PTO/SB/05 (08-08)
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# UTILITY PATENT APPLICATION TRANSMITTAL

*(Only for new nonprovisional applications under 37 CFR 1.53(b))*

| | |
|---|---|
| *Attorney Docket No.* | 1744.2320003 |
| *First Inventor* | Gregory S. SILVER |
| *Title* | Switching Power Supply |
| *Express Mail Label No.* | |

## APPLICATION ELEMENTS

*See MPEP chapter 600 concerning utility patent application contents.*

1. [ ] **Fee Transmittal Form** (e.g., PTO/SB/17)
2. [ ] **Applicant claims small entity status.** See 37 CFR 1.27.
3. [X] **Specification** [*Total Pages* 21 ]
   Both the claims and abstract must start on a new page
   *(For information on the preferred arrangement, see MPEP 608.01(a))*
4. [X] **Drawing(s)** (*35 U.S.C. 113*) [*Total Sheets* 19 ]
5. **Oath or Declaration** [*Total Sheets* 4 ]
   a. [X] Newly executed (original or copy)
   b. [ ] A copy from a prior application (37 CFR 1.63(d))
   *(for continuation/divisional with Box 18 completed)*
   i. [ ] DELETION OF INVENTOR(S)
   Signed statement attached deleting inventor(s) name in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. [X] **Application Data Sheet.** See 37 CFR 1.76
7. [ ] **CD-ROM or CD-R** in duplicate, large table or Computer Program *(Appendix)*
   [ ] Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**
   *(if applicable, items a. – c. are required)*
   a. [ ] Computer Readable Form (CRF)
   b. Specification Sequence Listing on:
      i. [ ] CD-ROM or CD-R (2 copies); or
      ii. [ ] Paper
   c. [ ] Statements verifying identity of above copies

*ADDRESS TO:* **Commissioner for Patents**
**P.O. Box 1450**
**Alexandria VA 22313-1450**

## ACCOMPANYING APPLICATION PARTS

9. [ ] **Assignment Papers** (cover sheet & document(s))
   Name of Assignee
10. [X] **37 CFR 3.73(b) Statement** *(when there is an assignee)* [X] **Power of Attorney**
11. [ ] **English Translation Document** *(if applicable)*
12. [ ] **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    [ ] Copies of citations attached
13. [ ] **Preliminary Amendment**
14. [ ] **Return Receipt Postcard** (MPEP 503)
    *(Should be specifically itemized)*
15. [ ] **Certified Copy of Priority Document(s)**
    *(if foreign priority is claimed)*
16. [ ] **Nonpublication Request** under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
17. [X] Other: Authorization under 37 CFR 1.136(a)(3)

18. If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:*

[X] Continuation [ ] Divisional [ ] Continuation-in-part (CIP) of prior application No.: 13/347,317

*Prior application information:* *Examiner* Thanh C. LE *Art Unit:* 2618

## 19. CORRESPONDENCE ADDRESS

[X] The address associated with Customer Number: **26111** *OR* [ ] Correspondence address below

| | | | | | |
|---|---|---|---|---|---|
| Name | | | | | |
| Address | | | | | |
| City | | State | | Zip Code | |
| Country | | Telephone | | Email | |

| | | | |
|---|---|---|---|
| Signature | | Date | August 21, 2012 |
| Name (Print/Type) | **Christian A. Camarce** | Registration No. (Attorney/Agent) | **65,021** |

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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MEDIATEK-1002
IPR2025-00030

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | |
|---|---|
| In re application of: | Confirmation No.: To Be Assigned |
| SILVER *et al.* | Art Unit: To Be Assigned |
| Appl. No.: To Be Assigned | Examiner: To Be Assigned |
| (*Continuation of Appl. No. 13/347,317; Filed: January 10, 2012*) | Atty. Docket: 1744.2320003 |
| Filed: Herewith | |
| For: **Switching Power Supply** | |

## Authorization to Treat a Reply as Incorporating an Extension of Time Under 37 C.F.R. § 1.136(a)(3)

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Commissioner:

The U.S. Patent and Trademark Office is hereby authorized to treat any concurrent or future reply that requires a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. The U.S. Patent and Trademark Office is hereby authorized to charge all required extension of time fees to our Deposit Account No. 19-0036, if such fees are not otherwise provided for in such reply.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Christian A. Camarce
Attorney for Applicants
Registration No. 65,021

Date: August 21, 2012

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600
1573030_1.docx

APPLICATION DATA SHEET

Electronic Version v14
Stylesheet Version v14.1

***Applicant Information:***

Inventor 1:

| | |
|---|---|
| **Applicant Authority Type:** | Inventor |
| **Citizenship:** | US |
| **Given Name:** | Gregory |
| **Middle Name:** | S. |
| **Family Name:** | SILVER |
| **City of Residence:** | St. Augustine |
| **State of Residence:** | FL |
| **Country of Residence:** | US |
| **Address-1 of Mailing Address:** | 2790 CR 13th South |
| **Address-2 of Mailing Address:** | |
| **City of Mailing Address:** | Elkton |
| **State of Mailing Address:** | FL |
| **Postal Code of Mailing Address:** | 32033 |
| **Country of Mailing Address:** | US |
| **Phone:** | |
| **Fax:** | |
| **E-mail:** | |

Inventor 2:

| | |
|---|---|
| **Applicant Authority Type:** | Inventor |
| **Citizenship:** | US |
| **Given Name:** | David |
| **Middle Name:** | F. |
| **Family Name:** | SORRELLS |
| **City of Residence:** | Middleburg |
| **State of Residence:** | FL |
| **Country of Residence:** | US |
| **Address-1 of Mailing Address:** | 3129 Rideout Lane |
| **Address-2 of Mailing Address:** | |
| **City of Mailing Address:** | Middleburg |
| **State of Mailing Address:** | FL |
| **Postal Code of Mailing Address:** | 32068 |

| | |
|---|---|
| **Country of Mailing Address:** | US |
| **Phone:** | |
| **Fax:** | |
| **E-mail:** | |

Inventor 3:

| | |
|---|---|
| **Applicant Authority Type:** | Inventor |
| **Citizenship:** | US |
| **Given Name:** | Gregory |
| **Middle Name:** | S. |
| **Family Name:** | RAWLINS |
| **City of Residence:** | Heathrow |
| **State of Residence:** | FL |
| **Country of Residence:** | US |
| **Address-1 of Mailing Address:** | 1577 Cherry Lake Way |
| **Address-2 of Mailing Address:** | |
| **City of Mailing Address:** | Heathrow |
| **State of Mailing Address:** | FL |
| **Postal Code of Mailing Address:** | 32746-6973 |
| **Country of Mailing Address:** | US |
| **Phone:** | |
| **Fax:** | |
| **E-mail:** | |

*Correspondence Information:*

| | | |
|---|---|---|
| **Customer Number:** | 26111 | *26111* |

*Application Information:*

| | |
|---|---|
| **Title of Invention:** | **Switching Power Supply** |
| **Application Type:** | regular, utility |
| **Attorney Docket Number:** | 1744.2320003 |

Botanic Information:

Publication Information:
Suggested Figure for Publication – 5
**Suggested Classification -**
**Suggested Technology Center -**

Total Number of Drawing Sheets - 19

*Representative Information:*

practitioner(s) at Customer Number:

26111 *26111*

as our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

***Domestic Priority Information:***

This application is a continuation of U.S. Patent Application No. 13/347,317, filed January 10, 2012 (Atty. Docket No. 1744.2320002), now allowed, which is a continuation of U.S. Application No. 11/979,852, filed November 8, 2007 (Atty. Docket No. 1744.2320001), now U.S. Patent No. 8,116,704, which claims the benefit of U.S. Provisional Patent Application No. 60/857,777, filed November 9, 2006 (Atty. Docket No. 1744.2160006).

*Foreign Priority Information:*

***Assignee Information:***

Assignee 1:

| | |
|---|---|
| Organization Name: | ParkerVision, Inc. |
| Address-1 of Mailing Address: | 7915 Baymeadows Way |
| **Address-2 of Mailing Address:** | Ste. 400 |
| **City of Mailing Address:** | Jacksonville |
| **State of Mailing Address:** | FL |
| **Postal Code of Mailing Address:** | 32256 |
| **Country of Mailing Address:** | |
| **Phone:** | |
| **Fax:** | |
| **E-mail:** | |

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Christian A. Camarce
Attorney for Applicants
Registration No. 65,021

Date: August 21, 2012

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
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## STATEMENT UNDER 37 CFR 3.73(b)

Atty. Docket No. 1744.2320003

Applicant/Patent Owner: Gregory S. SILVER, David F. SORRELLS, and Gregory S. RAWLINS

Application No./Patent No.: To Be Assigned Filed/Issue Date: Herewith

Titled: Switching Power Supply

ParkerVision, Inc., 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 _____, Frame _____, 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.

Christian A. Camarce — Signature

August 21, 2012 — Date

Christian A. Camarce, Reg. No. 65,021 — Printed or Typed Name

Attorney for Applicants — Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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NOT FOR RECORDATION

Attorney Docket No. 1744.216000G

# ASSIGNMENT

In consideration of the sum of One Dollar ($1.00) or equivalent and other good and valuable consideration paid to each of the undersigned inventors: **Gregory S. SILVER, David F. SORRELLS, and Gregory S. RAWLINS,** hereby sell and assign to **ParkerVision, Inc.**, a corporation formed under the laws of Florida, whose mailing address is 7915 Baymeadows Way, Suite 400, Jacksonville, Florida 32256 (hereafter referred to as the Assignee), his/her entire right, title and interest, including the right to sue for past infringement and to collect for all past, present and future damages, for the United States of America (as defined in 35 U.S.C. § 100) and throughout the world,

(a) in the invention known as **Switching Power Supply** for which application for patent in the United States of America has a filing date of November 8, 2007 (also known as United States Application No. 11/979,852), in any and all applications thereon, in any and all Letters Patent(s) therefor, and

(b) in any and all applications that claim the benefit of the patent application listed above in part (a), including non-provisional applications, continuing (continuation, divisional, or continuation-in-part) applications, reissues, extensions, renewals and reexaminations of the patent application or Letters Patent therefor listed above in part (a), to the full extent of the term or terms for which Letters Patents issue, and

(c) in any and all inventions described in the patent application listed above in part (a), and in any and all forms of intellectual and industrial property protection derivable from such patent application, and that are derivable from any and all continuing applications, reissues, extensions, renewals and reexaminations of such patent application, including, without limitation, patents, applications, utility models, inventor's certificates, and designs together with the right to file applications therefor; and including the right to claim the same priority rights from any previously filed applications under the International Agreement for the Protection of Industrial Property, or any other international agreement, or the domestic laws of the country in which any such application is filed, as may be applicable;

all such rights, title and interest to be held and enjoyed by the above-named Assignee, its successors, legal representatives and assigns to the same extent as all such rights, title and interest would have been held and enjoyed by the Assignor had this assignment and sale not been made.

The undersigned inventors agree to execute all papers necessary in connection with the application(s) and any non-provisional, continuing (continuation, divisional, or continuation-in-part), reissue, reexamination or corresponding application(s) thereof and also to execute separate assignments in connection with such application(s) as the Assignee may deem necessary or expedient.

The undersigned inventors agree to execute all papers necessary in connection with any interference or patent enforcement action (judicial or otherwise) related to the application(s) or any non-provisional, continuing (continuation, divisional, or continuation-in-part), reissue or reexamination application(s) thereof and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference or patent enforcement action.

The undersigned inventors hereby represent that he/she has full right to convey the entire interest herein assigned, and that he/she has not executed, and will not execute, any agreement in conflict therewith.

The undersigned inventors hereby grant Robert Greene Sterne, Esq., Registration No. 28,912; Edward J. Kessler, Esq., Registration No. 25,688; Jorge A. Goldstein, Esq., Registration No. 29,021; David K.S. Cornwell, Esq., Registration No. 31,944; Robert W. Esmond, Esq., Registration No. 32,893; Tracy-Gene G. Durkin, Esq., Registration No. 32,831; Michele A. Cimbala, Esq., Registration No. 33,851; Michael B. Ray, Esq., Registration No. 33,997; Robert E. Sokohl, Esq., Registration No. 36,013; Eric K. Steffe, Esq., Registration No. 36,688; Michael Q. Lee, Esq., Registration No. 35,239; Steven R. Ludwig, Esq., Registration No. 36,203; John M. Covert, Esq., Registration No. 38,759; Linda E. Alcorn, Esq., Registration No. 39,588; Donald J. Featherstone, Esq., Registration No. 33,876; Robert C. Millonig, Esq., Registration No. 34,395; Michael V. Messinger, Esq., Registration No. 37,575; Judith U. Kim, Esq., Registration No. 40,679; Timothy J. Shea, Jr., Esq., Registration No. 41,306; Patrick E. Garrett, Esq., Registration No. 39,987; Jeffrey Helvey, Registration No. 44,757; Heidi L. Kraus, Registration No. 43,730; Eldora Ellison, Registration No. 39,967; Thomas C. Fiala, Registration No. 43,610; all of STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C., 1100 New York Avenue, N.W., Washington, D.C. 20005-3934, power to insert in this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

IN WITNESS WHEREOF, executed by the undersigned inventors on the date opposite his/her name.

Date: 12-30-07 Signature of Inventor: _____
Gregory S. SILVER

Date: 12-20-07 Signature of Inventor: _____
David T. SORRELLS

Date: _____ Signature of Inventor: _____
Gregory S. RAWLINS

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# ASSIGNMENT

In consideration of the sum of One Dollar ($1.00) or equivalent and other good and valuable consideration paid to each of the undersigned inventors: **Gregory S. SILVER, David F. SORRELLS, and Gregory S. RAWLINS,** hereby sell and assign to **ParkerVision, Inc.**, a corporation formed under the laws of Florida, whose mailing address is 7915 Baymeadows Way, Suite 400, Jacksonville, Florida 32256 (hereafter referred to as the Assignee), his/her entire right, title and interest, including the right to sue for past infringement and to collect for all past, present and future damages, for the United States of America (as defined in 35 U.S.C. § 100) and throughout the world,

(a) in the invention known as **Switching Power Supply** for which application for patent in the United States of America has a filing date of November 8, 2007 (also known as United States Application No. 11/979,852), in any and all applications thereon, in any and all Letters Patent(s) therefor, and

(b) in any and all applications that claim the benefit of the patent application listed above in part (a), including non-provisional applications, continuing (continuation, divisional, or continuation-in-part) applications, reissues, extensions, renewals and reexaminations of the patent application or Letters Patent therefor listed above in part (a), to the full extent of the term or terms for which Letters Patents issue, and

(c) in any and all inventions described in the patent application listed above in part (a), and in any and all forms of intellectual and industrial property protection derivable from such patent application, and that are derivable from any and all continuing applications, reissues, extensions, renewals and reexaminations of such patent application, including, without limitation, patents, applications, utility models, inventor's certificates, and designs together with the right to file applications therefor; and including the right to claim the same priority rights from any previously filed applications under the International Agreement for the Protection of Industrial Property, or any other international agreement, or the domestic laws of the country in which any such application is filed, as may be applicable;

all such rights, title and interest to be held and enjoyed by the above-named Assignee, its successors, legal representatives and assigns to the same extent as all such rights, title and interest would have been held and enjoyed by the Assignor had this assignment and sale not been made.

The undersigned inventors agree to execute all papers necessary in connection with the application(s) and any non-provisional, continuing (continuation, divisional, or continuation-in-part), reissue, reexamination or corresponding application(s) thereof and also to execute separate assignments in connection with such application(s) as the Assignee may deem necessary or expedient.

The undersigned inventors agree to execute all papers necessary in connection with any interference or patent enforcement action (judicial or otherwise) related to the application(s) or any non-provisional, continuing (continuation, divisional, or continuation-in-part), reissue or reexamination application(s) thereof and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference or patent enforcement action.

The undersigned inventors hereby represent that he/she has full right to convey the entire interest herein assigned, and that he/she has not executed, and will not execute, any agreement in conflict therewith.

The undersigned inventors hereby grant Robert Greene Sterne, Esq., Registration No. 28,912; Edward J. Kessler, Esq., Registration No. 25,688; Jorge A. Goldstein, Esq., Registration No. 29,021; David K.S. Cornwell, Esq., Registration No. 31,944; Robert W. Esmond, Esq., Registration No. 32,893; Tracy-Gene G. Durkin, Esq., Registration No. 32,831; Michele A. Cimbala, Esq., Registration No. 33,851; Michael B. Ray, Esq., Registration No. 33,997; Robert E. Sokohl, Esq., Registration No. 36,013; Eric K. Steffe, Esq., Registration No. 36,688; Michael Q. Lee, Esq., Registration No. 35,239; Steven R. Ludwig, Esq., Registration No. 36,203; John M. Covert, Esq., Registration No. 38,759; Linda E. Alcorn, Esq., Registration No. 39,588; Donald J. Featherstone, Esq., Registration No. 33,876; Robert C. Millonig, Esq., Registration No. 34,395; Michael V. Messinger, Esq., Registration No. 37,575; Judith U. Kim, Esq., Registration No. 40,679; Timothy J. Shea, Jr., Esq., Registration No. 41,306; Patrick E. Garrett, Esq., Registration No. 39,987; Jeffrey Helvey, Registration No. 44,757; Heidi L. Kraus, Registration No. 43,730; Eldora Ellison, Registration No. 39,967; Thomas C. Fiala, Registration No. 43,610; all of STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C., 1100 New York Avenue, N.W., Washington, D.C. 20005-3934, power to insert in this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

IN WITNESS WHEREOF, executed by the undersigned inventors on the date opposite his/her name.

Date:_____ Signature of Inventor: _____
Gregory S. SILVER

Date:_____ Signature of Inventor: _____
David F. SORRELLS

Date: 01/04/2008 Signature of Inventor: _____
Gregory S. RAWLINS

743757_1.DOC

PTO/SB/80 (11-08)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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# POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

[X] Practitioners associated with the Customer Number: 26111

*OR*

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

| Name | Registration Number | Name | Registration Number |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

[X] The address associated with Customer Number: 26111

*OR*

| | | | |
|---|---|---|---|
| [ ] Firm or Individual Name | | | |
| Address | | | |
| City | | State | Zip |
| Country | | | |
| Telephone | | Email | |

Assignee Name and Address:

ParkerVision, Inc.
D2DTM Technologies
7915 Baymeadows Way, Suite 400
Jacksonville, Florida 32256

**A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.**

**SIGNATURE of Assignee of Record**

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

| | | | |
|---|---|---|---|
| Signature | | Date | 4/28/09 |
| Name | David F. Sorrells | Telephone | (904) 737-1367 |
| Title | Co-Founder and CTO | | |

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.***

**Declaration for Patent Application**

As a below named inventor, I hereby declare that:

My residence, mailing address and citizenship are as stated below next to my name.

I believe I am an original, first and joint inventor of the subject matter that is claimed and for which a patent is sought on the invention entitled **Switching Power Supply**, the specification of which is attached hereto unless the following box is checked:

☒ was filed on November 8, 2007;

**as United States Application Number 11/979,852; and**

**was amended on _____ (if applicable).**

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 that is material to patentability as defined in 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

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| Prior Foreign Applications(s): | | | Priority Claimed Yes | Priority Claimed No |
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| (Application No.) | (Country) | (Day/Month/Year Filed) | ☐ | ☐ |

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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 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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**Declaration for Patent Application**

As a below named inventor, I hereby declare that:

My residence, mailing address and citizenship are as stated below next to my name.

I believe I am an original, first and joint inventor of the subject matter that is claimed and for which a patent is sought on the invention entitled **Switching Power Supply**, the specification of which is attached hereto unless the following box is checked:

☒ was filed on November 8, 2007;

as United States Application Number 11/979,852; and

was amended on _____ (if applicable).

