/3592* (2013.01); *A61M 2230/04* (2013.01); *A61M 2230/10* (2013.01); *A61M 2230/14* (2013.01); *A61M 2230/202* (2013.01); *A61M 2230/205* (2013.01); *A61M 2230/60* (2013.01)

(58) **Field of Classification Search**
CPC ... A61B 5/085; A61B 5/02055; A61B 5/4815; A61M 16/026; A61M 16/0069; A61M 16/0051; A61M 2205/3553; A61M 2205/3561; A61M 2205/3584; A61M 2205/3592; A61M 2016/0027; A61M 2016/0039; A61M 2202/0208; A61M 2230/04; A61M 2230/10; A61M 2230/14; A61M 2230/202; A61M 2230/205; A61M 2230/60
USPC 600/484, 529–543
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,353,788 A * 10/1994 Miles A61M 16/00 128/204.23
5,704,345 A * 1/1998 Bethun-Jones A61B 5/087 128/204.23
5,803,078 A * 9/1998 Brunner A61M 16/0484 128/207.14

(Continued)

Primary Examiner — Navin Nimirthithadha
(74) *Attorney, Agent, or Firm* — Brian Kolkowski

(57) **ABSTRACT**

The present invention relates to an integrated sleep diagnosis and treatment device, and more particularly to an integrated apnea diagnosis and treatment device. The present invention additionally relates to method of sleep diagnosis and treatment.

16 Claims, 6 Drawing Sheets

ResMed Corp. - Ex. 1001
Page 1

by the subject's physician or another clinician. Another example is where the remote communication system is a PDA, computer or cell phone, which receives the physiological data transmission, optionally re-processes the information, and re-transmits the information via cell towers, land phone lines, satellite, radio frequencies or cable to a remote site for analysis. Another example is where the

POR 32 (citing EX1001, 19:35-41)

Rep., 18-21

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc., IPR2025-00159
Ex. 1087 - Page 44

PO's Interpretation That Retransmitted Data Cannot Have Been Requested Is Unsupported by the '921 Specification

The '921 Specification Does Not Describe or Limit How Data Is Retransmitted

PO's Position

"Client devices like the physician's mobile device would ***request data*** from the web server ***instead of receiving it*** from the PAP device."

Sur-Reply, 16 (emphasis added)

The '921 Disclosure

by the subject's physician or another clinician. Another example is where the remote communication system is a PDA, computer or cell phone, which receives the physiological data transmission, optionally re-processes the information, and re-transmits the information via cell towers, land phone lines, satellite, radio frequencies or cable to a remote site for analysis. Another example is where the

EX1001, 19:35-4

Rep., 18-21; POR, 32

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 45

Data That Is Retransmitted Encompasses Data That Is Requested

Q. It's an intermediary device that receives the data -- first receives the data, and then just pushes the data onward to an end device. That's what I mean by an intermediary device.

A. So I'm not really sure -- like when you're talking about pushes the data, I don't think retransmit is limited to pushing data. It simply means to a POSITA that you're getting that data, and that you could do something with that data, and then you're sending that data.

EX2033, 63:14-24

EX2033, 62:14-76:4

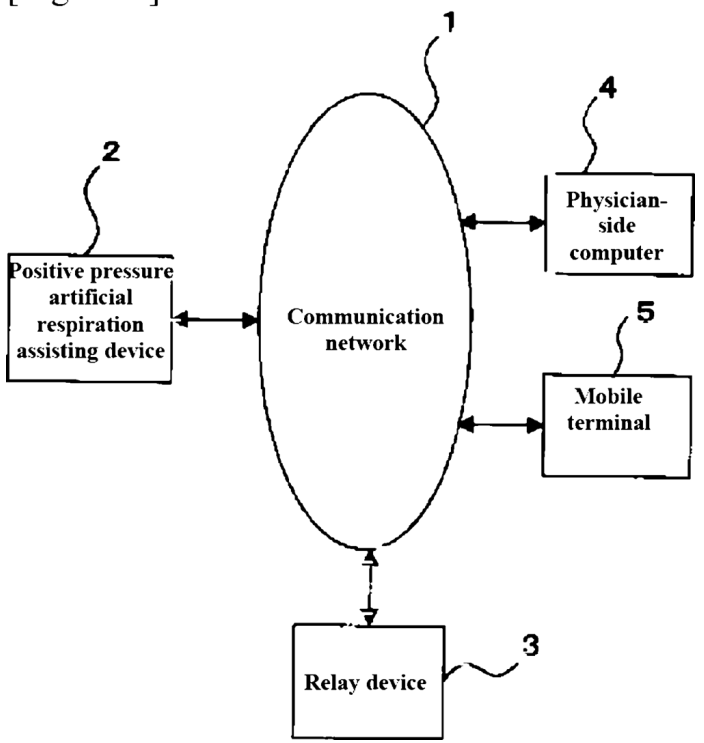
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The Toge-Kumar System Retransmits Data Under PO's Interpretation

