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PTO Reg. # 57,418, MD Lic. # 1706200135

301.468.9233 (o)
240.678.7422 (c)

Abstracts from Representative Patents/Applications

The abstracts selected here showcase the diverse range of technologies spanned by the patent applications drafted by Steven Oppenheimer.

- **(1) Aviation / Data Processing** • *Preserving Vehicular Raw Vibration Data for Post-Event Analysis*
- **(2) Aviation / Electro-Mechanical / Signal Processing** • *Monitoring of Revolving Component Employing Time Synchronized Multiple Detectors*
- **(3) Biotechnology / Electrical** • *Hybrid Battery System With Bioelectric Cell for Implantable Cardiac Therapy Device*
- **(4) Biotechnology / Mechanical / Materials** • *Small Caliber Implantable Bioelectric Leads and Cables for Same*
- **(5) Biotechnology / Signal Processing** • *Assessing A Degree Of Vascular Blockage or Risk of Ischemia*
- **(6) Electro-Mechanical** • *Autocorrection for Uneven Print Pressure on Print Media*
- **(7) Electro-Mechanical / Data Encryption** • *Cryptographic Printhead*
- **(8) Electronics / Component, Circuit, Chip** • *Integrated Circuit with Modular Dynamic Power Optimization Architecture*
- **(9) Electronics / Controllers** • *Managing Performance Throttling in a Digital Controller*
- **(10) Electronics / Memory** • *Non-Volatile Memory Express (NVME) Over Compute Express Link (CXL)*
- **(11) Industrial Electronics** • *Imaging Barcode Reader with Color-Separated Aimer and Illuminator*
- **(12) Industrial Electronics / Power Systems** • *Multiple Switch Types Hybrid PEBB Power Converter*
- **(13) Industrial Sensing / Supply Chain** • *Supply Chain Tracking of Farm Produce...*
- **(14) Information Processing / Data Security** • *Generation of Randomized Passwords...*
- **(15) Signal Processing** • *Enhanced Matrix Symbol Error Correction*

For some abstracts, the figure shown here is not the one printed on the first page of the issued/published application. A different figure (but still taken from the actual patent/application) has been photo-shopped into place on the first page.



(19) **United States**

(12) **Patent Application Publication**
Dunning et al.

(10) **Pub. No.: US 2021/0139167 A1**

(43) **Pub. Date: May 13, 2021**

(54) **MONITORING OF A REVOLVING COMPONENT EMPLOYING TIME-SYNCHRONIZED MULTIPLE DETECTORS**

(52) **U.S. Cl.**
CPC . *B64F 5/60* (2017.01); *G07C 5/02* (2013.01)

(71) Applicant: **GE AVIATION SYSTEMS LIMITED**,
Gloucestershire (GB)

(57) **ABSTRACT**

(72) Inventors: **Paul Dunning**, Eastleigh (GB);
Nicholas Keningley, Eastleigh (GB);
Steven Bonnett, Eastleigh (GB);
Timothy North, Eastleigh (GB);
Matthew William Wiseman, Fairfield,
OH (US)

A system and method for acquiring accurate vibration data, time of arrival, or other mechanical state for a mechanical system with rotary elements, such as a planetary gear system with multiple planet gears that rotate relative to a central sun gear, or blades in a turbine engine. Multiple vibration sensors are arranged at spaced intervals along the exterior of the gear system (such as along the ring gear of the system or the exterior housing of the system). Each vibration sensor is so situated as to periodically detect vibrations from each one of the planet gears in succession, as the planet gears rotate around the central sun gear. Using timing and gear-system configuration information, a determination is made as to which gear is being sensed by any one sensor at any time; also determined is which teeth of each gear are being sensed by a particular sensor at any one time. The system and method consolidates the vibration data from multiple sensors to determine a consolidated vibration profile for each planet gear.

(73) Assignee: **GE AVIATION SYSTEMS LIMITED**,
Gloucestershire (GB)

(21) Appl. No.: **16/677,631**

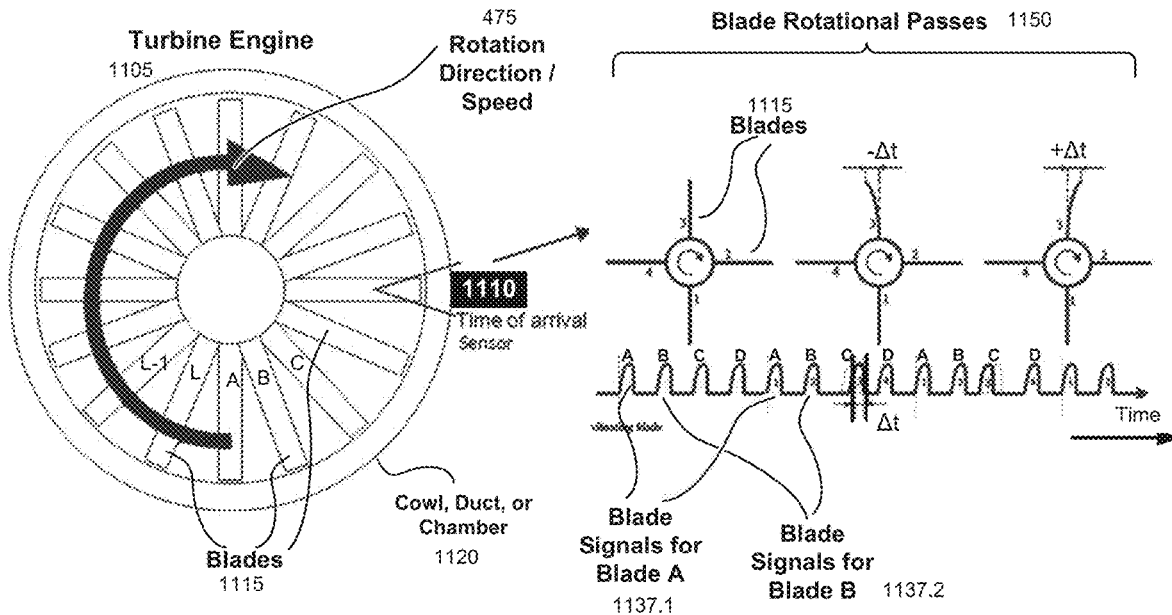
(22) Filed: **Nov. 7, 2019**

Publication Classification

(51) **Int. Cl.**
B64F 5/60 (2006.01)
G07C 5/02 (2006.01)

Blade Monitoring with Single Vibration Sensor

1100





US 20100114236A1

(19) **United States**

(12) **Patent Application Publication**

Jiang et al.

(10) **Pub. No.: US 2010/0114236 A1**

(43) **Pub. Date: May 6, 2010**

(54) **HYBRID BATTERY SYSTEM WITH BIOELECTRIC CELL FOR IMPLANTABLE CARDIAC THERAPY DEVICE**

Publication Classification

(51) **Int. Cl.**
A61N 1/362 (2006.01)
H01M 10/36 (2006.01)
(52) **U.S. Cl.** **607/35; 429/2**

(75) **Inventors:** **Naixiong Jiang**, Mountain View, CA (US); **Gene A. Bornzin**, Simi Valley, CA (US); **John W. Poore**, South Pasadena, CA (US)

(57) **ABSTRACT**

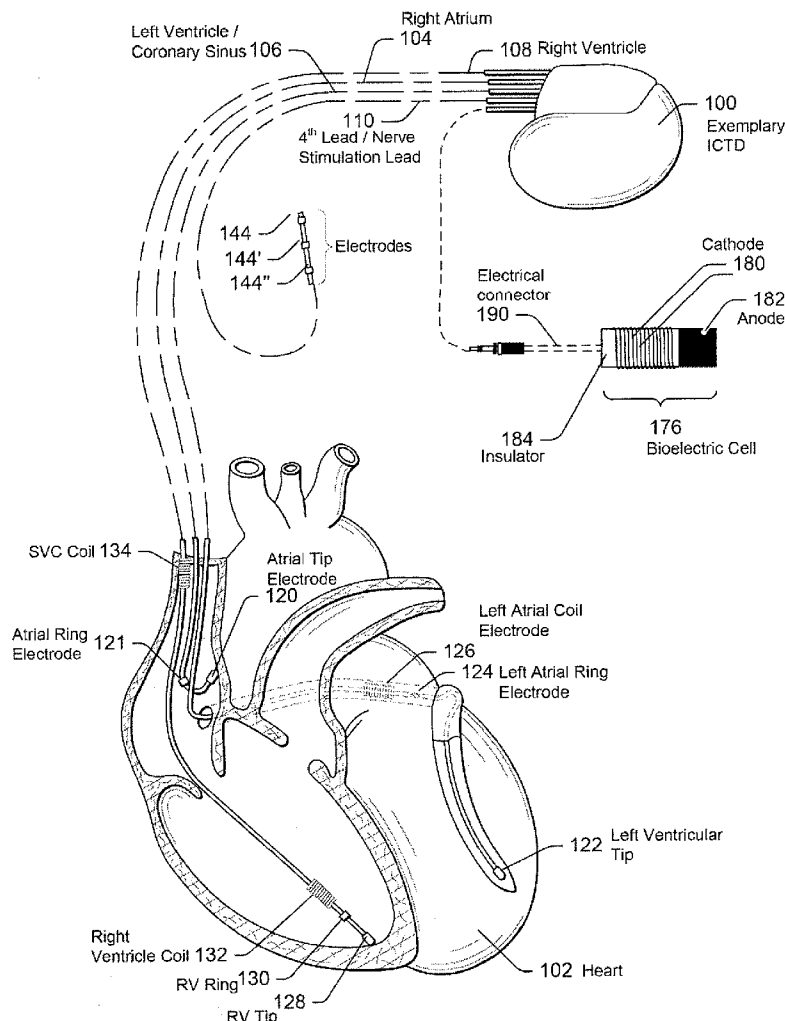
A system and method for powering an implantable cardiac therapy device (ICTD) via a hybrid battery system. The hybrid battery is comprised of a low voltage and low current bioelectric cell, a high voltage and high current rechargeable cell, and a charging means. Via the charging means, the bioelectric cell maintains the rechargeable cell at or near full power. The rechargeable cell is configured to power some or all operations of the ICTD. Some ICTD operations may be powered directly by the bioelectric cell. The rechargeable cell is further configured to be charged via a continuous charging process, reducing the complexity of the charging circuitry. In an embodiment, at least the bioelectric cell is external to the ICTD, enabling easy replacement of this power source. In an embodiment, a consumable anode of the bioelectric cell is external to the ICTD, enabling replacement of the power source by replacing only the anode.

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(73) **Assignee:** **PACESETTER INC.**, Sunnyvale, CA (US)

(21) **Appl. No.:** **12/263,348**

(22) **Filed:** **Oct. 31, 2008**





US008108053B2

(12) **United States Patent**
Zhao

(10) **Patent No.:** **US 8,108,053 B2**
(45) **Date of Patent:** **Jan. 31, 2012**

(54) **SMALL CALIBER IMPLANTABLE BIOMETRIC LEADS AND CABLES FOR SAME**

(75) Inventor: **Yong D. Zhao**, Simi Valley, CA (US)

(73) Assignee: **Pacesetter, Inc.**, Sylmar, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 534 days.

(21) Appl. No.: **12/370,461**

(22) Filed: **Feb. 12, 2009**

(65) **Prior Publication Data**

US 2010/0204767 A1 Aug. 12, 2010

(51) **Int. Cl.**
A61N 1/00 (2006.01)

(52) **U.S. Cl.** **607/122**

(58) **Field of Classification Search** 607/122
See application file for complete search history.

(56) **References Cited**

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5,476,483 A 12/1995 Bornzin et al.
6,314,323 B1 11/2001 Ekwall
7,366,556 B2* 4/2008 Brister et al. 600/347
2007/0106144 A1 5/2007 Squeri
2009/0192577 A1* 7/2009 Desai 607/116

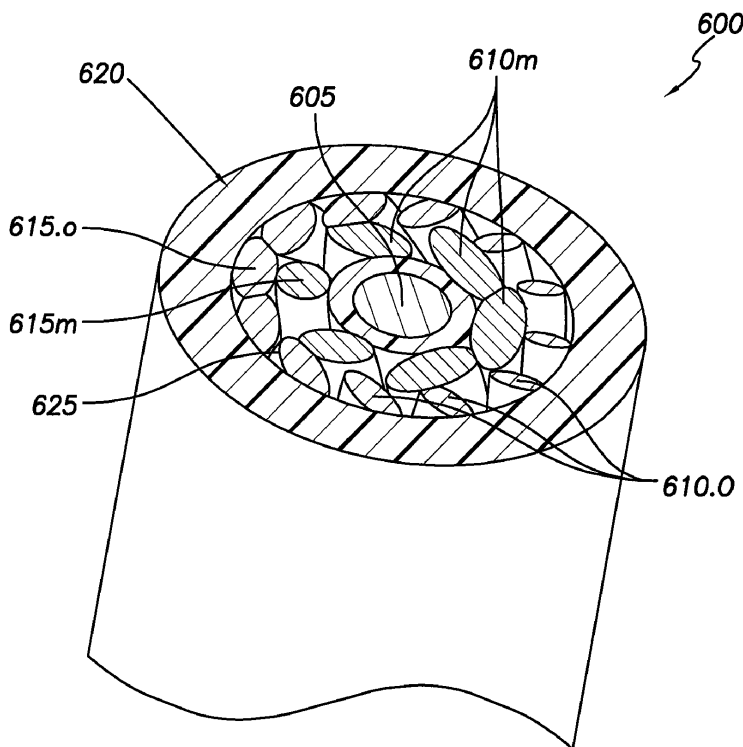
* cited by examiner

Primary Examiner — George Manuel

(57) **ABSTRACT**

Implantable medical leads have reduced diameter while providing for optimized mechanical and electrical properties, by reducing the diameters of the conducting cables used within the leads for sensing and delivery of therapeutic electrical stimulation. In an embodiment, conducting filaments within a cable have oval cross-sectional areas. Suitably orienting the oval filaments increases the contact surface between adjacent filaments, broadly distributing the pressure between filaments and reducing fretting fatigue, while the oval cross-sectional area also increases conductivity. In an embodiment, non-conducting coatings around filaments within a cable, or around groups of filaments organized into cable-layers, reduce fretting fatigue. In an embodiment, the cross-sectional area of filaments decreases as the filaments are positioned at increasing radial distances from the center of the cable. In an embodiment, the relative composition of various filament metals and/or alloys is varied in filaments at different radial distances from the center of the cable.

21 Claims, 26 Drawing Sheets





(19) **United States**

(12) **Patent Application Publication**
Koh

(10) **Pub. No.: US 2011/0082350 A1**

(43) **Pub. Date: Apr. 7, 2011**

(54) **ASSESSING A DEGREE OF VASCULAR
BLOCKAGE OR RISK OF ISCHEMIA**

(52) **U.S. Cl. 600/301; 600/484**

(57) **ABSTRACT**

(75) **Inventor: Steve Koh, South Pasadena, CA
(US)**

A system and method for determining a patient's degree of cardiac vascular blockage or, equivalently, a patient's risk of cardiac ischemia, based on the time interval between the onset of exercise activity and the onset of an episode of cardiac ischemia. In one embodiment, an implantable cardiac device may obtain an EGM and possibly other measures of patient physiologic activity. These measures are used to determine when the patient has initiated exercise activity. Analysis of the EGM then detects an elevated or depressed ST segment, which typically indicates an episode of cardiac ischemia. The time interval between the onset of exercise and the onset of ischemia is a metric reflecting the patient's degree of vascular blockage or, equivalently, the patient's risk of ischemia. Other metrics may be derived, such as a substantially workload-level invariant measure determined as the product of the exercise workload level and the ischemia onset time interval.

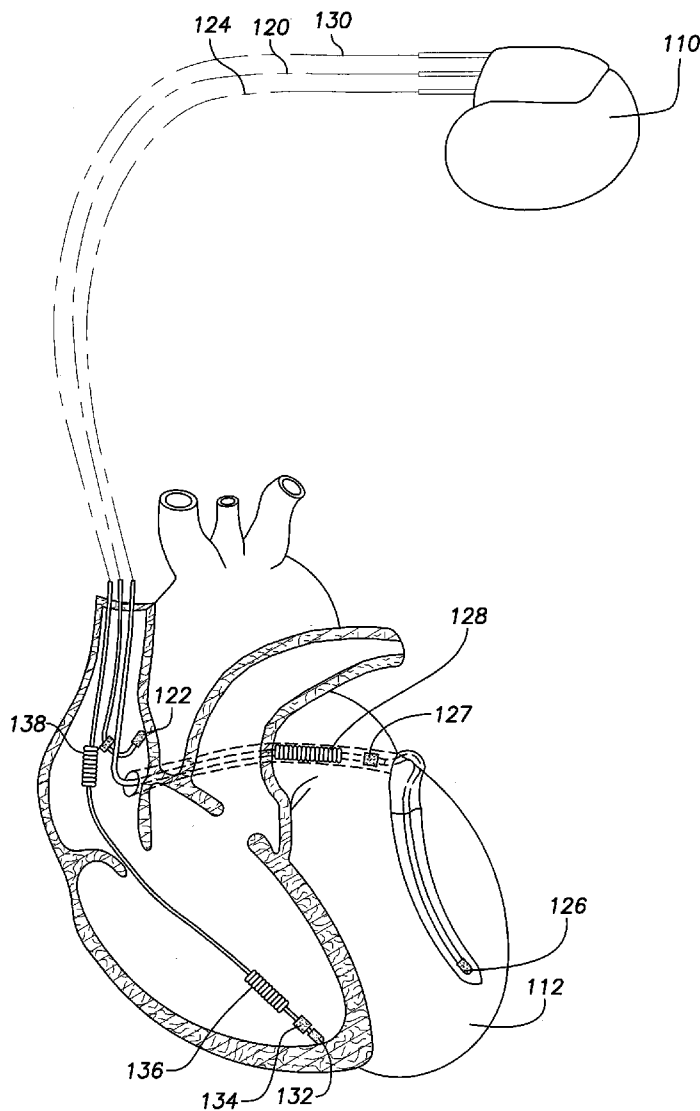
(73) **Assignee: PACESETTER, INC., Sylmar, CA
(US)**

(21) **Appl. No.: 12/573,735**

(22) **Filed: Oct. 5, 2009**

Publication Classification

(51) **Int. Cl. A61B 5/0205 (2006.01)**



(12) **United States Patent**
Ho

(10) **Patent No.:** **US 10,960,681 B2**
(45) **Date of Patent:** **Mar. 30, 2021**

(54) **AUTOCORRECTION FOR UNEVEN PRINT PRESSURE ON PRINT MEDIA**

7,128,266 B2 10/2006 Zhu et al.
7,159,783 B2 1/2007 Walczyk et al.
7,413,127 B2 8/2008 Ehrhart et al.

(71) Applicant: **Datamax-O'Neil Corporation**,
Altamonte Springs, FL (US)

(Continued)

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(72) Inventor: **Wai Kit Ho**, Singapore (SG)

WO 2013/163789 A1 11/2013

(73) Assignee: **DATAMAX-O'NEIL CORPORATION**, Altamonte Springs,
FL (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

Notice of Allowance for related U.S. Appl. No. 15/696,359, dated May 20, 2019, 10 pages.

(Continued)

(21) Appl. No.: **16/511,840**

Primary Examiner — Jannelle M Lebron

(22) Filed: **Jul. 15, 2019**

(74) *Attorney, Agent, or Firm* — Alston & Bird LLP

(65) **Prior Publication Data**

(57) **ABSTRACT**

US 2019/0337303 A1 Nov. 7, 2019

Related U.S. Application Data

A printer may be used to print on print media, such as labels, where the print media, as fed through the print, spans substantially less than the full width of the printhead and platen. This may result in uneven print pressure across the print media during the print process. The uneven print pressure, in turn, may result in an uneven print density on the print media, which causes poor print quality. A system and method is employed with identifies the uneven print pressure, and compensates for the uneven print pressure to ensure consistent print density and good print quality. Along segments of the printhead which apply a below average pressure to the print media, the printhead is configured to apply a proportionately higher density of an appropriate contrast-inducing element, such as ink or heat. Along segments of the printhead which apply an above average pressure to the print media, the printhead is configured to apply a proportionately lower density of an appropriate contrast-inducing element, such as ink or heat.

(63) Continuation of application No. 15/696,359, filed on Sep. 6, 2017, now Pat. No. 10,399,359.

(51) **Int. Cl.**
B41J 2/36 (2006.01)

(52) **U.S. Cl.**
CPC **B41J 2/362** (2013.01)

(58) **Field of Classification Search**
CPC B41J 29/393; B41J 2/32; B41J 2/36; B41J 2/362

See application file for complete search history.

(56) **References Cited**

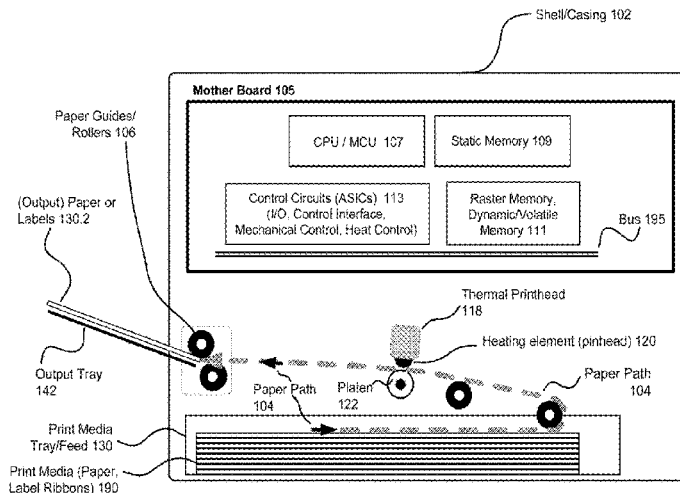
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4,827,279 A 5/1989 Lubinsky et al.
6,832,725 B2 12/2004 Gardiner et al.

17 Claims, 5 Drawing Sheets

Exemplary Thermal Printer

100



(12) **United States Patent**
d'Armancourt

(10) **Patent No.:** **US 10,373,032 B2**
(45) **Date of Patent:** **Aug. 6, 2019**

- (54) **CRYPTOGRAPHIC PRINthead** 6,250,824 B1 * 6/2001 Ogiyama B41J 2/325 347/172
- (71) Applicant: **Datamax-O'Neil Corporation**, Orlando, FL (US) 6,832,725 B2 12/2004 Gardiner et al. 7,039,185 B2 5/2006 Campagna et al. 7,128,266 B2 10/2006 Zhu et al. 7,159,783 B2 1/2007 Walczyk et al. 7,413,127 B2 8/2008 Ehrhart et al. 7,726,575 B2 6/2010 Wang et al.
- (72) Inventor: **Sébastien Michel Marie Joseph d'Armancourt**, Singapore (SG)
- (73) Assignee: **Datamax-O'Neil Corporation**, Orlando, FL (US)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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WO 2013163789 A1 11/2013

Primary Examiner — Yaovi M Ameh

(74) *Attorney, Agent, or Firm* — Additon, Higgins & Pendleton, P.A.

- (21) Appl. No.: **15/665,705**
(22) Filed: **Aug. 1, 2017**

- (65) **Prior Publication Data**
US 2019/0042901 A1 Feb. 7, 2019

- (51) **Int. Cl.**
H04N 1/32 (2006.01)
G06K 15/00 (2006.01)
G06K 15/02 (2006.01)
B41J 2/355 (2006.01)
- (52) **U.S. Cl.**
CPC **G06K 15/4095** (2013.01); **B41J 2/355** (2013.01); **G06K 15/028** (2013.01); **H04N 1/32272** (2013.01); **H04N 2201/3281** (2013.01)

- (58) **Field of Classification Search**
CPC ... G06K 15/4095; G06K 15/028; B41J 2/355; H04N 1/32272; H04N 2201/3281
See application file for complete search history.

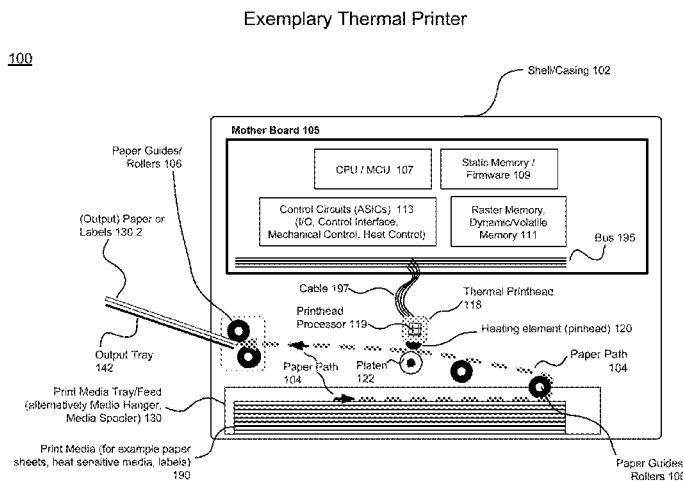
- (56) **References Cited**
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5,583,779 A 12/1996 Naclerio et al.
6,056,455 A * 5/2000 Klaus B41J 2/2132 400/176

(57) **ABSTRACT**

A printer is configured with a processor which calculates printhead control parameters, the control parameters being determined by the processor in such a way as to optimize the printing process of the printer's printhead. The processor determines the printhead control parameters according to an optimization algorithm stored in the printer. To maintain the internal security of the optimization algorithm, the printhead control parameters are encrypted by the processor. The encrypted printhead control parameters are then transmitted to the printhead via an internal data path of the printer. If a third party monitors the data along the internal data path, the encryption algorithm remains secure because the control parameters are encrypted. The printhead contains a second, dedicated processor. The printhead processor receives the encrypted printhead control parameters, and decrypts the control parameters. The printhead then prints according to the decrypted printhead control parameters, ensuring optimized printing.

17 Claims, 5 Drawing Sheets



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

(10) **Patent No.:** **US 8,171,323 B2**
(45) **Date of Patent:** **May 1, 2012**

(54) **INTEGRATED CIRCUIT WITH MODULAR DYNAMIC POWER OPTIMIZATION ARCHITECTURE**

(75) Inventors: **Vafa James Rakshani**, Newport Coast, CA (US); **Musaravakkam Samaram Krishnan**, Cupertino, CA (US)

(73) Assignee: **Broadcom Corporation**, Irvine, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 799 days.

(21) Appl. No.: **12/166,065**

(22) Filed: **Jul. 1, 2008**

(65) **Prior Publication Data**

US 2010/0005328 A1 Jan. 7, 2010

(51) **Int. Cl.**

G06F 1/00 (2006.01)
G06F 1/32 (2006.01)

(52) **U.S. Cl.** **713/323**; 713/300; 713/320; 713/322; 713/324

(58) **Field of Classification Search** 713/300, 713/320, 322-324, 500, 600; 714/1, 4.11, 714/10, 11, 13

See application file for complete search history.

(56) **References Cited**

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U.S. Appl. No. 11/073,229, filed Aug. 18, 2005, Krishnan.

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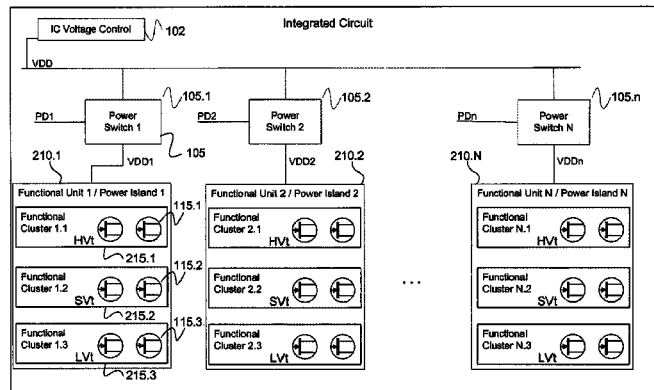
Primary Examiner — Thomas J Cleary

(74) Attorney, Agent, or Firm — Sterne, Kessler, Goldstein & Fox P.L.L.C.

(57) **ABSTRACT**

A system and method for regulating power consumption within an integrated circuit (IC) with a modular design. The IC is designed so that any one distinct functional module within the IC utilizes only transistors with a substantially same or similar critical voltage level, which may for example be the threshold voltage of the transistors. Consequently, the supply voltage delivered to each functional modules can be lowered to the minimum voltage necessary to enable the transistors within the module to operate. Similarly, modules within the IC may be designed with transistors which share a common value for a substrate bias voltage or a clock speed, or with a combination of common values for several electrical factors. In this way, it is possible to reduce power consumption by fine-tuning the voltages supplied to (or clock speeds driving) specific modules, in a way which is custom-tuned to each module.

22 Claims, 10 Drawing Sheets





(19) **United States**

(12) **Patent Application Publication**
CRESCI et al.

(10) **Pub. No.: US 2023/0236949 A1**

(43) **Pub. Date: Jul. 27, 2023**

(54) **MANAGING PERFORMANCE THROTTLING IN A DIGITAL CONTROLLER**

Publication Classification

(71) Applicant: **Micron Technology, Inc.**, Boise, ID (US)

(51) **Int. Cl.**
G06F 11/34 (2006.01)
G06F 12/0893 (2006.01)

(72) Inventors: **Federica CRESCI**, Boise, ID (US);
Nicola DEL GATTO, Boise, ID (US);
Emanuele CONFANOLIERI, Boise, ID (US)

(52) **U.S. Cl.**
CPC **G06F 11/349** (2013.01); **G06F 12/0893** (2013.01); **G06F 2212/601** (2013.01)

(73) Assignee: **Micron Technology, Inc.**, Boise, ID (US)

(57) **ABSTRACT**

Provided is a system and method for storing, via a processor, in a memory of an application specific integrated circuit (ASIC), one or more threshold values responsive to at least one of physical layer and processing layer operating conditions of the ASIC. Also included is monitoring at least one of a physical layer operating condition value and a processing layer performance condition value of the ASIC, the moderating forming a monitored value, comparing the monitored value with the stored threshold values, and throttling processing layer performance of the ASIC when the monitored value exceeds at least one of the stored threshold values.

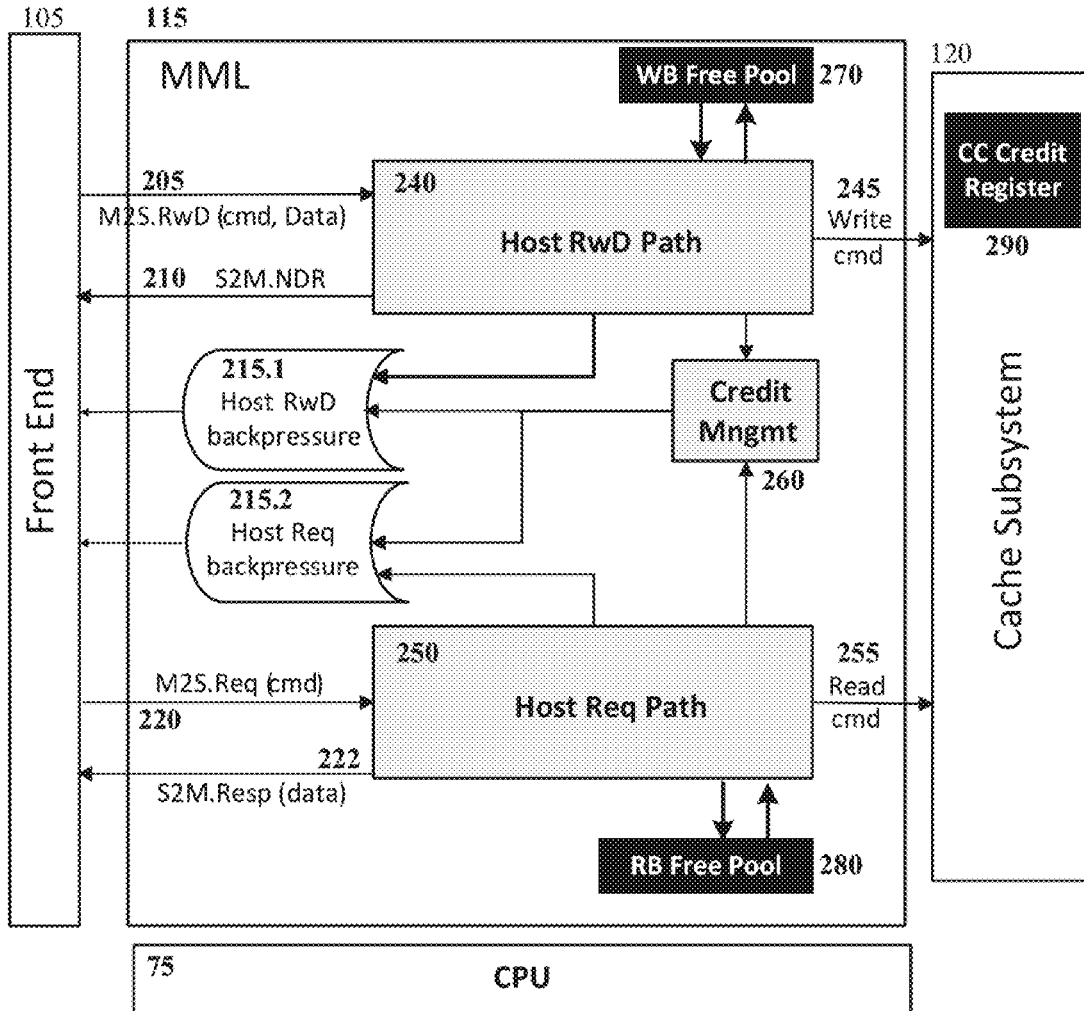
(21) Appl. No.: **17/902,714**

(22) Filed: **Sep. 2, 2022**

Related U.S. Application Data

(60) Provisional application No. 63/303,908, filed on Jan. 27, 2022.

Exemplary CXL Media Management Layer





(19) **United States**

(12) **Patent Application Publication**
SEHGAL et al.

(10) **Pub. No.: US 2023/0236742 A1**

(43) **Pub. Date: Jul. 27, 2023**

(54) **NONVOLATILE MEMORY EXPRESS (NVME)
OVER COMPUTE EXPRESS LINK (CXL)**

Publication Classification

(71) Applicant: **Micron Technology, Inc.**, Boise, ID (US)

(51) **Int. Cl.**
G06F 3/06 (2006.01)

(72) Inventors: **Rohit SEHGAL**, Boise, ID (US);
Eishan MIRAKHUR, Boise, ID (US);
Vishal TANNA, Boise, ID (US); **Rohit SINDHU**, Boise, ID (US)

(52) **U.S. Cl.**
CPC **G06F 3/0625** (2013.01); **G06F 3/0659**
(2013.01); **G06F 3/0673** (2013.01); **G06F 3/0679** (2013.01)

(73) Assignee: **Micron Technology, Inc.**, Boise, ID (US)

(57) **ABSTRACT**

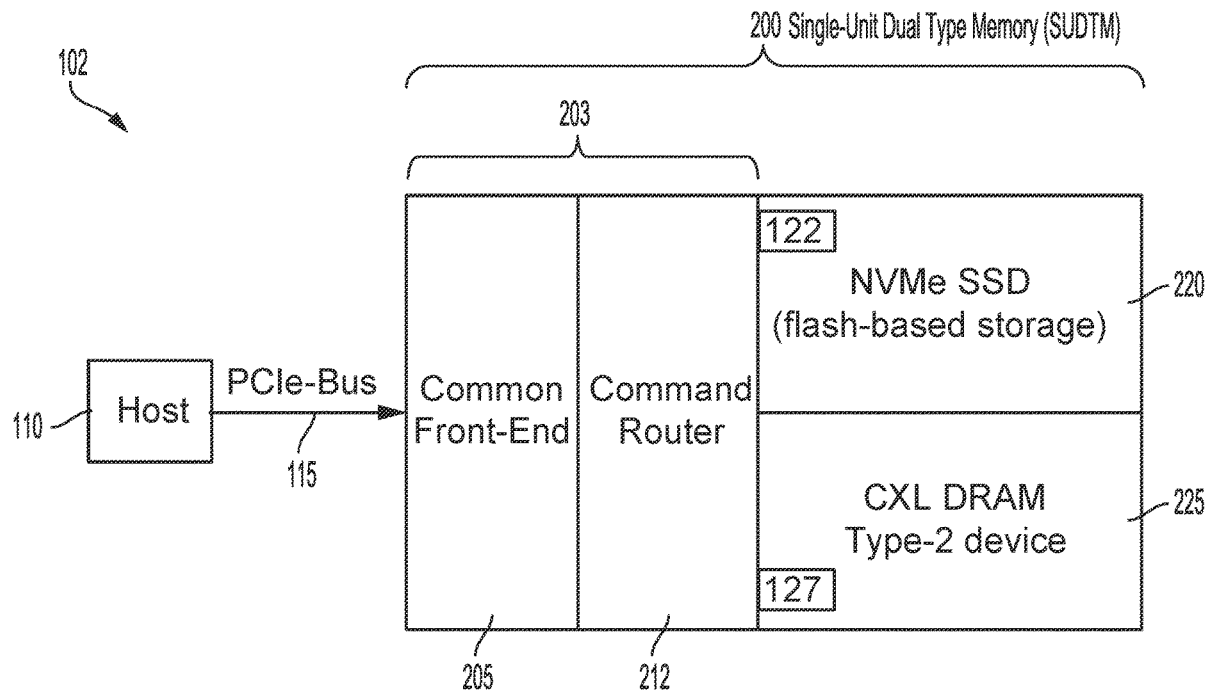
(21) Appl. No.: **17/941,567**

A memory card, for use with a host system, combines both: (i) non-volatile memory express (NVMe) data storage such as a solid state drive (SSD) with (ii) dynamic random access memory (DRAM) conforming to the computer express link (CXL) protocol. The SSD and CXL DRAM share a common controller. CXL memory requests from the host system are handled according to the CXL.io protocol. NVMe data requests are wrapped into a CXL request packet. The common front end identifies the NVMe data request(s) within the CXL packet, parses the NVMe data request, and routes the request to the NVMe memory. A host operating system software driver intercepts the NVMe memory requests and wraps them into the CXL request packet.

(22) Filed: **Sep. 9, 2022**

Related U.S. Application Data

(60) Provisional application No. 63/302,047, filed on Jan. 22, 2022.





US010055625B2

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

(10) **Patent No.:** **US 10,055,625 B2**

(45) **Date of Patent:** **Aug. 21, 2018**

(54) **IMAGING BARCODE READER WITH
COLOR-SEPARATED AIMER AND
ILLUMINATOR**

(56) **References Cited**

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(Continued)

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U.S. Appl. No. 14/715,916 for Evaluating Image Values filed May 19, 2015 (Ackley); 60 pages.
(Continued)

Primary Examiner — Edwyn Labaze
(74) *Attorney, Agent, or Firm* — Additon, Higgins & Pendleton, P.A.

(71) Applicant: **Hand Held Products, Inc.**, Fort Mill, SC (US)

(72) Inventors: **Chen Feng**, Snohomish, WA (US); **Jie Ren**, Jiangsu (CN)

(73) Assignee: **Hand Held Products, Inc.**, Fort Mill, SC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/470,971**

(22) Filed: **Mar. 28, 2017**

(65) **Prior Publication Data**
US 2017/0300728 A1 Oct. 19, 2017

(30) **Foreign Application Priority Data**

Apr. 15, 2016 (CN) 2016 1 0233259
Apr. 15, 2016 (CN) 2016 2 0314790 U

(51) **Int. Cl.**
G06K 7/10 (2006.01)
G06K 7/14 (2006.01)
G06K 19/06 (2006.01)

(52) **U.S. Cl.**
CPC **G06K 7/10732** (2013.01); **G06K 7/10811** (2013.01); **G06K 7/10881** (2013.01); **G06K 7/1417** (2013.01); **G06K 19/06037** (2013.01)

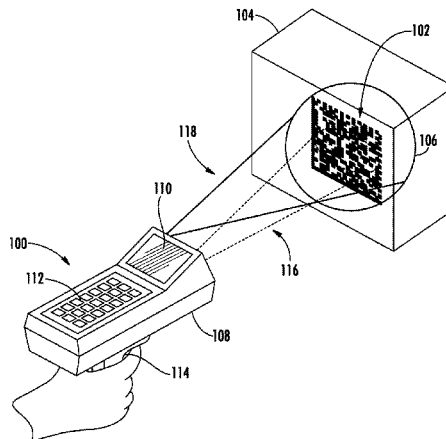
(58) **Field of Classification Search**
CPC .. G06K 7/10; G06K 9/36; G06K 9/80; G06K 15/12; G06K 5/00; G06K 7/14; G03B 7/08; G06F 17/00

(Continued)

(57) **ABSTRACT**

A scanner for machine-readable symbols, such as barcodes and two-dimensional matrix symbols, employs at least two different light frequencies (colors). The first frequency supports accurate aiming of the scanner at a symbol. The second frequency supports illumination of a machine-readable symbol so that the reflected illumination light can be read at the second frequency by the scanner's optical imaging element. Employing two different light frequencies enables both aiming and scanning to occur simultaneously, while the aiming process does not interfere with the scanning process. It enables the aiming frequency to be used for additional purposes, such as providing signaling to a user of the scanner. In an embodiment, two distinct light sources are used in the scanner to provide the different light frequencies. In an embodiment, various color filters are employed to separate and distinguish light frequencies. In an embodiment, signal processing may be employed to digitally distinguish multiple separate frequencies in light reflected from the symbol.

20 Claims, 7 Drawing Sheets





(19) **United States**

(12) **Patent Application Publication**
Zhou et al.

(10) **Pub. No.: US 2021/0344283 A1**

(43) **Pub. Date: Nov. 4, 2021**

(54) **MULTIPLE-SWITCH TYPES HYBRID PEBB POWER CONVERTER**

Publication Classification

(71) Applicant: **General Electric Company**,
Schenectady, NY (US)

(51) **Int. Cl.**
H02M 7/5387 (2006.01)
H02M 7/53846 (2006.01)
H02M 3/158 (2006.01)

(72) Inventors: **Zhi Zhou**, Niskayuna, NY (US);
Steven Mankevich, Cranberry
Township, PA (US)

(52) **U.S. Cl.**
CPC *H02M 7/53875* (2013.01); *H02M 3/1582*
(2013.01); *H02M 7/538466* (2013.01)

(73) Assignee: **General Electric Company**,
Schenectady, NY (US)

(57) **ABSTRACT**

(21) Appl. No.: **17/358,065**

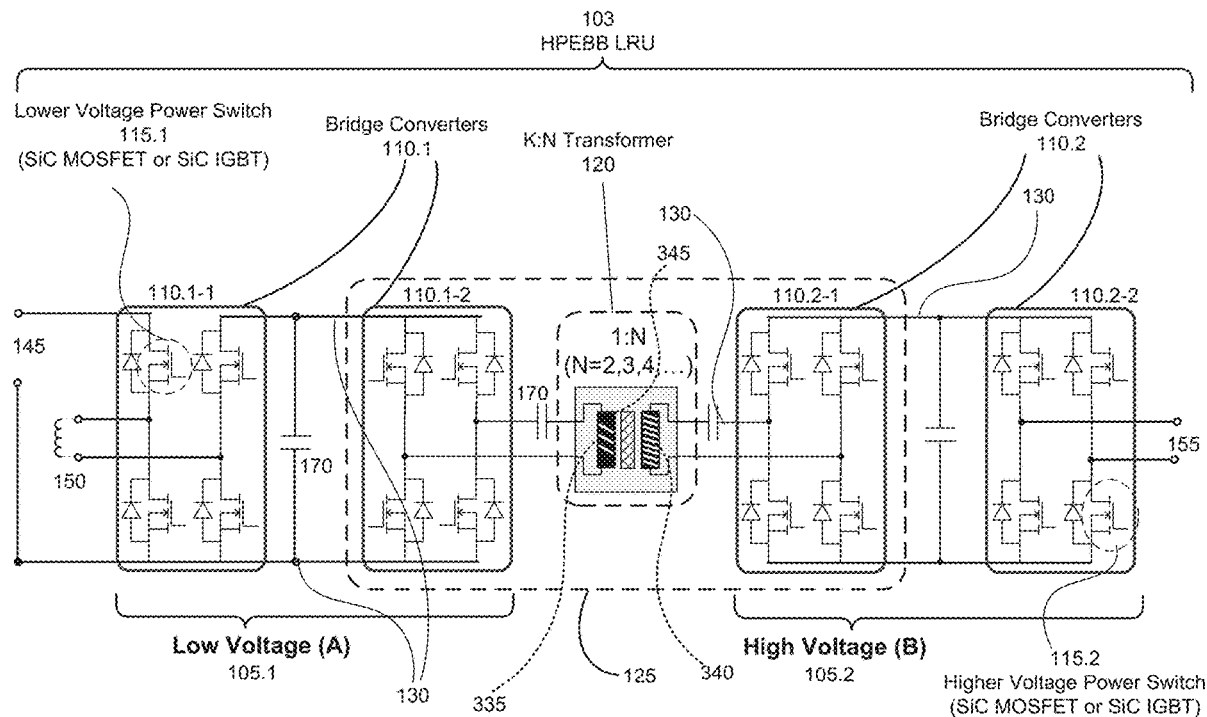
A multi-switch types hybrid power electronics build block (MST HPEBB) least replaceable unit converter employs a first low voltage side (for example, 1000 volt power switches) and a second high voltage side (for example, 3000 volt power switches). The MST HPEBB LRU employs multiple bridge converters connected in series and/or in parallel, and coupled in part by a 1:1 transformer. To reduce weight and volume requirements compared to known PEBB LRUs, different power switch types are employed in different bridge converters. For example, in one exemplary embodiment, low voltage 1.7 kV SiC MOSFETs may be employed on the lower voltage side, while at least some 4.5 kV Silicon IGBTs may be employed on the high voltage side.

(22) Filed: **Jun. 25, 2021**

Related U.S. Application Data

(63) Continuation-in-part of application No. PCT/
US2020/030413, filed on Apr. 29, 2020.

Exemplary Hybrid PEBB (HPEBB) LRU





US010740855B2

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

(10) **Patent No.:** **US 10,740,855 B2**
(45) **Date of Patent:** **Aug. 11, 2020**

(54) **SUPPLY CHAIN TRACKING OF FARM PRODUCE AND CROPS**

7,726,575 B2 6/2010 Wang et al.
8,294,969 B2 10/2012 Plesko
8,317,105 B2 11/2012 Kotlarsky et al.
8,322,622 B2 12/2012 Suzhou et al.
8,366,005 B2 2/2013 Kotlarsky et al.
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8,376,233 B2 2/2013 Van Horn et al.
8,381,979 B2 2/2013 Franz
8,390,909 B2 3/2013 Plesko
8,408,464 B2 4/2013 Zhu et al.

(71) Applicant: **Hand Held Products, Inc.**, Fort Mill, SC (US)

(72) Inventors: **Joseph R. Lesik**, Greenburg, PA (US);
Brian Sutton, North Huntingdon, PA (US)

(73) Assignee: **HAND HELD PRODUCTS, INC.**, Fort Mill, SC (US)

(Continued)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 601 days.

WO 2013163789 A1 11/2013
WO 2013173985 A1 11/2013
(Continued)

(21) Appl. No.: **15/378,124**

OTHER PUBLICATIONS

(22) Filed: **Dec. 14, 2016**

U.S. Appl. No. 13/367,978, filed Feb. 7, 2012, (Feng et al.); now abandoned.

(65) **Prior Publication Data**

US 2018/0165771 A1 Jun. 14, 2018

(Continued)

(51) **Int. Cl.**
G06Q 50/02 (2012.01)
G06Q 10/08 (2012.01)

Primary Examiner — A. Hunter Wilder
Assistant Examiner — Joseph M Mutschler
(74) *Attorney, Agent, or Firm* — Alston & Bird LLP

(52) **U.S. Cl.**
CPC **G06Q 50/02** (2013.01); **G06Q 10/087** (2013.01)

(57) **ABSTRACT**

(58) **Field of Classification Search**
CPC G06Q 10/087; G06Q 50/02
See application file for complete search history.

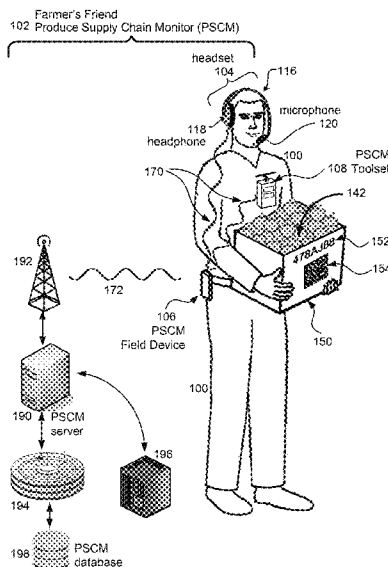
A device, system, and method are disclosed whereby farm produce harvested at a particular time and location can be tracked throughout the food supply chain, from farm or orchard to consumer market. If farm produce in the market is found to be unhealthy, contaminated, or otherwise unsuited for human consumption, the system and method enables identification of the source of harvesting, and so identification of other produce which was harvested at substantially the same time and location. This enables improved identification and containment of any problems in the produce food supply chain.

(56) **References Cited**

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6,832,725 B2 12/2004 Gardiner et al.
7,128,266 B2 10/2006 Marlton et al.
7,159,783 B2 1/2007 Walczyk et al.
7,413,127 B2 8/2008 Ehrhart et al.

20 Claims, 7 Drawing Sheets





US010282526B2

(12) **United States Patent**
Nichols

(10) **Patent No.:** **US 10,282,526 B2**

(45) **Date of Patent:** **May 7, 2019**

(54) **GENERATION OF RANDOMIZED
PASSWORDS FOR ONE-TIME USAGE**

7,159,783 B2 1/2007 Walczyk et al.
7,210,622 B2 * 5/2007 Lambert G06F 21/31
235/379

(71) Applicant: **Hand Held Products, Inc.**, Fort Mill,
SC (US)

7,413,127 B2 8/2008 Ehrhart et al.
(Continued)

(72) Inventor: **Matthew Nichols**, Pittsburgh, PA (US)

FOREIGN PATENT DOCUMENTS

(73) Assignee: **HAND HELD PRODUCTS, INC.**,
Fort Mill, SC (US)

GB 2379525 A 3/2003
JP 2011-022953 A 2/2011
(Continued)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 136 days.

OTHER PUBLICATIONS

U.S. Appl. No. 14/715,916 for Evaluating Image Values filed May
19, 2015 (Ackley); 60 pages.

(21) Appl. No.: **14/963,943**

(Continued)

(22) Filed: **Dec. 9, 2015**

Primary Examiner — Saleh Najjar
Assistant Examiner — Louis C Teng

(65) **Prior Publication Data**

(74) *Attorney, Agent, or Firm* — Additon, Higgins &
Pendleton, P.A.

US 2017/0169198 A1 Jun. 15, 2017

(51) **Int. Cl.**
G06F 21/31 (2013.01)

(57) **ABSTRACT**

(52) **U.S. Cl.**
CPC **G06F 21/31** (2013.01)

An electronic device dynamically generates a password for one-time only usage. The one-time password is constructed by placing, in a random sequential order: (i) several randomly chosen digits and (ii) several digits, which are randomly selected from personal identification numbers, which were previously provided by an authorized user. The current user of the device is presented with a natural-language password hint, which describes the sequence of digits in the password. Only the authorized user knows the personal identification numbers; and so is able to construct, on-the-fly, the one-time password, and present that password to the device. The password hint may be presented aloud, in audio form, and the password may be entered into the device via speech. If someone nearby hears the hint and/or the password, they cannot use it at a later time to gain device control or data access, since the password is only valid the one time.

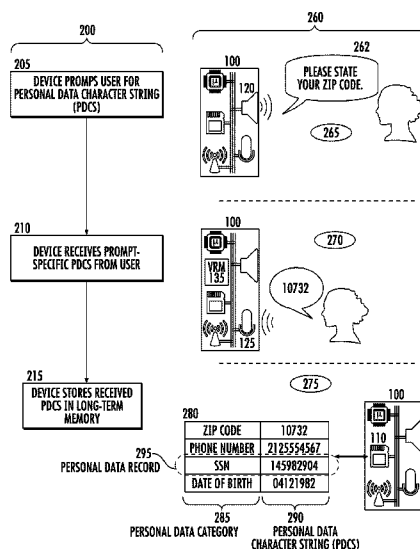
(58) **Field of Classification Search**
CPC G06F 21/31
See application file for complete search history.

(56) **References Cited**

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341/106
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7,128,266 B2 10/2006 Zhu et al.

21 Claims, 4 Drawing Sheets





US010235547B2

(12) **United States Patent**
Ackley

(10) **Patent No.:** **US 10,235,547 B2**
(45) **Date of Patent:** **Mar. 19, 2019**

(54) **ENHANCED MATRIX SYMBOL ERROR CORRECTION METHOD**

6,832,725 B2 12/2004 Gardiner et al.
7,128,266 B2 10/2006 Marlton et al.
(Continued)

(71) Applicant: **Hand Held Products, Inc.**, Fort Mill, SC (US)

FOREIGN PATENT DOCUMENTS

(72) Inventor: **H. Sprague Ackley**, Seattle, WA (US)

WO 2013163789 A1 11/2013
WO 2013173985 A1 11/2013

(73) Assignee: **HAND HELD PRODUCTS, INC.**, Fort Mill, SC (US)

(Continued)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

OTHER PUBLICATIONS

U.S. Appl. No. 14/715,916 for Evaluating Image Values filed May 19, 2015 (Ackley); 60 pages.

(21) Appl. No.: **15/006,561**

(Continued)

(22) Filed: **Jan. 26, 2016**

Primary Examiner — Kyle Vallecillo

(65) **Prior Publication Data**

US 2017/0213064 A1 Jul. 27, 2017

(74) *Attorney, Agent, or Firm* — Additon, Higgins & Pendleton, P.A.

(51) **Int. Cl.**

G06K 7/14 (2006.01)
G06F 11/10 (2006.01)

(57) **ABSTRACT**

(52) **U.S. Cl.**

CPC **G06K 7/1473** (2013.01); **G06F 11/10** (2013.01); **G06K 7/14** (2013.01); **G06K 7/1417** (2013.01)

A system and method for error correction for machine-readable symbols having data codewords, and having error correction (EC) codewords derived from the data codewords and redundantly indicating the location and data contents of the data codewords. The symbols use Reed-Solomon (RS) error correction to retrieve damaged codewords. RS error correction normally requires two EC codewords to identify both the location and data contents of a data codeword. The present system and method performs optical contrast analysis on the codewords, identifying those codewords with the lowest contrast levels (that is, the least difference between the reflectance of the black or white cells and the black/white threshold). Codewords with the lowest contrast levels are flagged as optically ambiguous, thereby marking, in the EC equations, the locations of the codewords most like to be in error. As a result, only a single EC codeword is required to retrieve the data for a flagged data codeword.

(58) **Field of Classification Search**

CPC G06K 7/1473; G06K 7/1417; G06K 19/06037; G06K 19/06046; G06K 19/06075; G06K 19/06056; G06K 7/10722; G06K 7/1434; G06F 11/10

See application file for complete search history.

(56) **References Cited**

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6,330,972 B1 12/2001 Wiklof et al.

14 Claims, 8 Drawing Sheets

