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PTO/SB/66 (11-23)
Approved for use through 11/30/2024. OMB 0651-0016
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))

Docket Number (Optional)

Mail to: **Mail Stop Petition**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Fax: (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact the Office of Petitions at (571) 272-3282.

Patent No. 8,358,103 Application Number 12/511,069

Issue Date January 22, 2013 Filing Date July 29, 2009

CAUTION: Maintenance fee payment must correctly identify: (1) the patent number (or reissue patent number, if a reissue) and (2) the application number of the actual U.S. application (or reissue application) leading to issuance of that patent to ensure the fee(s) is/are associated with the correct patent. 37 CFR 1.366(c) and (d).

Also complete the following information, if applicable.

The above-identified patent

☐ is a reissue of original Patent No. _____ original issue date _____

original application number _____

original filing date _____.

☐ resulted from the entry into the U.S. under 35 U.S.C. 371 of international application _____

filed on _____.

NOTE: A grantable petition requires the following items:

(1) Petition fee;
(2) Maintenance fee; and
(3) Statement that the delay in payment of the maintenance fee was unintentional.

CERTIFICATE OF MAILING OR TRANSMISSION (37 CFR 1.8(a))

I hereby certify that this paper (* along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or being transmitted to the USPTO by the USPTO patent electronic filing system, or by facsimile to (571) 273-8300, on the date shown below.

10/22/2024
Date

Jeffrey R. Eastlack
Signature

Jeffrey R. Eastlack
Typed or Printed Name of Person Signing Certificate

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

PTO/SB/66 (11-23)
Approved for use through 11/30/2024. OMB 0651-0016
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))

1. SMALL ENTITY

☑ Patentee asserts, or has previously asserted, small entity status. See 37 CFR 1.27.

2. LOSS OF ENTITLEMENT TO SMALL ENTITY STATUS

☐ Patentee is no longer entitled to small entity status. See 37 CFR 1.27(g).

3. MICRO ENTITY

☐ Patentee certifies, or has previously certified, micro entity status. See 37 CFR 1.29
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

4. LOSS OF ENTITLEMENT TO MICRO ENTITY STATUS

☐ Patentee is no longer entitled to micro entity status. See 37 CFR 1.29(i).

5. MAINTENANCE FEE (37 CFR 1.20(e)-(g))

The appropriate maintenance fee must be submitted with this petition, unless it was paid earlier.

Undiscounted			Small Entity			Micro Entity		
Amount	Fee	(Code)	Amount	Fee	(Code)	Amount	Fee	(Code)
☐ $	3½ yr fee	(1551)	☐ $	3½ yr fee	(2551)	☐ $	3½ yr fee	(3551)
☐ $	7½ yr fee	(1552)	☑ $ 1504.00	7½ yr fee	(2552)	☐ $	7½ yr fee	(3552)
☐ $	11½ yr fee	(1553)	☐ $	11½ yr fee	(2553)	☐ $	11½ yr fee	(3553)

MAINTENANCE FEE BEING SUBMITTED $ 1504.00

6. PETITION FEE

The petition fee required by 37 CFR 1.17(m) of:

$ _____ Undiscounted (Fee Code 1558); or
$ 840.00 Small Entity (Fee Code 2558); or
$ _____ Micro Entity (Fee Code 3558)

must be paid as a condition of accepting an unintentionally delayed payment of a maintenance fee.

PETITION FEE BEING SUBMITTED $ 840.00

7. MANNER OF PAYMENT

☑ Enclosed is a check for the sum of $ 2344.00
☐ Please charge Deposit Account No. _____ the sum of $ _____
☐ Payment by credit card. Form PTO-2038 is attached.
☐ Payment made via USPTO patent electronic filing system.

8. AUTHORIZATION TO CHARGE ANY FEE DEFICIENCY

☐ The Director is hereby authorized to charge any maintenance fee or petition deficiency to Deposit Account No. _____

PTO/SB/66 (11-23)
Approved for use through 11/30/2024. OMB 0651-0016
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))

9. OVERPAYMENT

As to any overpayment made, please

☐ Credit to Deposit Account No. _____

OR

☑ Send refund check

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information, such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form (PTO-2038) submitted for payment purposes), is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioner/applicant should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms (PTO-2038) submitted for payment purposes are not retained in the application file and therefore are not publicly available.

10. STATEMENT

The delay in payment of the maintenance fee for this patent was unintentional.

Petitioner is reminded that a delay resulting from a deliberately chosen course of action or a change in circumstance is not an unintentional delay.

Petitioner is further reminded that a person seeking reinstatement of an expired patent should not make a statement that the delay in payment of the maintenance fee was unintentional unless the entire delay was unintentional, including the period from discovery that the maintenance fee was not timely paid until payment of the maintenance fee. For example, a statement that the delay in payment of the maintenance fee was unintentional would not be proper when the patentee becomes aware of an unintentional failure to timely pay the maintenance fee and then intentionally delays filing a petition for reinstatement of the patent under 37 CFR 1.378. See MPEP 2590.

NOTE: Where the petition under 37 CFR 1.378 is filed more than two years after the date the patent expired for nonpayment of the maintenance fee, the United States Patent and Trademark Office requires an additional explanation of the circumstances surrounding the delay that establishes the entire delay was unintentional. This requirement is in addition to the requirement to provide a statement that the entire delay was unintentional. See *Clarification of the Practice for Requiring Additional Information in Petitions Filed in Patent Applications and Patents Based on Unintentional Delay*, 85 FR 12222 (March 2, 2020). See MPEP 711.03(c)(II)(C)-(F) for additional guidance on the information required to establish that the entire delay was unintentional.

☑ Because this petition under 37 CFR 1.378 is being filed more than two years after the date the patent expired for nonpayment of the maintenance fee, additional explanation of the circumstances surrounding the delay that establishes the entire delay was unintentional is enclosed herewith.

PTO/SB/66 (11-23)
Approved for use through 11/30/2024. OMB 0651-0016
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))

11. PETITIONER REQUESTS THAT THE DELAYED PAYMENT OF THE MAINTENANCE FEE BE ACCEPTED AND THE PATENT BE REINSTATED.

10/22/2024
Date

Signature(s) of Petitioner

Jeffrey R. Eastlack
Typed or Printed Name

Registration Number, if applicable

512-784-4307
Telephone Number

8991 Winegar Rd, Laingsburg MI 48848
Address

Address

37 CFR 1.378(c) states: "Any petition under this section must be signed in compliance with § 1.33(b)."

12. ENCLOSURES

- [x] Maintenance Fee Payment
- [x] Petition fee under 37 CFR 1.17(m) (fee for filing the maintenance fee petition)
- [x] Additional sheet(s) containing statement establishing unintentional delay
- [ ] Other: _____

PTO/SB/92 (11-23)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Certificate of Mailing or Transmission under 37 CFR 1.8

I hereby certify that this correspondence is being:

1. ☑ Deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

   Commissioner for Patents
   P.O. Box 1450
   Alexandria, VA 22313-1450

   on 10/22/2024 (Date),

2. ☐ Facsimile transmitted to the United States Patent and Trademark Office, or

   OR

3. ☐ Transmitted by the USPTO patent electronic filing system.

/s/ Andrew G. DiNovo	10/22/2024
Signature	Date
Andrew G. DiNovo	(512) 539-2632
Typed or printed name	Telephone number

Note: Each paper must have its own certificate of mailing or transmission, or this certificate must identify each submitted paper:

Additional Pages in Support of Petition to Accept Unintentional Delayed Payment of the Maintenance Fee under 37 C.F.R. Section 1.378 (b)

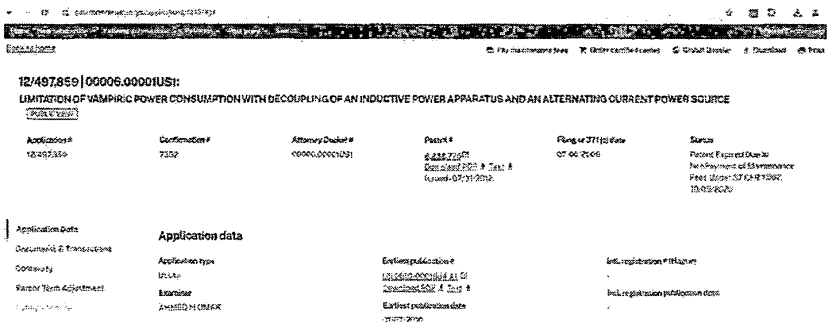
I hereby submit an explanation of the circumstances surrounding the delay in payment of the 7.5 year maintenance fee for U.S. Patent No. 8.358,103 demonstrating that the entire delay was unintentional.

The 7.5 year maintenance payment for U.S. Patent No. 8.358,103 was to be paid by January 22, 2021. I moved from 530 S. Creekwood Dr., Driftwood, Texas 78619 to downtown Austin in August 2015. I then used my mother's address 2125 Kaiser Dr. Austin, Texas 78748 for the USPTO. She has been diagnosed with age-based dementia and it is possible that the mail was lost, if received there.

I have been repeatedly advised by prior counsel, including in writing on multiple occasions, that U.S. Patent No. 8.358,103 is in full force and effect, whereas related U.S. Patent No. 8,232,775 expired for failure to pay maintenance fees on October 5, 2020. I was only apprised by my new legal counsel that was incorrect on October 17, 2024. I have acted diligently to prepare and file this Petition.

When asked, my prior counsel responded that the incorrect advice was based on his review of the USPTO website, which continues to have this landing page for each patent.

As can be seen, even until this date, the Patent Center status page for U.S. Patent No. 8,358,103 indicates that it is a "Patented Case." Conversely, the landing page for U.S. Patent No. 8,232,775 indicates "Patent Expired to Nonpayment of Maintenance Fees."



Only when attempting to pay maintenance fees does this issue appear on Patent Center.

I am not a lawyer and do not have specialized training. I relied on the advice my counsel provided, which proved to be wrong. I have acted with diligence in filing this petition.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 22, 2024.

Jeffrey R. Eastlack

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AUSTIN TX 78731-3249

Scheduled Delivery Date: 10/23/24

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/511,069	07/29/2009	JEFFREY RAYMOND EASTLACK	00006.00002US1

CONFIRMATION NO. 3061

MISCELLANEOUS NOTICE

55952
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040

OC000000060036537

Date Mailed: 03/26/2013

A communication which cannot be delivered in electronic form has been mailed to the applicant.

Doc Code: N572

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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/511,069	07/29/2009	JEFFREY RAYMOND EASTLACK	00006.00002US1

CONFIRMATION NO. 3061

OC000000060036537

55952
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040

Cc: ALBERT WU
27518 N. ROSA LANE
APT 204
CANYON COUNTRY, CA 91387

Date Mailed: 03/25/13

DENIAL OF REQUEST FOR POWER OF ATTORNEY

The request for Power of Attorney filed 02/28/13 is acknowledged. However, the request cannot be granted at this time for the reason stated below.

- ☐ The Power of Attorney you provided did not comply with the new Power of Attorney rules that became effective on June 25, 2004. See 37 CFR 1.32.
- ☐ The revocation is not signed by the applicant, the assignee of the entire interest, or one particular principal attorney having the authority to revoke.
- ☑ The Power of Attorney is from an assignee and the Certificate required by 37 CFR 3.73(b) has not been received.
- ☐ The person signing for the assignee has omitted their empowerment to sign on behalf of the assignee.
- ☐ The inventor(s) is without authority to appoint attorneys since the assignee has intervened as provided by 37 CFR 3.71.
- ☐ The signature(s) of _____ , a co-inventor in this application, has been omitted. The Power of Attorney will be entered upon receipt of confirmation signed by said co-inventor(s).
- ☐ The person(s) appointed in the Power of Attorney is not registered to practice before the U.S. Patent and Trademark Office.

Questions relating to this Notice should be directed to the Application Assistance Unit.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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PATENT - POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Patent Number	8358103
Issue Date	January 22, 2013
First Named Inventor	Eastlack, Jeffrey
Title	AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE
Attorney Docket Number	1302002

I hereby revoke all previous powers of attorney given in the above-identified patent.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: 91288

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified patent to:

☐ The address associated with the above-mentioned Customer Number.

OR

☒ The address associated with Customer Number: 91288

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☐ Inventor, having ownership of the patent.

OR

☒ Patent owner.
Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on _____.

SIGNATURE of Inventor or Patent Owner

Signature	Jeffrey K Eastlack	Date	2-19-2013
Name	Jeffrey K. Eastlack	Telephone	512-784-4307
Title and Company	Title: CEO, Vampire Labs, LLC		

NOTE: Signatures of all the inventors or patent owners of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

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FEB 2 8 2013

PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Vampire Labs

Application No./Patent No.: 8358103 Filed/Issue Date: 01/22/2013

Titled: AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY

Vampire Labs, a corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.

states that it is:

1. [X] the assignee of the entire right, title, and interest in;

2. [ ] an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or

3. [ ] the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

A. [X] An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 023018, Frame 0696, or for which a copy therefore is attached.

OR

B. [ ] A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

[ ] Additional documents in the chain of title are listed on a supplemental sheet(s).

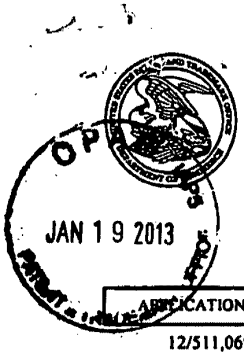
[X] As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Jeffrey R. Eastlack — 2-19-2013
Signature — Date

Jeffrey R. Eastlack — CEO
Printed or Typed Name — Title



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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/511,069	07/29/2009	JEFFREY RAYMOND EASTLACK	00006.00002US1	3061

55952 7590 01/09/2013

Raj Abhyanker, P.C.
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040

EXAMINER	
OMAR, AHMED H	
ART UNIT	**PAPER NUMBER**
2859	

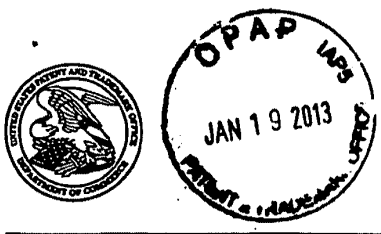
NOTIFICATION DATE	DELIVERY MODE
01/09/2013	ELECTRONIC

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

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

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@rajpatent.com



UNITED STATES PATENT AND TRADEMARK OFFICE

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Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View CA 94040

Application No.: 12511069
Date Mailed: 12/26/12

NOTICE TO PAY BALANCE OF ISSUE FEE

The issue fee payment filed on **12/07/12** has been received. Although the fee was paid in response to the Notice of Allowance and Fees Due, new patent fees went into effect on October 5, 2012, after the mailing date of the Notice. See CPI Adjustment of Patent Fees for Fiscal Year 2013, 77 Fed. Reg. 54360, which adjusts certain patent fees, including the issue fee, to reflect fluctuations in the Consumer Price Index (CPI). Because the issue fee was paid on or after October 5, 2012, the new issue fee was due instead of the amount specified in the Notice of Allowance and Fees Due.

Applicant is given a time period of **THREE (3) MONTHS** from the mailing date of this notice during which to pay the **BALANCE DUE** indicated below. The balance due is the difference between the issue fee required on the date that the correct issue fee is paid and the amount that was previously paid. This three-month time period may not be extended. If the balance due is not paid before the expiration of the three-month period, the application will become abandoned (if not issued) or the patent will lapse (if issued) at the termination of the three-month period.

Application Type	Column A Issue Fee Required		Column B Issue Fee Paid	Balance Due Column A - Column B
	Small Entity	Large Entity		
UTILITY	$885.00	$1,770.00	$870.00	$15.00
REISSUE	$885.00	$1,770.00		
DESIGN	$505.00	$1,010.00		
PLANT	$695.00	$1,390.00		

/Kimberly Terrell/
Office of Data Management
571-272-4100

01/23/2013 ZJUHAR2 00000041 12511069
885.00 OP

How to Pay: 01 FC:2501

Adjustment date: 01/23/2013 ZJUHAR2
12/10/2012 EEKUBAY2 00000020 12511069
02 FC:1506 -870.00 OP

Currently payments cannot be made via the Electronic Filing System

Submit payment by fax at 571-273-8300 – Include a copy of the letter and authorization to charge a deposit account or credit card on file.
Submit payment by mail – Include a copy of the letter, and either authorization to charge a deposit account/credit card or submit a check/ money order.

1-22-13

IFW

Kimberly Terrell:

Attached you will find the following:

1) Copy of the notice letter regarding changes to the Issue Fee and requested payment of balance for Application Number 12/511,069; and
2) A check for the fifteen dollar ($15.00) balance due on the Issue Fee for Application Number 12/511,069.

Should you have any questions, please feel free to call me directly.

Kind regards,

/Dario Olivas/

512.484.9181

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/511,069	07/29/2009	JEFFREY RAYMOND EASTLACK	00006.00002US1	3061

55952 7590 01/09/2013

Raj Abhyanker, P.C.
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040

EXAMINER	
OMAR, AHMED H	

ART UNIT	PAPER NUMBER
2859	

NOTIFICATION DATE	DELIVERY MODE
01/09/2013	ELECTRONIC

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

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

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docketing@rajpatent.com

UNITED STATES PATENT AND TRADEMARK OFFICE

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Alexandria, VA 22313-1450
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Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View CA 94040

Application No.: **12511069**
Date Mailed: **12/26/12**

NOTICE TO PAY BALANCE OF ISSUE FEE

The issue fee payment filed on **12/07/12** has been received. Although the fee was paid in response to the Notice of Allowance and Fees Due, new patent fees went into effect on October 5, 2012, after the mailing date of the Notice. See CPI Adjustment of Patent Fees for Fiscal Year 2013, 77 Fed. Reg. 54360, which adjusts certain patent fees, including the issue fee, to reflect fluctuations in the Consumer Price Index (CPI). Because the issue fee was paid on or after October 5, 2012, the new issue fee was due instead of the amount specified in the Notice of Allowance and Fees Due.

Applicant is given a time period of **THREE (3) MONTHS** from the mailing date of this notice during which to pay the **BALANCE DUE** indicated below. The balance due is the difference between the issue fee required on the date that the correct issue fee is paid and the amount that was previously paid. This three-month time period may not be extended. If the balance due is not paid before the expiration of the three-month period, the application will become abandoned (if not issued) or the patent will lapse (if issued) at the termination of the three-month period.

Application Type	Column A		Column B	Balance Due
	Issue Fee Required		Issue Fee Paid	Column A - Column B
	Small Entity	Large Entity		
UTILITY	$885.00	$1,770.00	$870.00	$15.00
REISSUE	$885.00	$1,770.00		
DESIGN	$505.00	$1,010.00		
PLANT	$695.00	$1,390.00		

/Kimberly Terrell/
Office of Data Management
571-272-4100

How to Pay:

Currently payments cannot be made via the Electronic Filing System

Submit payment by fax at 571-273-8300 – Include a copy of the letter and authorization to charge a deposit account or credit card on file.
Submit payment by mail – Include a copy of the letter, and either authorization to charge a deposit account/credit card or submit a check/ money order.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/511,069	01/22/2013	8358103	00006.00002US1	3061

55952 7590 12/29/2012

Raj Abhyanker, P.C.
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 805 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

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

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

JEFFREY RAYMOND EASTLACK, Austin, TX;

PART B - FEE(S) TRANSMITTAL

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

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

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

55952 7590 09/19/2012
Raj Abhyanker, P.C.
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040

12/10/2012 EEKUBAY2 00000020 12511069

01 FC:1504 300.00 OP
02 FC:1506 870.00 OP

OPAP IAP11 DEC 07 2012 PATENT & TRADEMARK OFFICE

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

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

Jeffrey Eastlack	(Depositor's name)
Jeffrey R. Eastlack	(Signature)
12/05/2012	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/511,069	07/29/2009	JEFFREY RAYMOND EASTLACK	00006.00002US1	3061

TITLE OF INVENTION: AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$870	$300	$0	$1170	12/19/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
OMAR, AHMED H	2859	320-108000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

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

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

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

(A) NAME OF ASSIGNEE: Vampire Labs, LLC
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Austin, TX USA

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

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☒ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature Jeffrey R. Eastlack Date 12/04/2012
Typed or printed name Jeffrey R. Eastlack Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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

Document Code: IMIS

Notice of Fee Due

Date: 12-10-12

Application Number: 12511069

A fee is due for the attached document for the reason indicated below. Please check the application for the appropriate authorization to charge a deposit account. If an authorization is present, please charge the appropriate fee*. If an authorization is not present, notify the applicant of the fee deficiency.

***If the fee due is for any of the filing fees, check for authorization to charge the surcharge. If authorization is present, charge the surcharge for late payment of the filing fees as well.**

- ☐ Insufficient payment by check or money order.
- ☐ Insufficient funds in deposit account _____ at _____:_____ (time).
- ☑ Insufficient payment by credit card.
- ☐ Declined credit card _____:_____ (time).
- ☑ No authorization to charge a deposit account.

Fee code(s) to be applied:	2501	385.00
Amount in holding fee code:	1506	370.00
	1622/2622	
	1999	
Total remaining due from applicant:		15.00

RAM Operator E.E

Rev. 12/27/07

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

55952 7590 09/19/2012

Raj Abhyanker, P.C.
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040

EXAMINER
OMAR, AHMED H

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 09/19/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/511,069	07/29/2009	JEFFREY RAYMOND EASTLACK	00006.00002US1	3061

TITLE OF INVENTION: AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$870	$300	$0	$1170	12/19/2012

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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

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

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

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

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

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

55952 7590 09/19/2012

Raj Abhyanker, P.C.
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040

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

Certificate of Mailing or Transmission

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

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/511,069	07/29/2009	JEFFREY RAYMOND EASTLACK	00006.00002US1	3061

TITLE OF INVENTION: AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$870	$300	$0	$1170	12/19/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
OMAR, AHMED H	2859	320-108000

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

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

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

1 _____

2 _____

3 _____

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

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

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

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

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

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

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

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

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/511,069	07/29/2009	JEFFREY RAYMOND EASTLACK	00006.00002US1	3061

55952 7590 09/19/2012

Raj Abhyanker, P.C.
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040

EXAMINER	
OMAR, AHMED H	

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 09/19/2012

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

The Patent Term Adjustment to date is 628 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 628 day(s).

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

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

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

Privacy Act Statement

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

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

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

Applicant-Initiated Interview Summary	**Application No.** 12/511,069	**Applicant(s)** EASTLACK, JEFFREY RAYMOND	
	Examiner AHMED OMAR	**Art Unit** 2859	

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

(1) *AHMED OMAR*. (3)_____.

(2) *DANIEL XU (Reg#69329)*. (4)_____.

Date of Interview: *07 September 2012*.

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

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

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

Claim(s) discussed: *1,16 and 20*.

Identification of prior art discussed: *LYON*.

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

Discussed with Attorney, Applicant and Patent engineer the claim limitations and the proposed amendments sent to the examiner before the interview. Applicant made a the distinction between the LYON and hthe claimed invention and how LYON did not disclose the separation module as claimed in the amended claims..

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

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

☐ Attachment

/AHMED OMAR/ Examiner, Art Unit 2859	

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

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

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

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

———

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

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

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

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

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

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

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

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

Examiner to Check for Accuracy

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

Notice of Allowability	Application No.	Applicant(s)	
	12/511,069	EASTLACK, JEFFREY RAYMOND	
	Examiner	Art Unit	
	AHMED OMAR	2859	

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

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

1. ☒ This communication is responsive to *interview conducted on 09/07/2012*.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1,6-8,10-16 and 18-20*.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

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

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *20120911* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Edward Tso/
Primary Examiner, Art Unit 2859

DETAILED ACTION

EXAMINER'S AMENDMENT

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

Authorization for this examiner's amendment was given in a telephone interview with Attorney: Daniel Xu on 09/07/2012.

Please amend the claims as follows:

a. Claim 1:

An inductive battery charging system, comprising:

a connection module to determine when a target device is coupled to an inductive power apparatus; a monitoring module to determine when a target device battery is below a charging threshold while using power from a supplemental power source; and

an activation module to automatically couple the inductive power apparatus and an alternating current power source when a power level of the target device battery is below the charging threshold;

a separation module to automatically decouple the inductive power apparatus and the alternating current power source when a desired charging state of the target device battery is observed,

wherein the separation module is comprised of a relay switch,

wherein the inductive power apparatus includes at least one of a transformer to inductively generate an electric current, a rectification circuit, and a voltage regulation circuit.

b. Cancel claims 2-5, 9 and 17.

c. Claim 6:

The inductive battery charging system of claim [[5]] 1, wherein the [[opto-coupled]] relay switch of the separation module is deactivated when the target device and the inductive power apparatus are decoupled.

d. Claim 8:

The inductive battery charging system of claim 7, further comprising: a battery monitor coupled to the target device to determine the target device battery power level;

wherein the target device is comprised of a mobile device.

e. Claim 11:

The inductive battery charging system of claim [[9]] 8, further comprising:

an output buffer to generate an engage signal to control a coupling state of the inductive power apparatus and the alternating current power source.

f. Claim 12:

The inductive battery charging system of claim [[9]] 8, further comprising:

a USB module to generate an engage signal to control the coupling state of the inductive power apparatus and the alternating current power source.

g. Claim 16:

An inductive battery charging method, comprising:

identifying whether a target device is coupled to an inductive power apparatus;

determining whether a power level of a target device battery is below a lower charging threshold while using power from a supplemental power source;

automatically engaging the inductive power apparatus and an alternating current power source when a lower available power threshold of a battery is reached; [[and]]

automatically decoupling the inductive power apparatus and the alternating current power source when a desired threshold power level of the target device battery is reached, wherein the inductive power apparatus includes at least one of a transformer to inductively generate an electric current, a rectification circuit, and a voltage regulation circuit; and

deactivating an opto-coupled relay of the inductive power apparatus when the target device and the inductive power apparatus are decoupled.

h. Claim 18:

The inductive battery charging method of claim [[17]] 16, wherein the power level of the target device battery is determined using a processor and a battery monitor, and wherein the target device is comprised of a mobile device coupled to the processor and the battery monitor.

Reasons for Allowance

Claims 1, 6-8, 11-16 and 18-20 are allowed. The following is the examiner's statement for allowance" The prior art does not disclose or suggest the following:

"**an activation module to automatically couple the inductive power apparatus and an alternating current power source when a power level of the target device battery is below the charging threshold;**

a separation module to automatically decouple the inductive power apparatus and the alternating current power source when a desired charging state of the target device battery is observed,

wherein the separation module is comprised of a relay switch." in combination with the remaining limitation of independent claims 1, 16 and 20 . Dependent claims 6-8, 10-15 and 18-19 are allowable for the same reason.

The examiner found LYON et al. (US 2004/0145342 A1) and MORITA et al. (US 7,782,447 B2) to be the closest prior art to the claimed invention. LYON discloses an inductive battery charging system, comprising: a connection module to determine when a target device is coupled to an inductive power apparatus; a monitoring module to determine when a target device battery is below a charging threshold while using power from a supplemental power source ; and an activation module to automatically couple the inductive power apparatus and an alternating current power source when a power level of the target device battery is below the charging threshold. MORITA discloses a battery charger comprising a bypass module to initiate a charging sequence by electrically coupling the alternating current power source and the inductive power apparatus when a bypass input is detected

However neither reference nor their combination disclose the above missing limitation, and it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify any of the references in view of the other or any other additional references in order to meet the above missing limitations.

Conclusion

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

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ahmed Omar whose telephone number (571)270-7165. The examiner can normally be reached between 7:00 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DREW DUNN can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/AHMED OMAR/
Examiner, Art Unit 2859

/Edward Tso/
Primary Examiner, Art Unit 2859

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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BIB DATA SHEET

CONFIRMATION NO. 3061

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/511,069	07/29/2009 RULE	320	2859	00006.00002US1

APPLICANTS

JEFFREY RAYMOND EASTLACK, Austin, TX;

**** CONTINUING DATA ***************************

This appln claims benefit of 61/084,616 07/29/2008
and is a CIP of 12/497,859 07/06/2009 PAT 8,232,775 *
which claims benefit of 61/078,365 07/04/2008
(*)Data provided by applicant is not consistent with PTO records.

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
08/10/2009

Foreign Priority claimed	☐ Yes ☑ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No					
Verified and Acknowledged	/AHMED H OMAR/ Examiner's Signature	Initials	TX	16	20	3

ADDRESS

Raj Abhyanker, P.C.
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040
UNITED STATES

TITLE

AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY

FILING FEE RECEIVED		
462	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12511069	EASTLACK, JEFFREY RAYMOND
	Examiner	**Art Unit**
	AHMED OMAR	2859

ORIGINAL		INTERNATIONAL CLASSIFICATION														
CLASS	SUBCLASS	CLAIMED									NON-CLAIMED					
320	108	H	0	2	J	7 / 00 (2006.01.01)										
CROSS REFERENCE(S)		H	0	2	J	7 / 16 (2006.01.01)										
		H	0	2	J	7 / 04 (2006.01.01)										

CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
320	132	136	152	157	162

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1		17												
	2	12	18												
	3	13	19												
	4	14	20												
	5														
2	6														
3	7														
4	8														
	9														
5	10														
6	11														
7	12														
8	13														
9	14														
10	15														
11	16														

/AHMED OMAR/ Examiner.Art Unit 2859	09/11/2012	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	14	
/EDWARD TSO/ Primary Examiner.Art Unit 2859	09/11/2012	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	9

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S75	2133	(((limit$3 or eliminat$3 or stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or shrink$3 or slash$3) near5 (vampir$3 or leakage or stand$1by or phantom or idling or idle or (power near2 sav$3))) and (loss or load or power or draw$3 or electricity or mode) and (bypass$3 or shunt$3 or get around or get$1around) and (separat$3 or switch or disconnect$3 or decoupl$3) and (detect$3 or sens$3 or measur$3 or measurement or observ$3) and (load or drain or consumption or threshold) and (over$1rid$3 or overrid$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/09/11 03:36
S76	21475	(state$1of$1charg$3 or state of charg$3 or "SOC" or capacity or state) and (automatic$4 near5 (charg$3 or re$1charg$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/09/11 03:36
S77	6775	320/128,132,134,136,152,157,162.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/09/11 03:37
S78	19	S75 and S77	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/09/11 03:37
S79	4665	(((limit$3 or eliminat$3 or stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or shrink$3 or slash$3) same (vampir$3 or leakage or stand$1by or phantom or idling or idle or (power near2 sav$3))) and (loss or load or power or draw$3 or electricity or mode) and (bypass$3 or shunt$3 or get around or get$1around) and (separat$3 or switch or disconnect$3 or decoupl$3) and (detect$3 or sens$3 or measur$3 or measurement or observ$3) and (load or drain or consumption or threshold) and (over$1rid$3 or overrid$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/09/11 03:38
S80	26	S79 and S77	US-PGPUB; USPAT;	ADJ	ON	2012/09/11 03:38

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S81	534567	((limit$3 or eliminat$3 or stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or shrink$3 or slash$3) same (vampir$3 or leakage or stand$1by or phantom or idling or idle or (power near2 sav$3))) and (loss or load or power or draw$3 or electricity or mode) and (separat$3 or switch or disconnect$3 or decoupl$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/09/11 03:39
S82	7762	320/108,128,132,134,136,152,157,162.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/09/11 03:40
S83	910	S82 and S81	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/09/11 03:40
S84	2	US "20100001685" A1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/09/11 03:51

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S85	58	((vampiric or leakage or vampire or stand$1by or stand by or phantom) and (power or load or loss) and (eliminat$3 or prevent$3 or avoid$3 or limit$3 or cancel$4 or negat$3 or offset$3 or abolish$3) and (separat$3 or disconnect$3 or decoupl$3) and (inductive$2 or contact$1less or contact free or contact$1free)).clm.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/09/11 03:36

9/11/2012 4:59:41 AM
C:\Users\aomar\Documents\EAST\Workspaces\12497859-limitation of vampiric power consumption with decoupling.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12511069	EASTLACK, JEFFREY RAYMOND
	Examiner	Art Unit
	AHMED OMAR	2859

SEARCHED			
Class	Subclass	Date	Examiner
320	108	6/13/2012	A.O.

SEARCH NOTES		
Search Notes	Date	Examiner
PLUS search, inventor name search in PALM, (320/128,132,134,136,152,157,162) (text search only), also class/subclass search.	6/13/2012	A.O.
Search updated, See EAST search history	9/11/2012	A.O.

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
Keyword search of PGPUB, USPAT and UPAD claims		9/11/2012	A.O.

/A.O./ Examiner.Art Unit 2859	

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/511,069	07/29/2009	JEFFREY RAYMOND EASTLACK	00006.00002US1	3061

55952 7590 06/18/2012

Raj Abhyanker, P.C.
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040

EXAMINER	
OMAR, AHMED H	
ART UNIT	PAPER NUMBER
2859	

NOTIFICATION DATE	DELIVERY MODE
06/18/2012	ELECTRONIC

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

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

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@rajpatent.com

Office Action Summary	Application No.	Applicant(s)	
	12/511,069	EASTLACK, JEFFREY RAYMOND	
	Examiner	Art Unit	
	AHMED OMAR	2859	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

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

Status

1)☒ Responsive to communication(s) filed on *29 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-20* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *29 July 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

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

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/22/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The instant application having Application No. 12/511069 filed on 07/29/2009 is presented for examination by the examiner.

Oath/Declaration

2. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in **37 C.F.R. 1.63.**

Priority

3. As required by **M.P.E.P. 201.14(c)**, acknowledgement is made of applicant's claim for priority based on US provisional application#61/081616, filed on 07/29/2008, and also continuation in part of non-provisional application#12/497859 filed on 07/06/2009 which claims priority to provisional application#61/078365, filed on 07/04/2008.

Drawings

4. The applicant's drawings submitted are acceptable for examination purposes.

Information Disclosure Statement

5. As required by M.P.E.P. 609, the applicant's submissions of the Information Disclosure Statement dated 10/22/2009 is acknowledged by the examiner and the cited references have been considered in the examination of the claims now pending.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(b) which forms the basis for all obviousness rejections set forth in this Office action:

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

7. **Claims 1-9, 13-14 and 16-18** are rejected under 35 U.S.C. 102(b) as being anticipated by LYON (US 2004/0145342 A1).

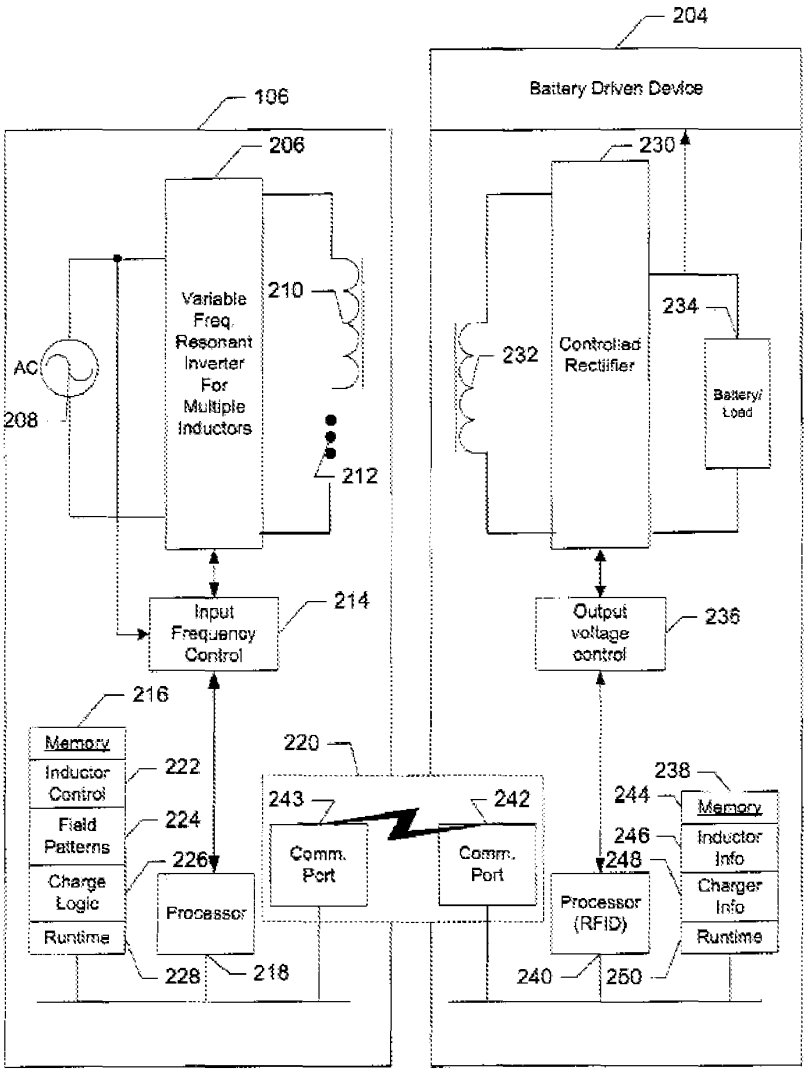

FIG. 2

As per claims 1 and 16, LYON discloses an inductive battery charging system, comprising:

a connection module to determine when a target device is coupled to an inductive power apparatus (See Fig.2, Items#240 and Par.5);

a monitoring module to determine when a target device battery is below a charging threshold while using power from a supplemental power source (See Fig.2, Items#236,240 and 220 and also see Par.29 disclose that the state of charge of the device is detected and that charging is stopped when the battery is full charged, which implicitly means that charging takes place when battery level is below the full charge level) ; and

an activation module to automatically couple the inductive power apparatus and an alternating current power source when a power level of the target device battery is below the charging threshold (See Fig.2, Items#214 and 206,Fig.3, Steps#302,306,310,312 disclose that once a device is placed on the charger, parameters are detected and charging takes place automatically).

As per claim 2, LYON discloses the inductive battery charging system of claim 1 as discussed above, further comprising:

a separation module to automatically decouple the inductive power apparatus and the alternating current power source when a desired charging state of the target device battery is observed (See Fig.2, Items#218, 214, 220 and 206, and Par.29, disclose that once the device battery is fully charged, the charging process is terminated).

As per claim 3, LYON discloses the inductive battery charging system of claim 2, further comprising:

a transformer of the inductive power apparatus to inductively generate an electric current (See Fig.2, Items#210 and 232).

As per claim 4, LYON discloses the inductive battery charging system of claim 3 as discussed above, further comprising:

a rectification circuit of the inductive power apparatus; and a voltage regulation circuit of the inductive power apparatus (See Fig.2, Item#230 and Par.24, discloses a controlled rectifier which performs both rectification and voltage regulation).

As per claim 5, LYON discloses the inductive battery charging system of claim 2 as discussed above, wherein the separation module is comprised of an opto-coupled relay (See Fig.2 Items#220).

As per claims 6 and 17, LYON discloses the inductive battery charging system of claim 5 as discussed above, wherein the opto-coupled relay of the separation module is deactivated when the target device and the inductive power apparatus are decoupled (See Fig.2, Items#242 and 243 which when the chargeable device is removed is deactivated).

As per claim 7, LYON discloses the inductive battery charging system of claim 1, further comprising:

a processor of the monitoring module coupled to the target device, wherein the processor is used to evaluate a target device battery power level with respect to the charging threshold (See Fig.2, Item#218).

As per claims 8 and 18, LYON discloses the inductive battery charging system of claim 7 as discussed above, further comprising:

a battery monitor coupled to the target device to determine the target device battery power level (See Fig.2, Item#230 and Par.29, disclose the state of charge is detected such that when full charge is achieved, charging is terminated).

As per claim 9, LYON discloses the inductive battery charging system of claim 8, wherein the target device is comprised of a mobile device (See Fig.1, Items#108 and 116, disclose a PDA and cellphone).

As per claim 13, LYON discloses the inductive battery charging system of claim 1 as discussed above, wherein the connection module determines whether the target device and the inductive power apparatus are coupled together by determining whether power is being provided to the target device by the inductive power apparatus (See Par.13).

As per claim 14, LYON discloses the inductive battery charging system of claim 1 as discussed above, wherein the supplemental power source is comprised of at least one of a target device battery, a charger system battery and an alternate inductive power apparatus (See Fig.2, Item#234).

Claim Rejections - 35 USC § 103

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

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

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

9. **Claim 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over LYON (US 2004/0145342 A1) in view of MORITA et al. (US 7,872,447 B2).

As per claim 15, LYON discloses the inductive battery charging system of claim 1 as discussed above, However LYON does not disclose it further comprising:

a bypass module to initiate a charging sequence by electrically coupling the alternating current power source and the inductive power apparatus when a bypass input is detected.

MORITA discloses a battery charger comprising a bypass module to initiate a charging sequence by electrically coupling the alternating current power source and the inductive power apparatus when a bypass input is detected (See Fig.1, Item#Sw1).

LYON and MORITA are analogous art since they both deal with battery charging.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention disclosed by LYON with that of MORITA by adding a bypass switch for the benefit of allowing the device to continue charging even after automatic disconnection takes place.

10. **Claims 10-11 and 19-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over LYON (US 2004/0145342 A1) in view of INCLEDON et al. (US 2009/0251100 A1).

As per claims 10 and 19-20, LYON discloses the inductive battery charging system of claim 1 as discussed above, further comprising:

a sense feedback loop of the connection module to identify whether the target device is coupled with at least one of the inductive power apparatus and the alternating current power source (See Fig.2, Item#242,243); and an interrupt controller module to generate an interrupt signal determined by the feedback signal (See Fig.2, Item#218). However LYON does not disclose an input buffer of the connection module to receive a feedback signal.

INCLEDON uses an input buffer to provide voltage input to the controller (See Fig.3, Item#322).

LYON and INCLEDON are analogous art since they both deal with battery charging.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention disclosed by LYON with that of INCLEDON by adding the input buffer for the benefit of protecting input voltage against loading fluctuations.

As per claim 11, LYON discloses the inductive battery charging system of claim 9 as discussed above, However LYON does not disclose it further comprising: an output buffer to generate an engage signal to control a coupling state of the inductive power apparatus and the alternating current power source.

INCLEDON uses an output buffer to output signal from the controller (See Fig.3, Item#342).

LYON and INCLEDON are analogous art since they both deal with battery charging.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention disclosed by LYON with that of INCLEDON by adding the output buffer for the benefit of protecting output signal against fluctuations.

11. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over LYON (US 2004/0145342 A1) in view of MCGINLEY et al. (US 2011/0187315 A1).

As per claim 12, LYON discloses the inductive battery charging system of claim 9 as discussed above However LYON does not disclose it further comprising: a USB module to generate an engage signal to control the coupling state of the inductive power apparatus and the alternating current power source.

MCGINLEY discloses an energy saving charger comprising a USB module to generate an engage signal to control the coupling state of the inductive power apparatus and the alternating current power source (See Fig.8, Item#16, discloses mini-USB module).

LYON and MCGINLEY are analogous art since they both deal with chargers.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention disclosed by LYON with that of MCGINLEY by adding the USB module for the benefit of increasing the charging capability of the charging device.

Examiner Notes

Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in its entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner

Conclusion

12. The prior art made of record and not relied upon is cited to establish the level of skill in the applicant's art and those arts considered reasonably pertinent to applicant's disclosure. See **MPEP 707.05(c)**.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AHMED OMAR whose telephone number is (571)270-7165. The examiner can normally be reached on Monday-Thursday 06:30-16:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DREW DUNN can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AHMED OMAR/
Examiner, Art Unit 2858

/Edward Tso/
Primary Examiner, Art Unit 2859

Notice of References Cited	Application/Control No. 12/511,069	Applicant(s)/Patent Under Reexamination EASTLACK, JEFFREY RAYMON	
	Examiner AHMED OMAR	Art Unit 2859	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2009/0251100 A1	10-2009	Incledon et al.	320/106
*	B	US-7,872,447 B2	01-2011	Morita et al.	320/122
*	C	US-2011/0187315 A1	08-2011	McGinley et al.	320/107
*	D	US-8,183,827 B2	05-2012	Lyon, Geoff M.	320/108
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2	"7872447".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 23:13
S1	99	(US-5657257-$ or US-5808881-$ or US-5987613-$ or US-6198262-$ or US-6204701-$ or US-5535238-$ or US-5673286-$ or US-5686881-$ or US-6000829-$ or US-6226316-$ or US-4868815-$ or US-4897662-$ or US-4952817-$ or US-5182810-$ or US-5297099-$ or US-5410711-$ or US-5544138-$ or US-5563907-$ or US-5570002-$ or US-5574747-$ or US-5640069-$ or US-5708819-$ or US-5768702-$ or US-5835527-$ or US-5920590-$ or US-5946086-$).did. or (US-5953536-$ or US-5961617-$ or US-5995538-$ or US-6100643-$ or US-6175586-$ or US-4296296-$ or US-4993249-$ or US-5249298-$ or US-5286518-$ or US-5299226-$ or US-5329758-$ or US-5396637-$ or US-5418701-$ or US-5446322-$ or US-5493707-$ or US-5517447-$ or US-5565807-$ or US-5566340-$ or US-5590343-$ or US-5612639-$ or US-5619204-$ or US-5631921-$ or US-5691603-$ or US-5719800-$ or US-5742833-$ or US-5770955-$ or US-5808460-$).did. or (US-5821924-$ or US-5877956-$ or US-5903767-$ or US-5907238-$ or US-5919263-$ or US-5978318-$ or US-6029074-$ or US-6066177-$ or US-6088806-$ or US-6098175-$ or US-6140864-$ or US-6144445-$ or US-6175774-$ or US-6201977-$ or US-4509128-$ or US-4524631-$ or US-4559476-$ or US-4786140-$ or US-4800481-$ or US-4815983-$ or US-4823640-$ or US-4841946-$ or US-4900965-$ or US-4903162-$ or US-4930386-$ or US-4966131-$ or US-4987983-$).did. or (US-5013980-$ or US-5016219-$ or US-5019996-$ or US-5020391-$ or US-5021716-$ or US-5203000-$ or US-5241680-$ or US-5268649-$ or US-5300900-$ or US-5323098-$ or US-5332979-$ or US-5333152-$ or US-	USPAT	ADJ	ON	2011/11/19 01:12

		5345164-$ or US-5355077-$ or US-5364316-$ or US-5381540-$ or US-5383340-$ or US-5396298-$ or US-5396636-$).did.				
S2	2	US "20100001684" A1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/19 01:14
S3	99	(US-5657257-$ or US-5808881-$ or US-5987613-$ or US-6198262-$ or US-6204701-$ or US-5535238-$ or US-5673286-$ or US-5686881-$ or US-6000829-$ or US-6226316-$ or US-4868815-$ or US-4897662-$ or US-4952817-$ or US-5182810-$ or US-5297099-$ or US-5410711-$ or US-5544138-$ or US-5563907-$ or US-5570002-$ or US-5574747-$ or US-5640069-$ or US-5708819-$ or US-5768702-$ or US-5835527-$ or US-5920590-$ or US-5946086-$).did. or (US-5953536-$ or US-5961617-$ or US-5995538-$ or US-6100643-$ or US-6175586-$ or US-4296296-$ or US-4993249-$ or US-5249298-$ or US-5286518-$ or US-5299226-$ or US-5329758-$ or US-5396637-$ or US-5418701-$ or US-5446322-$ or US-5493707-$ or US-5517447-$ or US-5565807-$ or US-5566340-$ or US-5590343-$ or US-5612639-$ or US-5619204-$ or US-5631921-$ or US-5691603-$ or US-5719800-$ or US-5742833-$ or US-5770955-$ or US-5808460-$).did. or (US-5821924-$ or US-5877956-$ or US-5903767-$ or US-5907238-$ or US-5919263-$ or US-5978318-$ or US-6029074-$ or US-6066177-$ or US-6088806-$ or US-6098175-$ or US-6140864-$ or US-6144445-$ or US-6175774-$ or US-6201977-$ or US-4509128-$ or US-4524631-$ or US-4559476-$ or US-4786140-$ or US-4800481-$ or US-4815983-$ or US-4823640-$ or US-4841946-$ or US-4900965-$ or US-4903162-$ or US-4930386-$ or US-4966131-$ or US-4987983-$).did. or (US-5013980-$ or US-5016219-$ or US-5019996-$ or US-5020391-$ or US-5021716-$ or US-5203000-$ or US-5241680-$ or US-5268649-$ or US-5300900-$ or US-5323098-$ or US-5332979-$ or US-5333152-$ or US-5345164-$ or US-5355077-$ or US-5364316-$ or US-5381540-$ or US-5383340-$ or US-5396298-$ or US-5396636-$).did.	USPAT	ADJ	ON	2011/11/19 18:08
S4	17197	(stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3) with (leak$3 or	USPAT	ADJ	ON	2011/11/20 13:18

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S8	0	320c.clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/20 13:27
S9	22799	"320".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/20 13:27
S10	479	S6 and S9	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/20 13:28
S11	301098	("361" or "363" or "323" or "307").clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/20 16:27
S12	56314	(stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or limit$3) with (leak$3 or vampi$3 or stand$1by or phantom) with (power or load)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/20 16:27
S13	4114	S12 and S11	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/20 16:27
S14	308	(stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or limit$3) with (leak$3 or vampi$3 or stand$1by or	US-PGPUB; USPAT; USOCR;	ADJ	ON	2011/11/20 18:21

		phantom) with (power or load) and (bypass$3 near5 input$4)	FPRS; EPO; JPO; DERWENT; IBM_TDB			
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S16	56314	(stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or limit$3) with (leak$3 or vampi$3 or stand$1by or phantom) with (power or load)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/20 19:24
S17	3823	S15 and S16	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/20 19:24
S18	3565	bypass$3 and S16	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/20 19:25
S19	513	S18 and S15	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/11/20 19:25
S20	30043	((vampir$3 or leakage or stand$1by or phantom or idling or idle) near9 (loss or load or power or draw$3 or electricity or mode)) and (bypass$3 or shunt$3 or get around or get$1around)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/12 08:00
S21	305404	("361" or "363" or "323" or "307").clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/12 08:00
S22	3539	S20 and S21	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/12 08:00
S23	8173	((stop$4 or prevent$3 or reduc$4 or	US-PGPUB;	ADJ	ON	2012/03/12

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S24	296448	("320" or "307" or "361" or "363").clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/12 08:01
S25	1060	S23 and S24	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/12 08:01
S26	7	"7800251".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/12 08:24
S27	2	"20080247203"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 16:51
S28	58073	(stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or limit$3) with (leak$3 or vampi$3 or stand$1by or phantom) with (power or load)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 16:51
S29	3652	bypass$3 and S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 16:51
S30	296828	("320" or "307" or "361" or "363").clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 16:52
S31	528	S29 and S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	ADJ	ON	2012/03/20 16:52

			IBM_TDB			
S32	67607	((limit$3 or eliminat$3 or stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or shrink$3 or slash$3) and (vampir$3 or leakage or stand$1by or phantom or idling or idle or (power near2 sav$3)) and (loss or load or power or draw$3 or electricity or mode) and (bypass$3 or shunt$3 or get around or get$1around) and (separat$3 or switch or disconnect$3 or decoupl$3) and (detect$3 or sens$3 or measur$3 or measurement or observ$3) and (load or drain or consumption or threshold))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 19:33
S33	5871	S32 and S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 19:44
S34	19204	(((limit$3 or eliminat$3 or stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or shrink$3 or slash$3) near5 (vampir$3 or leakage or stand$1by or phantom or idling or idle or (power near2 sav$3))) and (loss or load or power or draw$3 or electricity or mode) and (bypass$3 or shunt$3 or get around or get$1around) and (separat$3 or switch or disconnect$3 or decoupl$3) and (detect$3 or sens$3 or measur$3 or measurement or observ$3) and (load or drain or consumption or threshold))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 19:56
S36	1572	S34 and S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 19:58
S37	229	S34 and "320".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 19:59
S38	928	324/555.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 21:05
S39	6387	320/128,132,134,136,152,157,162.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 21:08

S40	3165	((limit$3 or eliminat$3 or stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or shrink$3 or slash$3) and (vampir$3 or leakage or stand$1by or phantom or idling or idle or (power near2 sav$3)) and (loss or load or power or draw$3 or electricity or mode) and ((bypass$3 or shunt$3 or get around or get$1around) with (user or operator)) and (separat$3 or switch or disconnect$3 or decoupl$3) and (detect$3 or sens$3 or measur$3 or measurement or observ$3) and (load or drain or consumption or threshold))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 21:14
S41	972	(((limit$3 or eliminat$3 or stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or shrink$3 or slash$3) near5 (vampir$3 or leakage or stand$1by or phantom or idling or idle or (power near2 sav$3))) and (loss or load or power or draw$3 or electricity or mode) and ((bypass$3 or shunt$3 or get around or get$1around) with (user or operator)) and (separat$3 or switch or disconnect$3 or decoupl$3) and (detect$3 or sens$3 or measur$3 or measurement or observ$3) and (load or drain or consumption or threshold))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 21:14
S42	45	S41 AND S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 21:15
S43	1510	(((limit$3 or eliminat$3 or stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or shrink$3 or slash$3) near5 (vampir$3 or leakage or stand$1by or phantom or idling or idle or (power near2 sav$3))) and (loss or load or power or draw$3 or electricity or mode) and ((bypass$3 or shunt$3 or get around or get$1around) with (user or operator OR MAnual$2)) and (separat$3 or switch or disconnect$3 or decoupl$3) and (detect$3 or sens$3 or measur$3 or measurement or observ$3) and (load or drain or consumption or threshold))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 21:18
S44	60	S43 and S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 21:19
S45	15	S44 not S42	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	ADJ	ON	2012/03/20 21:19

			IBM_TDB			
S47	15	(US-20110215768-$ or US-20110187315-$ or US-20100073177-$ or US-20090322281-$ or US-20080290731-$ or US-20060208699-$ or US-20060119321-$ or US-20080061634-$ or US-20030007372-$).did. or (US-8030885-$ or US-7764046-$ or US-7622898-$ or US-7579807-$ or US-7183748-$ or US-7800251-$).did.	US-PGPUB; USPAT	ADJ	ON	2012/03/20 22:43
S48	2040	(((limit$3 or eliminat$3 or stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or shrink$3 or slash$3) near5 (vampir$3 or leakage or stand$1by or phantom or idling or idle or (power near2 sav$3))) and (loss or load or power or draw$3 or electricity or mode) and (bypass$3 or shunt$3 or get around or get$1around) and (separat$3 or switch or disconnect$3 or decoupl$3) and (detect$3 or sens$3 or measur$3 or measurement or observ$3) and (load or drain or consumption or threshold) and (over$1rid$3 or overrid$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 22:49
S49	6387	320/128,132,134,136,152,157,162.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 23:03
S50	18	S48 and S49	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 23:03
S51	188	320/140.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/03/20 23:08
S53	193	320/140.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/07 13:18
S54	876	323/234,	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/07 13:19
S55	99	(US-4966131-$ or US-4369409-$ or US-	USPAT	ADJ	ON	2012/06/07

		4513224-$ or US-4543527-$ or US-4607323-$ or US-5300895-$ or US-5615100-$ or US-5640045-$ or US-5923218-$ or US-6152249-$ or US-6160374-$ or US-6175506-$ or US-6218835-$ or US-4262235-$ or US-4288721-$ or US-4319199-$ or US-4443810-$ or US-4472672-$ or US-4480210-$ or US-4513361-$ or US-4521659-$ or US-4755345-$ or US-4781609-$ or US-4819120-$ or US-4970434-$ or US-5001400-$).did. or (US-5018391-$ or US-5216567-$ or US-5216916-$ or US-5243214-$ or US-5270618-$ or US-5386141-$ or US-5404082-$ or US-5424627-$ or US-5559377-$ or US-5574357-$ or US-5583883-$ or US-5592054-$ or US-5602463-$ or US-5680078-$ or US-5717685-$ or US-5726615-$ or US-5738525-$ or US-5767495-$ or US-5783876-$ or US-5894678-$ or US-5917254-$ or US-5933334-$ or US-6118678-$ or US-6232781-$ or US-6246598-$ or US-4247786-$ or US-4253119-$).did. or (US-4252605-$ or US-4263653-$ or US-4272723-$ or US-4274033-$ or US-4276484-$ or US-4314325-$ or US-4319265-$ or US-4319359-$ or US-4334256-$ or US-4337430-$ or US-4347592-$ or US-4348598-$ or US-4348615-$ or US-4352077-$ or US-4358717-$ or US-4360847-$ or US-4377113-$ or US-4381677-$ or US-4384400-$ or US-4390795-$ or US-4393435-$ or US-4408186-$ or US-4409522-$ or US-4433326-$ or US-4435670-$ or US-4437146-$ or US-4438372-$).did. or (US-4475064-$ or US-4490730-$ or US-4490650-$ or US-4493040-$ or US-4506126-$ or US-4521795-$ or US-4527091-$ or US-4553197-$ or US-4559593-$ or US-4572964-$ or US-4580114-$ or US-4586188-$ or US-4604557-$ or US-4605844-$ or US-4608523-$ or US-4609905-$ or US-4613765-$ or US-4616300-$ or US-4628430-$).did.				15:11
S56	969	320/108	USPAT	ADJ	ON	2012/06/07 15:16
S57	3093	((Sens$3 or detect$3 or coupl$3 or presence or avilability or available) near4 (device)) and (state$1of$1charg$3 or state of charg$3 or "SOC" or capacity or state) and (automatic$4 near5 (charg$3 or re$1charg$3))	USPAT	ADJ	ON	2012/06/08 13:14
S58	72	S57 and 320/108	USPAT	ADJ	ON	2012/06/08 13:23
S59	21050	(state$1of$1charg$3 or state of charg$3 or "SOC" or capacity or state) and (automatic$4 near5 (charg$3 or re$1charg$3))	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2012/06/12 14:08

			EPO; JPO; DERWENT; IBM_TDB			
S60	972	320/108	USPAT	ADJ	ON	2012/06/12 14:09
S61	110	S59 and S60	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/12 14:09
S62	3	"20040145342"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 15:02
S63	2	US "20100001685" A1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 15:03
S64	1101	(charger or charg$3) with (bypass$3 near4 (switch$3 or "FET" or "BJT"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 18:51
S65	227	S64 and "320".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 18:51
S66	4080	(input near4 buffer) and (interrupt$3 near4 controller)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 20:50
S67	5	S66 and "320".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 20:55
S68	13941	feedback with buffer	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 21:09

S69	24	S68 and "320".clas.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 21:09
S70	31	(US-20110215768-$ or US-20110187315-$ or US-20100073177-$ or US-20090322281-$ or US-20080290731-$ or US-20060208699-$ or US-20060119321-$ or US-20080061634-$ or US-20030007372-$ or US-20090273316-$ or US-20080224652-$).did. or (US-8030885-$ or US-7764046-$ or US-7622898-$ or US-7579807-$ or US-7183748-$ or US-7800251-$ or US-8159183-$ or US-8183827-$ or US-8169185-$ or US-8054036-$ or US-7880338-$ or US-7791311-$ or US-7772802-$ or US-7761307-$ or US-8193766-$ or US-8111042-$ or US-8026693-$ or US-7560905-$ or US-4490650-$).did. or (US-20040145342-$).did.	US-PGPUB; USPAT; DERWENT	ADJ	ON	2012/06/13 21:35
S71	4	S70 and "USB"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 21:35
S72	217	320/108 and "USB"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2012/06/13 21:44

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S46	160	((limit$3 or eliminat$3 or stop$4 or prevent$3 or reduc$4 or eliminat$3 or avoid$3 or shrink$3 or slash$3) and (vampir$3 or leakage or stand$1by or phantom or idling or idle or (power near2 sav$3)) and (loss or load or power or draw$3 or electricity or mode) and (bypass$3 or shunt$3 or get around or get$1around) and (separat$3 or switch or disconnect$3 or decoupl$3) and (detect$3 or sens$3 or measur$3 or measurement or observ$3) and (load or drain or consumption or threshold)).clm.	US-PGPUB; USPAT; UPAD	ADJ	ON	2012/03/20 19:27
S52	1	"Term Removed"	US-PGPUB	ADJ	ON	2012/03/20 22:43
S73	1	"Term Removed"	US-PGPUB	ADJ	ON	2012/06/13 21:35

6/13/2012 11:14:23 PM
C:\Users\aomar\Documents\EAST\Workspaces\12497859-limitation of vampiric power consumption with decoupling.wsp

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12511069	EASTLACK, JEFFREY RAYMOND
	Examiner	Art Unit
	AHMED OMAR	2859

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

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/13/2012								
	1	✓								
	2	✓								
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	20	✓								

PTO/SB/08b (06-09)
Approved for use through 07/31/2009. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

	Complete if Known
Application Number	12/511,069
Filing Date	July 29, 2009
First Named Inventor	Jeffrey Raymond Eastlack
Art Unit	Unknown
Examiner Name	Unknown
Attorney Docket Number	00006.00002US1

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	1	GREEN PLUG, http://www.greenplug.us/ , Page 1, (Last Visited 07-09-2009).	
	2	THE CARPHONE WAREHOUSE, Eco Charger Samsung,	
		http://www.carphonewarehouse.com/phone-accessories/chargers-batteries/mains-chargers/buy/SAMSUNG-ECO-CHARGER;jsessionid=796E03F64DC0F98CA5A15	
		Page 1, (Last Visited 07-09-2009).	
	3	GADGETS.CO.UK, GREEN MOBILE PHONE CHARGER, http://www.gadgets.co.uk/item/GREENCHARGER/Green-Mobile-Phone-Charger.html	
		Pages 2, (Last Visited 07-09-2009).	
	4	GOOD FOR YOU, GOOD FOR THE PLANET, http://www.gfy-gfp.com/eng/zero.html , Pages 4, (Last Visited 07-09-2009).	

Examiner Signature	/Ahmed Omar/	Date Considered	06/13/2012

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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BIB DATA SHEET

CONFIRMATION NO. 3061

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/511,069	07/29/2009 RULE	320	2859	00006.00002US1

APPLICANTS

JEFFREY RAYMOND EASTLACK, Austin, TX;

**** CONTINUING DATA **************************

This appln claims benefit of 61/084,616 07/29/2008
and is a CIP of 12/497,859 07/06/2009 *
which claims benefit of 61/078,365 07/04/2008
(*)Data provided by applicant is not consistent with PTO records.

**** FOREIGN APPLICATIONS **************************

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08/10/2009

Foreign Priority claimed	35 USC 119(a-d) conditions met	Verified and Acknowledged	Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ Yes ☑ No	☐ Yes ☑ No	/AHMED H OMAR/ Examiner's Signature	☐ Initials	TX	16	20	3

ADDRESS

Raj Abhyanker, P.C.
Raj Abhyanker, P.C.
1580 W. El Camino Real
Suite 8
Mountain View, CA 94040
UNITED STATES

TITLE

AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY

FILING FEE RECEIVED		
462	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12511069	EASTLACK, JEFFREY RAYMOND
	Examiner	Art Unit
	AHMED OMAR	2859

SEARCHED			
Class	Subclass	Date	Examiner
320	108	6/13/2012	A.O.

SEARCH NOTES		
Search Notes	Date	Examiner
PLUS search, inventor name search in PALM, (320/128,132,134,136,152,157,162) (text search only), also class/subclass search.	6/13/2012	A.O.

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/A.O./ Examiner.Art Unit 2859	

PLUS Search Results for S/N 12511069, Searched Thu Dec 01 10:54:40 EST 2011

The Patent Linguistics Utility System (PLUS) is a USPTO automated search system for U.S. Patents from 1971 to the present PLUS is a query-by-example search system which produces a list of patents that are most closely related linguistically to the application searched. This search was prepared by the staff of the Scientific and Technical Information Center, SIRA.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/511,069	07/29/2009	JEFFREY RAYMOND EASTLACK	00006.00002US1

CONFIRMATION NO. 3061

PUBLICATION NOTICE

55952
Raj Abhyanker LLP
1580 West, El Camino Real, Suite 8
Mountain View, CA 94040

OC000000039528436

Title:AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY

Publication No.US-2010-0001685-A1
Publication Date:01/07/2010

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

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PTO/SB/08b (06-09)
Approved for use through 07/31/2009. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	12/511,069
Filing Date	July 29, 2009
First Named Inventor	Jeffrey Raymond Eastlack
Art Unit	Unknown
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NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	1	GREEN PLUG, http://www.greenplug.us/ , Page 1, (Last Visited 07-09-2009).	
	2	THE CARPHONE WAREHOUSE, Eco Charger Samsung,	
		http://www.carphonewarehouse.com/phone-accessories/chargers-batteries/mains-chargers/buy/SAMSUNG-ECO-CHARGER;jsessionid=796E03F64DC0F98CA5A15	
		Page 1, (Last Visited 07-09-2009).	
	3	GADGETS.CO.UK, GREEN MOBILE PHONE CHARGER, http://www.gadgets.co.uk/item/GREENCHARGER/Green-Mobile-Phone-Charger.html	
		Pages 2, (Last Visited 07-09-2009).	
	4	GOOD FOR YOU, GOOD FOR THE PLANET, http://www.gfy-gfp.com/eng/zero.html , Pages 4, (Last Visited 07-09-2009).	

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1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

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EFS ID:	6307717
Application Number:	12511069
International Application Number:	
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Title of Invention:	AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY
First Named Inventor/Applicant Name:	JEFFREY RAYMOND EASTLACK
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1	Information Disclosure Statement (IDS) Filed (SB/08)	IDS_00006_00002US1.pdf	331226 cdf7b94ab64670d6c3b1c94867f296c5c489a8f7	no	2

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
12/511,069	07/29/2009	2838	462	00006.00002US1	20	3

CONFIRMATION NO. 3061

55952
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FILING RECEIPT

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Date Mailed: 08/17/2009

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Applicant(s)

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Power of Attorney: The patent practitioners associated with Customer Number 55952

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/084,616 07/29/2008
and is a CIP of 12/497,859 07/06/2009 *
which claims benefit of 61/078,365 07/04/2008
(*)Data provided by applicant is not consistent with PTO records.

Foreign Applications

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/511,069**

Projected Publication Date: 01/07/2010

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** **SMALL ENTITY** **

Title

AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY

Preliminary Class

320

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UNITED STATES PATENT APPLICATION

FOR

AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY

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Phone: 650-965-8731

RALLP Docket No: 00006.00002US1

AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY

CLAIM OF PRIORITY

[0001] This application claims the benefit of U.S. Provisional Application No. **61/084,616**, filed on **July 29, 2008**. This application is also a continuation-in-part of U.S. Patent Application No. **12/497,859**, entitled "Limitation of Vampiric Power Consumption With Decoupling of an Inductive Power Apparatus and an Alternating Current Power Source," filed on **July 4, 2009**, which claims the benefit of U.S. Provisional Application No. **61/078,365**, filed on **July 4, 2008**.

FIELD OF TECHNOLOGY

[0002] This disclosure relates generally to battery charging technology, and in particular to automatic coupling of an alternating current power source and an inductive power apparatus to charge a target device battery.

BACKGROUND

[0003] A system to decouple an inductive charging unit and an alternating current power supply may use an external input to initiate a coupling operation to allow a charging operation to occur. The system may decouple the inductive charging unit and the alternating current power supply to prevent a vampiric power loss that may otherwise be consumed by the inductive charging unit. After the inductive charging unit and the alternating current power supply have been decoupled, if the external input is not received, the system may allow a battery of a charging target device to be used until a power level of the battery falls below a desired power

threshold while it is connected to the inductive charging unit. As a result, the target device may have insufficient power to operate for a desired period of time when it is disconnected from the inductive charging unit.

[0004] An alternate system to charge the target device may be used to maintain the power level of the battery of the target device above a desired power threshold, which may limit the ability of the system to prevent a vampiric power loss that may be consumed by an alternate inductive charging unit. The alternate inductive charging unit may consume the vampiric power regardless of whether the battery is coupled to the alternate inductive charging unit. The consumption of the vampiric power by the alternate inductive charging unit may contribute to an aggregate power waste of a household, a community, and/or a country.

[0005] The consumption of the vampiric power may continuously occur while the inductive charging unit is coupled to the alternating current power source, and it may occur over the course of an hour, a day, and/or over a longer time period. The consumption of the vampiric power may result in an unnecessary generation of power by a power plant. Carbon pollution, nuclear waste, or other forms of pollution and waste may occur as a result of the unnecessary generation of power. In addition, the consumption of the vampiric power may incur a power cost during a peak use period, which may waste a financial resource and/or contribute to causing an insufficient supply of power.

SUMMARY

[0006] Several methods and systems to perform automatic coupling of an alternating current power source and an inductive power apparatus to charge a target device battery are disclosed. In an aspect, an inductive battery charging system includes a connection module to determine when a target device is coupled to an inductive power apparatus. The system further includes a monitoring module to determine when a target device battery is below a charging threshold while using power from a supplemental power source. The system also includes an activation module to automatically couple the inductive power apparatus and an alternating current power source when a power level of the target device battery is below the charging threshold.

[0007] The system may include a separation module to automatically decouple the inductive power apparatus and the alternating current power source when a desired charging state of the target device battery is observed. The system may also include a transformer of the inductive power apparatus to inductively generate an electric current. The system may further include a rectification circuit of the inductive power apparatus and a voltage regulation circuit of the inductive power apparatus. The separation module may include an opto-coupled relay.

[0008] In the aspect, the opto-coupled relay of the separation module may be deactivated when the target device and the inductive power apparatus are decoupled. The system may further include a processor of the monitoring module coupled to the target device. The processor may be used to evaluate a target device battery power level with respect to the charging threshold. The system may also include a battery monitor coupled to the target device to determine the target device battery power level. The target device may include a mobile device.

[0009] In the aspect, the system may further include a sense feedback loop of the connection module to identify whether the target device is coupled with at least one of the inductive power

apparatus and the alternating current power source. The system may also include an input buffer of the connection module to receive a feedback signal. In addition, the system may include an interrupt controller module to generate an interrupt signal determined by the feedback signal received by the input buffer. The system may also include an output buffer to generate an engage signal to control a coupling state of the inductive power apparatus and the alternating current power source. The system may further include a USB module to generate an engage signal to control a coupling state of the inductive power apparatus and the alternating current power source.

[0010] In addition, the connection module may determine whether the target device and the inductive power apparatus are coupled together by determining whether power is being provided to the target device by the inductive power apparatus. The supplemental power source may include one or more of a target device battery, a charger system battery, and an alternate inductive power apparatus. The system may further include a bypass module to initiate a charging sequence by electrically coupling the alternating current power source and the inductive power apparatus when a bypass input is detected.

[0011] In another aspect, an inductive battery charging method includes identifying whether a target device is coupled to a charging apparatus that includes an inductive power apparatus. The method further includes determining whether a power level of a target device battery is below a lower charging threshold while using power from a supplemental power source. The method also includes automatically engaging the inductive power apparatus and an alternating current power source when a lower available power threshold of a battery is reached. The method further includes automatically decoupling the inductive power apparatus and the alternating current power source when a desired threshold power level of the target device battery is reached. The

inductive power apparatus includes one or more of a transformer to inductively generate an electric current, a rectification circuit, and a voltage regulation circuit. The method may include deactivating a solid state relay, such as an opto-coupled relay, of the inductive power apparatus when the target device and the inductive power apparatus are decoupled. In another aspect, an electromechanical relay may be used.

[0012] The power level of the target device battery may be determined using a processor and a battery monitor, and the target device may be a mobile device. The processor and the battery monitor may be physically coupled to the target device. The method may further include identifying a coupling of the inductive power apparatus and the target device using a sense feedback loop and receiving a feedback signal using an input buffer. The method may also include transmitting an interrupt signal determined in accordance with the feedback signal received by the input buffer. The method may further include adapting a coupling state of the inductive power apparatus and the alternating current power source based on the interrupt signal.

[0013] In yet another aspect, an inductive battery charging system includes a connection module to confirm whether a target device is coupled to a charging apparatus comprised of an inductive power apparatus. The inductive power apparatus includes a transformer and the target device includes a mobile device. The system also includes a sense feedback loop of the connection module to identify whether the target device is coupled to an alternating current power source using one or more of a sense feedback signal and a power transmitted from the alternating current power source to the target device.

[0014] In the aspect, the system also includes a monitoring module to detect whether a target device battery is below a charging threshold while using power from a supplemental power source. The system also includes a battery monitor coupled to the target device to determine a

target device battery power level. The system further includes a processor of the monitoring module coupled to the target device. The processor is used to evaluate the target device battery power level with respect to the charging threshold. The system further includes an activation module to automatically couple the target device and the alternating current power source using the inductive power apparatus when the target device battery is below the charging threshold. The system also includes a separation module to automatically decouple the target device and the alternating current power source when a desired charging state of the target device battery is detected by the monitoring module. The separation module may include an opto-coupled relay or an electromechanical relay.

BRIEF DESCRIPTION OF THE VIEWS OF DRAWINGS

[0015] Example embodiments are illustrated by way of example and not limitation in the figures of the accompanying drawings, in which like references indicate similar elements and in which:

[0016] **Figure 1** is a schematic view of an inductive power apparatus, according to one embodiment.

[0017] **Figure 2** is a schematic view of an inductive battery charger, according to one embodiment.

[0018] **Figure 3** is an exploded view of a charger module, according to one embodiment.

[0019] **Figure 4** is an exploded schematic view illustrating the charger module, according to one embodiment.

[0020] **Figure 5** is an illustration of an inductive battery charger, according to one embodiment.

[0021] **Figure 6** is a system diagram of various devices that may be powered by the inductive battery charger, according to one embodiment.

[0022] **Figure 7** is an illustration of a current draw characterization to charge a mobile device battery, according to one embodiment.

[0023] **Figure 8** is a flow chart that depicts operation of an inductive battery charger, according to one embodiment.

[0024] **Figure 9** is a schematic view of an inductive power apparatus coupled to a target device, according to one embodiment.

[0025] **Figure 10** is an exploded view of an inductive power apparatus and a target device, according to one embodiment.

[0026] **Figure 11** is an exploded schematic view illustrating components of the inductive power apparatus and the target device, according to one embodiment.

[0027] **Figure 12** is an exploded schematic view illustrating components of the inductive power apparatus and the target device, according to an additional embodiment.

[0028] **Figure 13** is a diagrammatic system view of a data processing system that may be used with various embodiments disclosed herein, according to one embodiment.

[0029] **Figure 14** is a flow chart that depicts coupling of an inductive battery charger and an alternating current source, according to one embodiment.

[0030] **Figures 15A-15B** illustrate a process flow to automatically couple an inductive power apparatus and an alternating current power source, according to one embodiment.

[0031] Other features of the present embodiments will be apparent from the accompanying Drawings and from the Detailed Description that follows.

DETAILED DESCRIPTION

[0032] Disclosed are systems and a method of automatic coupling of an alternating current power source and an inductive power apparatus to charge a target device battery. Although the embodiments have been described with reference to specific example embodiments, it will be evident that various modifications and changes may be made to these embodiments without departing from the broader spirit and scope of the various embodiments.

[0033] **Figure 1** is a schematic view of an inductive power apparatus 112, according to one embodiment. In particular, **Figure 1** illustrates an alternating current power source 102, a transformer 104, a rectification circuit 106, a voltage regulation circuit 108, a target load 110, an inductive power apparatus 112, and an alternating current circuit 114.

[0034] In an embodiment, the alternating current power source 102 provides power to an inductive power apparatus 112 through a wall socket that is coupled to a power grid of an apparatus, a building, a city, and/or a larger power network. In the embodiment, the inductive power apparatus 112 includes a transformer 104, a rectification circuit 106, and a voltage regulation circuit 108. As illustrated in **Figure 1**, the alternating current power source 102 may be coupled to the transformer 104 with an alternating current circuit 114. The transformer 104 may be coupled to the rectification circuit 106 and the voltage regulation circuit 108 in the inductive power apparatus 112. The inductive power apparatus 112 may further be coupled to the target load 110.

[0035] In the embodiment, the transformer 104 includes two conductively independent coils that are mutually coupled by magnetic flux when current flows in one of the coils. When alternating current flows in the primary coil a changing magnetic field may be produced within

the transformer 104 core, which may then induce an electric current in the secondary coil as described by Faraday's law.

[0036] Vampire energy loss may occur when an electronic or mechanical machine consumes energy before or after the machine performs a useful task. Vampire energy loss may waste approximately 12% of the electric power production within the United States. One form of vampire energy loss may be "no load loss," in which energy may be lost even when the secondary coil of a transformer 104 is left open or is not attached to a load.

[0037] "No load loss" may be attributed to eddy currents and magnetic hysteresis within the transformer core. In addition, a direct current power supply may also incur dynamic and/or static power loss within a rectification circuit 106 and/or a voltage regulation circuit 108. These and other losses may contribute substantially to vampire energy loss. Another form of energy loss may include "parasitic loading," which may occur during a battery charging operation after a battery has been charged. "Parasitic loading" is further discussed with respect to **Figure 7**.

[0038] In the embodiment, the target load 110 may be comprised of a battery, which may be one or more of various battery types. For example, the battery may be a wet cell or a dry cell battery. In addition, the battery may be one or more of a lead-acid battery, a nickel-cadmium battery, a nickel metal hydride battery, a lithium-ion cell, or any other type of rechargeable battery. The target load 110 may include a device and/or apparatus that may or may not include a battery, such as a laptop, a cell phone, a mobile device, etc.

[0039] **Figure 2** is a schematic view of an inductive battery charger 200, according to one embodiment. In particular, **Figure 2** illustrates an alternating current power source 102, a transformer 104, a rectification circuit 106, a voltage regulation circuit 108, a target load 110, an

inductive power apparatus 112, an alternating current circuit 114, an inductive battery charger 200, a charger module 216, and connections 218, 220, 222, 224, and 226.

[0040] As illustrated in **Figure 2**, the charger module 216 may be coupled to the transformer 104 and the alternating current power source 102 through connections 224 and 226 in the alternating current circuit 114. The charger module 216 may be coupled to the voltage regulation circuit 108 and the target load 110 through connections 218, 220, and 222. In the present embodiment, the inductive battery charger 200 includes the inductive power apparatus 112 and the charger module 216.

[0041] In one embodiment, the inductive battery charger 200 may operate in accordance with a power usage characteristic of a charging battery, which may be illustrated by the current vs. time plot of **Figure 7**. The inductive battery charger 200 may cut alternating current power to the inductive power apparatus 112 once the charger module 216 determines that a battery of the target load 110 has been charged to a target threshold level. The charger module 216 may cut alternating current power when the determination occurs.

[0042] In the present embodiment, when the alternating current power is cut off from the inductive power apparatus 112, the charger module 216 may also undergo a "self disconnect" in which the charger module 216 may lack power from the inductive power apparatus 112. The charger module 216 may or may not include a charger module battery to allow the module to continue monitoring the target load after the "self disconnect" operation.

[0043] In the embodiment, when the alternating current power is cut off from the inductive power apparatus 112, a source of "no load loss" from the transformer 104 may be limited or prevented. In addition, cutting off the alternating current power may limit or prevent energy loss

from static and/or dynamic power consumption of the rectification circuit 106 and/or the voltage regulation circuit 108.

[0044] In another embodiment, the charger module 216 may be modularly designed so that it may be integrated into future charger designs and/or adapted to an existing charger. For example, in **Figure 2**, the charger module may be integrated with an existing design of an inductive power apparatus 112, according to the present embodiment.

[0045] In yet another embodiment, a charging operation to limit vampiric power consumption may begin when a target load 110 is coupled to the inductive battery charger 200 and the alternating current power source 102. A push button switch of the inductive battery charger 200 may be used to initiate a charging operation of the target load 110. In an embodiment, the charger module 216 then takes control of the inductive power apparatus 112. The charger module 216 then monitors the charge status of the battery. Based on the battery status, the charger module 216 determines whether to continue to allow alternating current power to be coupled to the inductive battery charger 200 components or to electrically disconnect the inductive battery charger 200 from the alternating current power source 102. The inductive battery charger 200 may be electrically disconnected from the alternating current power source 102 once the battery is charged to a desired target level. In other embodiments, the charger module 216 is made up of analog control circuits, which may be better understood from **Figures 3** and **4**. In multiple embodiments, the inductive battery charger 216 may be used to power a variety of portable devices, mobile devices, and other electrically powered devices or systems. Some example devices are illustrated in **Figure 6**.

[0046] **Figure 3** is an exploded view of a charger module 216, according to one embodiment. In particular, **Figure 3** illustrates an observation module 326, a filter module 328, a detection

module 330, an inverter module 332, a separation module 334, and a bypass module 336. In an embodiment, the modules may be circuits, including an observation circuit, a filter circuit, a detection circuit, an inverter circuit, a separation circuit, and/or a bypass circuit.

[0047] In one embodiment, the inductive power apparatus 112 provides direct current power to a target load 110 when the inductive power apparatus 112 is coupled to the alternating current power source 102. In the present embodiment, the observation module 326 determines a power consumption associated with the target load 110, and the detection module 330 determines when power consumption reaches a threshold level. The separation module 334 decouples the inductive power apparatus 112 and the alternating current power source 102 when the power consumption is lower than a threshold level to limit vampiric power consumption of the inductive power apparatus 112.

[0048] **Figure 4** is an exploded schematic view illustrating the charger module 216, according to one embodiment. In particular, **Figure 4** illustrates a voltage regulation circuit 108, a target load 110, an alternating current circuit 114, connections 216, 218, 220, 222, 224, an observation circuit 326, a filter circuit 328, a detection circuit 330, an inverter circuit 332, a separation circuit 334, a bypass circuit 336, according to the embodiment. The embodiment further includes a charger module 416, a sense resistor 438, resistors 440, 442, 444, and 446. The charger module 416 may use analog circuits rather than software that operate using a processor 1302 and a memory (e.g., a main memory 1304, a static memory 1306). In other embodiments, the components of the charger module 416 may include circuit elements and/or software elements.

[0049] In an embodiment, the observation module 326 includes a differential amplifier, which uses an operational amplifier 450 with a particular arrangement of resistors 440, 442, 444, and 446. The differential amplifier senses and amplifies the voltage difference across a sense resistor

438, which is placed in series with the target load 110 that can be electrically modeled as a varying resistor, according to the embodiment.

[0050] In an embodiment, based on one or more charging characterization experiments of a cell phone and various mobile devices, the current drawn while the target battery is being charged will vary in accordance with the state of the battery charge. For example, in an embodiment, the current drawn will remain approximately constant at the maximum level for a period of time before decaying. The current draw decay may occur linearly or nonlinearly, such as by decaying exponentially. The charging operation may be better understood from **Figure** 7.

[0051] In the embodiment, as the target battery becomes charged, a sudden drop in the current drawn by the target battery may occur. The amplified output of the differential amplifier of the observation module 326 is fed into a filter module 328, which may include a low pass filter. The low pass filter may be composed of resistor 460 and capacitor 458.

[0052] In the present embodiment, the output signal of the filter module 328 is fed to an analog comparator circuit of a detection module 330. The analog comparator circuit may be composed of an additional operational amplifier 454, and resistors 452 and 448. Resistors 452 and 448 are arranged as a voltage divider with an output value that dictates the comparator's voltage threshold and is fed into a non-inverting input of the additional operational amplifier 454.

[0053] In the embodiment, the low pass filter of the filter module 328 conditions the signal between the differential amplifier of the observation module 326 and the comparator circuit of a detection module 330 to prevent a high frequency noise from prematurely crossing the voltage threshold of the analog comparator. The high frequency noise may otherwise generate a voltage level associated with a completed charging operation based on signal fluctuation. In other embodiments, circuitry and/or software may be used to determine whether a target voltage

threshold has been crossed for a sufficient period of time to indicate that a sufficient charging level has been reached. For instance, a timing circuit and/or software instruction may delay or prevent transmission of a voltage to the comparator circuit that would cause the comparator circuit to change its output voltage before the target load 110 reaches its desired charging state.

[0054] In the embodiment, the output of the comparator circuit of the detection module 330 is fed into an inverter of the inverter module 332. The inverter module 332 outputs a high voltage signal, which provides an operational current (e.g., "on current") to an internal LED of the opto-coupled relay 462 of the separation module 334 when the output of the voltage comparator of the detection module 330 is low.

[0055] In the embodiment, a current limiting resistor 464 is placed in series with the output of the inverter module 332 and the input of the opto-coupled relay 462 of the separation module 334 to keep the current level from exceeding the maximum current value of the relay's internal LED. When the output voltage of the low pass filter of the filter module 328 crosses the threshold of the comparator of the detection module 330, its output changes from low to high. The output is inverted by the inverter module 332 to provide a low voltage to the opto-coupled relay 462 of the separation module 334. The low voltage signal may provide an approximately zero voltage potential difference across the internal LED of the opto-coupled relay 462 of the separation module 334. The approximately zero voltage potential difference , which stops the necessary "on current" for closed switch operation of the opto coupled relay's 462 alternating current ports 208 and 210. The operation may be better understood by referring to **Figure 8**.

[0056] In an additional embodiment, a bypass module 336 is used to provide an initial power to the charger module 216. The bypass module 336 may include a push button switch 502, which may be used to provide initial power to the charger module 216. The push button switch

502 once pressed bypasses the opto-coupled relay 462 and provides direct alternating current to the components of the inductive power apparatus, including the transformer 104, the rectification circuit 106, and the voltage regulation circuit 108. Providing direct alternating current to these components may provide power to the charger module 216, which may then provide the "on current" to the opto-coupled relay 462 of the separation module 334. Power may be provided to the separation module 334 within approximately several milliseconds of the pressing of the push button of the bypass module 336.

[0057] In an embodiment, when the opto-coupled relay 462 of the separation module 334 lacks the "on current," the connection between the alternating current power source 102 from the wall receptacle and the primary coil of the transformer 104 is electrically open. In the embodiment, the "on current" to the opto-coupled relay 462 couples the connections 208 and 210 on the charger module, allows alternating current power to be provided to the transformer 104. The AC source will remain open until the push button switch 502 is pressed again as described in 806 for the next charging session.

[0058] In another embodiment, the output of the voltage divider of the observation module 326 is set by adjusting the variable resistor 448. The voltage divider is composed of resistors 452 and 448. This output sets the voltage threshold of the analog comparator of the detection module 330, and the output may be set to an amplified voltage level that is approximately equal to the lower current demand that is consistent with a charged battery. The operation of the charging operation may be better understood by referring to **Figure 7**. The voltage cutoff threshold may be set to a level below a voltage associated with a charged battery, which may be below the lowest current level illustrated in **Figure 7**.

[0059] **Figure 5** is an illustration of an inductive battery charger 500, according to one embodiment. In particular, **Figure 5** illustrates a push button switch 502, wall receptacle prongs 504, a charger enclosure 506, and a two port power and ground connector 508. Integration of the charger module 216 with an inductive power apparatus 112 may be internal to the charger enclosure 506. The alternating current power source 102 may be coupled to the inductive battery charger 500.

[0060] **Figure 6** is a system diagram of various devices that may be powered by the inductive battery charger, according to one embodiment. In particular, **Figure 6** illustrates an inductive battery charger 600, a GPS system 602, an electric razor 604, a notebook computer 606, a mobile phone 608, an MP3/media player 610, and an electric toothbrush 612, according to one or more embodiments. The inductive battery charger 600 may include the same embodiments as the inductive battery charger 200 and 500. Each of the illustrated devices may include a battery that can be coupled to the inductive battery charger 600. Once a target battery coupled to the inductive battery charger 600 has been determined to have been charged, the inductive battery charger 600 may disconnect the alternating current power source 102 of the target device to limit vampiric energy loss associated with the inductive power apparatus 112.

[0061] **Figure 7** is an illustration of a current draw characterization to charge a mobile device battery, according to one embodiment. According to an embodiment, **Figure 7** shows the magnitude of the current drawn by the target load 110 over time through different states of charging and/or other electrical operation. In the present embodiment, the current drawn from the target load 110 (e.g., a battery) will be approximately constant at a maximum current draw, as illustrated in region 702 of **Figure 7**. The current draw then decays exponentially as shown in

region 704. In region 706, there may be a sudden current drop as the target load 110 becomes charged, and a residual parasitic current draw may occur in region 706.

[0062] In an embodiment, the inductive battery charger 200 may self-disconnect after the device battery has been charged and before a parasitic load can draw power. In the embodiment, by setting a cut off voltage threshold to a level below the current draw level for a charging battery of region 704 and above the parasitic current draw level of region 706, the inductive battery charger 200 may limit a loss of power due to the parasitic current draw while achieving a desired charging level of the target load 110.

[0063] In another embodiment, the current draw for a charging battery may be experimentally determined and used to adjust the comparator circuit of the detection module 330.

[0064] **Figure 8** is a flow chart that depicts operation of an inductive battery charger 200, according to one embodiment. In operation 802, a charging operation starts. In operation 804, a charger is plugged in to a socket coupled to an alternating current power source 102. In operation 806, a mechanical interface that includes a push button is compressed. In operation 808, power is provided to analog control circuitry of the charger module 216. In operation 810, an "on current" is engaged to a separation module 334 that includes a relay switch. In operation 812, the voltage is compared with the voltage level. If the voltage has not crossed the comparator threshold, the "on current" continues to be engaged. If the voltage level has crossed the comparator threshold, in operation 814, the circuit is cut off from an alternating current power source 102 to limit vampiric energy loss. In operation 816, the process ends.

[0065] **Figure 9** is a schematic view of an inductive power apparatus 912 coupled to a target device 916, according to one embodiment. In particular, **Figure 9** illustrates an alternating current power source 102, a transformer 104, a signal rectification circuit 106, a voltage

regulation circuit 108, an alternating current circuit 114, a separation module 334, an inductive battery charger 900, a target device battery 901, an inductive power apparatus 912, a target device 916, a connection module 918, a monitoring module 920, an activation module 922, a feedback module 924, and connections 926, 928, 930, 932, 934, and 936.

[0066] In an embodiment, the inductive battery charger 900 apparatus includes the inductive power apparatus 912 and the target device 916. The inductive power apparatus 912 includes the transformer 104, the signal rectification circuit 106, and the voltage regulation circuit 108. The inductive power apparatus 912 also includes the separation module 334 and the feedback module 924. The target device 916 includes the connection module 918, the monitoring module 920, the activation module 922, and the target device battery 901.

[0067] In the embodiment, the voltage regulation circuit 108 is coupled to the target device 916. The target device 916 is coupled to the separation module 334 with connections 926 and 928. The target device 916 is coupled to the feedback module 924 with connections 930 and 932. The feedback module 924 is coupled to the target device 916 with connections 934 and 936. In an alternate embodiment, the inductive power apparatus 912 and the target device 916 may operate without the feedback module 924 and connections 930 and 932.

[0068] **Figure 10** is an exploded view of the inductive power apparatus 912 and the target device 916, according to one embodiment. In particular, **Figure 10** illustrates a separation module 334, a bypass module 336, a target device battery 901, the inductive power apparatus 912, the target device 916, a connection module 918, a monitoring module 920, an activation module 922, a feedback module 924, an inductive battery charger 1000, an input buffer 1038, a feedback signal 1040, an interrupt controller module 1042, a processor 1044, a battery monitor 1046, a supplemental power source 1048A-B, an output buffer 1050, and a USB module 1052.

[0069] In an embodiment, the inductive battery charger 1000 apparatus includes the inductive power apparatus 912 and the target device 916. The connection module 918 includes the input buffer 1038. The connection module 918 is coupled to the feedback module 924, and the feedback signal 1040 is communicated between the connection module 918 and the feedback module 924. The connection module 918 is coupled to the interrupt controller module 1042, which is coupled to the monitoring module 920. In the embodiment, the monitoring module 920 is coupled to the activation module 922, the processor 1044, the battery monitor 1046, the target device battery 901, the supplemental power source 1048A, the output buffer 1050, and the USB module 1052. The output buffer 1050 and the USB module 1052 are coupled to the separation module 334. In the embodiment, the separation module 334 is coupled to the bypass module 336 and the supplemental power source 1048B. The supplemental power source 1048B is coupled to the feedback module 924.

[0070] In an embodiment, the inductive battery charger 900 includes a connection module 918 to determine when a target device 916 is coupled to an inductive power apparatus 912. The system includes a monitoring module 920 to determine when a target device battery 901 (e.g., a supplemental power source 1048A-B) is below a charging threshold while using power from a supplemental power source 1048A-B (e.g., the target device battery 901, a charger battery, a capacitor, an alternate inductive power apparatus, etc.). The system also includes an activation module 922 to automatically couple an inductive power apparatus 912 and an alternating current power source 102 when a power level of the target device battery 901 is below the charging threshold.

[0071] In an embodiment, a separation module 334 may automatically decouple the inductive power apparatus and the alternating current power source when a desired charging state of the

target device battery 901 is observed. The separation module 334 may automatically decouple the inductive power apparatus 112 and the alternating current power source 102 when the "on current" to the opto-coupled relay 462 of the separation module 334 is disabled, which may cause the opto-coupled relay to open the alternating current circuit 114.

[0072] In the embodiment, the desired charging state may be identified by a change in a charging characteristic, such as a drop in charging current below a threshold level. The inductive power apparatus 912 may include a transformer 104 to inductively generate an electric current, a rectification circuit 106 of the inductive power apparatus 112, and/or a voltage regulation circuit. The separation module 334 may include an opto-coupled relay 462. The opto-coupled relay 462 of the separation module 334 may be deactivated when the target device 916 and the inductive power apparatus 912 are decoupled to further reduce power consumption when charging is not occurring.

[0073] In an embodiment, a processor 1044 and a battery monitor 1046 of the monitoring module 920 are coupled to the target device 916 to evaluate a target device battery 901 power level with respect to the charging threshold and to determine the target device battery 901 power level. The target device 916 may be a mobile device, such as a mobile phone 608 or a notebook computer 606.

[0074] In another embodiment, a sense feedback loop 1154 of the connection module 918 may be used to identify whether the target device 916 is coupled with at least one of the inductive power apparatus 912 and the alternating current power source 102. An input buffer 1038 of the connection module 918 may receive a feedback signal 1040. In addition, the system may include an interrupt controller module 1042 to generate an interrupt signal determined by the feedback signal 1040 received by the input buffer 1038. The system may also include an output buffer

1050 to generate an engage signal to control a coupling state of the inductive power apparatus 912 and the alternating current power source 102. The system may further include a USB module 1052 to generate an engage signal to control a coupling state of the inductive power apparatus 912 and the alternating current power source 102. The engage signal may be an "on current" provided to or withheld from the opto-coupled relay 462 of the separation module 334 to open or close the alternating current circuit 114.

[0075] In an embodiment, the connection module 918 may determine whether the target device 916 and the inductive power apparatus 912 are coupled together by determining whether power is being provided to the target device 916 by the inductive power apparatus 912. The supplemental power source 1048A-B may include one or more of a target device battery 901, a charger system battery, and an alternate inductive power apparatus. A bypass module 336 may initiate a charging sequence by electrically coupling the alternating current power source 102 and the inductive power apparatus 912 when a bypass input is detected.

[0076] **Figure 11** is an exploded schematic view illustrating components of the inductive power apparatus 1112 and the target device 1116, according to one embodiment. In particular, **Figure 11** illustrates a separation module 334, a bypass module 336, a resistor 438, an opto-coupled relay 462, a resistor 464, connections 926, 928, 930, 932, 934, 936, an inductive battery charger 1100, an inductive power apparatus 1112, target device 1116, connection module 1118, feedback module 1124, input buffer 1138, output buffer 1150, sense feedback loop 1154, nodes 1156, 1158, 1160, pFET 1162, nFET 1164, pFET 1166, nFET 1168, resistor 1170, node 1172, and capacitor 1174.

[0077] In the embodiment, the inductive battery charger 1100 includes the inductive power apparatus 1112 and the target device 1116. The output buffer 1150 includes pFET 1166 and

nFET 1168, and the separation module 334 includes opto-coupled relay 462 and resistor 464. The connection module 1118 includes the input buffer 1138, node 1172 and capacitor 1174. Input buffer 1138 includes pFET 1162, nFET 1164, and resistor 1170. In addition, in the embodiment, feedback module 1124 includes sense feedback loop 1154.

[0078] In an embodiment, the inductive charger apparatus 1100 may use a feedback signal 1040 communicated between the connection module 1118 and the feedback module 1124 using the sense feedback loop 1154 and the input buffer 1138. The feedback may occur when the target device 1116 is coupled to the inductive power apparatus 1112, and it may provide a detection mechanism for the control mechanism described in greater detail with respect to **Figure 14**.

[0079] In the embodiment, a logic state change on the input buffer 1138 will trigger an interrupt by the interrupt controller module 1042 to initiate an Interrupt Service Routine (ISR) by the processor 1044. Based on the strength of the battery reported by the battery monitor 1046, the control algorithm as described in **Figure 14** will make the decision to provide the "on current" to the separation module 334 on the inductive power apparatus 1112 via the output buffer 1150.

[0080] In the embodiment, a voltage source signal of the connection module 1118 is connected by node 1172 to the IO supply 1158 of the system on a chip (SoC). A ground connected decoupling capacitor 1174 is placed in parallel to the IO supply 1158 to reduce noise. The voltage source signal 302 is coupled to node 930 and is connected to node 932 via the sense feedback loop 1154 which electrically shorts the two nodes 930 and 932 together as illustrated in **Figure 11**. The sense feedback loop 1154, connection module 1118, and feedback module 1124 serve as the coupling detection mechanism of the target device 1116.

[0081] In various embodiments, General Purpose Input Output (GPIO) hardware is used for the output buffer 1150 and input buffer 1138. In an embodiment as illustrated in **Figure 11**, the

output buffer 1150 is the last stage of a MOSFET inverter chain of SoC IO signals, and is composed of pFET 1166 and nFET 1168. In the embodiment, input buffer 1138 is the first stage of the input inverter chain and is composed of pFET 1162 and nFET 1164. The logical equivalent of the input voltage present at node 932 is mapped to an internal register address that can be accessed by the processor 1044 of the SoC. When the voltage state of node 932 is changed, for example, when the inductive charger apparatus 1112 is connected or disconnected from the target device 916, the interrupt controller module 1042 will trigger an ISR for the processor 1044 to service. In the embodiment, a pull down resistor 1170 is used to keep the input port from "floating" while disconnected from the charger. When the control algorithm determines that the battery needs charging, the processor 1044 will write a logic 1 to the register address that maps to the GPIO output buffer 1150, which is the last stage of the inverter chain with an output value that is the inverted value of node 1156. The GPIO port employed as output buffer 1150 should be capable of providing the necessary "on current" to the separation module 334, which may include an opto-coupled relay 462 and a current limiting resistor 464.

[0082] **Figure 12** is an exploded schematic view illustrating components of the inductive power apparatus and the target device, according to an additional embodiment. In particular, **Figure 12** illustrates separation module 334, bypass module 336, opto-coupled relay 462, resistor 464, connections 926, 928, 934, 936, an inductive battery charger 1200, an inductive power apparatus 1212, a target device 1216, a USB module 1252, and a multiplexor select 1274.

[0083] In an embodiment, the inductive battery charger 1200 includes the inductive power apparatus 1212 and the target device 1216. The inductive power apparatus 1212 includes the separation module 334 and the bypass module 336. The separation module 334 includes the

opto-coupled relay 462 and the resistor 464. The target device 1216 includes the USB module 1252, which includes the multiplexor select 1274 node.

[0084] **Figure 12** illustrates an alternate embodiment of the inductive charger apparatus 1200 that uses a USB interface to couple the inductive power apparatus 1212 and the target device 1216. A USB interface may be used as a battery charge port on a cell phone or other mobile device. The USB specification applicable to the embodiments described may include a power, a ground, a D+, and a D- signal.

[0085] In an embodiment, the USB power signal may be coupled to the power signal of the inductive charger apparatus 1200, and the USB ground signal may be coupled to the ground signal of the inductive charger apparatus 1200. Data signals D+ and D- may be coupled to connections 926 and 928 to provide control signals to the separation module 334 and the opto-coupled relay 462.

[0086] In the embodiment, mechanisms other than connections 930 and 932 may be used to determine whether the inductive power apparatus 1212 is coupled to the target device 1216. For example, the connection module 918 may use detection circuitry to determine if direct current (DC) power is available to a power management IC once current is provided through connections 926 and 928. These two events, DC power and "on current" to the separation module 334, may be used to indicate the logical state in which 1) the inductive power apparatus 1212 is coupled to the alternating current power source 102; and 2) the inductive power apparatus 1212 is coupled to the target device 1216, in which case a charge session may be initiated.

[0087] In an additional embodiment, the USB module 1252 may control the D+ and D- signals, for example, to behave like GPIO signals. The USB module 1252 may configure D+ to be a high signal (or logic 1) and feed current to the opto-coupled relay 462 using connection 926.

Signal D- may be configured as a low signal to provide a return path to ground, and D- may be coupled to connection 928.

[0088] In an additional embodiment, the USB module 1252 may tie D+ and D- to internal pull up or pull down resistors. As part of the operations described in **Figure 14**, the D+ may be tied to high using a pull up resistor and the D- may be tied to low using a pull down resistor to initiate the "on current" to the opto-coupled relay 462. The resistors may be of sufficient value to allow an adequate "on current" to flow to the relay.

[0089] In a further embodiment, a multiplexor may be between the USB D- and D+. During a charge session, the multiplexor may switch from USB mode to charge mode to feed a logic high voltage and ground signal to the separation module 334. The switch may be initiated by toggling the multiplexor select 1274 line.

[0090] **Figure 13** is a diagrammatic system view 1350 of a data processing system that may be used with various embodiments disclosed herein. Particularly, the diagrammatic system view 1350 of **Figure 13** illustrates a processor 1302, a main memory 1304, a static memory 1306, a bus 1308, a video display 1310, an alpha-numeric input device 1312, a cursor control device 1314, a drive unit 1316, a signal generation device 1318, a network interface device 1320, a machine readable medium 1322, instructions 1324, and a network 1326, according to one embodiment.

[0091] The diagrammatic system view 1300 may indicate a personal computer and/or the data processing system in which one or more operations disclosed herein are performed. The processor 1302 may be a microprocessor, a state machine, an application specific integrated circuit, a field programmable gate array, etc. (e.g., Intel® Pentium® processor). The main

memory 1304 may be a dynamic random access memory and/or a primary memory of a computer system.

[0092] The static memory 1306 may be a hard drive, a flash drive, and/or other memory information associated with the data processing system. The bus 1308 may be an interconnection between various circuits and/or structures of the data processing system. The video display 1310 may provide graphical representation of information on the data processing system. The alpha-numeric input device 1312 may be a keypad, a keyboard and/or any other input device of text (e.g., a special device to aid the physically handicapped).

[0093] The cursor control device 1314 may be a pointing device such as a mouse. The drive unit 1316 may be the hard drive, a storage system, and/or other longer term storage subsystem. The signal generation device 1318 may be a bios and/or a functional operating system of the data processing system. The network interface device 1320 may be a device that performs interface functions such as code conversion, protocol conversion and/or buffering required for communication to and from the network 1326. The machine readable medium 1322 may provide instructions on which any of the methods disclosed herein may be performed. The instructions 1324 may provide source code and/or data code to the processor 1302 to enable any one or more operations disclosed herein.

[0094] **Figure 14** is a flow chart that depicts coupling of an inductive power apparatus 912 and an alternating current source 102, according to one embodiment. In various embodiments, the operations with respect to **Figure 14** may be performed using the inductive battery charger 900, 1000, 1100, or 1200 interchangeably. Similarly, in various embodiments, the operations of **Figure 14** may be performed interchangeably with respect to the inductive power apparatus 912, 1112, or 1212 and the target device 916, 1116, or 1216.

[0095] In operation 1402, a charge operation is started. In operation 1404, an inductive power apparatus 912 is coupled to the target device 916, which may be a mobile device such as a mobile phone 608, a notebook computer 606, a personal digital assistant, an MP3/media player 610, or another device. In operation 1406, whether a battery has sufficient power to operate the charger is determined. The battery may be internal to the target device 916, such as an internal mobile phone 608 battery or an internal notebook computer 606 battery, and may be included as part of the supplemental power source 1048A. The battery may be attached to the inductive charging apparatus 916, and the battery may be included as part of the supplemental power source 1048B.

[0096] In operation 1408, if the battery does not have sufficient power to operate the inductive power apparatus 912 or the target device 916, then the device may wait for an external bypass input to be received by the inductive battery charger 1000. The external bypass input may be generated by a user generated contact with a user interface, such as a push button 502, a touch pad, or a mechanical switch. The bypass input may couple the inductive charging apparatus 912 to an alternating current power source 102. In an embodiment, the inductive charging apparatus 912 remains coupled to the alternating current power source 102. In another embodiment, the inductive charging apparatus 912 remains coupled to the alternating current power source 102 until the target device 916 battery is sufficiently charged.

[0097] In operation 1410, if the battery has sufficient power to operate the inductive battery charger 900, whether the inductive power apparatus 912 is coupled to the target device 916 is determined. In an embodiment, the connection module 918 communicates a feedback signal 1040 to the feedback module 924, which may include a sense feedback loop 1154. If the inductive power apparatus 912 and the target device 916 are coupled together, the sense

feedback loop 1154 returns the feedback signal 1040 to the input buffer 1038. A GPIO input port may be used as the input buffer 1038, and the processor 1044 may be used by the monitoring module 920 to check the status of the GPIO input port by polling an internal register address that maps to that particular GPIO signal. If the inductive power apparatus 912 and the target device 916 are not coupled, then the process returns to operation 1404. In the embodiment, the processor 1044 may then exit the Interrupt Service Routine (ISR). If the inductive power apparatus 912 and the target device 916 are coupled, the process proceeds to operation 1412.

[0098] In another embodiment, in operation 1410, rather than use sense feedback loop 1154, the connection module 918 may determine whether the inductive power apparatus 912 is coupled to the target device 916 by monitoring current flow between the inductive power apparatus 912 and the target device 916. In the embodiment, the connection module may monitor current flowing through port 926 and/or port 928. If current is flowing through port 926 and/or port 928 when the "on current" is initiated, then the inductive power apparatus 912 may be determined to be coupled to the target device. If current is not flowing through port 926 and/or port 928 when the "on current" is activated, then the inductive power apparatus 912 and the target device 916 may be determined to be decoupled. A detection circuit of the target device 916 may monitor the current between the target device 916 and the inductive power apparatus 912. The detection circuit may be connected to an analog comparator to trigger an interrupt signal to indicate the status of the connection between the target device 916 and the inductive power apparatus 916.

[0099] In an embodiment, if the feedback signal 1040 is received, the processor 1044 will be used to write a logic '1' to a GPIO output port that is used as the output buffer 1050, which will source the "on current" to the separation module 334. In operation 1412, an "on current" is communicated to the opto-coupled relay switch 462 of the separation module 334. The "on

current" may activate the alternating current circuit 114 and couple the inductive power apparatus 912 and the alternating current power source 102. The "on current" may couple the target device 916 and the target device 916 battery to the alternating current power source 102.

[00100] In operation 1414, whether the battery is sufficiently charged may be determined. The battery may be sufficiently charged based on a user determined level or predetermined charging level. Sufficient charging may be determined in accordance with a usage and/or storage pattern associated with the battery. The power level and/or charging state of the battery may be determined by a change in the rate of charging of the battery, an output voltage of the battery, or other criterion.

[00101] If the battery is not determined to be sufficiently charged after operation 1414, whether the battery is charging is determined in operation 1416. If the battery is charging, the "on current" to the opto-coupled relay 462 continues to be allowed in operation 1412. If the battery is not charging, in operation 1418, the "on current" to the opto-coupled relay 462 is disabled to limit a vampiric consumption of power. In an embodiment, when the battery is sufficiently charged, the processor 1044 may be used to write a logic '0' to the output buffer 1050, which disables the "on current" to the separation module 334, which electrically decouples the inductive power apparatus 912 and the alternating current power source 102.

[00102] If the battery is determined to be sufficiently charged after operation 1414, in operation 1418, the "on current" to the opto-coupled relay 462 is disabled to limit a vampiric consumption of power. Disabling the "on current" to the opto-coupled relay 462 may disconnect the transformer 104, the rectification circuit 106, and the voltage regulation circuit 108 from the alternating current power supply 102, depending on what components are included with or coupled to the inductive power apparatus 112.

[00103] In operation 1420, whether the target device 916 is decoupled and/or disconnected from the inductive charging apparatus 912 is determined. If the target device 916 is disconnected or decoupled from the inductive charging apparatus 912, in operation 1424, the charging process ends. If the target device 916 has not been decoupled from the inductive charging apparatus 912, in operation 1422, whether the power level of the battery has fallen below a lower threshold is determined. The check for whether the power level of the battery has fallen below a lower threshold may be made periodically or continuously, and the frequency of checking may vary. The time of checking may be associated with a lower cost of power use, which may occur during a non-peak period of power generation, which may be at night.

[00104] In an embodiment, the monitoring module 920 uses the processor 1044 to monitor the digitized strength status of the battery using the battery monitor 1046 while keeping the "on current" to the separation module 334, as described in operation 1412. In the embodiment, at operation 1414, a check of historical information on the same charge session is performed to determine if the charge strength is increasing over time. If the battery strength is not increasing over time, the control algorithm determines that the charger is not connected to the alternating current power source 102, and the processor 1044 then disables the "on current" to the separation module 334 to preserve battery strength.

[00105] Other methods to determine if the inductive power apparatus 912 is coupled to the target device 916 without the inductive power apparatus 912 being connected to the alternating current power source 102 could use an additional GPIO port configured as an input. The additional GPIO input port could be connected to the level shifted voltage of the inductive battery charger's 900 supply voltage. The additional GPIO input port may then be used to

communicate a flag signal to indicate the connection status of the inductive power apparatus 912 and the alternating current power source 102.

[00106] In an additional embodiment, the check for the battery's current power level may be performed using power from a supplemental power source 1048. The supplemental power source 1048 may be attached or coupled to the target device 916, such as the target device battery 901. In another embodiment, the supplemental power source 1048 may be a separate battery or an alternate inductive power apparatus that uses less vampiric power than the inductive power apparatus 912. The alternate inductive power apparatus may use a part of the inductive power apparatus 912 rather than the whole inductive power apparatus 912 to reduce its vampiric power consumption. In an embodiment, the supplemental power source 1048 may be disposable or may be charged using the inductive power apparatus 912 when it is coupled to the alternating current power source 102.

[00107] The lower threshold power level may be determined in accordance with a user's preferences. For example, a user may prefer that a battery is kept above 80% of the battery's charge capacity, which may be determined by a manufacturer's specification, experimentation, an output voltage of the battery, a user setting, or other parameters. Alternatively, the lower threshold may be a lower predetermined level of charge that allows additional time for the inductive power apparatus 912 to be decoupled from the alternating current power source 102, which may further reduce a vampiric power consumption.

[00108] If the power level of the battery has not fallen below the lower threshold, then the "on current" to the opto-coupled relay 462 may continue to be disabled in operation 1418. If the power level of the battery has fallen below the lower threshold, then the "on current" to the opto-coupled relay 462 may be enabled in operation 1412.

[00109] In an embodiment, if the target device 916 remains connected to the inductive power apparatus 912 after the inductive power apparatus has been decoupled from the alternating current power source 102, the monitoring module 920 will monitor the strength of the battery. If the battery power level is drained past a predefined threshold, for example through standby operation or normal use, the activation module 922 will use the processor 1044 to allow "on current" to the separation module 334.

[00110] **Figures 15A-15B** illustrate a process flow to automatically couple an inductive power apparatus 912 and an alternating current power source 102, according to one embodiment. In operation 1502, whether a target device 916 is coupled to an inductive power apparatus 912 is identified. In operation 1504, a coupling of the inductive power apparatus 912 and the target device 916 is identified using a sense feedback loop 1154. In operation 1506, a feedback signal 1040 is received using an input buffer 1038. In operation 1508, an interrupt signal determined in accordance with the feedback signal 1040 received by the input buffer 1038 is transmitted.

[00111] In operation 1510, a coupling state of the inductive power apparatus 912 and the alternating current power source 102 is adapted based on the interrupt signal. In operation 1512, whether a power level of a target device 916 battery is below a lower charging threshold is determined while using power from a supplemental power source 1048. In operation 1514, an inductive power apparatus and an alternating current power source 102 are automatically engaged when a lower available power threshold of a battery is reached. In operation 1516, the inductive power apparatus and the alternating current power source 102 are automatically decoupled when a desired threshold power level of the target device battery 901 is reached. In operation 1518, an opto-coupled relay 462 of the inductive power apparatus is deactivated when

the target device and the inductive power apparatus are decoupled. In operation 1520, the switch in the alternating current power circuit is opened in response to a change in the external contact.

[00112] In an embodiment, the output buffer 1050 and input buffer 1038 represent GPIO ports on a modern System on a Chip (SoC). In the embodiment, nodes 1156 and 1160 map to register addresses that are assigned by the particular SoC's memory map. In additional embodiments, many different implementation methods from the proposed invention are possible. For example, instead of using the processor 1044 resources of the target device's 1116 SoC, the control algorithms described in this application could be realized using state machines coupled with the support circuitry. The control algorithms described in this application could also be implemented using a Hardware Description Language (HDL) and incorporated directly into a power management Integrated Circuit (IC). In an additional embodiment, the control algorithms described in this application may be implemented in a standalone IC with direct access to the battery monitor 1046 of the target device 1116.

[00113] Although the present embodiments have been described with reference to specific example embodiments, it will be evident that various modifications and changes may be made to these embodiments without departing from the broader spirit and scope of the various embodiments. For example, the various devices, modules, analyzers, generators, etc. described herein may be enabled and operated using hardware circuitry (e.g., CMOS based logic circuitry), firmware, software or any combination of hardware, firmware, or software (e.g., embodied in a machine readable medium). For example, the various electrical structure and methods may be embodied using transistors, logic gates, and electrical circuits (e.g., application specific integrated (ASIC) circuitry or in Digital Signal Processor (DSP) circuitry).

[00114] Particularly, the charger module 216, the observation module 326, the filter module 328, the detection module 330, the inverter module 332, the separation module 334, the bypass module 336, the connection module 918, the monitoring module 920, the activation module 922, the feedback module 924, the input buffer 1038, the interrupt controller module 1042, the battery monitor 1046, the output buffer 1050, the USB module 1052, the connection module 1118, the feedback module 1124, the input buffer 1138, the output buffer 1150, and the USB module 1252 of **Figures 2** through **12** may be enabled using software and/or using transistors, logic gates, and electrical circuits (e.g., application specific integrated circuitry, analog circuitry, programmable logic devices, microprocessors, etc.) such as a charger circuit, an observation circuit, a filter circuit, a detection circuit, an inverter circuit, a separation circuit, a bypass circuit, a connection circuit, a monitoring circuit, an activation circuit, a feedback circuit, an input buffer circuit, an interrupt controller circuit, a battery monitor circuit, an output buffer circuit, a USB circuit, and other circuits.

[00115] In addition, it will be appreciated that the various operations, processes, and methods disclosed herein may be embodied in a machine-readable medium or a machine accessible medium compatible with a data processing system (e.g., a computer system), and may be performed in any order (e.g., including using means for achieving the various operations). Accordingly, the Specification and Drawings are to be regarded in an illustrative rather than a restrictive sense.

CLAIMS

What is claimed is:

1. An inductive battery charging system, comprising:

a connection module to determine when a target device is coupled to an inductive power apparatus;

a monitoring module to determine when a target device battery is below a charging threshold while using power from a supplemental power source; and

an activation module to automatically couple the inductive power apparatus and an alternating current power source when a power level of the target device battery is below the charging threshold.

2. The inductive battery charging system of claim 1, further comprising:

a separation module to automatically decouple the inductive power apparatus and the alternating current power source when a desired charging state of the target device battery is observed.

3. The inductive battery charging system of claim 2, further comprising:

a transformer of the inductive power apparatus to inductively generate an electric current.

4. The inductive battery charging system of claim 3, further comprising:

a rectification circuit of the inductive power apparatus; and

a voltage regulation circuit of the inductive power apparatus.

5. The inductive battery charging system of claim 2, wherein the separation module is comprised of an opto-coupled relay.

6. The inductive battery charging system of claim 5, wherein the opto-coupled relay of the separation module is deactivated when the target device and the inductive power apparatus are decoupled.

7. The inductive battery charging system of claim 1, further comprising:

a processor of the monitoring module coupled to the target device, wherein the processor is used to evaluate a target device battery power level with respect to the charging threshold.

8. The inductive battery charging system of claim 7, further comprising:

a battery monitor coupled to the target device to determine the target device battery power level.

9. The inductive battery charging system of claim 8, wherein the target device is comprised of a mobile device.

10. The inductive battery charging system of claim 1, further comprising:

a sense feedback loop of the connection module to identify whether the target device is coupled with at least one of the inductive power apparatus and the alternating current power source;

an input buffer of the connection module to receive a feedback signal; and

an interrupt controller module to generate an interrupt signal determined by the feedback signal received by the input buffer.

11. The inductive battery charging system of claim 9, further comprising:

an output buffer to generate an engage signal to control a coupling state of the inductive power apparatus and the alternating current power source.

12. The inductive battery charging system of claim 9, further comprising:

a USB module to generate an engage signal to control the coupling state of the inductive power apparatus and the alternating current power source.

13. The inductive battery charging system of claim 1, wherein the connection module determines whether the target device and the inductive power apparatus are coupled together by determining whether power is being provided to the target device by the inductive power apparatus.

14. The inductive battery charging system of claim 1, wherein the supplemental power source is comprised of at least one of a target device battery, a charger system battery and an alternate inductive power apparatus.

15. The inductive battery charging system of claim 1, further comprising:

a bypass module to initiate a charging sequence by electrically coupling the alternating current power source and the inductive power apparatus when a bypass input is detected.

16. An inductive battery charging method, comprising:

identifying whether a target device is coupled to an inductive power apparatus;

determining whether a power level of a target device battery is below a lower charging threshold while using power from a supplemental power source;

automatically engaging the inductive power apparatus and an alternating current power source when a lower available power threshold of a battery is reached; and

automatically decoupling the inductive power apparatus and the alternating current power source when a desired threshold power level of the target device battery is reached, wherein the inductive power apparatus includes at least one of a transformer to inductively generate an electric current, a rectification circuit, and a voltage regulation circuit.

17. The inductive battery charging method of claim 16, further comprising:

deactivating an opto-coupled relay of the inductive power apparatus when the target device and the inductive power apparatus are decoupled.

18. The inductive battery charging method of claim 17, wherein the power level of the target device battery is determined using a processor and a battery monitor, and wherein the target device is comprised of a mobile device coupled to the processor and the battery monitor.

19. The inductive battery charging method of claim 18, further comprising:

identifying a coupling of the inductive power apparatus and the target device using a sense feedback loop;

receiving a feedback signal using an input buffer;

transmitting an interrupt signal determined in accordance with the feedback signal received by the input buffer; and

adapting a coupling state of the inductive power apparatus and the alternating current power source based on the interrupt signal.

20. An inductive battery charging system, comprising:

a connection module to confirm whether a target device is coupled to an inductive power apparatus, wherein the inductive power apparatus is comprised of a transformer and the target device is comprised of a mobile device;

a sense feedback loop of the connection module to identify whether the target device is coupled to an alternating current power source using at least one of a sense feedback signal and a power transmitted from the alternating current power source to the target device;

a monitoring module to detect whether a target device battery is below a charging threshold while using power from a supplemental power source;

a battery monitor coupled to the target device to determine a target device battery power level;

a processor of the monitoring module coupled to the target device, wherein the processor is used to evaluate the target device battery power level with respect to the charging threshold;

an activation module to automatically couple the target device and the alternating current power source using the inductive power apparatus when the target device battery is below the charging threshold; and

a separation module to automatically decouple the target device and the alternating current power source when a desired charging state of the target device battery is detected by the monitoring module, wherein the separation module is comprised of an opto-coupled relay.

ABSTRACT OF THE DISCLOSURE

Several methods and systems to perform automatic coupling of an alternating current power source and an inductive power apparatus to charge a target device battery are disclosed. In an embodiment, an inductive battery charging system includes a connection module to determine when a target device is coupled to a charging apparatus comprised of an inductive power apparatus. The system further includes a monitoring module to determine when a target device battery is below a charging threshold while using power from a supplemental power source. In addition, the system includes an activation module to automatically couple the inductive power apparatus and an alternating current power source when a power level of the target device battery is below the charging threshold.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY
First Named Inventor/Applicant Name:	JEFFREY RAYMOND EASTLACK
Filer:	Raj Vasant Abhyanker/Mahalakshmi Raman
Attorney Docket Number:	00006.00002US1

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	82	82
Utility Search Fee	2111	1	270	270
Utility Examination Fee	2311	1	110	110
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**462**

Electronic Acknowledgement Receipt	
EFS ID:	5787290
Application Number:	12511069
International Application Number:	
Confirmation Number:	3061
Title of Invention:	AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY
First Named Inventor/Applicant Name:	JEFFREY RAYMOND EASTLACK
Customer Number:	55952
Filer:	Raj Vasant Abhyanker/Mahalakshmi Raman
Filer Authorized By:	Raj Vasant Abhyanker
Attorney Docket Number:	00006.00002US1
Receipt Date:	29-JUL-2009
Filing Date:	
Time Stamp:	01:51:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

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Payment was successfully received in RAM	$462
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Deposit Account	
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Oath or Declaration filed	Combined_Declaration_00006_00002US1.pdf	3180456 819623f736c43b8372897b891869b00b7c2d4d3e	no	3
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Information:					
2	Specification	Specification_00006_00002US1.pdf	549234 d79325515a4687ea98693de8a80dfcf4153555e7	no	36
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3	Claims	Claims_00006_00002US1.pdf	75986 82dd823bfe6ed1ab5737fdc611dc7e906f9fd3cd	no	6
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Information:					
		Total Files Size (in bytes):	4093228		

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled: **AUTOMATIC COUPLING OF AN ALTERNATING CURRENT POWER SOURCE AND AN INDUCTIVE POWER APPARATUS TO CHARGE A TARGET DEVICE BATTERY**, the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with 37 C.F.R. § 1.56 (attached hereto). I also acknowledge my duty to disclose all information known to be material to patentability which became available between a filing date of a prior application and the national or PCT international filing date in the event this is a Continuation-In-Part application in accordance with 37 C.F.R. § 1.63(e).

I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

No such claim for priority is being made at this time.

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below:

- **U.S. Provisional Application No. 61/084,616, filed on July 29, 2008**
- **U.S. Provisional Application No. 61/078,365, filed on July 4, 2008**

I hereby claim the benefit under 35 U.S.C. § 120 or 365(c) of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose material information as defined in 37 C.F.R. § 1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

- **U.S. Patent Application No. 12/497,859 filed on July 4, 2009**

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith:

Practitioners at Customer No. 55952

I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/organization/who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct them to the contrary.

Please direct all correspondence in this case to the address indicated below:

Customer No. 55952

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of inventor: **Jeffrey Raymond Eastlack**
Citizenship: **United States of America** Residence: **Austin, TX**
Post Office Address: 2125 Kaiser Dr
Austin, TX 78748

Signature: _____ Date: 07/29/2009
Jeffrey Raymond Eastlack

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application:

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

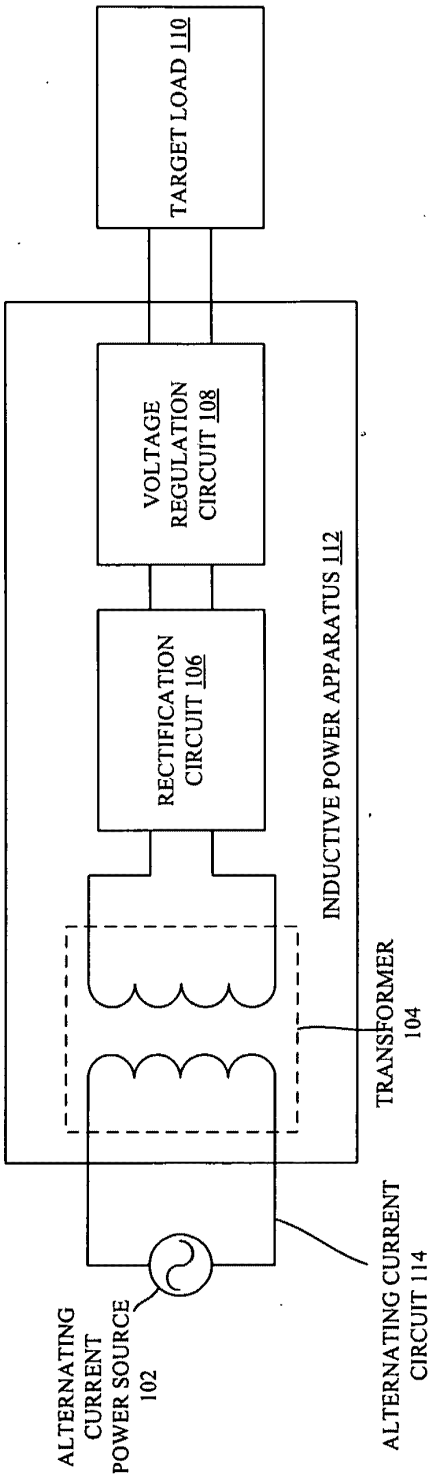
TARGET LOAD 110
VOLTAGE REGULATION CIRCUIT 108
RECTIFICATION CIRCUIT 106
INDUCTIVE POWER APPARATUS 112
TRANSFORMER 104
ALTERNATING CURRENT CIRCUIT 114
ALTERNATING CURRENT POWER SOURCE 102

FIGURE 1

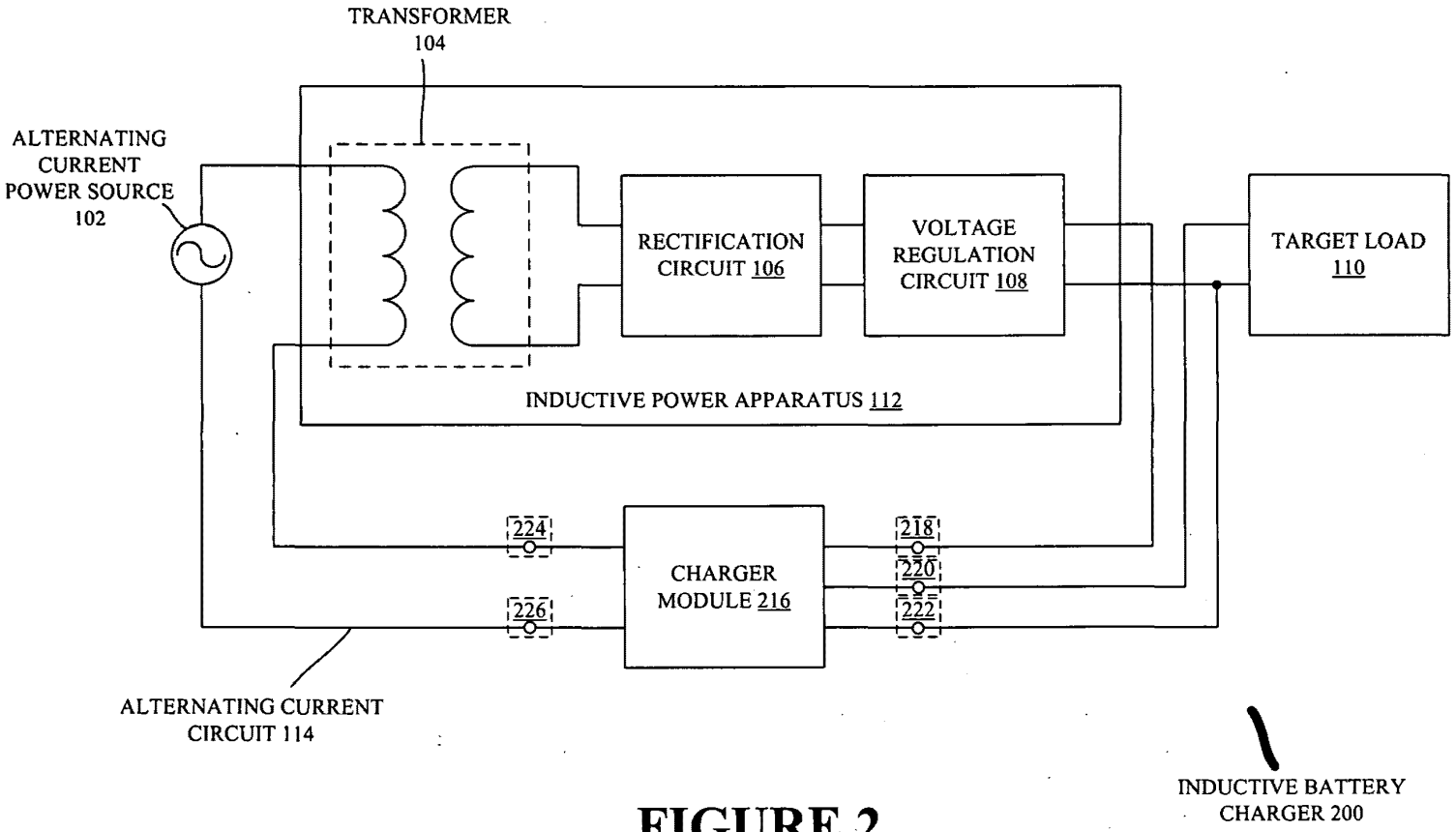

FIGURE 2

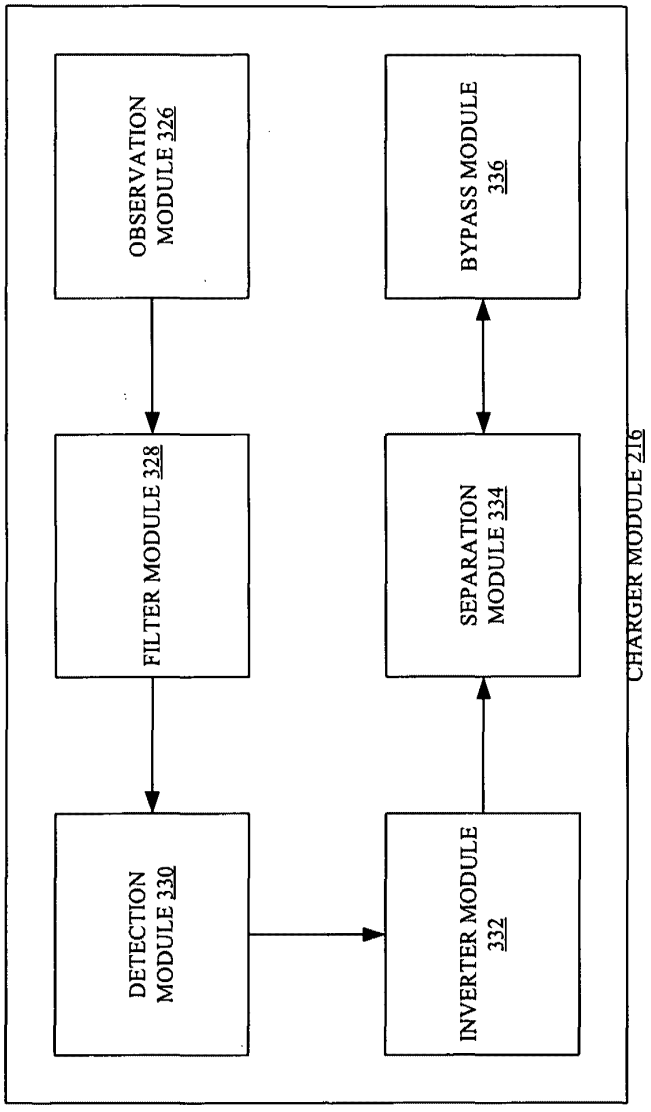
OBSERVATION MODULE 326
FILTER MODULE 328
DETECTION MODULE 330
INVERTER MODULE 332
SEPARATION MODULE 334
BYPASS MODULE 336
CHARGER MODULE 216

FIGURE 3

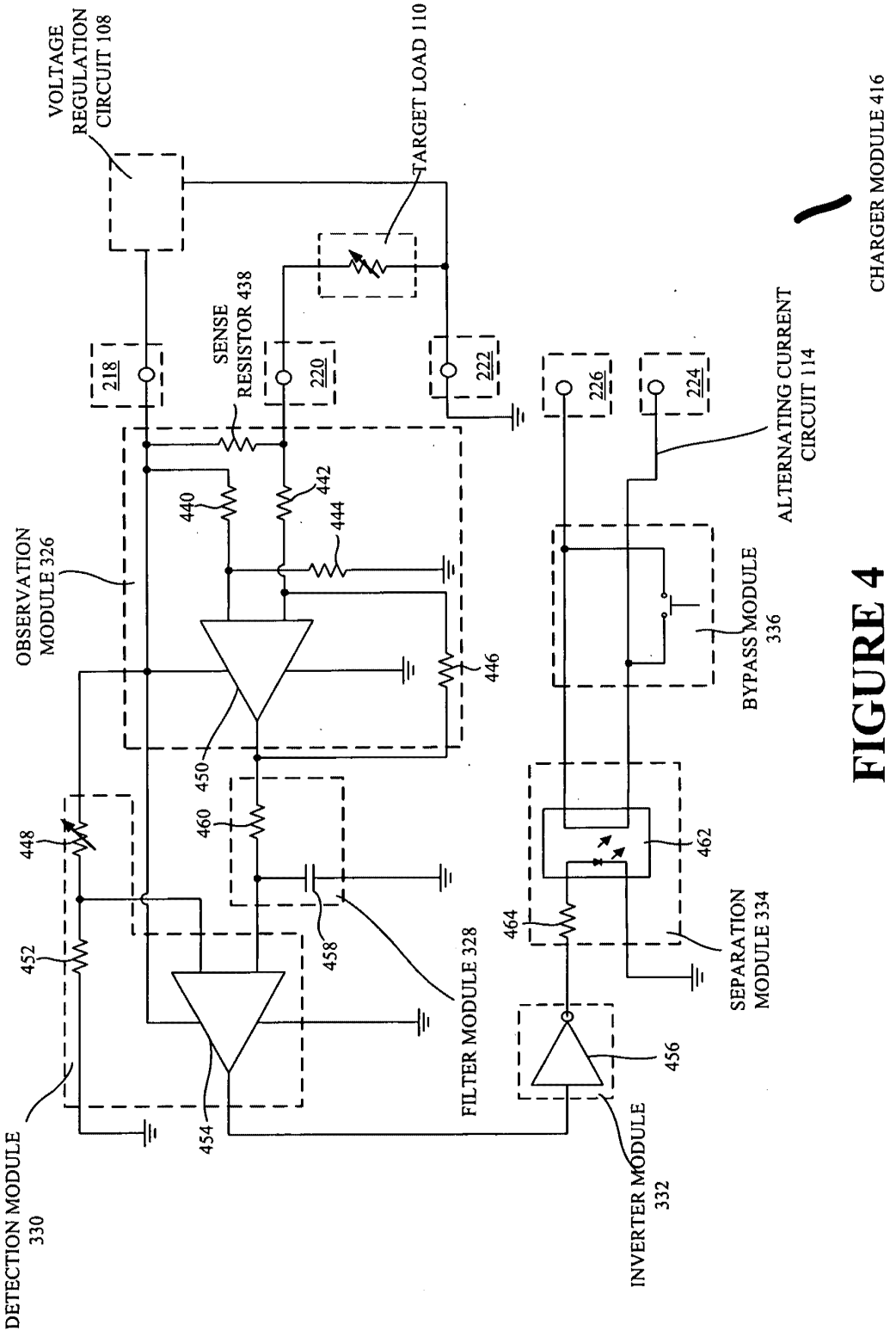
VOLTAGE REGULATION CIRCUIT 108
TARGET LOAD 110
SENSE RESISTOR 438
218
220
222
226
224
OBSERVATION MODULE 326
440
442
444
446
450
460
448
452
458
454
FILTER MODULE 328
DETECTION MODULE 330
ALTERNATING CURRENT CIRCUIT 114
BYPASS MODULE 336
462
464
456
SEPARATION MODULE 334
INVERTER MODULE 332
CHARGER MODULE 416

FIGURE 4

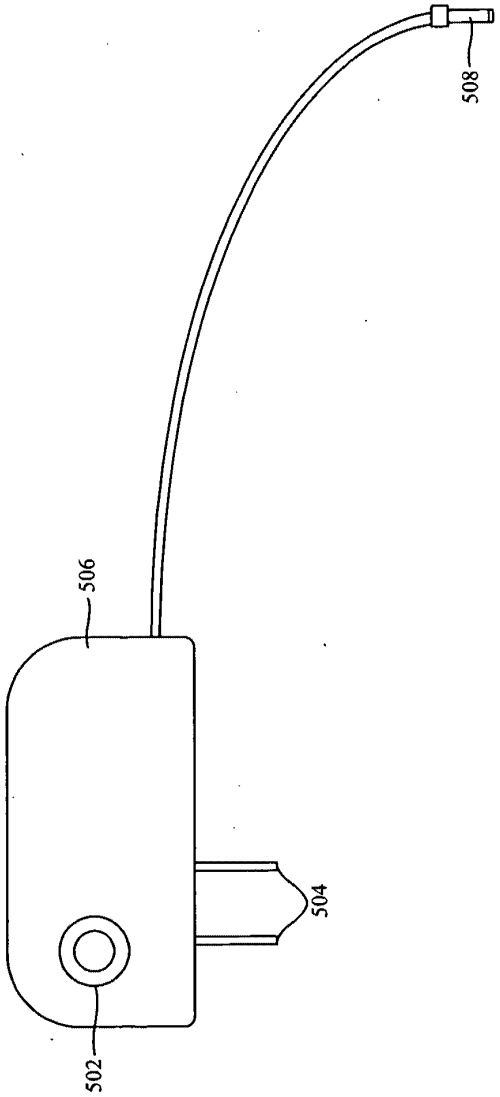

FIGURE 5

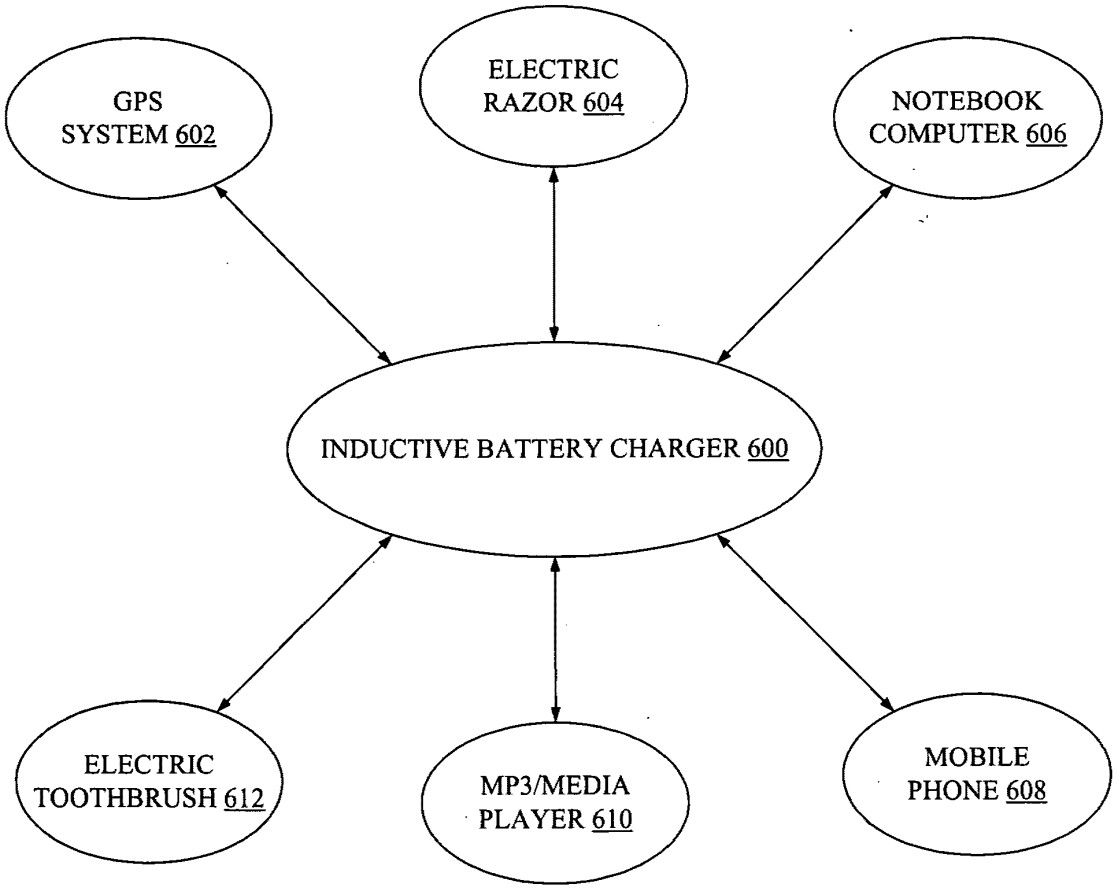

FIGURE 6

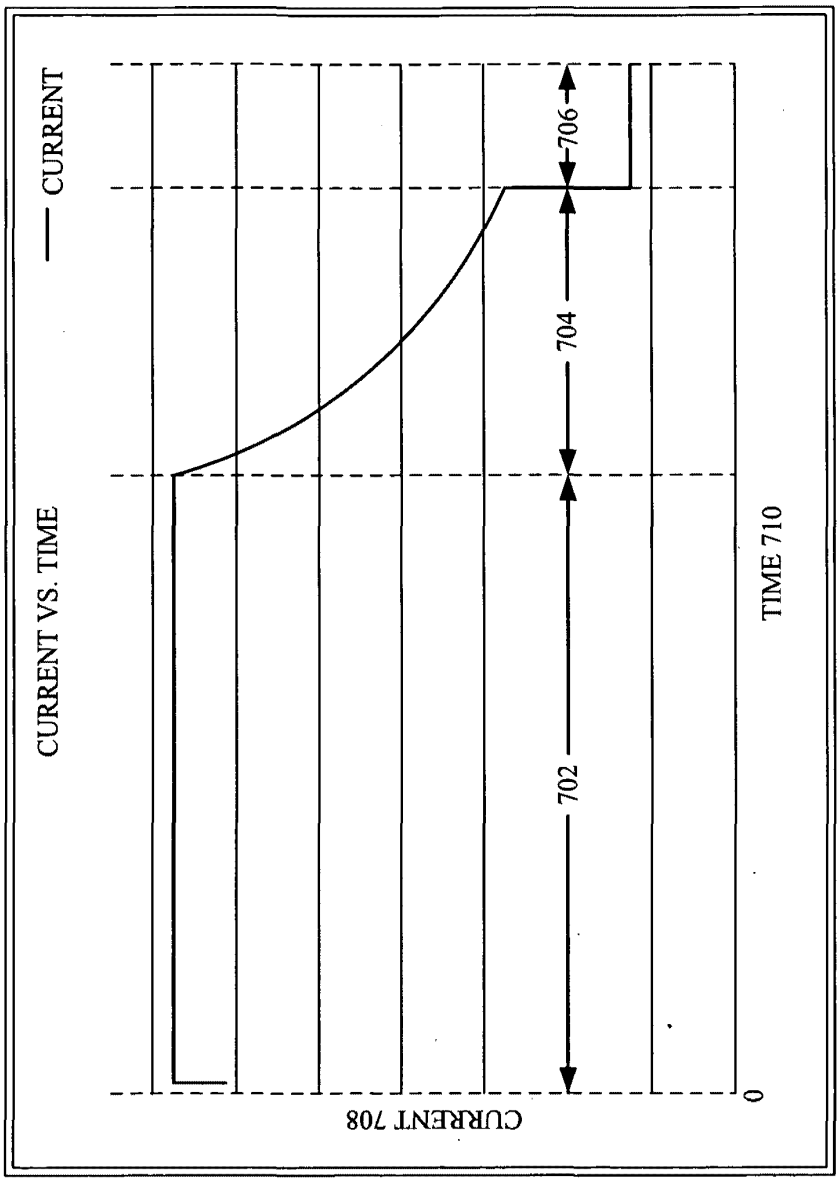

FIGURE 7

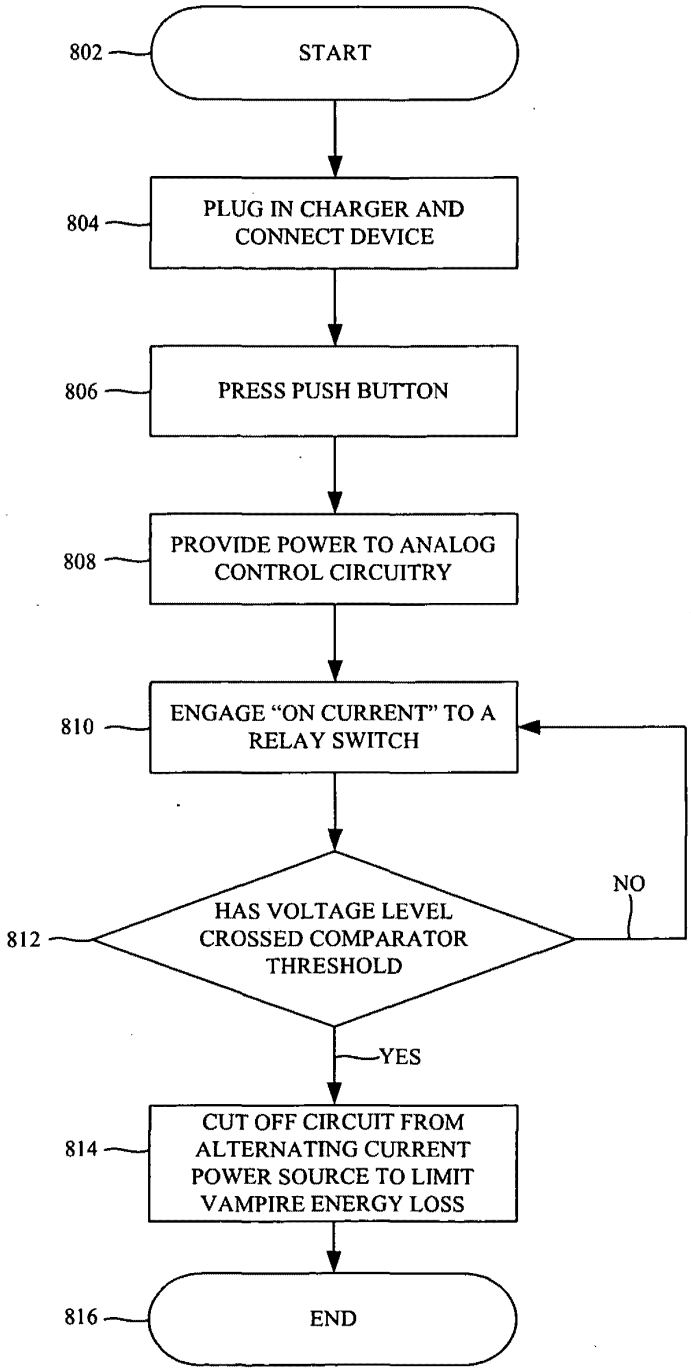
802
START
804
PLUG IN CHARGER AND CONNECT DEVICE
806
PRESS PUSH BUTTON
808
PROVIDE POWER TO ANALOG CONTROL CIRCUITRY
810
ENGAGE "ON CURRENT" TO A RELAY SWITCH
812
HAS VOLTAGE LEVEL CROSSED COMPARATOR THRESHOLD
NO
YES
814
CUT OFF CIRCUIT FROM ALTERNATING CURRENT POWER SOURCE TO LIMIT VAMPIRE ENERGY LOSS
816
END

FIGURE 8

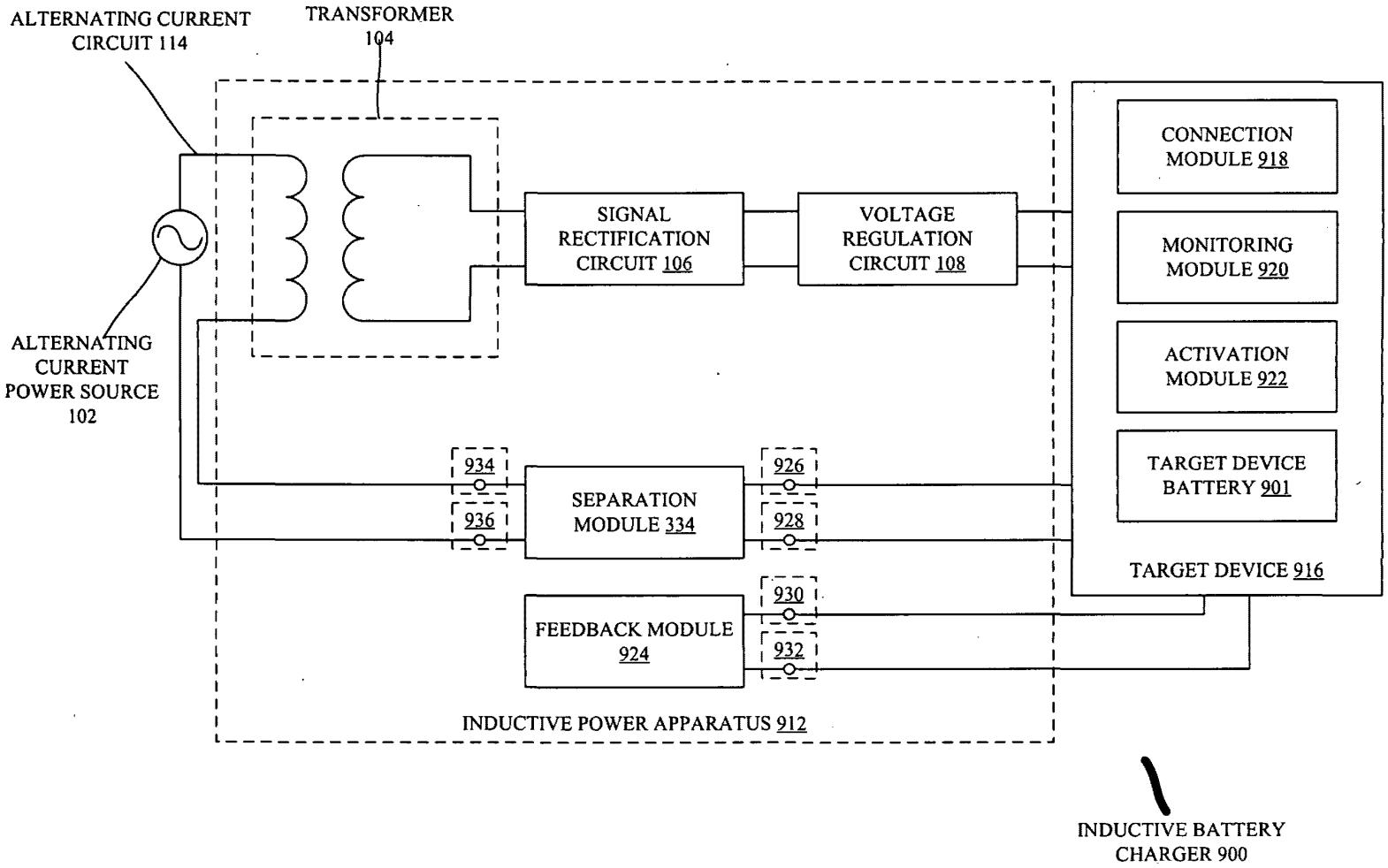

FIGURE 9

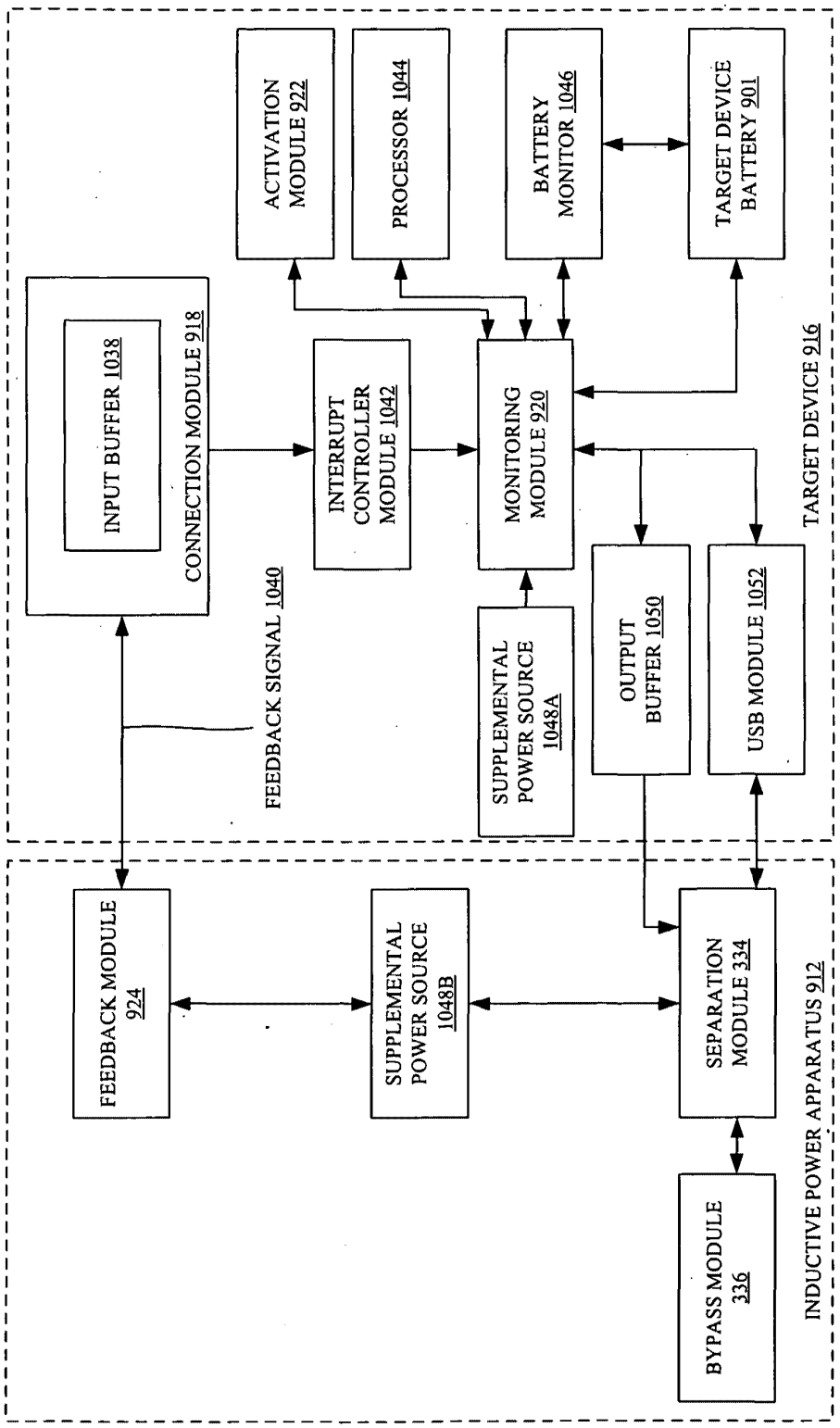
INDUCTIVE BATTERY CHARGER 1000
TARGET DEVICE 916
ACTIVATION MODULE 922
PROCESSOR 1044
BATTERY MONITOR 1046
TARGET DEVICE BATTERY 901
CONNECTION MODULE 918
INPUT BUFFER 1038
INTERRUPT CONTROLLER MODULE 1042
MONITORING MODULE 920
FEEDBACK SIGNAL 1040
SUPPLEMENTAL POWER SOURCE 1048A
OUTPUT BUFFER 1050
USB MODULE 1052
FEEDBACK MODULE 924
SUPPLEMENTAL POWER SOURCE 1048B
SEPARATION MODULE 334
BYPASS MODULE 336
INDUCTIVE POWER APPARATUS 912

FIGURE 10

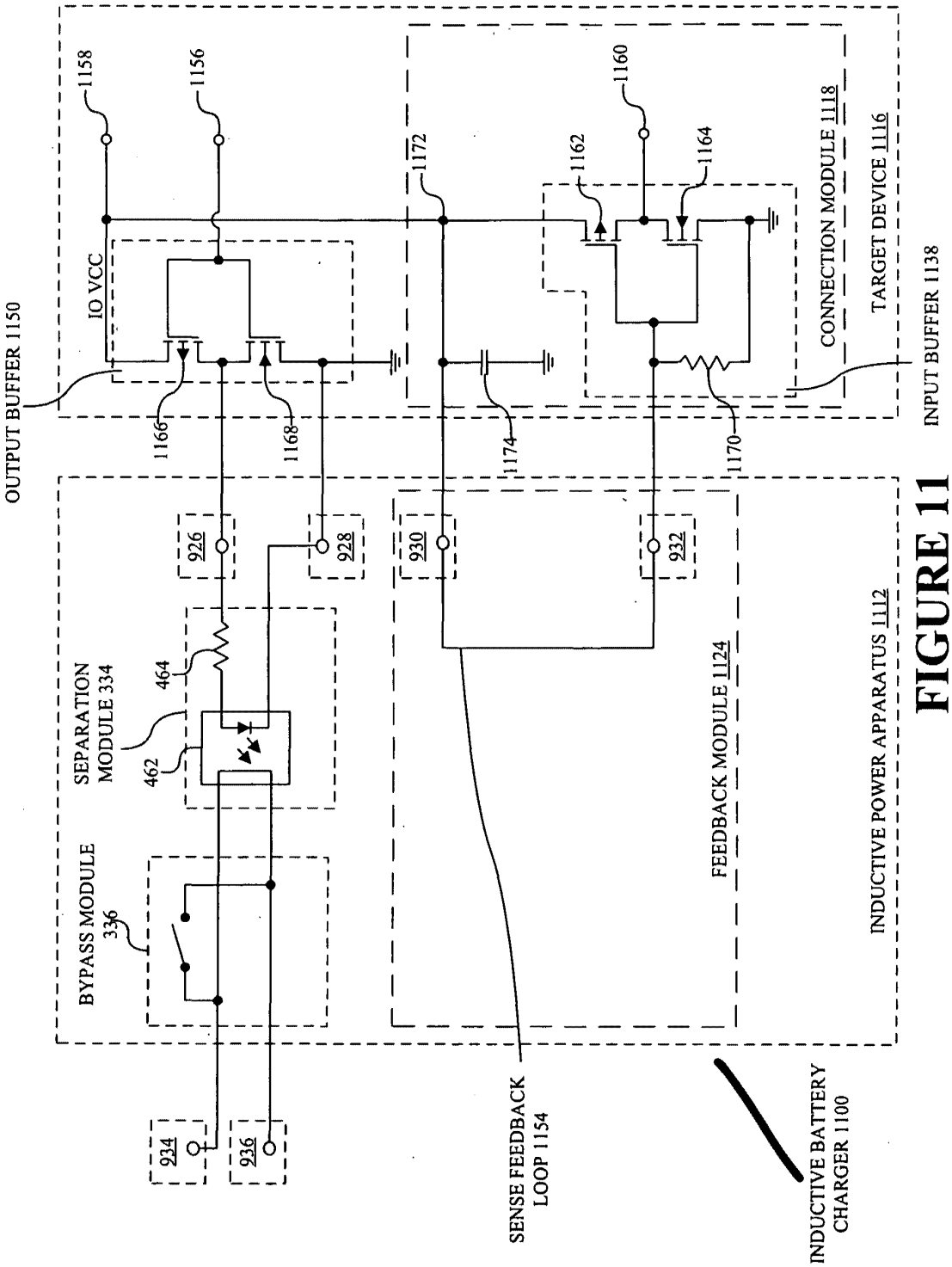
OUTPUT BUFFER 1150
IO VCC
1158
1156
1166
1168
1172
1160
1162
1164
1174
1170
CONNECTION MODULE 1118
TARGET DEVICE 1116
INPUT BUFFER 1138
926
928
930
932
SEPARATION MODULE 334
464
462
BYPASS MODULE 336
FEEDBACK MODULE 1124
INDUCTIVE POWER APPARATUS 1112
934
936
SENSE FEEDBACK LOOP 1154
INDUCTIVE BATTERY CHARGER 1100

FIGURE 11

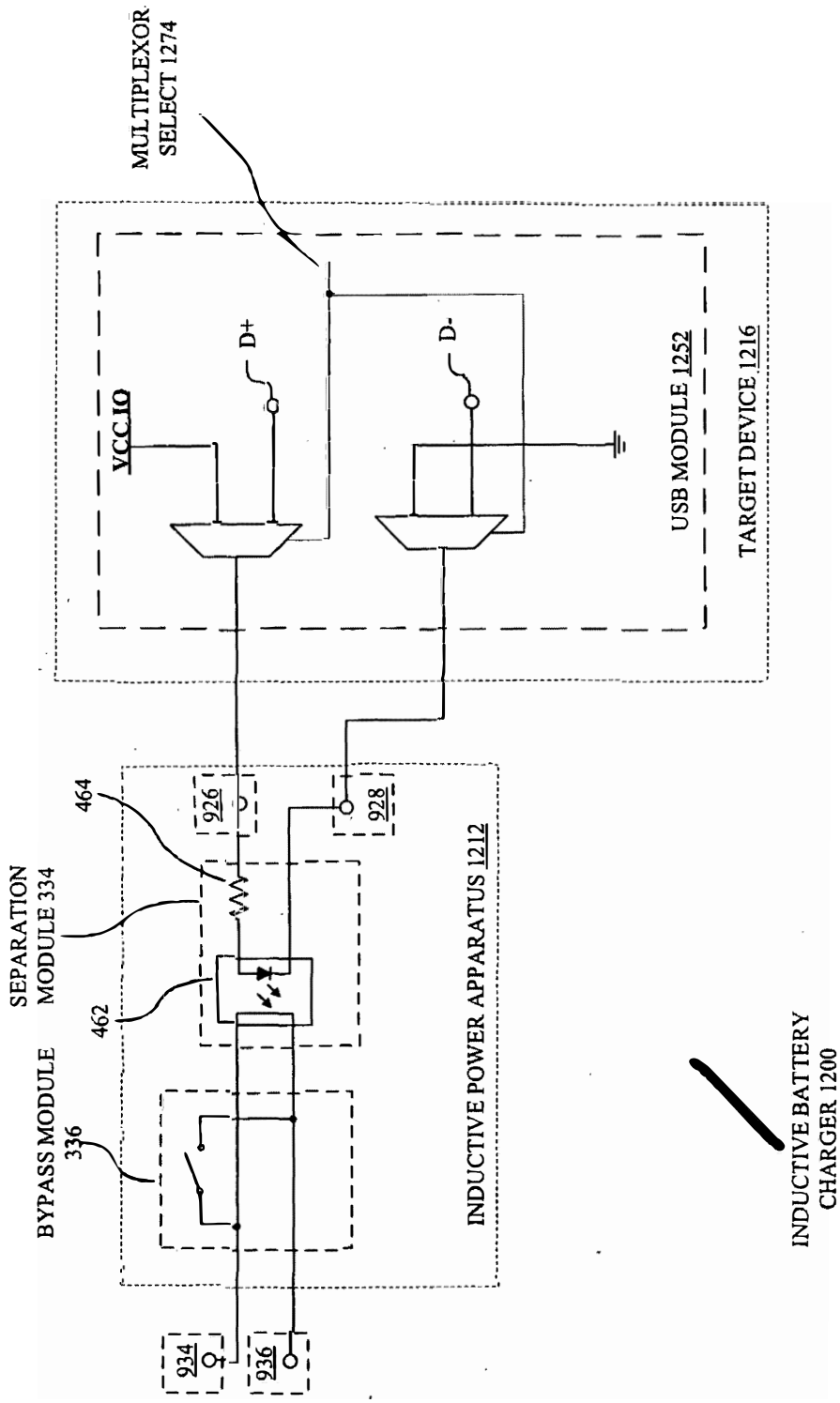
MULTIPLEXOR SELECT 1274
VCC IO
D+
D-
USB MODULE 1252
TARGET DEVICE 1216
464
926
928
SEPARATION MODULE 334
462
BYPASS MODULE 336
INDUCTIVE POWER APPARATUS 1212
234
236
INDUCTIVE BATTERY CHARGER 1200

FIGURE 12

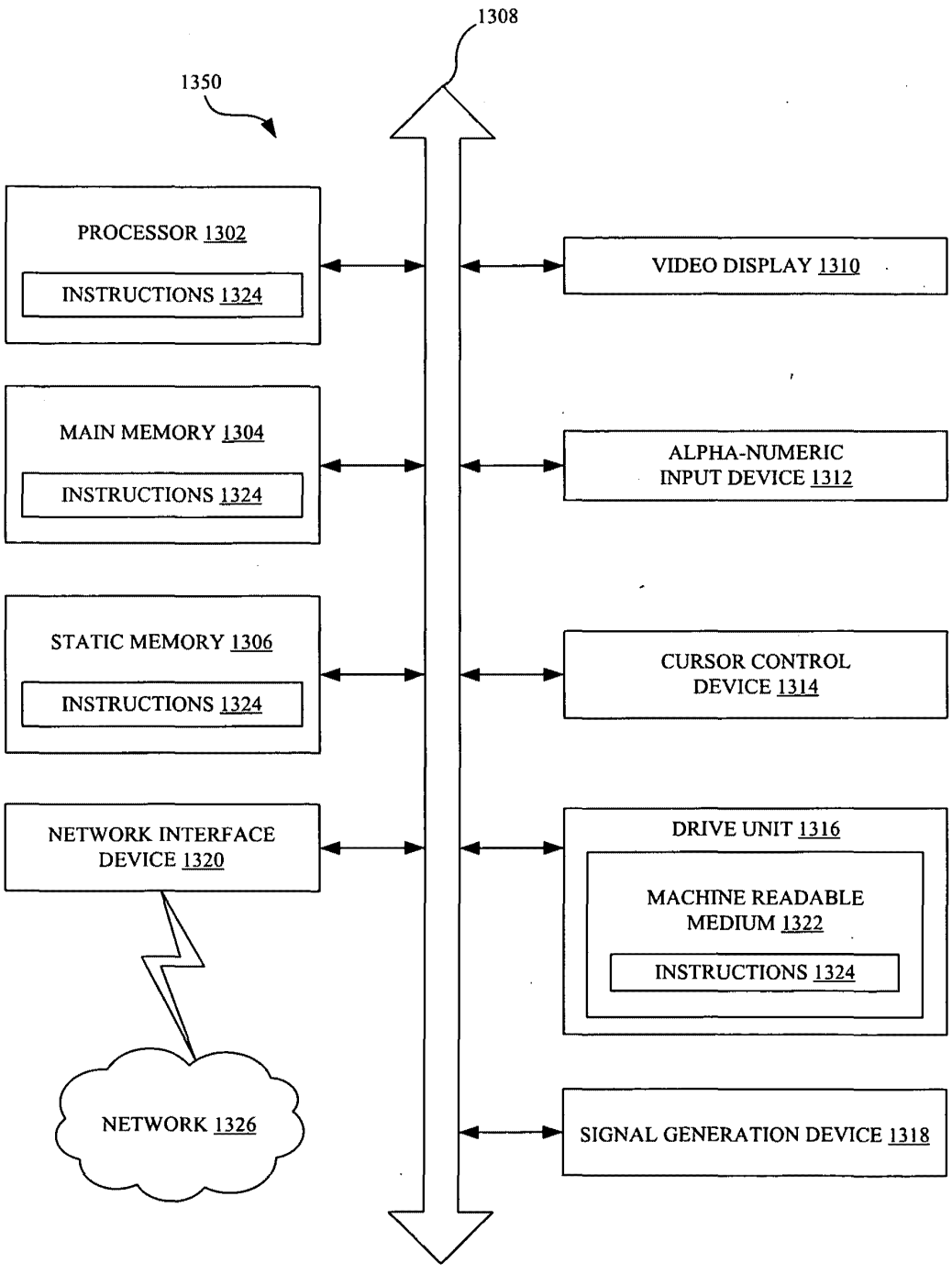
1308
1350
PROCESSOR 1302
INSTRUCTIONS 1324
MAIN MEMORY 1304
INSTRUCTIONS 1324
STATIC MEMORY 1306
INSTRUCTIONS 1324
NETWORK INTERFACE DEVICE 1320
NETWORK 1326
VIDEO DISPLAY 1310
ALPHA-NUMERIC INPUT DEVICE 1312
CURSOR CONTROL DEVICE 1314
DRIVE UNIT 1316
MACHINE READABLE MEDIUM 1322
INSTRUCTIONS 1324
SIGNAL GENERATION DEVICE 1318

FIGURE 13

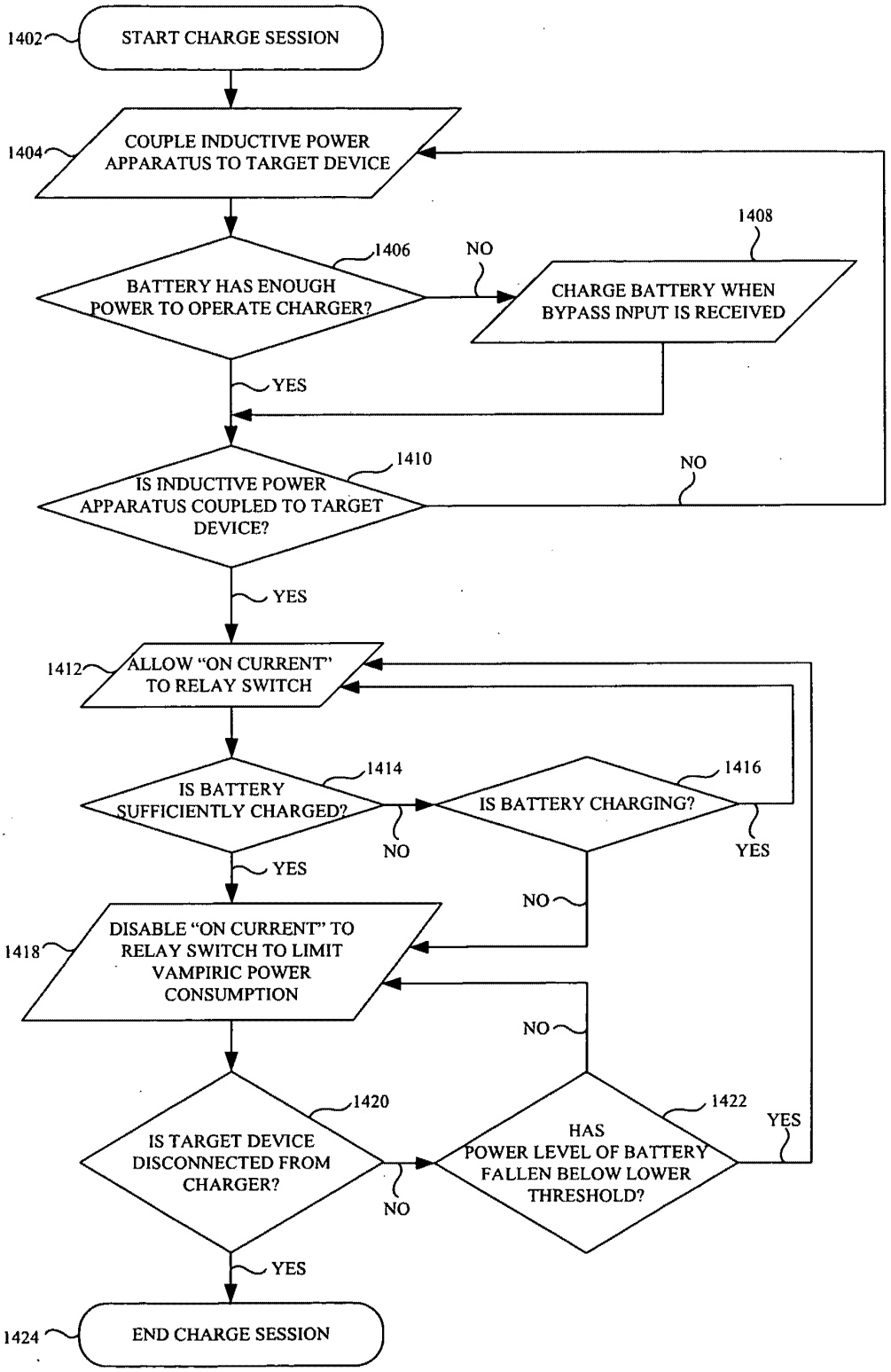
1402
START CHARGE SESSION
1404
COUPLE INDUCTIVE POWER APPARATUS TO TARGET DEVICE
1406
BATTERY HAS ENOUGH POWER TO OPERATE CHARGER?
NO
1408
CHARGE BATTERY WHEN BYPASS INPUT IS RECEIVED
YES
1410
IS INDUCTIVE POWER APPARATUS COUPLED TO TARGET DEVICE?
NO
YES
1412
ALLOW "ON CURRENT" TO RELAY SWITCH
1414
IS BATTERY SUFFICIENTLY CHARGED?
NO
1416
IS BATTERY CHARGING?
YES
YES
NO
1418
DISABLE "ON CURRENT" TO RELAY SWITCH TO LIMIT VAMPIRIC POWER CONSUMPTION
NO
1420
IS TARGET DEVICE DISCONNECTED FROM CHARGER?
NO
1422
HAS POWER LEVEL OF BATTERY FALLEN BELOW LOWER THRESHOLD?
YES
YES
1424
END CHARGE SESSION

FIGURE 14

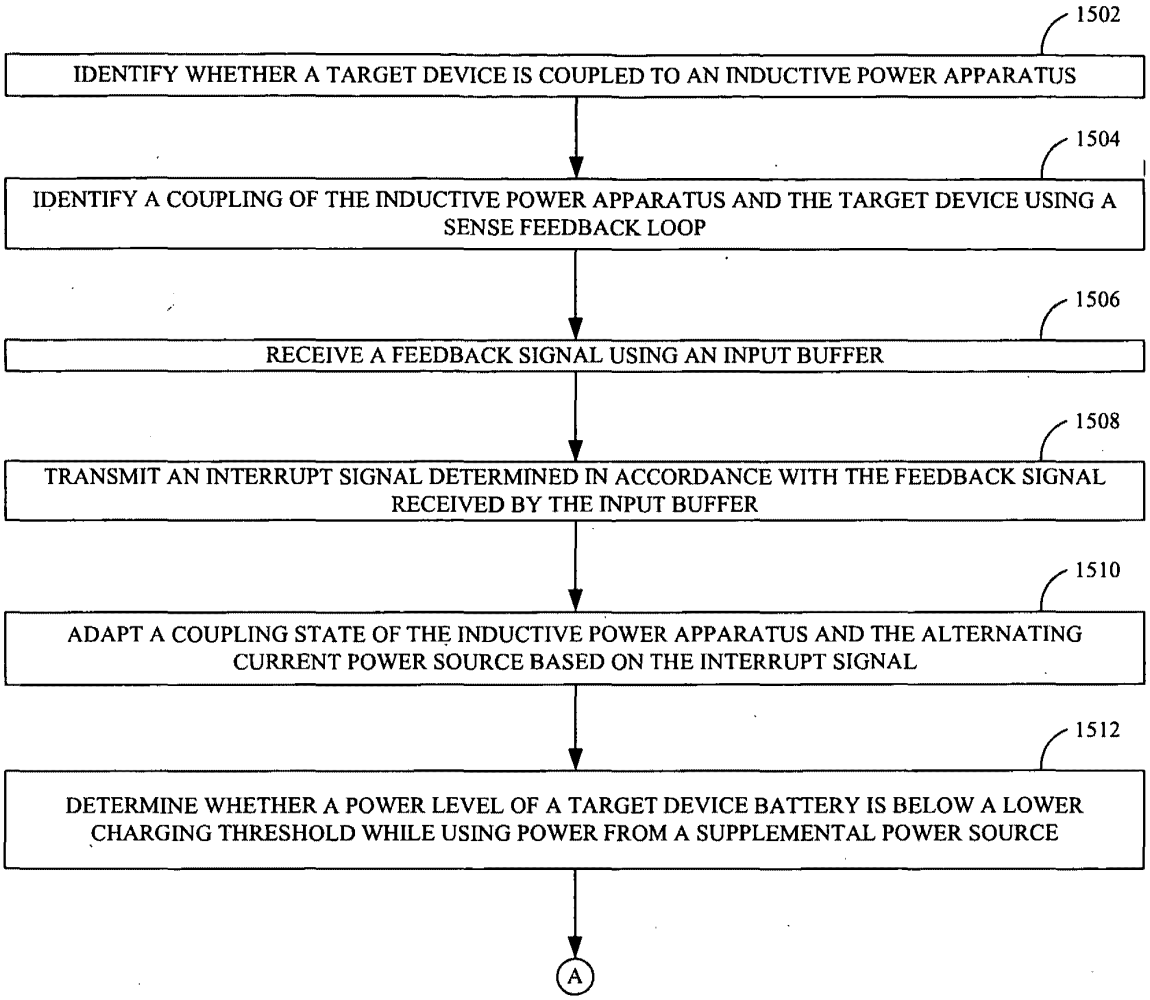
1502
IDENTIFY WHETHER A TARGET DEVICE IS COUPLED TO AN INDUCTIVE POWER APPARATUS
1504
IDENTIFY A COUPLING OF THE INDUCTIVE POWER APPARATUS AND THE TARGET DEVICE USING A SENSE FEEDBACK LOOP
1506
RECEIVE A FEEDBACK SIGNAL USING AN INPUT BUFFER
1508
TRANSMIT AN INTERRUPT SIGNAL DETERMINED IN ACCORDANCE WITH THE FEEDBACK SIGNAL RECEIVED BY THE INPUT BUFFER
1510
ADAPT A COUPLING STATE OF THE INDUCTIVE POWER APPARATUS AND THE ALTERNATING CURRENT POWER SOURCE BASED ON THE INTERRUPT SIGNAL
1512
DETERMINE WHETHER A POWER LEVEL OF A TARGET DEVICE BATTERY IS BELOW A LOWER CHARGING THRESHOLD WHILE USING POWER FROM A SUPPLEMENTAL POWER SOURCE
A

FIGURE 15A

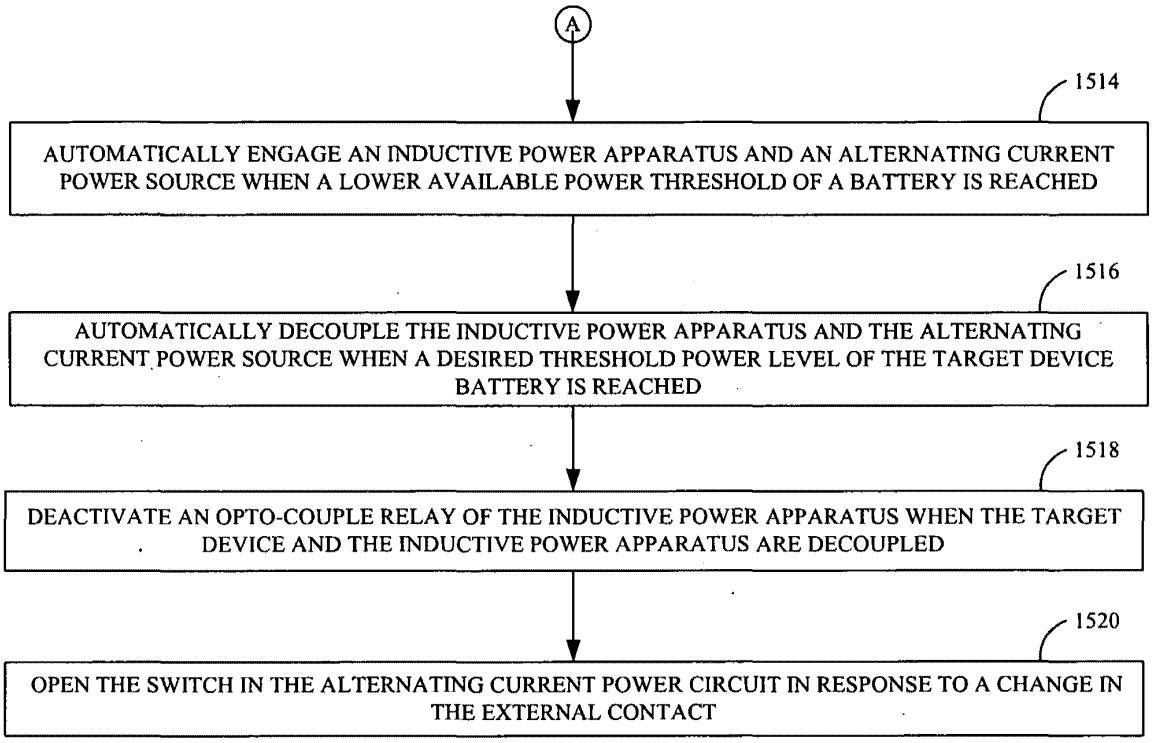
A
1514
AUTOMATICALLY ENGAGE AN INDUCTIVE POWER APPARATUS AND AN ALTERNATING CURRENT POWER SOURCE WHEN A LOWER AVAILABLE POWER THRESHOLD OF A BATTERY IS REACHED
1516
AUTOMATICALLY DECOUPLE THE INDUCTIVE POWER APPARATUS AND THE ALTERNATING CURRENT POWER SOURCE WHEN A DESIRED THRESHOLD POWER LEVEL OF THE TARGET DEVICE BATTERY IS REACHED
1518
DEACTIVATE AN OPTO-COUPLE RELAY OF THE INDUCTIVE POWER APPARATUS WHEN THE TARGET DEVICE AND THE INDUCTIVE POWER APPARATUS ARE DECOUPLED
1520
OPEN THE SWITCH IN THE ALTERNATING CURRENT POWER CIRCUIT IN RESPONSE TO A CHANGE IN THE EXTERNAL CONTACT

FIGURE 15B

PTO/SB/06 (12-04)

Filing Date: 07/29/09

Approved for use through 7/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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PATENT APPLICATION FEE DETERMINATION RECORD
Substitute for Form PTO-875

Application or Docket Number: 12/511,069

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	**82**		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	**270**		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	**110**		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	**20** minus 20 =		x$26		OR	x$52	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	**3** minus 3 =	*	x$110			x$220	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $260 ($130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			195			390	
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	**462**		TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

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