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 that is material to patentability as defined in 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or (f) or § 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), 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, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or PCT international application having a filing date before that of the application on which priority is claimed.

| Prior Foreign Applications(s): | | | Priority Claimed | |
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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 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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# SWITCHING POWER SUPPLY

Inventors: Gregory Silver
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## CROSS-REFERENCE TO RELATED APPLICATIONS

**[0001]** The present application is a continuation of U.S. Patent Application No. 13/347,317, filed January 10, 2012 (Atty. Docket No. 1744.2320002), now allowed, which is a continuation of U.S. Application No. 11/979,852, filed November 8, 2007 (Atty. Docket No. 1744.2320001), now U.S. Patent No. 8,116,704, which claims the benefit of U.S. Provisional Patent Application No. 60/857,777, filed November 9, 2006 (Atty. Docket No. 1744.2160006). Each of the foregoing applications is incorporated herein by reference in its entirety.

**[0002]** The present application is related to U.S. Patent Application No. 11/256,172, filed October 24, 2005, now U.S. Patent No. 7,184,723 (Atty. Docket No. 1744.1900006) and U.S. Patent Application No. 11/508,989, filed August 24, 2006 (Atty. Docket No. 1744.2160001), both of which are incorporated herein by reference in their entireties.

## BACKGROUND

### Field

**[0003]** Embodiments of the present invention relate generally to modulation and power amplification and related network and system control functions. More particularly, embodiments of the present invention relate to methods and systems for enhancing system parameters including efficiency in power amplification systems.

### Background

**[0004]** The efficiency of a power supply directly affects the efficiency of the power amplification system using the power supply. Further, in the case of mobile or portable battery powered wireless devices, the voltage and current

requirements of the radio frequency (RF) transmitter used in the devices are largely determined by the power amplifier technology and system requirements.

**[0005]** As such, the power supply efficiency not only affects the efficiency of the power modulation and amplification system but also the efficiency of the mobile device using the power amplification system.

**[0006]** There is a need therefore for power supply architectures, design techniques, and operation modes that affect and/or optimize the overall system efficiency of the modulation and power amplification system.

## BRIEF DESCRIPTION

**[0007]** Embodiments of the present invention relate to systems and methods of RF power transmission, modulation, and amplification. Systems and methods of RF power transmission, modulation, and amplification also referred to herein as Vector Power Amplification (VPA) are described in related U.S. Patent Application No. 11/256,172, filed October 24, 2005, now U.S. Patent No. 7,184,723 and U.S. Patent Application No. 11/508,989, filed August 24, 2006, both of which are incorporated herein by reference in their entireties. It is noted that embodiments of the present invention are not limited to these VPA examples but can be applied to other transmitter functions and circuitry such as modulators, amplifiers, filters, and control circuitry.

**[0008]** Embodiments of the present invention provide methods and systems for enhancing system efficiency in a power amplification, modulation, and transmission system.

**[0009]** According to embodiments of the present invention, the overall system efficiency can be affected and/or optimized according to, but not limited to, the average or most probable output power levels, maximum power output level, battery voltage and/or changes in battery voltage, amplifier and/or modulator voltage and current requirements, power control requirements, adjacent channel power requirements (ACPR), adjacent channel leakage requirements (ACLR), standing wave ratio (SWR) requirements, in-band noise performance requirements, and out-of-band noise performance requirements such as is required by GSM and other standards based cell phone signals. In mobile or

portable battery powered devices, this results in extended battery life, smaller battery size, and increased and/or optimized output power for various power output levels, connectivity range, number of network nodes, and reliability and longevity.

**[0010]** In an embodiment, a power supply is disclosed. The power supply includes a switching devices and an aperture generator and control module. The switching device is configured to down-convert an input voltage and pass the down-converted input voltage to an output voltage node. The aperture generator and control module is configured to control the switching device, where, in response to a power efficiency of the power supply exceeding a predetermined threshold, the aperture generator and control module deactivates the switching device and passes the input voltage to the output voltage node.

**[0011]** In another embodiment, a method for controlling a power supply is disclosed. The method includes: down-converting, with a switching device, an input voltage to generate a down-converted voltage; passing the down-converted voltage to an output voltage node; and, in response to a power efficiency of the power supplying exceeding a predetermined threshold, de-activating the switching device and passing the input voltage to the output voltage node.

**[0012]** In yet another embodiment, a system is disclosed. The system includes an electronic device and a power supply. The power supply is coupled to the electronic device and includes a switching device and an aperture generator and control module. The switching device is configured to down-convert an input voltage and pass the down-converted input voltage to an output voltage node. The aperture generator and control module is configured to control the switching device, where, in response to a power efficiency of the power supply exceeding a predetermined threshold, the aperture generator and control module deactivates the switching device and passes the input voltage to the output voltage node.

**[0013]** Additional features and advantages of the invention will be set forth in the description that follows. Yet further features and advantages will be apparent to a person skilled in the art based on the description set forth herein or may be learned by practice of the invention. The advantages of embodiments of the present invention will be realized and attained by the structure and methods particularly pointed out in the written description and claims hereof as well as the appended drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0014]** Embodiments of the present invention will be described with reference to the accompanying drawings, wherein generally like reference numbers indicate identical or functionally similar elements. Also, generally, the leftmost digit(s) of the reference numbers identify the drawings in which the associated elements are first introduced.

**[0015]** FIG. 1 illustrates exemplary plots of efficiency versus output current of a typical switching power supply for two exemplary values of output power.

**[0016]** FIG. 2 illustrates an example probability density function (PDF) of a handset output power.

**[0017]** FIG. 3 illustrates exemplary plots of power supply output voltage and power supply output current versus output power of an example multiple-input-single-output (MISO) amplifier.

**[0018]** FIG. 4 illustrates an example step down switching power supply having a bypass switch architecture.

**[0019]** FIG. *5* illustrates another example step down switching power supply having a bypass switch architecture.

**[0020]** FIG. 6 illustrates example efficiency enhancement due to the use of a bypass switch architecture in a switching power supply.

**[0021]** FIG. 7 illustrates examples of coupling a switching power supply to traditional amplifier designs.

**[0022]** FIG. 8 illustrates examples of coupling a switching power supply to multiple-input-single-output (MISO) amplifier designs.

**[0023]** FIGS. 9A-9E illustrate the integration of a switching power supply in a D2P vector power amplification system according to an embodiment of the invention.

**[0024]** FIGS. 10A-10E illustrate the integration of a switching power supply in another D2P vector power amplification system according to an embodiment of the invention.

**[0025]** FIG. 11 is a process flowchart of a method for enhancing system efficiency in a power amplification system according to an embodiment of the present invention.

# DETAILED DESCRIPTION

## Overview

**[0026]** Methods and systems for enhancing system efficiency in a power amplification, modulation, and transmission system are provided herein.

**[0027]** According to embodiments of the present invention, the overall system efficiency can be affected and/or optimized according to, but not limited to, the average or most probable output power levels, maximum power output level, battery voltage and/or changes in battery voltage, amplifier and/or modulator voltage and current requirements, power control requirements, adjacent channel power requirements (ACPR), adjacent channel leakage requirements (ACLR), standing wave ratio (SWR) requirements, in-band noise performance requirements, and out-of-band noise performance requirements such as is required by GSM and other standards based cell phone signals. In mobile or portable battery powered devices, this results in extended battery life, smaller battery size, and increased and/or optimized output power for various power output levels, connectivity range, number of network nodes, and reliability and longevity.

**[0028]** According to embodiments of the present invention, the efficiency of all types of amplifiers, including, but not limited to, MISO amplifiers can be improved over various output power levels by designing a variable voltage switching power supply based on system criteria, such as, but not limited to, network statistics and/or typical operating conditions.

**[0029]** According to further embodiments, an optional bypass switch architecture can be used as part of the power supply design to further enhance the system efficiency, reduce the system noise floor, and increase the available output current of the power supply. These advantages reduce the amount of circuitry required to support multiple modulation methods and output powers.

**[0030]** Embodiments for enhancing system efficiency can be used with traditional power amplifiers, vector power amplifiers, and multiple-input-single-output (MISO) power amplifiers. Further, embodiments can be applied with various modulation schemes including, but not limited to, GSM, W-CDMA, CDMA 2000, EvDO, EDGE, HSUPA, and OFDM.

[0031] Systems implementing some of the above described embodiments include a mechanism to bypass the power supply circuitry at a pre-determined threshold, further increasing the system efficiency. In an implementation, a bypass switch control circuitry is used together with the power supply circuitry, to cause the bypass of the power supply circuitry when the pre-determined threshold is exceeded. In an embodiment, the threshold is defined in terms of output power, and the bypass switch is engaged or disengaged when the output power exceeds or falls below the threshold. In another embodiment, the power supply is bypassed when the noise power on or near the output frequency (frequency of the output signal) exceeds a threshold.

Effect of Power Supply Efficiency on System Efficiency

[0032] FIG. 1 illustrates exemplary plots 102 and 104 of efficiency versus output current of a typical switching power supply for two exemplary values of output power.

[0033] As illustrated in plots 102 and 104, the power supply is most efficient when the output current is between 100 and 200 milliamps (rna) depending on the input and output voltages. Also, when plots 102 and 104 are extended beyond 650 rnA for the output current, the power supply efficiency would continue to decrease as the output current increases.

[0034] The power supply efficiency directly affects the efficiency of the entire power amplification system using the power supply. Further, in the case of mobile or portable battery powered wireless devices including, but not limited to, cellular phones, wireless LAN devices, and WiMax devices and systems, voltage and current requirements of the radio frequency (RF) transmitter are largely determined by the power amplifier technology and system requirements. As such, the efficiency of the power supply of a power amplification system significantly affects the efficiency of the mobile device using said power amplification system.

[0035] To highlight this problem, consider, for example, a scenario where the battery voltage (power supply input voltage, VIN) is 3.6 V and the output voltage (power supply output voltage, $V_{OUT}$) is 3.16 V, and where the power supply drives a power amplifier that is 50% efficient generating a +30 dBm output power. Accordingly, the power supply current will be approximately 633

mA. From plot 102 of FIG. 1, this results in a power supply efficiency of approximately 94%, which is 4% less than the optimum 98% achievable with a power supply current of approximately 190 mA.

[0036] At lower output voltages ($V_{OUT}$), as illustrated in plot 104 for example, the problem becomes more pronounced, and the power supply efficiency approaches approximately 80% at 633 mA, which is 18% less efficient than when the power supply is operating in its optimum voltage and current range.

[0037] The effect on system efficiency is significant. For example, when the power amplifier is operating at 50% efficiency and the power supply is operating at 94% efficiency, the system efficiency is 0.5 x 0.94 = 0.47 or 47%. Similarly, when the power amplifier is operating at 50% efficiency and the power supply is operating at 80% efficiency, the system efficiency is 0.5 x 0.8 = 0.4 or40%.

## Power Supply Design Optimization for Enhanced System Efficiency

[0038] In this section, power supply design embodiments to enhance system efficiency. are provided. For example, switching power supplies can be designed to operate in pre-determined output voltage and current ranges that result in increased efficiency of the power supply and consequently in increased system efficiency. These embodiments can be used to control both the efficiency and the output power level of traditional power amplifiers (PAs) and/or multiple-input-single-output (MISO) amplifiers.

[0039] One set of criteria that can be used to design both the power supply and the power amplifier for maximized system efficiency include the network characteristics and/or statistics. An exemplary network characteristic of a code division multiple access (CDMA) network is shown in FIG. 2, which illustrates a probability density function (PDF) 200 of a handset output power used on a reverse link (handset to base station) and measured at the power amplifier output of the handset.

[0040] PDF 200 is shown according to a log normal scale in FIG. 2 and provides the time probability that the handset spends transmitting using a given output power level, according to the transmitted CDMA waveform.

[0041] Based on PDF 200, it would be sufficient to increase system efficiency to design a power supply and/or amplifier system that maintains or increases the system

efficiency at power levels below +30dBm. Indeed, mathematical analysis shows that the mean or expected value of PDF 200 is approximately +17 dBm or 50 milliWatts (mW). Further, since the probability of transmission at +17 dBm is higher than the probability of transmission at +30 dBm, system efficiency increases at +17 dBm will have a greater overall effect on extended battery life and/or battery size than system efficiency increases at +30 dBm.

**[0042]** The above described CDMA design criteria can be applied in the case of a multiple-input-single-output (MISO) amplifier, examples of which are described in the patent and patent application cited above. FIG. 3 illustrates exemplary plots 302 and 304 of power supply output voltage and power supply output current, respectively, versus output power of an example MISO amplifier.

**[0043]** Plots 302 and 304 illustrate the power supply output voltage and output current that are required by an example MISO amplifier to achieve a CDMA power control range. For ease of illustration, the output power range in plots 302 and 304 is limited to 0 dBm to +30 dBm instead of -40 dBm to +30 dBm, since the most probable output power occurs at +17 dBm.

**[0044]** In an example MISO amplifier, the power supply output voltage is applied at the collector/drain of the MISO amplifier depending on the MISO amplifier configuration used. As illustrated in exemplary plot 302, the collector/drain voltage range of the MISO amplifier is +1.39V to +3.6V. Also, for an output power of +17 dBm, the collector/drain voltage of the MISO amplifier is approximately+1.39V.

**[0045]** Accordingly, to achieve the highest system efficiency possible using example CDMA PDF 200, the switching power supply should be designed to operate at its highest efficiency when its output voltage is approximately +1.39V and, correspondingly from exemplary plot 304, when its output current is approximately 100 mA.

**[0046]** Note that the switching power supply may be designed to vary its highest efficiency point of operation according to the selected data modulation and transmission scheme. As would be understood by a person skilled in the art, the output power characteristics of transmission schemes (e.g., CDMA, CDMA2000, GSM, etc.) differ from one scheme to another. Accordingly, the most probable output power point of operation also varies from one transmission scheme to another, and, consequently, so does the highest efficiency point of operation of the power supply.

[0047] Based on the above, a method for enhancing system efficiency in a power amplification system is provided and is illustrated in process flowchart 1100 of FIG. 11. The power amplification system can be a traditional power amplifier, a vector power amplifier, or a multiple-input-single-output (MISO) amplifier. Process 1100 includes steps 1102, 1104, and 1106.

[0048] Process 1100 begins in step 1102, which includes determining output power characteristics of a selected modulation scheme to be employed in data transmission. In an embodiment, the output power characteristics include a probability distribution function of output power using the selected modulation scheme. In another embodiment, the output power characteristics are determined according to network statistics. The selected modulation scheme can be any one of GSM, W-CDMA, CDMA 2000, EvDO, EDGE, HSUPA, and OFDM.

[0049] Step 1104 includes determining a probable (in certain embodiments, a most probable) output power point of operation for the selected modulation scheme based on the determined output power characteristics.

[0050] Step 1106 includes controlling an output stage power supply within the power amplification system to operate at substantially optimal efficiency at the probable output power point of operation.

## Power Supply Efficiency Optimization

[0051] In addition to designing/controlling the power supply to operate optimally in terms of efficiency at the most probable output power, the overall power supply efficiency can be improved to increase system efficiency. As will be described in the exemplary embodiments below, the system efficiency can be further increased by bypassing the power supply when the required output voltage (or the output power) exceeds a pre-determined threshold. For example, referring to exemplary plot 302, an optional power supply bypass switch can be used to bypass the power supply when the power supply output voltage required by the MISO amplifier reaches 3.6V, which corresponds to an output power of +26 dBm or 400 mW. By bypassing the power supply, any loss in system efficiency due to the power supply efficiency can be eliminated.

[0052] FIG. 4 illustrates an example step down (buck) switching power supply 400 having a bypass switch architecture.

**[0053]** Power supply 400 receives an input voltage signal $V_{IN}$ 418, an Output Stage Voltage Control signal 416, and a Threshold Voltage signal414.

**[0054]** Input voltage signal $V_{IN}$ 418 is typically received from a battery and is set according to, among other requirements, the device using the power amplifier. In exemplary plots 102 and 104, for example, $V_{IN}$ 418 takes values of 2.7V, 3.6V, 4.2V, and 5.5V.

**[0055]** Output Stage Voltage Control signal 416 is received from a control module configured to control the power supply voltage provided to the output stage of the power amplifier. In example 400, Output Stage Voltage Control signal 416 controls an Aperture Generator and Control module 404 of power supply400.

**[0056]** Threshold Voltage 414 may also be received from the same control module as Output Stage Voltage Control signal 416. The function of Threshold Voltage 414 is to control a Bypass Switch Control module 402 of power supply 400.

**[0057]** Threshold Voltage 414 may be fixed or programmable. Threshold Voltage 414 may vary depending on network statistics and/or network waveforms including, but not limited to, GSM, W-CDMA, CDMA2000, EvDO, EDGE, HSUPA, OFDM, or others. In an embodiment, Threshold Voltage 414 can be changed in real time by wirelessly downloading information to the system. For example, Threshold Voltage 414 can be downloaded to the mobile device or portable unit using power supply 400 from a network provider. In another embodiment, Threshold Voltage 414 can be pre-programmed based on waveform efficiency requirements and/or modified or adjusted based on battery life requirements. In a further embodiment, Threshold Voltage 414 is modified based on output power requirements and/or on power supply current output requirements.

**[0058]** Referring back to FIG. 4, in addition to modules 402 and 404, power supply 400 includes a Bypass Switch 406, an input switch 420, a switching transistor 408, and an output LC circuit comprised of an inductor $L_{OUT}$ 410 and a capacitor $C_{OUT}$ 412.

**[0059]** Power supply 400 operates in two modes: normal mode and bypass mode.

**[0060]** In normal mode, input voltage signal $V_{IN}$ 418 is received at input switch 420, which is controlled by Aperture Generator and Control module 404.

**[0061]** Aperture Generator and Control module 404 is configured to control input switch 420 to couple input voltage signal $V_{IN}$ 418 to the collector/drain of switching

transistor 408. As such, $V_{IN}$ 418 provides a bias voltage for the collector/drain of switching transistor 408.

**[0062]** Aperture Generator and Control module 404 is also configured to control the base/gate voltage of switching transistor 408, effectively controlling the point of operation and subsequently the gain of switching transistor 408. In an embodiment, Aperture Generator and Control module 404 uses Output Stage Voltage Control signal 416 to determine the required power supply output voltage and, accordingly, controls the base/gate voltage of switching transistor 408. In another embodiment, Aperture Generator and Control module 404 receives a feedback signal of the power supply output voltage $V_{OUT}$ 422. Aperture Generator and Control module 404 may then adjust its control of switching transistor 408, if necessary.

**[0063]** In example power supply 400, switching transistor 408 is illustrated as a single NMOS transistor. As would be understood by a person skilled in the art, embodiments according to the present invention are not limited by this configuration and may include, among other configurations, one or more NMOS, PMOS, NPN, and PNP transistors.

**[0064]** At the output (collector/drain node) of switching transistor 408, inductor $L_{OUT}$ 410 is an exemplary output reactance that meets the voltage and current output requirements of the supply. The reactance can be inductive or capacitive. $C_{OUT}$ 412 acts to filter the AC components of the output of switching transistor 408. As such power supply output voltage $V_{OUT}$ 422 is substantially a DC voltage.

**[0065]** In Bypass mode, $V_{OUT}$ 418 is directly coupled to the power supply output node, which provides power supply output voltage $V_{OUT}$ 422. Bypass mode operation is described below.

**[0066]** Bypass Switch Control module 402 receives Threshold Voltage signal 414 and Output Stage Voltage Control signal 416. Threshold Voltage signal 414 determines at which value of the power supply output voltage power supply 400 switches to bypass mode. Output Stage Voltage Control signal 416 includes information about the target power supply output voltage and thus allows Bypass Switch Control module 402 to determine the value of the power supply output voltage.

**[0067]** Bypass Switch Control module 402 compares Threshold Voltage 414 and the value of the power supply output voltage to determine whether power supply 400 should switch to bypass mode. When the power supply

output voltage exceeds Threshold Voltage 414, Bypass Switch Control module 402 controls Bypass Switch 406 to couple input voltage signal $V_{IN}$ 418 to the power supply output node. At the same time, Bypass Switch Control module 402 controls Aperture Generator and Control module 404 to cause it to de-couple input voltage signal $V_{IN}$ 418 from the collector/drain node of switching transistor 408 and to shut off switching transistor 408.