The Toge-Kumar System Would Encompass a "push" Implementation

[Figure 1]



EX1044, Fig. 1

[0049] 3. Configuration and operation of the relay device

The relay device 3 can be constructed using computers, server devices, or similar equipment. The relay device 3 receives the transmitted data from the positive pressure artificial respiration assisting device 2 as described earlier.

EX1044, [0049]

Q. Okay. And then Paragraph 26 you alluded to that it is your automatically push data that has been received, where the data would come in and then be pushed to another device?

* * *

A. Well, what I'm stating in Paragraph 26 is that the Toge/Kumar system is not limited to a pull system and could be implemented to automatically "push data that has been received."

EX2033, 71:23-72:8 (objection omitted)

921 Pet., 55-56; 921 Rep., 21-22

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 47

The Toge-Kumar System Retransmits Data Under PO's Interpretation

The physician does not have to "request" the data

Q. And in your querying, the web server example that you also spoke to, that's where the web browser client is active on the computer; is that correct, for the querying?

* * *

A. So like I explained to you, when I use the term active, I meant, as an example, the physician sitting in front of the computer and doing some work, but it doesn't even have to be like that. Like I've explained to you, the long polling, it works by the data is received and then immediately the client in long polling will send another request. And so the physician doesn't even have to be sitting there in front of the computer. The data would show up using long polling, or even continuous polling.

EX2033, 74:7-24 (objection omitted)

Rep., 21-22, Sur-Reply, 18

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

The Toge-Kumar System Renders Obvious the "retransmit" Limitation in Claims 1 and 7 of the '921 Patent

1. A sleeping disorder treatment system comprising:
a PAP device configured to be a single enclosure, the PAP device comprising:

* * *

a software stored on a non-transitory computer readable medium and executable by a second processor, the software adapted to be used with and to display the data related to the subject's treatment and the treatment's efficacy to the subject or a care provider by using a base station, a cell phone or a PDA, each comprising a second radio frequency wireless transceiver, the second processor and a display; and
a remote internet site, the remote internet site adapted to receive the data relate to the subject's treatment and the treatment's efficacy, in whole or part, generated by the PAP device and transmitted via the first radio frequency wireless transceiver,
wherein the software is further adapted to retransmit a data related to the subject's treatment and the treatment's efficacy received by the software from the first radio frequency wireless transceiver of the PAP device, in whole or part, to the remote internet site, and

921 Pet., 55-59
921 Rep., 13-22

7. A sleeping disorder treatment system comprising:
a PAP device configured to be a single enclosure, the PAP device comprising:
a blower having an air output;

* * *

a software stored on a non-transitory computer readable medium and executable by a second processor, the software adapted to be used with and to display the data related to the subject's treatment and the treatment's efficacy to the subject or a care provider by using a base station, a cell phone or a PDA, each comprising a second radio frequency wireless transceiver, the second processor and a display; and
a remote internet site, the remote internet site adapted to receive the data related to the subject's treatment and the treatment's efficacy, in whole or part, generated by the PAP device and transmitted via the first radio frequency wireless transceiver,
wherein the software is further adapted to receive, in whole or part, the data related to the subject's treatment and the treatment's efficacy generated by the PAP device that is first received by then retransmitted from the remote internet site, and

