PTO/SB/80 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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:

☑ Practitioners associated with the Customer Number: 147655

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:

☑ The address associated with Customer Number: 147655

OR

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

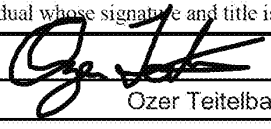
Assignee Name and Address:

Fundamental Innovations Systems International LLC
2900 Long Prairie Road, Suite B
Flower Mound, TX 75022

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	April 29, 2017
Name	Ozer Teitelbaum	Telephone	
Title	Co-Founder and Partner		

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

Electronic Acknowledgement Receipt	
EFS ID:	29828892
Application Number:	10087629
International Application Number:	
Confirmation Number:	3767
Title of Invention:	MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Daniel M. Fischer
Customer Number:	141762
Filer:	Richard J. Botos/Seth Botos
Filer Authorized By:	Richard J. Botos
Attorney Docket Number:	TNT 3.0-001
Receipt Date:	19-JUL-2017
Filing Date:	01-MAR-2002
Time Stamp:	14:35:53
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	Assignee showing of ownership per 37 CFR 3.73	a.pdf	125818 966684505905d50dac659718b3d2d1d7d275da30	no	2

Warnings:

Information:					
2	Power of Attorney	Pre.pdf	855803 9d2dcb10ca818530f8e78aa5360dfcda7dc53c9e	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	981621	

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.

PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: RESEARCH IN MOTION LIMITED

Application No./Patent No.: 6,936,936 Filed/Issue Date: August 30, 2005

Titled:

RESEARCH IN MOTION LIMITED , a Corporation

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

states that it is:

1. ☒ 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. ☒ 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 013155, Frame 0301, 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).

☒ 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.

/BRYAN C. DINER/ October 23, 2010

Signature Date

BRYAN C. DINER Reg. No. 32,409

Printed or Typed Name Title

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.

PTO/SB/80 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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:

☑ Practitioners associated with the Customer Number: 147655

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:

☑ The address associated with Customer Number: 147655

OR

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

Assignee Name and Address:

TnT IP LLC
2900 Long Prairie Road, Suite B
Flower Mound, TX 75022

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	April 29, 2017
Name	Ozer Teitelbaum	Telephone	
Title	Co-Founder and Partner		

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

Electronic Acknowledgement Receipt	
EFS ID:	29727344
Application Number:	10087629
International Application Number:	
Confirmation Number:	3767
Title of Invention:	MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Daniel M. Fischer
Customer Number:	141762
Filer:	Richard J. Botos/Seth Botos
Filer Authorized By:	Richard J. Botos
Attorney Docket Number:	TNT 3.0-001
Receipt Date:	10-JUL-2017
Filing Date:	01-MAR-2002
Time Stamp:	11:00:07
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	Assignee showing of ownership per 37 CFR 3.73	37_CFR_373c.pdf	125819 6e25bbd33edb26157f8f2ca2d5926986bc848fbc	no	2

Warnings:

Information:					
2	Power of Attorney	Pre.PDF	848759 7257765b1815b875887d3784c11da374906b7654	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	974578	

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.

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PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: RESEARCH IN MOTION LIMITED

Application No./Patent No.: 6,936,936 Filed/Issue Date: August 30, 2005

Titled:

RESEARCH IN MOTION LIMITED , a Corporation

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

states that it is:

1. ☒ 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. ☒ 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 013155, Frame 0301, 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:

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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

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

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

/BRYAN C. DINER/ October 23, 2010

Signature Date

BRYAN C. DINER Reg. No. 32,409

Printed or Typed Name Title

Privacy Act Statement

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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).
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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.
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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.

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 **Director of the U.S. Patent and Trademark Office** **P.O. Box 1450** **Alexandria, VA 22313-1450**	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Texas, Marshall Division on the following

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

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:17-cv-145	2/21/2017	Eastern District of Texas, Marshall Division

PLAINTIFF	DEFENDANT
Fundamental Innovation Systems International LLC	Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	6,936,936	8/30/2005	Fundamental Innovation Systems Internaional LLC
2	7,239,111	7/3/2007	Fundamental Innovation Systems International LLC
3	8,624,550	1/7/2014	Fundamental Innovation Systems International LLC
4			
5			

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

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

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

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/087,629	03/01/2002	Daniel M. Fischer	TNT 3.0-001

CONFIRMATION NO. 3767

POA ACCEPTANCE LETTER

141762
TNT
Lerner David
600 South Avenue West
Westfield, NJ 07090

OC000000083930743

Date Mailed: 06/27/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/17/2016.

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.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/rmturner myles/

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
10/087,629	03/01/2002	Daniel M. Fischer	TNT 3.0-001

CONFIRMATION NO. 3767

POWER OF ATTORNEY NOTICE

93377
BlackBerry Limited (Finnegan)
2200 University Avenue East
Waterloo, ON N2K 0A7
CANADA

OC000000083930742

Date Mailed: 06/27/2016

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/17/2016.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/rmturner myles/

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
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

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	10/087,629
Filing Date	March 1, 2002
First Named Inventor	Daniel M. Fischer
Title	MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD
Art Unit	2838
Examiner Name	E. H. Tso
Attorney Docket Number	TNT 3.0-001

SIGNATURE of Applicant or Patent Practitioner

Signature	/Richard J. Botos/	Date (Optional)	June 17, 2016
Name	Richard J. Botos	Registration Number	32,016
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of 1 forms are submitted.

4584813_1.docx

4584813_1.docx

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
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

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

[X] I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 141762

OR

[ ] I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

[X] The address associated with the above-mentioned Customer Number

OR

[ ] The address associated with Customer Number:

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

[ ] Inventor or Joint Inventor (title not required below)

[ ] Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

[X] Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

[ ] Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	June 17, 2016
Name	Ozer Peitelbaum		
Title	Vice-President, Fundamental Innovation Systems International LLC		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

[ ] Total of 1 forms are submitted.

4584171_1.docx

Electronic Acknowledgement Receipt

EFS ID:	26103359
Application Number:	10087629
International Application Number:	
Confirmation Number:	3767
Title of Invention:	MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Daniel M. Fischer
Customer Number:	93377
Filer:	Arnold H. Krumholz/Sophia Buchan
Filer Authorized By:	Arnold H. Krumholz
Attorney Docket Number:	11298.0188-00000
Receipt Date:	17-JUN-2016
Filing Date:	01-MAR-2002
Time Stamp:	16:53:02
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	Power of Attorney	Transmittal_for_POA_and_POA.pdf	114820 80a582736c92fb9f2bbe9390d9793ad99c6361e4	no	2
Warnings:					
Information:					

Total Files Size (in bytes):	114820

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

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

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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
10/087,629	03/01/2002	Daniel M. Fischer	555255012294

CONFIRMATION NO. 3767

93377
RIM/FINNEGAN
901 New York Avenue NW
Washington, DC 20001

POA ACCEPTANCE LETTER

OC000000044249551

Date Mailed: 11/01/2010

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/23/2010.

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.

/skiflemariam/

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
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
10/087,629	03/01/2002	Daniel M. Fischer	555255012294

CONFIRMATION NO. 3767

33070
JOSEPH M. SAUER
JONES DAY REAVIS & POGUE
NORTH POINT, 901 LAKESIDE AVENUE
CLEVELAND, OH 44114

POWER OF ATTORNEY NOTICE

OC000000044249502

Date Mailed: 11/01/2010

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/23/2010.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/skiflemariam/

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

PTO/SB/80 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
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.

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:

☑ Practitioners associated with the Customer Number: 93377

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:

☑ The address associated with Customer Number: 93377

OR

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

Assignee Name and Address:

Research In Motion Limited
295 Phillip Street
Waterloo, Ontario, Canada N2L 3W8

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	Bill Feng	Date	(519) 888-7465
Name	Bill Feng	Telephone	Dec. 23/09
Title	Vice President, Shared Services		

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.

Legal OK
MH

RIM OI

PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: RESEARCH IN MOTION LIMITED

Application No./Patent No.: 6,936,936 Filed/Issue Date: August 30, 2005

Titled:

RESEARCH IN MOTION LIMITED , a Corporation

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

states that it is:

1. ☒ 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. ☒ 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 013155, Frame 0301, 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).

☒ 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.

/BRYAN C. DINER/ October 23, 2010

Signature Date

BRYAN C. DINER Reg. No. 32,409

Printed or Typed Name Title

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.

Electronic Acknowledgement Receipt

EFS ID:	8688874
Application Number:	10087629
International Application Number:	
Confirmation Number:	3767
Title of Invention:	MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Daniel M. Fischer
Customer Number:	33070
Filer:	Bryan C. Diner
Filer Authorized By:	
Attorney Docket Number:	555255012294
Receipt Date:	23-OCT-2010
Filing Date:	01-MAR-2002
Time Stamp:	16:10:02
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	Power of Attorney	RIM_FINNEGAN_POA.PDF	151330 55ef3f27be706caa8125032df82c95a0d544e2ad	no	1
Warnings:					
Information:					

2	Assignee showing of ownership per 37 CFR 3.73(b).	SB96_Statement_Under_37_CFR_3_73.pdf	468800 9d6438b3f68e3e4b81409fe82bc6ce56a803145c	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	620130

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

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

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,936,936 B2
DATED : August 30, 2005
INVENTOR(S) : Fischer et al.

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

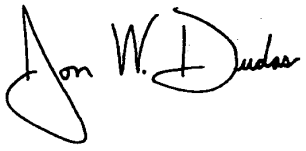
Title page,
Item [57], **ABSTRACT**,
Line 6, change "operative to coupled" to -- operative to couple --.

Column 17,
Line 44, replace "25" with -- 65 --.

Column 22,
Line 30, replace "91" with -- 103 --.

Signed and Sealed this

Sixth Day of June, 2006



JON W. DUDAS
Director of the United States Patent and Trademark Office

10/087 629

cgc

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Fischer et al.

Patent No: 6,936,936 B2

Issued: Aug. 30, 2005

For: MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

Atty. Docket No.: 555255012294

Commissioner for Patents
Attention: Certificate of Correction Branch
P.O. Box 1450
Alexandria, Virginia 22313-1450

Certificate
APR 14 2006
of Correction

NOTIFICATION OF ERROR IN PRINTING PATENT
CERTIFICATE OF CORRECTION REQUESTED UNDER 37 CFR § 1.322

Dear Sir or Madam:

In proofreading the above-referenced patent, it has been noted that errors occurred in the printing thereof. A Certificate of Correction is therefore requested. (See enclosed Certificate of Correction.)

No fees are deemed to be due in connection with the issuance of the Certificate of Correction as the errors are printing errors of the United States Patent and Trademark Office. In the event, however, that fees are due, please charge any fees required by this request to Deposit Account Number 501432, order 555255012294.

I hereby certify that this correspondence is being deposited today with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
on April 6, 2006
By: Debra Pejeau

Respectfully submitted,

Joseph M. Sauer
Reg. No. 47,919
JONES DAY
901 Lakeside Avenue/North Point
Cleveland, OH 44114
(216) 586-7506

CLI-1397846v1

APR 18 2006

PTO/SB/44 (04-05)
Approved for use through 04/30/2007. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,936,936 B2

APPLICATION NO.: 10/087,629

ISSUE DATE : Aug. 30, 2005

INVENTOR(S) : Fischer 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:

Face of Patent, (57) Abstract, line 6
Please change "operative to coupled" to - - operative to couple - -

Column 17, line 44
Please replace "25" with - - 65 - -

Column 22, line 30
Please replace "91" with - - 103 - -

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

Joseph M. Sauer, Esq., Jones Day, North Point, 901 Lakeside Avenue, Cleveland, OH 44114

APR 18 2006

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2001

Application or Docket Number: 10/087627

CLAIMS AS FILED - PART I

	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA
TOTAL CLAIMS		
FOR		
TOTAL CHARGEABLE CLAIMS	18 minus 20=	*
INDEPENDENT CLAIMS	2 minus 3 =	*
MULTIPLE DEPENDENT CLAIM PRESENT		☐

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐		OR	OTHER THAN SMALL ENTITY	
RATE	FEE 370		RATE	FEE
BASIC FEE	370.00	OR	BASIC FEE	740.00
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL	370	OR	TOTAL	

8/11/05

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	* 18	Minus	** 20	=
Independent	* 2	Minus	*** 3	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. 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.

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

Bib Data Sheet

CONFIRMATION NO. 3767

SERIAL NUMBER	FILING OR 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/087,629	03/01/2002 RULE 1.47	307	2838	555255012294

APPLICANTS

Daniel M. Fischer, Waterloo, CANADA;
Dan G. Radut, Waterloo, CANADA;
Michael F. Habicher, Cambridge, CANADA;
Quang A. Luong, Kitchener, CANADA;
Jonathan T. Malton, Kitchener, CANADA;

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

This appln claims benefit of 60/273,021 03/01/2001
and claims benefit of 60/330,486 10/23/2001

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

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 04/05/2002

Foreign Priority claimed	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ yes ☐ no	CANADA	4	36	4
35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance				
Verified and Acknowledged Examiner's Signature Initials				

ADDRESS
33070

TITLE
MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

FILING FEE RECEIVED	FEES: Authority has been given in Paper	
3910	No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

PART B - FEE(S) TRANSMITTAL

06-2

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 (703) 746-4000

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)

7590 04/15/2005

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue
Cleveland, OH 44114

OIPE JUN 29 2005 PATENT & TRADEMARK OFFICE

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

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

Debra Pejeau	(Depositor's name)
Debra Pejeau	(Signature)
June 27, 2005	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,629	03/01/2002	Daniel M. Fischer	555255012294	3767

TITLE OF INVENTION: MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$300	$1700	07/15/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
TSO, EDWARD H	2838	307-151000

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 Jones Day
2 Krishna K. Pathiyal
3 Robert C. Liang

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.

06/30/2005 MBERHE1 00000057 501432 10087629
01 FC:1501 1400.00 DA
02 FC:1504 300.00 DA
03 FC:8001 30.00 DA

(A) NAME OF ASSIGNEE: Research In Motion Limited

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Waterloo, Canada

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 enclosed:
- ☑ Issue Fee
- ☑ Publication Fee (No small entity discount permitted)
- ☑ Advance Order - # of Copies 10 ($30)

4b. Payment of Fee(s):
- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☑ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 501432 (*) (*) 555255012294 (enclose an extra copy of this form).

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

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
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 X

Date X 6/29/05

Typed or printed name Joseph M. Sauer

Registration No. 47,919

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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PTO/SB/122 (04-05)
Approved for use through 07/31/2006. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

CHANGE OF CORRESPONDENCE ADDRESS
Application

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

Application Number	10/087,629
Filing Date	03/01/2002
First Named Inventor	Daniel M. Fischer
Art Unit	2838
Examiner Name	Edward H. Tso
Attorney Docket Number	555255012294

Please change the Correspondence Address for the above-identified patent application to:

☑ The address associated with Customer Number: 33070

OR

☐ Firm or Individual Name

Address

City | State | Zip

Country

Telephone | Email

This form cannot be used to change the data associated with a Customer Number. To change the data associated with an existing Customer Number use "Request for Customer Number Data Change" (PTO/SB/124).

I am the:

☐ Applicant/Inventor

☐ Assignee of record of the entire interest.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☑ Attorney or agent of record. Registration Number 47,919.

☐ Registered practitioner named in the application transmittal letter in an application without an executed oath or declaration. See 37 CFR 1.33(a)(1). Registration Number_____.

Signature X

Typed or Printed Name Joseph M. Sauer

Date X 6/29/05 | Telephone 216-586-7506

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

☐ *Total of _____forms are submitted.

This collection of information is required by 37 CFR 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.

● PRINTER RUSH ●
(PTO ASSISTANCE)

Application :	10/087629	**Examiner :**	Tso	**GAU :**	2838
From:	NPB	**Location:**	(IDC) FMF FDC	**Date:**	03/16/05
		Tracking #:	0600680	**Week Date:**	1/24/05

DOC CODE	DOC DATE	MISCELLANEOUS
☐ 1449		☐ Continuing Data
☑ IDS	12/06/04	☐ Foreign Priority
☐ CLM		☐ Document Legibility
☐ IIFW		☐ Fees
☐ SRFW		☐ Other
☐ DRW		
☐ OATH		
☐ 312		
☐ SPEC		

[RUSH] MESSAGE: ① Please initial/line through citations on IDS form dated 12/06/04.

Thanhnga

[XRUSH] RESPONSE: Initialed see PTO dated 4/15/05

5/18/05 **INITIALS:**

NOTE: This form will be included as part of the official USPTO record, with the Response document coded as XRUSH.

REV 10/04

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 04/15/2005

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue
Cleveland, OH 44114

EXAMINER	
TSO, EDWARD H	
ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 04/15/2005

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,629	03/01/2002	Daniel M. Fischer	555255012294	3767

TITLE OF INVENTION: MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$300	$1700	07/15/2005

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 REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

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

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

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

If the SMALL ENTITY is shown as NO:

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

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

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. 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.

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.

PTOL-85 (Rev. 12/04) Approved for use through 04/30/2007.

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 (703) 746-4000

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)

7590 04/15/2005

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue
Cleveland, OH 44114

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 (703) 746-4000, on the date indicated below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,629	03/01/2002	Daniel M. Fischer	555255012294	3767

TITLE OF INVENTION: MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$300	$1700	07/15/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
TSO, EDWARD H	2838	307-151000

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 enclosed:

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

☐ A check in the amount of the fee(s) is enclosed.

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

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

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

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

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

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
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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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,629	03/01/2002	Daniel M. Fischer	555255012294	3767

7590 04/15/2005

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue
Cleveland, OH 44114

EXAMINER	
TSO, EDWARD H	

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 04/15/2005

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 464 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 464 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 (703) 305-8283.

PTOL-85 (Rev. 12/04) Approved for use through 04/30/2007.

Notice of Allowability	Application No.	Applicant(s)
	10/087,629	FISCHER ET AL.
	Examiner	Art Unit
	Edward H. Tso	2838

-- 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 *an RCE filed 4/4/2005*.

2. ☒ The allowed claim(s) is/are *1-6,8-25,27 and 29-107*.

3. ☒ The drawings filed on *01 March 2002* are accepted by the Examiner.

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

   * Certified copies not received: _____.

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

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

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

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

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 4/4/05; 12/6/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Edward H Tso
Primary Examiner
Art Unit: 2838

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	10/087,629
Filing Date	03/01/2002
First Named Inventor	Daniel M. Fischer
Art Unit	2838
Examiner Name	Edward H. Tso
Attorney Docket Number	555255012294

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
	A1	US- 6,138,242	10/24/2000	Massman et al.	
	A2	US- 6,283,789 B1	09/04/2001	Tsai	
		US-			
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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]

Examiner Signature		Date Considered	4/05

*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] 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/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 3

Complete if Known	
Application Number	10/087,629
Filing Date	March 01, 2002
First Named Inventor	Daniel M. Fischer
Art Unit	2838
Examiner Name	Edward H. Tso
Attorney Docket Number	555255-012294

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
	AA	US- 3,775,659	11/27/1973	Carlsen, II	
	AB	US- 4,433,251	02/21/1984	Banks, et al.	
	AC	US- 4,510,431	04/09/1985	Winkler	
	AD	US- 5,173,855	12/22/1992	Neilsen, et al.	
	AE	US- 5,229,649	07/20/1993	Nielsen, et al.	
	AF	US- 5,272,475	12/21/1993	Eaton, et al.	
	AG	US- 5,444,378	08/22/1995	Rogers	
	AH	US- 5,631,503	05/20/1997	Cioffi	
	AI	US- 5,638,540	06/10/1997	Aldous	
	AJ	US- 5,651,057	07/22/1997	Blood, et al.	
	AK	US- 5,769,877	06/23/1998	Barreras, Sr.	
	AL	US- 5,850,113	12/15/1998	Weimer, et al.	
	AM	US- 5,939,860	08/17/1999	William	
	AN	US- 6,104,162	08/15/2000	Sainsbury, et al.	
	AO	US- 6,104,759	08/15/2000	Carkner, et al.	
	AP	US- 6,252,375	06/26/2001	Richter, et al.	
	AQ	US- 6,211,649	04/03/2001	Matsuda	
	AR	US- 6,184,652	02/06/2001	Yang	
	AS	US- 6,006,088	12/21/1999	Couse	

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]
	BA	WO 0101330A1	01/04/2001	McClurg, et al.		

Examiner Signature		Date Considered	4/05

*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]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.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

PTO/SB/08A (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 2 of 3

Complete if Known	
Application Number	10/087,629
Filing Date	March 01, 2002
First Named Inventor	Daniel M. Fischer
Art Unit	2838
Examiner Name	Edward H. Tso
Attorney Docket Number	555255-012294

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
	AT	US- 6,130,518	10/10/2000	Gabehart, et al.	
	AU	US- 6,255,800	07/02/2001	Bork	
		US-			
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FOREIGN PATENT DOCUMENTS

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Examiner Signature		Date Considered	4/05

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 3 of 3

Complete if Known	
Application Number	10/087,629
Filing Date	March 01, 2002
First Named Inventor	Daniel M. Fischer
Art Unit	2838
Examiner Name	Edward H. Tso
Attorney Docket Number	555255-012294

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]
EHT	CA	Electric Double-Layer Capacitors, Vol. 2, 10/25/1996 (Japan, Tokin Corp., Cat. No. EC-200E)	
EHT	CB	Supercapacitor: User's Manual, Vol. 2 (Japan, Tokin Corp., date unknown)	
EHT	CC	Charging Big Supercaps, Portable Design, p. 26, March 1997	

Examiner Signature	EHT	Date Considered	11/07

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Issue Classification	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/087,629	FISCHER ET AL.	
	Examiner	Art Unit	
	Edward H. Tso	2838	

ISSUE CLASSIFICATION

ORIGINAL					CROSS REFERENCE(S)						
CLASS				SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					
307				151							
INTERNATIONAL CLASSIFICATION											
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---- (Assistant Examiner) (Date)	Edward H. Tso Primary Examiner (Primary Examiner) 4/04/05 (Date)	Total Claims Allowed: 104
(Legal Instruments Examiner) (Date)		O.G. Print Claim(s): 1 / O.G. Print Fig.: none

☐ 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
1	1	78	31	30	61	97	91		121		151		181
2	2	79	32	31	62	98	92		122		152		182
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4	4	67	34	33	64	100	94		124		154		184
5	5	68	35	34	65	101	95		125		155		185
6	6	69	36	35	66	102	96		126		156		186
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59	29	28	59	95	89		119		149		179		209
74	30	29	60	96	90		120		150		180		210

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BIBDATASHEET

CONFIRMATION NO. 3767

Bib Data Sheet

SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/087,629	03/01/2002 RULE 1.47	307	2838	555255012294

APPLICANTS

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Dan G. Radut, Waterloo, CANADA;
Michael F. Habicher, Cambridge, CANADA;Quang A. Luong, Kitchener, CANADA;
Jonathan T. Malton, Kitchener, CANADA;

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

This appln claims benefit of 60/273,021 03/01/2001
and claims benefit of 60/330,486 10/23/2001

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

F REQUIRED, FOREIGN FILING LICENSE GRANTED
04/05/2002

Foreign Priority claimed	STATE OR	SHEETS	TOTAL	INDEPENDENT
☐ yes ☒ no	COUNTRY	DRAWING	CLAIMS	CLAIMS
35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance	CANADA	4	36	4
Verified and Acknowledged Examiner's Signature Initials				

ADDRESS
F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue
Cleveland , OH
44114

TITLE
Multifunctional charger system and method

FILING FEE RECEIVED 1242	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue)

Search Notes

Application/Control No.	Applicant(s)/Patent under Reexamination	
10/087,629	FISCHER ET AL.	
Examiner	**Art Unit**	
Edward H. Tso	2838	

SEARCHED			
Class	Subclass	Date	Examiner

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
307	151	4/1/2005	ET

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
update class search	4/1/2005	ET

Rce/2838
TAW

PTO/SB/30 (09-04)
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Request for Continued Examination (RCE) Transmittal

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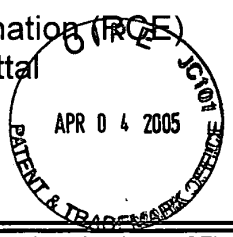

Application Number	10/087,629
Filing Date	03/01/2002
First Named Inventor	Daniel M. Fischer
Art Unit	2838
Examiner Name	Edward H. Tso
Attorney Docket Number	555255012294

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

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

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

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

ii. ☐ Other _____

b. ☑ Enclosed

i. ☐ Amendment/Reply

ii. ☐ Affidavit(s)/ Declaration(s)

iii. ☑ Information Disclosure Statement (IDS)

iv. ☐ Other _____

2. Miscellaneous

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

b. ☐ Other _____

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

a. ☑ The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. 501432 (555255012294). I have enclosed a duplicate copy of this sheet.

i. ☑ RCE fee required under 37 CFR 1.17(e) ($790)

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

iii. ☑ Other IDS ($180)

04/05/2005 AWONDAF1 00000076 501432 10087629
01 FC:1801 790.00 DA

b. ☐ Check in the amount of $ _____ enclosed

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

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

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Name (Print/Type)	Joseph M. Sauer	Registration No.	47919

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Signature	Debra L. Pejeau		
Name (Print/Type)	Debra L. Pejeau	Date	March 31, 2005

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PATENT

Attorney Docket No. 555255012294

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Daniel M. Fischer, et al.
Serial No.:	10/087,629
Filed:	March 01, 2002
For:	Multifunctional Charger System and Method
Art Unit:	2838
Examiner:	Edward H. Tso

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

Sir:

In accordance with the duty of disclosure imposed by 37 C.F.R. § 1.56, applicants hereby advise the United States Patent and Trademark Office of certain references which may be material to the determination of patentability of the above-identified application. The references are identified on the attached Form PTO-1449. Copies of the references are enclosed. Applicants respectfully request that these references be considered and made of record in the present application by completing and returning the enclosed Form PTO-1449.

No fee is believed to be due for entry of this Information Disclosure Statement. However, if any fee should be required, please charge such fee to Jones Day's Deposit Account No. 501432, Reference No. 555255012294.

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Cleveland, Ohio 44114
(216) 586-3939

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 3

Complete if Known	
Application Number	10/087,629
Filing Date	March 01, 2002
First Named Inventor	Daniel M. Fischer
Art Unit	2838
Examiner Name	Edward H. Tso
Attorney Docket Number	555255-012294

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
	AA	US- 3,775,659	11/27/1973	Carlsen, II	
	AB	US- 4,433,251	02/21/1984	Banks, et al.	
	AC	US- 4,510,431	04/09/1985	Winkler	
	AD	US- 5,173,855	12/22/1992	Neilsen, et al.	
	AE	US- 5,229,649	07/20/1993	Nielsen, et al.	
	AF	US- 5,272,475	12/21/1993	Eaton, et al.	
	AG	US- 5,444,378	08/22/1995	Rogers	
	AH	US- 5,631,503	05/20/1997	Cioffi	
	AI	US- 5,638,540	06/10/1997	Aldous	
	AJ	US- 5,651,057	07/22/1997	Blood, et al.	
	AK	US- 5,769,877	06/23/1998	Barreras, Sr.	
	AL	US- 5,850,113	12/15/1998	Weimer, et al.	
	AM	US- 5,939,860	08/17/1999	William	
	AN	US- 6,104,162	08/15/2000	Sainsbury, et al.	
	AO	US- 6,104,759	08/15/2000	Carkner, et al.	
	AP	US- 6,252,375	06/26/2001	Richter, et al.	
	AQ	US- 6,211,649	04/03/2001	Matsuda	
	AR	US- 6,184,652	02/06/2001	Yang	
	AS	US- 6,006,088	12/21/1999	Couse	

FOREIGN PATENT DOCUMENTS

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	BA	WO 0101330A1	01/04/2001	McClurg, et al.		

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Attorney Docket Number	555255-012294

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	AU	US- 6,255,800	07/02/2001	Bork	
		US-			
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Examiner Signature		Date Considered	

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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Application Number	10/087,629
Filing Date	March 01, 2002
First Named Inventor	Daniel M. Fischer
Art Unit	2838
Examiner Name	Edward H. Tso
Attorney Docket Number	555255-012294

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]
	CA	Electric Double-Layer Capacitors, Vol. 2, 10/25/1996 (Japan, Tokin Corp., Cat. No. EC-200E)	
	CB	Supercapacitor: User's Manual, Vol. 2 (Japan, Tokin Corp., date unknown)	
	CC	Charging Big Supercaps, Portable Design, p. 26, March 1997	

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.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 January 2001 (04.01.2001)

PCT

(10) International Publication Number
WO 01/01330 A1

(51) International Patent Classification[7]: G06K 9/00

(21) International Application Number: PCT/US99/22709

(22) International Filing Date: 1 October 1999 (01.10.1999)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/140,754 25 June 1999 (25.06.1999) US

(71) Applicant *(for all designated States except US)*: **CROSS MATCH TECHNOLOGIES, INC.** [US/US]; Phillips Point East Tower, Suite 1200, 777 South Flagler Drive, West Palm Beach, FL 33401 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **MCCLURG, George, W.** [US/US]; 2166 N.E. Ocapi Court, Jensen Beach, FL 34957 (US). **BRUNELL, David** [US/US]; 200 Avila Road, West Palm Beach, FL 33405 (US). **SCOTT, Walter, G.** [NZ/US]; 11662 Lake Shore Place, North Palm Beach, FL 33408 (US).

(74) Agents: **KESSLER, Edward, J.** et al.; Sterne, Kessler, Goldstein & Fox P.L.L.C., Suite 600, 1100 New York Avenue, N.W., Washington, DC 20005-3934 (US).

(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

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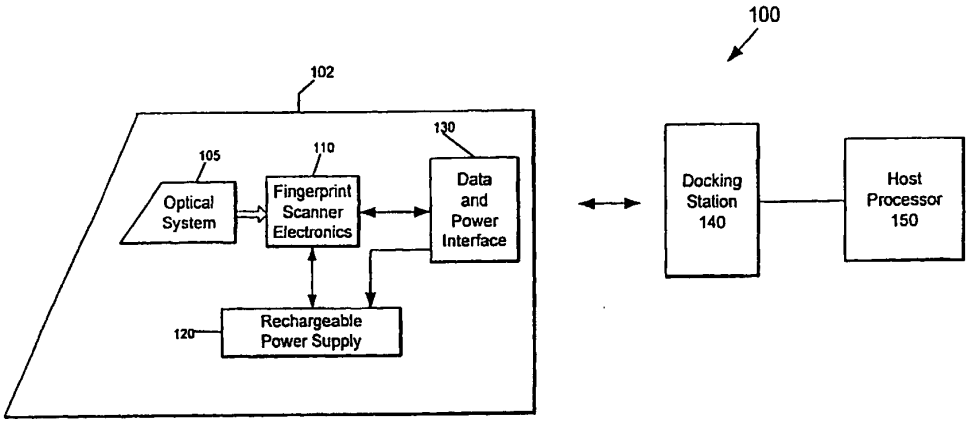
— *With a statement concerning non-prejudicial disclosure or exception to lack of novelty.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: RECHARGEABLE MOBILE HAND-HELD FINGERPRINT SCANNER WITH A DATA AND POWER COMMUNICATION INTERFACE



(57) Abstract: A mobile, hand-held fingerprint scanner is recharged by a data and power communication interface. The mobile, hand-held fingerprint scanner includes a rechargeable power supply and a data and power communication interface. The rechargeable power supply powers the fingerprint scanner during mobile use. In one example, the rechargeable power supply includes at least one rechargeable battery, a charging circuit, and a voltage regulator circuit. Data and recharging power is carried over the same interface. A separate plug for power is not needed. The fingerprint scanner can then be inserted quickly and easily in a docking station as only a single data and power communication interface need be coupled. This is particularly advantageous in law enforcement applications where mobile use is important and safety can be compromised if a mobile scanner does not couple to a docking station quickly and easily.

WO 01/01330 A1

Rechargeable Mobile Hand-Held Fingerprint Scanner With a Data and Power Communication Interface

Background of the Invention

1. Field of the Invention

The present invention relates generally to fingerprint scanning and imaging.

2. Related Art

Biometrics are a group of technologies that provide a high level of security. Fingerprint capture and recognition is an important biometric technology. Law enforcement, banking, voting, and other industries increasingly rely upon fingerprints as a biometric to recognize or verify identity. See, *Biometrics Explained*, v. 2.0, G. Roethenbaugh, International Computer Society Assn. Carlisle, PA 1998, pages 1-34 (incorporated herein by reference in its entirety).

Fingerprint scanners are available which capture an image of a fingerprint. A signal representative of the captured image is then sent over a data communication interface to a host computer for further processing. For example, the host can perform one-to-one or one-to-many fingerprint matching.

However, such fingerprint scanners are typically attached or tethered to a computer. These fingerprint scanners can rely upon power from a separate plug or through a Universal Serial Bus (USB) interface. See, e.g., fingerprint scanners made by Digital Persona, Veridcom, and SecurGen.

Mobile use is increasingly desired in biometric applications, such as law enforcement. Police and other users need a portable, hand-held device to easily

capture fingerprint images in the field. The portable hand-held device must be powered reliably. Conventional fingerprint scanners tethered to a personal computer cannot meet this need.

Summary of the Invention

The present invention provides a mobile, hand-held fingerprint scanner that is recharged by a powered data communication interface. Data and recharging power is carried over the same interface. A separate plug for power is not needed. The fingerprint scanner can then be inserted quickly and easily in a docking station as only a single data and power communication interface need be coupled. This is particularly advantageous in law enforcement applications where mobile use is important and safety can be compromised if a mobile scanner does not couple to a docking station quickly and easily.

In one embodiment, the mobile, hand-held fingerprint scanner includes a rechargeable power supply and a data and power communication interface. The rechargeable power supply powers the fingerprint scanner during mobile use. In one example implementation, the rechargeable power supply includes at least one rechargeable battery, a charging circuit, and a voltage regulator circuit. The charging circuit regulates the charging (*i.e.* the rate) of a rechargeable battery when the fingerprint scanner is receiving power through the data and power communication interface. The voltage regulator circuit maintains a substantially constant output system voltage from the rechargeable battery during mobile use. Further, in one preferred example, the data and power communication interface is a universal serial bus (USB). The data and power interface of the present invention is not limited to USB. In general, any data communication interface that provides for power in its protocol may be used, such as, an IEEE 1394 interface.

Further features and advantages of the present invention, as well as the structure and operation of various embodiments of the present invention, are described in detail below with reference to the accompanying drawings.

Brief Description of the Drawings

The accompanying drawings, which are incorporated herein and form part of the specification, illustrate the present invention and, together with the description, further serve to explain the principles of the invention and to enable a person skilled in the pertinent art to make and use the invention.

FIG. 1 is a diagram of a mobile, hand-held fingerprint scanner and docking system according to one embodiment of the present invention.

FIG. 2 is a diagram of a mobile, hand-held fingerprint scanner according to one embodiment of the present invention.

FIGs. 3A and 3B are drawings of an example implementation of a mobile, hand-held fingerprint scanner used in a law enforcement application according to the present invention.

The present invention is described with reference to the accompanying drawings. In the drawings, like reference numbers indicate identical or functionally similar elements. Additionally, the left-most digit(s) of a reference number identifies the drawing in which the reference number first appears.

Detailed Description of the Embodiments

According to the present invention, a mobile, hand-held fingerprint scanner is recharged by a data and power communication interface. The term "data and power interface" refers to any communication interface that transfers data and provides power. The data and power interface of the present invention can include, but is not limited to, Universal Serial Bus (USB) or IEEE 1394.

FIG. 1 shows a mobile, hand-held fingerprint scanner and docking system 100 according to one embodiment of the present invention. System 100 includes a mobile, hand-held fingerprint scanner 102, docking station 140 and a host processor 150. Fingerprint scanner 102 is a portable, hand-held scanner that detects and stores images representing part or all of a fingerprint. For convenience, the term "fingerprint image" is used herein to refer to any type of detected fingerprint including but not limited to an image of all or part of one or more fingerprints, a rolled fingerprint, a flat stationary fingerprint, a palm print, and/or prints of multiple fingers. Fingerprint scanner 102 is detachably coupled to docking station 140. Stored images are then downloaded from fingerprint scanner 102 through docking station 140 to a host processor 150.

In one embodiment, fingerprint scanner 102 includes an optical system 105. For example, optical system 105 can include a prism and a lens system, as described in U.S. Patent No. 5,900,993 (incorporated herein by reference). Other optical systems can be used in the present invention as would be apparent to a person skilled in the art.

Optical system 105 outputs a fingerprint image to fingerprint scanner electronics 110. Fingerprint scanner electronics 110 detects the image and generates an electrical signal representative of the detected signal. The signal is then stored in a memory for subsequent download through data and power interface 130.

According to the present invention, rechargeable power supply 120 is coupled to fingerprint scanner electronics 110 (and electrical components, if any, in optical system 105) and data and power interface 130. Rechargeable power supply 120 provides power for the electronic components in fingerprint scanner 102, including fingerprint scanner electronics 110 and any electrical components in optical system 105, such as, a shutter, lens cover, or drive unit(s) for the lens system. Rechargeable power supply 120 is able to power the fingerprint scanner 102 when the scanner is in active, mobile use out of the docking station 140.

According to a further feature, when the fingerprint scanner 102 is returned to docking station 140, power is provided through data and power interface 130 to recharge rechargeable power supply 120. No separate plug or power connection is needed. This is especially important in time-sensitive and safety critical applications, such as law enforcement. A police officer needs to be able to return fingerprint scanner 102 to docking station 140 in a simple and rapid fashion such that a connection is made quickly and reliably.

In one preferred example, data and power interface 130 is a universal serial bus (USB). A USB includes four pins (or channels). Two pins (+,-) carry a differential data signal, a third pin carries power, and a fourth pin is ground. The data and power interface of the present invention is not limited to USB. In general, any data communication interface that provides for power in its protocol may be used, such as, the IEEE 1394 High Performance Serial Bus (also called a FIREWIRE interface). See, e.g., Randall, "Solutions: Tutor, a Serial Bus on Speed," *PC Magazine* May 25, 1999, pp. 201-203 (incorporated herein by reference).

Docking station 140 can hold fingerprint scanner 102 in a variety of configurations depending upon a particular application and environment. For example, in a law enforcement application, docking station 140 may be a holder mounted in a police car. Host processor 150 can be any type of computer, processor(s), or logic which can receive and process fingerprint images detected by the fingerprint scanner 102. In one example, host processor 150 includes software for performing one-to-one or one-to-many fingerprint matching and recognition.

In another example, host processor 150 transmits detected fingerprint data to another processor for matching and recognition. For instance, if host processor 150 is in a law enforcement vehicle, host processor 150 can transmit detected fingerprint data to another processor at a police station or FBI office with access to a larger database for matching and recognition over a broader range of data.

In a law enforcement application, host processor 150 can further assemble the detected images into a format compatible with a local, county, or state AFIS or the NCIC or NCIC 2000 service. National Crime Information Center (NCIC) is an on-line information service jointly maintained by the Federal Bureau of Investigation (FBI) and criminal justice agencies throughout the United States and its territories. NCIC is being replaced by NCIC 2000, which will provide all NCIC services and new services. The new services include fingerprint matching, additional information files, and image files.

FIG. 2 is a diagram showing mobile, hand-held fingerprint scanner 102 in further detail according to one embodiment of the present invention. Fingerprint scanner electronics 110 includes a camera board 212 and a capture board 214. Camera board 212 includes a CMOS square pixel array. For example, a CMOS camera manufactured by Motorola Corporation can be used. Capture board 214 includes a memory for storing detected fingerprint images. Other circuitry and/or processing capability, such as, a frame grabber, analog/digital converter, and system controller can be provided as would be apparent to a person skilled in the art given this description. Such functionality can be provided all or in part, as desired, in the camera card 212, capture card 214, a stand-alone component, docking station 140 or host processor 150. In one example, image processing and finger print matching and recognition operations are carried out primarily in host processor 150. Processing operations related to detecting and storing a detected image signal are carried out in capture board 214.

Rechargeable power supply 120 includes voltage regulator circuit 222, at least one rechargeable battery 224, and charging circuit 226. Data and power interface 230 is a Universal Serial Bus (USB). Voltage regulator circuit 222 maintains a substantially constant output system voltage from rechargeable battery 224 during mobile use and while nested in docking station 140. In one preferred example, a relatively low system voltage of about 3 volts can be output to power a CMOS camera (compared to 12 volts for a charge-coupled-device (CCD)

camera). Charging circuit 226 regulates the charging (i.e., the rate of charging) of a rechargeable battery 224 when fingerprint scanner 102 is receiving power through Universal Serial Bus 230. In one example, charging circuit 226 is connected to charge voltage regulator circuit 222 and rechargeable battery 224 with power from USB 230. Rechargeable battery 224 is coupled to voltage regulator circuit 222. Other configurations and arrangements can be used. Any known charging circuit and voltage regulator circuit can be used in accordance with this description as would be apparent to a person skilled in the art.

Example Mobile Hand-Held Fingerprint Scanner

FIGs. 3A and 3B are drawings of an example implementation of a mobile, hand-held fingerprint scanner (also called a live scan device) used in a law enforcement application according to the present invention. FIG. 3A shows two views (top view and a view from an angle) of an example fingerprint scanner 102 according to the present invention. Fingerprint scanner 102 can be used with a FBI Mobile Imaging Unit (MIU) software application in host processor 150 to support NCIC 2000 functions in mobile law enforcement vehicles. The MIU provides a user interface, supports various peripheral devices, and transmits information in NCIC 2000-defined formats. The mobile fingerprint live scan device 102 can operate as a peripheral to the MIU (or to a processor that performs MIU-equivalent functions).

Fingerprint scanner 102 captures single (right or left index) fingerprint images in the environment of a law enforcement vehicle (see FIG. 3B). Fingerprint scanner 102 communicates the fingerprint images to a mobile host processor 150 in the vehicle. Fingerprint scanner 102 does not compromise officer safety when used by a single officer working with an unknown subject in a remote location. Hence, its small size, light weight, and mobility in the vicinity of the patrol car are vital to law enforcement. The ability to provide electrical

power to fingerprint scanner 102 and support data transfer to the mobile host processor 150 without a tether is also highly desirable to law enforcement.

Further, fingerprint scanner 102 is sufficiently rugged for extended use in a mobile environment. The housing for fingerprint scanner 102 is a machined aluminum enclosure providing a rugged, durable device that can sustain the rigors of harsh temperature environments associated with portable/mobile use with mass handling.

Host processor 150 includes or is coupled through a wireless communication link to other system databases or services (such as NCIC 2000). A software interface which is TWAIN compliant is included for easy integration and Plug and Play (PnP) connectivity.

Fingerprint scanner 102 integrates optical system 105 and an internal processor in electronics 110 to make up a complete, self-contained unit. The optics provide forensic quality image capture that meets or exceeds most image matching requirements.

The hardware interface of the fingerprint scanner 102 utilizes an industry standard USB connection 230 in one example. USB interface 230 eliminates the need for costly digitizer boards, providing immediate return on investment.

Fingerprint scanner 102 is ergonomically designed to fit the hand naturally. The oblong, cylindrical shape (similar to a flashlight), does not contain sharp edges. The device is small enough to be gripped by large or small hands without awkward or unnatural movement. The device is comfortable to use without muscle strain on the operator or subject. In one example, fingerprint scanner 102 is 1.5 x 8.0 x 1.5 inches (height x length x width), weighs about 340 grams (12 oz.), and has an image platen size of about 1" x 1".

Fingerprint scanner102 has controls and status indicators on the front-face of the unit for single (left or right) hand operation. The non-intimidating appearance of the fingerprint scanner 102 is designed to resemble a typical flashlight - a device that is not generally threatening to the public. Fingerprint

scanner102 has no sharp edges and is constructed of a light-weight aluminum housing that is coated with a polymer to give the device a "rubberized" feel. Because fingerprint scanner 102 is small and lightweight, it may be carried on the officer's utility belt upon exiting a vehicle. The device is designed for one hand use, allowing the officer to have a free hand for protective actions. Fingerprint scanner 102 is designed for harsh environments to sustain issues such as dramatic temperature changes and non-intentional abuse.

Fingerprint scanner 102 exchanges data with the mobile host processor 150 via a docking station 140. The docking station 140 serves as a cradle that easily guides the fingerprint scanner 102 into position blindly, allowing the officer to focus on safety issues rather than the device operation. Docking station 140 is small and compact for easy placement in a tight space. Using a simple USB cable, the docking station 140 transmits data and charges the rechargeable battery 224 through a simple, single connection.

Fingerprint scanner 102 captures a single image and stores the captured image in any type of portable media (not shown). Such portable media for example can be memory integral to or coupled to receive output from camera board 212. Random-access memory (RAM) backed-up by rechargeable battery 224 is used in one embodiment of the present invention. Rechargeable battery 224 can be a Commercial Off The Shelf (COTS) Nickel Cadmium battery. The low-voltage battery (3.3 VDC) powers fingerprint scanner 102. Other types of memory (flash memory, non-volatile memory, floppy drives, disks, mini-floppy drives, etc.) can be used in alternative embodiments of the present invention.

In one embodiment of the present invention, a captured image of a fingerprint print is stored locally in memory in fingerprint scanner electronics 110. For example, the memory can store the print without having to transmit the print using expensive radio-frequency transmission. Captured images of prints can be stored in mini-floppy drives (such as the available from Sandisk Corp. or Intel Corp.). In this way, multiple prints can be stored locally. This is especially

important in border control and accident sight markets. A crime scene can also be better documented as prints of all people present can be captured. Such captured prints can then be distinguished from other latent images which are uncovered.

Fingerprint scanner 102 can meet the most strict NIST (ANSI-NIST CSL 1998) image requirements.

Fingerprint scanner 102 contains a simple push button and set of 3 LED's that provide user activation and status indication. The user need only press one button to activate the unit. Once activated, the fingerprint scanner 102 awaits a finger to be introduced to the fingerprint capture platen. The digital image (or analog) is automatically captured when an adequate image area is detected. The image is then tested for quality of data prior to notifying the operator with an indication (e.g., visual indication and/or audible tone) for acceptance. The detected image is scalable to conform to FBI provided software (cropped or padded to 512 pixels by 512 pixels), although the standard image size is 1" X 1", 500 dpi, 256 levels of gray-scale (ANSI-NIST).

The digital fingerprint image output is stored in raw data format within memory (preferably a memory in fingerprint scanner 102). The raw data is then sent via the USB interface to host processor 150. Host processor 150 reformats the raw data into any desired or required image format. Scanner 102 can also store information that identifies the format of the raw data. Host processor 150 can then receive this information to determine what reformatting (e.g. cropping and/or padding), if any, is needed. For example, the raw data can be stored ins canner 102 in a 504 x 480 pixel image format. Host processor 150 can then reformat the 504 x 480 pixel format to a 512 x 512 image format or any other desired format.

In an example environment, fingerprint scanner 102 can meet the following criteria:

* A WINDOWS operating system environment and FBI-provided fingerprint image processing algorithms are used in NCIC 2000 fingerprint transactions;
* Fingerprint image sampling rate: 500 pixels per inch
* Size at input to FBI-provided Software: Cropped or padded to 512 pixels by 512 pixels
* Software interface from live scan device to MIU: TWAIN
* Image Quality: Electronic Fingerprint Transmission Specification, FBI Criminal Justice Information Services
1) Appendix F, IAFIS Image Quality Specification Section 2 Fingerprint Scanners and
2) Appendix G, Interim IAFIS Image Quality Specification for Scanners; MIU Processing: FBI-provided fingerprint image processing in mobile computer.

Fingerprint scanner 102 is held in either hand and used to capture a person's fingerprint. The fingerprint is captured from a cooperative individual (frontal approach) or an uncooperative individual (handcuffed subject - most commonly face down). Fingerprint scanner 102 can be operated with one-hand, allowing the officer to have a hand ready for protective actions. The officer need not have fingerprinting knowledge to capture the fingerprint.

The fingerprint capture process is simple as pressing a button and applying the subject's finger. The fingerprint is automatically captured and a quality check is performed immediately. The unit emits a tone to indicate a completed process. The officer may introduce the unit to the docking station blindly, maintaining his eyes on the subject for safety. Once seated in the docking station, the fingerprint is automatically transferred to the mobile computer without operator intervention. The unit's batteries are charged while within the docking station and ready for the next operation.

Thus, the present invention provides a mobile, hand-held fingerprint scanner that is recharged by a powered data communication interface. Data and recharging power is carried over the same interface. A separate plug for power

is not needed. The fingerprint scanner can then be inserted quickly and easily in a docking station, as only a single data and power communication interface need be coupled. This is particularly advantageous in law enforcement applications where mobile use is important and safety can be compromised if a mobile scanner does not couple to a docking station quickly and easily.

Conclusion

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. It will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined in the appended claims. 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 mobile, hand-held fingerprint scanner, comprising:

an interface charged rechargeable power supply that powers the fingerprint scanner during mobile use; and

a data and power communication interface that couples data between the fingerprint scanner and a docking station, and that provides power to charge said interface charged rechargeable power supply; whereby, a dedicated plug for recharging a power supply separate from a data interface can be avoided.

2. The mobile, hand-held fingerprint scanner of claim 1, wherein said interface charged rechargeable power supply includes at least one rechargeable battery.

3. The mobile, hand-held fingerprint scanner of claim 2, wherein said interface charged rechargeable power supply includes a charging circuit that regulates the charging of said at least one rechargeable battery when the fingerprint scanner is receiving power through the powered interface.

4. The mobile, hand-held fingerprint scanner of claim 3, wherein said charging circuit regulates the rate of charging of said at least one rechargeable battery.

5. The mobile, hand-held fingerprint scanner of claim 2, wherein said interface charged rechargeable power supply includes a voltage regulator circuit that maintains a substantially constant output system voltage from the rechargeable battery during mobile use.

6. The mobile, hand-held fingerprint scanner of claim 2, wherein said powered interface comprises a universal serial bus (USB).

7. The mobile, hand-held fingerprint scanner of claim 2, wherein said powered interface comprises an IEEE1394 compatible interface.

8. The mobile, hand-held fingerprint scanner of claim 3, wherein said charging circuit regulates the rate of charging of said at least one rechargeable battery.

9. The mobile, hand-held fingerprint scanner of claim 2, wherein said at least one rechargeable battery comprises at least one nickel cadmium battery.

10. A method for charging a mobile fingerprint scanner comprising the step of:

charging a rechargeable power supply in the mobile fingerprint scanner with power carried over a data and communication interface.

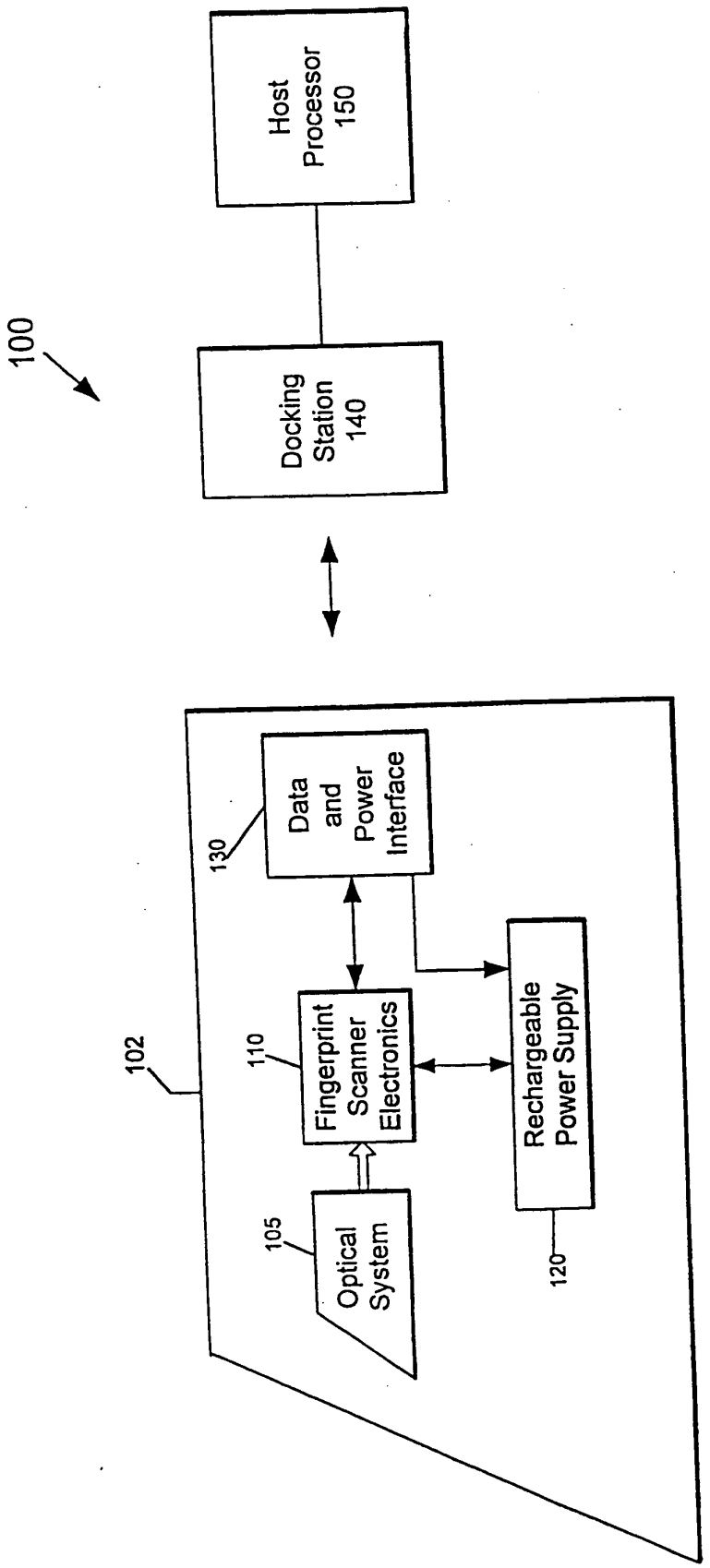

Host Processor 150
100
Docking Station 140
Data and Power Interface
130
Fingerprint Scanner Electronics
110
Rechargeable Power Supply
120
102
Optical System
105

FIG. 1

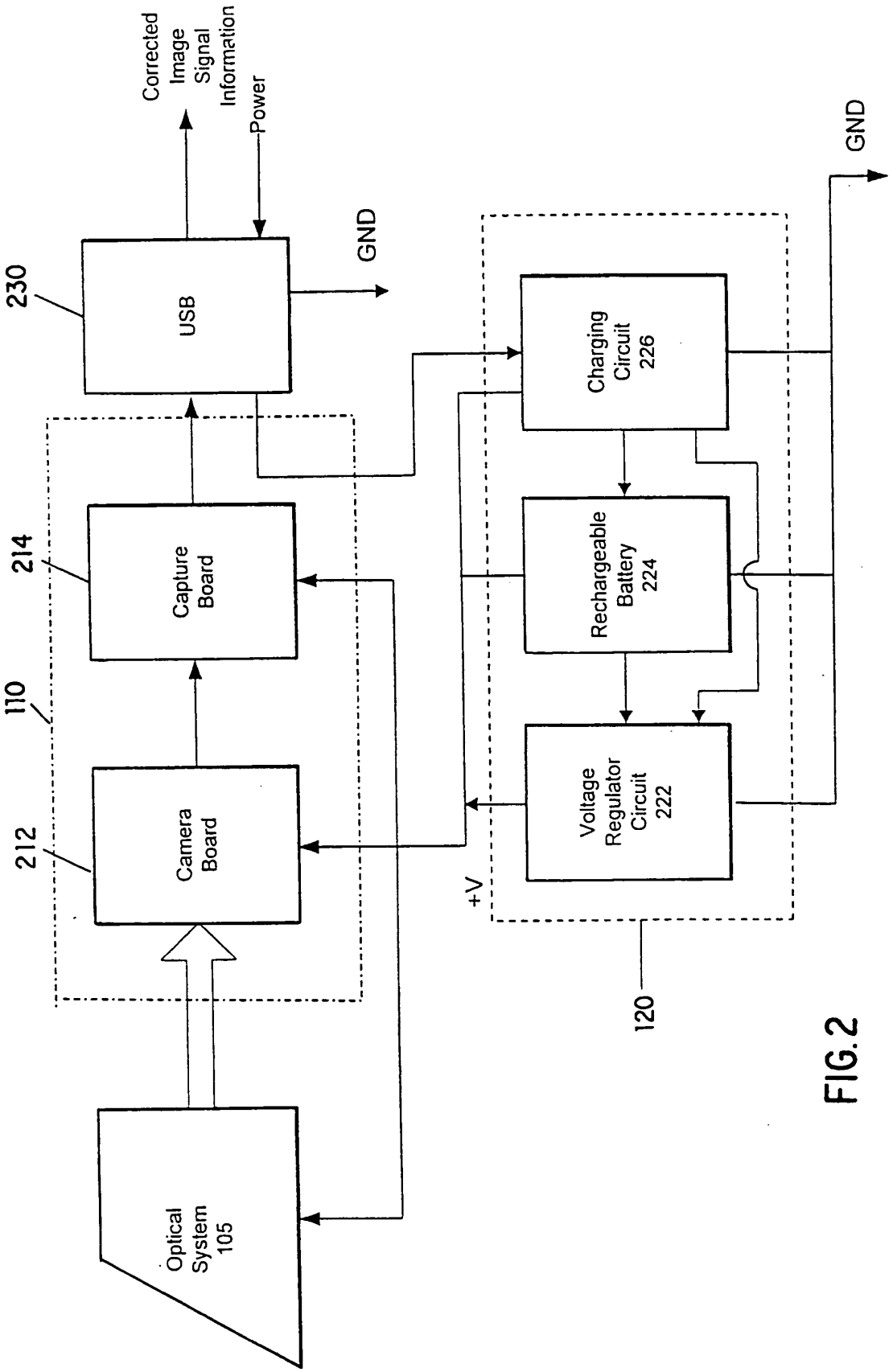

Corrected Image Signal Information
Power
GND
230
USB
214
Capture Board
110
212
Camera Board
Optical System 105
Charging Circuit 226
Rechargeable Battery 224
Voltage Regulator Circuit 222
+V
120
GND

FIG.2

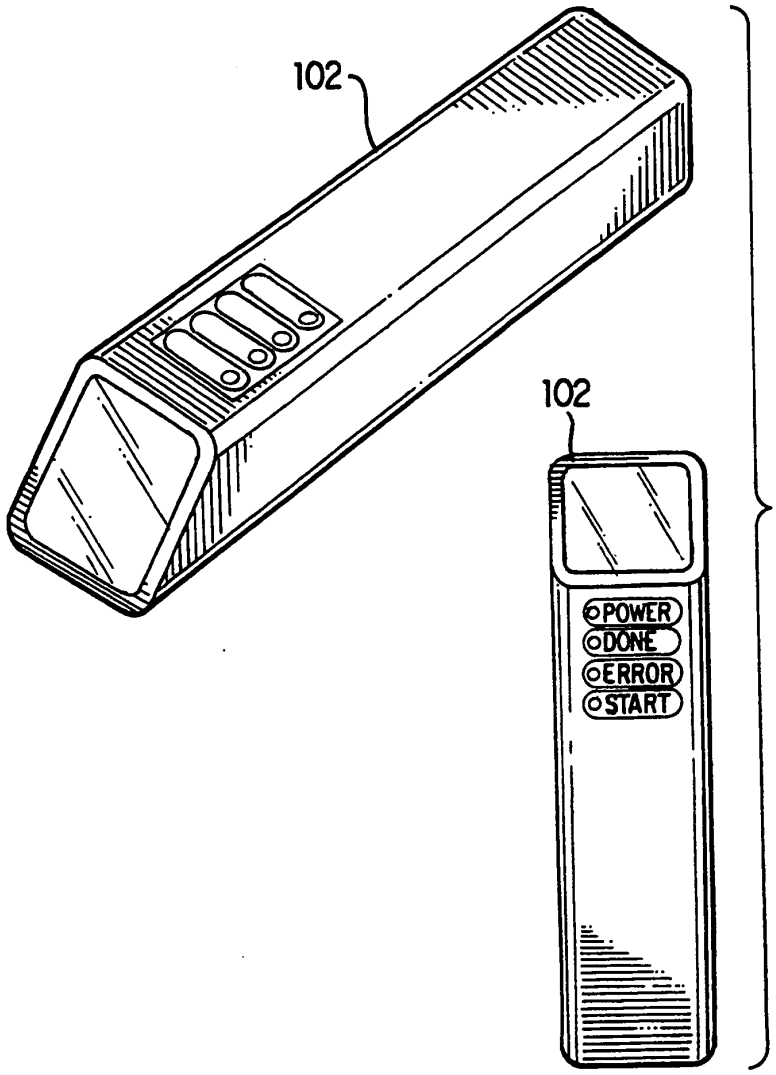


FIG. 3A

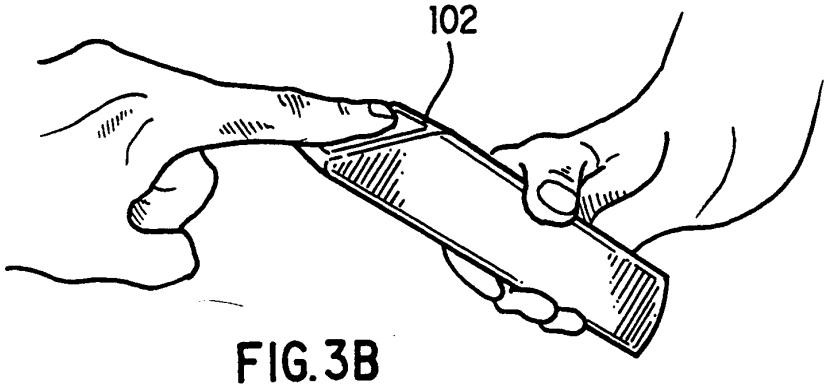


FIG. 3B

2. STATEMENT CONCERNING NON-PREJUDICIAL DISCLOSURES OR EXCEPTIONS TO LACK OF NOVELTY

Due to a possible disclosure by the inventors on or after October 1, 1998, the applicant respectfully requests that the subject International application be granted the respective provisions under National laws concerning Exceptions to Lack of Novelty in each of the designated countries. This is not an admission that the subject invention lacks novelty or inventive step over this disclosure. Exception to Lack of Novelty is hereby requested for purposes of disclosure and precautionary measures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/22709

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06K9/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
INSPEC, WPI Data, IBM-TDB, PAJ, EPO-Internal, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 2 313 441 A (MOTOROLA ISRAEL LTD) 26 November 1997 (1997-11-26) abstract ---	1-10
Y	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 14, 31 December 1998 (1998-12-31) & JP 10 262071 A (FUJI PHOTO FILM CO LTD), 29 September 1998 (1998-09-29) abstract --- -/--	1-10

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 July 2000	20/07/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Granger, B

1

INTERNATIONAL SEARCH REPORT

Inte. ational Application No
PCT/US 99/22709

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
P,X	SLUIJS F ET AL: "An on-chip USB-powered three-phase up/down DC/DC converter in a standard 3.3 V CMOS process" 2000 IEEE INTERNATIONAL SOLID-STATE CIRCUITS CONFERENCE. DIGEST OF TECHNICAL PAPERS (CAT. NO.00CH37056), 2000 IEEE INTERNATIONAL SOLID-STATE CIRCUITS CONFERENCE. DIGEST OF TECHNICAL PAPERS, SAN FRANCISCO, CA, USA, 7-9 FEB. 2000, pages 440-441, XP000923437 2000, Piscataway, NJ, USA, IEEE, USA ISBN: 0-7803-5853-8 the whole document ---	1-10
P,X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 14, 22 December 1999 (1999-12-22) & JP 11 252489 A (MINOLTA CO LTD), 17 September 1999 (1999-09-17) abstract -----	1-10

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte .tional Application No
PCT/US 99/22709

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2313441 A	26-11-1997	NONE	
JP 10262071 A	29-09-1998	NONE	
JP 11252489 A	17-09-1999	NONE	

● PRINTER RUSH ●
(PTO ASSISTANCE)

Application :	10/087629	**Examiner :**	Tso	**GAU :**	2838
From:	NBB	**Location:**	(IDC) FMF FDC	**Date:**	03/16/05
		Tracking #:	06070680	Week Date:	1/24/05

DOC CODE	DOC DATE	MISCELLANEOUS
☐ 1449		☐ Continuing Data
☑ IDS	12/06/04	☐ Foreign Priority
☐ CLM		☐ Document Legibility
☐ IIFW		☐ Fees
☐ SRFW		☐ Other
☐ DRW		
☐ OATH		
☐ 312		
☐ SPEC		

[RUSH] **MESSAGE:** Please initial/line through citations on IDS form dated 12/06/04.

[XRUSH] **RESPONSE:**

INITIALS:

NOTE: This form will be included as part of the official USPTO record, with the Response document coded as XRUSH.
REV 10/04

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2001

Application or Docket Number: 555255012294

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	36	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	36 minus 20=	* 16
INDEPENDENT CLAIMS	4 minus 3 =	* 1
MULTIPLE DEPENDENT CLAIM PRESENT	☐	

SMALL ENTITY TYPE ☐		OR	OTHER THAN SMALL ENTITY	
RATE	FEE		RATE	FEE
BASIC FEE	370.00	OR	BASIC FEE	740.00
X$ 9=		OR	X$18=	288
X42=		OR	X84=	84
+140=		OR	+280=	
TOTAL		OR	TOTAL	1112

* If the difference in column 1 is less than zero, enter "0" in column 2

12/6/04

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	* 104	Minus	** 36	= 68
Independent	* 17	Minus	*** 4	= 13
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM	☐			

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18= 55	3480
X42=		OR	X84= 200	2600
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

01/21 ...
01 FC 120...
02 FC 120...

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM	☐			

		OR		
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM	☐			

		OR		
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. 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.

FORM PTO-875 (Rev. 8/01) — Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

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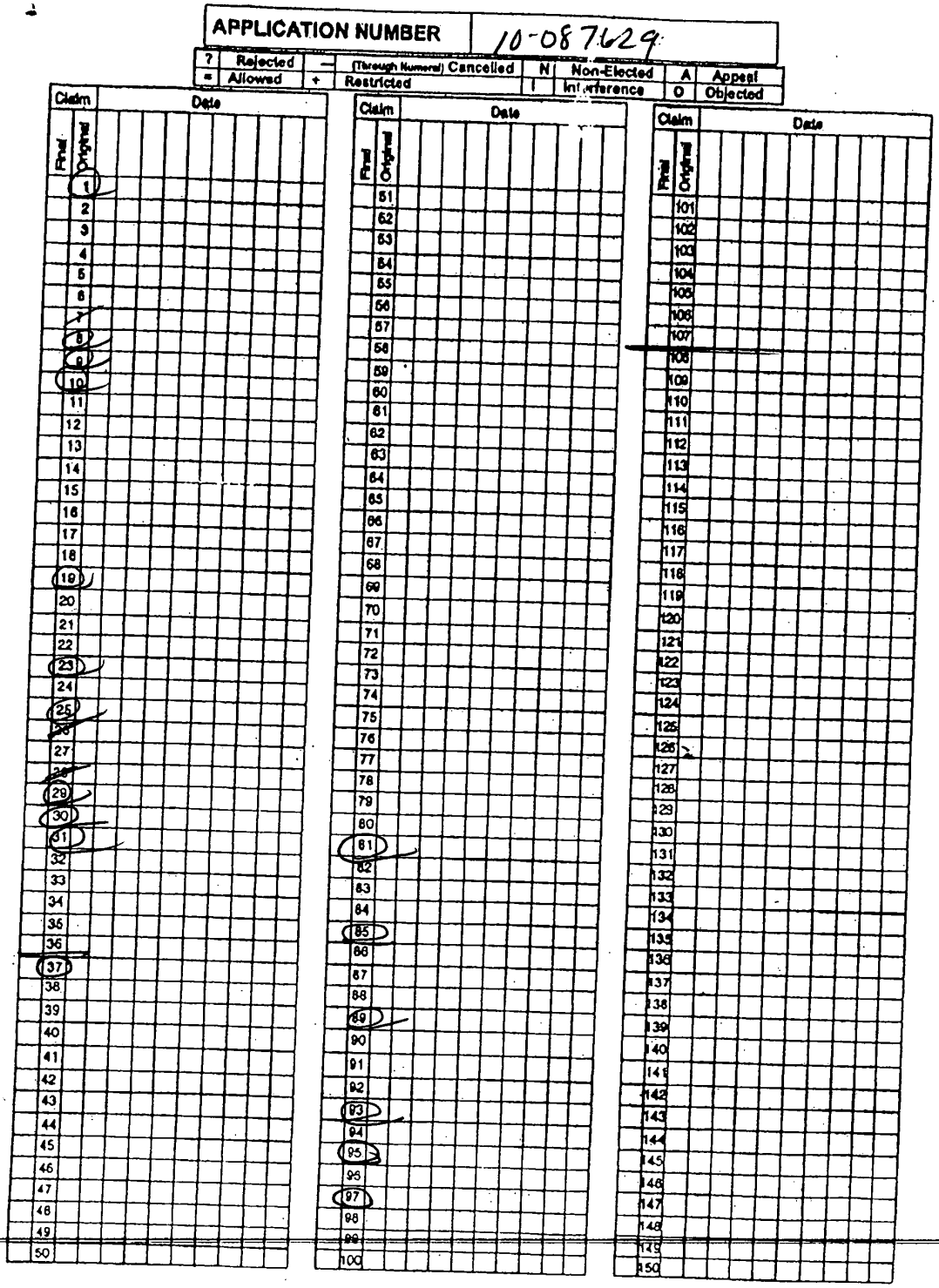

If more than 150 claims or 10 actions staple additional sheet here

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A-7

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NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 01/10/2005

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue
Cleveland, OH 44114

EXAMINER	
TSO, EDWARD H	
ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 01/10/2005

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,629	03/01/2002	Daniel M. Fischer	555255012294	3767

TITLE OF INVENTION: MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$300	$1700	04/11/2005

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 REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

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

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

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

If the SMALL ENTITY is shown as NO:

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

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

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. 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.

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.

PTOL-85 (Rev. 12/04) Approved for use through 04/30/2007.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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or Fax (703) 746-4000

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)

7590 01/10/2005

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue
Cleveland, OH 44114

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 (703) 746-4000, on the date indicated below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,629	03/01/2002	Daniel M. Fischer	555255012294	3767

TITLE OF INVENTION: MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$300	$1700	04/11/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
TSO, EDWARD H	2838	307-151000

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

4b. Payment of Fee(s):
- ☐ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

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

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
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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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,629	03/01/2002	Daniel M. Fischer	555255012294	3767

7590 01/10/2005

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue
Cleveland, OH 44114

EXAMINER	
TSO, EDWARD H	

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 01/10/2005

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 464 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 464 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 (703) 305-8283.

PTOL-85 (Rev. 12/04) Approved for use through 04/30/2007.

Notice of Allowability	Application No.	Applicant(s)	
	10/087,629	FISCHER ET AL.	
	Examiner	Art Unit	
	Edward Tso	2838	

-- 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 *12/6/2004*.

2. ☒ The allowed claim(s) is/are *1-6,8-25,27 and 29-107*.

3. ☒ The drawings filed on *01 March 2002* are accepted by the Examiner.

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

   * Certified copies not received: _____.

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

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

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

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

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Edward H. Tso
Primary Examiner

EXAMINER'S AMENDMENT

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

The application has been amended as follows:

The dependency of claim 27 has been corrected to –25--.

Any inquiry concerning this communication should be directed to the Examiner at the below-listed number.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is 571 272 2800, Monday-Friday, 830am to 5:00pm, EST.

By: 

EDWARD TSO
Primary Examiner
571 272 2087

Issue Classification	Application No.	Applicant(s)	
	10/087,629	FISCHER ET AL.	
	Examiner	Art Unit	
	Edward Tso	2838	

ISSUE CLASSIFICATION

ORIGINAL		CROSS REFERENCE(S)	
CLASS	SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)
307	151		
INTERNATIONAL CLASSIFICATION			
H02M 1/00			
/			
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/			

--- (Assistant Examiner) (Date)	Edward H. Tso Primary Examiner	Total Claims Allowed: 104
Diane Mortun 1/7/05 (Legal Instruments Examiner) (Date)	(Primary Examiner) 1/25 (Date)	O.G. Print Claim(s): 1 / O.G. Print Fig.: none

☐ 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
1	1	78	31	30	61	97	91		121		151		181
2	2	79	32	31	62	98	92		122		152		182
3	3	80	33	32	63	99	93		123		153		183
4	4	67	34	33	64	100	94		124		154		184
5	5	68	35	34	65	101	95		125		155		185
6	6	69	36	35	66	102	96		126		156		186
	7	84	37	36	67	103	97		127		157		187
13	8	85	38	27	68	104	98		128		158		188
25	9	86	39	26	69	60	99		129		159		189
37	10	87	40	40	70	61	100		130		160		190
38	11	88	41	41	71	62	101		131		161		191
39	12	89	42	42	72	75	102		132		162		192
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65	25	21	55	55	85		115		145		175		205
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	28	24	58	58	88		118		148		178		208
59	29	28	59	95	89		119		149		179		209
74	30	29	60	96	90		120		150		180		210

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BIBDATASHEET

Bib Data Sheet

CONFIRMATION NO. 3767

SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/087,629	03/01/2002 RULE 1.47	307	2838	555255012294

APPLICANTS

Daniel M. Fischer, Waterloo, CANADA;

Dan G. Radut, Waterloo, CANADA;
Michael F. Habicher, Cambridge, CANADA;Quang A. Luong, Kitchener, CANADA;
Jonathan T. Malton, Kitchener, CANADA;

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

This appln claims benefit of 60/273,021 03/01/2001
and claims benefit of 60/330,486 10/23/2001

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

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 04/05/2002

Foreign Priority claimed ☐ yes ☑ no 35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance Verified and Acknowledged Examiner's Signature Initials	STATE OR COUNTRY CANADA	SHEETS DRAWING 4	TOTAL CLAIMS 36	INDEPENDENT CLAIMS 4

ADDRESS
F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue
Cleveland , OH
44114

TITLE
Multifunctional charger system and method

FILING FEE RECEIVED 1242	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue)

0

Search Notes	Application No.	Applicant(s)	
	10/087,629	FISCHER ET AL.	
	Examiner	Art Unit	
	Edward Tso	2838	

SEARCHED			
Class	Subclass	Date	Examiner

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
307	151	1/1/2005	ET

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
update search	1/1/2005	ET

2838 $

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 555255-012294

Group Art Unit:	2838	
Examiner:	Tso	
Inventor:	Daniel M. Fischer, et al.	**AMENDMENT**
Serial No.:	10/087,629	
Filed:	3/01/2002	
For:	Multifunctional Charger System and Method	

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on Dec. 3 ***, 2004.***

By Debra Pejeau

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

Sir:

Please amend the above-referenced application as follows. Any resulting fees should be charged to Jones Day Deposit Account No. 501432, ref: 555255-012294.

IN THE CLAIMS

1. (Currently Amended) A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the power requirement to the mobile device; and

an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector;

wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector, and the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.

2. (Original) The USB adapter of claim 1, wherein the plug unit is configured to couple directly with the power socket.

3. (Original) The USB adapter of claim 2, wherein the plug unit is configured to couple to at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

4. (Original) The USB adapter of claim 1, further comprising a plug adapter that is configured to couple the plug unit to the power socket.

5. (Original) The USB adapter of claim 4, wherein the plug adapter is configured to couple to at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

6. (Original) The USB adapter of claim 1 wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector.

7. (Cancelled)

8. (Currently Amended) A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the power requirement to the mobile device; and

an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector;

~~The USB adapter of claim 1~~ wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector.

9. (Currently Amended) A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the power requirement to the mobile device; and

an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector;

~~The USB adapter of claim 1~~ wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector.

10. (Currently Amended) A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the power requirement to the mobile device; and

an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector;

~~The USB adapter of claim 1,~~ wherein the identification subsystem ~~further~~ comprises a switch that is operable to couple electrically the power requirement output from the power converter to the primary USB connector.

11. (Original) The USB adapter of claim 10, wherein the identification system is operable to cause the switch to disconnect the power requirement output from the primary USB connector.

12. (Original) The USB adapter of claim 11, wherein the identification system is operable to cause the switch to reconnect the power requirement output to the primary USB connector.

13. (Original) The USB adapter of claim 1, further comprising an auxiliary USB connector.

14. (Original) The USB adapter of claim 13, wherein the data lines of the auxiliary USB connector are coupled to the data lines of the primary USB connector via the identification

subsystem.

15. (Original) The USB adapter of claim 13, wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

16. (Original) The USB adapter of claim 1, wherein the USB adapter is integrated with a USB hub or host.

17. (Original) The USB adapter of claim 1, further comprising: a battery receptacle for providing a location at which to attach a rechargeable battery; and a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging subsystem being operable to receive energy from the power converter and to provide power at the battery receptacle.

18. (Original) The USB adapter of claim 1, wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

19. (Currently Amended) A method for providing energy to a mobile device using a USB adapter that comprises a plug unit, a primary USB connector, a power converter electrically coupled between the plug unit and the primary USB connector, and an identification subsystem electrically coupled to the primary USB connector, the method comprising the steps of:

coupling the USB connector to the mobile device;

coupling the plug unit to a power socket;

outputting a power requirement to the mobile device via the power converter and the USB connector; and

providing an identification signal to the mobile device, via the identification subsystem and the USB connector, that is operative to inform the mobile device that the USB adapter is not limited by the power limits imposed by the USB specification, wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.

20. (Original) The method of claim 19, further comprising the step of: detecting the presence of the identification signal by the mobile device.

21. (Original) The method of claim 19, further comprising the step of: electrically disconnecting the power requirement from the USB connector.

22. (Original) The method of claim 21, further comprising the step of: electrically reconnecting the power requirement to the USB connector to allow the power requirement to be outputted to the mobile device.

23. (Currently Amended) A powering system for a mobile device having a USB connector; comprising:

a power distribution subsystem in the mobile device that is operable to receive energy through the USB connector and to distribute the energy to at least one component in the mobile device; and

a USB adapter for coupling to the USB connector, the USB adapter comprising a plug unit for coupling to a power socket and that is operable to receive energy from the power socket,

a power converter electrically coupled to the plug unit for regulating the received energy and for providing a power requirement to the power distribution subsystem, and

an identification subsystem that is operable to transmit an identification signal that is operative to identify the USB adapter as not being limited by the power limits imposed by the USB specification, wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.

24. (Original) The system of claim 23, further comprising a charging subsystem in the USB power adapter configured to couple the power converter to a battery receptacle to directly charge a rechargeable battery.

25. (Currently Amended) A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the outputted power requirement to the mobile device; and

an auxiliary USB connector having data lines that are electrically coupled to the data lines of the primary USB connector;

an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector; wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.

26. (Cancelled)

27. (Original) The USB adapter of claim 26 wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector.

28. (Cancelled)

29. (Currently Amended) A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the outputted power requirement to the mobile device; and

an auxiliary USB connector having data lines that are electrically coupled to the data lines of the primary USB connector;

an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector; ~~The USB adapter of claim 26~~ wherein the identification subsystem comprises a hardwired connection of a voltage level to one or more data lines in the primary USB connector.

30. (Currently Amended) A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the outputted power requirement to the mobile device; and

an auxiliary USB connector having data lines that are electrically coupled to the data lines of the primary USB connector;

an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector; ~~The USB adapter of claim 26~~ wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector.

31. (Currently Amended) A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the outputted power requirement to the mobile device; and

an auxiliary USB connector having data lines that are electrically coupled to the data lines of the primary USB connector;

an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector; ~~The USB adapter of claim 26~~ wherein the identification subsystem ~~further~~ comprises a switch that is operable to electrically couple the power requirement output from the power converter to the primary USB connector.

32. (Original) The USB adapter of claim 31 wherein the identification system is operable to cause the switch to disconnect the power requirement output from the primary USB connector.

33. (Original) The USB adapter of claim 32 wherein the identification system is operable to cause the switch to reconnect the power requirement output to the primary USB connector.

34. (Original) The USB adapter of claim 25 wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

35. (Original) The USB adapter of claim 25 further comprising: a battery receptacle for providing a location at which to attach a rechargeable battery; and a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging subsystem being operable to receive energy from the power converter and to provide a charge at the battery receptacle.

36. (Original) The USB adapter of claim 25 wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

37. (New) A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the power requirement to the mobile device; and

an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector;

wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.

38. (New) The USB adapter of claim 37, wherein the plug unit is configured to couple directly with the power socket.

39. (New) The USB adapter of claim 37, wherein the plug unit is configured to couple to at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

40. (New) The USB adapter of claim 37, further comprising a plug adapter that is configured to couple the plug unit to the power socket.

41. (New) The USB adapter of claim 40, wherein the plug adapter is configured to couple to at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

42. (New) The USB adapter of claim 37, further comprising an auxiliary USB connector.

43. (New) The USB adapter of claim 42, wherein the data lines of the auxiliary USB connector are coupled to the data lines of the primary USB connector via the identification subsystem.

44. (New) The USB adapter of claim 42, wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

45. (New) The USB adapter of claim 37, wherein the USB adapter is integrated with a USB hub or host.

46. (New) The USB adapter of claim 37, further comprising: a battery receptacle for providing a location at which to attach a rechargeable battery; and a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging subsystem being operable to receive energy from the power converter and to provide power at the battery receptacle.

47. (New) The USB adapter of claim 37, wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

48. (New) The USB adapter of claim 8, wherein the plug unit is configured to couple directly with the power socket.

49. (New) The USB adapter of claim 8, wherein the plug unit is configured to couple to at

least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

50. (New) The USB adapter of claim 8, further comprising a plug adapter that is configured to couple the plug unit to the power socket.

51. (New) The USB adapter of claim 50, wherein the plug adapter is configured to couple to at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

52. (New) The USB adapter of claim 8 wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector.

53. (New) The USB adapter of claim 8, further comprising an auxiliary USB connector.

54. (New) The USB adapter of claim 53, wherein the data lines of the auxiliary USB connector are coupled to the data lines of the primary USB connector via the identification subsystem.

55. (New) The USB adapter of claim 53, wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

56. (New) The USB adapter of claim 8, wherein the USB adapter is integrated with a USB hub or host.

57. (New) The USB adapter of claim 8, further comprising: a battery receptacle for providing a location at which to attach a rechargeable battery; and a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging subsystem being operable to receive energy from the power converter and to provide power at the battery receptacle.

58. (New) The USB adapter of claim 8, wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

59. (New) The USB adapter of claim 9, wherein the plug unit is configured to couple directly with the power socket.

60. (New) The USB adapter of claim 9, wherein the plug unit is configured to couple to at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

61. (New) The USB adapter of claim 9, further comprising a plug adapter that is configured to couple the plug unit to the power socket.

62. (New) The USB adapter of claim 61, wherein the plug adapter is configured to couple to at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

63. (New) The USB adapter of claim 9 wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector.

64. (New) The USB adapter of claim 9, further comprising an auxiliary USB connector.

65. (New) The USB adapter of claim 64, wherein the data lines of the auxiliary USB connector are coupled to the data lines of the primary USB connector via the identification subsystem.

66. (New) The USB adapter of claim 64, wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

67. (New) The USB adapter of claim 9, wherein the USB adapter is integrated with a USB hub or host.

68. (New) The USB adapter of claim 9, further comprising: a battery receptacle for providing a location at which to attach a rechargeable battery; and a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging subsystem being operable to receive energy from the power converter and to provide power at the battery receptacle.

69. (New) The USB adapter of claim 9, wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

70. (New) The USB adapter of claim 10, wherein the plug unit is configured to couple directly with the power socket.

71. (New) The USB adapter of claim 10, wherein the plug unit is configured to couple to at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

72. (New) The USB adapter of claim 10, further comprising a plug adapter that is configured to couple the plug unit to the power socket.

73. (New) The USB adapter of claim 72, wherein the plug adapter is configured to couple to

at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

74. (New) The USB adapter of claim 10 wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector.

75. (New) The USB adapter of claim 10, further comprising an auxiliary USB connector.

76. (New) The USB adapter of claim 75, wherein the data lines of the auxiliary USB connector are coupled to the data lines of the primary USB connector via the identification subsystem.

77. (New) The USB adapter of claim 75, wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

78. (New) The USB adapter of claim 10, wherein the USB adapter is integrated with a USB hub or host.

79. (New) The USB adapter of claim 10, further comprising: a battery receptacle for providing a location at which to attach a rechargeable battery; and a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging

subsystem being operable to receive energy from the power converter and to provide power at the battery receptacle.

80. (New) The USB adapter of claim 10, wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

81. (New) A method for providing energy to a mobile device using a USB adapter that comprises a plug unit, a primary USB connector, a power converter electrically coupled between the plug unit and the primary USB connector, and an identification subsystem electrically coupled to the primary USB connector, wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector, the method comprising the steps of:

coupling the USB connector to the mobile device;

coupling the plug unit to a power socket;

outputting a power requirement to the mobile device via the power converter and the USB connector; and

providing an identification signal to the mobile device, via the identification subsystem and the USB connector, that is operative to inform the mobile device that the USB adapter is not limited by the power limits imposed by the USB specification.

82. (New) The method of claim 81, further comprising the step of: detecting the presence of the identification signal by the mobile device.

83. (New) The method of claim 81, further comprising the step of: electrically disconnecting the power requirement from the USB connector.

84. (New) The method of claim 83, further comprising the step of: electrically reconnecting the power requirement to the USB connector to allow the power requirement to be outputted to the mobile device.

85. (New) A method for providing energy to a mobile device using a USB adapter that comprises a plug unit, a primary USB connector, a power converter electrically coupled between the plug unit and the primary USB connector, and an identification subsystem electrically coupled to the primary USB connector, wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector, the method comprising the steps of:

coupling the USB connector to the mobile device;

coupling the plug unit to a power socket;

outputting a power requirement to the mobile device via the power converter and the USB connector; and

providing an identification signal to the mobile device, via the identification subsystem and the USB connector, that is operative to inform the mobile device that the USB adapter is not limited by the power limits imposed by the USB specification.

86. (New) The method of claim 85, further comprising the step of: detecting the presence of the identification signal by the mobile device.

87. (New) The method of claim 85, further comprising the step of: electrically disconnecting the power requirement from the USB connector.

88. (New) The method of claim 87, further comprising the step of: electrically reconnecting the power requirement to the USB connector to allow the power requirement to be outputted to the mobile device.

89. (New) A method for providing energy to a mobile device using a USB adapter that comprises a plug unit, a primary USB connector, a power converter electrically coupled between the plug unit and the primary USB connector, and an identification subsystem electrically coupled to the primary USB connector, wherein the identification subsystem comprises a switch that is operable to couple electrically the power requirement output from the power converter to the primary USB connector, the method comprising the steps of:

coupling the USB connector to the mobile device;

coupling the plug unit to a power socket;

outputting a power requirement to the mobile device via the power converter and the USB connector; and

providing an identification signal to the mobile device, via the identification subsystem and the USB connector, that is operative to inform the mobile device that the USB adapter is not limited by the power limits imposed by the USB specification.

90. (New) The method of claim 89, further comprising the step of: detecting the presence of the identification signal by the mobile device.

91. (New) The method of claim 89, further comprising the step of: electrically disconnecting the power requirement from the USB connector.

92. (New) The method of claim 91, further comprising the step of: electrically reconnecting the power requirement to the USB connector to allow the power requirement to be outputted to the mobile device.

93. (New) A powering system for a mobile device having a USB connector; comprising:

a power distribution subsystem in the mobile device that is operable to receive energy through the USB connector and to distribute the energy to at least one component in the mobile device; and

a USB adapter for coupling to the USB connector, the USB adapter comprising a plug unit for coupling to a power socket and that is operable to receive energy from the power socket,

a power converter electrically coupled to the plug unit for regulating the received energy and for providing a power requirement to the power distribution subsystem, and

an identification subsystem that is operable to transmit an identification signal that is operative to identify the USB adapter as not being limited by the power limits imposed by the USB specification, wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector.

94. (New) The system of claim 93, further comprising a charging subsystem in the USB power adapter configured to couple the power converter to a battery receptacle to directly charge a rechargeable battery.

95. (New) A powering system for a mobile device having a USB connector; comprising:

a power distribution subsystem in the mobile device that is operable to receive energy through the USB connector and to distribute the energy to at least one component in the mobile device; and

a USB adapter for coupling to the USB connector, the USB adapter comprising a plug unit for coupling to a power socket and that is operable to receive energy from the power socket,

a power converter electrically coupled to the plug unit for regulating the received energy and for providing a power requirement to the power distribution subsystem, and

an identification subsystem that is operable to transmit an identification signal that is operative to identify the USB adapter as not being limited by the power limits imposed by the USB specification, wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector.

96. (New) The system of claim 95, further comprising a charging subsystem in the USB power adapter configured to couple the power converter to a battery receptacle to directly charge a rechargeable battery.

97. (New) A powering system for a mobile device having a USB connector; comprising:

a power distribution subsystem in the mobile device that is operable to receive energy through the USB connector and to distribute the energy to at least one component in the mobile device; and

a USB adapter for coupling to the USB connector, the USB adapter comprising a plug unit for coupling to a power socket and that is operable to receive energy from the power socket,

a power converter electrically coupled to the plug unit for regulating the received energy and for providing a power requirement to the power distribution subsystem, and

an identification subsystem that is operable to transmit an identification signal that is operative to identify the USB adapter as not being limited by the power limits imposed by the USB specification, wherein the identification subsystem comprises a switch that is operable to couple electrically the power requirement output from the power converter to the primary USB connector.

98. (New) The system of claim 97, further comprising a charging subsystem in the USB power adapter configured to couple the power converter to a battery receptacle to directly charge a rechargeable battery.

99. (New) The USB adapter of claim 29 wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

100. (New) The USB adapter of claim 29 further comprising: a battery receptacle for providing a location at which to attach a rechargeable battery; and a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging

subsystem being operable to receive energy from the power converter and to provide a charge at the battery receptacle.

101. (New) The USB adapter of claim 29 wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

102. (New) The USB adapter of claim 30 wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

103. (New) The USB adapter of claim 30 further comprising: a battery receptacle for providing a location at which to attach a rechargeable battery; and a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging subsystem being operable to receive energy from the power converter and to provide a charge at the battery receptacle.

104. (New) The USB adapter of claim 30 wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

105. (New) The USB adapter of claim 31 wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

106. (New) The USB adapter of claim 31 further comprising: a battery receptacle for providing a location at which to attach a rechargeable battery; and a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging subsystem being operable to receive energy from the power converter and to provide a charge at the battery receptacle.

107. (New) The USB adapter of claim 31 wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

REMARKS

This Amendment responds to the Office Action dated September 7, 2004. Applicants hereby request reconsideration of the objections/rejections set forth in the Office Action in view of these remarks, and the above claim amendments. Applicant thanks the examiner for his indication of allowability of claims 7-12 and 28-33.

In the Office Action the Examiner objected to the claims 7-12 and 28-33 for being dependent on a rejected base claim. Claim 7 has been cancelled and the limitations thereof were added to claim 1. Thus, claim 1 has been amended to be claim 7 rewritten in independent form. Claims 8-10 are also amended to be in independent form. Claims 11 and 12 remain as originally presented, but claim 10 on which they were dependent is no longer dependent on a rejected claim. Accordingly, claims 1 and 8-12 should be allowed because their subject matter was indicated to be allowable and they are no longer dependent on rejected claims.

Claim 28 has been cancelled and rewritten to be in independent form by adding its limitations to amended claim 25. Thus, claim 25 has been amended to be claim 28 rewritten in independent form. Claims 29-31 are now amended to be in independent form. Claims 32 and 33 remain as originally presented, but claim 31 on which they were dependent is no longer dependent on a rejected claim. Accordingly, claims 25 and 29-33 should be allowed because their subject matter was indicated to be allowable and they are no longer dependent on rejected claims.

In the Office Action, claims 1, 2, 4, 6, and 16-24 were rejected under 35 U.S.C. 102(e) as being unpatentable over Dougherty (U.S. 6,668,296). Regarding claim 1, claim 1 as mentioned above is now original claim 7 rewritten in independent form, and per the examiner's indication of allowability should thus be allowable. Claims 2, 4, and 6 are now dependent on amended claim

1 and should thus also be allowable, because the subject matter of amended claim 1 was indicated to be allowable. Claims 16-24 have been amended to add the limitation that was indicated to be allowable in claim 7. Furthermore, claims 16-18 are dependent on amended claim 1 which is claim 7 rewritten in independent form. Claim 7 was indicated to be allowable, and thus claims 16-18 should be allowable because they are dependent on an allowable claim.

Claims 3, 5, 13-15, 25-27 and 34-36 were rejected under 35 U.S.C. 103(a) as unpatentable over Dougherty et al. Claims 3, 5, and 13-15 are now dependent on amended claim 1 and should thus also be allowable, because the subject matter of amended claim 1 was indicated to be allowable. Claim 25 has been amended to be claim 28 in independent form. Claim 28 was indicated to be allowable and thus claim 25 should now be allowable. Claim 26 is cancelled. Claims 27, and 34-36 are now dependent on amended claim 25 and should thus also be allowable, because the subject matter of amended claim 25 was indicated to be allowable.

New claims 37-47 should be allowable because they all include the same limitation that was indicated to be allowable in original claim 7. Because the examiner indicated the allowability of original claim 7, new claims 37-47 should also be allowable.

New claims 48-58, 81-84, and 93-94 should be allowable because they all include the same limitation that was indicated to be allowable in original claim 8. Because the examiner indicated the allowability of original claim 8, new claims 48-58, 81-84, and 93-94 should also be allowable.

New claims 59-69, 85-88, and 95-96 should be allowable because they all incorporate the limitation given in original claim 9. Because the examiner indicated the allowability of original claim 9, new claims 59-69, 85-88, and 95-96 should also be allowable.

New claims 70-80, 89-92, and 97-98 should be allowable because they all incorporate the limitation given in original claim 10. Because the examiner indicated the allowability of original claim 10, new claims 70-80, 89-92, and 97-98 should also be allowable.

New claims 99-101 should be allowable because they all incorporate the limitation given in original claim 29. Because the examiner indicated the allowability of original claim 29, new claims 99-101 should also be allowable.

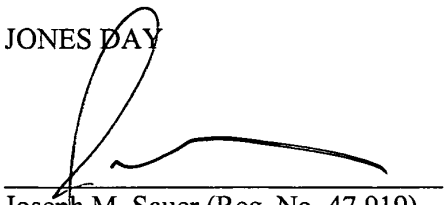
New claims 102-104 should be allowable because they all incorporate the limitation given in original claim 30. Because the examiner indicated the allowability of original claim 30, new claims 02-104 should also be allowable.

New claims 105-107 should be allowable because they all incorporate the limitation given in original claim 31. Because the examiner indicated the allowability of original claim 31, new claims 105-107 should also be allowable.

For the foregoing reasons, Applicants respectfully submits that the claims are in condition for allowance. The Examiner is, therefore, respectfully requested to enter this Amendment and pass this case to issue.

Respectfully submitted,

JONES DAY



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PATENT

Attorney Docket No. 555255012294

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Daniel M. Fischer, et al.
Serial No.:	10/087,629
Filing Date:	03/01/2002
For:	MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD
Art Unit:	2838
Examiner:	Edward H. Tso

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

Sir:

In accordance with the duty of disclosure imposed by 37 C.F.R. § 1.56, applicants hereby advise the United States Patent and Trademark Office of certain references which may be material to the determination of patentability of the above-identified application. The references are identified on the attached Form PTO-1449 and copies are enclosed. Applicants respectfully request that these references be considered and made of record in the present application by completing and returning the enclosed Form PTO-1449.

Please charge the fee ($180) for entry of this Information Disclosure Statement to Jones Day's Deposit Account No. 501432, Reference No. 555255012294.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited today with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

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PTO/SB/08A (08-03)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	10/087,629
Filing Date	03/01/2002
First Named Inventor	Daniel M. Fischer
Art Unit	2838
Examiner Name	Edward H. Tso
Attorney Docket Number	555255012294

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
	A1	US- 6,138,242	10/24/2000	Massman et al.	
	A2	US- 6,283,789 B1	09/04/2001	Tsai	
		US-			
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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]

Examiner Signature		Date Considered	

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,629	03/01/2002	Daniel M. Fischer	555255012294	3767

7590 09/07/2004

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue
Cleveland, OH 44114

EXAMINER	
TSO, EDWARD H	

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 09/07/2004

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

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	10/087,629	FISCHER ET AL.	
	Examiner	Art Unit	
	Edward Tso	2838	

-- 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) 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 the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- 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 _____.

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

3)☐ 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

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,13-27 and 34-36* is/are rejected.

7)☒ Claim(s) *7-12 and 28-33* is/are objected to.

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

Application Papers

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

10)☐ 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).

11)☐ 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

12)☐ 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-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure should be carefully reviewed to ensure that any and all grammatical, idiomatic, and spelling or other minor errors are corrected.

Claim Rejections - 35 USC § 102

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

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 6 and 16-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Dougherty et al. (US 6,668,296). The reference discloses a USB adapter 200 having plug to receive power from a power socket, a power converter to output power to an external device 100 and a USB connector 136 connecting to the converter and delivering power to the external device. The ID system or logic system 134 provides protocol communication of the adapter. The adapter is also used to charge the battery.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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

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

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

Claims 3, 5, 13-15, 25-27 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dougherty et al. (US 6,668,296).

Regarding claims 3 and 5, the reference does not specifically points out the different types of plugs to be used. It would have been obvious to one having ordinary skill in the art to have substituted the US plug with the EU, UK plug or any other type of plugs since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Regarding claims 13-15, 25-27 and 34-36, the reference does not mention an auxiliary USB connector. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have added a second USB connector, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

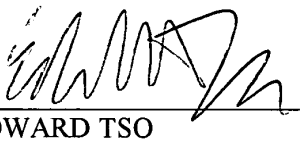
Allowable Subject Matter

Claims 7-12 and 28-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication should be directed to the Examiner at the below-listed number.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is 571 272 2800, Monday-Friday, 830am to 5:00pm, EST.

By: 

EDWARD TSO
Primary Examiner
571 272 2087

Notice of References Cited	Application/Control No. 10/087,629	Applicant(s)/Patent Under Reexamination FISCHER ET AL.	
	Examiner Edward Tso	Art Unit 2838	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,668,296	12-2003	Dougherty et al.	710/303
	B	US-6,738,856	05-2004	Milley et al.	710/315
	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.

Index of Claims

Application No.	Applicant(s)
10/087,629	FISCHER ET AL.
Examiner	**Art Unit**
Edward Tso	2838

√	Rejected	–	(Through numeral) Cancelled	N	Non-Elected	A	Appeal
=	Allowed	+	Restricted	I	Interference	O	Objected

Claim		Date
Final	Original	8/1/04
	1	v
	2	v
	3	v
	4	v
	5	v
	6	v
	7	o
	8	o
	9	o
	10	o
	11	o
	12	o
	13	v
	14	v
	15	v
	16	v
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Claim		Date
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Claim		Date
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Search Notes	Application No.	Applicant(s)	
	10/087,629	FISCHER ET AL.	
	Examiner	Art Unit	
	Edward Tso	2838	

SEARCHED			
Class	Subclass	Date	Examiner
307	150	8/1/2004	ET
	151		
320	107		
	128		
	138		

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

Paper No. 4

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
901 Lakeside Avenue/North Point
Cleveland, OH 44114

COPY MAILED

SEP 0 9 2002

OFFICE OF PETITIONS

In re Application of :
Fischer, et al. :
Application No. 10/087,629 : DECISION GRANTING STATUS
Filed: March 1, 2002 : UNDER 37 CFR 1.47(a)
Attorney Docket No. 555255012294 :
For: MULTIFUNCTIONAL CHARGER SYSTEM:
AND METHOD :

This is in response to the petition under 37 CFR 1.47(a), filed August 5, 2002.

The petition is **GRANTED**.

Petitioner has shown that inventor Dan G. Radut has refused to join in the filing of the above-identified application after having been presented with the application papers.

The above-identified application and papers have been reviewed and found in compliance with 37 CFR 1.47(a). This application is hereby accorded Rule 1.47(a) status.

As provided in Rule 1.47(c), this Office will forward notice of this application's filing to the non-signing inventor at the address given in the petition. Notice of the filing of this application will also be published in the Official Gazette.

After this decision is mailed, the above-identified application will be returned to the Office of Initial Patent Examination for further processing.

Telephone inquiries related to this decision may be directed to the undersigned at (703) 305-0310.

Alesia M. Brown
Petitions Attorney
Office of Petitions
Office of the Deputy Commissioner
for Patent Examination Policy

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
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DAN G. RADUT
300 REGINA STREET, NORTH
BUILDING 1, APT. 1207
WATERLOO, ONTARIO N2J 3B8
CANADA

COPY MAILED

SEP 0 9 2002

OFFICE OF PETITIONS

In re Application of :
Fischer, et al. :
Application No. 10/087,629 : LETTER
Filed: March 1, 2002 :
Attorney Docket No. 555255012294 :
For: MULTIFUNCTIONAL CHARGER SYSTEM:
AND METHOD :

Dear Sir:

You are named as an inventor in the above-identified United States patent application filed under the provisions of 35 U.S.C. 116 (United States Code) and 37 C.F.R. § 1.47(a), Rules of Practice in Patent Cases. Should a patent be granted on the application you will be designated therein as a joint inventor.

As a named inventor you are entitled to inspect any paper in the file wrapper of the application, order copies of all or any part thereof (at a prepaid cost as per 37 C.F.R. § 1.19) or make your position of record in the application. Alternatively, you may arrange to do any of the preceding through a registered patent attorney or agent presenting written authorization from you. If you care to join the application, counsel of record (see below) would presumably assist you. Joining in the application would entail the filing of an appropriate oath or declaration by you pursuant to 37 C.F.R. § 1.63.

Telephone inquiries regarding this communication should be directed to the undersigned at (703) 305-0310. Requests for information regarding your application should be directed to the File Information Unit at (703) 308-2733. Information regarding how to pay for and order a copy of the application, or a specific paper in the application, should be directed to Certification Division at (703) 308-9726 or 1-800-972-6382 (outside the Washington D.C. area).

Alesia M. Brown
Petitions Attorney
Office of Petitions
Office of the Deputy Commissioner
for Patent Examination Policy

CC: F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
901 Lakeside Avenue/North Point
Cleveland, OH 44114

PTO/SB/01 (03-01)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

☐ Declaration Submitted with Initial Filing OR ☑ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

Attorney Docket Numb r	555255012294
First Named Inventor	Dani I M. FISCHER
COMPLETE IF KNOWN	
Application Number	10 / 087/629
Filing Date	March 01/02
Group Art Unit	
Examiner Name	

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 the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☑ was filed on (MM/DD/YYYY) 03/01/2002 as United States Application Number or PCT International

Application Number 10/087,629 and was amended on (MM/DD/YYYY) _____ (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 specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 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 any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES	NO
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

PTO/SB/01 (03-01)
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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 contains a valid OMB control number.

DECLARATION — Utility or Design Patent Application

Direct all correspondence to: ☐ Customer Number or Bar Code Label [ ] OR ☑ Correspondence address below

Name F. Drexel Feeling, Esq.

Address Jones, Day, Reavis & Pogue
North Point, 901 Lakeside Avenue

City	State	ZIP
Cleveland	Ohio	44114-1190

Country	Telephone	Fax
USA	(216) 586-3939	(216) 579-0212

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.

NAME OF SOLE OR FIRST INVENTOR : ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])	Family Name or Surname
Daniel M.	FISCHER

Inventor's Signature [signature] **Date** Mar 1, 2002

Residence: City	State	Country	Citizenship
Waterloo	Ontario	CANADA	Canadian

Mailing Address 295 Phillip Street

City	State	ZIP	Country
Waterloo	Ontario	N2L 3W8	CANADA

NAME OF SECOND INVENTOR: ☑ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])	Family Name or Surname
Dan G.	RADUT

Inventor's Signature **Date**

Residence: City	State	Country	Citizenship
Waterloo	Ontario	CANADA	Canadian

Mailing Address 295 Phillip Street

City	State	ZIP	Country
Waterloo	Ontario	N2L 3W8	CANADA

☑ Additional inventors are being named on the 2 supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.

PTO/SB/02A (10-00)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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DECLARATION

ADDITIONAL INVENTOR(S)
Supplemental Sh et
Page 1 of 2

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name	Family Name or Surname
Michael F.	HABICHER

Inv ntor's Signature: [signature] Date: 2002-Feb-28,

Residence: City	State	Country	Citizenship
Cambridge	Ontario	CANADA	Canadian

Mailing Address: 295 Phillip Street

Mailing Address:

City	State	ZIP	Country
Waterloo	Ontario	N2L 3W8	CANADA

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name	Family Name or Surname
Quang A.	LUONG

Inventor's Signature: [signature] Date: Feb 28, 2002

Residence: City	State	Country	Citizenship
Kitchener	Ontario	CANADA	Canadian

Mailing Address: 295 Phillip Street

Mailing Address:

City	State	ZIP	Country
Waterloo	Ontario	N2L 3W8	CANADA

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name	Family Name or Surname
Jonathan T.	MALTON

Inv ntor's Signature: [signature] Date: Feb 28 /2002

Residence: City	State	Country	Citizenship
Kitchener	Ontario	CANADA	Canadian

Mailing Address: 295 Phillip Street

Mailing Address:

City	State	ZIP	Country
Waterloo	Ontario	N2L 3W8	CANADA

Burden Hour Statement: This form is estimated to take 21 minutes to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Please type a plus sign (+) inside this box → [+]

PTO/SB/81 (02-01)
Approved for use through 10/31/2002. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

POWER OF ATTORNEY OR AUTHORIZATION OF AGENT

Application Number	10/087,629
Filing Date	March 1, 2002
First Named Inventor	Daniel M. FISCHER
Title	Multifunctional Charger...
Group Art Unit	
Examiner Name	
Attorney Docket Number	555255012294

I hereby appoint:

☐ Practitioners at Customer Number [ ] → *Place Customer Number Bar Code Label here*

OR

☑ Practitioner(s) named below:

Name	Registration Number
Krishna K. Pathiyal, Esq.	44435
Please see attached sheet	

as my/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.

Please change the correspondence address for the above-identified application to:

☐ The above-mentioned Customer Number.

OR

☐ Practitioners at Customer Number [ ] → *Place Customer Number Bar Code Label here*

OR

☑ Firm *or* Individual Name	**F. Drexel Feeling, Esq.**				
Address	Jones, Day, Reavis & Pogue				
Address	North Point, 901 Lakeside Avenue				
City	Cleveland	State	Ohio	Zip	44114
Country	USA				
Telephone	(216) 586-3939	Fax	(216) 579-0212		

I am the:

☐ Applicant/Inventor.

☑ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

SIGNATURE of Applicant or Assignee of Record

Name	Mihal Lazaridis, President and Co-CEO, on behalf of Research In Motion Limited
Signature	
Date	28 Feb 02

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

☑ *Total of 2 forms are submitted. (PTO/SB/81 (02-01) and *Supplemental Page Listing Additional Agents of Record)

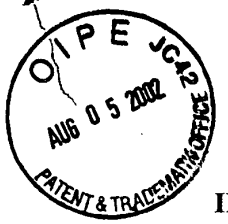
555255012294

MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

* SUPPLEMENTAL PAGE LISTING ADDITIONAL AGENTS OF RECORD

ADAMO, Kenneth R., Reg. No. 27,299
ARNDT, Barbara E., Reg. No. 37,768
BIERNACKI, John V., Reg. No. 40,511
COCHRAN, David B., Reg. No. 39,142
COOPER, Lorri W., Reg. No. 40,038
FAY, Regan J., Reg. No. 26,878
FEELING, F. Drexel, Reg. No. 40,602
FRANZ, Paul E., Reg. No. 45,910
GRIFFITH, Calvin P., Reg No. 34,831
MAIORANA, David M., Reg. No. 41,449
O'HEARN, Timothy J., Reg. No. 31,552
ROSE, Mitchell, Reg. No. 47,906
SAUER, Joseph M., Reg. No. 47,919
SCANLON, Stephen D., Reg. No. 32,755
SHEAFFER, Jenny F., Reg. No. 45,099
SWITZER, H. Duane, Reg. No. 22,431
VARY, Michael W., Reg. No. 30,811
WAMSLEY, III, James L., Reg. No. 31,578

all of JONES, DAY, REAVIS & POGUE
North Point
901 Lakeside Avenue
Cleveland, Ohio 44114
US



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PATENT

Attorney Docket No. 555255012294

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Daniel M. Fischer, Dan G. Radut, Michael F. Habicher, Quang A. Luong, Jonathan T. Malton
Serial No.:	10/087,629
Filed:	March 1, 2002
For:	MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD
Art Unit:	Not yet assigned
Examiner:	Not yet assigned

ASSISTANT COMMISSIONER OF PATENTS
WASHINGTON, D.C. 20231

PETITION FOR FILING BY OTHER THAN ALL THE INVENTORS UNDER 37 CFR § 1.47

In accordance with 37 CFR § 1.47 and MPEP §409.03(a) and (d), applicants Fischer, Habicher, Luong, and Malton hereby petition the Assistant Commissioner to accept the filing of this patent application on behalf of themselves and the joint inventor, Dan G. Radut, who refuses to join in the application for patent. The petition fee of $130 under 37 CFR § 1.17(I) accompanies this petition.

08/02/2002 SLUONG1 00000004 10087629
01 FC:122 130.00 OP

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231 on the date indicated below.

Debra L. Pejeau
Name

July 29, 2002
Date

Debra L. Pejeau
Signature

CL-692976v1

As required by MPEP § 409.03(d), applicants enclose herein proof of the refusal of Mr. Radut to execute the application papers, in the form of a Declaration of David B. Cochran to whom the refusal to sign was made. In the Declaration, Mr. Cochran states that a bona fide attempt was made to present a copy of the application papers to Mr. Radut, and that Mr. Radut refused to sign the application papers. The Declaration by Mr. Cochran is deemed by the applicants to be sufficient proof of the refusal of Mr. Radut to sign.

In accordance with MPEP § 409.03(a) and (d), a Declaration signed by Messrs./Mmes. Fischer, Habicher, Luong and Malton with the signature block of Mr. Radut left blank is enclosed herein. The last known address of Mr. Radut is "300 Regina Street, North, Building 1, Apt. 1207, Waterloo, Ontario N2J 3B8 Canada."

The Assistant Commissioner is hereby authorized to charge any additional fees which may be required by this paper only to Jones, Day Reavis & Pogue Deposit Account No. 501432, order no. 555255012294.

Respectfully Submitted,

David B. Cochran

David B. Cochran
Registration No. 39,142
JONES, DAY, REAVIS & POGUE
901 Lakeside Avenue/North Point
Cleveland, OH 44114
(216) 586-3939

Date: 7/29/02

CL-692976v1

PATENT

Attorney Docket No. 555255012294

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Daniel M. Fischer, Dan G. Radut, Michael F. Habicher, Quang A. Luong, Jonathan T. Malton
Serial No.:	10/087,629
Filed:	March 1, 2002
For:	MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD
Art Unit:	Not yet assigned
Examiner:	Not yet assigned

ASSISTANT COMMISSIONER OF PATENTS
WASHINGTON, D.C. 20231

RESPONSE TO NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

In response to the Notice to File Missing Parts of Nonprovisional Application, Filing Date Granted, mailed April 5, 2002, a copy of which is returned herewith, enclosed are the following papers relating to the above-identified application:

Declaration,

Power of Attorney,

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231 on the date indicated below.

Debra L. Pejeau
Name

July 29, 2002
Date

Debra L. Pejeau
Signature

08/05/2002 SLUANG1 00000004 10087629
02 FC:216 400.00 OP

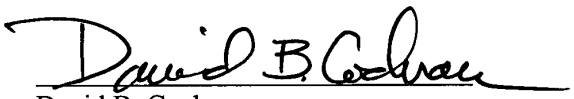
CL-694794v1

Petition for Filing By Other Than All The Inventors,

Declaration of David B. Cochran.

The late filing fee/surcharge of $130 is enclosed, as well as the petition fee of $130 and the fee for an extension for a response within the second month of $400. The PTO is hereby authorized to charge any additional fees, or credit any overpayment, to Deposit Account No. 510432, Account 555255012294.

Respectfully submitted,



David B. Cochran
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(216) 586-7029

CL-694794v1

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
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APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/087,629	03/01/2002	Daniel M. Fischer	555255012294

CONFIRMATION NO. 3767

FORMALITIES LETTER

OC000000007807051

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
901 Lakeside Avenue/North Point
Cleveland, OH 44114

Date Mailed: 04/05/2002

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.
  A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(l) of $130 for a non-small entity, must be submitted with the missing items identified in this letter.
- **The balance due by applicant is $ 130.**

A copy of this notice MUST be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202
PART 2 - COPY TO BE RETURNED WITH RESPONSE

[illegible]/2002 [illegible] 00000004 10087629
[illegible] 130.00 OP

PATENT

Attorney Docket No. 555255012294

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Daniel M. Fischer, Dan G. Radut, Michael F. Habicher, Quang A. Luong, Jonathan T. Malton
Serial No.:	10/087,629
Filed:	March 1, 2002
For:	MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD
Art Unit:	Not yet assigned
Examiner:	Not yet assigned

ASSISTANT COMMISSIONER OF PATENTS
WASHINGTON, D.C. 20231

DECLARATION OF DAVID B. COCHRAN

I hereby declare and state as follows:

1. I represent Research In Motion Limited ("RIM") in connection with the above-referenced patent application. This application names five inventors, Daniel M. Fischer, Dan G. Radut, Michael F. Habicher, Quang A. Luong, and Jonathan T. Malton.

2. Four of these inventors, Fischer, Habicher, Luong, and Malton, have signed the Declaration and Power of Attorney documents, which is being submitted to the USPTO along with this paper. Mr. Radut, however, who is no longer in the employ of RIM, refuses to sign the documents despite the fact that he signed an employment contract when beginning his employ obligating him to assist RIM in pursuing any such applications, even after his employment had ceased.

3. Prior to filing this application, a copy thereof was provided to each of the named inventors for their review and approval, including Mr. Radut.

CL-692970v1

4. On May 2, 2002, another copy of the application, along with the Declaration and Power of Attorney, was mailed to Mr. Radut's home address. Mr. Radut refused to sign the documents.

5. Between May 8 and May 15, 2002, Mr. Radut was contacted by telephone on several occasions regarding his willingness to sign the Declaration and Power of Attorney, and he refused to do so.

6. On June 19, 2002, I forwarded another copy of the application and the Declaration and Power of Attorney to Mr. Radut, again asking that he sign and return the papers, by June 27, 2002. I also called him on his home phone number to inquire as to whether he would be signing and returning the papers. He has refused to return any of my phone calls or to return the papers.

7. The last known address of Mr. Radut is 300 Regina Street, North, Building 1, Apt. 1207, Waterloo, Ontario N2J 3B8.

8. 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 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 the such willful false testimony may jeopardize the validity of the application or any patent issuing thereon.

David B. Cochran

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/087,629	03/01/2002	Daniel M. Fischer	555255012294

CONFIRMATION NO. 3767

FORMALITIES LETTER

OC000000007807051

F. Drexel Feeling, Esq.
Jones, Day, Reavis & Pogue
901 Lakeside Avenue/North Point
Cleveland, OH 44114

Date Mailed: 04/05/2002

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.
  A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(l) of $130 for a non-small entity, must be submitted with the missing items identified in this letter.
- **The balance due by applicant is $ 130.**

A copy of this notice MUST be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202
PART 3 - OFFICE COPY

03-04-02

PTO/SB/05 (03-01)
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UTILITY PATENT APPLICATION TRANSMITTAL

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

Attorney Docket No.	555255012294
First Inventor	Daniel M. FISCHER
Title	MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD
Express Mail Label No.	EL647387181US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231

1. [✔] Fee Transmittal Form (e.g., PTO/SB/17) *(Submit an original and a duplicate for fee processing)*
2. [ ] Applicant claims small entity status. See 37 CFR 1.27.
3. [✔] Specification [*Total Pages* 28]
   (preferred arrangement set forth below)
   - Descriptive title of the invention
   - Cross Reference to Related Applications
   - Statement Regarding Fed sponsored R & D
   - Reference to sequence listing, a table, or a computer program listing appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings *(if filed)*
   - Detailed Description
   - Claim(s)
   - Abstract of the Disclosure
4. [✔] Drawing(s) *(35 U.S.C. 113)* [*Total Sheets* 4]
5. Oath or Declaration [*Total Pages*]
   a. [ ] Newly executed (original or copy)
   b. [ ] 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) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. [ ] Application Data Sheet. See 37 CFR 1.76
7. [ ] CD-ROM or CD-R in duplicate, large table or Computer Program *(Appendix)*
8. Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
   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

ACCOMPANYING APPLICATION PARTS

9. [ ] Assignment Papers (cover sheet & document(s))
10. [ ] 37 CFR 3.73(b) Statement *(when there is an assignee)* [ ] Power of Attorney
11. [ ] English Translation Document *(if applicable)*
12. [ ] Information Disclosure Statement (IDS)/PTO-1449 [ ] Copies of IDS Citations
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 its equivalent.
17. [✔] Other: Claiming priority on USSN 60/273021 and 60/330486

18. If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:*

[ ] Continuation [ ] Divisional [ ] Continuation-in-part (CIP) of prior application No.: _____ / _____

Prior application information: *Examiner:* _____ *Group Art Unit:* _____

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

19. CORRESPONDENCE ADDRESS

[ ] *Customer Number or Bar Code Label* *(Insert Customer No. or Attach bar code label here)* or [✔] *Correspondence address below*

Name	F. Drexel Feeling, Esq.				
	Jones, Day, Reavis & Pogue				
Address	901 Lakeside Avenue/North Point				
City	Cleveland	*State*	Ohio	*Zip Code*	44114
Country	USA	*Telephone*	(216) 586-3939	*Fax*	(216) 579-0212

Name (Print/Type)	F. Drexel Feeling, Esq.	*Registration No. (Attorney/Agent)*	40,602
Signature	F. D. Feeling	*Date*	3/1/02

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

PTO/SB/17 (10-01)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT ($) 1112.00

Complete if Known	
Application Number	
Filing Date	03/01/2002
First Named Inventor	Daniel M. FISCHER
Examiner Name	
Group Art Unit	
Attorney Docket No.	555255012294

METHOD OF PAYMENT

1. ☑ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number: 501432 (555255012294)

Deposit Account Name: Jones Day Reavis & Pogue

☑ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17

☐ Applicant claims small entity status. See 37 CFR 1.27

2. ☐ **Payment Enclosed:**

☐ Check ☐ Credit card ☐ Money Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	740	201	370	Utility filing fee	740.00
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	80	Provisional filing fee	

SUBTOTAL (1) ($) 740.00

2. EXTRA CLAIM FEES

		Extra Claims		Fee from below	Fee Paid
Total Claims	36	-20** = 16	X	18.00	= 288.00
Independent Claims	4	- 3** = 1	X	84.00	= 84.00
Multiple Dependent					=

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple dependent claim, if not paid
109	84	209	42	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 372.00

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for *ex parte* reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	920	217	460	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	320	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	
121	280	221	140	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,280	241	640	Petition to revive - unintentional	
142	1,280	242	640	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1.17(q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	740	246	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))	
179	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 0.00

SUBMITTED BY

Name (Print/Type)	F. Drexel Feeling	Registration No. (Attorney/Agent)	40,602	Telephone	(216) 586-3939
Signature	F. D. Feeling			Date	3/1/02

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.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Title of the Invention

Multifunctional Charger System and Method

Inventors

Daniel M. Fischer

Dan G. Radut

Michael F. Habicher

Quang A. Luong

Jonathan T. Malton

Multifunctional Charger System and Method

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority from and is related to United States Provisional Application No. 60/273021, entitled "System and Method for Adapting a USB to Provide Power for Charging a Mobile Device," which was filed on March 1, 2001. United States Provisional Application No. 60/273021 is hereby incorporated into the present application by reference.

This application also claims priority from and is related to United States Provisional Application No. 60/330486, entitled "Multifunctional Charger System and Method", which was filed on October 23, 2001. United States Provisional Application No. 60/330486 is hereby incorporated into the present application by reference.

BACKGROUND

1. Field of the Invention

This invention relates generally to power adapters. More particularly, the invention relates to power adapters for use with mobile devices.

2. Description of the Related Art

Providing an external source of power to a mobile device, such as a personal digital assistants ("PDA"), mobile communication device, cellular phone, wireless two-way e-mail communication device, and others, requires design considerations with respect to both the mobile device and the power source. With regard to the mobile device, most mobile devices provide a distinct power interface for receiving power from a power source, for instance to recharge a battery, and a separate data interface for communicating. For example, many mobile devices

presently use USB (Universal Serial Bus) interfaces for communicating and use a separate power interface, such as a barrel connector, for receiving power.

It is desirable, however, to have a combined power and data interface. The mobile devices that do have combined power and data interfaces typically use non-standard and sometimes proprietary interfaces. Consequently, combined interfaces for a particular manufacturer's mobile device may not be compatible with combined interfaces for mobile devices provided by other manufacturers.

Although the USB interface can be used as a power interface, the USB is typically not used for that purpose by mobile devices. In accordance with the USB specification, typical USB power source devices, such as hubs and hosts, require that a USB device participate in a host-initiated process called enumeration in order to be compliant with the current USB specification in drawing power from the USB interface. Although a mobile device could be adapted to participate in enumeration when drawing power over the USB interface, it would be preferable in many situations, such as when a host would not be available, as often happens during normal use of a mobile device, to be able to utilize alternate power sources such as conventional AC outlets and DC car sockets that are not capable of participating in enumeration to supply power to the mobile device via a USB interface.

SUMMARY

An adapter for providing a source of power to a mobile device through an industry standard port is provided. In accordance with one aspect of the invention, the adapter comprises a plug unit, a power converter, a primary connector, and an identification subsystem. The plug unit is operative to couple the adapter to a power socket and operative to receive energy from the

power socket. The power converter is electrically coupled to the plug unit and is operable to regulate the received energy from the power socket and to output a power requirement to the mobile device. The primary connector is electrically coupled to the power converter and is operative to couple to the mobile device and to deliver the outputted power requirement to the mobile device. The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal.

In accordance with another aspect, a USB adapter for providing a source of power to a mobile device through a USB port is provided. The USB adapter comprises a plug unit, a power converter, a primary USB connector, and an identification subsystem. The plug unit is operative to couple the USB adapter to a power socket and operative to receive energy from the power socket. The power converter is electrically coupled to the plug unit and is operable to regulate the received energy from the power socket and to output a power requirement to the mobile device. The primary USB connector is electrically coupled to the power converter and is operative to couple to the mobile device and to deliver the outputted power requirement to the mobile device. The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal.

Another aspect provides a USB adapter for providing a source of power to a mobile device through a USB port. The USB adapter comprises a plug unit, a power converter, a primary USB connector, and an auxiliary USB adapter. The plug unit is operative to couple the USB adapter to a power socket and operative to receive energy from the power socket. The power converter is electrically coupled to the plug unit and is operable to regulate the received energy from the power socket and to output a power requirement to the mobile device. The primary USB connector is electrically coupled to the power converter and is operative to couple

to the mobile device and to deliver the outputted power requirement to the mobile device. The auxiliary USB connector has data lines that are electrically coupled to the data lines of the primary USB connector.

Yet another aspect provides a method for providing energy to a mobile device using a USB adapter that comprises a plug unit, a primary USB connector, a power converter electrically coupled between the plug unit and the primary USB connector, and an identification subsystem electrically coupled to the primary USB connector. The method comprising the steps of coupling the USB connector to the mobile device, coupling the plug unit to a power socket, outputting a power requirement to the mobile device via the power converter and the USB connector, and providing an identification signal to the mobile device, via the identification subsystem and the USB connector, that is operative to inform the mobile device that the USB adapter is not limited by the power limits imposed by the USB specification.

In accordance with another aspect, a powering system for a mobile device having a USB connector is provided. The powering system comprises a power distribution subsystem in the mobile device that is operable to receive energy through the USB connector and to distribute the energy to at least one component in the mobile device and a USB adapter that is operative to couple to the USB connector.. The USB adapter comprises a plug unit for coupling to a power socket and that is operable to receive energy from the power socket, a power converter electrically coupled to the plug unit for regulating the received energy and for providing a power requirement to the power distribution subsystem, and an identification subsystem that is operable to transmit an identification signal that is operative to identify the USB adapter as not being limited by the power limits imposed by the USB specification.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention identified in the claims may be more clearly understood, preferred embodiments thereof will be described in detail by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a schematic diagram of an exemplary mobile device which has an industry standard interface;

Fig. 2 is a schematic diagram of a first embodiment of a USB adapter that is coupled to an exemplary mobile device;

Fig. 3 is a flow chart illustrating an exemplary use of a USB adapter with a mobile device; and

Fig. 4 is a schematic diagram of an additional exemplary embodiment of a USB adapter that is coupled to both an exemplary mobile device and an external battery.

DETAILED DESCRIPTION

Exemplary Mobile Device

Turning now to the drawing figures, shown in Fig. 1 is a schematic diagram of an exemplary mobile communication device **10** which has an industry standard interface. The mobile communication device **10** is preferably a two-way communication device having at least voice or data communication capabilities. Preferably, the mobile device **10** is also capable of communicating over the Internet, for example, via a radio frequency ("RF") link. Examples of types of devices that could be classified as a mobile device **10** include a data messaging device, a two-way pager, a cellular telephone with data messaging capabilities, a wireless Internet appliance, a data communication device (with or without telephony capabilities), a personal digital assistants ("PDA"), a wireless two-way e-mail communication device, and others.

The exemplary mobile device **10** comprises a microprocessor **12**, a communication subsystem **14**, input/output ("I/O") devices **16**, an industry standard interface **18** which in this example is a USB port, and a power subsystem **20**. The microprocessor **12** controls the overall operation of the mobile device **10**. The communication subsystem **14** provides the mobile device **10** with the ability to communicate wirelessly with external devices such as other mobile devices and other computers. The I/O devices **16** provide the mobile device **10** with input/output capabilities for use with a device user. The USB port **18** provides the mobile device **10** with a serial port for linking directly with other computers and/or a means for receiving power from an external power source. The power subsystem **20** provides the mobile device **10** with a local power source.

The exemplary communication subsystem **14** comprises components such as a receiver **22**, a transmitter **24**, antenna elements **26** and **28**, local oscillators (LOs) **30**, and a processing module such as a digital signal processor (DSP) **32**. The particular design of the communication subsystem **14** and the components used therein can vary. It would be apparent to one of ordinary skill in the art to design an appropriate communication subsystem using conventional methods and components to operate over a communication network **34** based on the parameters necessary to operate over that communication network. For example, a mobile device **10** geographically located in North America may include a communication subsystem **14** designed to operate within the Mobitex™ mobile communication system or DataTAC™ mobile communication system, whereas a mobile device **10** intended for use in Europe may incorporate a General Packet Radio Service (GPRS) communication subsystem **14**.

Network access requirements will also vary depending upon the type of network **34**. For example, in the Mobitex and DataTAC networks, mobile devices **10** are registered on the

network using a unique personal identification number or PIN associated with each device. In GPRS networks however, network access is associated with a subscriber or user of a mobile device **10**. A GPRS device therefore requires a subscriber identity module (not shown), commonly referred to as a SIM card, in order to operate on a GPRS network. Without a SIM card, a GPRS device will not be fully functional. Local or non-network communication functions (if any) may be operable, but the mobile device **10** will be unable to carry out any functions involving communications over the network **34**.

When required, after the network registration or activation procedures have been completed, a mobile device **10** may send and receive communication signals over the network **34**. Signals received by the receiver antenna **26** through a communication network **34** are input to the receiver **22**, which may perform such common receiver functions as signal amplification, frequency down conversion, filtering, channel selection and the like, and in the exemplary system shown in Fig. 1, analog to digital conversion. Analog to digital conversion of a received signal allows more complex communication functions such as demodulation and decoding to be performed in a DSP **32**. Similarly, signals to be transmitted are processed, including modulation and encoding for example, by the DSP **32** and input to the transmitter **24** for digital to analog conversion, frequency up conversion, filtering, amplification and transmission over the communication network **34** via the transmitter antenna **28**.

Also, in the exemplary communication subsystem **14**, the DSP **32** processes communication signals and also provides for receiver and transmitter control. For example, the gains applied to communication signals in the receiver **22** and transmitter **24** may be adaptively controlled through automatic gain control algorithms implemented in the DSP **32**.

In implementing its control function, the microprocessor **12** in the exemplary mobile device **10** executes an operating system. The operating system software used by the microprocessor **12** is preferably stored in a persistent store such as flash memory **36**, or alternatively read only memory (ROM) or similar storage element. The microprocessor **12** may also enable the execution of specific device applications, which preferably are also stored in a persistent store. The operating system, specific device applications, or parts thereof, may also be temporarily loaded into a volatile store such as in RAM **38**.

A predetermined set of applications which control basic device operations, including at least data and voice communication applications for example, will normally be installed on the mobile device **10** during manufacture. One such application loaded on the mobile device **10** could be a personal information manager (PIM) application. The PIM application preferably is an application for organizing and managing user inputted data items such as e-mail, calendar events, voice mails, appointments, and task items. The PIM data items may be stored in the RAM **38** and/or the flash memory **36**.

The PIM application preferably has the ability to send and receive data items, via the wireless network **34**. The PIM data items are preferably seamlessly integrated, synchronized and updated, via the wireless network **34**, with corresponding data items stored or associated with a host computer system (not shown) used by the device user. The synchronization of PIM data items is a process by which the PIM data items on the mobile device **10** and the PIM data items on the host computer system can be made to mirror each other.

There are several possible mechanisms for loading applications onto the mobile device **10**. For example, applications may be loaded onto the mobile device **10** through the wireless network **34**, an auxiliary I/O subsystem **40**, the serial port **18**, a short-range communications

subsystem **42**, such as an infrared ("IR") communication system, or any other suitable subsystem **44**. When loading the applications onto the mobile device **10**, the device user may install the applications in the RAM **38**, the flash memory **36**, or preferably a non-volatile store (not shown) such as ROM for execution by the microprocessor **12**. The available application installation mechanisms can increase the utility of the mobile device **10** by providing the device user with a way of upgrading the mobile device **10** with additional and/or enhanced on-device functions, communication-related functions, or both. For example, a secure communication application may be loaded onto the mobile device **10** that allows for electronic commerce functions or other financial transactions to be performed using the mobile device **10**.

The I/O devices **16** may be used to display and/or compose data communication messages. In one mode of operation, a signal received by the mobile device **10**, such as a text message or web page download, will be received and processed by the communication subsystem **14**, forwarded to the microprocessor **12**, which will preferably further process the received signal, and provide the processed signal to one or more of the I/O devices **16** such as a display **46**. Alternatively, a received signal such as a voice signal can be provided to a speaker **48**, or alternatively to an auxiliary I/O device **40**. In another mode of operation a device user may compose a data item such as an e-mail message using a keyboard **50** in cooperation with the display **46** and possibly an auxiliary I/O device **40**. Alternatively, a device user may compose a voice message via a microphone **52**. The composed data item may then be transmitted over a communication network **34** using the communication subsystem **14**.

A short-range communications subsystem **42** may be provided in the mobile device **10** to allow the mobile device **10** to communicate with other systems or devices, which need not necessarily be similar to device **10**. For example, the short-range communications subsystem **42**

may include an infrared device and associated circuitry and components or a Bluetooth™ communication module to allow the device **10** to communicate with similarly-enabled systems and devices.

The USB port **18** provides the mobile device **10** with a serial port for linking directly with other computers to exchange data and/or to receive power. The USB port **18** also provides the mobile device **10** with a means for receiving power from an external power source. For example, in a personal digital assistant (PDA)-type communication device, the USB port **18** could be used to allow the mobile device **10** to synchronize data with a user's desktop computer (not shown). The USB port **18** could also enable a user to set parameters in the mobile device **10** such as preferences through the use of an external device or software application. In addition the USB port **18** may also be used to provide a means for downloading information or software to the mobile device **10** without using the wireless communication network **34**. The USB port **18** can provide a direct and thus reliable and trusted connection that may for example be used to load an encryption key onto the mobile device **10** thereby enabling secure device communication.

Coupled to the USB port **18** is a USB connector **54**. The USB connector **54** is the physical component that couples the USB port to the outside world. In the exemplary mobile device **10**, the USB connector **54** is used to transmit and receive data from an external data/power source **56**, receive power from the external data/power source **56**, direct the transmitted/received data from/to the USB port **18**, and direct the received power to the power subsystem **20**.

The exemplary power subsystem **20** comprises a charging and power distribution subsystem **58** and a battery **60**. The charging and power distribution subsystem **58** performs

many functions. It may be used to transfer energy to the battery **60** from the external data/power source **56** to charge the battery **60** and also to distribute power to the many power requiring components within the mobile device **10**. The charging subsystem **58** may be capable of determining the presence of a battery **60** and/or a power circuit coupled to the mobile device **10**, such as an AC adapter, USB connection, or car adapter, which alternatively can act as power sources **56** to provide power for the mobile device **10** and to charge the battery **60**. Additionally, the charging subsystem **58** may have the ability to determine if a power source **56** is coupled to the mobile device **10** and, in the absence of such a coupling, cause the mobile device **10** to be powered by the battery **60**.

The power distributed by the charging and power distribution subsystem **58** may be derived from energy stored in the battery **60** and/or energy received from the external data/power source **56**. When the battery **60** is depleted, the charging and power distribution subsystem **58** transfers energy from the power source **56** to recharge the battery **60**. Optionally, the charging and power distribution subsystem **58** may also transfer energy from the power source **56** to other components in the mobile device **10** to power the mobile device **10** when the battery **60** has been depleted and is recharging. When the data/power source **56** is not connected to the mobile device **10**, power for the device **10** is derived from the battery **60**.

Exemplary USB Adapter

Fig. 2 is a schematic diagram of a first embodiment of an adapter **100** that can be used to couple the mobile device **10** of fig. 1 to the data/power source **56** of fig. 1. In this example the adapter **100** is a USB adapter **100** that comprises a primary USB connector **102**, a power converter **104**, a plug unit **106**, and an identification subsystem **108**. The power converter is a known element in the art and typically includes at least one of the following components: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier. In

the embodiment shown in fig. 2, the USB adapter **100** is shown coupling a mobile device **10** to one of one or more types of power sockets **110N**, **110D**, **110B**, and **100**. Also shown in fig. 2 is an optional auxiliary USB connector **112** that can be used to couple the mobile device **10** to a data source (not shown) such as a personal computer.

In the embodiment shown in fig. 2, the primary USB connector **102** is configured to mate with the USB connector **54** of the mobile device **10**. The USB adapter **100** is operable to provide power to the mobile device **10** through the Vbus and Gnd power pins in the USB connectors **54** and **102**. The USB adapter **100** also optionally provides a communication path for data across the D+ and D- data pins in the USB connectors **54** and **102**.

The plug unit **106** is preferably a conventional plug unit that can be used to couple with a conventional power socket to receive power therefrom. For example, the plug unit **106** can be a two prong or three prong plug of the type used in North America that can couple to a North American AC power socket **110N** that provides 115 VAC. In the embodiment shown in figure 2, the plug unit **106** can accept one or more types of plug adapters **114N**, **114B**, **114D**, and **114** that are configured to couple to the plug unit **106** and are further configured to directly mate with one or more types of power sockets **110N**, **110D**, **110B**, and **100**. The plug unit **106** can be configured to receive energy from a power socket **110N**, **110D**, **110B**, or **100**, either directly or through the use of a plug adapter, and is operative to transfer the received energy to the power converter **104**.

The power converter **104** is operative to receive energy from a power socket **110N**, **110D**, **110B**, or **100** and to convert that received energy to a form that can be used by the mobile device **10**. For example, the power converter **104** can be of conventional construction such as a switching power converter that converts 115 VAC to 5 VDC. Also, the power converter **104**

could comprise a D.C. regulator circuit that converts a D.C. input to a D.C. output. The power converter **104** could also be adapted to accept a wide range of input energy levels and frequencies. Alternatively, the power converter **104** could be adapted to accept a limited range of input energy levels and frequencies, wherein the plug adapters are operable to convert the possible input energy levels and frequencies to a range that the power converter can accommodate. The power converter **104** provides its energy output to the mobile device **10** via the Vbus and Gnd pins of the primary USB connector **102**.

Through the use of a variety of different types of plug adapters, the USB adapter **100** can be adapted to receive energy from various types of power sockets **110N**, **110D**, **110B**, or **100**. For example, using the appropriate plug adapter **114**, **114B**, **114D**, and **114N**, the USB adapter **100** can receive energy from a power socket such as an 115 VAC North American power socket **110N**, or a 12 VDC automobile power socket, or an air power socket, or others.

For example, in North America, a type "N" power socket is commonly available. The plug adapter **114N** can be releasably attached to the plug unit **106** thereby allowing any North American power socket **114N** to be used as a power source. When traveling to a locale which does not have the North American power socket **114N**, an alternate plug adapter such as adapters **114**, **114B**, or **114D** may be selected by the user, according to the power socket **110D**, **110B**, or **100** available at the locale. The plug adapter **114**, **114B**, or **114D** may then be releasably attached to plug unit **106** in place of the plug adapter **114N**, thereby allowing the USB power adapter **100** to connect to a local power supply via the local power socket . Various other plug adapters are envisioned that can be configured to operate with alternate power sources such as for instance car sockets.

The power distribution and charging subsystem **58** of the mobile device **10** can selectively use the power provided on the Vbus and Gnd lines of the USB connector **54** to provide power to the mobile device **10**, charge the battery **60**, or both. A more detailed discussion of how the charging function of mobile device **10** can be implemented is described in United States Provisional Application No. 60/273021 filed on March 1st, 2001 and entitled "System and Method for Adapting a USB to Provide Power for Charging a Mobile Device" which has been incorporated herein by reference.

Typically when a mobile device **10** receives power over the USB from a USB host, it is required to draw power in accordance with the USB specification. The USB specification specifies a process for transferring energy across the USB called enumeration and limits the electrical current that can flow across the USB.

The USB adapter **100** contributes to a system wherein a device **10** that follows the USB specification when coupled to a typical USB host via its USB port can be informed that the USB adapter **100** has been coupled to the device **10** and that the device **10** can now draw power without regard to the USB specification and the USB specification imposed limits.

The identification subsystem **108** provides an identification signal to the mobile device **10** that the power source is not a USB limited source. The identification signal could be the communication of a single voltage on one or more of the USB data lines, different voltages on the two data lines, a series of pulses or voltage level changes, or other types of electrical signals. The identification subsystem **108** that generates the identification signal could have multiple types of configurations. In one embodiment, the identification subsystem **108** comprises a hard-wired connection of a single voltage level to both data lines. In another embodiment, the identification subsystem **108** comprises a USB controller that is operable to communicate an

identification signal to the mobile device. Additional embodiments are contemplated. The identification subsystem **108** may optionally be configured to have the capability of electrically connecting or disconnecting the power output from the power converter **104** from the USB connector **102** and/or to connect or disconnect any data inputs from the USB adapter **100** to the USB connector **102**.

In addition to providing power to the mobile device **10** over the primary USB connector **102**, the USB adapter **100** may optionally be equipped with an auxiliary USB connector **112** that allows the USB adapter **100** to create a communication path between the mobile device **10** and some other device capable of communicating over the USB such as a personal computer, another mobile device or some other type of device.

The USB adapter **100** preferably provides a communication path between the D+ and D- pins of the Primary USB connector **102** and the D+ and D- pins of the auxiliary USB connector **112**. In the embodiment shown, the communication path also traverses the identification subsystem **108.** Alternatively, the communication path could bypass the identification subsystem **108**. The USB adapter **100** can thus act as a pass through device for communication between a USB hub or host and a mobile device **10**.

Optionally, the USB adapter **100** could also transfer energy from the power converter **104** to the auxiliary USB connector **112** thereby providing a device coupled to the auxiliary USB connector **112** with power. In this arrangement, the identification subsystem **108** could also provide an identification signal to the device coupled to the auxiliary USB connector **112** to inform that device that the power source is not a USB limited source.

Exemplary Illustration Of The Use of A USB Adapter With A Mobile Device

When a USB adapter **100** is connected to a mobile device **10**, the identification subsystem **108** of the USB adapter **100** preferably provides an identification signal to the mobile

device **10** to notify the mobile device **10** that the device **10** is connected to a power source that is not subject to the power limits imposed by the USB specification. Preferably, the mobile device **10** is programmed to recognize the identification signal and therefore recognizes that an identification signal has been transmitted by the USB adapter **100**. After recognizing a valid identification signal, the mobile device **10**, draws power through the USB adapter **100** without waiting for enumeration or charge negotiation.

The detection of the identification signal may be accomplished using a variety of methods. For example, the microprocessor **12** may detect the identification signal by detecting the presence of an abnormal data line condition at the USB port **18**. The detection may also be accomplished through the use of other device subsystems **44** in the mobile device **10**. The preferred identification signal results from the application of voltage signals greater than 2 volts to both the D+ and D- lines in the USB connector. The preferred method of identification is described below in greater detail with reference to Fig. 3.

At step **210**, the mobile device **10** detects the presence of a voltage on the Vbus line of the USB connector **54** via the USB port **18**. At step **220**, the mobile device checks the state of the D+ and D- lines of the USB connector. In the example shown in the drawings, the D+ and D- lines are compared to a 2V reference. Also, in this example, the identification subsystem **108** of the USB adapter **100** may have applied a logic high signal, such as +5V reference, to both the D+ and D- lines to identify the attached device as a USB adapter **100**. If the voltages on both the D+ and D- lines of the USB connector are greater than 2 Volts (step **220**), then the mobile device **10** determines that the device connected to the USB connector **54** is not a typical USB host or hub and that a USB adapter **100** has been detected (step **230**). The mobile device **10** can then

charge the battery or otherwise use power provided via the Vbus and Gnd lines in the USB connector **54** (step **260**) without waiting for enumeration.

If, however, after the mobile device **10** detects the presence of a voltage on the Vbus line of the USB connector **54** and determines that the voltages on both the D+ and D- lines of the USB connector are not greater than 2 Volts (step **220**), then the mobile device **10** determines that a USB host or hub has been detected (step **240**). A typical USB host or hub weakly holds its D+ and D- lines at zero volts when it is not connected to another device. The mobile device **10** can then signal the USB host or hub to initiate the enumeration process (step **250**) and can charge the battery or otherwise use power provided via the Vbus and Gnd lines in the USB connector (step **260**) in accordance with the power limits imposed by the USB specification. The enumeration process is typically initiated after the mobile device **10** applies approximately zero volts to the D- line and approximately 5 volts to the D+ line to inform the host of the mobile device's **10** presence and communication speed.

Therefore, when a USB adapter **100** is coupled to the mobile device **10** and has been identified as a USB adapter **100**, the mobile device **10** can forego the enumeration process and charge negotiation process and immediately draw energy from the USB power adapter **100** at a desired rate, for instance at 5 unit loads, i.e. 500mA. While the mobile device **10** charges its battery using the USB adapter **100**, the mobile device **10** can disable its typical USB functions. If, however, the mobile device **10** detects that a USB host or hub is coupled to the mobile device **10**, the mobile device **10** can apply a voltage to the D+ line to indicate to the USB host or hub that the mobile device **10** is coupled thereto and await enumeration and USB charge negotiation.

If the USB adapter **100**, is coupled to the mobile device **10**, and the mobile device **10** does not identify the USB adapter **100** through communications with the identification module

108, the mobile device **10** may stop drawing energy from the Vbus and Gnd lines of the USB connector **54**. This may occur, for example, if the mobile device **10** is not programmed to identify the USB adapter **100**. The mobile device **10** may mistakenly identify the USB adapter **100** as a typical USB host or hub and await enumeration before drawing substantial energy. To guard against this, the USB adapter **100** can optionally be adapted to function with mobile devices that are not programmed to recognize the USB adapter **100**.

In that scenario, the USB adapter **100** can be adapted to provide energy to a mobile device by using the knowledge that the mobile device will draw energy from a connected device for a period of time before it stops drawing energy due to lack of enumeration. The USB adapter **100** can optionally provide power for charging a battery **60** in a mobile device by periodically switching the voltages on the Vbus and Gnd lines between on and off states. When the USB adapter **100** is coupled to the mobile device, the identification subsystem **108** can apply an on-voltage (5 V for example) between the Vbus and Gnd lines. The mobile device will draw energy while awaiting enumeration. After a period of time, the identification subsystem **108** can apply an off-voltage (0 volts) between the Vbus and Gnd lines thereby fooling the mobile device into determining that the unidentified USB device has been disconnected from the mobile device. The identification subsystem **108** can then reapply an on-voltage between the Vbus and Gnd lines. The mobile device will draw energy again while awaiting enumeration. This cycle can be repeated to periodically apply energy to the mobile device, for example, to recharge the battery **60** of the mobile device.

Additional Exemplary Embodiments Of USB Adapters

Shown in fig. 4 is a schematic diagram of an additional exemplary embodiment of a USB adapter **300** that is coupled to a mobile device **10**. The exemplary USB adapter **300** comprises a USB connector **302**, a power converter **304**, a plug unit **306**, and an identification subsystem

308. The USB connector **302**, plug unit **306**, and identification subsystem **308**, preferably correspond to the USB connector **102**, plug unit **106**, and identification subsystem **108** which were described earlier with respect to the first embodiment. Similar to the first embodiment, the additional embodiment may optionally be equipped with various plug adapters **314N**, **314D**, **314B**, and **314** that preferably are releasably attachable to plug unit **306** so that the appropriate plug adapter **314N**, **314D**, **314B**, or **314** can be selected by a user to allow the USB adapter **300** to couple to and receive energy from an available power socket **310N**, **310D**, **310B**, or **310**. The exemplary USB power converter **300** further comprises a charging subsystem **316** and battery receptacle **318** for coupling the USB adapter **300** to an external battery **320** that may be optionally coupled thereto.

The battery receptacle **318** provide a location for releasably coupling an external battery **320** thereto so that the external battery can be charged via the USB adapter **300**. This provides the USB adapter **300** with a mechanism for charging, for example, a mobile device's primary or spare battery when the battery has been separated from or is not coupled to the mobile device **10**.

To accommodate this functionality, the power converter **304** is capable of providing the proper voltage levels for the USB connector **302** and also capable of providing necessary voltage and current levels to drive a battery charging subsystem **316**. The power converter **304** is preferably a dual power converter that may be constructed using conventional or non-conventional architectures. With respect to the portion of the power converter **304** that provides energy to the USB connector **302**, that portion is preferably similar in construction and function to the power converter **104** of the first embodiment.

Preferably, the charging subsystem **316** performs in a substantially similar manner to charging subsystem **58** of the mobile device **10**. But, for efficiency and simplicity of design,

certain aspects of the dual power converter **304** and the charging subsystem **316** may be combined, as both are local to the USB adapter **300**.

Other alternative embodiments of the USB adapter may include various combinations of components described above with respect to the first and additional embodiments. Another embodiment of the USB adapter may include a second or more auxiliary USB connectors. A USB adapter having one or more auxiliary USB connectors may optionally be configured such that one or more of the auxiliary USB connectors may have power from the USB adapter's power converter made available to it so that multiple USB devices may draw power simultaneously. Preferably, a USB adapter having multiple auxiliary USB connectors will be configured such that the data lines in the auxiliary connectors can, on a selective basis, be electrically connected to or disconnected from the data lines in the primary USB connector. This allows a mobile device connected to the primary USB connector to receive energy from the adapter regardless of whether a USB host or hub is connected to an auxiliary USB connector. It is also contemplated that a USB adapter may be embodied in a USB host or hub.

Conclusion

The embodiments described herein are examples of structures, systems or methods having elements corresponding to the elements of the invention recited in the claims. This written description may enable those skilled in the art to make and use embodiments having alternative elements that likewise correspond to the elements of the invention recited in the claims. The intended scope of the invention thus includes other structures, systems or methods that do not differ from the literal language of the claims, and further includes other structures, systems or methods with insubstantial differences from the literal language of the claims. Although the embodiments have been described with reference to the USB interface, it is

contemplated that the invention could be applicable to devices and systems that use other standard interfaces such as the IEEE 1394 interface.

The following is claimed:

1. A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the power requirement to the mobile device; and

an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector.

2. The USB adapter of claim 1, wherein the plug unit is configured to couple directly with the power socket.

3. The USB adapter of claim 2, wherein the plug unit is configured to couple to at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

4. The USB adapter of claim 1, further comprising a plug adapter that is configured to couple the plug unit to the power socket.

5. The USB adapter of claim 4, wherein the plug adapter is configured to couple to at least one power socket selected from the group consisting of: North American power socket, United Kingdom power socket, European power socket, Australian power socket, airplane power socket, and automobile power socket.

6. The USB adapter of claim 1 wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector.

7. The USB adapter of claim 6 wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.

8. The USB adapter of claim 1 wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector.

9. The USB adapter of claim 1 wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector.

10. The USB adapter of claim 1, wherein the identification subsystem further comprises a switch that is operable to couple electrically the power requirement output from the power converter to the primary USB connector.

11. The USB adapter of claim 10, wherein the identification system is operable to cause the switch to disconnect the power requirement output from the primary USB connector.

12. The USB adapter of claim 11, wherein the identification system is operable to cause the switch to reconnect the power requirement output to the primary USB connector.

13. The USB adapter of claim 1, further comprising an auxiliary USB connector.

14. The USB adapter of claim 13, wherein the data lines of the auxiliary USB connector are coupled to the data lines of the primary USB connector via the identification subsystem.

15. The USB adapter of claim 13, wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

16. The USB adapter of claim 1, wherein the USB adapter is integrated with a USB hub or host.

17. The USB adapter of claim 1, further comprising:

a battery receptacle for providing a location at which to attach a rechargeable battery; and

a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging subsystem being operable to receive energy from the power converter and to provide power at the battery receptacle.

18. The USB adapter of claim 1, wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

19. A method for providing energy to a mobile device using a USB adapter that comprises a plug unit, a primary USB connector, a power converter electrically coupled between the plug unit and the primary USB connector, and an identification subsystem electrically coupled to the primary USB connector, the method comprising the steps of:

coupling the USB connector to the mobile device;

coupling the plug unit to a power socket;

outputting a power requirement to the mobile device via the power converter and the USB connector; and

providing an identification signal to the mobile device, via the identification subsystem and the USB connector, that is operative to inform the mobile device that the USB adapter is not limited by the power limits imposed by the USB specification.

20. The method of claim 19, further comprising the step of:

detecting the presence of the identification signal by the mobile device.

21. The method of claim 19, further comprising the step of:

electrically disconnecting the power requirement from the USB connector.

22. The method of claim 21, further comprising the step of:

electrically reconnecting the power requirement to the USB connector to allow the power requirement to be outputted to the mobile device.

23. A powering system for a mobile device having a USB connector; comprising:

a power distribution subsystem in the mobile device that is operable to receive energy through the USB connector and to distribute the energy to at least one component in the mobile device; and

a USB adapter for coupling to the USB connector, the USB adapter comprising a plug unit for coupling to a power socket and that is operable to receive energy from the power socket, a power converter electrically coupled to the plug unit for regulating the received energy and for providing a power requirement to the power distribution subsystem, and an identification subsystem that is operable to transmit an identification signal that is operative to identify the USB adapter as not being limited by the power limits imposed by the USB specification.

24. The system of claim 23, further comprising a charging subsystem in the USB power adapter configured to couple the power converter to a battery receptacle to directly charge a rechargeable battery.

25. A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising:

a plug unit for coupling to a power socket and for receiving energy from the power socket;

a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device;

a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the outputted power requirement to the mobile device; and

an auxiliary USB connector having data lines that are electrically coupled to the data lines of the primary USB connector.

26. The USB adapter of claim 25 further comprising an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector.

27. The USB adapter of claim 26 wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector.

28. The USB adapter of claim 27 wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.

29. The USB adapter of claim 26 wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector.

30. The USB adapter of claim 26 wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector.

31. The USB adapter of claim 26 wherein the identification subsystem further comprises a switch that is operable to electrically couple the power requirement output from the power converter to the primary USB connector.

32. The USB adapter of claim 31 wherein the identification system is operable to cause the switch to disconnect the power requirement output from the primary USB connector.

33. The USB adapter of claim 32 wherein the identification system is operable to cause the switch to reconnect the power requirement output to the primary USB connector.

34. The USB adapter of claim 25 wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

35. The USB adapter of claim 25 further comprising:

a battery receptacle for providing a location at which to attach a rechargeable battery; and

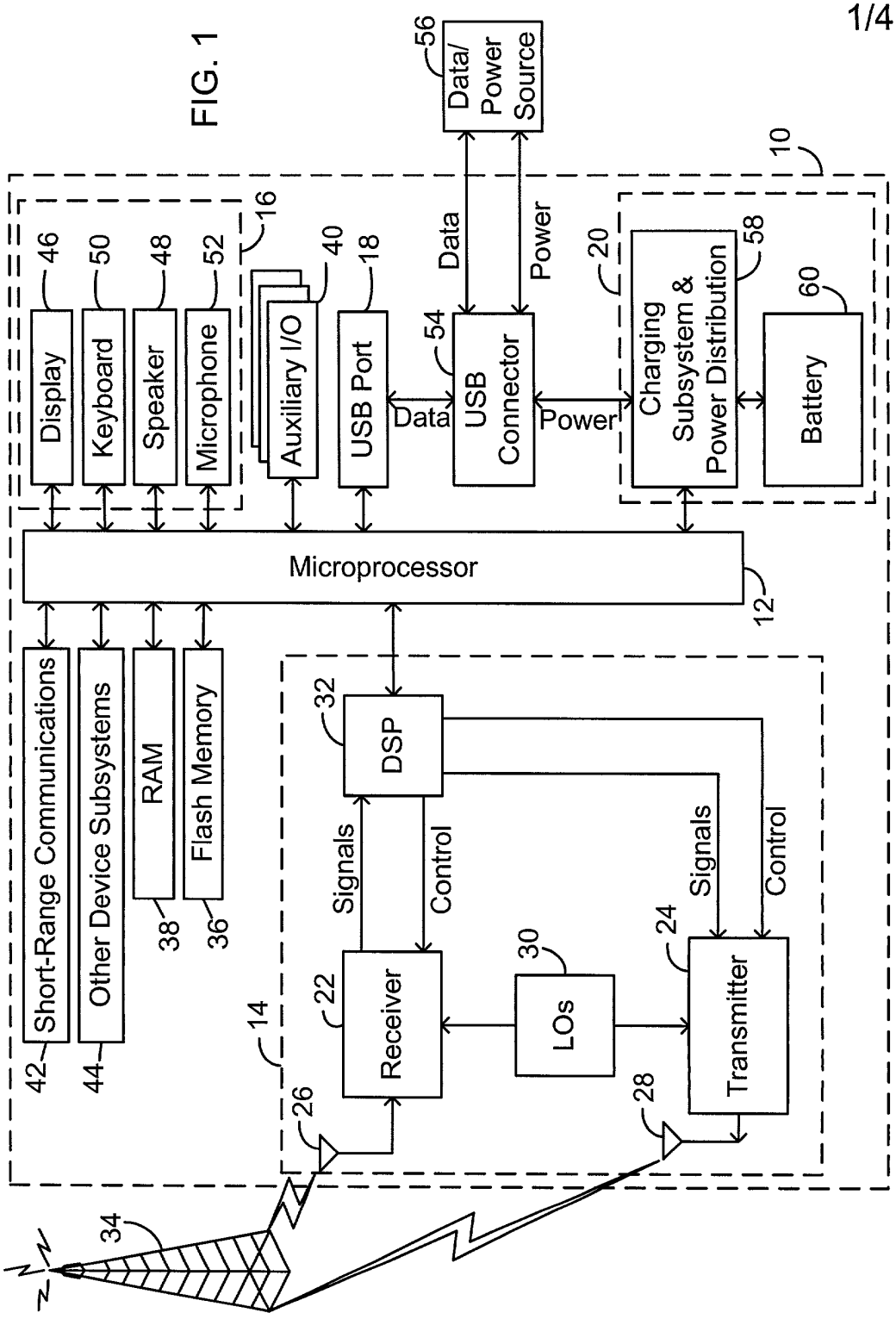
a battery charging subsystem electrically coupled between the battery receptacle and the power converter, the battery charging subsystem being operable to receive energy from the power converter and to provide a charge at the battery receptacle.

36. The USB adapter of claim 25 wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.

ABSTRACT

An adapter for providing a source of power to a mobile device through an industry standard port is provided. In accordance with one aspect of the invention, the adapter comprises a plug unit, a power converter, a primary connector, and an identification subsystem. The plug unit is operative to couple the adapter to a power socket and operative to receive energy from the power socket. The power converter is electrically coupled to the plug unit and is operable to regulate the received energy from the power socket and to output a power requirement to the mobile device. The primary connector is electrically coupled to the power converter and is operative to couple to the mobile device and to deliver the outputted power requirement to the mobile device. The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal.

FIG. 1


10
Data/ Power Source
56
Data
Power
16
Display
46
Keyboard
50
Speaker
48
Microphone
52
Auxiliary I/O
40
USB Port
18
USB Connector
54
Data
Power
20
Charging Subsystem & Power Distribution
58
Battery
60
Microprocessor
12
Short-Range Communications
42
Other Device Subsystems
44
RAM
38
Flash Memory
36
14
DSP
32
Signals
Control
Receiver
22
LOs
30
Signals
Control
Transmitter
24
26
28
34

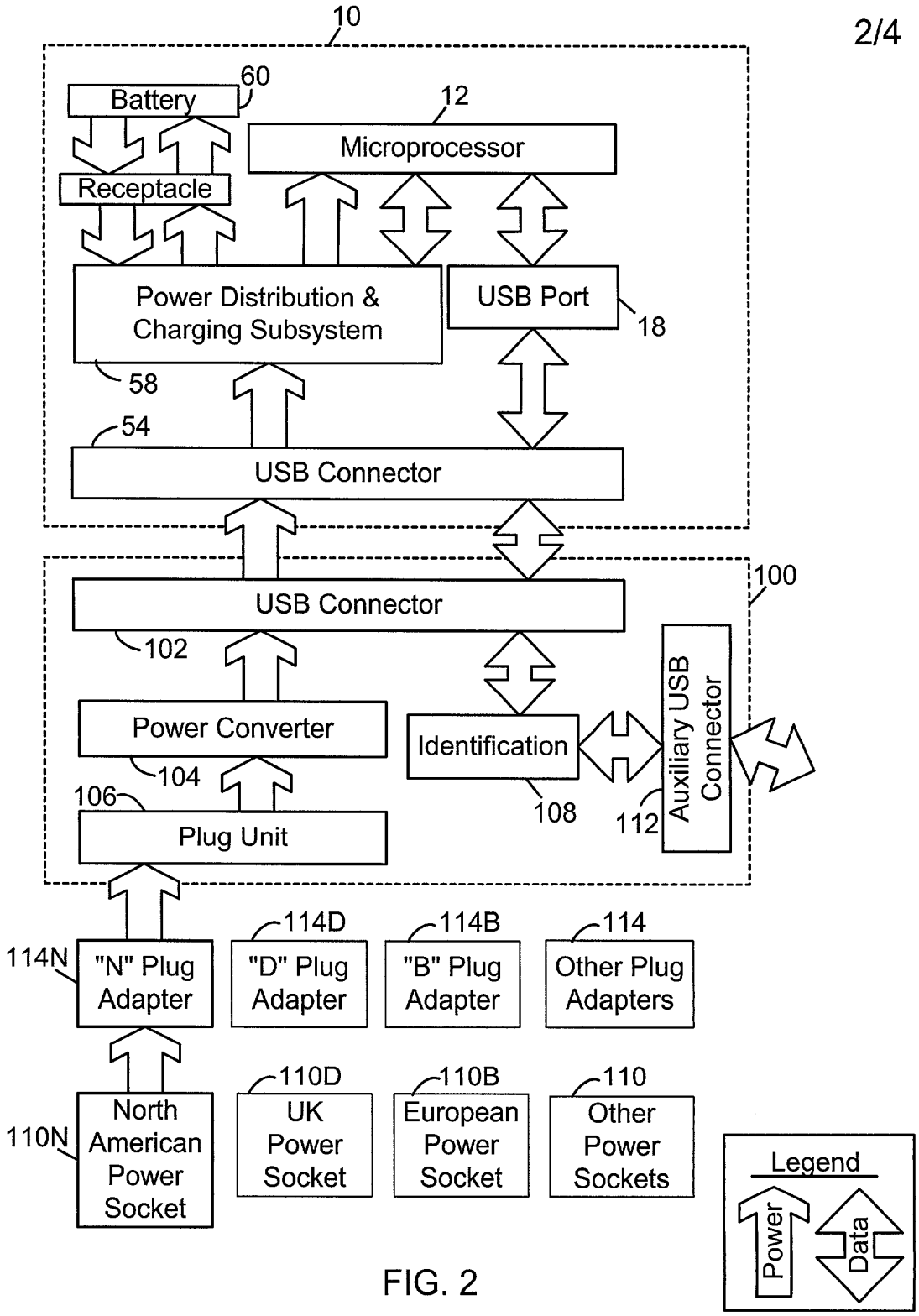

10
Battery
60
12
Microprocessor
Receptacle
Power Distribution & Charging Subsystem
USB Port
18
58
54
USB Connector
100
USB Connector
102
Power Converter
104
106
Plug Unit
Identification
108
112
Auxiliary USB Connector
114N
"N" Plug Adapter
114D
"D" Plug Adapter
114B
"B" Plug Adapter
114
Other Plug Adapters
110N
North American Power Socket
110D
UK Power Socket
110B
European Power Socket
110
Other Power Sockets
Legend
Power
Data

FIG. 2

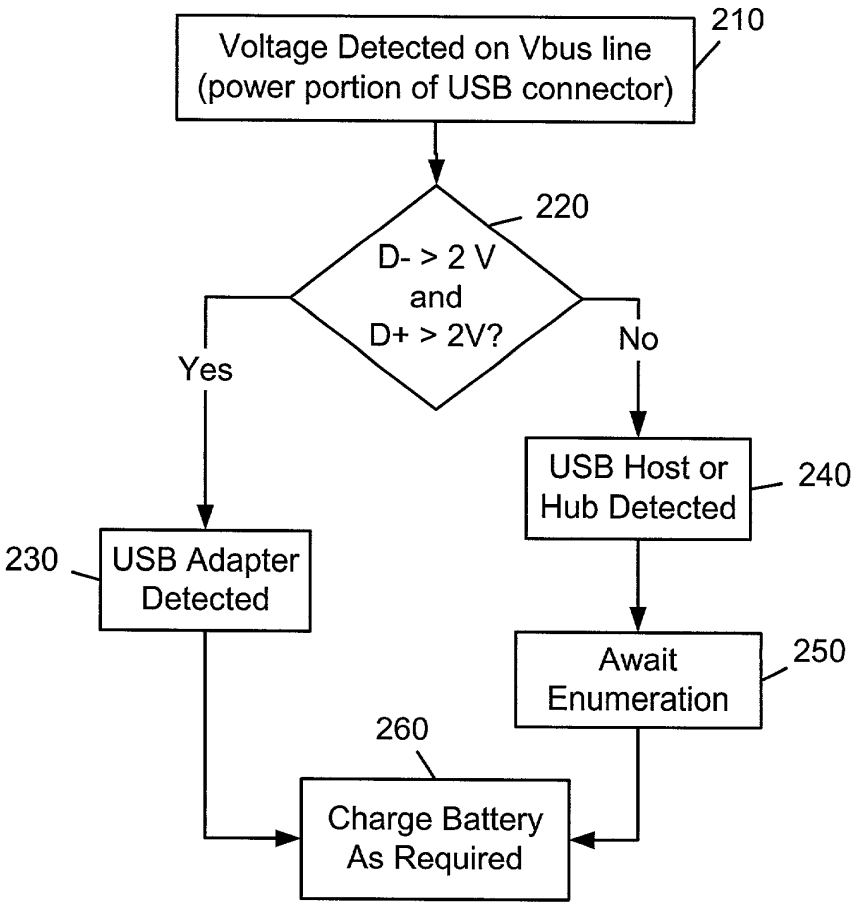

Voltage Detected on Vbus line
(power portion of USB connector)
210
D- > 2 V
and
D+ > 2V?
220
Yes
No
USB Adapter
Detected
230
USB Host or
Hub Detected
240
Await
Enumeration
250
Charge Battery
As Required
260

FIG. 3

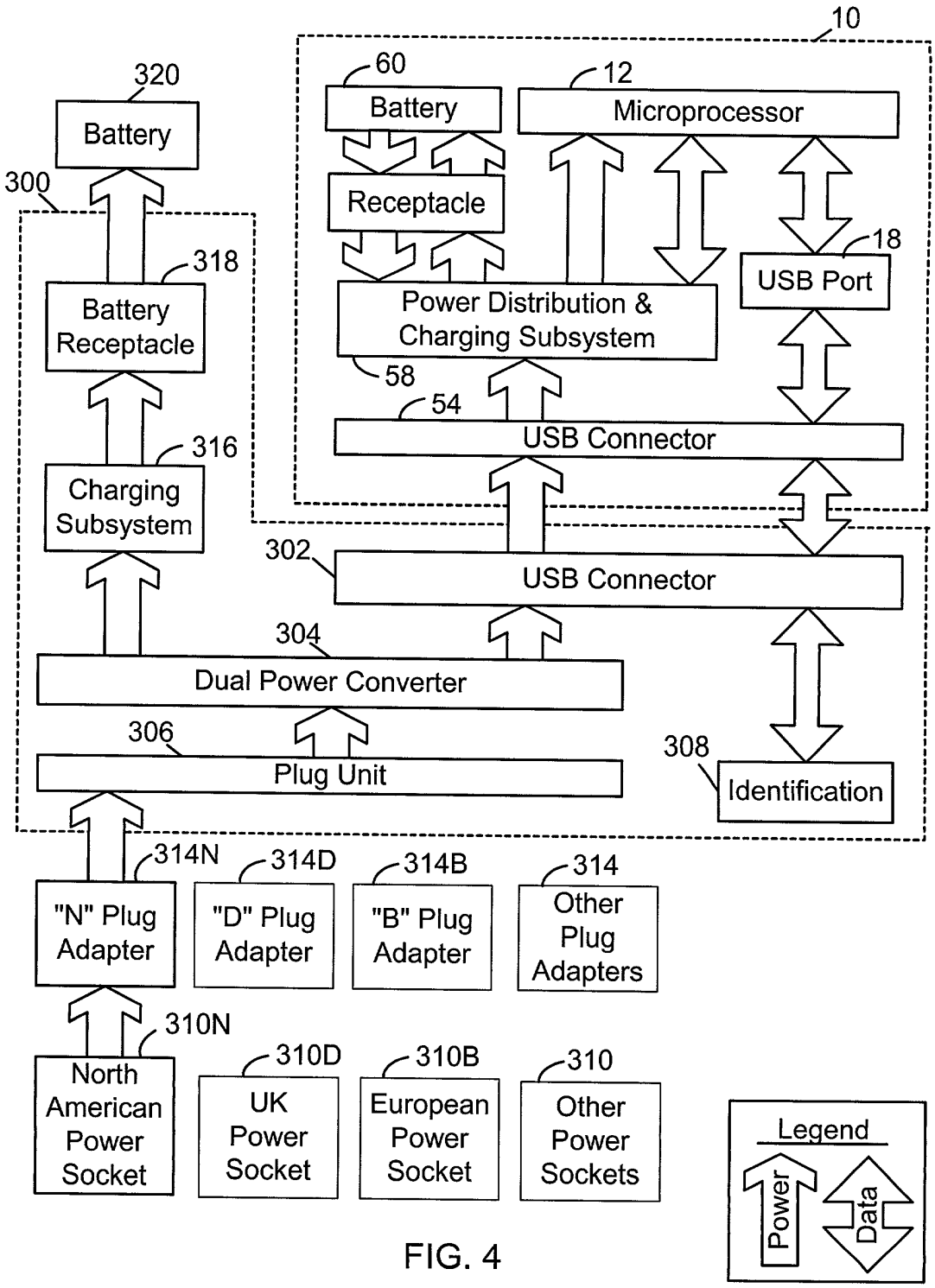

10
320
Battery
300
60
Battery
12
Microprocessor
Receptacle
18
USB Port
318
Battery Receptacle
Power Distribution & Charging Subsystem
58
54
USB Connector
316
Charging Subsystem
302
USB Connector
304
Dual Power Converter
306
Plug Unit
308
Identification
314N
314D
314B
314
"N" Plug Adapter
"D" Plug Adapter
"B" Plug Adapter
Other Plug Adapters
310N
310D
310B
310
North American Power Socket
UK Power Socket
European Power Socket
Other Power Sockets
Legend
Power
Data

FIG. 4

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

03/11/2002 VTRUONG1 00000046 501432 10087629

01 FC:101 740.00 CH
02 FC:102 84.00 CH
03 FC:103 288.00 CH

PTO-1556
(5/87)

*U.S. GPO: 2000-468-987/39595

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2001

Application or Docket Number: 55525501229 4

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	36	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	36 minus 20=	* 16
INDEPENDENT CLAIMS	4 minus 3 =	* 1
MULTIPLE DEPENDENT CLAIM PRESENT		☐

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐		OR	OTHER THAN SMALL ENTITY	
RATE	FEE		RATE	FEE
BASIC FEE	370.00	OR	BASIC FEE	740.00
X$ 9=		OR	X$18=	288
X42=		OR	X84=	84
+140=		OR	+280=	
TOTAL		OR	TOTAL	1112

CLAIMS AS AMENDED - PART II

AMENDMENT A	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. 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.

CLAIMS ONLY

SERIAL NO. 10087629 | FILING DATE 03-01-02

APPLICANT(S)

CLAIMS

	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1					
2		1				
3		1				
4		1				
5		1				
6		1				
7		1				
8		1				
9		1				
10		1				
11		1				
12		1				
13		1				
14		1				
15		1				
16		1				
17		1				
18		1				
19	1					
20		1				
21		1				
22		1				
23	1					
24		1				
25	1					
26		1				
27		1				
28		1				
29		1				
30		1				
31		1				
32		1				
33		1				
34		1				
35		1				
36		1				
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45						
46						
47						
48						
49						
50						
TOTAL IND.	4	⇩		⇩		⇩
TOTAL DEP.	32					
TOTAL CLAIMS	36					

	*		*		*	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
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87						
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89						
90						
91						
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93						
94						
95						
96						
97						
98						
99						
100						
TOTAL IND.		⇩		⇩		⇩
TOTAL DEP.						
TOTAL CLAIMS						

* MAY BE USED FOR ADDITIONAL CLAIMS OR ADMENDMENTS

U.S.DEPARTMENT OF COMMERCE
Patent and Trademark Office

FORM PTO-2022 (1-98)

*U.S. Government Printing Office: 1998 - 433-214/70303