**[0068]** Accordingly, Bypass Switch Control module 402 bypasses the power supply when the output power exceeds a determined threshold, thereby increasing the efficiency of the power supply for output powers exceeding the determined threshold. In another embodiment, Bypass Switch Control module 402 bypasses the power supply when the noise power on or near the output frequency exceeds a threshold.

**[0069]** As would be understood by a person skilled in the art based on the teachings herein, several parameters can be affected and/or optimized using the power supply design of FIG. 4. For example, the operation dynamic range of the power supply is reduced through the bypass option, which increases the efficiency over the smaller power supply control range. Also, since the switching portion of the supply does not have to carry the maximum voltage and current required, the size and value of the switch (including the switching inductor or capacitor) can be reduced. Additionally, in-band and out-of-band noise can be reduced as switching components typically cause noise. This is especially important at higher power output levels because all cellular phone standards have a maximum "close in" (20 MHz offset) receive band noise floor requirement. Further, as the battery voltage changes during operation, the higher output power levels can be maintained and controlled over a wider battery voltage range.

**[0070]** FIG. *5* illustrates another example step down switching power supply 500 having a bypass switch architecture.

**[0071]** Switching power supply 500 is similar in several respects to example power supply 400 of FIG. 4. Additionally, switching power supply 500 includes an Optional Hysteresis Control signal 502, which is received by Bypass Switch Control module 402, and an Optional Load Current Sensing Circuit 504.

**[0072]** Operation of Bypass Switch Control module 402 is as follows in example switching power supply 500. Bypass Switch Control module 402 receives Threshold

Voltage signal 414, Output Stage Voltage Control signal 416, and Optional Hysteresis Control signal 502.

[0073] Bypass Switch Control module 402 compares the value of Output Stage Voltage Control signal 416 to the sum of Threshold Voltage signal 414 and Optional Hysteresis Control signal 502.

[0074] When Output Stage Voltage Control signal 416 exceeds the sum of Threshold Voltage signal 414 and Optional Hysteresis Control signal 502, Bypass Switch Control module 402 controls Aperture Generator and Control module to cause it to de-couple input voltage signal $V_{IN}$ 418 from the collector/drain node of switching transistor 408 and to shut off switching transistor 408. At the same time, Bypass Switch Control module 406 controls Bypass Switch 406 to couple input voltage signal $V_{IN}$ 418 to the power supply output node 506.

[0075] On the other hand, when Output Stage Voltage Control signal 416 falls below the sum of Threshold Voltage signal 414 and Optional Hysteresis Control signal 502, Bypass Switch Control module 402 controls Bypass Switch 406 to de-couple input voltage signal $V_{IN}$ 418 from the power supply output node 506 and re-activates transistor 408 by coupling input voltage signal $V_{IN}$ 418 thereto through input switch 420.

[0076] Optional Hysteresis Control signal 502 can be downloaded or otherwise provided to the mobile device or portable unit using power supply 500 from a network provider. In another embodiment, Optional Hysteresis Control signal 502 can be pre-programmed based on waveform efficiency requirements and/or modified or adjusted based on changes in battery voltage and/or required output power.

[0077] Optional Load Current Sensing Circuit 504 is coupled at output node 422 of power supply 500. In an embodiment, Load Current Sensing Circuit 504 senses load current to determine any variations that may affect power supply output voltage $V_{OUT}$ 506. Further, Optional Load Current Sensing Circuit 504 provides a feedback signal to Bypass Switch Control module 402. In an embodiment, the feedback signal includes information about sensed load current, which can be used by Bypass Switch Control module 402 to control the operation mode of switching power supply 500.

[0078] The power supply design techniques discussed above have been described with respect to step down switching power supplies. Embodiments of

the present invention are not limited to these embodiments. As would be understood by a person skilled in the art based on the teachings herein, the power supply design techniques described herein can be applied to step down switching power supplies (buck), step up switching power supplies (boost), and step down and step up (buck-boost) power supplies.

**[0079]** FIG. 6 is an example graph 600 that illustrates efficiency enhancement due to the use of a bypass switch architecture in a switching power supply. In example 600, the switching power supply is optimized for a +17dBm output (1.39V output voltage and 100 mA output current).

**[0080]** Efficiency curve 602 represents the efficiency versus the output current of the switching power supply without a bypass switch. Efficiency curve 604 represents the efficiency versus the output current of the switching power supply with a bypass switch. Note that the two efficiency curves 602 and 604 overlap with each other over the output current range from 0 to approximately 0.4A.

**[0081]** Without a bypass switch, as illustrated by efficiency curve 602, the switching power supply has its highest efficiency between 70 and 100 mA of output current, which renders the highest system efficiency of the exemplary MISO amplifier in the example network statistics.

**[0082]** On the other hand, with a bypass switch architecture, as illustrated by efficiency curve 604, the power supply efficiency can be further increased when the output current exceeds 400 mA. This in turn increases the network system efficiency when the required output power is equal to or greater than 400 mW (+26dBm).

**[0083]** The optional bypass switch architecture can also be used to increase the maximum current range of the power supply design. For example, if the switching power supply circuitry (without the bypass switch) can supply a maximum of 650 mA but the bypass switch is designed to support up to 1500 mA, the power supply can as a result supply up to 1500 mA. The bypass switch has yet another advantage, which includes the suppression of switching noise or ripple presented to the amplifier when the bypass switch is engaged and the switching power supply is turned off. This results in a reduced system noise floor when the bypass switch is engaged.

**[0084]** In what follows, the positioning/integration of the switching power supply within a power amplifier design or a system using the power amplifier design is described.

[0085] FIG. 7 illustrates examples 702 and 704 of coupling a switching power supply to traditional amplifier designs. In example 702, the switching power supply, represented by voltage signal $V_{OUT}$, is coupled (optionally through a pull-up resistance) to the collector/emitter node of an NPN/PNP-based amplifier. Similarly, in example 702, the switching power supply, represented by voltage signal $V_{OUT}$, is coupled (optionally through a pullup resistance) to the drain/source node of an NMOS/PMOS-based amplifier.

[0086] FIG. 8 illustrates similar examples 802 and 804 of coupling a switching power supply to multiple-input-single-output (MISO) amplifier designs. Example 802 illustrates the coupling of the switching power supply, represented by voltage signal $V_{OUT}$, to an exemplary two-input single output BJT-based (NPN/PNP/Hybrid) MISO amplifier. The switching power supply can be coupled (optionally through a pull-up resistance) to the common collector/emitter node of the MISO transistors. Similarly, example 804 illustrates the coupling of the switching power supply, represented by voltage signal $V_{OUT}$, to an exemplary two-input single output FET-based (NMOS/PMOS/Hybrid) MISO amplifier. The switching power supply can be coupled (optionally through a pull-up resistance) to the common drain/source node of the MISO transistors.

[0087] The switching power supply (with optional bypass switch architecture) can be used to increase the system efficiency of the exemplary traditional and MISO amplifier designs described above. Further, the switching power supply (with optional bypass switch architecture) can be designed to operate with and optimize the system efficiency of any of the MISO amplifier architectures and schematics shown in related U.S. Patent Application No. 11/256,172 and 11/508,989.

[0088] FIGS. 9A-9E illustrate an example D2P Vector Power Amplification system 5900, which uses an embodiment of the switching power supply described herein to power its output stage. The output stage of system 5900 includes two MISO amplifiers MA1 5930 and MA2 5932. The switching power supply is integrated in system 5900 as Output Stage Power Supply module 5906, shown in FIG. 9B. The switching power supply receives an Output Stage Voltage Control signal 5765 and outputs two output stage supply voltage signals MA1 Output Stage VSupply 5911 and MA2 Output Stage VSupply 5913, which power MA1 5930 and MA2 5932, respectively. Further description of system 5900 can be found in related U.S. Patent Application No. 11/508,989, incorporated herein by reference in its entirety.

[0089] FIGS. 10A-10E illustrate another example D2P Vector Power Amplification system 6100, which uses an embodiment of the switching power supply described herein to power its output stage. The output stage of system 6100 includes five MISO amplifiers GMA2 6126, MA3 6128, MA4 6130, GMAO 6132, and MA1 6134. The switching power supply is integrated in system 6100 as Output Stage Power Supply module 5906, shown in FIG. 10B. The switching power supply receives an Output Stage Voltage Control signal 5765 and outputs five output stage supply voltage signals GMAO Output Stage VSupply 6113, MA1 Output Stage VSupply 6114, GMA2 Output Stage VSupply 6115, MA3 Output Stage VSupply 6116, and MA4 Output Stage VSupply 6117, which power MISO amplifiers GMAO 6132, MA1 6134, GMA2 6126, MA3 6128, and MA4 6130, respectively. Further description of system 5900 can be found in related U.S. Patent Application No. 11/508,989, incorporated herein by reference in its entirety.

[0090] Embodiments of the switching power supply and bypass switch design techniques described herein can be applied to any modulation and/or amplification circuitry or stage within a multi-stage amplification system, to enhance the system efficiency. For example, in addition to being applied to the output stage of MISO amplifiers MA1 5930 and MA2 5932, embodiments described herein can be applied to a Driver Stage and/or a Pre-Driver Stage within each of MISO amplifiers MA1 5930 and MA2 5932. As such, power supplies designed to power up these amplification stages (e.g., Driver Stage Power Supply 5904 in FIGS. 9B and 10B) can be configured to operate in optimum voltage and current ranges to provide increased system efficiency.

[0091] In other embodiments, the Driver Stage Power Supply and the Output Stage Power Supply can be combined into a single switching power supply design. The combined switching power supply may or may not employ a bypass switch architecture depending on the system design requirements.

## Conclusion

[0092] While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of the present invention should not be limited by any of the above-described exemplary

embodiments, but should be defined only in accordance with the following claims and their equivalents.

WHAT IS CLAIMED IS:

1. A power supply comprising:

a switching device configured to down-convert an input voltage and pass the down-converted input voltage to an output voltage node; and

an aperture generator and control module configured to control the switching device, wherein, in response to a power efficiency of the power supply exceeding a predetermined threshold, the aperture generator and control module deactivates the switching device and passes the input voltage to the output voltage node.

2. The power supply of claim 1, wherein the aperture generator and control module is configured to deactivate the switching device based on a load current at the output voltage node.

3. The power supply of claim 1, wherein the aperture generator and control module is configured to control the switching device based on a probable output power point of operation for a selected modulation scheme based on one or more power efficiency characteristics of an electronic device coupled to the power supply.

4. The power supply of claim 3, wherein the modulation scheme is a GSM, W-CDMA, CDMA 2000, EvDO, EDGE, HSUPA, or OFDM communication protocol.

5. The power supply of claim 1, wherein the aperture generator and control module is configured to provide an output current at a maximum power efficiency associated with the down-converted input voltage.

6. The power supply of claim 1, wherein the aperture generator and control module is configured to deactivate the switching device and pass the input voltage to the output voltage node based on a comparison of the down-converted input voltage to a threshold voltage.

7. The power supply of claim 6, wherein the threshold voltage is set to a fixed or programmable value.

8. The power supply of claim 6, wherein the threshold voltage is programmed based on a communication waveform efficiency, battery life associated with an electronic device coupled to the power supply, or a combination thereof.

9. A method for controlling a power supply comprising:

down-converting, with a switching device, an input voltage to generate a down-converted voltage;

passing the down-converted voltage to an output voltage node; and

in response to a power efficiency of the power supplying exceeding a predetermined threshold, de-activating the switching device and passing the input voltage to the output voltage node.

10. The method of claim 9, further comprising:

controlling the switching device based on a probable output power point of operation for a selected modulation scheme based on one or more power efficiency characteristics of an electronic device coupled to the power supply.

11. The method of claim 9, further comprising:

providing an output current at a maximum power efficiency associated with the down-converted voltage.

12. The method of claim 9, wherein the de-activating comprises deactivating the switching device and passing the input voltage to the output voltage node comprises comparing the down-converted voltage to a threshold voltage.

13. The method of claim 12, wherein the comparing comprises programming the threshold voltage based on a communication waveform efficiency, battery life associated with an electronic device coupled to the power supply, or a combination thereof.

14. The method of claim 12, wherein the communication waveform efficiency is based on a GSM, W-CDMA, CDMA 2000, EvDO, EDGE, HSUPA, or OFDM communication protocol.

15. A system comprising:

an electronic device; and

a power supply coupled to the electronic device, wherein the power supply comprises:

a switching device configured to down-convert an input voltage and pass the down-converted input voltage to an output voltage node; and

an aperture generator and control module configured to control the switching device, wherein, in response to a power efficiency of the power supply exceeding a predetermined threshold, the aperture generator and control module deactivates the switching device and passes the input voltage to the output voltage node.

16. The system of claim 15, wherein the electronic device comprises a multiple-input-single-output (MISO) amplifier.

17. The system of claim 15, wherein the electronic device comprises an amplifier with a bipolar junction transistor (BJT), and wherein the power supply is coupled to a collector or an emitter terminal of the BJT.

18. The system of claim 15, wherein the electronic device comprises an amplifier with a metal oxide semiconductor (MOS) transistor, and wherein the power supply is coupled to a drain or a source terminal of the MOSFET.

19. The system of claim 15, wherein the aperture generator and control module is configured to control the switching device based on a probable output power point of operation for a selected modulation scheme based on one or more power efficiency characteristics of an electronic device coupled to the power supply.

20. The system of claim 15, wherein the modulation scheme is a GSM, W-CDMA, CDMA 2000, EvDO, EDGE, HSUPA, or OFDM communication protocol.

# ABSTRACT

A power supply is disclosed herein. For example, the power supply can include a switching device and an aperture generator and control module. The switching device can be configured to down-convert an input voltage and pass the down-converted input voltage to an output voltage node. The aperture generator and control module can be configured to control the switching device. In response to a power efficiency of the power supply exceeding a predetermined threshold, the aperture generator and control module can deactivate the switching device and pass the input voltage to the output voltage node.

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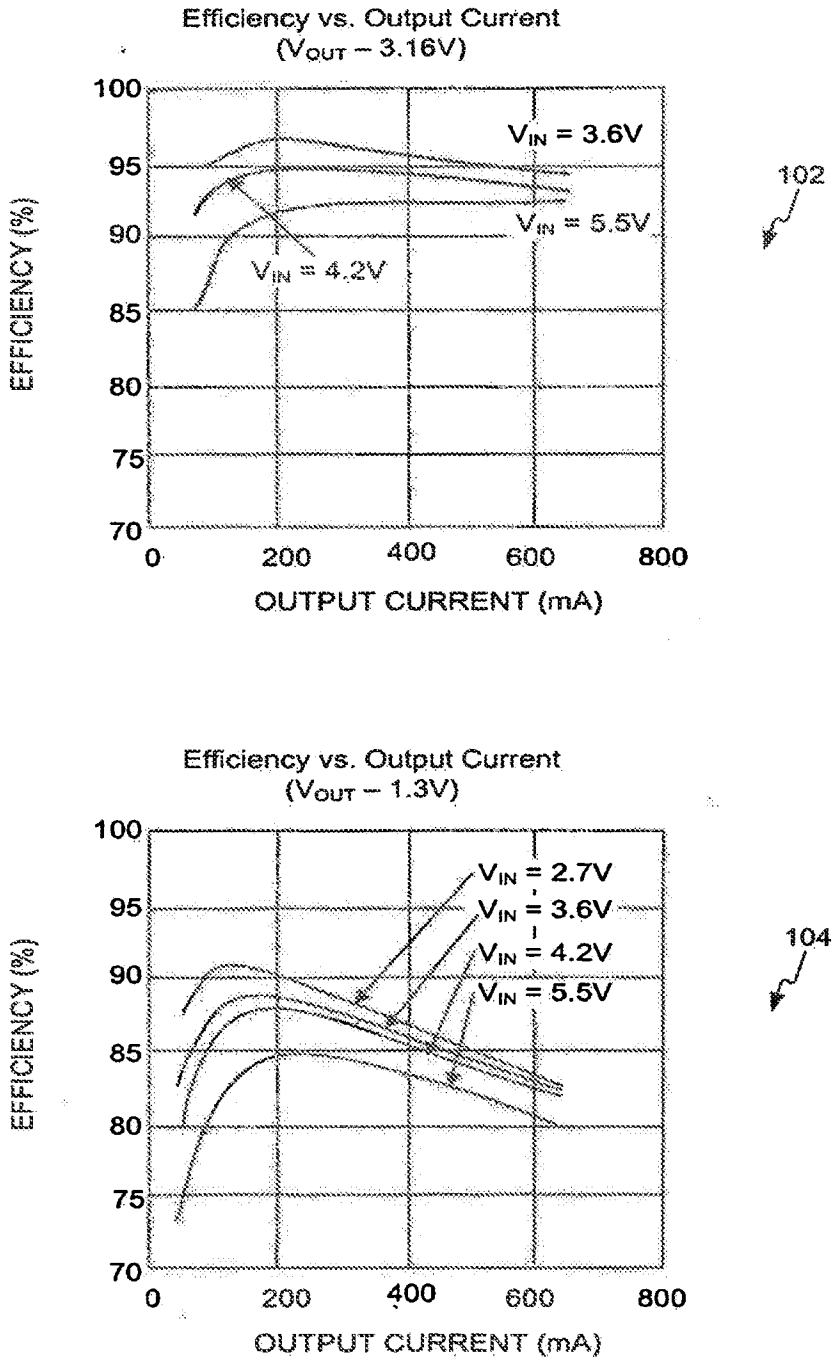