921 EX1001, Claims 1, 7 Excerpted

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

“Independently Receive” the Data (’921, Independent Claim 12)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 50

The Cell Phone and Remote Internet Site Independently Receive Data in the Toge-Kumar System

12. A sleeping disorder treatment system comprising:

a PAP device configured to be a single enclosure, the PAP device comprising:

* * *

a software stored on a non-transitory computer readable medium and executable by a second processor, the software adapted to be used with and to display the data related to the subject's treatment and the treatment's efficacy to the subject or a care provider by using a base station, a cell phone or a PDA, each comprising a second radio frequency wireless transceiver, the second processor and a display; and

a remote internet site, the remote internet site adapted to receive the data related to the subject's treatment and the treatment's efficacy, in whole or part, generated by the PAP device and transmitted via the first radio frequency wireless transceiver,

wherein both the software and the remote internet site independently receive, in whole or part, the data related to the subject's treatment and the treatment's efficacy generated by the PAP device, and

921 EX1001, Claim 12 Excerpted

[0081] Preferably, the engine manages transmission of the data from the patient-side device to the provider-side device. This means that the engine may configure the devices to transfer the data directly from one device to the other; may receive the data from the patient-side device and transmit the raw or processed data to the provider-side device; may store the data for later transmission to the provider-side device, etc.

EX1008, [0081]

921 Pet., 59-60;
921 Rep., 22-24

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

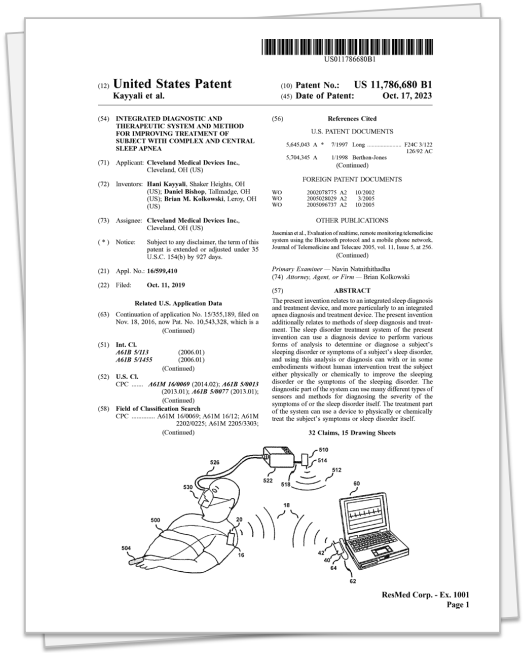
Resmed

Motivation to Combine (the ’680 Patent)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 52

The ’680 Patent Claim 1 – “patient cell phone”



US011786680B1

(12) **United States Patent**
Kayyali et al.

(10) **Patent No.: US 11,786,680 B1**
(45) **Date of Patent: Oct. 17, 2023**

(54) **INTEGRATED DIAGNOSTIC AND THERAPEUTIC SYSTEM AND METHOD FOR IMPROVING TREATMENT OF SUBJECT WITH COMPLEX AND CENTRAL SLEEP APNEA**

(71) Applicant: **Cleveland Medical Devices Inc.**, Cleveland, OH (US)

(72) Inventors: **Hani Kayyali**, Shaker Heights, OH (US); **Daniel Bishop**, Tallmadge, OH (US); **Brian M. Kolkowski**, Leroy, OH (US)

(73) Assignee: **Cleveland Medical Devices Inc.**, Cleveland, OH (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 927 days.

(21) Appl. No.: **16/599,410**

(22) Filed: **Oct. 11, 2019**

Related U.S. Application Data

(63) Continuation of application No. 15/355,189, filed on Nov. 18, 2016, now Pat. No. 10,543,328, which is a (Continued)

(51) **Int. Cl.**
A61B 5/113 (2006.01)
A61B 5/1455 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ..... ***A61M 16/0069*** (2014.02); ***A61B 5/0013*** (2013.01); ***A61B 5/0077*** (2013.01); (Continued)

(58) **Field of Classification Search**
CPC ..... A61M 16/0069; A61M 16/12; A61M 2202/0225; A61M 2205/3303; (Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,645,043 A * 7/1997 Long ..... F24C 3/122 126/92 AC
5,704,345 A 1/1998 Berthon-Jones
(Continued)

FOREIGN PATENT DOCUMENTS

WO 2002/078775 A2 10/2002
WO 2005/028029 A2 3/2005
WO 2005/096737 A2 10/2005

OTHER PUBLICATIONS

Jasenkas et al., Evaluation of realtime, remote monitoring telemedicine system using the Bluetooth protocol and a mobile phone network, Journal of Telemedicine and Telecare 2005, vol. 11, Issue 5, at 256.
(Continued)

Primary Examiner — Navin Natnithithadha
(74) *Attorney, Agent, or Firm* — Brian Kolkowski

(57) **ABSTRACT**

The present invention relates to an integrated sleep diagnosis and treatment device, and more particularly to an integrated apnea diagnosis and treatment device. The present invention additionally relates to methods of sleep diagnosis and treatment. The sleep disorder treatment system of the present invention can use a diagnosis device to perform various forms of analysis to determine or diagnose a subject’s sleeping disorder or symptoms of a subject’s sleep disorder, and using this analysis or diagnosis can with or in some embodiments without human intervention treat the subject either physically or chemically to improve the sleeping disorder or the symptoms of the sleeping disorder. The diagnostic part of the system can use many different types of sensors and methods for diagnosing the severity of the symptoms of or the sleep disorder itself. The treatment part of the system can use a device to physically or chemically treat the subject’s symptoms or sleep disorder itself.

32 Claims, 15 Drawing Sheets

ResMed Corp. - Ex. 1001
Page 1

680 Pet., 79

1. A system for remote internet server-based diagnostic monitoring with one or more positive airway pressure (PAP) device(s) for sleep disorder treatment comprising

* * *

B. a first non-transitory computer readable medium comprising a first software stored on the first non-transitory computer readable medium, the first software adapted to be executed by a first processor when the first software is downloaded to a cell phone of a subject(s) receiving treatment, the cell phone requiring:

* * *

the first software further adapted for:

i) receiving a PAP therapy efficacy data or a modified PAP therapy efficacy data based in part on the PAP therapy efficacy data both based on treatment of the subject and its efficacy in whole or in part, and

ii) outputting one or more PAP therapy efficacy measures(s) on the display of the cell phone for viewing by the subject based in whole or in part on the data received by the first software; and

EX1001 (’680 Patent), Claim 1 Excerpted

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc., IPR2025-00159
Ex. 1087 - Page 53

A POSITA Would Have Been Motivated to Implement a Patient Cell Phone With Toge's PAP System Based on Kumar

- Enable patients to easily view treatment data
- Allow storage of patient data for later viewing any time or any place
- Encourage patient compliance
- Increase patient engagement
- Reduce PAP size and/or increase portability by reducing or eliminating display screen on PAP

680 Pet., 32-34, 44-45, 680 Rep., 12-15

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

A POSITA Would Have Implemented a Patient Cell Phone With the Toge PAP System

Cell Phones That Could Display the Data Were Readily Available at the Time

25. Well before 2005, a person of ordinary skill in the art was aware of the trend towards mobile computing. For example, launched in 1996[2], the Nokia 9000 Communicator rolled all of the features of a computer into a phone, putting email, web browsing, fax, word processing and spreadsheets into a single pocketable device. (https://medium.com/people-gadgets/the-gadget-we-miss-thenokia-9000-

680 EX1005 ¶25

680 Pet., 3-4, 32-34; 680 Rep., 12-15; 680 EX1005 ¶¶25-31

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp., v. Cleveland Medical Devices, Inc.,
IPR2025-00159
Ex. 1087 - Page 55

A POSITA Would Have Implemented a Patient Cell Phone With the Toge PAP System

31. As the trend towards mobile computing was happening, a person of ordinary skill in the art would have recognized the importance of mobile and wireless computing, including wireless sensors.