**FIG. 1**

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200

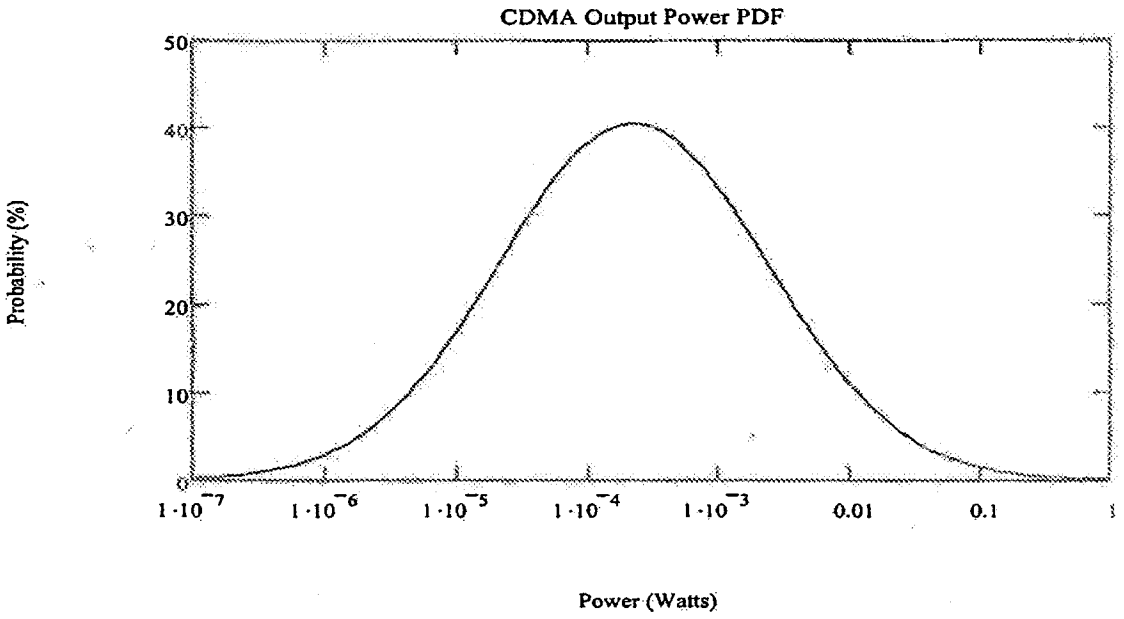



FIG. 2

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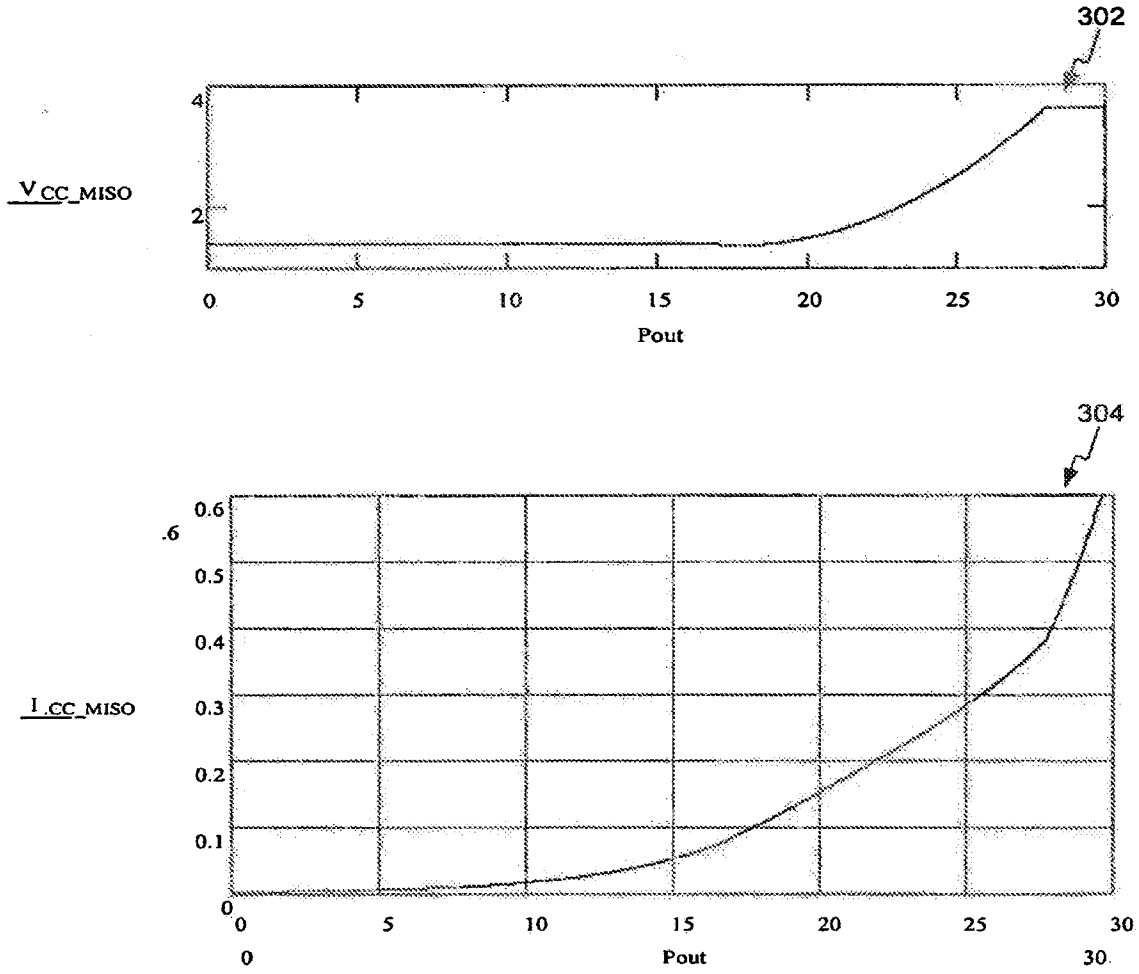



FIG. 3

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400

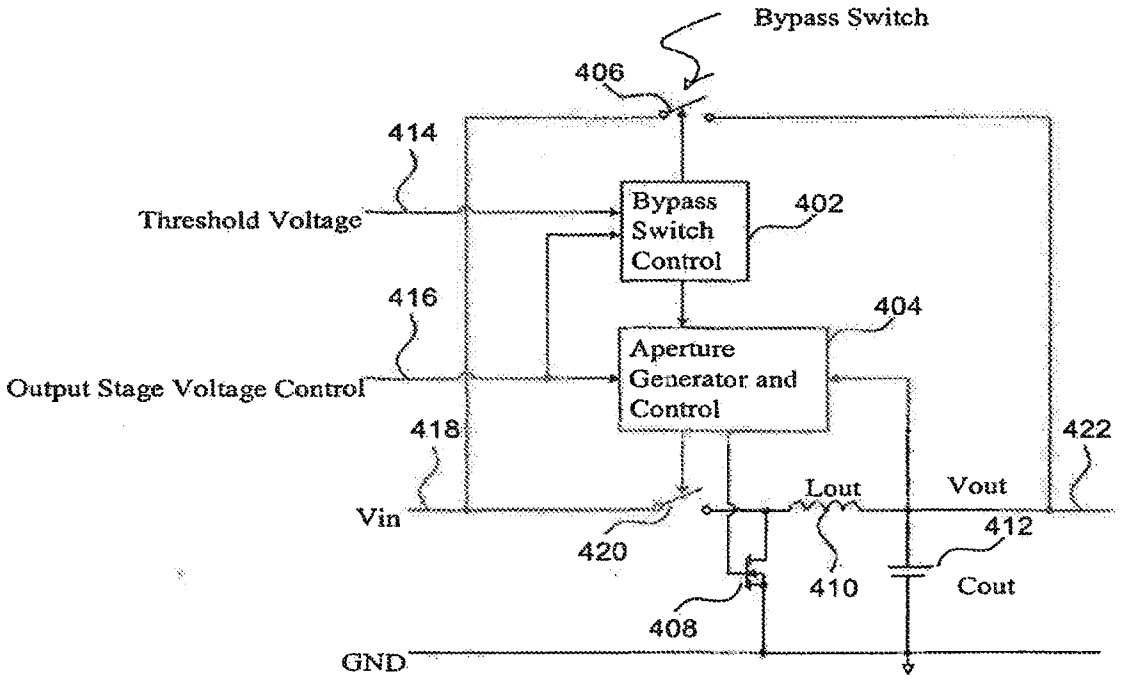



FIG. 4

0702-50.vsd/4

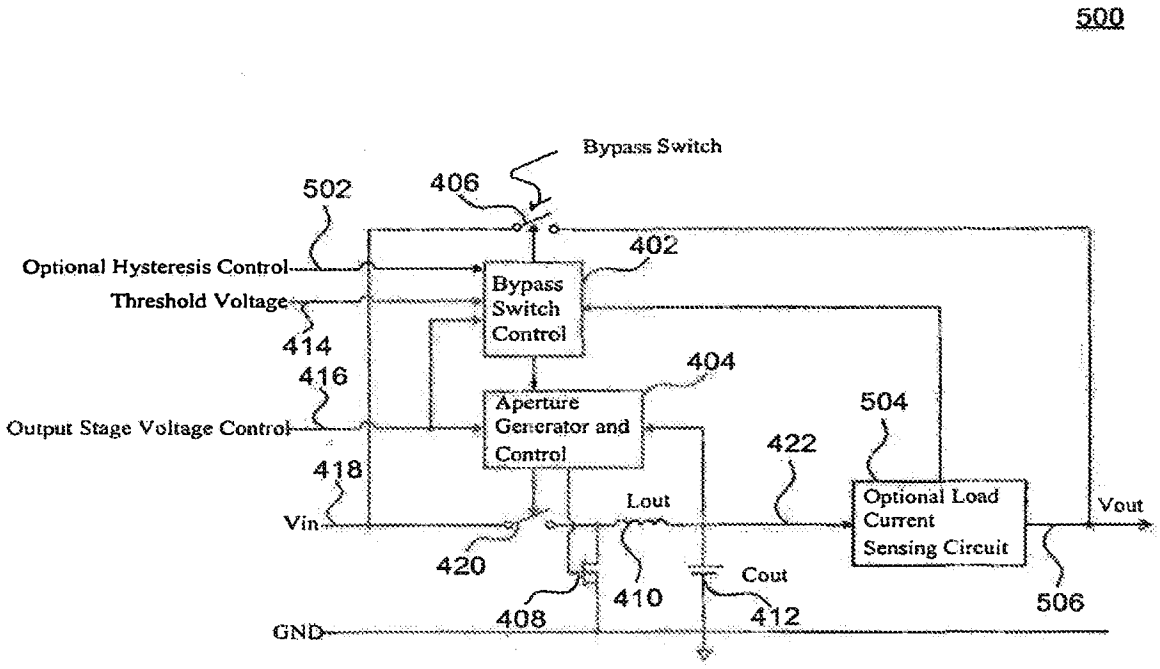



FIG. 5

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600

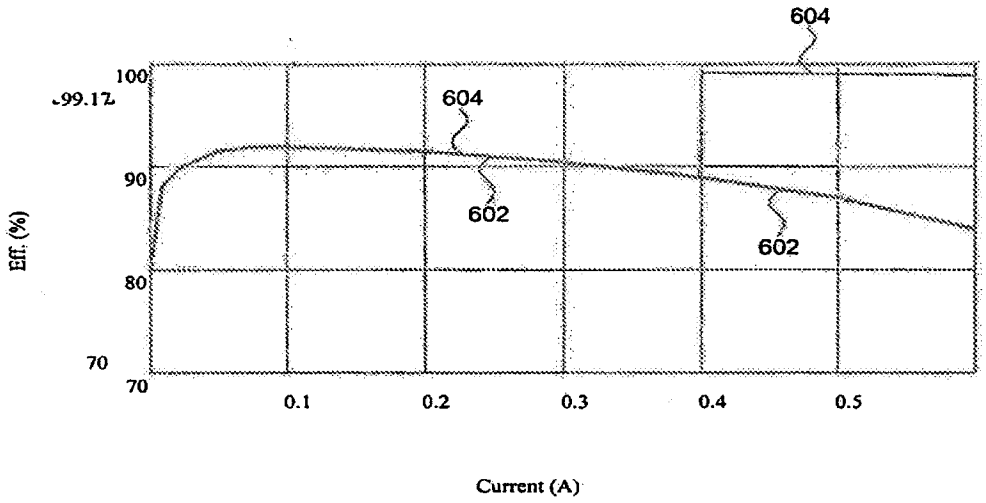



FIG. 6

0702-50.vsd/6

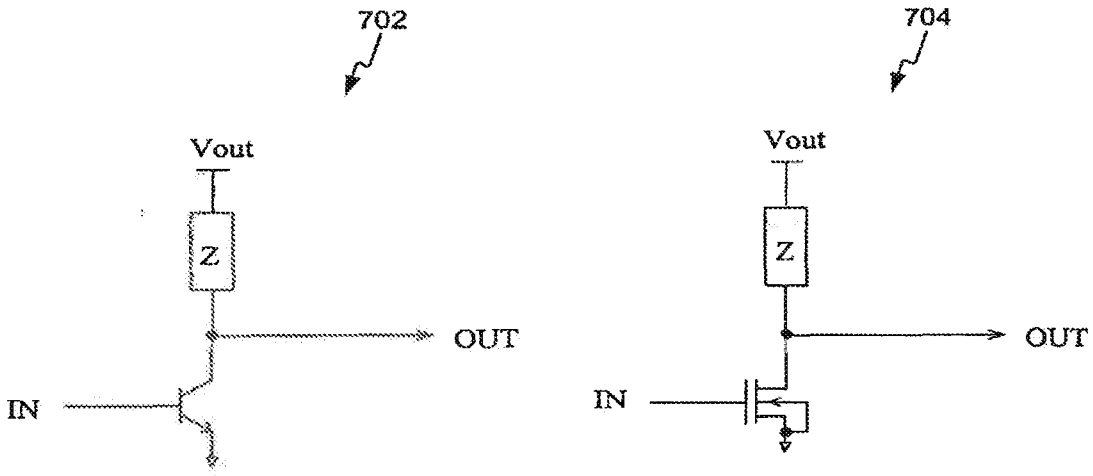



FIG. 7

0702-50.vsd/7

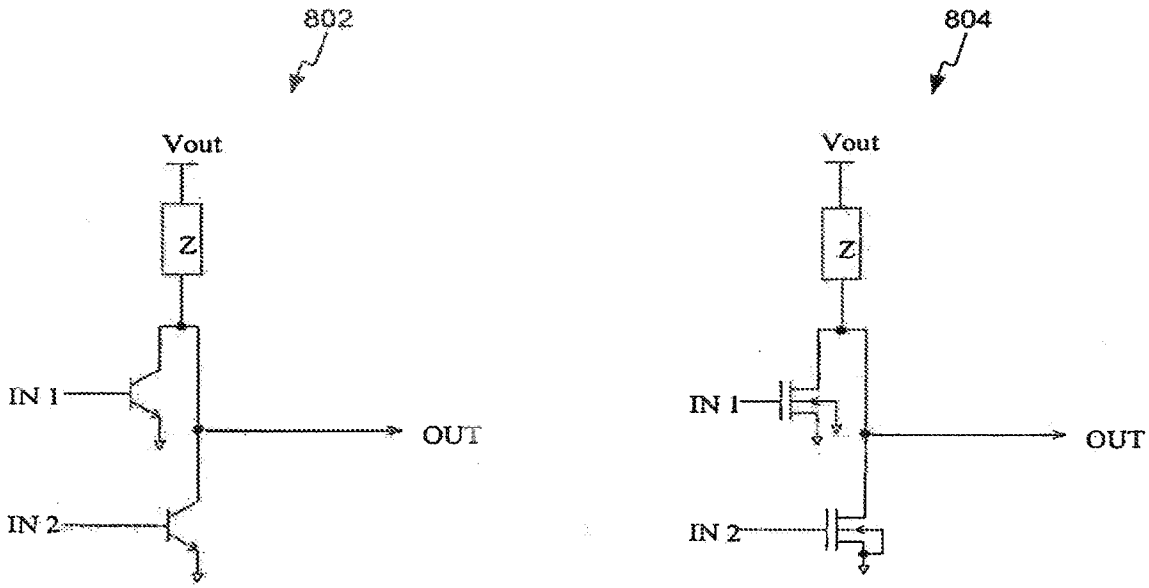



FIG. 8

0702-50.vsd/8

FIGS. 9B-9E form a single drawing and are oriented relative to each other as shown below.

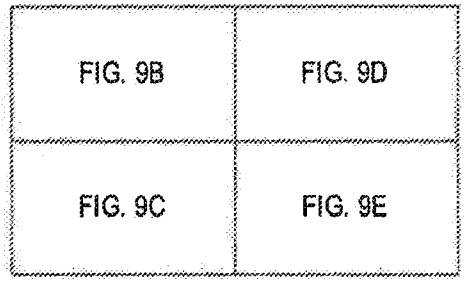



FIG. 9A

0702-50.vsd/9

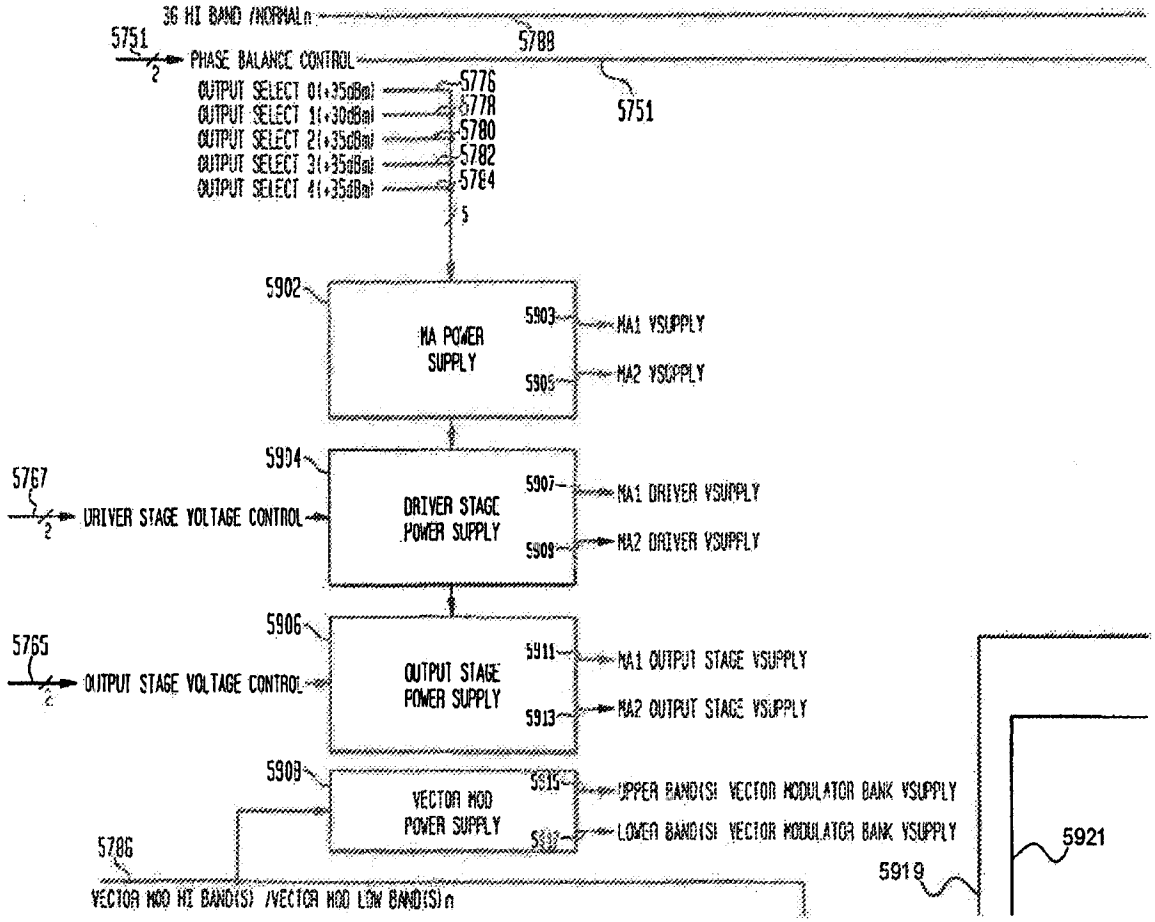



FIG. 9B

0702-50.vsd/10

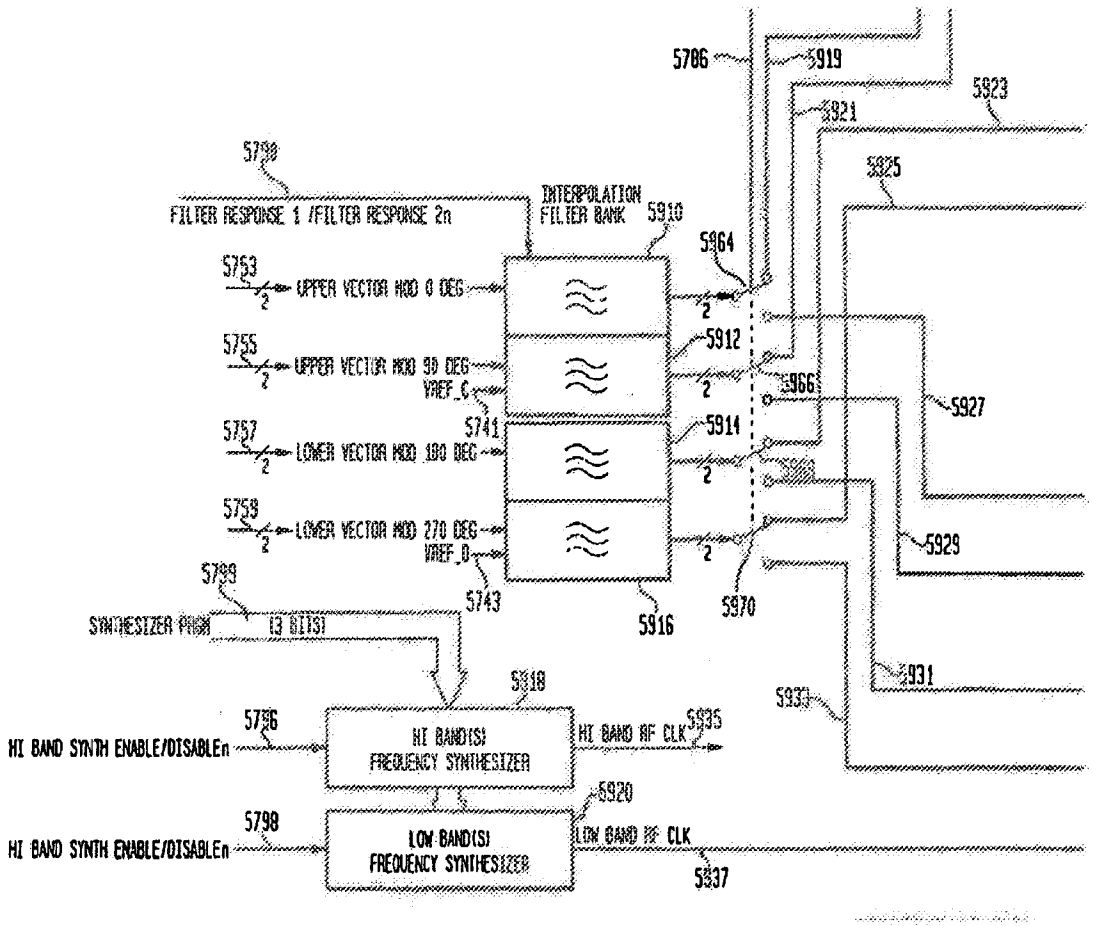



FIG. 9C

0702-50.vsd/11

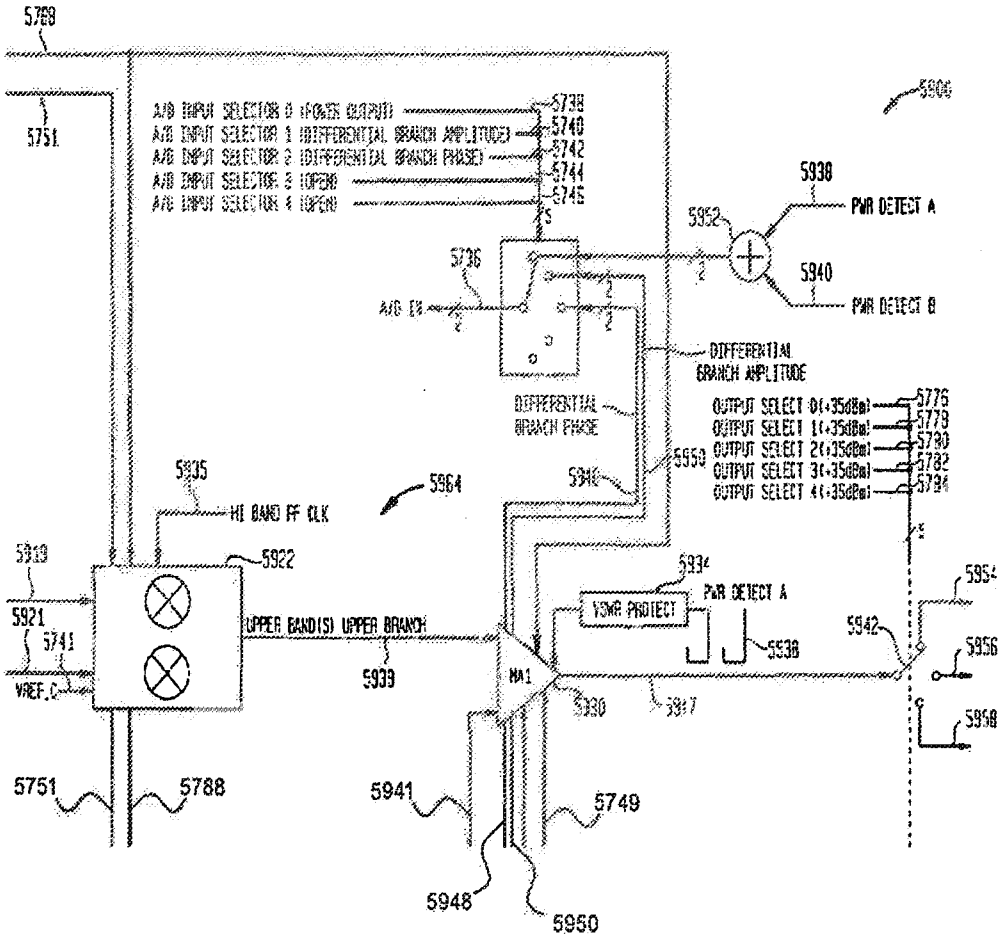



FIG. 9D

0702-50.vsd/12

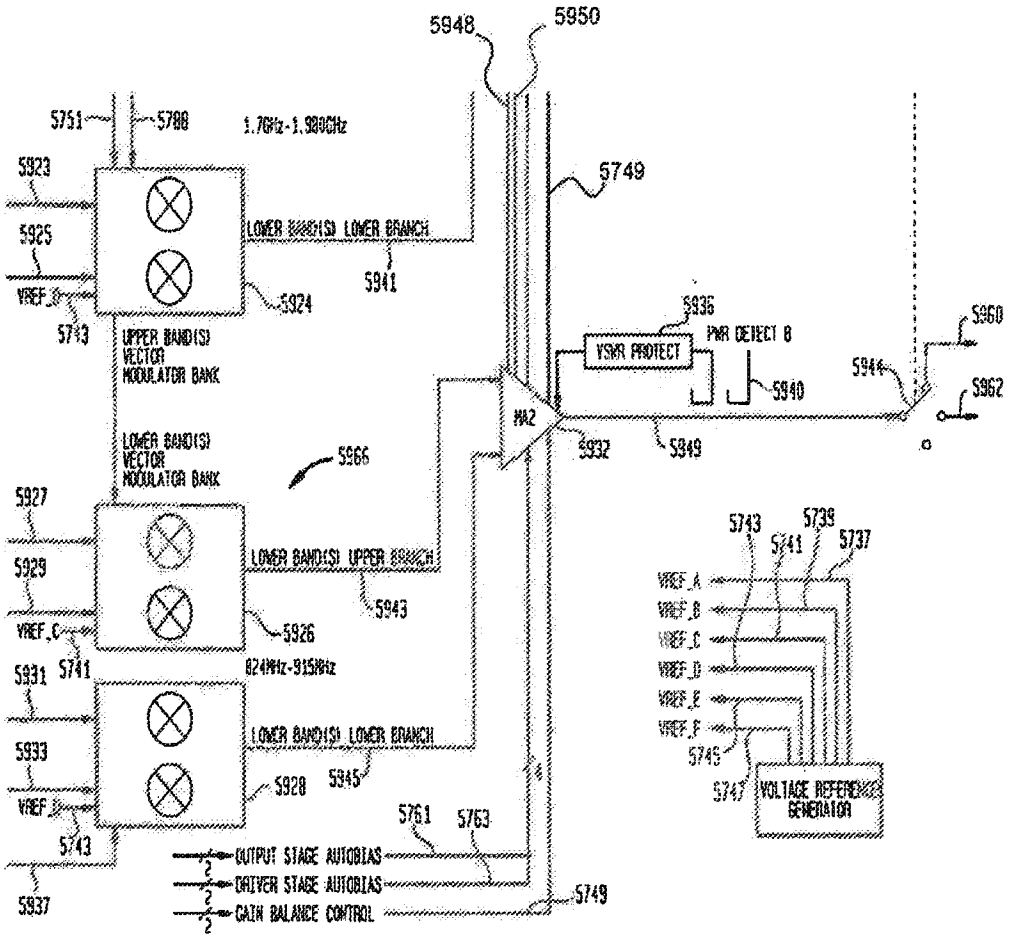



FIG. 9E

0702-50.vsd/13

FIGS. 10B-10E form a single drawing and are oriented relative to each other as shown below.

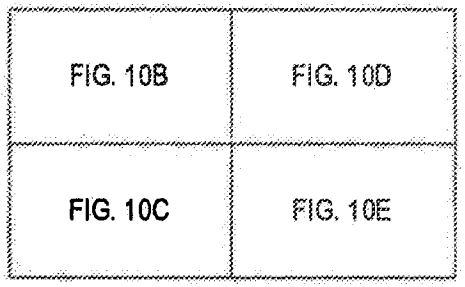



FIG. 10A

0702-50.vsd/14

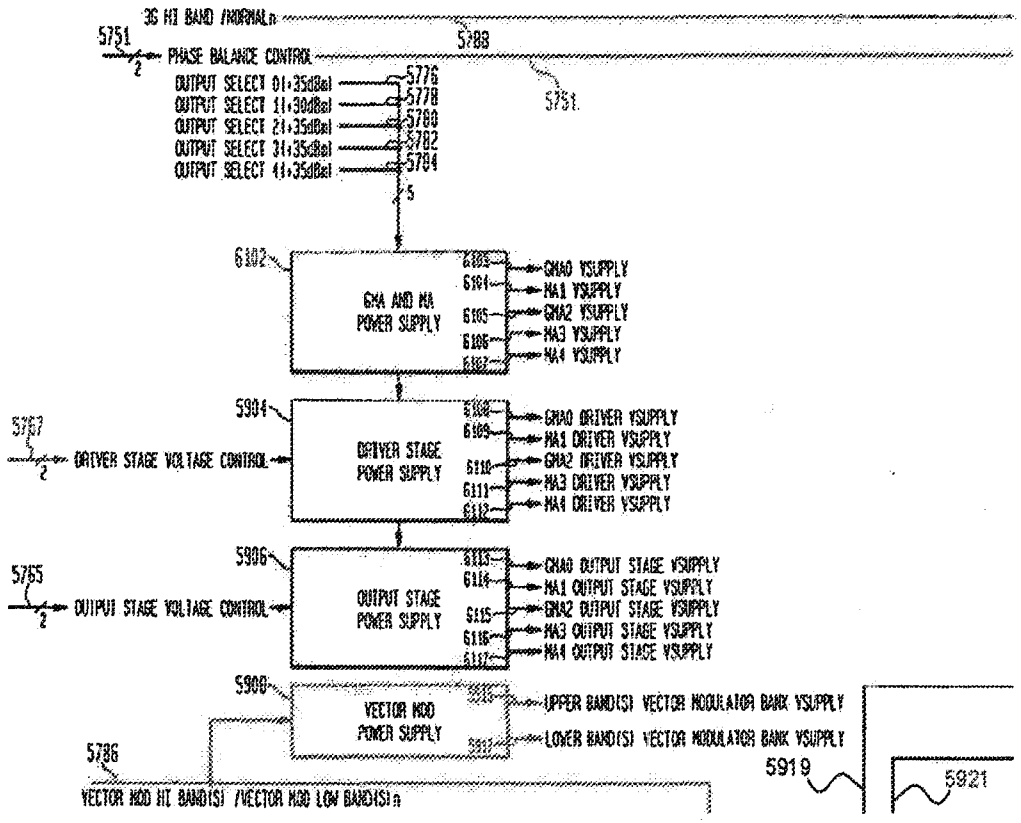



FIG. 10B

0702-50.vsd/15

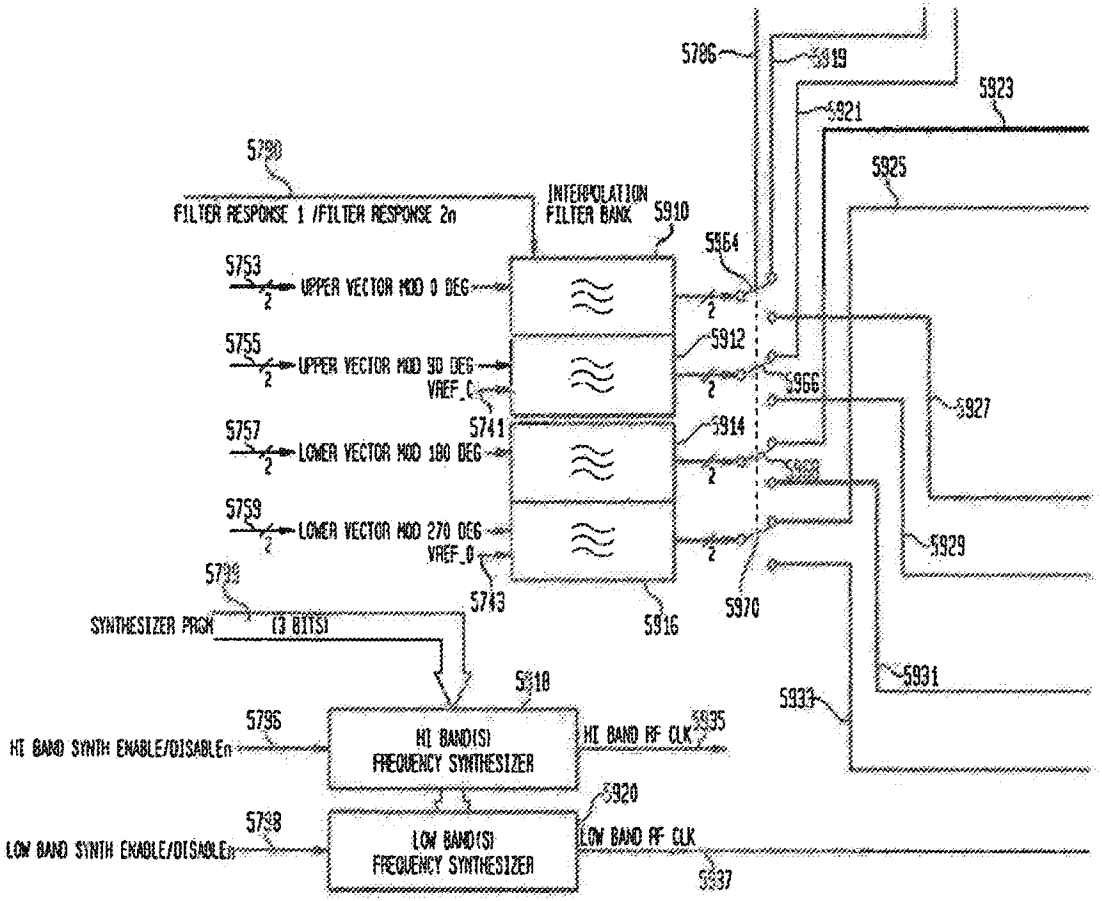



FIG. 10C

0702-50.vsd/16

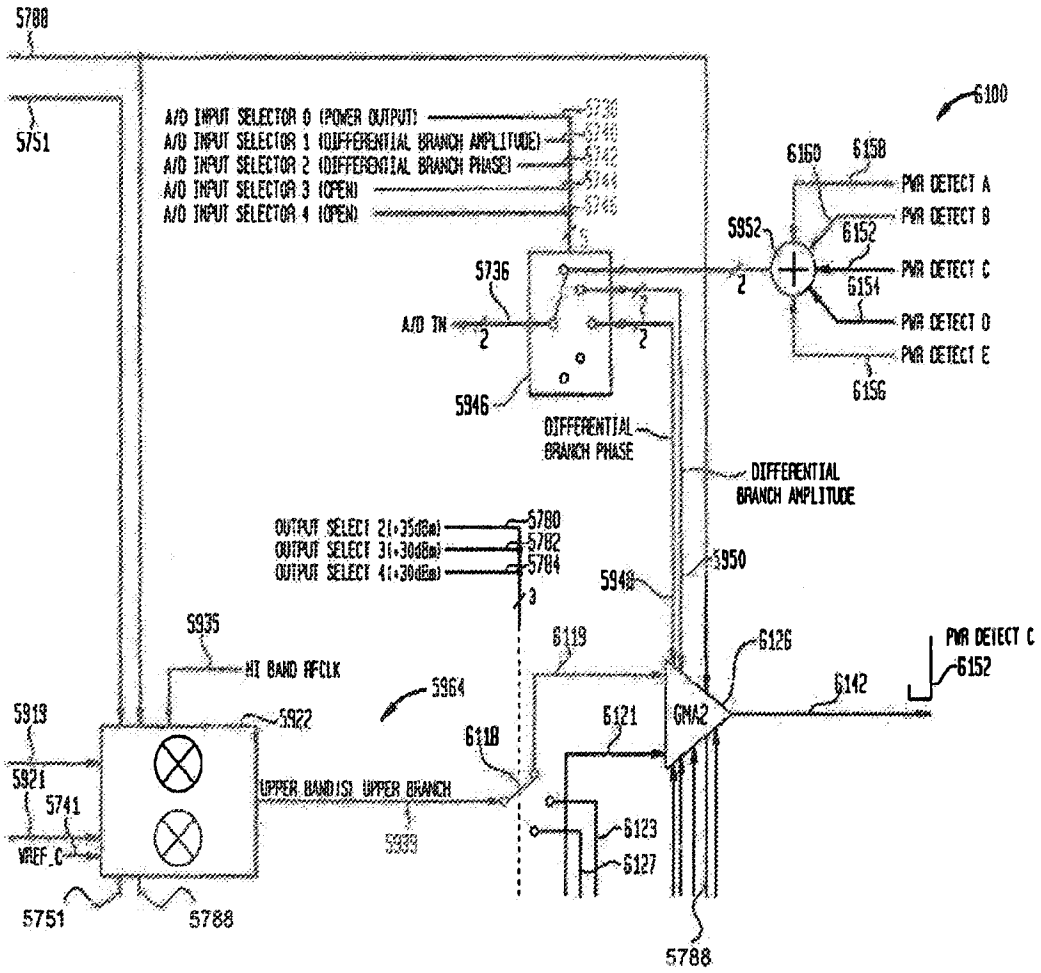



FIG. 10D

0702-50.vsd/17

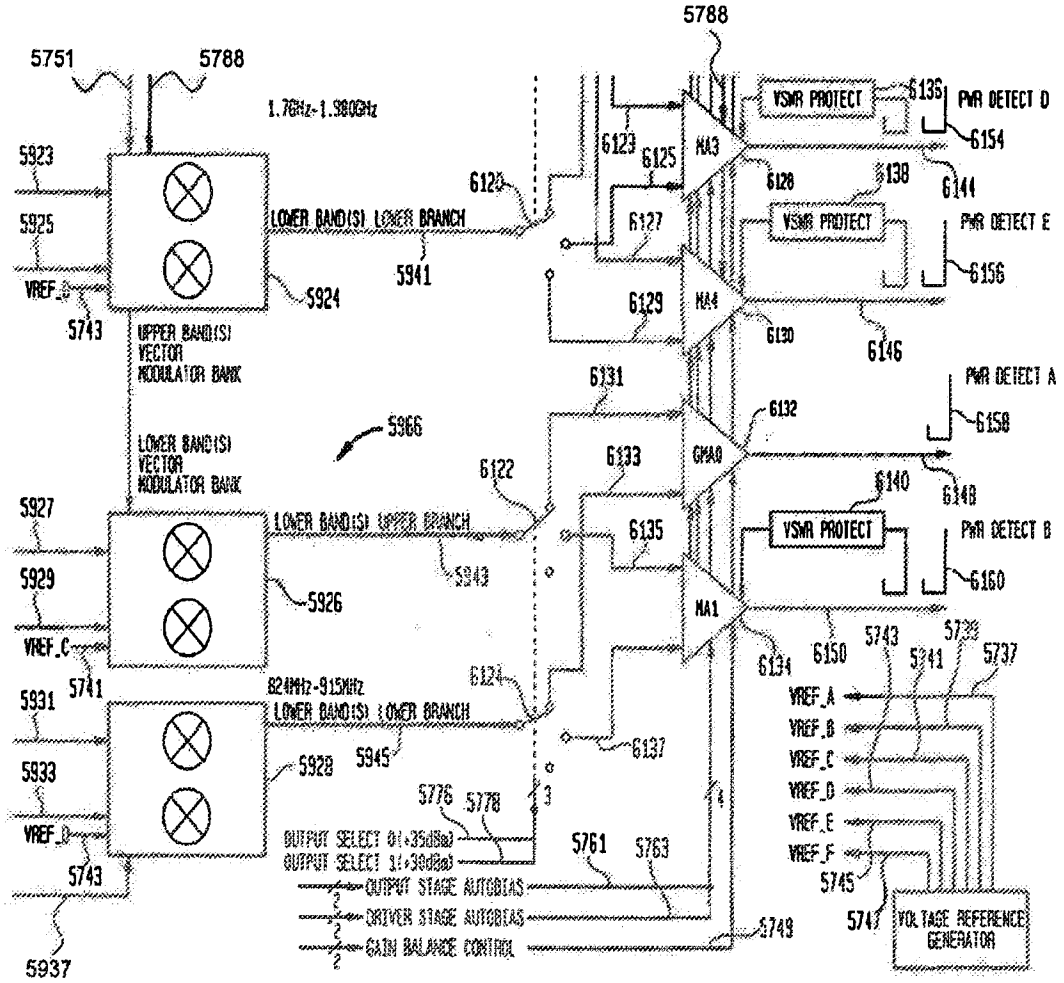



FIG. 10E

0702-50.vsd/18

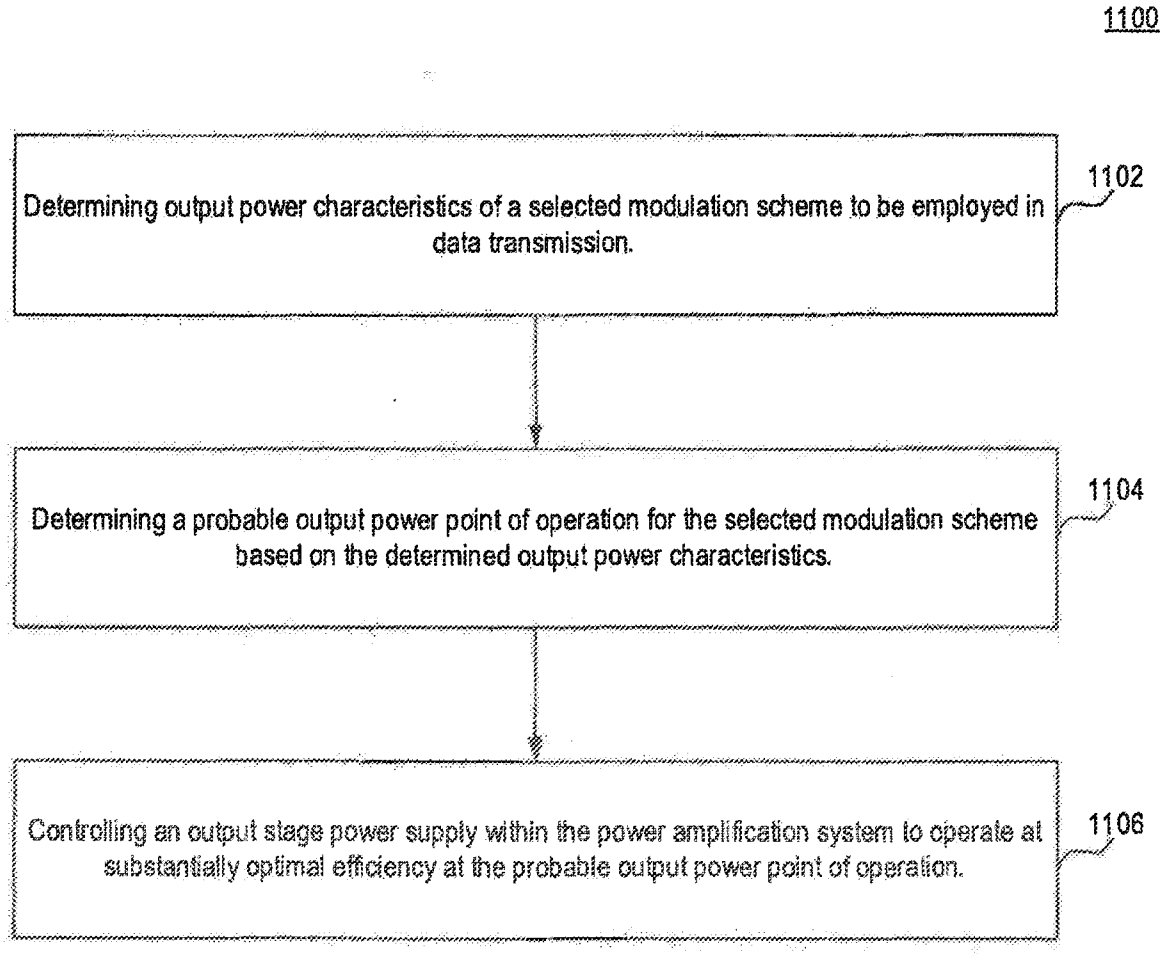



FIG. 11

0702-50.vsd/19

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | |
| **Filing Date:** | |
| **Title of Invention:** | Switching Power Supply |
| **First Named Inventor/Applicant Name:** | Gregory S. SILVER |
| **Filer:** | Christian Andy Camarce/Amy Norris |
| **Attorney Docket Number:** | 1744.2320003 |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| Utility application filing | 1011 | 1 | 380 | 380 |
| Utility Search Fee | 1111 | 1 | 620 | 620 |
| Utility Examination Fee | 1311 | 1 | 250 | 250 |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |
| **Miscellaneous:** | | | | |
| | | | **Total in USD ($)** | **1250** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 13548653 |
| **Application Number:** | 13590876 |
| **International Application Number:** | |
| **Confirmation Number:** | 6335 |
| **Title of Invention:** | Switching Power Supply |
| **First Named Inventor/Applicant Name:** | Gregory S. SILVER |
| **Customer Number:** | 26111 |
| **Filer:** | Christian Andy Camarce/Amy Norris |
| **Filer Authorized By:** | Christian Andy Camarce |
| **Attorney Docket Number:** | 1744.2320003 |
| **Receipt Date:** | 21-AUG-2012 |
| **Filing Date:** | |
| **Time Stamp:** | 16:59:34 |
| **Application Type:** | Utility under 35 USC 111(a) |

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| Submitted with Payment | yes |
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| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
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| 1 | Transmittal Letter | PTOLetter232_3.pdf | 207751<br>b626b98161bdefe640ec4b1b4285b3667423bb36 | no | 2 |
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| 2 | Miscellaneous Incoming Letter | Rescinder232_3.pdf | 101714<br>b6bacb670b89270a6926cdfa8d712096e319b980 | no | 1 |
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| **Information:** | | | | | |
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| 6 | Assignee showing of ownership per 37 CFR 3.73(b). | Statement232_3.pdf | 722335<br>83df86bf30f62e9aacb9106ed552a81e1d46ef22 | no | 5 |
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| | Multipart Description/PDF files in .zip description | | | | |
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| | **Document Description** | **Start** | **End** | | |
| | Specification | 1 | 17 | | |
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| **Information:** | | | | | |
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**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.**

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Sterne Kessler Goldstein Fox
ATTORNEYS AT LAW

August 21, 2012

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Re: U.S. Non-Provisional Utility Patent Application under 37 C.F.R. § 1.53(b)
(*Continuation of Appl. No. 13/347,317; Filed January 10, 2012*)
Appl. No. To Be Assigned; Filed: Herewith
For: **Switching Power Supply**
Inventors: SILVER *et al.*
Our Ref: 1744.2320003

Sir:

The following documents are transmitted herewith for appropriate action by the U.S. Patent and Trademark Office:

1. Utility Patent Application Transmittal Form (PTO/SB/05);

2. Online Credit Card Payment Authorization for $1,250.00 to cover the Patent Application fee (including basic filing, search, and examination fees);

3. Authorization to Treat a Reply As Incorporating An Extension of Time Under 37 C.F.R. § 1.136(a)(3);

4. U.S. Utility Patent Application entitled:

   **Switching Power Supply**

   and naming as inventors:

   **Gregory S. SILVER, David F. SORRELLS and Gregory S. RAWLINS**

   the application consisting of:

   a. An Application Data Sheet (37 C.F.R. § 1.76);

   b. A copy of the executed Declaration, as originally filed in U.S. Appl. No. 13/347,317;

   c. A specification containing:

i. 17 pages of description prior to the claims;

ii. 3 pages of claims (20 claims);

iii. a one (1) page abstract;

d. 19 sheets of drawings: (Figures 1-8, 9A, 9B, 9C, 9D, 9E, 10A, 10B, 10C, 10D, 10E and 11);

5. A copy of the original executed Power of Attorney to Prosecute (PTO/SB/80);

6. Statement under 37 C.F.R. § 3.73(b) with a copy of Assignment attached. The Assignment document was, or concurrently is, submitted for recordation pursuant to 37 C.F.R. § 3.11; and

7. Rescinder of All Disclaimers of Claim Scope.

***The above-listed documents are filed electronically through EFS-Web.***

Fee payment is provided through online credit card payment. The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Christian A. Camarce
Attorney for Applicants
Registration No. 65,021

MQL/CAC/amn
Enclosures

1573042_1.docx

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | |
|---|---|
| In re application of: | Confirmation No.: To Be Assigned |
| SILVER et al. | Art Unit: To Be Assigned |
| Appl. No. To Be Assigned | Examiner: To Be Assigned |
| Filed: Herewith | Atty. Docket No.: 1744.2320003 |
| For: **Switching Power Supply** | |

## Rescinder of All Disclaimers of Claim Scope

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

With respect to the present application, Applicants hereby rescind any disclaimer of claim scope made in the parent application or any predecessor or related application. The Examiner is advised that any previous disclaimer of claim scope, if any in the parent application or any predecessor or related application, and the alleged prior art that it was made to allegedly avoid, may need to be revisited. Also, no disclaimer of claim scope, if any, in the present application should be read back into any parent, predecessor or related application.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Christian A. Camarce
Attorney for Applicants
Registration No. 65,021

Date: August 21, 2012

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

1572272_1.docx

## PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/590,876

### 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 | | | N/A | 380 |
| SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | 620 |
| EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | 250 |
| TOTAL CLAIMS (37 CFR 1.16(i)) | 20 minus 20 = | * | | | OR | x 60 = | 0.00 |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | 3 minus 3 = | * | | | | x 250 = | 0.00 |
| APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | 0.00 |
| MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | 0.00 |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | 1250 |

### 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)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

| | | (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 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)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

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

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

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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www.uspto.gov

| APPLICATION NUMBER | FILING or 371(c) DATE | GRP ART UNIT | FIL FEE REC'D | ATTY.DOCKET.NO | TOT CLAIMS | IND CLAIMS |
|---|---|---|---|---|---|---|
| 13/590,876 | 08/21/2012 | 2115 | 1250 | 1744.2320003 | 20 | 3 |

**CONFIRMATION NO. 6335**

26111
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

**FILING RECEIPT**




Date Mailed: 09/05/2012

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

**Applicant(s)**

Gregory S. SILVER, St. Augustine, FL;
David F. Sorrells, Middleburg, FL;
Gregory S. Rawlins, Heathrow, FL;

**Assignment For Published Patent Application**

ParkerVision, Inc., Jacksonville, FL

**Power of Attorney:** The patent practitioners associated with Customer Number 26111

**Domestic Priority data as claimed by applicant**

This application is a CON of 13/347,317 01/10/2012
which is a CON of 11/979,852 11/08/2007 PAT 8116704
which claims benefit of 60/857,777 11/09/2006

**Foreign Applications** (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

**If Required, Foreign Filing License Granted:** 08/30/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/590,876**

**Projected Publication Date:** 12/13/2012

**Non-Publication Request:** No

**Early Publication Request:** No

**Title**

Switching Power Supply

**Preliminary Class**

713

## PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

## LICENSE FOR FOREIGN FILING UNDER

## Title 35, United States Code, Section 184

## Title 37, Code of Federal Regulations, 5.11 & 5.15

**GRANTED**

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

**NOT GRANTED**

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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

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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|---|---|---|---|
| 13/590,876 | 08/21/2012 | Gregory S. SILVER | 1744.2320003 |

**CONFIRMATION NO. 6335**

26111
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

**POA ACCEPTANCE LETTER**

*OC00000056296771*

Date Mailed: 09/05/2012

## NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/21/2012.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/tnguyen/

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/590,876 | 08/21/2012 | Gregory S. SILVER | 1744.2320003 | 6335 |

26111 7590 10/24/2012

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

| EXAMINER | |
|---|---|
| LE, THANH C | |
| **ART UNIT** | **PAPER NUMBER** |
| 2649 | |
| **MAIL DATE** | **DELIVERY MODE** |
| 10/24/2012 | PAPER |

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

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

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 13/590,876 | SILVER ET AL. | |
| | Examiner | Art Unit | |
| | THANH LE | 2649 | |

*-- 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 *21 August 2012*.

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 _____ 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 _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 8,116,704. Although the conflicting claims are not identical, they are not patentably distinct from each other.

With respect to claims 1-3 and 5-8, claims 1-3 and 5-8 are fully encompassed by Patent claims 1-11 since the Patent claims teach a power supply comprising an aperture generator, a switching device, a control module for controlling (or bypassing) the switching device and a programmable threshold voltage.

With respect to claim 4, since the Patent claims teach the control module for controlling the switching device based on the selected modulation scheme. The use of one of the well-known modulation schemes such GSM would have been obvious one skill in the art.

With respect to claims 9-20, claims 9-20 are corresponding claims of claims 1-8 above; therefore, they are also rejected.

3. Claims 1-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 13-20of U.S. Patent No. 8,285,229.

Although the conflicting claims are not identical, they are not patentably distinct from each other.

With respect to claims 1-3 and 5-8, claims 1-3 and 5-8 are fully encompassed by Patent claims 13-20 since the Patent claims teach a power supply comprising an aperture generator, a switching device, a control module for controlling (or bypassing) the switching device and a programmable threshold voltage.

With respect to claim 4, since the Patent claims teach the control module for controlling the switching device based on the selected modulation scheme. The use of one of the well-known modulation schemes such GSM would have been obvious one skill in the art.

With respect to claims 9-20, claims 9-20 are corresponding claims of claims 1-8 above; therefore, they are also rejected.

***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Earl teaches an RF device employing a power supply with a bypass circuit for controlling RF operation based on the selected modulation scheme.

Hammalainen teach a RF transmitter with bias voltage control process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THANH LE whose telephone number is (571)272-5027. The examiner can normally be reached on 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. 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.

TCL
10/22/12

/Thanh C Le/
Primary Examiner, Art Unit 2649

| Notice of References Cited | Application/Control No. 13/590,876 | Applicant(s)/Patent Under Reexamination SILVER ET AL. | |
|---|---|---|---|
| | Examiner THANH LE | Art Unit 2649 | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|---|---|---|---|---|
| * | A | US-2006/0178121 | 08-2006 | Hamalainen et al. | 455/125 |
| * | B | US-7,245,180 | 07-2007 | Earl et al. | 330/133 |
| | C | US- | | | |
| | D | US- | | | |
| | E | US- | | | |
| | F | US- | | | |
| | G | US- | | | |
| | H | US- | | | |
| | I | US- | | | |
| | J | US- | | | |
| | K | US- | | | |
| | L | US- | | | |
| | M | US- | | | |

**FOREIGN PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | Classification |
|---|---|---|---|---|---|---|
| | 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.

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13590876 | SILVER ET AL. |
| | Examiner | Art Unit |
| | THANH LE | 2649 |

| SEARCHED | | | |
|---|---|---|---|
| Class | Subclass | Date | Examiner |
| 455 | 91, 114.1, 115.1, 126.1, 127.1, 127.4 | 10/22/12 | TL |
| 375 | 295, 296 | 10/22/12 | TL |
| 330 | 129, 133, 279, 282 | 10/22/12 | TL |

| SEARCH NOTES | | |
|---|---|---|
| Search Notes | Date | Examiner |
| EAST (USPTA, USPGPUB) Text Search | 10/22/12 | TL |

| INTERFERENCE SEARCH | | | |
|---|---|---|---|
| Class | Subclass | Date | Examiner |
| | | | |

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13590876 | SILVER ET AL. |
| | **Examiner** | **Art Unit** |
| | THANH LE | 2649 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | 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 | 10/22/2012 | | | | | | | | |
| | 1 | ✓ | | | | | | | | |
| | 2 | ✓ | | | | | | | | |
| | 3 | ✓ | | | | | | | | |
| | 4 | ✓ | | | | | | | | |
| | 5 | ✓ | | | | | | | | |
| | 6 | ✓ | | | | | | | | |
| | 7 | ✓ | | | | | | | | |
| | 8 | ✓ | | | | | | | | |
| | 9 | ✓ | | | | | | | | |
| | 10 | ✓ | | | | | | | | |
| | 11 | ✓ | | | | | | | | |
| | 12 | ✓ | | | | | | | | |
| | 13 | ✓ | | | | | | | | |
| | 14 | ✓ | | | | | | | | |
| | 15 | ✓ | | | | | | | | |
| | 16 | ✓ | | | | | | | | |
| | 17 | ✓ | | | | | | | | |
| | 18 | ✓ | | | | | | | | |
| | 19 | ✓ | | | | | | | | |
| | 20 | ✓ | | | | | | | | |

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | |
|---|---|
| In re application of: | Confirmation No.: 6335 |
| SILVER *et al.* | Art Unit: 2649 |
| Appl. No.: 13/590,876 | Examiner: LE, Thanh C. |
| Filed: August 21, 2012 | Atty. Docket: 1744.2320003 |
| For: **Switching Power Supply** | |

## Reply Under 37 C.F.R. § 1.111

***Mail Stop Amendment***

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Commissioner:

In reply to the Office Action dated October 24, 2012 (PTO File Wrapper No. 20121022), Applicants submit the following Remarks.

It is not believed that extensions of time or fees for net addition of claims are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 19-0036.

## *Status of the Claims*

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (*Original*) A power supply comprising:

a switching device configured to down-convert an input voltage and pass the down-converted input voltage to an output voltage node; and

an aperture generator and control module configured to control the switching device, wherein, in response to a power efficiency of the power supply exceeding a predetermined threshold, the aperture generator and control module deactivates the switching device and passes the input voltage to the output voltage node.

2. (*Original*) The power supply of claim 1, wherein the aperture generator and control module is configured to deactivate the switching device based on a load current at the output voltage node.

3. (*Original*) The power supply of claim 1, wherein the aperture generator and control module is configured to control the switching device based on a probable output power point of operation for a selected modulation scheme based on one or more power efficiency characteristics of an electronic device coupled to the power supply.

4. (*Original*) The power supply of claim 3, wherein the modulation scheme is a GSM, W-CDMA, CDMA 2000, EvDO, EDGE, HSUPA, or OFDM

communication protocol.

5. (*Original*) The power supply of claim 1, wherein the aperture generator and control module is configured to provide an output current at a maximum power efficiency associated with the down-converted input voltage.

6. (*Original*) The power supply of claim 1, wherein the aperture generator and control module is configured to deactivate the switching device and pass the input voltage to the output voltage node based on a comparison of the down-converted input voltage to a threshold voltage.

7. (*Original*) The power supply of claim 6, wherein the threshold voltage is set to a fixed or programmable value.

8. (*Original*) The power supply of claim 6, wherein the threshold voltage is programmed based on a communication waveform efficiency, battery life associated with an electronic device coupled to the power supply, or a combination thereof.

9. (*Original*) A method for controlling a power supply comprising:

down-converting, with a switching device, an input voltage to generate a down-converted voltage;

passing the down-converted voltage to an output voltage node; and

in response to a power efficiency of the power supplying exceeding a predetermined threshold, de-activating the switching device and passing the input voltage to the output voltage node.

10. (*Original*) The method of claim 9, further comprising:

controlling the switching device based on a probable output power point of operation for a selected modulation scheme based on one or more power efficiency characteristics of an electronic device coupled to the power supply.

11. (*Original*) The method of claim 9, further comprising:

providing an output current at a maximum power efficiency associated with the down-converted voltage.

12. (*Original*) The method of claim 9, wherein the de-activating comprises deactivating the switching device and passing the input voltage to the output voltage node comprises comparing the down-converted voltage to a threshold voltage.

13. (*Original*) The method of claim 12, wherein the comparing comprises programming the threshold voltage based on a communication waveform efficiency, battery life associated with an electronic device coupled to the power supply, or a combination thereof.

14. (*Original*) The method of claim 12, wherein the communication waveform efficiency is based on a GSM, W-CDMA, CDMA 2000, EvDO, EDGE,

HSUPA, or OFDM communication protocol.

15. (*Original*) A system comprising:

an electronic device; and

a power supply coupled to the electronic device, wherein the power supply comprises:

a switching device configured to down-convert an input voltage and pass the down-converted input voltage to an output voltage node; and

an aperture generator and control module configured to control the switching device, wherein, in response to a power efficiency of the power supply exceeding a predetermined threshold, the aperture generator and control module deactivates the switching device and passes the input voltage to the output voltage node.

16. (*Original*) The system of claim 15, wherein the electronic device comprises a multiple-input-single-output (MISO) amplifier.

17. (*Original*) The system of claim 15, wherein the electronic device comprises an amplifier with a bipolar junction transistor (BJT), and wherein the power supply is coupled to a collector or an emitter terminal of the BJT.

18. (*Original*) The system of claim 15, wherein the electronic device comprises an amplifier with a metal oxide semiconductor (MOS) transistor, and wherein the power supply is coupled to a drain or a source terminal of the MOSFET.

19. (*Original*) The system of claim 15, wherein the aperture generator and control module is configured to control the switching device based on a probable output power point of operation for a selected modulation scheme based on one or more power efficiency characteristics of an electronic device coupled to the power supply.

20. (*Original*) The system of claim 15, wherein the modulation scheme is a GSM, W-CDMA, CDMA 2000, EvDO, EDGE, HSUPA, or OFDM communication protocol.

## *Remarks*

Reconsideration of this Application is respectfully requested.

Claims 1-20 are pending in the application, with claims 1, 9, and 15 being the independent claims. No claims are sought to be amended, added, or canceled.

Based on the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding rejections and that they be withdrawn.

### *Double Patenting Rejections*

Claims 1-20 are rejected on the ground on nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-11 of U.S. Patent No. 8,116,704 and over claims 13-20 of U.S. Patent No. 8,285,229. *See* Office Action, pp. 3-4.

Applicants submit Terminal Disclaimers concurrently herewith to overcome the obviousness-type double patenting rejections with respect to the claim 1-20. The filing of these Terminal Disclaimers is to expedite prosecution and is not an admission of the propriety of the rejection. *See Quad Environmental Technologies Corp. v. Union Sanitary District*, 946 F.2d 870, 20 USPQ2d 1392 (Fed. Cir. 1991).

Thus, Applicants respectfully request that the Examiner reconsider and withdraw the rejections and pass claims 1-20 to allowance.

## *Conclusion*

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn.

Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Christian A. Camarce
Attorney for Applicants
Registration No. 65,021

Date: DECEMBER 6, 2012

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

MQL/CAC
1605498_1.DOCX

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 13590876 |
| **Filing Date:** | 21-Aug-2012 |
| **Title of Invention:** | Switching Power Supply |
| **First Named Inventor/Applicant Name:** | Gregory S. SILVER |
| **Filer:** | Christian Andy Camarce/Amy Norris |
| **Attorney Docket Number:** | 1744.2320003 |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| Submission- Information Disclosure Stmt | 1806 | 1 | 180 | 180 |
| Statutory or terminal disclaimer | 1814 | 1 | 160 | 160 |
| | | **Total in USD ($)** | | **340** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 14403890 |
| **Application Number:** | 13590876 |
| **International Application Number:** | |
| **Confirmation Number:** | 6335 |
| **Title of Invention:** | Switching Power Supply |
| **First Named Inventor/Applicant Name:** | Gregory S. SILVER |
| **Customer Number:** | 26111 |
| **Filer:** | Christian Andy Camarce/Amy Norris |
| **Filer Authorized By:** | Christian Andy Camarce |
| **Attorney Docket Number:** | 1744.2320003 |
| **Receipt Date:** | 06-DEC-2012 |
| **Filing Date:** | 21-AUG-2012 |
| **Time Stamp:** | 16:39:00 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Credit Card |
| Payment was successfully received in RAM | $340 |
| RAM confirmation Number | 3833 |
| Deposit Account | |
| Authorized User | |

## File Listing:

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

| | | | | | |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | PTOLetter232_3.pdf | 196390<br>8a6c26fcbd4db1a20af7b92af947151af3493172 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Terminal Disclaimer Filed | TD232_3.pdf | 167352<br>f476d36aea06cf0b0870746396f427f8f9e286b9 | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 3 | Transmittal Letter | IDS232_3.pdf | 647697<br>f3c395a5500ba2864bd74b54771dee2f94180c47 | no | 6 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 4 | Information Disclosure Statement (IDS) Form (SB08) | SB08a232_3.pdf | 209136<br>af9aa2b2398226ce55e88e18a728ae62a9cf6249 | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| 5 | Information Disclosure Statement (IDS) Form (SB08) | SB08b232_3.pdf | 147488<br>e41664be87998f2c1d4c24725b1d15416fec0232 | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| 6 | | Reply232_3.pdf | 846477<br>1ee44d1d63cdc437fb147471f0492cf8a34782d7 | yes | 8 |

**Multipart Description/PDF files in .zip description**

| Document Description | Start | End |
|---|---|---|
| Amendment/Req. Reconsideration-After Non-Final Reject | 1 | 1 |
| Claims | 2 | 6 |
| Applicant Arguments/Remarks Made in an Amendment | 7 | 8 |

| | | | | | |
|---|---|---|---|---|---|
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 7 | Fee Worksheet (SB06) | fee-info.pdf | 31610<br>42da43a8aec25dd976c5c19b5127d1e186560eb8 | no | 2 |

| Warnings: | |
|---|---|
| Information: | |
| Total Files Size (in bytes): | 2246150 |

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

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

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

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

**CHRISTIAN A. CAMARCE**
ASSOCIATE
(202) 772-8895
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Sterne Kessler Goldstein Fox
ATTORNEYS AT LAW

December 6, 2012

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

*Confirmation No. 6335*
*Art Unit 2649*
*Attn: Mail Stop Amendment*

Re: U.S. Utility Patent Application
Appl. No. 13/590,876; Filing Date: August 21, 2012
For: **Switching Power Supply**
Inventors: SILVER *et al.*
Our Ref: 1744.2320003

Commissioner:

Transmitted herewith for appropriate action are the following documents:

1. Online Credit Card Payment Authorization in the amount of $340.00 to cover the IDS fee ($180.00) and Terminal Disclaimer to Obviate a Double Patenting Rejection over "Prior" Patents fee ($160.00);
2. Reply Under 37 C.F.R. § 1.111;
3. Terminal Disclaimer To Obviate a Double Patenting Rejection over "Prior" Patents;
4. Information Disclosure Statement;
5. Form PTO/SB/08a (1 sheet) listing 14 documents (US1-US14); and
6. Form PTO/SB/08b (1 sheet) listing 1 document (NPL1).

***The above-listed documents are filed electronically through EFS-Web.***

In the event that extensions of time are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned.

Fee payment is provided through online credit card authorization. The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Christian A. Camarce
Attorney for Applicants
Registration No. 65,021

CAC/amn
Enclosure

1616594_1.docx

| TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER "PRIOR" PATENTS | Docket Number (Optional) 1744.2320003 |
|---|---|

In re Application of: SILVER et al.

Application No.: 13/590,876

Filed: August 21, 2012

For: SWITCHING POWER SUPPLY

The owner*, ParkerVision, Inc., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory terms of **prior patent** Nos. 8,116,704 and 8,285,229 as the terms of said **prior patents** are defined in 35 U.S.C. 154 and 173, and as the terms of said **prior patents** are presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patents** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory terms as defined in 35 U.S.C. 154 and 173 of the **prior patents**, "as the terms of said **prior patents** are presently shortened by any terminal disclaimer," in the event that said **prior patents** later:

expire for failure to pay a maintenance fee;
are held unenforceable;
are found invalid by a court of competent jurisdiction;
are statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
have all claims canceled by a reexamination certificate;
are reissued; or
are in any manner terminated prior to the expiration of their full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ For submissions on behalf of a business/organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the organization.

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.

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 35,239

/ML/ — 12/16/2017

Signature — Date

Michael Q. Lee

Typed or printed name

(202) 772-8674

Telephone Number

☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).

Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | |
|---|---|
| In re application of: | Confirmation No.: 6335 |
| SILVER *et al.* | Art Unit: 2649 |
| Appl. No.: 13/590,876 | Examiner: Thanh C. LE |
| Filed: August 21, 2012 | Atty. Docket: 1744.2320003 |
| For: **Switching Power Supply** | |

# Information Disclosure Statement

***Mail Stop Amendment***

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Commissioner:

Listed on accompanying IDS Forms PTO/SB/08a equivalent and/or PTO/SB/08b equivalent are documents that may be considered material to the patentability of this application as defined in 37 C.F.R. §1.56, and in compliance with the duty of disclosure requirements of 37 C.F.R. §§ 1.97 and 1.98.

Applicants have listed publication dates on the attached IDS Forms based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the date indicated.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may

not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

This statement should not be construed as a representation that a search has been made, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith.

Applicants have checked the appropriate boxes below.

☐ 1. Statement under 37 C.F.R. 1.704(d). Each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in 37 C.F.R. § 1.56(c) more than thirty days prior to the filing of this information disclosure statement.

☐ 2. Filing under 37 C.F.R. § 1.97(b). This Information Disclosure Statement is being filed within three months of the date of filing of a national application other than a continued prosecution application (CPA), OR within three months of the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in an international application, OR before the mailing date of a first Office Action on the merits OR before the mailing of a first Office Action after the filing of a request for continued examination under 37 C.F.R. § 1.114. No statement or fee is required.

☒ 3. Filing under 37 C.F.R. § 1.97(c). This Information Disclosure Statement is being filed more than three months after the U.S. filing date AND after the mailing date

of the first Office Action on the merits, but before the mailing date of a Final Rejection, or Notice of Allowance, or an action that otherwise closes prosecution in the application.

☐ a. Statement under 37 C.F.R. § 1.97(e)(1). I hereby state that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).

☐ b. Statement under 37 C.F.R. § 1.97(e)(2). I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).

☒ c. The required fee is provided through online credit card payment authorization in the amount of $180.00 in payment of the fee under 37 C.F.R. § 1.17(p).

☐ 4. Filing under 37 C.F.R. § 1.97(d) This Information Disclosure Statement is being filed more than three months after the U.S. filing date and after the mailing date of a Final Rejection or Notice of Allowance, but on or before payment of the

Issue Fee. The required fee is provided through online credit card payment authorization in the amount of $____ in payment of the fee under 37 C.F.R. § 1.17(p); in addition:

☐ a. Statement under 37 C.F.R. § 1.97(e)(1). I hereby state that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).

☐ b. Statement under 37 C.F.R. § 1.97(e)(2). I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).

☐ 5. The document(s) was/were cited in a search report by a foreign patent office in a counterpart foreign application. Submission of an English language version of the search report that indicates the degree of relevance found by the foreign office is provided in satisfaction of the requirement for a concise explanation of relevance. 1138 OG 37, 38 and MPEP 609.04(a)(III).

☐ 6. A concise explanation of the relevance of the non-English language document(s) appears below in accordance with 37 C.F.R. § 1.98(a)(3).

☒ 7. In accordance with 37 C.F.R. § 1.98(a)(2), no copies of U.S. patents and patent application publications cited as documents US1-US14 on the attached IDS Forms are submitted.

☒ 8. A copy of document NPL1 was submitted to the Office in an IDS that complies with 37 C.F.R. § 1.98(a)-(c) in Application No. 11/979,852, filed November 8, 2007, which is relied upon for an earlier filing date under 35 U.S.C. § 120. Thus, a copy of this document is not attached. 37 C.F.R. § 1.98(d).

☒ 9. It is expected that the examiner will review the prosecution and cited art in the parent application nos. 13/347,717, filed January 10, 2012 (now Pat. No. 8,285,229), and 11/979,852, filed November 8, 2007 (now Pat. No. 8,116,704), in accordance with MPEP 2001.06(b), and indicate in the next communication from the office that the art cited in the earlier prosecution history has been reviewed in connection with the present application.

☐ 10. In accordance with the Federal Circuit decision in *Dayco Prods., Inc. v. Total Containment, Inc.* 329 F.3d 1358 (Fed. Cir. 2003), Applicants submit herewith Office Actions from the co-pending U.S. Patent Application No._____, filed _____, as documents _____ to _____. The identification of these Office Actions is not to be construed as a waiver of secrecy as to those applications now or upon issuance of the present application as a

patent. The Examiner is respectfully requested to consider the cited applications and the art cited therein during examination.

It is respectfully requested that the Examiner initial and return a copy of the enclosed IDS Forms, and indicate in the official file wrapper of this patent application that the documents have been considered.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Christian A. Camarce
Attorney for Applicants
Registration No. 65,021

Date: December 6, 2012

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

1617299_1.DOCX

| Substitute for form 1449/PTO | | | | *Complete if Known* | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** *(Use as many sheets as necessary)* | | | | Application Number | 13/590,876 |
| | | | | Filing Date | August 21, 2012 |
| | | | | First Named Inventor | Gregory S. SILVER |
| | | | | Art Unit | 2649 |
| | | | | Examiner Name | Le, Thanh C. |
| Sheet | 1 | of | 1 | Attorney Docket Number | 1744.2320003 |

**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] |
|---|---|---|---|
| | NPL1 | International Search Report for PCT/US2007/023461, dated June 18, 2008, 10 pp. | |
| | NPL2 | | |
| | NPL3 | | |
| | NPL4 | | |
| | NPL5 | | |
| | NPL6 | | |
| | NPL7 | | |
| | NPL8 | | |
| | NPL9 | | |
| | NPL10 | | |

1617290_1.DOCX

| Examiner Signature | | Date Considered | |
|---|---|---|---|

*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.

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

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 | 13/590,876 |
| Filing Date | August 21, 2012 |
| First Named Inventor | Gregory S. SILVER |
| Art Unit | 2649 |
| Examiner Name | Le, Thanh C. |
| Attorney Docket Number | 1744.2320003 |

## U.S. PATENT DOCUMENTS

| Examiner initials* | Cite No.[1] | Document Number Number-Kind Code[2] (if known) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | US1 | 7,047,032 B2 | 05-16-2006 | Yun | |
| | US2 | 7,184,723 B2 | 02-27-2007 | Sorrells *et al.* | |
| | US3 | 7,355,470 B2 | 04-08-2008 | Sorrells *et al.* | |
| | US4 | 8,116,697 B2 | 02-14-2012 | Gates *et al.* | |
| | US5 | 8,116,704 B2 | 02-14-2012 | Silver *et al.* | |
| | US6 | 8,285,229 B2 | 10-09-2012 | Silver *et al.* | |
| | US7 | 2004/0203992 A1 | 10-14-2004 | Yun | |
| | US8 | 2005/0007083 A1 | 01-13-2005 | Yang *et al.* | |
| | US9 | 2005/0025254 A1 | 02-03-2005 | Awad *et al.* | |
| | US10 | 2005/0141251 A1 | 06-30-2005 | Allwyn *et al.* | |
| | US11 | 2005/0162142 A1 | 07-28-2005 | Kemahan *et al.* | |
| | US12 | 2006/0001410 A1 | 01-05-2006 | Ishikawa *et al.* | |
| | US13 | 2006/0022656 A1 | 02-02-2006 | Leung *et al.* | |
| | US14 | 2006/0104384 A1 | 05-18-2006 | Sorrells *et al.* | |
| | US15 | | | | |
| | US16 | | | | |
| | US17 | | | | |
| | US18 | | | | |
| | US19 | | | | |
| | US20 | | | | |

## FOREIGN PATENT DOCUMENTS

| Examiner initials* | Cite No.[1] | Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | FP1 | | | | | |
| | FP2 | | | | | |
| | FP3 | | | | | |
| | FP4 | | | | | |
| | FP5 | | | | | |
| | FP6 | | | | | |
| | FP7 | | | | | |
| | FP8 | | | | | |

*1610200_1.DOCX*

| Examiner Signature | | Date Considered | |
|---|---|---|---|

*EXAMINER: Initial if reference considered, whether or notcitation 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. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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.

| **PATENT APPLICATION FEE DETERMINATION RECORD**<br>Substitute for Form PTO-875 | Application or Docket Number<br>13/590,876 | Filing Date<br>08/21/2012 | ☐ To be Mailed |
|---|---|---|---|

## APPLICATION AS FILED – PART I

| | (Column 1) | (Column 2) | SMALL ENTITY ☐ | | OR | OTHER THAN SMALL ENTITY | |
|---|---|---|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | RATE ($) | FEE ($) | | RATE ($) | FEE ($) |
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT | 12/06/2012 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * 20 | Minus | ** 20 | = 0 | X $ = | | OR | X $62= | 0 |
| | Independent (37 CFR 1.16(h)) | * 3 | Minus | ***3 | = 0 | X $ = | | OR | X $250= | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 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)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

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

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

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

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

Legal Instrument Examiner:
/DESHONNE T. MARTINO/

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

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

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 NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|---|---|---|---|
| 13/590,876 | 08/21/2012 | Gregory S. SILVER | 1744.2320003 |

**CONFIRMATION NO. 6335**

26111
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

**PUBLICATION NOTICE**

*OC00000058141317*

**Title:**Switching Power Supply

**Publication No.**US-2012-0313713-A1
**Publication Date:**12/13/2012

## 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.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

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

| Application Number | Application/Control No. | Applicant(s)/Patent under Reexamination | |
|---|---|---|---|
| | 13/590,876 | SILVER ET AL. | |
| | | | |

| Document Code - DISQ | Internal Document – DO NOT MAIL |
|---|---|

| TERMINAL DISCLAIMER | ☒ APPROVED | ☐ DISAPPROVED |
|---|---|---|
| Date Filed : 12/6/12 | This patent is subject to a Terminal Disclaimer | |

**Approved/Disapproved by:**

Felicia D. Roberts

8,116,704 and 8,285,229

U.S. Patent and Trademark Office

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# NOTICE OF ALLOWANCE AND FEE(S) DUE

26111 7590 03/25/2013

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

| EXAMINER |
|---|
| LE, THANH C |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2649 | |

DATE MAILED: 03/25/2013

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/590,876 | 08/21/2012 | Gregory S. SILVER | 1744.2320003 | 6335 |

TITLE OF INVENTION: Switching Power Supply

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $1780 | $300 | $0 | $2080 | 06/25/2013 |

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

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

**HOW TO REPLY TO THIS NOTICE:**

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

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

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

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

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

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

**IMPORTANT REMINDER: 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)

26111 7590 03/25/2013
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

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. |
|---|---|---|---|---|
| 13/590,876 | 08/21/2012 | Gregory S. SILVER | 1744.2320003 | 6335 |

TITLE OF INVENTION: Switching Power Supply

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $1780 | $300 | $0 | $2080 | 06/25/2013 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|---|---|---|
| LE, THANH C | 2649 | 455-127100 |

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 (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)

| | |
|---|---|
| ❑ Applicant certifying micro entity status. See 37 CFR 1.29 | NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. |
| ❑ Applicant asserting small entity status. See 37 CFR 1.27 | NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status. |
| ❑ Applicant changing to regular undiscounted fee status. | NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable. |

NOTE: 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 DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/590,876 | 08/21/2012 | Gregory S. SILVER | 1744.2320003 | 6335 |

26111 7590 03/25/2013

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

| EXAMINER | |
|---|---|
| LE, THANH C | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2649 | |

DATE MAILED: 03/25/2013

**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 0 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 0 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.

| Notice of Allowability | Application No. | Applicant(s) | |
|---|---|---|---|
| | 13/590,876 | SILVER ET AL. | |
| | Examiner | Art Unit | |
| | THANH LE | 2649 | |

*-- 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 *12/6/12*.

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 *1-20*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

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

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

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

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

**Attachment(s)**

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

/Thanh C Le/
Primary Examiner, Art Unit 2649

# Issue Classification

| Application/Control No. | Applicant(s)/Patent Under Reexamination |
| --- | --- |
| 13590876 | SILVER ET AL. |
| **Examiner** | **Art Unit** |
| THANH LE | 2649 |

**CPC**

| Symbol | | | | Type | Version |
| --- | --- | --- | --- | --- | --- |
| H03F | 3 | / | 24 | F | 20130101 |
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**CPC Combination Sets**

| Symbol | | | | Type | Set | Ranking | Version |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | / | | | | | |
| | | / | | | | | |

**US ORIGINAL CLASSIFICATION**

| CLASS | SUBCLASS |
| --- | --- |
| 455 | 127.1 |

**CROSS REFERENCE(S)**

| CLASS | SUBCLASS (ONE SUBCLASS PER BLOCK) | | | | |
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**INTERNATIONAL CLASSIFICATION**

| CLAIMED | | | | | NON-CLAIMED | | | | |
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| H | 0 | 4 | B | 1 / 04 (2006.01.01) | | | | | |
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| NONE<br><br>(Assistant Examiner) (Date) | **Total Claims Allowed:**<br>20 | |
| /THANH LE/<br>Primary Examiner.Art Unit 2649 3/20/13<br><br>(Primary Examiner) (Date) | O.G. Print Claim(s)<br>1 | O.G. Print Figure<br>4 |

U.S. Patent and Trademark Office

Part of Paper No. 20130320

| Issue Classification | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13590876 | SILVER ET AL. |
| | **Examiner** | **Art Unit** |
| | THANH LE | 2649 |

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| NONE | | **Total Claims Allowed:** | |
| (Assistant Examiner) | (Date) | 20 | |
| /THANH LE/<br>Primary Examiner.Art Unit 2649 | 3/20/13 | O.G. Print Claim(s) | O.G. Print Figure |
| (Primary Examiner) | (Date) | 1 | 4 |

| Issue Classification | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13590876 | SILVER ET AL. |
| | **Examiner** | **Art Unit** |
| | THANH LE | 2649 |

☒ 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 |
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|---|---|---|---|
| NONE<br><br>(Assistant Examiner) | (Date) | **Total Claims Allowed:**<br>20 | |
| /THANH LE/<br>Primary Examiner.Art Unit 2649<br><br>(Primary Examiner) | 3/20/13<br><br>(Date) | O.G. Print Claim(s)<br>1 | O.G. Print Figure<br>4 |

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

# BIB DATA SHEET

**CONFIRMATION NO. 6335**

| SERIAL NUMBER | FILING or 371(c) DATE<br>RULE | CLASS | GROUP ART UNIT | ATTORNEY DOCKET NO. |
|---|---|---|---|---|
| 13/590,876 | 08/21/2012 | 455 | 2649 | 1744.2320003 |

**APPLICANTS**

INV001Gregory S. SILVER, St. Augustine, FL;
INV002David F. Sorrells, Middleburg, FL;
INV003Gregory S. Rawlins, Heathrow, FL;

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

This application is a CON of 13/347,317 01/10/2012 PAT 8285229
which is a CON of 11/979,852 11/08/2007 PAT 8116704
which claims benefit of 60/857,777 11/09/2006

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

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

08/30/2012

| Foreign Priority claimed ☐ Yes ☑ No<br>35 USC 119(a-d) conditions met ☐ Yes ☑ No<br>Verified and Acknowledged /THANH C LE/ Examiner's Signature | ☐ Met after Allowance<br>TL Initials | STATE OR COUNTRY | SHEETS DRAWINGS | TOTAL CLAIMS | INDEPENDENT CLAIMS |
|---|---|---|---|---|---|
| | | FL | 19 | 20 | 3 |

**ADDRESS**

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005
UNITED STATES

**TITLE**

Switching Power Supply

| FILING FEE RECEIVED | | |
|---|---|---|
| 1250 | FEES: Authority has been given in Paper<br>No._____ to charge/credit DEPOSIT ACCOUNT<br>No._____ for following: | ☐ All Fees<br>☐ 1.16 Fees (Filing)<br>☐ 1.17 Fees (Processing Ext. of time)<br>☐ 1.18 Fees (Issue)<br>☐ Other _____<br>☐ Credit |

BIB (Rev. 05/07).

**EAST Search History**

**EAST Search History (Interference)**

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L5 | 23 | ((aperture same (power near2 supply)) and (voltage same switch$4)).clm. | US-PGPUB; UPAD | OR | ON | 2013/03/20 16:17 |

**3/20/2013 4:20:55 PM**
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| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13590876 | SILVER ET AL. |
| | Examiner | Art Unit |
| | THANH LE | 2649 |

| CPC- SEARCHED | | |
|---|---|---|
| Symbol | Date | Examiner |
| H03fF3/24 | 3/20/13 | TL |

| CPC COMBINATION SETS - SEARCHED | | |
|---|---|---|
| Symbol | Date | Examiner |
| | | |

| US CLASSIFICATION SEARCHED | | | |
|---|---|---|---|
| Class | Subclass | Date | Examiner |
| 455 | 91, 114.1, 115.1, 126.1, 127.1, 127.4 | 10/22/12 | TL |
| 375 | 295, 296 | 10/22/12 | TL |
| 330 | 129, 133, 279, 282 | 10/22/12 | TL |
| Updated | | 3/20/13 | TL |

| SEARCH NOTES | | |
|---|---|---|
| Search Notes | Date | Examiner |
| EAST (USPTA, USPGPUB) Text Search | 10/22/12 | TL |

| INTERFERENCE SEARCH | | | |
|---|---|---|---|
| US Class/ CPC Symbol | US Subclass / CPC Group | Date | Examiner |
| | See the Attachment | 3/24/13 | TL |

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. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/590,876 | 08/21/2012 | Gregory S. SILVER | 1744.2320003 | 6335 |

26111 7590 04/04/2013

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

| EXAMINER | |
|---|---|
| LE, THANH C | |
| **ART UNIT** | **PAPER NUMBER** |
| 2649 | |
| **MAIL DATE** | **DELIVERY MODE** |
| 04/04/2013 | PAPER |

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

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

| Supplemental Notice of Allowability | Application No. 13/590,876 | Applicant(s) SILVER ET AL. | |
|---|---|---|---|
| | Examiner THANH LE | Art Unit 2649 | AIA (First Inventor to File) Status No |

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

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

1. ☒ This communication is responsive to *12/6/12*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-20*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   **Certified copies:**

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

   * Certified copies not received: _____.

   **Interim copies:**

   a) ☐ All b) ☐ Some c) ☐ None of the: Interim copies of the priority documents have been received.

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

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

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

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 12/6/12
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/Thanh C Le/
Primary Examiner, Art Unit 2649

Equivalent of Form PTO/SB/08a (07-09)

Substitute for form 1449/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

*(Use as many sheets as necessary)*

| Sheet | 1 | of | 1 |
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| *Complete if Known* | |
|---|---|
| Application Number | 13/590,876 |
| Filing Date | August 21, 2012 |
| First Named Inventor | Gregory S. SILVER |
| Art Unit | 2649 |
| Examiner Name | Le, Thanh C. |
| Attorney Docket Number | 1744.2320003 |

## U.S. PATENT DOCUMENTS

| Examiner initials* | Cite No.[1] | Document Number Number-Kind Code[2] (if known) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|
| | US1 | 7,047,032 B2 | 05-16-2006 | Yun | |
| | US2 | 7,184,723 B2 | 02-27-2007 | Sorrells *et al.* | |
| | US3 | 7,355,470 B2 | 04-08-2008 | Sorrells *et al.* | |
| | US4 | 8,116,697 B2 | 02-14-2012 | Gates *et al.* | |
| | US5 | 8,116,704 B2 | 02-14-2012 | Silver *et al.* | |
| | US6 | 8,285,229 B2 | 10-09-2012 | Silver *et al.* | |
| | US7 | 2004/0203992 A1 | 10-14-2004 | Yun | |
| | US8 | 2005/0007083 A1 | 01-13-2005 | Yang *et al.* | |
| | US9 | 2005/0025254 A1 | 02-03-2005 | Awad *et al.* | |
| | US10 | 2005/0141251 A1 | 06-30-2005 | Allwyn *et al.* | |
| | US11 | 2005/0162142 A1 | 07-28-2005 | Kernahan *et al.* | |
| | US12 | 2006/0001410 A1 | 01-05-2006 | Ishikawa *et al.* | |
| | US13 | 2006/0022656 A1 | 02-02-2006 | Leung *et al.* | |
| | US14 | 2006/0104384 A1 | 05-18-2006 | Sorrells *et al.* | |
| | US15 | | | | |
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## FOREIGN PATENT DOCUMENTS

| Examiner initials* | Cite No.[1] | Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (if known) | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T[6] |
|---|---|---|---|---|---|---|
| | FP1 | | | | | |
| | FP2 | | | | | |
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| | FP7 | | | | | |
| | FP8 | | | | | |

*1610200_1.DOCX*

| Examiner Signature | /Thanh Le/ | Date Considered | 12/13/2012 |
|---|---|---|---|

*EXAMINER: Initial if reference considered, whether or notcitation 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. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.L./

Equivalent of Form PTO/SB/08B (7-09)

| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** *(Use as many sheets as necessary)* | | | | Application Number | 13/590,876 |
| | | | | Filing Date | August 21, 2012 |
| | | | | First Named Inventor | Gregory S. SILVER |
| | | | | Art Unit | 2649 |
| | | | | Examiner Name | Le, Thanh C. |
| Sheet | 1 | of | 1 | Attorney Docket Number | 1744.2320003 |

**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] |
|---|---|---|---|
| | NPL1 | International Search Report for PCT/US2007/023461, dated June 18, 2008, 10 pp. | |
| | NPL2 | | |
| | NPL3 | | |
| | NPL4 | | |
| | NPL5 | | |
| | NPL6 | | |
| | NPL7 | | |
| | NPL8 | | |
| | NPL9 | | |
| | NPL10 | | |

1617290_1.DOCX

| Examiner Signature | /Thanh Le/ | Date Considered | 12/13/2012 |
|---|---|---|---|

*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.

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

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.L./

## 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)

26111 7590 03/25/2013
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

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. |
|---|---|---|---|---|
| 13/590,876 | 08/21/2012 | Gregory S. SILVER | 1744.2320003 | 6335 |

TITLE OF INVENTION: Switching Power Supply

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $1780 | $300 | $0 | $2080 | 06/25/2013 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|---|---|---|
| LE, THANH C | 2649 | 455-127100 |

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 STERNE, KESSLER,
2 **GOLDSTEIN & FOX PLLC**
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: **ParkerVision, Inc.**

(B) RESIDENCE: (CITY and STATE OR COUNTRY): **Jacksonville, Florida**

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 [redacted] (enclose an extra copy of this form).

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

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

☐ Applicant asserting small entity status. See 37 CFR 1.27

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

☐ Applicant changing to regular undiscounted fee status.

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

NOTE: 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 /Christian A. Camarce/ Date June 25, 2013

Typed or printed name Christian A. Camarce Registration No. 65,021

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.

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 13590876 |
| **Filing Date:** | 21-Aug-2012 |
| **Title of Invention:** | Switching Power Supply |
| **First Named Inventor/Applicant Name:** | Gregory S. SILVER |
| **Filer:** | Christian Andy Camarce/Stacy Hill |
| **Attorney Docket Number:** | 1744.2320003 |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| Utility Appl Issue Fee | 1501 | 1 | 1780 | 1780 |
| Publ. Fee- Early, Voluntary, or Normal | 1504 | 1 | 300 | 300 |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Extension-of-Time:** | | | | |
| **Miscellaneous:** | | | | |
| Printed Copy of Patent - No Color | 8001 | 1 | 3 | 3 |
| | | **Total in USD ($)** | | **2083** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 16141167 |
| **Application Number:** | 13590876 |
| **International Application Number:** | |
| **Confirmation Number:** | 6335 |
| **Title of Invention:** | Switching Power Supply |
| **First Named Inventor/Applicant Name:** | Gregory S. SILVER |
| **Customer Number:** | 26111 |
| **Filer:** | Christian Andy Camarce |
| **Filer Authorized By:** | |
| **Attorney Docket Number:** | 1744.2320003 |
| **Receipt Date:** | 25-JUN-2013 |
| **Filing Date:** | 21-AUG-2012 |
| **Time Stamp:** | 09:05:19 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Credit Card |
| Payment was successfully received in RAM | $2083 |
| RAM confirmation Number | 11149 |
| Deposit Account | |
| Authorized User | |

## File Listing:

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

| | | | | | |
|---|---|---|---|---|---|
| 1 | | 17442320003issuefeefiled06252013.pdf | 340091<br>0b96b1f997ac78b530c9d0481af72ce59a901166 | yes | 3 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | **Document Description** | **Start** | **End** |
| | Miscellaneous Incoming Letter | 1 | 1 |
| | Issue Fee Payment (PTO-85B) | 2 | 3 |

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|---|---|---|---|---|---|
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Fee Worksheet (SB06) | fee-info.pdf | 33389<br>00b1c391653e5256418e698f3db62dac20dadbe4 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 373480 | | |

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

**<u>New Applications Under 35 U.S.C. 111</u>**
**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.**

**<u>National Stage of an International Application under 35 U.S.C. 371</u>**
**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.**

**<u>New International Application Filed with the USPTO as a Receiving Office</u>**
**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.**

**CHRISTIAN A. CAMARCE**
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(202) 772-8895
CCAMARCE@SKGF.COM

Sterne Kessler Goldstein Fox
ATTORNEYS AT LAW

June 25, 2013

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

*Confirmation No. 6335*
*Mail Stop Issue Fee*

Re: Allowed U.S. Utility Patent Application
Appl. No. 13/590,876; Filed: August 21, 2012
For: **Switching Power Supply**
Inventors: SILVER *et al.*
Our Ref: 1744.2320003

Commissioner:

In response to the **Notice of Allowance and Fee(s) Due** dated March 25, 2013, the following documents are transmitted for appropriate action by the U.S. Patent and Trademark Office:

1. Issue Fee Transmittal (Form PTOL-85);

2. Online Credit Card Payment Authorization for $2,083.00 to cover:
   $1,780.00 Issue Fee;
   $ 300.00 Publication Fee;
   $ 3.00 One advance copy of patent.

The above-listed documents are filed electronically through EFS-Web.

Fee payment is provided through online credit card payment. The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Christian A. Camarce
Attorney for Applicants
Registration No. 65,021

CAC/smh
Enclosure(s)

1707991_1.DOCX

UNITED STATES PATENT AND TRADEMARK OFFICE

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

| APPLICATION NO. | ISSUE DATE | PATENT NO. | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/590,876 | 07/30/2013 | 8498593 | 1744.2320003 | 6335 |

26111 7590 07/10/2013

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

# 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 0 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):

Gregory S. SILVER, St. Augustine, FL;
David F. Sorrells, Middleburg, FL;
Gregory S. Rawlins, Heathrow, FL;

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | |
|---|---|
| In re patent of: | Confirmation No.: 6335 |
| SILVER *et al.* | Art Unit: 2649 |
| Patent No.: 8,498,593 B2 | Examiner: Thanh C. LE |
| Issued: July 30, 2013 | Atty. Docket: 1744.2320003 |
| For: **Switching Power Supply** | |

**Request for Certificate of Correction**
**Under 37 C.F.R. § 1.322**

***Attn: Certificate of Correction Branch***

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Commissioner:

It is hereby requested that a Certificate of Correction under 37 C.F.R. § 1.322 be issued for the above-captioned United States Patent. This Certificate of Correction is being requested due to mistakes which appear in the printed patent. These mistakes were made by the U.S. Patent and Trademark Office.

Specifically, the printed patent contains the following errors for which a Certificate of Correction is respectfully requested:

Column 12, Line 39, replace "The, system" with --The system--.

## *Remarks*

The above-noted corrections do not involve such changes in the patent as would constitute new matter or would require reexamination.

A completed Form PTO/SB/44 accompanies this request, with the above-noted corrections printed thereon. Accordingly, a Certificate of Correction is believed proper and issuance thereof is respectfully requested.

The Commissioner is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Christian A. Camarce
Attorney for Patentees
Registration No. 65,021

Date: September 4, 2013

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

1737320_1.DOCX

PTO/SB/44 (09-07)
Approved for use through 08/13/2013. OMB 0651-0033
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
(Also Form PTO-1050)

# UNITED STATES PATENT AND TRADEMARK OFFICE
# CERTIFICATE OF CORRECTION



PATENT NO. : 8,498,593 B2

APPLICATION NO. : 13/590,876

ISSUE DATE : July 30, 2013

INVENTOR(S) : SILVER *et al.*

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 12, Line 39, replace "The, system" with --The system--.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Sterne, Kessler, Goldstein & Fox P.L.L.C.
1100 New York Avenue, NW
Washington DC 20005-3934

Atty. Dkt. No. 1744.2320003

This collection of information is required by 37 CFR 1.322, 1.323 and 1.324. 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 1.0 hour 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 are required 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: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 16755247 |
| **Application Number:** | 13590876 |
| **International Application Number:** | |
| **Confirmation Number:** | 6335 |
| **Title of Invention:** | Switching Power Supply |
| **First Named Inventor/Applicant Name:** | Gregory S. SILVER |
| **Customer Number:** | 26111 |
| **Filer:** | Christian Andy Camarce |
| **Filer Authorized By:** | |
| **Attorney Docket Number:** | 1744.2320003 |
| **Receipt Date:** | 04-SEP-2013 |
| **Filing Date:** | 21-AUG-2012 |
| **Time Stamp:** | 09:19:54 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | no |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | 17442320003reqforcocfiled09042013.pdf | 339492<br>e9e26d1f26809d4e3dc19e86ec16b3a86e876333 | yes | 4 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | **Document Description** | **Start** | **End** |
| | Miscellaneous Incoming Letter | 1 | 1 |
| | Request for Certificate of Correction | 2 | 4 |
| **Warnings:** | | | |
| **Information:** | | | |
| | **Total Files Size (in bytes):** | 339492 | |

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

**<u>New Applications Under 35 U.S.C. 111</u>**
**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.**

**<u>National Stage of an International Application under 35 U.S.C. 371</u>**
**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.**

**<u>New International Application Filed with the USPTO as a Receiving Office</u>**
**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.**

CHRISTIAN A. CAMARCE
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Sterne Kessler Goldstein Fox
ATTORNEYS AT LAW

September 4, 2013

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

*Confirmation No. 6335*
*Art Unit 2649*
*Attn: Mail Stop Certificate of Correction Branch*

Re: U.S. Utility Patent Application
Appl. No. 13/590,876; Filing Date: August 21, 2012
For: **Switching Power Supply**
Inventors: SILVER *et al.*
Our Ref: 1744.2320003

Commissioner:

Transmitted herewith for appropriate action are the following documents:

1. Request for Certificate of Correction Under 37 C.F.R. §1.322; and

2. Form PTO/SB/44.

The above-listed documents are filed electronically through EFS-Web.

In the event that extensions of time are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Christian A. Camarce
Attorney for Patentees
Registration No. 65,021

CAC/smh
Enclosure(s)

1737324_1.DOCX

UNITED STATES PATENT AND TRADEMARK OFFICE

# CERTIFICATE OF CORRECTION



| | |
|---|---|
| PATENT NO. | : 8,498,593 B2 |
| APPLICATION NO. | : 13/590876 |
| DATED | : July 30, 2013 |
| INVENTOR(S) | : Silver et al. |

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims:

Column 12, Line 39, Claim 16, replace "The, system" with --The system--.

Signed and Sealed this
Eighth Day of October, 2013

Teresa Stanek Rea
*Deputy Director of the United States Patent and Trademark Office*