680 EX1005 ¶31

A POSITA would have been aware of those devices in addition to their exponential uptake and would have been motivated to incorporate a patient-side cell phone into Toge's PAP system for the reasons discussed above.

680 Rep., 14

680 Pet., 32-34; 680 Rep., 12-14; 680 EX1005 ¶¶25-31

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Real Party in Interest

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp. Is the Only Real Party in Interest

> Resmed Corp. is the sole RPI in this case. Resmed Corp. (not Resmed Inc.) paid and continues to pay for this proceeding. And Resmed Corp. (not Resmed Inc.) directs and controls counsel in this proceeding. These facts are dispositive and

Petitioner's Opposition to Motion to Terminate, 1

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed

Resmed Corp. Is the Only Real Party in Interest

Invoice Number	Invoice Date	Payee	ResMed Matter Reference	Invoice Total with Currency (Use this for currency)	Type Reader	Matter Type	Source Currency	Raw Status Category	Owner	Client
2420617	11/25/2024	Paul Hastings LLP - Los Angeles	J344	[redacted]	J	Litigation	USD	litigation	ResMed Corp.	ResMed Corp
2423487	12/19/2024	Paul Hastings LLP - Los Angeles	J344	[redacted]	J	Litigation	USD	litigation	ResMed Corp.	ResMed Corp
2431735	2/28/2025	Paul Hastings LLP - Los Angeles	J344	[redacted]	J	Litigation	USD	litigation	ResMed Corp.	ResMed Corp
2440932	5/13/2025	Paul Hastings LLP - Los Angeles	J344	[redacted]	J	Litigation	USD	litigation	ResMed Corp.	ResMed Corp
2445470	6/24/2025	Paul Hastings LLP - Los Angeles	J344	[redacted]	J	Litigation	USD	litigation	ResMed Corp.	ResMed Corp
2449361	7/31/2025	Paul Hastings LLP - Los Angeles	J344	[redacted]	J	Litigation	USD	litigation	ResMed Corp.	ResMed Corp
JP33015	12/11/2024	Jason Paul Kirkness PhD (NLV), S	J344	[redacted]	J	Litigation	USD	litigation	ResMed Corp.	ResMed Corp
JP33016	2/2/2025	Jason Paul Kirkness PhD (NLV), S	J344	[redacted]	J	Litigation	USD	litigation	ResMed Corp.	ResMed Corp
JP33017	2/2/2025	Jason Paul Kirkness PhD (NLV), S	J344	[redacted]	J	Litigation	USD	litigation	ResMed Corp.	ResMed Corp

Owner	Client
ResMed Corp.	ResMed Corp

EX1080

Opp. Mot. Term., 2

Resmed

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Resmed Corp. Is the Only Real Party in Interest

Resmed | VIEWS | FIND | CREATE | REPORTS | ADMIN | J344

Conflict / Dispute Reference J344

Events | Tasks | Add Document

- Main Details
- Clients
- Parties
  - Subjects
  - Classifications
- Contacts
- Organizations
  - Associations
  - Prosecution
  - Opinions
- Conflict / Dispute Umbrella
  - Financials
  - Assoc. Agreements
  - Verification
  - Locations
  - Questionnaires
- Documents
  - Security
  - Related Records
  - Links

J344 - Live - US - Cancellation - RMD v CleveMed IPR

Options

Conflict / Dispute Organizations

Relationship	Organization Name	Organization Name (National)	Firm Code	Comments
Client	ResMed Corp.		RMCORP	
Law Firm	Paul Hastings LLP		PHLLP	

Add Organization

* Organization
* Relationship
Comments

ADD

Audit

Record created on 27 Oct 2024 by Piyush Tikoo

Law Engine Status: Enabled

Terms & Conditions | Privacy Policy

© Copyright 2002-2024 Anaqua, Inc. Proprietary & Confidential. All rights reserved.

RMD v CleveMed IPR

Organization Name
ResMed Corp.
Paul Hastings LLP

Opp. Mot. Term., 2

EX1081

Resmed

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE