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UTILITY PATENT APPLICATION TRANSMITTAL

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

Attorney Docket No.	555255012844
First Inventor	Daniel M. Fischer
Title	
Express Mail Label No.	EV 302225424 US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

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

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

ACCOMPANYING APPLICATION PARTS

9. [ ] **Assignment Papers** (cover sheet & document(s))
   Name of Assignee: Research In Motion Limited
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** (PTO/SB/08 or PTO-1449)
    [✓] Copies of citations attached
13. [ ] **Preliminary Amendment**
14. [✓] **Return Receipt Postcard** (MPEP 503) *(Should be specifically itemized)*
15. [ ] **Certified Copy of Priority Document(s)** *(if foreign priority is claimed)*
16. [ ] **Nonpublication Request** under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
17. [✓] Other: Copy of Worldwide Assignment (6 pgs) to complete Item 10 above →

17 continued: Also enclosed with #5b - Copy of Letter to Dan Radut, Petition for Filing by Other Than All the Inventors, and Declaration of David B. Cochran

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

[✓] Continuation [ ] Divisional [ ] Continuation-in-part (CIP) of prior application No.: 10/087,629 filed 03/01/2002**

Prior application information: *Examiner* Edward H. Tso *Art Unit:* 2838

19. CORRESPONDENCE ADDRESS

[✓] The address associated with Customer Number: 33070 *OR* [ ] Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Fax	

Signature	[signature]	Date	7/5/5
Name (Print/Type)	Joseph M. Sauer	Registration No. (Attorney/Agent)	47,919

**which claimed US 60/273,021 filed 03/01/2001 and US 60/330,486 filed 10/23/2001.

PTO/SB/17 (12-04v2)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL
For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 1000

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Daniel M. Fischer
Examiner Name	
Art Unit	
Attorney Docket No.	555255012844

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 501432 (555255012844) Deposit Account Name: Jones Day

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES Fee ($)	FILING FEES Small Entity Fee ($)	SEARCH FEES Fee ($)	SEARCH FEES Small Entity Fee ($)	EXAMINATION FEES Fee ($)	EXAMINATION FEES Small Entity Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	1000
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee ($)	Fee Paid ($)
18 - 20 or HP =	0	x 50	= 0.00

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee ($)	Fee Paid ($)
3 - 3 or HP =	0	x 200	= 0.00

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims Fee ($)	Multiple Dependent Claims Fee Paid ($)
360	0

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
30 - 100 =	0	/ 50 = 0 (round up to a whole number) x	250	= 0

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	0
Other (e.g., late filing surcharge): _____	0

SUBMITTED BY

Signature		Registration No. (Attorney/Agent) 47,919	Telephone 216/586-7506
Name (Print/Type)	Joseph M. Sauer		Date 7/5/5

Multifunctional Charger System and Method

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation United States Patent Application No. 10/087,629, entitled "Multifunctional Charger System and Method," which was filed on March 1, 2002. United States Patent Application No. 10/087, 629 claims priority from and is related to United States Provisional Application No. 60/273,021, entitled "System and Method for Adapting a USB to Provide Power for Charging a Mobile Device," which was filed on March 1, 2001, and United States Provisional Application No. 60/330,486, entitled "Multifunctional Charger System and Method", which was filed on October 23, 2001. The entirety of these prior applications are 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 power to a mobile device through a USB port, comprising:

a plug unit configured to receive energy from a power socket;

a power converter coupled to the plug unit, the power converter being configured to regulate the received energy from the power socket to generate a power output;

an identification subsystem configured to generate an identification signal, wherein the identification signal is configured to indicate to the mobile device that the power socket is not a USB host or hub; and

a USB connector coupled to the power converter and the identification subsystem, the USB connector being configured to couple the power output and the identification signal to the mobile device.

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 data line in the USB connector.

7. 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 USB connector.

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

9. The USB adapter of claim 1, wherein the identification subsystem further comprises a switch that is configured to couple the power output to the USB connector.

10. The USB adapter of claim 9, wherein the identification subsystem is configured to cause the switch to disconnect the power output from the USB connector.

11. The USB adapter of claim 10, wherein the identification subsystem is configured to cause the switch to reconnect the power output to the USB connector.

12. The USB adapter of claim 1, further comprising an auxiliary USB connector.

13. The USB adapter of claim 12, wherein one or more data lines of the auxiliary USB connector are coupled to one or more data lines of the USB connector via the identification subsystem.

14. The USB adapter of claim 12, wherein the power converter is operable to generate a second power output that is coupled to the auxiliary USB connector.

15. The USB adapter of claim 1, further comprising:

a battery receptacle configured to attach a rechargeable battery; and

a battery charging subsystem coupled between the battery receptacle and the power converter, the battery charging subsystem being configured to receive energy from the power converter and to provide power at the battery receptacle.

16. 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.

17. A method for providing energy to a mobile device using a USB adapter that includes a USB connector for coupling the USB adapter to the mobile device, comprising:

receiving a power input from a power socket;

generating a regulated DC power output from the power input;

generating an identification signal that is configured to indicate to the mobile device that the power socket is not a USB host or hub;

providing the identification signal on one or more data pins of the USB connector; and

providing the power output on one or more power pins of the USB connector.

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

means for receiving energy from a power socket;

means for regulating the received energy from the power socket to generate a power output;

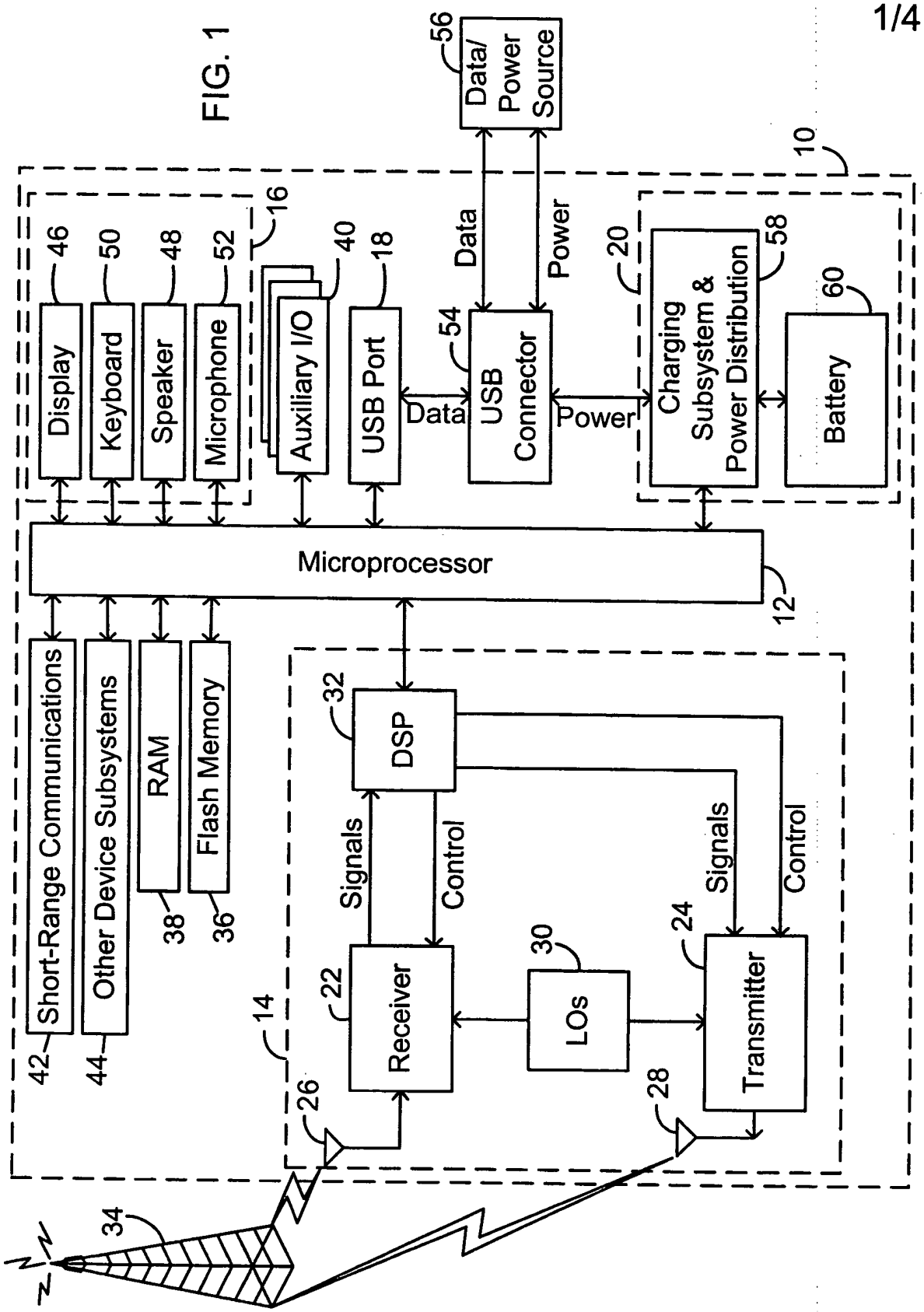
means for generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host; and

means for coupling the power output and identification signal to the mobile device.

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


Data/ Power Source
56
10
Data
Power
16
46
50
48
52
40
18
20
58
60
Display
Keyboard
Speaker
Microphone
Auxiliary I/O
USB Port
54
USB Connector
Charging Subsystem & Power Distribution
Battery
Data
Power
Microprocessor
12
Short-Range Communications
Other Device Subsystems
RAM
Flash Memory
42
44
38
36
32
DSP
Signals
Control
Signals
Control
14
22
Receiver
30
LOs
24
Transmitter
26
28
34

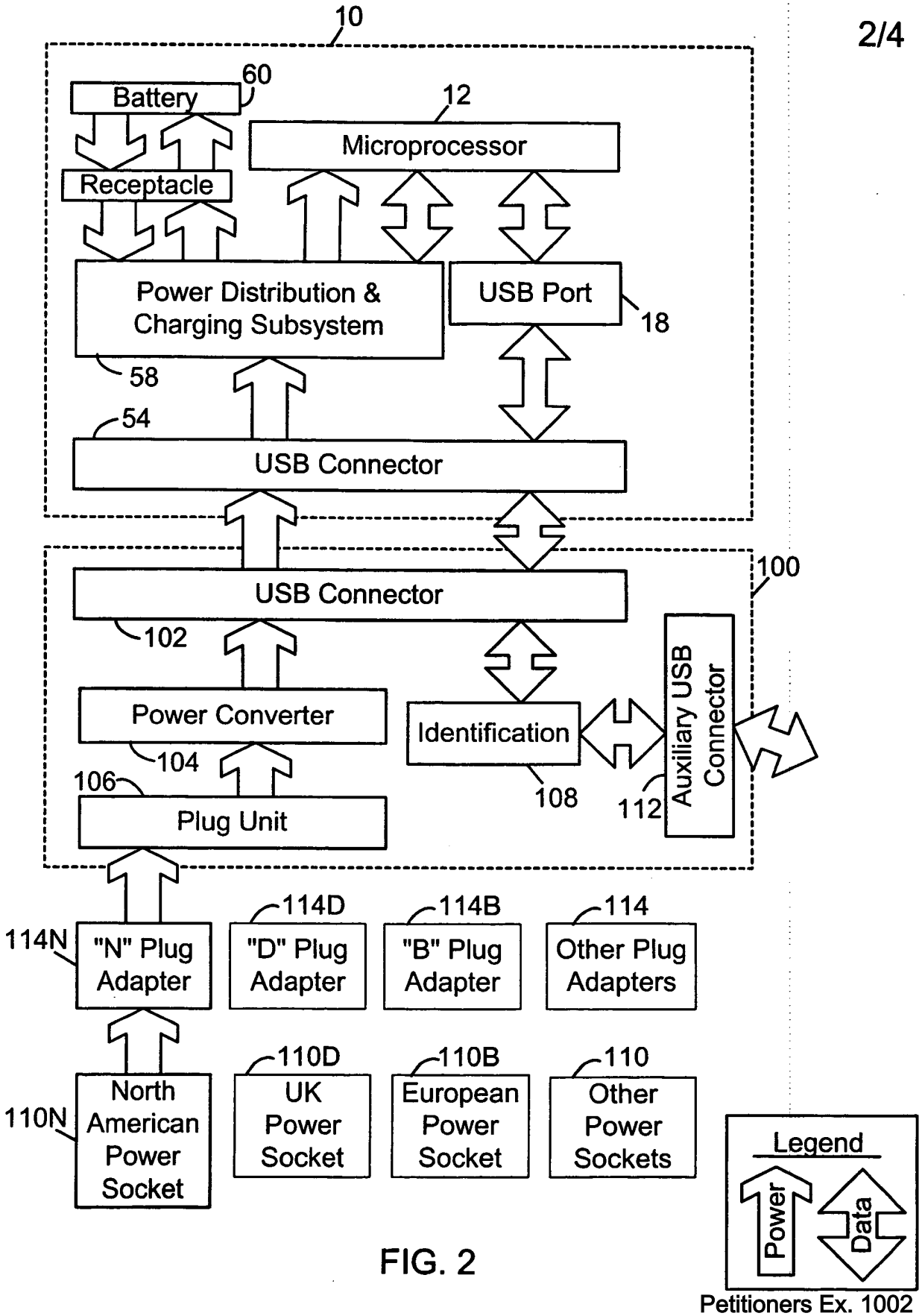

10
Battery
60
12
Microprocessor
Receptacle
Power Distribution & Charging Subsystem
USB Port
18
58
54
USB Connector
USB Connector
100
102
Power Converter
104
106
Plug Unit
Identification
108
Auxiliary USB Connector
112
114N
"N" Plug Adapter
114D
"D" Plug Adapter
114B
"B" Plug Adapter
114
Other Plug Adapters
110N
North American Power Socket
110D
UK Power Socket
110B
European Power Socket
110
Other Power Sockets
Legend
Power
Data

FIG. 2

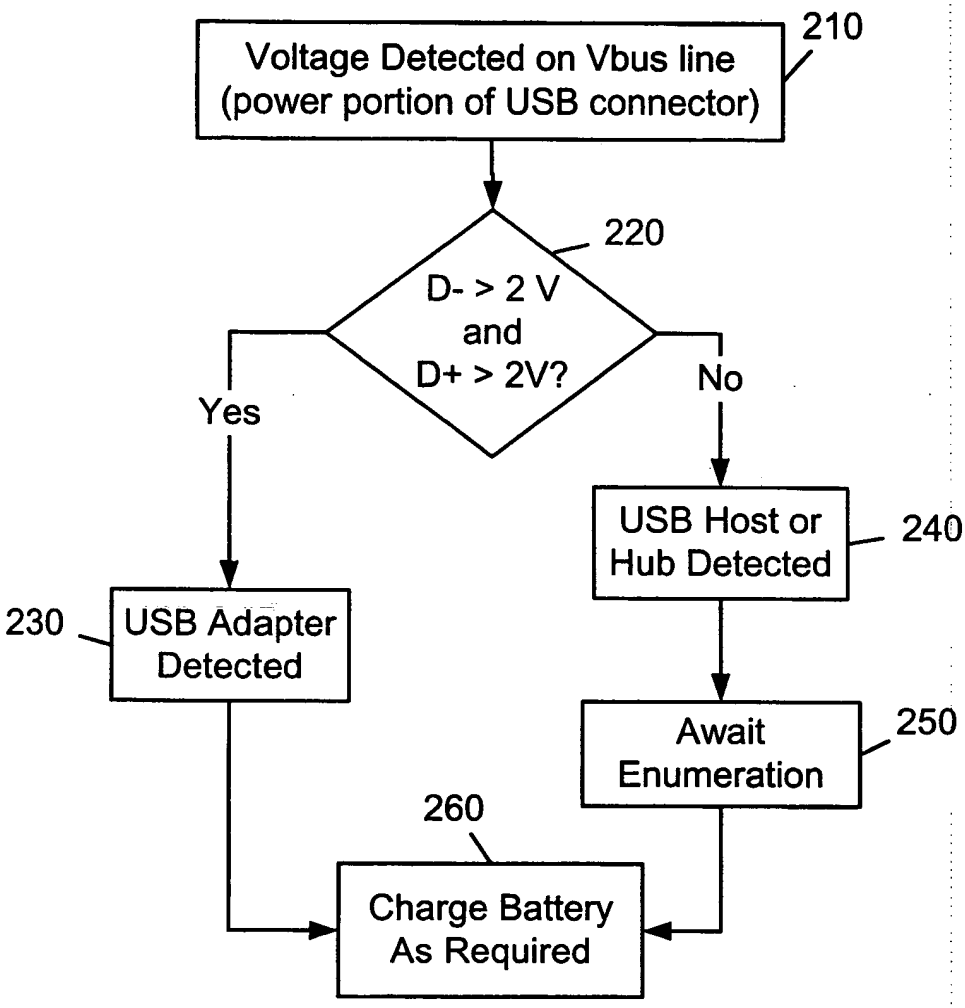

Voltage Detected on Vbus line
(power portion of USB connector)
210
D- > 2 V
and
D+ > 2V?
220
Yes
No
USB Adapter
Detected
230
USB Host or
Hub Detected
240
Await
Enumeration
250
Charge Battery
As Required
260

FIG. 3

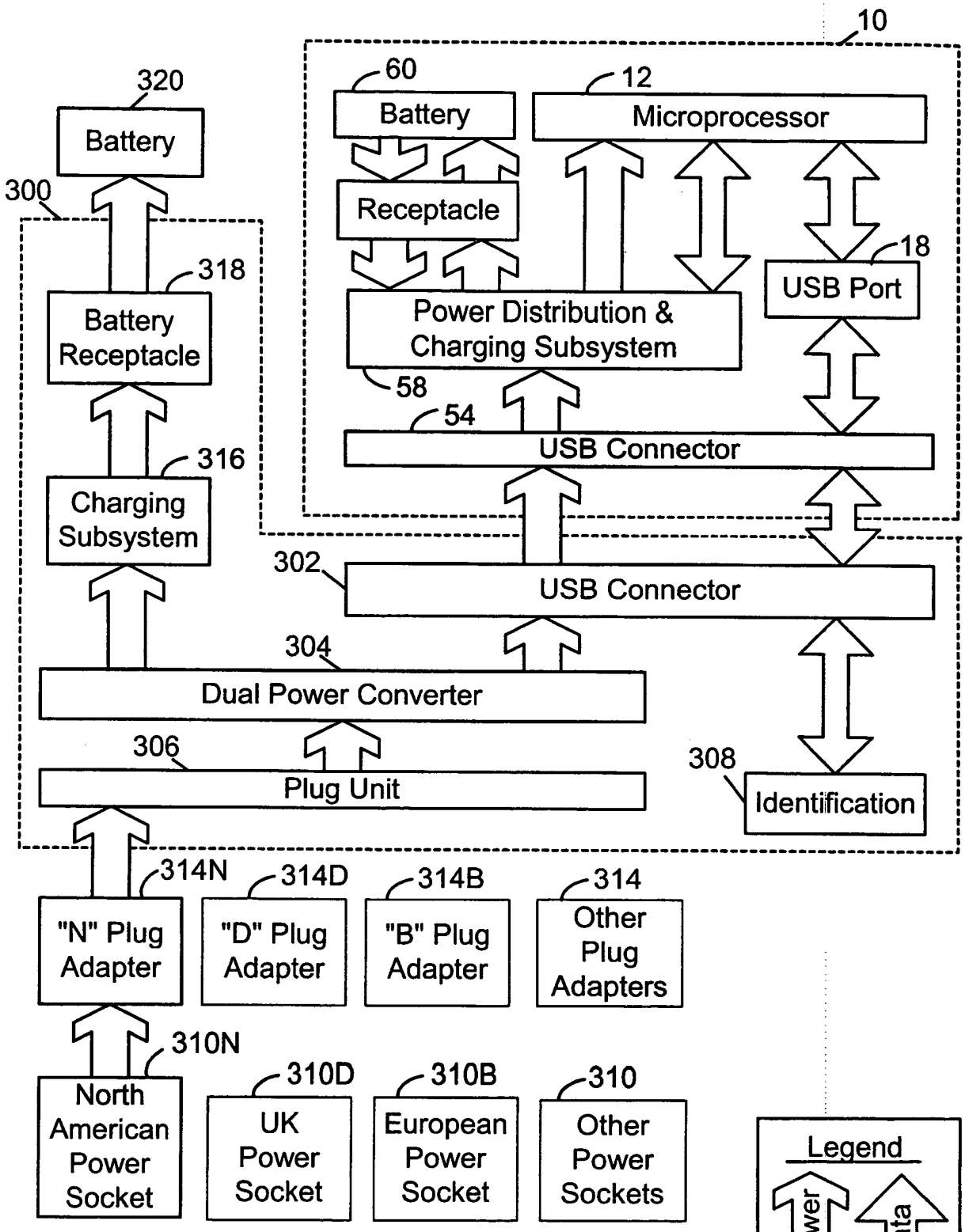

10
320
Battery
300
60
Battery
12
Microprocessor
Receptacle
18
USB Port
318
Battery Receptacle
Power Distribution & Charging Subsystem
58
54
USB Connector
316
Charging Subsystem
302
USB Connector
304
Dual Power Converter
306
Plug Unit
308
Identification
314N
314D
314B
314
"N" Plug Adapter
"D" Plug Adapter
"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

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 Number	555255012294
First Named Inventor	Daniel 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)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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 Sheet
Page 1 of 2

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor		
Michael F. Given Name		**HABICHER** Family Name or Surname	
Inventor's Signature			2002-Feb-28. Date
Cambridge Residence: City	Ontario State	CANADA Country	Canadian Citizenship
295 Phillip Street Mailing Address			
Mailing Address			
Waterloo City	Ontario State	N2L 3W8 ZIP	CANADA Country
Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor		
Quang A. Given Name		**LUONG** Family Name or Surname	
Inventor's Signature			Date Feb 28, 2002
Kitchener Residence: City	Ontario State	CANADA Country	Canadian Citizenship
295 Phillip Street Mailing Address			
Mailing Address			
Waterloo City	Ontario State	N2L 3W8 ZIP	CANADA Country
Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor		
Jonathan T. Given Name		**MALTON** Family Name or Surname	
Inventor's Signature			Date Feb 28 / 2002
Kitchener Residence: City	Ontario State	CANADA Country	Canadian Citizenship
295 Phillip Street Mailing Address			
Mailing Address			
Waterloo City	Ontario State	N2L 3W8 ZIP	CANADA Country

045-0539

555255-012-294 C

UNITED STATES PATENT AND TRADEMARK OFFICE

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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

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.

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

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

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.

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

PTO/SB/80 (12-03)
Approved for use through 11/30/2005. 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 appoint:

☑ Practitioners associated with the Customer Number: 24325

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

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).

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

Name	Mihal Lazaridis		
Signature		Date	JAN 16, 2004
Title	President & Co-CEO	Telephone	519-888-7465

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

PTO/SB/96 (09-04)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Daniel M. Fischer, Dan G. Radut, Michael F. Habicher, Quang A. Luong, Jonathan T. Malton

Application No./Patent No.: _____ Filed/Issue Date: _____

Entitled: MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

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; or

2. ☐ an assignee of less than the entire right, title and interest.
The extent (by percentage) of its ownership interest is_____ %

in 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 thereof is attached.

OR

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

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.

☑ Copies of assignments or other documents in the chain of title are attached.
[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, if the assignment is to be recorded 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.

_____ 6/29/05
Signature Date

Joseph M. Sauer 216-586-7506
Printed or Typed Name Telephone Number

Attorney (Agent) for Assignee
Title

PLS-0539

555255-012-294

UNITED STATES PATENT AND TRADEMARK OFFICE

OCTOBER 08, 2002

PTAS

Under Secretary of Commerce For Intellectual Property and
Director of the United States Patent and Trademark Office
Washington, DC 20231
www.uspto.gov

JONES DAY REAVIS & POGUE
DEBRA L. PEJEAU
901 LAKESIDE AVENUE
CLEVELAND, OH 44114

102182327A

UNITED STATES PATENT AND TRADEMARK OFFICE
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 08/05/2002

REEL/FRAME: 013155/0301
NUMBER OF PAGES: 7

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:
FISCHER, DANIEL M. DOC DATE: 03/01/2002

ASSIGNOR:
RADUT, DAN G. DOC DATE: 11/30/2001

ASSIGNOR:
HABICHER, MICHAEL F. DOC DATE: 02/28/2002

ASSIGNOR:
LUONG, QUANG A. DOC DATE: 02/28/2002

ASSIGNOR:
MALTON, JONATHAN T. DOC DATE: 02/28/2002

ASSIGNEE:
RESEARCH IN MOTION LIMITED
295 PHILLIP STREET
WATERLOO, ONTARIO N2L 3W8

COPY TO CLIENT

DOCKETED

SERIAL NUMBER: 10087629
PATENT NUMBER:

FILING DATE: 03/01/2002
ISSUE DATE:

TARA WASHINGTON, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS

MRD 8-5.02

08-08-2002

102182327

Form PTO-1595 (Rev. 03/01)
OMB No. 0651-0027 (exp. 5/31/2002)
Tab settings ⇨ ⇨ ⇨

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

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):
Daniel M. Fischer; Dan G. Radut;
Michael F. Habicher; Quang A. Luong;
Jonathan T. Malton

Additional name(s) of conveying party(ies) attached? ☐ Yes ☑ No

2. Name and address of receiving party(ies)
Name: Research In Motion Limited
Internal Address:
Street Address: 295 Phillip Street
City: Waterloo State: ON Zip: N2L 3W8
Additional name(s) & address(es) attached? ☐ Yes ☑ No

3. Nature of conveyance:
☑ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Other
Execution Date: 11/30/2001, 02/28/2002, 03/01/2002

4. Application number(s) or patent number(s):
If this document is being filed together with a new application, the execution date of the application is:
A. Patent Application No.(s) 10/087629
B. Patent No.(s)
Additional numbers attached? ☐ Yes ☑ No

5. Name and address of party to whom correspondence concerning document should be mailed:
Name: Debra L. Pejeau
Internal Address: Jones Day Reavis & Pogue
North Point
Street Address: 901 Lakeside Avenue
City: Cleveland State: OH Zip: 44114

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41).....$ 40.00
☑ Enclosed
☐ Authorized to be charged to deposit account

8. Deposit account number:

OFFICE OF ... RECORDS
2002 AUG -5 AM 9:58
FINANCE SECTION

DO NOT USE THIS SPACE

9. Signature.

Debra L. Pejeau	Debra L. Pejeau	07/29/2002
Name of Person Signing	Signature	Date

Total number of pages including cover sheet, attachments, and documents: 7

08/07/2002 LMUELLER 00000255 10087629
01 FC:581 40.00 OP

Mail documents to be recorded with required cover sheet information to:
Commissioner of Patents & Trademarks, Box Assignments
Washington, D.C. 20231

ASSIGNMENT

WHEREAS, new and useful improvements have been made by the undersigned in

MULTIFUNCTIONAL CHARGER SYSTEM AND METHOD

and are the subject of a patent application prepared for filing with the United States Patent and Trademark Office attached hereto, and executed by the undersigned on the dates indicated below in the appropriate spaces to the left of the signatures of the undersigned, which application is further identified as Jones, Day, Reavis & Pogue Docket No. 555255012294.

WHEREAS, RESEARCH IN MOTION LIMITED, a corporation organized under the laws of the Province of Ontario, CANADA, having a place of business at 295 Phillip Street, Waterloo, Ontario, CANADA N2L 3W8, hereinafter referred to as "assignee", is desirous of acquiring all right, title, and interest throughout the world in, to, and under said improvements and inventions and patent rights therefor.

NOW, THEREFORE, be it known that, for valuable consideration, the receipt and sufficiency of which are hereby acknowledged, all right, title, and interest, in the United States and throughout the world, in, to and under said improvements and inventions and all patents, patent applications, patent rights, and inventor's certificates thereof, therefor, and therein, including without limitation said application for patent in the United States, all divisions and continuations thereof, all patents which may be granted thereon, all reissues and extensions thereof, all right to sue for past infringement thereunder, all patents which may be granted for said improvements and inventions by states or nations other than the United States, or by other authority, entity, or organization, and all applications therefor, have been and are hereby sold, assigned, transferred, and delivered unto assignee, its successors and assigns; and it is covenanted and agreed by the undersigned, and for executors, administrators, and legal representatives of the undersigned, that at assignee's request any and all applications, affidavits, assignments, and other instruments will be made, executed, and delivered as may be necessary, or desirable to secure for or vest in assignee, its successors or assigns, any improvement, inventions, right, title, interest, application, patent, patent right or other right or property covered by this assignment, and the United States Commissioner of Patents and Trademarks is hereby requested and authorized to issue any and all United States patents granted on any of said applications to assignee as owner of the entire right, title, and interest in, to, and under the same, and appropriately empowered officials of foreign countries are hereby authorized to issue any letters patent granted on any of said applications to assignee as owner of the entire right, title and interest in, to, and under the same.

The undersigned hereby grants the firm of Jones, Day, Reavis & Pogue the power to insert on this assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

IN WITNESS WHEREOF, this assignment has been executed below by the undersigned:

Date: March 1, 2002

Daniel M. Fischer

303-276 Eiwo Ct
Waterloo, Ontario
N2K 3M6
CANADA

STATEMENT BY WITNESS

I, Camille D. Girard, whose full Post Office address is

9 Armstrong Ave, Guelph, Ontario, N1E 5W9 CANADA
(Address of Witness)

hereby declare that I was personally present and did see the above named person, personally known to me to be the person named in the assignment, duly sign and execute the same.

Date: 1 Mar 02

(Signature of Witness)

IN WITNESS WHEREOF, this assignment has been executed below by the undersigned:

Date: 11/30/2001

Dan G. Radut

300 REGINA ST. N, 1-1207
Waterloo, Ontario
N2J 3B8
CANADA

STATEMENT BY WITNESS

I, A. SuMei Cheung, whose full Post Office address is
(Name of Witness)

19 Bond Court, Guelph, Ontario, N1H8N6, Canada
(Address of Witness)

hereby declare that I was personally present and did see the above named person, personally known to me to be the person named in the assignment, duly sign and execute the same.

Date: 30 Nov/01

(Signature of Witness)

IN WITNESS WHEREOF, this assignment has been executed below by the undersigned:

Date: 2002-Feb-28

Michael F. Habicher

27 Ronald Road
Cambridge, Ontario
N1S 4N2
CANADA

STATEMENT BY WITNESS

I, Camille D. Girard, whose full Post Office address is

9 Armstrong Ave, Guelph, Ontario, N1E 5W9 CANADA
(Address of Witness)

hereby declare that I was personally present and did see the above named person, personally known to me to be the person named in the assignment, duly sign and execute the same.

Date: 28 FEB 02

(Signature of Witness)

IN WITNESS WHEREOF, this assignment has been executed below by the undersigned:

Date: Feb 28, 2002

Quang A. Luong

94 Fairway Road
Unit 10
Kitchener, Ontario
N2A 2N5
CANADA

STATEMENT BY WITNESS

I, Camille D. Girard, whose full Post Office address is

9 Armstrong Ave, Guelph, Ontario, N1E 5W9 CANADA
(Address of Witness)

hereby declare that I was personally present and did see the above named person, personally known to me to be the person named in the assignment, duly sign and execute the same.

Date: 28 Feb 02

(Signature of Witness)

IN WITNESS WHEREOF, this assignment has been executed below by the undersigned:

Date: Feb 28/02

Jonathan T. Malton

100 Highland Cr.
Kitchener, Ontario
N2M 5C1
CANADA

STATEMENT BY WITNESS

I, Camille D. Girard, whose full Post Office address is

9 Armstrong Ave, Guelph, Ontario, N1E 5W9 CANADA
(Address of Witness)

hereby declare that I was personally present and did see the above named person, personally known to me to be the person named in the assignment, duly sign and execute the same.

Date: 28 Feb 02

(Signature of Witness)

PATENT APPLICATION SERIAL NO _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

07/11/2005 HLE333 00000026 501432 11175885

01 FC:1011 300.00 DA
02 FC:1111 500.00 DA
03 FC:1311 200.00 DA

PTO-1556
(5/87)

*U.S. Government Printing Office: 2002 — 466-247/69033

PTO/SB/06 (12-04)
Approved for use through 7/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875 Effective December 8, 2004

Application or Docket Number: 11/175,885

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	150.00		N/A	300.00
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	$250		N/A	$500
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	$100		N/A	$200
TOTAL CLAIMS (37 CFR 1.16(i))	18 minus 20 =	* 0	X$ 25 =		OR	X$50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	5 minus 3 =	* 0	X100 =			X200 =	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			+180=			+360=	
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1000

APPLICATION AS AMENDED – PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X$ 25 =		OR	X$50 =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X100 =		OR	X200 =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					+180=		OR	+360=	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X$ 25 =		OR	X$50 =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X100 =		OR	X200 =	
Application Size Fee (37 CFR 1.16(s))									
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					+180=		OR	+360=	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

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

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

PATENT

Attorney Docket No. 555255012844

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Daniel M. Fischer, et al.
Serial No.:	Not yet assigned (continuation of 10/087,629)
Filing Date:	
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 forms PTO/SB/08A and PTO/SB/08B; copies of non-US patent 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 forms PTO/SB/08A and PTO/SB/08B.

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. 555255012844.

Respectfully submitted,

Joseph M. Sauer
Reg. No. 47,919
JONES DAY
North Point
901 Lakeside Avenue
Cleveland, Ohio 44114
(216) 586-3939

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 3

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Daniel M. Fischer
Art Unit	
Examiner Name	
Attorney Docket Number	555255012844

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	

*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

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	
Filing Date	
First Named Inventor	Daniel M. Fischer
Art Unit	
Examiner Name	
Attorney Docket Number	555255012844

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	
	AV	US- 6,138,242	10/24/2000	Massman et al.	
	AW	US- 6,283,789 B1	09/04/2001	Tsai	
	AX	US- 6,668,296 B1	12/23/2003	Dougherty et al.	
	AY	US- 6,738,856 B1	05/18/2004	Milley et al.	
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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	

*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/08B (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 3 of 3

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Daniel M. Fischer
Art Unit	
Examiner Name	
Attorney Docket Number	555255012844

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.

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(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).

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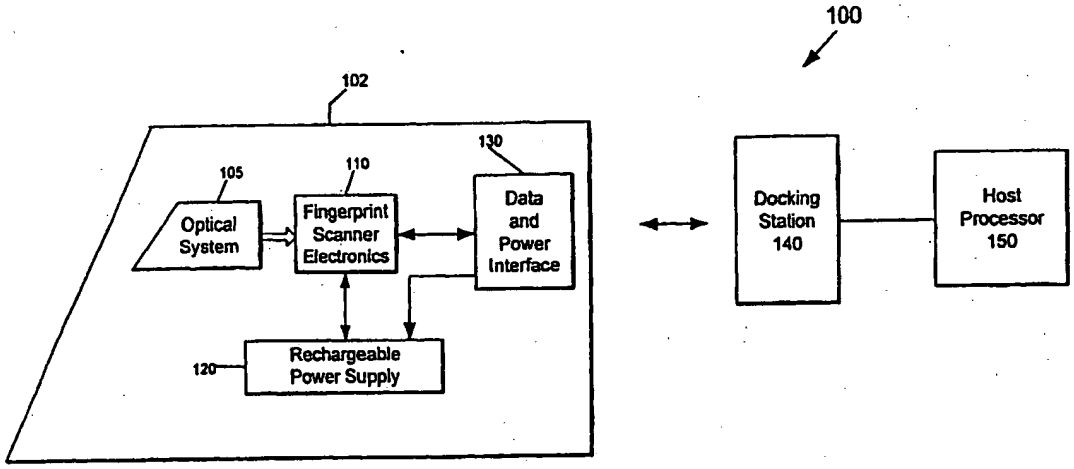
(54) Title: RECHARGEABLE MOBILE HAND-HELD FINGERPRINT SCANNER WITH A DATA AND POWER COMMUNICATION INTERFACE



(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.

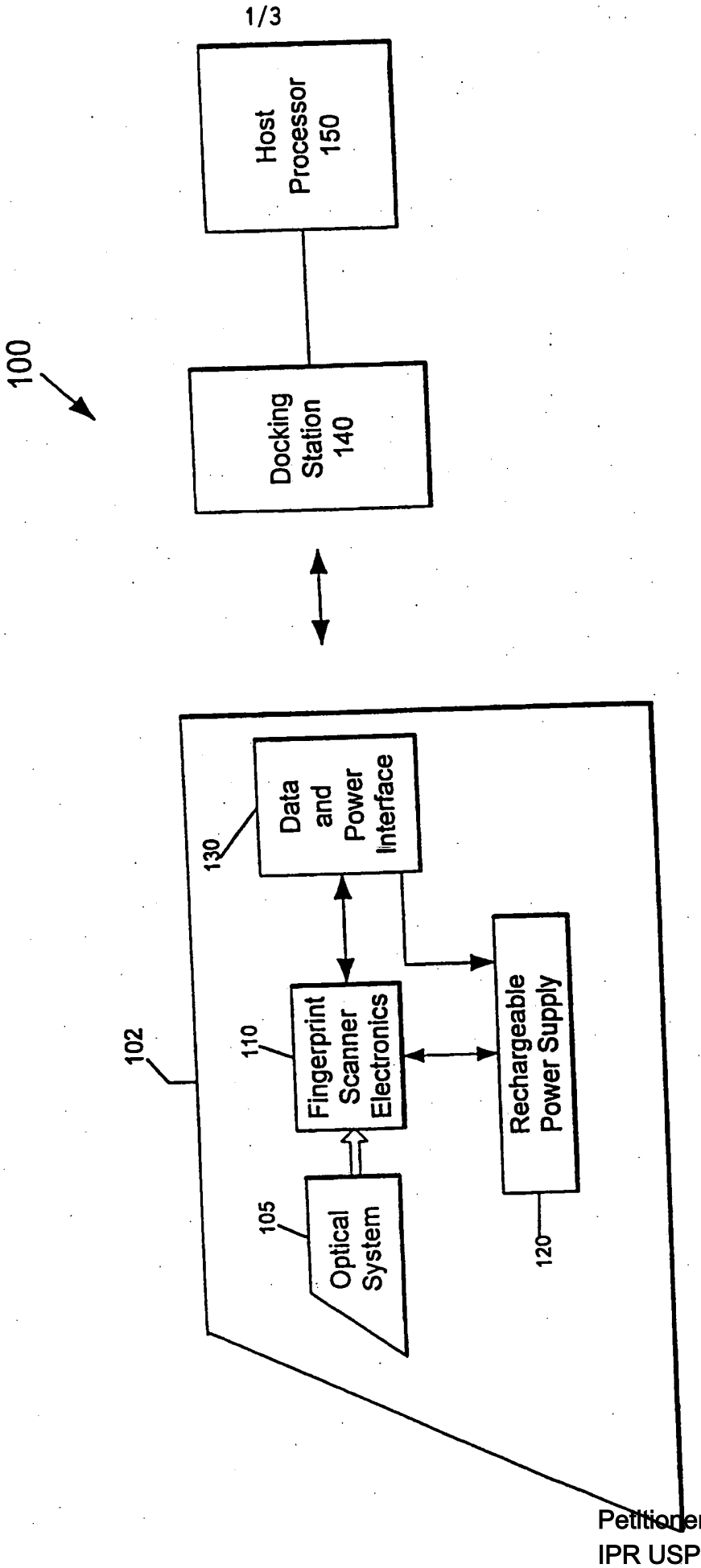

Host Processor 150
100
Docking Station 140
Data and Power Interface
130
102
110
Fingerprint Scanner Electronics
Rechargeable Power Supply
105
Optical System
120

FIG. 1

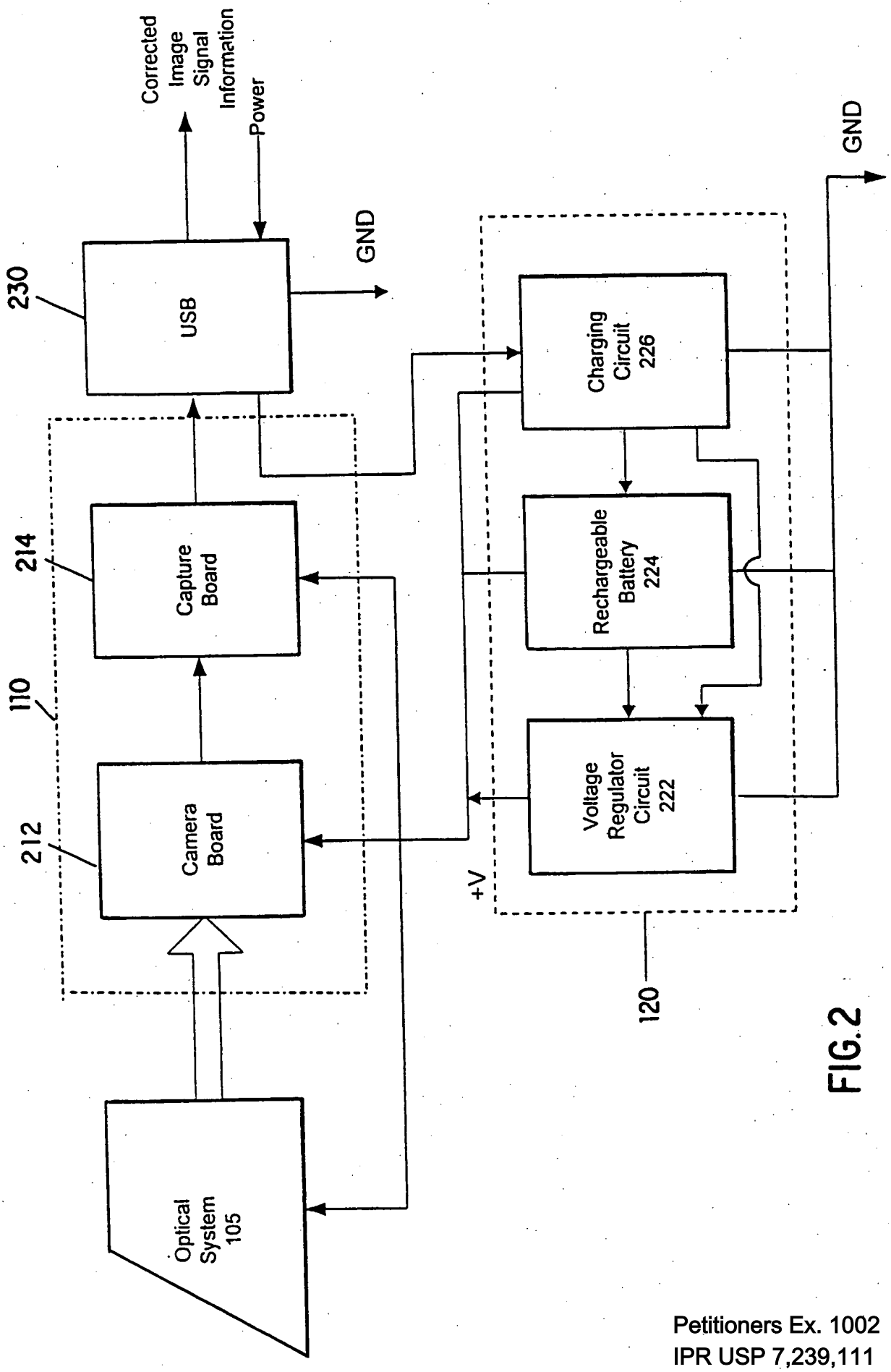

Corrected Image Signal Information
Power
GND
230
USB
Charging Circuit 226
GND
214
Capture Board
Rechargeable Battery 224
110
Voltage Regulator Circuit 222
212
Camera Board
+V
120
Optical System 105

FIG.2

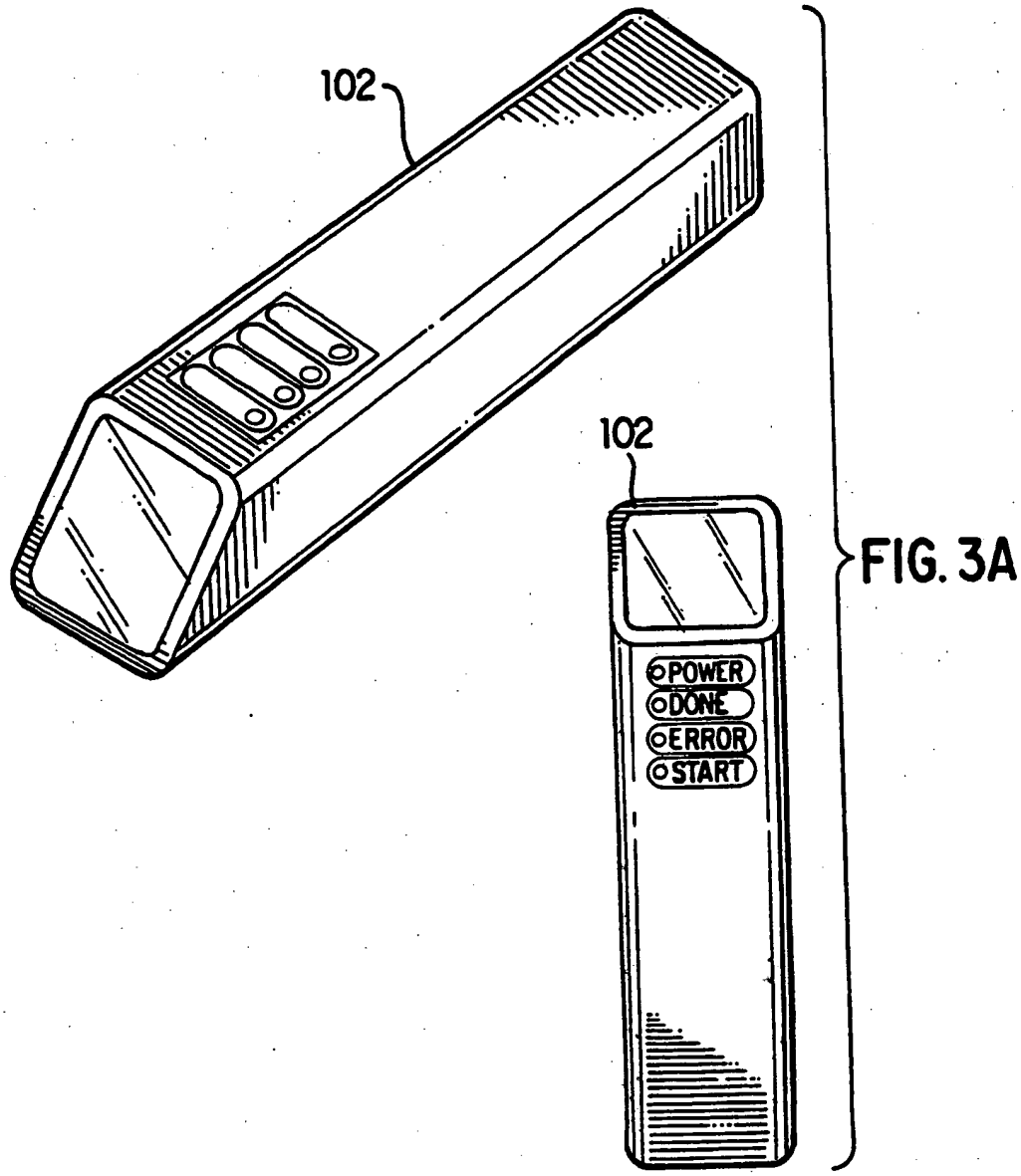


FIG. 3A

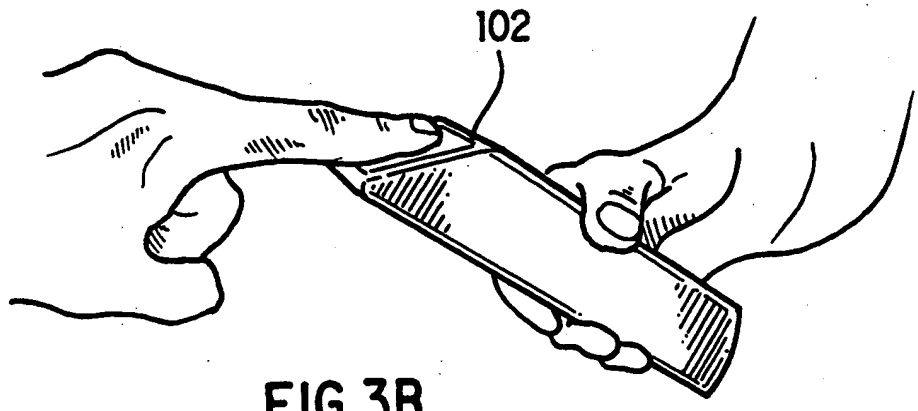


FIG. 3B

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

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"&" 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
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NL – 2280 HV Rijswijk
Tel. (+31–70) 340–2040, Tx. 31 651 epo nl,
Fax: (+31–70) 340–3016

Authorized officer
Granger, B

INTERNATIONAL SEARCH REPORT

Int. 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	

PTO/SB/17 (12-04v2)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 1000

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Daniel M. Fischer
Examiner Name	
Art Unit	
Attorney Docket No.	555255012844

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 501432 (555255012844) Deposit Account Name: Jones Day

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☑ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☑ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☑ Credit any overpayments

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.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES Fee ($)	FILING FEES Small Entity Fee ($)	SEARCH FEES Fee ($)	SEARCH FEES Small Entity Fee ($)	EXAMINATION FEES Fee ($)	EXAMINATION FEES Small Entity Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	1000
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee ($)	Fee Paid ($)
18 - 20 or HP =	0	x 50	= 0.00

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee ($)	Fee Paid ($)
3 - 3 or HP =	0	x 200	= 0.00

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims Fee ($)	Fee Paid ($)
360	0

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
30 - 100 =	0	/ 50 = 0 (round up to a whole number)	x 250	= 0

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	0
Other (e.g., late filing surcharge):	0

SUBMITTED BY

Signature		Registration No. (Attorney/Agent) 47,919	Telephone 216/586-7506
Name (Print/Type)	Joseph M. Sauer		Date 7/5/5

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/175,885	07/06/2005	Daniel M. Fischer	555255012844	5606

33070 7590 10/20/2005

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

EXAMINER	
TSO, EDWARD H	

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 10/20/2005

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

Office Action Summary	Application No.	Applicant(s)	
	11/175,885	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 --

Period for Reply

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

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

Status

1)☐ Responsive to communication(s) filed on _____.

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) *1-18* 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) *1-18* is/are rejected.

7)☐ Claim(s) _____ 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 *7/6/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The IDS filed 7/6/05 has been considered and placed of record. An initialed copy is attached herewith.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

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

Claims 1, 2, 4 and 6-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Gabehart et al. (US 6,130,518). The reference discloses a method of charging a battery whereby the device has, *inter alia*, sensor to sense whether the power source is

external or from a usb port. The arrangement allows the battery to be charged from the internal usb hub or not from the usb hub. See column 2, line 25 to column 3, line 20.

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 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gabehart et al. (US 6,130,518). The reference is silent on the external power source plug being a variety of plugs. It would have been an obvious matter of design choice to have changed the type of plug to fit the right application, since such a modification would have involved a mere change in the size and shape of a component. A change in

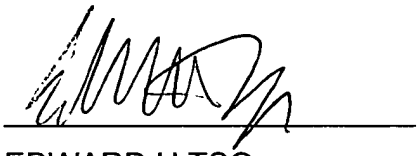
size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Conclusion

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

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mike Sherry, can be reached on 571 272 2084.

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, 8:30am to 5:00pm, EST.

By: 

EDWARD H TSO
Primary Examiner
571 272 2087

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 3

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Daniel M. Fischer
Art Unit	
Examiner Name	
Attorney Docket Number	555255012844

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	Nellsen, 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	10/05

*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

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	
Filing Date	
First Named Inventor	Daniel M. Fischer
Art Unit	
Examiner Name	
Attorney Docket Number	555255012844

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	
	AVA	US- 6,138,242	10/24/2000	Massman et al.	
	AW	US- 6,283,789 B1	09/04/2001	Tsai	
	AX	US- 6,668,296 B1	12/23/2003	Dougherty et al.	
	AY	US- 6,738,856 B1	05/18/2004	Milley et al.	
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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	12/05

*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/08B (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 3 of 3

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	Daniel M. Fischer
Art Unit	
Examiner Name	
Attorney Docket Number	555255012844

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	1/05

*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 Applicant is to place a check mark here if English language Translation is attached.

Search Notes

Application/Control No.	Applicant(s)/Patent under Reexamination
11/175,885	FISCHER ET AL.
Examiner	**Art Unit**
Edward H. Tso	2838

SEARCHED			
Class	Subclass	Date	Examiner
320	111	10/1/2005	ET
	138		
307	150		
	151		

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
checked references on parent file	10/1/2005	ET

Index of Claims

Application/Control No.	Applicant(s)/Patent under Reexamination
11/175,885	FISCHER ET AL.
Examiner	**Art Unit**
Edward H. Tso	2838

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

Claim		Date								
Final	Original	10/1/05								
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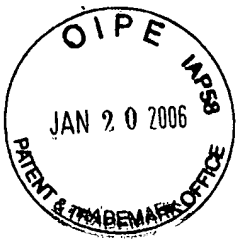


IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 555255-012844

Group Art Unit:	2838
Examiner:	Edward H. Tso
Inventor:	Fischer, et al.
Serial No.:	11/175,885
Filed:	July 06, 2005
For:	Multifunctional Charger System and Method

Amendment

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: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on Jan 18, 2006.

By Debra Pejeau (DEBRA PEJEAU)

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

Sir:

In response to the Office Action mailed on October 20, 2005, please amend the application as follows and consider the following remarks. Any fees due should be charged to Jones Day Deposit Account No. 501432, ref: 555255-012844.

AMENDMENT TO THE SPECIFICATION

Please amend the title of the application as follows:

~~Multifunctional Charger System and Method~~ A Universal Serial Bus Adapter for a Mobile Device"

Please amend the paragraph beginning at page 1, line 4 of the specification, as follows:

This application is a continuation United States Patent Application No. 10/087,629, entitled "Multifunctional Charger System and Method," which was filed on March 1, 2002, and issued as United States Patent No. 6,936,936. United States Patent Application No. 10/087, 629 claims priority from and is related to United States Provisional Application No. 60/273,021, entitled "System and Method for Adapting a USB to Provide Power for Charging a Mobile Device," which was filed on March 1, 2001, and United States Provisional Application No. 60/330,486, entitled "Multifunctional Charger System and Method", which was filed on October 23, 2001. The entirety of these prior applications are hereby incorporated into the present application by reference.

REMARKS

This Amendment responds to the office action mailed on October 20, 2005. The specification has been amended to amend the title of the application and to add the patent number of the parent application. Claims 1-18 remain pending as originally filed. Reconsideration is respectfully requested in light of the following remarks.

Objection to the Specification

The title is objected to in the office action as not being descriptive of the invention. The title has been amended to more clearly indicate the invention being claimed.

Claim Rejections under 35 U.S.C. § 102

Claims 1, 2, 4 and 6-18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Gabehart (U.S. 6,130,518). These rejections are respectfully traversed. Among other distinctions, the Gabehart reference does not disclose or suggest the generation of an identification signal which is configured to indicate to the mobile device that the power socket is not a USB host or hub, as claimed in independent claims 1, 17 and 18. That is, the Gabehart reference does not determine if an attached power source is a USB source. Rather, Gabehart assumes an existing connection to a databus (204), and determines if power is available from another external source (EXT B+) (i.e., a non-USB source). If power is not available from the external source (EXT B+), then the Gabehart system "allows the battery 210 to be charged from the power available from the data bus 204." (Gabehart, col. 3, lines 16-17). The Gabehart reference does not even contemplate a situation in which the device is not connected to a databus. Consequently, the Gabehart reference clearly does not disclose or even remotely suggest determining if a connected power source is or is not a USB host or hub, as claimed. For this reason alone, the patent owner submits that claims 1, 17 and 18 are patentable over the Gabehart reference and are in condition for allowance. The remaining claims 2-16 each ultimately depend from claim 1, and are thus also in condition for allowance.

Moreover, the patent owner further submits that the rejections under 35 U.S.C. § 102(b) completely fail to show correspondence between the cited Gabehart reference and the language of the claims, and therefore fail to make out a prima facie rejection under 35 U.S.C. § 102(b). Particularly with respect to the rejected dependent claims, the office action does not even make an attempt to demonstrate that the claim language is anticipated by the cited Gabehart reference. For example, claim 7 recites that "the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the USB connector." Even a cursory review of the Gabehart reference clearly shows that this limitation and other claimed limitations are not disclosed. The patent owner therefore respectfully requests that these improper rejections under section 102(b) be withdrawn.

Claim Rejections under 35 U.S.C. § 103

Claims 3 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Gabehart reference and the knowledge generally recognized as being within the level of ordinary skill in the art. The patent owner respectfully disagrees. Nonetheless, claims 3 and 5 are patentable over the cited references for at least the same reasons stated above with respect to independent claim 1.

Conclusion

For the foregoing reasons, the patent owner respectfully submits that claims 1-18 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

Joseph M. Sauer (Reg. No. 47,919)
Jones Day
North Point, 901 Lakeside Avenue
Cleveland, Ohio 44114
(216) 586-7506

PTO/SB/06 (12-04)
Approved for use through 7/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 11-175,885

APPLICATION AS FILED – PART I

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

APPLICATION AS AMENDED – PART II

1-20-06

AMENDMENT A	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 20	Minus	** 20	= —	x =		OR	x =	
Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= —	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))							OR		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
Application Size Fee (37 CFR 1.16(s))							OR		
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

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

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/175,885	07/06/2005	Daniel M. Fischer	555255012844	5606

33070 7590 04/04/2006

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

EXAMINER	
TSO, EDWARD H	

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 04/04/2006

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

Office Action Summary	Application No.	Applicant(s)	
	11/175,885	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 --

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *20 January 2006*.

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) *1-18* 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) *1-18* is/are rejected.

7)☐ Claim(s) _____ 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

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 –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 2, 4 and 6-18 are rejected under 35 U.S.C. 102(a) as being anticipated by Veselic (US 2004/0251878). The reference discloses a usb charger for a mobile device wherein the usb cord is attached to the ac power outlet 130 of a conventional house or not (dc source in this case). The device is configured to identify the operating characteristics of the charger signal 115 (this case whether the usb cord is connected to the ac or dc (i.e. hub)). See column 2.

Claim Rejections - 35 USC § 103

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 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veselic (US 2004/0251878). The reference does not disclose the type of power plugs being used. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected any type of plugs being American or European, since it has been held to be within the general skill of a worker in the art to

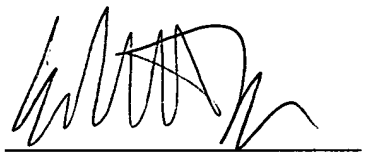
select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Conclusion

Any inquiry concerning this communication should be directed to the Examiner at the below-listed number on every Tuesday, Thursday and Saturday.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Karl Easthom, can be reached at (571) 272-1989 on Monday-Thursday.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist at (571) 272-2800, Monday-Friday, 8:30am to 5:00pm, EST.

By: 

EDWARD H TSO
Primary Examiner
(571) 272-2087

Notice of References Cited	Application/Control No. 11/175,885	Applicant(s)/Patent Under Reexamination FISCHER ET AL.	
	Examiner Edward H. 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-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
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	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
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	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
X	U	US 2004/0251878 A1 (Veselic) 16 Dember 2004. 320/141.
	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/Control No.	Applicant(s)/Patent under Reexamination
11/175,885	FISCHER ET AL.
Examiner	**Art Unit**
Edward H. Tso	2838

√	Rejected	–	(Through numeral) Cancelled	N	Non-Elected	A	Appeal
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Claim		Date								
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IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 555255-012844

Group Art Unit:	2838	)
Examiner:	Edward H. Tso	)
Inventor:	Fischer, et al.	)
Serial No.:	11/175,885	)
Filed:	July 06, 2005	)
For:	A Universal Serial Bus Adapter for a Mobile Device	)

OFFICE ACTION RESPONSE

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: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on June 13, 2006.

By Debra Peyeau

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

Sir:

In response to the Office Action mailed on April 4, 2006, please consider the following remarks.

Any fees due should be charged to Jones Day Deposit Account No. 501432, ref: 555255-012844.

REMARKS

This Amendment responds to the Office Action mailed on April 4, 2006. Reconsideration is respectfully requested in light of the following remarks.

Claims 1-18 were rejected as anticipated by and obvious in view of Veselic (U.S. Pub. No. 2004/0251878). However, as Applicants' representative mentioned in a phone message for the Examiner, the current application claims priority to two provisional applications, the latest of which is dated 10/23/2001. Veselic has a priority date of 6/11/2003. Therefore, Veselic is not prior art to this application.

Applicants respectfully submit that claims 1-18 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

Joseph M. Sauer (Reg. No. 47,919)
Jones Day
North Point, 901 Lakeside Avenue
Cleveland, Ohio 44114
(216) 586-7506

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Fischer et al.

Application No.: 11/175,885

Art Unit: 2838

Filed: July 6, 2005

Examiner: Edward Tso

For: A Universal Serial Bus Adapter for a Mobile Device

Attorney Docket No.: 555255-012844

INFORMATION DISCLOSURE STATEMENT

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

Sir:

This Statement is submitted in compliance with 37 C.F.R. § 1.56.

A list of patent(s) and/or publication(s) is set forth on the attached Form PTO-1449. A copy of each item is enclosed.

Any fees required for the proper filing of this Information Disclosure Statement should be withdrawn from Jones Day's Deposit Account No. 50-1432, account 555255-012844.

Respectfully submitted,

Joseph Sauer
Reg. No. 47,919
JONES DAY
901 Lakeside Avenue
Cleveland, Ohio 44114
(216) 586-7076

Date: 6/8/6

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 June 13, 2006

By: Debra L. Bylan

CLI-1298334v1

PTO/SB/08A (07-05)
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	11/175,885
Filing Date	07/06/2005
First Named Inventor	Fischer, Daniel M.
Art Unit	2838
Examiner Name	Tso, Edward H.
Attorney Docket Number	555255-012844

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
		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]
		EP0684680 A1	11-29-1995	Nokia Mobile Phones Ltd.		
		EP1198049 A1	04-17-2002	Sony International (Eur.)		

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] 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.

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 684 680 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **95106552.3**

(51) Int. Cl.[6]: **H02J 7/00**

(22) Date of filing: **02.05.95**

(30) Priority: **16.05.94 FI 942271**

(43) Date of publication of application:
29.11.95 Bulletin 95/48

(84) Designated Contracting States:
DE FR GB SE

(71) Applicant: **NOKIA MOBILE PHONES LTD.**
P.O. Box 86
SF-24101 Salo (FI)

(72) Inventor: **Hakkarainen, Kalle**
Sahrankatu 24,
B11
SF-24100 Salo (FI)

(74) Representative: **Frain, Timothy John et al**
Nokia Mobile Phones,
St. George's Court,
St. George's Road,
9 High Street
Camberley,
Surrey GU15 3QZ (GB)

(54) Identification apparatus and method.

(57) The object of the invention is a method and a switching arrangement for identifying the charger of the rechargeable batteries of portable devices. In the solution according to the invention the charger transmits the identification of the charger via a charging cable by switching the charging voltage on and off by using a certain pulse ratio, pulse length, or pulse count. The solution according to the invention can be applied in mobile phone sets.

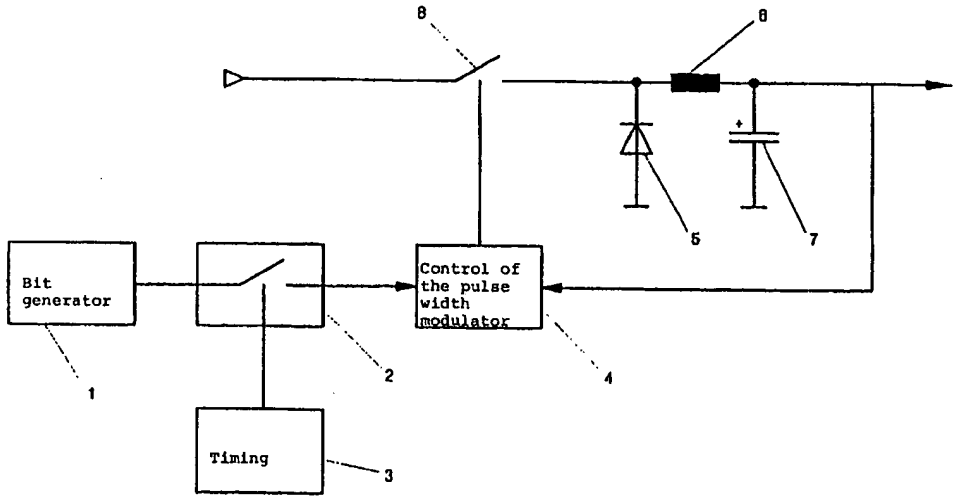

Fig. 1

EP 0 684 680 A1

The present invention relates to identification apparatus and a method therefor. In particular, it relates to such apparatus and method for accessory devices of electronic devices such as portable telephones.

There are many types of peripheral devices used with electronic devices. A particularly common accessory device is a battery charger for portable devices such as portable telephones The present invention will now be discussed in terms of the state of the art and by way of example, with reference to battery chargers.

There are a number of known methods for charging rechargeable batteries for portable devices, such as nickel-cadmium batteries. Many of these chargers require the removal of the batteries from the device to enable recharging. Removal of the batteries from the device is considered a drawback, since the device is out of operation during the recharging. However, a number of different chargers have been developed which can be attached to a battery powered device and the batteries charged in situ in the device. In this way, the functionality of the device can be maintained while charging the batteries. Even though the functionality of the device is maintained, a portable device, such as a mobile phone, is unavailable for operation in the manner intended, i.e., as a portable device. Since chargers often recharge a battery using a fairly low charging current, the battery powered device is not available for portable operation for extended periods of time, such as eight hours or more during which time the batteries are being recharged.

Many battery powered devices, such as mobile phones, are extremely energy intensive, expending considerable amounts of power during the receive functions and more particularly during the transmit functions. Because of lengthy recharging times, "rapid" chargers have been developed which can charge batteries fairly rapidly, for example in less than an hour as compared with the charging time of eight hours for previous battery chargers.

In order to charge batteries rapidly, numerous problems had to be overcome. One of the most serious problems was overcharging of the batteries, resulting in turn in overheating of the batteries. Overheating may damage the battery case seals, resulting in rupturing of the battery case and in extreme instances in explosive rupturing of the battery case.

In known "rapid" battery chargers most of these problems have been solved in one way or another, e.g., by monitoring given battery parameters, such as the charging rate of the battery, internal battery temperatures or charge state of the battery. In some "rapid" chargers, attempts have been made to prevent overcharging of the batteries by utilizing timed charging of the battery. However, using these known solutions it is not always possible to prevent overcharging of batteries, for instance, when the charger type is not exactly a correct one or designed to be used with the battery being charged.

Numerous different types of chargers are on the market which comprise different charging capacities and charging parameters for charging rechargeable batteries of portable devices. Some chargers can even be unsuitable, i.e., hazardous for the batteries. Consequently, portable devices should be able to somehow identify the charger and its properties. Similar problems exist for accessory devices generally for all types of electronic device, not just battery charges or portable telephones.

According to a first aspect of the present invention, there is provided identification apparatus for an accessory device, comprising coupling means for coupling the accessory device to an electronic device and modulation means for modulating a signal on the coupling means in accordance with identity data for the accessory device.
modulating a signal on the coupling means in accordance with identity data for the accessory device.

According to a second aspect of the present invention, there is provided an identification method for an accessory device, comprising transmitting an identity signal from the accessory device to an electronic device coupled thereto by modulating a signal transmitted therebetween in accordance with identity data for the accessory device.

This has the advantage that the accessory device can indicate to an electronic device to which it is connected which peripheral device it is. Thus, there is provided a solution to a problem of identifying accessory devices.

In a preferred embodiment the modulation means comprises a switch means operable to activate and de-activate the coupling means.

Preferably, the identification apparatus further comprises a bit generator or corresponding charger for generating the identity data.

Suitably, there is provided control means adopted to control the modulation means in accordance with the identity data for superimposing a pulse ratio, pulse length, pulse count or the like signal on the signal on the coupling means.

Advantageously, there is provided timing means for determining a time during which the modulation means is operable, in particular the timing means comprises a timer and a switch operable in accordance with the timer to decouple the identity data from the control and/or modulation means.

Optionally, the switch means comprises a switching transistor or field effect transistor.

Embodiments in accordance with the invention are now described, by way of example only, and with reference to the appended drawings in which:

Fig. 1 shows a diagrammatic illustration of the implementation of apparatus in accordance with the invention,

Fig. 2 shows a more detailed diagrammatic illustration of the apparatus of Fig. 1

In a device in accordance with the invention a battery charger for a transportable device transmits an identification code for the charger via a charging cable, by switching the charging voltage on and off using a certain pulse ratio or pulse length or pulse count. Such identification can be implemented after a certain start-up time or before starting an actual charging routine It can also be carried out in the initial stage of charging after having switched the charging on or entered a charging routine.

Fig. 1 shows an implementation of an embodiment in accordance with the invention. The identification of the charger is formed by using bit generator 1 from which the identification is taken via switching block 2, controlled by timing block 3, to control block 4 of a pulse width modulator. A switching transistor or field effect transistor functions as switch 8 and takes a charging voltage containing the identification as a modulation imposed thereon, via inductance 6 to the output of the charger. Timing block 3 can also operate to control switch 8 to stay on after the pulse identification has been transmitted from the charger. The main circuit comprises, in a known manner, parallel diode 5 and parallel capacitor 7 coupled to ground. The charging voltage may be the output of a DC/DC converter, the output of which is then switched on or off by switch 8.

Fig. 2 shows a slightly more detailed diagrammatic illustration of the apparatus in accordance with the invention. The identification of the charger is formed by using logic NAND circuit 9 (an AND circuit having an inverting output), from where the identification is transmitted to control block 4 of the pulse width modulator. The resistances shown in Figure 2 are marked with numbers 10 and 11 and the capacitors are marked with numbers 12 and 13. A switching transistor or field effect transistor functions as switch 8 and takes the charging voltage containing the identification via inductance 6 to the output of the charger. The pulse identification is formed until capacitor 12 is charged, switch 8 being left switched on thereafter.

In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention. For example, the accessory device need not be a battery charger but could be some other accessory, and the electronic device need not be just a portable telephone. Additionally, the modulation of the charging voltage may comprise varying the charging voltage as well as switching it on or off.

The scope of the present disclosure includes any novel feature or combination of features disclosed therein either explicitly or implicitly or any generalisation thereof irrespective of whether or not it relates to the claimed invention or mitigates any or all of the problems addressed by the present invention. The applicant hereby gives notice that new claims may be formulated to such features during prosecution of this application or of any such further application derived therefrom.

Claims

1. Identification apparatus for an accessory device, comprising coupling means for coupling the accessory device to an electronic device and modulation means for modulating a signal on the coupling means in accordance with identity data for the accessory device.

2. Identification apparatus according to claim 1, wherein the modulation means comprises a switch means operable to activate and deactivate the coupling means.

3. Identification apparatus according to claim 1 or claim 2, further comprising a bit generator or corresponding charger for generating the identity data.

4. Identification apparatus according to any preceding claim, wherein there is provided control means adapted to control the modulation means in accordance with the identity data for superimposing a pulse ratio, pulse length, pulse count or the like signal on the signal on the coupling means.

5. Identification apparatus according to any preceding claim, wherein there is provided timing means for determining a time during which the modulation means is operable.

6. Identification apparatus according to claim 5, wherein the timing means comprises a timer and a switch operable in accordance with the timer to decouple the identity data from the control and/or modulation means.

7. Identification apparatus according to any preceding claim, wherein the switch means comprises a switching transistor or field effect transistor.

8. Identification apparatus according to claim 1, further comprising:
   - a logic NAND circuit,
   - resistance, and
   - capacitance, wherein

   the identity data is formed by using the logic NAND circuit, from where the identity data is taken to control block for a pulse width modulator.

9. A battery charger comprising identification apparatus according to any preceding claim, wherein the coupling means is adapted to carry a charging voltage, and the signal on the coupling means is a charging voltage.

10. An identification method for an accessory device, comprising transmitting an identity signal from the accessory device to an electronic device coupled thereto by modulating a signal transmitted therebetween in accordance with identity data for the accessory device.

11. A method according to claim 10, wherein the signal is modulated by switching the signal on or off.

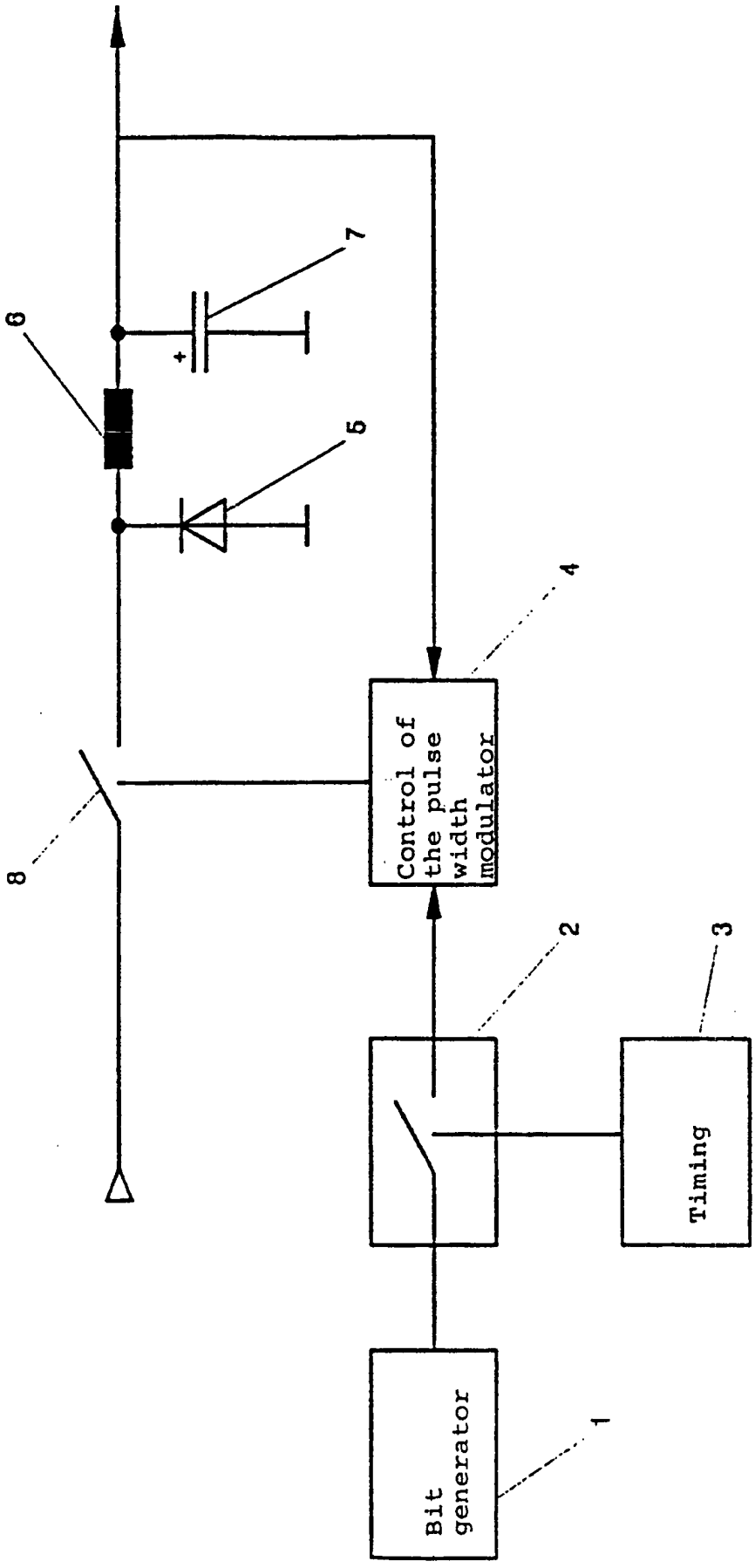

Fig. 1

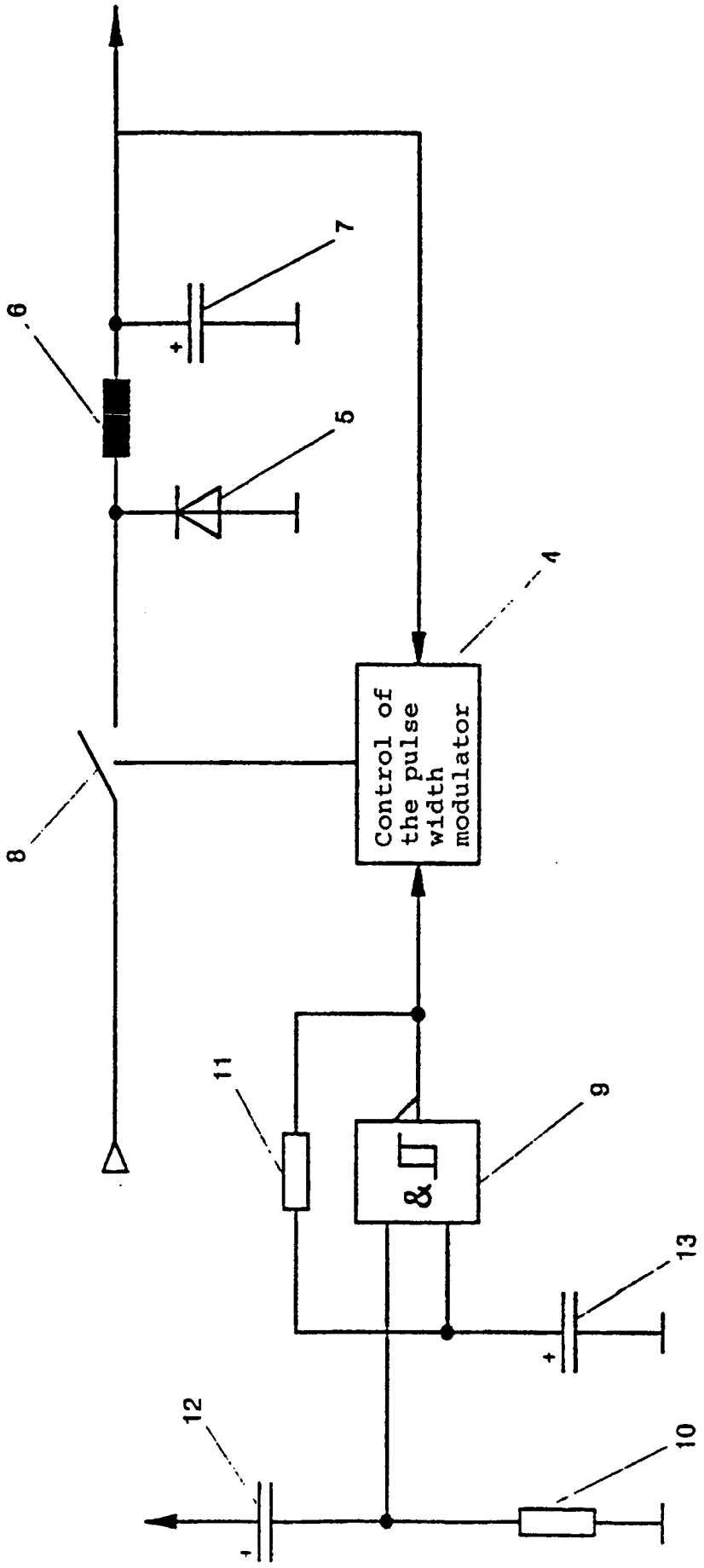

Fig. 2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 95 10 6552

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP-A-0 409 226 (HITACHI LTD.) * abstract * * column 18, line 40 - line 55 * * column 19, line 38 - line 51 * * column 20, line 24 - column 21, line 7; figures 25,26,29 * * column 27, line 37 - line 55; figures 41,42 *	1,3-8, 10,11	H02J7/00
X	EP-A-0 038 877 (P. ROUET) * abstract * * page 3, line 18 - line 31; figure 5 *	1,2	
X	DE-A-35 28 659 (JUNGHEINRICH UNTERNEHMENSVERWALTUNG KG) * abstract * * column 9, line 3 - column 10, line 23; figures 1-3 *	1,9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			H02J

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	22 August 1995	Helot, H

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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(71) Applicant: **Sony International (Europe) GmbH**
10785 Berlin (DE)

(72) Inventor: **Tong, Zhao, c/o Digital Telecom. Europe**
85609 Aschheim (DE)

(74) Representative: **Körber, Martin, Dipl.-Phys. et al**
Mitscherlich & Partner
Patentanwälte
Sonnenstrasse 33
80331 München (DE)

Remarks:
The application is published incomplete as filed (Article 93 (2) EPC).Claim number 7 is missing.

(54) Charging circuit for charging a mobile terminal through an USB interface

(57) The present invention relates to a charging circuit (1) for charging a mobile terminal (2) of a wireless telecommunication system through a USB interface of a computer (3), with first connection means (4) for connection with the USB interface of a computer (3), second connection means (5) for connection with a mobile terminal (2) to be charged, and adaptation means (6; 7; 8) for adapting power received from the USB interface to the power requirements of a mobile terminal to be charged. The present invention further relates to a mobile terminal (2) adapted to be connected and charged by such a charging circuit (1). The present invention enables charging of a mobile terminal through a USB interface of a computer in a simple and flexible way.

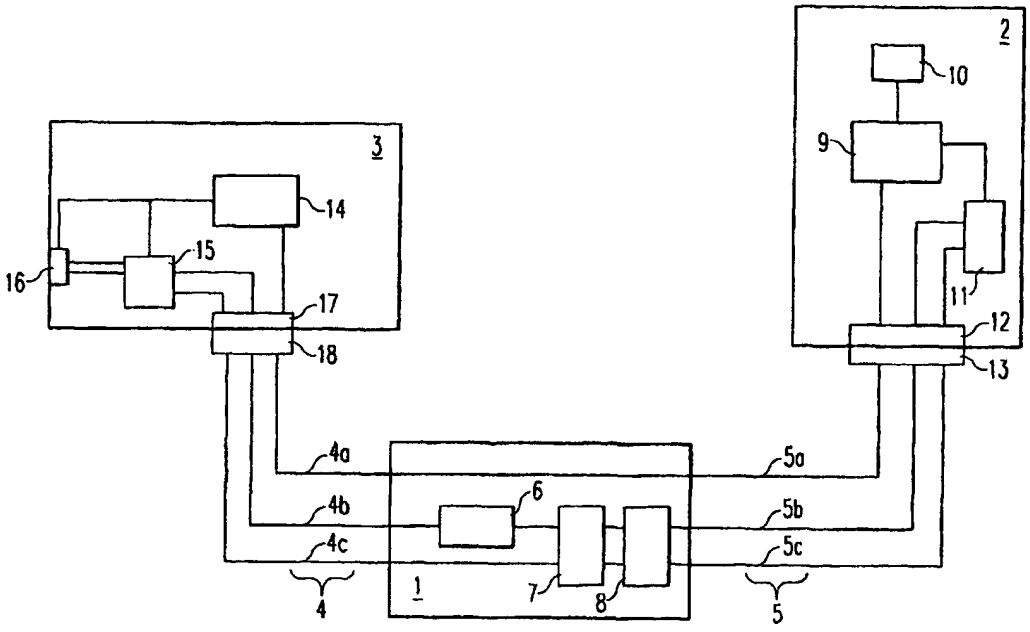

Fig. 1

EP 1 198 049 A1

Description

[0001] The present invention relates to a charging circuit for charging a mobile terminal of a wireless telecommunication system through a USB interface of a computer and to a mobile terminal for a wireless telecommunication system adapted to be connected to and charged by such a charging circuit.

[0002] Charging circuits for charging batteries or accumulators of mobile terminals are known in the art. For example, US 5,870,615 discloses a specially designed PCMCIA card comprising a charging circuit for charging the battery of a cellular phone and an adapter cable having a battery characteristic encoder integrated at one end. However, a PCMCIA card can only be used with portable computers, such as laptops, notebooks or the like so that the proposed way of charging a mobile terminal is limited to these applications.

[0003] The object of the present invention is therefore to propose a charging circuit for charging a mobile terminal of a wireless telecommunication system and a mobile terminal adopted to be connected to and charged by such a charging circuit, which can be used with different kinds of computers in a simple and effective way.

[0004] The above object is achieved by a charging circuit for charging a mobile terminal of a wireless telecommunication system through a USB interface of a computer, with first connection means for a connection with the USB interface of a computer, second connection means for a connection with a mobile terminal to be charged, and adaptation means for adapting power received from said USB interface to the power requirements of a mobile terminal to be charged.

[0005] Most of the available computers, such as PCs, laptops, notebooks and the like, are equipped with a USB interface (universal serial bus interface) for connection with other devices. The USB interface is realised with a standardised USB port in the computers, to which a corresponding USB plug from a USB data cable is connected. The USB interface comprises four lines, namely two data lines, one power line and one ground line. The charging circuit according to the present invention therefore presents a very flexible and universally usable way of charging a mobile terminal of a wireless telecommunication system. Particularly, the charging circuit according to the present invention has the advantage that a mobile terminal for a wireless telecommunication system can be charged at any place of the world with only a single charging circuit. Normal charging cables for mobile terminals are only adapted to the specific power supply system used in the respective country. A USB interface, however, is an internationally used and standardised way of connecting devices to computers.

[0006] Advantageously, the adaptation means of the charging circuit according to the present invention comprises a current limiter to limit the current received from the USB interface to a maximum charging current of the mobile terminal. The current limiter is advantageous in respect of protection against TDMA bursts and other kinds of bursts used in the mobile terminal for the wireless transmission of data. Further advantageously, the adaptation means comprises a short circuit protection means for protecting the mobile terminal and/or the computer against short circuits. Further advantageously, the adaptation means comprises a voltage regulator for regulating the voltage received from the USB interface to the charging requirements of the mobile terminal. The voltage regulator is particularly advantageous for stabilising the voltage supplied to the mobile terminal.

[0007] It has to be understood, that in the present application, the expression charging a mobile terminal means charging of the battery or the accumulator of a mobile terminal.

[0008] Further advantageously, the first connection means is a USB cable for connection with a USB port of the computer and the second connection means is a mobile terminal cable for connection with a corresponding data input/output and charge port of the mobile terminal. Here, the charging circuit according to the present invention is an independent device with respective cables for the connection with the computer and the mobile terminal. Alternatively, the charging circuit according to the present invention can be built in the mobile terminal or the computer to that an integrated solution is realised. In further alternative solutions, the charging circuit according to the present invention could have a USB port as the first connection means and/or a respective mobile terminal cable port as the second connection means. Here, standardised cables and plugs could be used as the cable connections between the computer as a charging circuit and the charging circuit and the mobile terminal. A further advantage of this solution is that the charging circuit according to the present invention could be used with different kinds of mobile terminals having different kinds of data input/output and charge ports for the connection with the charging circuit.

[0009] Further, the charging circuit according to the present invention advantageously comprises a data line for transmitting power supply status information from the computer to the mobile terminal. The charging circuit according to the present invention as described above does not necessarily need to enable a data transfer between the computer and the mobile terminal and the conversion and adaptation of power received from the computer to the power requirements for charging the mobile terminal is generally sufficient for the purpose of the present invention. However, the communication of data between the computer and the mobile terminal is necessary for embodiments in which the charging of the mobile terminal is controlled in dependence of the status of the power supply of the computer.

[0010] The above object is further achieved by a mobile terminal for a wireless telecommunication system according to claim 8, which comprises a battery providing power supply, connection means adapted to be con-

nected to a charging circuit of the above described kind, and control means for controlling the charging of the battery from a USB interface of a computer.

[0011] The battery of the mobile terminal according to the present invention which is to be charged by the charging circuit as above described, is for example part of a removable battery pack or accumulator of the mobile terminal. The connection means of the mobile terminal adapted to be connected to the inventive charging circuit is for example a data input/output and charge port of the mobile terminal, which serves also for other purposes, such as connecting a hands free kit or the like. The control means for controlling the charging of the battery is for example the central control microchip or microprocessor of the mobile terminal responsible for controlling the common functionalities. The wireless telecommunication system, in which the mobile terminal according to the present invention operates, can for example be the GSM and/or the UMTS and/or any other wireless telecommunication systsem.

[0012] Advantageously, the control means of the mobile terminal detects the charge level of the battery and controls the charging of the battery from a USB interface through a connected charging circuit on the basis of the detected charge level. Hereby, the control means advantageously charges the battery if the detected charge level is below a pre-set value. This value can for example be about 5% of the entire battery capacity. In this example of the mobile terminal according to the present invention, charging of the battery is performed only on the basis of the charge level of the battery and no further other information is used. Thus, the charging circuit can be reduced to the pure power conversion and adaptation function in order to deliver the specific voltage and current to the mobile terminal. The charging process is only controlled by the mobile terminal itself and not by the computer or the user. Alternatively, the charging circuit can, additionally to the power lines, comprise data lines for communicating data between the computer and the mobile terminal. In this way, the mobile terminal can be charged via the USB interface, while at the same time the data communication, for example for downloading or uploading data from and to the computer, can be performed.

[0013] In a further alternative example of the mobile terminal according to the present invention, the control means is adapted to receive a power supply status information of a computer through a connected charging circuit and controls the charging of the battery from a USB interface of the computer through the connected charging circuit on the basis of the received power supply status information. Here, charging of the battery of the mobile terminal is performed only if the received power supply status information indicates that the power supply status of the computer allows charging of the battery of the mobile terminal. Advantageously, the control means charges the battery if the received power supply status information indicates that the computer is connected to and powered by an external power supply. In this case, the battery of the mobile terminal is thus charged through the external power supply of the computer in any case in which the battery of the mobile terminal is not fully charged. Further advantageously, the control means is adapted to detect the charge level of the battery and charges the battery if the received power supply status information indicates that the computer is powered by an internal power supply and that the detected charge level is below a pre-set value. The preset value is advantageously about 5% of the entire battery capacity. Here, in order to save power for the computer, the battery is only charged if its charge level is so low that there is a risk that the mobile terminal cannot be further operated due to a lack of power. The last case is particularly applicable to mobile computers, such as laptops, notebooks and the like, which have an internal power supply in form of a detachable battery pack, an accumulator or the like. Here it is very important that the power resources of the computer as well as the mobile terminal are carefully controlled to ensure proper operation.

[0014] It is to be noted that in the example of the mobile terminal controlling the charging of its battery on the basis of a power supply status information received from the computer, the computer needs an appropriate driver software which detects the power status of the computer and transmits a corresponding information via the USB interface to the mobile terminal. Hereby, the data line of the charging circuit according to the present invention used for the transmission of the power supply status information between the computer and the mobile terminal can also be used for the communication of download/upload data and the like.

[0015] In the following description, the present invention is explained in more detail in relation to the enclosed only Figure 1, which shows a schematic block diagram of a charging circuit and a mobile terminal according to the present invention being connected to a computer.

[0016] Particularly, Fig. 1 shows a block diagram of a charging circuit 1 according to the present invention for charging a mobile terminal 2 of a wireless telecommunication system through a USB interface of a computer 3. Fig. 1 thereby shows an embodiment in which the charging circuit 1 comprises a connection cable 4 connected to the computer **3** and a connection cable **5** connected to the mobile terminal **2.** In another embodiment of the charging circuit **1** according to the present invention, the connection cables 4 and 5 can be separate devices to be detachably connected to the charging circuit 1.

[0017] The connection cable 5 connecting the charging circuit 1 and the computer 3 is a USB data cable (universal serial bus data cable), which comprises at least one data line 4a, one power line 4b and one ground line 4c. The power line 4b is considered for powering USB devices and delivers usually 5V ± 5% voltage and 500mA/100mA current so that the charging specifica-

tions of most mobile terminals for wireless telecommunication systems, such as the UMTS and/or the GSM system, are met.

[0018] The charging circuit 1 comprises adaptation means for adapting the power received from the USB interface of the computer 3 to the power requirements of the mobile terminal 2 to be charged. The adaptation means hereby comprise a current limiter 6 to limit the current in the power line 4b to the maximum charging current of the mobile terminal 2. The adaptation means further comprise a short circuit protection means 7 for protecting the mobile terminal 2 and/or the computer 3 against short circuits. The voltage received from the USB interface is regulated by a voltage regulator 8 to meet the charging requirements of the mobile terminal 2.

[0019] The connection cable 5 between the charging circuit 1 and the mobile terminal 2 comprises at least one data line 5a which is connected to the data line 4a of the connection cable 4 so that data are communicated between the computer 3 and the mobile terminal 2 via the data line 4a and the data line 5a. The connection cable 5 comprises a connector plug 13 for connection with a input/output and charge board 12 of the mobile terminal 2. Hereby, the power line 5b and the ground line 5c are connected to a battery 11 of the mobile terminal 2. The battery 11 can be an integral battery or a removable battery/accumulator. Further, the data line 5a is herewith connected to a control means 9 of the mobile terminal 2, which is connected to a memory means 10 for storing data and/or software application programs. The control means 9 controls the charging of the battery 11 from the USB interface of the computer 3 through the charging circuit 1.

[0020] The USB interface of the computer 3 is realised in a USB port 17, to which a USB plug 18 of the connection cable 4 of the charging circuit 1 is connected. Hereby, the power line 4b and the ground line 4c are connected to either an internal battery/accumulator 15 of the computer means 3 or to an external power supply socket 16, to which an external power source for the computer 3 can be connected. Thus, the battery 11 of the mobile terminal 2 is either charged from the internal battery/accumulator 15 of the computer 3 or an external power supply connected to the external power supply socket 16 of the computer 3.

[0021] The control means 9 of the mobile terminal 2 can control the charging process of the battery 11 in two ways. The first way is that the charging process is exclusively controlled by the control means 9, which, after detection that the mobile terminal 2 is connected to a USB interface of a computer 3 and that the battery level of the battery 11 is below a pre-set value starts to charge the battery 11. The charging circuit 1 will then deliver the specific voltage and current through the power lines 4b, 5b and the ground lines 4c, 5c to the battery 11. The current limiter and the voltage regulator are thereby set to the specific power requirements of the battery 11. In case that the charging circuit 1 is to be used with different kinds of mobile terminals 2, the necessary current and voltage values could for example be externally set by a user through a corresponding input means to the charging circuit 1. The power control software for controlling the charging of the battery is implemented in the memory 10 of the mobile terminal 2 and used by the control means 9 for detecting if the mobile terminal 2 is connected to an USB interface of a computer 3, to detect the charge level of the battery 11 and to control the charging process correspondingly. The pre-set value, from which charging of the battery 11 starts, can for example be 5% of the entire battery capacity. The control means 9 is for example a microchip or a microprocessor of the mobile terminal 2 which also controls other important functions of the mobile terminal.

[0022] In a second way of controlling the charging process of the battery 11 of the mobile terminal 2, the control means 9 receives a power supply status information of the computer 3 through the data lines 4a and 5a and controls the charging of the battery on the basis of the received power supply information. The power supply status information received from the computer 3 indicates if the computer 3 is connected to an internal battery/accumulator 15 or to an external power supply via the external power supply socket 16. The power supply status information is thereby detected in the computer 3 by a control means 14 and supplied via the data line 4a and the data line 5a to the control means 9 of the mobile terminal 2. In case that the received power supply status information indicates that the computer 3 is connected to an external power supply, the control means 9 charges the battery 11 independent of its charge level. If, on the other hand, the power control status information indicates that the computer 3 is only connected to and powered by an internal power supply, such as the battery/accumulator 15, the control means 9 detects the charge level of the battery 11 and only starts charging of the battery 11 via the charging circuit 1 if the charge level is below a pre-set value, as for example 5% of the entire battery capacity. Here, the control means 14 of the computer 3 may for example use the Microsoft Power Manager and a further special software application, as for example a USB data cable driver, to detect the power supply status of the computer 3 and supply a corresponding power status information to a connected mobile terminal 2. Each time a USB cable, as for example a connection cable 4 of the charging circuit 1 is connected to the USB port 17 of the computer 3, the USB data cable driver will start automatically and activate the Microsoft Power Manager to get the status of the power supply of the computer 3. After the USB cable is disconnected, the USB data cable driver will be automatically closed. Thus, no further special applications or software is needed on the computer 3 and the charging circuit 1 can be used as a so-called plug and play device. Further, the USB data cable driver only runs when a USB data cable is connected to the USB port

17, instead running the whole time in the background. Hereby, computer resources are saved. The USB data cable driver could also protect itself at questing and sending power supply information to a mobile terminal 2 by other drivers of other manufacturers.

[0023] The present invention is particularly advantageous, since the battery 11 of the mobile terminal 2 can be charged while the user works on the basis of the data connection between the mobile terminal 2 and the computer 3, for example while down- or uploading data or the like.

Claims

1. Charging circuit (1) for charging a mobile terminal (2) of a wireless telecommunication system through a USB interface of a computer (3), with first connection means (4) for connection with the USB interface of a computer (3), second connection means (5) for connection with a mobile terminal (2) to be charged, and
adaptation means (6, 7, 8) for adapting power received from said USB interface to the power requirements of a mobile terminal to be charged.

2. Charging circuit (1) according to claim 1,
characterized in,
that said adaptation means comprises a current limiter (6) to limit the current received from the USB interface to a maximum charging current of the mobile terminal (2).

3. Charging circuit (1) according to claim 1 or 2,
characterized in,
that said adaptation means comprises a short circuit protection means (7) for protecting the mobile terminal (2) and/or the computer (3) against short circuits.

4. Charging circuit (1) according to claim 1, 2 or 3,
characterized in,
that said adaptation means comprises a voltage regulator (8) for regulating the voltage received from the USB interface to the charging requirements of the mobile terminal (2).

5. Charging circuit (1) according to one of the claims 1 to 4,
characterized in,
that said first connection means (4) is a USB cable for connection with a USB port (17) of the computer and said second connection means (5) is a mobile terminal cable for connection with a corresponding data input/output and charge port (12) of the mobile terminal (2).

6. Charging circuit (1) according to one of the claims 1 to 5,
characterized by
a data line (4a, 5a) for transmitting power supply status information from the computer (3) to the mobile terminal (2).

8. Mobile terminal (2) for a wireless telecommunication system, comprising

a battery (11) providing power supply,
connection means (12) adapted to be connected to a charging circuit (1) according to one of the claims 1 to 6, and
control means (9) for controlling the charging of the battery (11) from a USB interface of a computer (3).

9. Mobile terminal (2) according to claim 8,
characterized in,
that the control means (9) detects the charge level of the battery (11) and controls the charging of the battery (11) from a USB interface through a connected charging circuit (1) on the basis of the detected charge level.

10. Mobile terminal (2) according to claim 9,
characterized in,
that the control means (9) charges said battery (11) if the detected charge level is below a preset value.

11. Mobile terminal (2) according to claim 10,
characterized in,
that the control means (9) charges said battery if the detected charge level is below about 5% of the entire battery capacity.

12. Mobile terminal (2) according to claim 8,
characterized in,
that the control means (9) is adapted to receive a power supply status information of a computer (3) through a connected charging circuit (1) and controls the charging of the battery from a USB interface of the computer (3) through the connected charging circuit (1) on the basis of the received power supply status information.

13. Mobile terminal (2) according to claim 12,
characterized in,
that the control means (9) charges said battery if the received power supply status information indicates that the computer (3) is connected to an external power supply.

14. Mobile terminal (2) according to claim 12 or 13,
characterized in,
that the control means (9) is adapted to detect the charge level of said battery and charges said battery if the received power supply status information

indicates that the computer (3) is powered by an internal power supply and that the detected charge level is below a preset value.

15. Mobile terminal (2) according to claim 14, **characterized in,**
that the preset value is about 5% of the entire battery capacity.

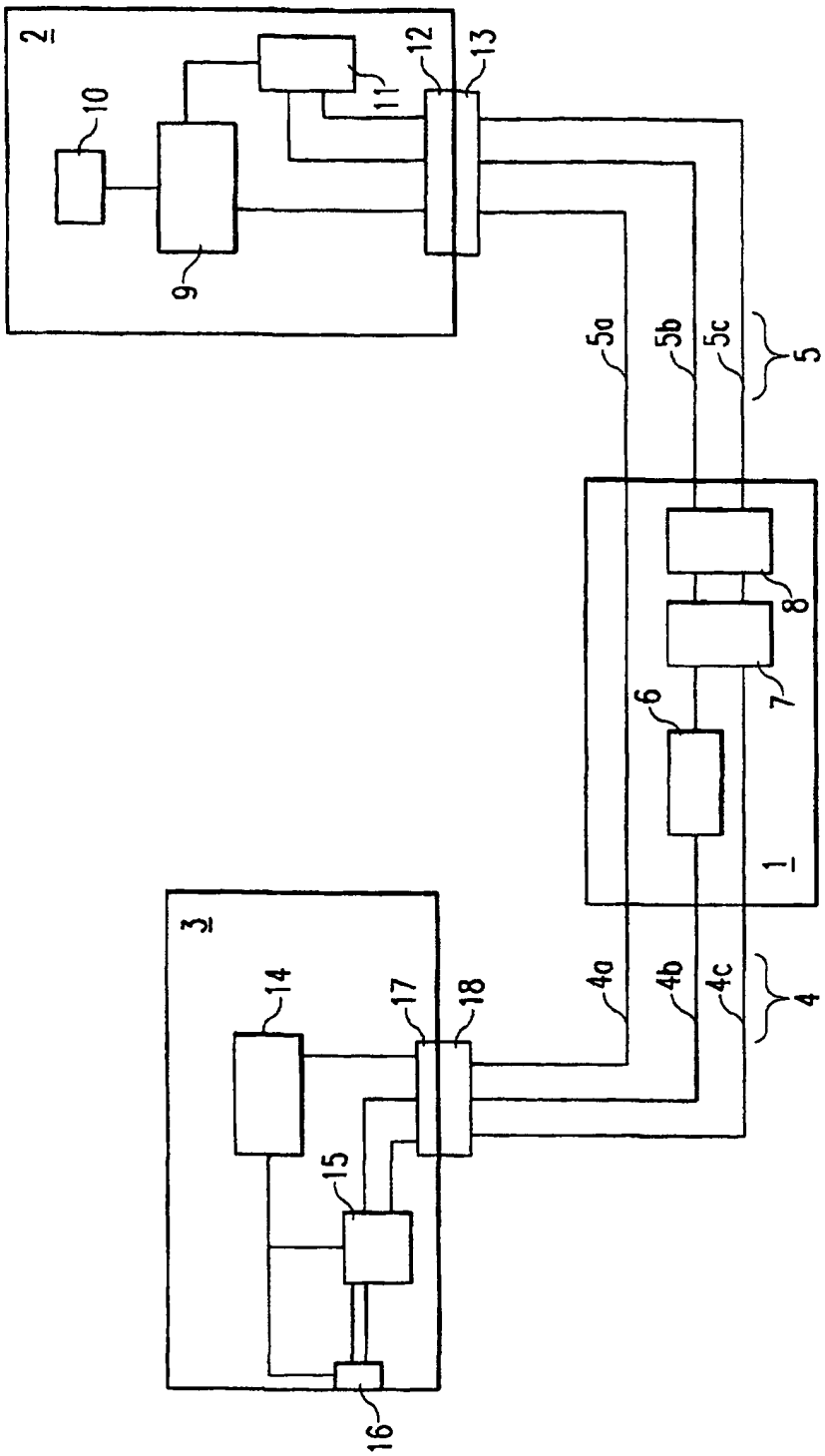

Fig. 1

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 12 2142

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	DE 200 04 691 U (YANG WEN CHIN) 29 June 2000 (2000-06-29) * page 1, paragraph 3 - paragraph 4 * * page 4, line 28 - line 30 * ---	1,3-5, 8-10 6,12	H02J7/00
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A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 09, 13 October 2000 (2000-10-13) & JP 2000 165513 A (KYOCERA CORP), 16 June 2000 (2000-06-16) * abstract * ---	6,12-14	
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 04, 31 August 2000 (2000-08-31) & JP 2000 020176 A (MINOLTA CO LTD), 21 January 2000 (2000-01-21) * abstract * ---	12-14	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H02J H01M H04B H04M
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 08, 6 October 2000 (2000-10-06) & JP 2000 139032 A (KYOCERA CORP), 16 May 2000 (2000-05-16) * abstract * -----	1-15	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	13 March 2001	Moyle, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 12 2142

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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13-03-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 20004691 U	29-06-2000	NONE	
JP 10201127 A	31-07-1998	JP 3085226 B	04-09-2000
JP 2000165513 A	16-06-2000	NONE	
JP 2000020176 A	21-01-2000	NONE	
JP 2000139032 A	16-05-2000	NONE	

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	("20040251878").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/08/18 09:31
L2	2404924	(universal serial bus) or usb	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:53
L3	1271432	identif$6	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:32
L4	400696	socket	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:32
L5	28790	2 and 3 and 4	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:33
L6	315061	mobile	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:33
L7	5140	5 and 6	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:34
L8	574304	plug	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:34
L9	2267	7 and 8	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:36
L10	1209063	charg$3	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:34
L11	2267	8 and 9	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:34
L12	1178	9 and 10	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:40
L13	24	("3775659"|"4433251"|"5173855"|"5229649"|"5272475"|"5444378"|"5631503"|"5638540"|"5651057"|"5769877"|"5850113"|"5939860"|"6006088"|"6104162"|"6104759"|"6130518"|"6138242"|"6184652"|"6211649"|"6252375"|"6255800"|"6283789"|"6668296"|"6738856").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:48

EAST Search History

L15	449	(ac adj plug) and 2	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:50
L16	53	(ac adj plug) same 2	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:53
L17	52607	(universal adj serial adj bus) or usb	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 09:53
L18	18	(ac adj plug) same 17	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 10:03
L19	0	("2001003205").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/08/18 10:03
L20	1	("20010003205").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/08/18 10:10
L21	2457	17 same 3	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 10:10
L22	47	21 same 4	US-PGPUB; USPAT; USOCR	OR	ON	2006/08/18 10:10

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/175,885	07/06/2005	Daniel M. Fischer	555255012844	5606

33070 7590 08/24/2006

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

EXAMINER	
TSO, EDWARD H	

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 08/24/2006

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

Office Action Summary	Application No.	Applicant(s)	
	11/175,885	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 --

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *15 June 2006*.

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) *1-18* 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) *1-18* is/are rejected.

7)☐ Claim(s) _____ 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 *6/15/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

An IDS filed 6/15/06 has been considered and placed of record. An initialed copy is attached herewith.

Double Patenting

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

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

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

Claims 1-18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of

copending Application No. 10/087,629. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to have monitored the usb connection to make sure it is not connected to the wrong power source.

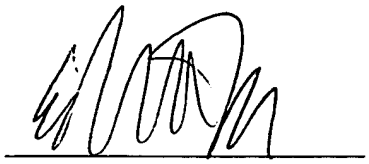
This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication should be directed to the Examiner at the below-listed number on every Tuesday, Thursday and Saturday.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Karl Easthom, can be reached at (571) 272-1989 on Monday-Thursday.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist at (571) 272-2800, Monday-Friday, 8:30am to 5:00pm, EST.

By: 

EDWARD H TSO
Primary Examiner
(571) 272-2087

Notice of References Cited	Application/Control No. 11/175,885	Applicant(s)/Patent Under Reexamination FISCHER ET AL.	
	Examiner Edward H. 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-			
	B	US-			
	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					
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	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
*	U	US 2001/0003205 A1 (Gilbert), 07 June 2001. 713/320.
	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.

PTO/SB/08A (07-05)
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	11/175,885
Filing Date	07/06/2005
First Named Inventor	Fischer, Daniel M.
Art Unit	2838
Examiner Name	Tso, Edward H.
Attorney Docket Number	555255-012844

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
		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]
ET		EP0684680 A1	11-29-1995	Nokia Mobile Phones Ltd.		
ET		EP1198049 A1	04-17-2002	Sony International (Eur.)		

Examiner Signature	/Edward Tso/	Date Considered	8/2006

*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.

Index of Claims

Application/Control No.	Applicant(s)/Patent under Reexamination
11/175,885	FISCHER ET AL.
Examiner	**Art Unit**
Edward H. Tso	2838

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

Claim		Date
Final	Original	8/1/06
	1	v
	2	v
	3	v
	4	v
	5	v
	6	v
	7	v
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	10	v
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Claim		Date
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Claim		Date
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Search Notes	Application/Control No.	Applicant(s)/Patent under Reexamination
	11/175,885	FISCHER ET AL.
	Examiner: Edward H. Tso	Art Unit: 2838

SEARCHED			
Class	Subclass	Date	Examiner

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
text search attached	8/1/2006	ET

IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. 555255-012844

Group Art Unit:	2838	
Examiner:	Edward H. Tso	
Inventor:	Fischer, et al.	**OFFICE ACTION RESPONSE**
Serial No.:	11/175,885	
Filed:	July 06, 2005	
For:	A Universal Serial Bus Adapter for a Mobile Device	

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: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on Nov. 20, 2006.

By Debra Pejeau

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

Sir:

In response to the Office Action mailed on August 24, 2006, please consider the following remarks. Any fees due should be charged to Jones Day Deposit Account No. 501432, ref: 555255-012844.

CLAIMS

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

a plug unit configured to receive energy from a power socket;

a power converter coupled to the plug unit, the power converter being configured to regulate the received energy from the power socket to generate a power output;

an identification subsystem configured to generate an identification signal, wherein the identification signal is configured to indicate to the mobile device that the power socket is not a USB host or hub; and

a USB connector coupled to the power converter and the identification subsystem, the USB connector being configured to couple the power output and the identification signal to the mobile device.

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 data line in the USB connector.

7. (Original) 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 USB connector.

8. (Original) The USB adapter of claim 1, wherein the identification subsystem comprises a USB controller that is configured to provide a voltage level to one or more data lines in the USB connector.

9. (Original) The USB adapter of claim 1, wherein the identification subsystem further comprises a switch that is configured to couple the power output to the USB connector.

10. (Original) The USB adapter of claim 9, wherein the identification subsystem is configured to cause the switch to disconnect the power output from the USB connector.

11. (Original) The USB adapter of claim 10, wherein the identification subsystem is configured to cause the switch to reconnect the power output to the USB connector.

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

13. (Original) The USB adapter of claim 12, wherein one or more data lines of the auxiliary USB connector are coupled to one or more data lines of the USB connector via the identification subsystem.

14. (Original) The USB adapter of claim 12, wherein the power converter is operable to generate a second power output that is coupled to the auxiliary USB connector.

15. (Original) The USB adapter of claim 1, further comprising:

a battery receptacle configured to attach a rechargeable battery; and

a battery charging subsystem coupled between the battery receptacle and the power converter, the battery charging subsystem being configured to receive energy from the power converter and to provide power at the battery receptacle.

16. (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.

17. (Original) A method for providing energy to a mobile device using a USB adapter that includes a USB connector for coupling the USB adapter to the mobile device, comprising:

receiving a power input from a power socket;

generating a regulated DC power output from the power input;

generating an identification signal that is configured to indicate to the mobile device that the power socket is not a USB host or hub;

providing the identification signal on one or more data pins of the USB connector; and

providing the power output on one or more power pins of the USB connector.

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

means for receiving energy from a power socket;

means for regulating the received energy from the power socket to generate a power output;

means for generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host; and

means for coupling the power output and identification signal to the mobile device.

REMARKS

This paper responds to the Office Action mailed on August 24, 2006. Reconsideration is respectfully requested in light of the following remarks.

Claims 1-18 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of copending application no. 10/087,629.

Applicants respectfully request entry of the terminal disclaimer filed herewith so that such provisional double patenting rejection is obviated. Applicants thus submit that claims 1-18 are in condition for allowance.

Respectfully submitted,

JONES DAY

Joseph M. Sauer (Reg. No. 47,919)
Jones Day
North Point, 901 Lakeside Avenue
Cleveland, Ohio 44114
(216) 586-7506

PTO/SB/25 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION

Docket Number (Optional): 555255012844

In re Application of: Fischer et al.

Application No.: 11/175,885

Filed: 07/06/2005

For: A Universal Serial Bus Adapter for a Mobile Device

The owner*, Research in Motion Limited, of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending **reference** Application Number 10/087,629, filed on 03/01/2002, as such term is defined in 35 U.S.C. 154 and 173, and as the term of any patent granted on said **reference** application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending **reference** application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the **reference** application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 and 173 of any patent granted on said **reference** application, "as the term of any patent granted on said **reference** application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending **reference** application," in the event that: any such patent: granted on the pending **reference** application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

Check either box 1 or 2 below, if appropriate.

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

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

2. ☑ The undersigned is an attorney or agent of record. Reg. No. 47919

Signature — Date: 11/20/06

11/24/2006 RMEBRAHT 00000028 501432 11175885
01 FC:1814 130.00 DA

Joseph M. Sauer, Esq.
Typed or printed name

216/586-7506
Telephone Number

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

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

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this statement. See MPEP § 324.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
11/175,885	07/06/2005	

APPLICATION AS FILED – PART I

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

APPLICATION AS AMENDED – PART II

AMENDMENT 11/22/2006	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 18	Minus	** 20	= 0	X $ =		OR	X $50=	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $ =		OR	X $200=	0
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

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

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

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

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

Legal Instrument Examiner:
Rosalind Ball

Application Number	Application No.	Applicant(s)	
	11/175,885	FISCHER ET AL.	
	Terminal Disclaimer Filed: 11/22/06		

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Document Code - DISQ	This patent is subject to a Terminal Disclaimer	Reasons:
INTERNAL DOCUMENT – DO NOT MAIL		

U.S. Patent and Trademark Office

NOTE DISCLAIMER:

The term of this patent shall not extend beyond the expiration date of Pat. No. , , , .

☒ **SHARON S. HOPPE**
PARALEGAL SPECIALIST
TECHNOLOGY CENTER 2800

☐ **RENEE M. PRESTON**
PARALEGAL SPECIALIST
TECHNOLOGY CENTER 2800

☐ **TREDELLE D. JACKSON**
PARALEGAL SPECIALIST
TECHNOLOGY CENTER 2800

☐ **NOVA M. CHAPMAN**
PARALEGAL SPECIALIST
TECHNOLOGY CENTER 2800

☐ **CASSANDRA B. PARIS**
PARALEGAL SPECIALIST
TECHNOLOGY CENTER 2800

— interference search —

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	69970	usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/03/03 21:15
L2	931970	hub or host	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/03/03 21:15
L3	4100521	power	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/03/03 21:16
L4	3402	1 same 2 same 3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/03/03 21:16
L5	716386	mobile	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/03/03 21:16
L6	136	4 same 5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/03/03 21:16
L7	2671353	identification or id	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/03/03 21:17
L8	9	6 same 7	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/03/03 21:23

EAST Search History

L9	42	(1 and 2 and 3 and 5 and 7).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/03/03 21:23

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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NOTICE OF ALLOWANCE AND FEE(S) DUE

33070 7590 03/08/2007

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

EXAMINER	
TSO, EDWARD H	
ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 03/08/2007

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/175,885	07/06/2005	Daniel M. Fischer	555255012844	5606

TITLE OF INVENTION: A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$300	$0	$1700	06/08/2007

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

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

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

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

If the SMALL ENTITY is shown as NO:

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

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

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

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

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

PTOL-85 (Rev. 07/06) 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 (571)-273-2885

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

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

33070 7590 03/08/2007

JOSEPH M. SAUER
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 (571) 273-2885, on the date indicated below.

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/175,885	07/06/2005	Daniel M. Fischer	555255012844	5606

TITLE OF INVENTION: A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$300	$0	$1700	06/08/2007

EXAMINER	ART UNIT	CLASS-SUBCLASS
TSO, EDWARD H	2838	320-111000

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

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

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

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

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

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

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

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

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

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

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/175,885	07/06/2005	Daniel M. Fischer	555255012844	5606

33070 7590 03/08/2007

JOSEPH M. SAUER
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CLEVELAND, OH 44114

EXAMINER	
TSO, EDWARD H	
ART UNIT	**PAPER NUMBER**
2838	

DATE MAILED: 03/08/2007

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

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

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

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

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

Notice of Allowability	Application No.	Applicant(s)	
	11/175,885	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 *a Terminal Disclaimer filed 11/22/06*.

2. ☒ The allowed claim(s) is/are *1-18*.

3. ☐ 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.

4. ☐ 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.

5. ☐ 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).

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

Attachment(s)

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

Edward H Tso
Primary Examiner
Art Unit: 2838

Issue Classification	Application/Control No. 11/175,885	Applicant(s)/Patent under Reexamination FISCHER ET AL.
	Examiner Edward H. Tso	Art Unit 2838

ISSUE CLASSIFICATION

ORIGINAL		INTERNATIONAL CLASSIFICATION									
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED				
320	111	H	01	M	10	/46				/	

CROSS REFERENCES				
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)			

----- (Assistant Examiner) (Date)	Edward H. Tso Primary Examiner	Total Claims Allowed: 18
(Legal Instruments Examiner) (Date)	(Primary Examiner) 3/27 (Date)	O.G. Print Claim(s): 1 / O.G. Print Fig.: 4

☒ 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		31		61		91		121		151		181
	2		32		62		92		122		152		182
	3		33		63		93		123		153		183
	4		34		64		94		124		154		184
	5		35		65		95		125		155		185
	6		36		66		96		126		156		186
	7		37		67		97		127		157		187
	8		38		68		98		128		158		188
	9		39		69		99		129		159		189
	10		40		70		100		130		160		190
	11		41		71		101		131		161		191
	12		42		72		102		132		162		192
	13		43		73		103		133		163		193
	14		44		74		104		134		164		194
	15		45		75		105		135		165		195
	16		46		76		106		136		166		196
	17		47		77		107		137		167		197
	18		48		78		108		138		168		198
	19		49		79		109		139		169		199
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	22		52		82		112		142		172		202
	23		53		83		113		143		173		203
	24		54		84		114		144		174		204
	25		55		85		115		145		175		205
	26		56		86		116		146		176		206
	27		57		87		117		147		177		207
	28		58		88		118		148		178		208
	29		59		89		119		149		179		209
	30		60		90		120		150		180		210

Search Notes

Application/Control No.	Applicant(s)/Patent under Reexamination	
11/175,885	FISCHER ET AL.	
Examiner	**Art Unit**	
Edward H. Tso	2838	

SEARCHED			
Class	Subclass	Date	Examiner
320	114	3/1/2007	ET

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
320	**111**	3/1/2007	**ET**

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
update class/subclass search	3/1/2007	ET
interference search attached	3/1/2007	ET

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Bib Data Sheet

CONFIRMATION NO. 5606

SERIAL NUMBER	FILING OR 371(c) DATE / RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/175,885	07/06/2005	320	2838	555255012844

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 ************************** yes

This application is a CON of 10/087,629 03/01/2002 PAT 6,936,936 which claims benefit of 60/273,021 03/01/2001 and claims benefit of 60/330,486 10/23/2001

**** FOREIGN APPLICATIONS ******************** none

IF REQUIRED, FOREIGN FILING LICENSE GRANTED **
07/28/2005

		STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
Foreign Priority claimed	☐ yes ☑ no	CANADA	4	18	3
35 USC 119 (a-d) conditions met	☐ yes ☐ no ☐ Met after Allowance				
Verified and Acknowledged	Examiner's Signature / Initials				

ADDRESS
33070

TITLE

A Universal Serial Bus Adapter for a Mobile Device

FILING FEE RECEIVED		
1000	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

PART B - FEE(S) TRANSMITTAL

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

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

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

33070 7590 03/08/2007

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

CONLEY ROSE, P.C.
5700 GRANITE PARKWAY
STE. 330
PLANO TX 75024

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

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

Karen A. Harris	(Depositor's name)
Karen A. Harris	(Signature)
June 1, 2007	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/175,885	07/06/2005	Daniel M. Fischer	555255012844	5606

TITLE OF INVENTION: A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE

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nonprovisional	NO	$1400	$300	$0	$1700	06/08/2007

EXAMINER	ART UNIT	CLASS-SUBCLASS
TSO, EDWARD H	2838	320-111000

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 Conley Rose, P.C.
2 J. Robert Brown, Jr.
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: RESEARCH IN MOTION LIMITED

(B) RESIDENCE: (CITY and STATE OR COUNTRY): WATERLOO, ONTARIO, 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 submitted:
- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 50-1515 (enclose an extra copy of this form).

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

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

Authorized Signature J. Robert Brown, Jr. Date June 1, 2007

Typed or printed name J. Robert Brown, Jr. Registration No. 45,438

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

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

Electronic Patent Application Fee Transmittal

Application Number:	11175885
Filing Date:	06-Jul-2005
Title of Invention:	A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE
First Named Inventor/Applicant Name:	Daniel M. Fischer
Filer:	J. Robert Brown/Karen Harris
Attorney Docket Number:	555255012844

Filed as Large Entity

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1400	1400
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	1700

Electronic Acknowledgement Receipt

EFS ID:	1830701
Application Number:	11175885
International Application Number:	
Confirmation Number:	5606
Title of Invention:	A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE
First Named Inventor/Applicant Name:	Daniel M. Fischer
Customer Number:	33070
Filer:	J. Robert Brown/Karen Harris
Filer Authorized By:	J. Robert Brown
Attorney Docket Number:	555255012844
Receipt Date:	01-JUN-2007
Filing Date:	06-JUL-2005
Time Stamp:	14:50:36
Application Type:	Utility

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	$1700
RAM confirmation Number	102
Deposit Account	501515
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 and 1.17	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	4214_GeneralPowerofAttorney.PDF	46387	no	1
Warnings:					
Information:					
2	Change of Address	4214-01503_FeeAddressIndication.PDF	60105	no	1
Warnings:					
Information:					
3	Issue Fee Payment (PTO-85B)	4214-01503_IssueFeeTransmittal.PDF	97845	no	1
Warnings:					
Information:					
4	Fee Worksheet (PTO-06)	fee-info.pdf	8295	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	212632		

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.

GENERAL POWER OF ATTORNEY
For Intellectual Property Proceedings

WHEREAS, Research in Motion Limited, a corporation organized and existing under the laws of Canada, having a principal office and place of business at 295 Phillip Street, Waterloo, Ontario, Canada, N2L 3W8 owns certain patent, trademark and other intellectual property, and has proceedings relating to its intellectual property ("IP proceedings") pending before the United States Patent and Trademark Office as well as in other foreign jurisdictions;

WHEREAS, Conley Rose, P.C., a professional corporation organized and existing under the laws of the State of Texas, having a principal office and place of business located at 5700 Granite Parkway, Suite 330, Plano, Texas 75024, United States of America, associated with Customer No. **30652**, is also responsible for handling some of these IP proceedings on behalf of Research in Motion Limited;

NOW, THEREFORE, as an authorized representative of Research in Motion Limited, I hereby appoint the following:

J. Robert Brown, Jr.	Reg. No. 45,438	Rodney B. Carroll	Reg. No. 39,624
Kristin Jordan Harkins	Reg. No. 37,859	Grant Rodolph	Reg. No. 50,487
Michael W. Piper	Reg. No. 39,800	Albert C. Metrailer	Reg. No. 27,145
Shannon W. Bates	Reg. No. 47,412		

as our attorney(s) and/or agent(s) to prosecute and transact all business related to Research in Motion Limited IP proceedings in the U.S. Patent and Trademark Office.

Please direct all correspondence associated with Customer No. 54120 to:

Research in Motion Limited
102 Decker Ct., Suite 180
Irving, Texas 75062
United States of America

The undersigned is an authorized representative having the title hereunder of Research in Motion Limited. As an authorized representative, the undersigned is authorized to sign and execute documents, including the Power of Attorney, on behalf of Research in Motion Limited.

In Testimony Whereof, I hereunto set my hand this 18th day of May, 2007.

RESEARCH IN MOTION LIMITED

By: _____

Name: Jim Balsillie

Title: Co-CEO

43467.01/4214.00000

LEGAL OK

PTO/SB/47 (09-06)
Approved for use through 04/30/2009. OMB 0651-0016
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE

"FEE ADDRESS" INDICATION FORM

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

- OR -

Fax to:
571-273-6500

INSTRUCTIONS: The issue fee must have been paid for application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. **When to check the first box below:** If you have a Customer Number to represent the fee address. **When to check the second box below:** If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

☑ Customer Number: 30652

OR

☐ The attached Request for Customer Number (PTO/SB/125) form.

PATENT NUMBER (if known)	APPLICATION NUMBER
	11/175,885

Completed by (check one):

☐ Applicant/Inventor

☑ Attorney or Agent of record 45,438 (Reg. No.)

☐ 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)

☐ Assignee recorded at Reel _____ Frame_____

Signature

J. Robert Brown, Jr.
Typed or printed name

972-731-2288
Requester's telephone number

June 1, 2007
Date

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 that one signature is required, see below*.

☑ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.363. 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 5 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 COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop M Correspondence, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/175,885	07/06/2005	Daniel M. Fischer	555255012844

CONFIRMATION NO. 5606

OC000000024243390
OC000000024243390

54120
RESEARCH IN MOTION, LTD
102 DECKER CT.
SUITE 180
IRVING, TX 75062

Date Mailed: 06/06/2007

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/01/2007.

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.

For Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199
OFFICE 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
11/175,885	07/06/2005	Daniel M. Fischer	555255012844

CONFIRMATION NO. 5606

OC000000024243360

OC000000024243360

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

Date Mailed: 06/06/2007

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/01/2007.

- 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).

FOR Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199
OFFICE 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

BIBDATASHEET

Bib Data Sheet

CONFIRMATION NO. 5606

SERIAL NUMBER	FILING OR 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/175,885	07/06/2005 RULE	320	2838	555255012844

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 application is a CON of 10/087,629 03/01/2002 PAT 6,936,936
which 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
** 07/28/2005

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 18	INDEPENDENT CLAIMS 3	

ADDRESS
54120

TITLE

A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE

FILING FEE RECEIVED		
1300	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

PTO/SB/47 (09-06)
Approved for use through 04/30/2009. OMB 0651-0016
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE

"FEE ADDRESS" INDICATION FORM

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

- OR -

Fax to:
571-273-6500

INSTRUCTIONS: The issue fee must have been paid for application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. **When to check the first box below:** If you have a Customer Number to represent the fee address. **When to check the second box below:** If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

☑ Customer Number: 30652

OR

☐ The attached Request for Customer Number (PTO/SB/125) form.

PATENT NUMBER (If known)	APPLICATION NUMBER
	11/175,885

Completed by (check one):

☐ Applicant/Inventor

☑ Attorney or Agent of record 45,438 (Reg. No.)

☐ 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)

☐ Assignee recorded at Reel _____ Frame _____

Signature

J. Robert Brown, Jr.
Typed or printed name

972-731-2288
Requester's telephone number

June 1, 2007
Date

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 that one signature is required, see below*.

☑ * Total of 1 forms are submitted.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/175,885	07/03/2007	7239111	555255012844	5606

54120 7590 06/13/2007

RESEARCH IN MOTION, LTD
102 DECKER CT.
SUITE 180
IRVING, TX 75062

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Daniel M. Fischer, et al.	§	
		§	Group Art Unit: 2838
Patent No.:	7,239,111 B2	§	
		§	Examiner: Tso, Edward H.
Issued:	July 3, 2007	§	
		§	Confirmation No. 5606
For:	UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE	§	

Mail Stop: Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF FILING

Pursuant to 37 C.F.R. §1.8, I hereby certify that this correspondence is being electronically submitted to the U.S. Patent and Trademark Office website, www.uspto.gov, on:

October 23 2007
Date of Filing

Karen Harris
Karen Harris

REQUEST FOR CERTIFICATE OF CORRECTION

Commissioner:

Patentees hereby request that a Certificate of Correction be issued pursuant to 37 C.F.R. §1.322 to correct the mistakes as set out in the attached draft certificate.

The mistakes to be corrected are minor and editorial in nature. As the mistakes were made on the part of the U.S. Patent and Trademark Office, no fee is deemed required. However, should a fee be found necessary, please charge Deposit Account 50-1515, Conley Rose, P.C., for any required fees.

Respectfully submitted,

Date: 10-23-07

J. Robert Brown, Jr.
Reg. No. 45,438

ATTORNEY FOR APPLICANTS

CONLEY ROSE, P.C.
5601 Granite Parkway, Suite 750
Plano, Texas 75024
(972) 731-2288
(972) 731-2289 (fax)

47460.01/4214.01503

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO.: **7,239,111 B2**

APPLICATION NO.: **11/175,885**

DATED : **July 3, 2007**

INVENTORS: **Daniel M. Fischer, et al.**

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

Col. 6, line 66, replace "10D" with -- 110D --
Col. 6, line 67, replace "10B" with -- 110B --
Col. 7, line 22, replace "10D" with -- 110D --
Col. 7, line 22, replace "10B" with -- 110B --
Col. 7, line 60, replace "10D" with -- 110D --

MAILING ADDRESS OF SENDER:

J. Robert Brown, Jr.
CONLEY, ROSE, P.C.
5601 Granite Parkway, Suite 750
Plano, Texas 75024

Electronic Acknowledgement Receipt

EFS ID:	2355393
Application Number:	11175885
International Application Number:	
Confirmation Number:	5606
Title of Invention:	A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE
First Named Inventor/Applicant Name:	Daniel M. Fischer
Customer Number:	54120
Filer:	J. Robert Brown/Karen Harris
Filer Authorized By:	J. Robert Brown
Attorney Docket Number:	555255012844
Receipt Date:	23-OCT-2007
Filing Date:	06-JUL-2005
Time Stamp:	12:14:38
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	Request for Certificate of Correction	4214-01503_RequestCertificateofCorrection.pdf	37069 7d4266caa5453a718d711d9c63abad864e2f9696	no	2

Warnings:

Information:	
Total Files Size (in bytes):	37069

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

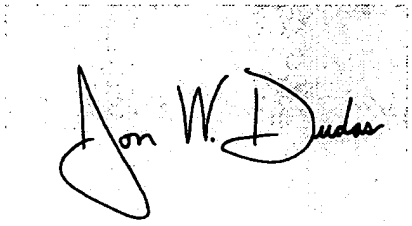
PATENT NO. : 7,239,111 B2
APPLICATION NO. : 11/175885
DATED : July 3, 2007
INVENTOR(S) : Daniel M. Fischer et al.

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

Col. 6, line 66, replace "10D" with -- 110D --
Col. 6, line 67, replace "10B" with -- 110B --
Col. 7, line 22, replace "10D" with -- 110D --
Col. 7, line 22, replace "10B" with -- 110B --
Col. 7, line 60, replace "10D" with -- 110D --

Signed and Sealed this

Eighteenth Day of December, 2007



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

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	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
11/175,885	7239111	2838	7581

OC000000037479905

Correspondence Address/Fee Address Change

The following fields have been set to Customer Number 82313 on 08/21/2009

- **Correspondence Address**
- **Maintenance Fee Address**
- **Power of Attorney Address**

The address of record for Customer Number 82313 is:

82313
Research in Motion Corp./CR
Attn: J. Robert Brown
5601 Granite Parkway, Suite 750
Plano, TX 75024

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: 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 Dec. 23/09
Name	Bill Feng	Telephone	
Title	Vice President, Shared Services		

Legal OK

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.: 7,239,111 Filed/Issue Date: July 3, 2007

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 24, 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:	8689098
Application Number:	11175885
International Application Number:	
Confirmation Number:	5606
Title of Invention:	A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE
First Named Inventor/Applicant Name:	Daniel M. Fischer
Customer Number:	82313
Filer:	Bryan C. Diner/Janet Weems
Filer Authorized By:	Bryan C. Diner
Attorney Docket Number:	555255012844
Receipt Date:	24-OCT-2010
Filing Date:	06-JUL-2005
Time Stamp:	11:07:17
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	468991 0af453406e67226246fbd42b6cae11c9ba4deb8d	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	620321

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
11/175,885	07/06/2005	Daniel M. Fischer	555255012844

CONFIRMATION NO. 5606

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

POA ACCEPTANCE LETTER

OC000000044264106

Date Mailed: 11/02/2010

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/24/2010.

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
11/175,885	07/06/2005	Daniel M. Fischer	555255012844

CONFIRMATION NO. 5606

POWER OF ATTORNEY NOTICE

82313
Research in Motion Corp./CR
Attn: J. Robert Brown
5601 Granite Parkway, Suite 750
Plano, TX 75024

OC000000044264081

Date Mailed: 11/02/2010

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/24/2010.

- 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

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	11/175,885
Filing Date	July 6, 2005
First Named Inventor	Daniel M. Fischer
Title	A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE
Art Unit	2859
Examiner Name	E. H. Tso
Attorney Docket Number	TNT 3.0-001 CON

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.

4584535_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.

Electronic Acknowledgement Receipt

EFS ID:	26103617
Application Number:	11175885
International Application Number:	
Confirmation Number:	5606
Title of Invention:	A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE
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:	11298.0188-01000
Receipt Date:	17-JUN-2016
Filing Date:	06-JUL-2005
Time Stamp:	17:04:35
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	TNT_10_Transmittal_and_POA.pdf	114561 0142fcd9a7eb07505a94499f773b61d17356af83	no	2

Warnings:	
Information:	

Total Files Size (in bytes):	114561

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
11/175,885	07/06/2005	Daniel M. Fischer	TNT 3.0-001 CON

CONFIRMATION NO. 5606

POWER OF ATTORNEY NOTICE

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

OC000000083902470

Date Mailed: 06/24/2016

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/

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
11/175,885	07/06/2005	Daniel M. Fischer	TNT 3.0-001 CON

CONFIRMATION NO. 5606

POA ACCEPTANCE LETTER

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

OC000000083902521

Date Mailed: 06/24/2016

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/

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-124	2/13/2017	Eastern District of Texas, Marshall Division

PLAINTIFF	DEFENDANT
Fundamental Innovation Systems International LLC	ZTE Corporation, ZTE (USA), Inc. and ZTE (TX), Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,232,766 B2	7/31/2012	Fundamental Innovation Systems International LLC
2	7,834,586 B2	11/16/2010	Fundamental Innovation Systems International LLC
3	7,239,111 B2	7/3/2007	Fundamental Innovation Systems International LLC
4	8,624,550 B2	1/7/2014	Fundamental Innovation Systems International LLC
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**

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**

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-124	2/13/2017	Eastern District of Texas, Marshall Division

PLAINTIFF	DEFENDANT
Fundamental Innovation Systems International LLC	ZTE Corporation, ZTE (USA), Inc. and ZTE (TX), Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,232,766 B2	7/31/2012	Fundamental Innovation Systems International LLC
2	7,834,586 B2	11/16/2010	Fundamental Innovation Systems International LLC
3	7,239,111 B2	7/3/2007	Fundamental Innovation Systems International LLC
4	8,624,550 B2	1/7/2014	Fundamental Innovation Systems International LLC
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**

AO 120 (Rev. 08/10)

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

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
2:16-cv-1424	12/16/2016	Eastern District of Texas, Marshall Division

PLAINTIFF	DEFENDANT
Fundamental Innovation Systems International LLC	Huawei Investment & Holding Co., Ltd. et al.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,232,766 B2	7/31/2012	Fundamental Innovation Systems International LLC
2	7,834,586 B2	11/16/2010	Fundamental Innovation Systems International LLC
3	7,893,655 B2	2/22/2011	Fundamental Innovation Systems International LLC
4	7,239,111 B2	7/3/2007	Fundamental Innovation Systems International LLC
5	8,624,550 B2	1/7/2014	Fundamental Innovation Systems International LLC

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

DECISION/JUDGEMENT

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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**

AO 120 (Rev. 08/10)

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

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
2:16-cv-1425	12/16/2016	Eastern District of Texas, Marshall Division

PLAINTIFF	DEFENDANT
Fundamental Innovation Systems International LLC	LG Electronics, Inc., LG Electronics U.S.A., Inc., LG Electronics MobileComm U.S.A. Inc., LG Electronics Mobile Research U.S.A. LLC, and LG Electronics Alabama, Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,232,766 B2	7/31/2012	Fundamental Innovation Systems International LLC
2	7,834,586 B2	11/16/2010	Fundamental Innovation Systems International LLC
3	7,239,111 B2	7/3/2007	Fundamental Innovation Systems International LLC
4	8,624,550 B2	1/7/2014	Fundamental Innovation Systems International LLC
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**

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		

Electronic Acknowledgement Receipt

EFS ID:	29795906
Application Number:	11175885
International Application Number:	
Confirmation Number:	5606
Title of Invention:	A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE
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 CON
Receipt Date:	17-JUL-2017
Filing Date:	06-JUL-2005
Time Stamp:	10:20:23
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	Transmittal Letter	Trans.pdf	124810 1771067186f1804ad8ddf285bfca5a81dd5fea42	no	3

Warnings:

Information:					
2	Transmittal Letter	Trans2.pdf	37862 fd48ab421465c13a02664cb4cdc439b86e8e7be4	no	1
Warnings:					
Information:					
3	Power of Attorney	Pre.PDF	848759 7257765b1815b875887d3784c11da374906b7654	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	1011431	

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/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC

Application No./Patent No.: 11/175,885 Filed/Issue Date: 07-06-2005

Titled: A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE

FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC, a corporation

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

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

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 _____, Frame _____, or for which a copy thereof is attached.

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

1. From: FISCHER, DANIEL M To: RESEARCH IN MOTION LIMITED

   The document was recorded in the United States Patent and Trademark Office at
   Reel 031533, Frame 0304, or for which a copy thereof is attached.

2. From: RADUT, DAN G To: RESEARCH IN MOTION LIMITED

   The document was recorded in the United States Patent and Trademark Office at
   Reel 031533, Frame 0304, or for which a copy thereof is attached.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

3. From: HABICHER, MICHAEL F To: RESEARCH IN MOTION LIMITED

The document was recorded in the United States Patent and Trademark Office at
Reel 031533, Frame 0304, or for which a copy thereof is attached.

4. From: LUONG, QUANG A To: RESEARCH IN MOTION LIMITED

The document was recorded in the United States Patent and Trademark Office at
Reel 031533, Frame 0304, or for which a copy thereof is attached.

5. From: MALTON, JONATHAN T To: RESEARCH IN MOTION LIMITED

The document was recorded in the United States Patent and Trademark Office at
Reel 031533, Frame 0304, or for which a copy thereof is attached.

6. From: RESEARCH IN MOTION LIMITED To: BLACKBERRY LIMITED

The document was recorded in the United States Patent and Trademark Office at
Reel 031558, Frame 0922, 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(c)(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.

/Richard J. Botos/	7/12/17
Signature	Date
Richard J. Botos	32,016
Printed or Typed Name	Title or Registration Number

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/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

7. From: BLACKBERRY LIMITED To: FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 037324, Frame 0978, or for which a copy thereof is attached.

8. From: BLACKBERRY LIMITED To: FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 040792, Frame 0483, or for which a copy thereof is attached.

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.

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.

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:	29828854
Application Number:	11175885
International Application Number:	
Confirmation Number:	5606
Title of Invention:	A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE
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 CON
Receipt Date:	19-JUL-2017
Filing Date:	06-JUL-2005
Time Stamp:	14:34:26
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	212236 a096b003bf86632afe8bde143178cc397abeab41	no	4

Warnings:

Information:					
2	Power of Attorney	Pre.pdf	855803 9d2dcb10ca818530f8e78aa5360dfcda7dc53c9e	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	1068039	

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/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC

Application No./Patent No.: 11/175,885 Filed/Issue Date: 07-06-2005

Titled: A UNIVERSAL SERIAL BUS ADAPTER FOR A MOBILE DEVICE

FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC, a corporation

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

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

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 _____, Frame _____, or for which a copy thereof is attached.

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

1. From: FISCHER, DANIEL M To: RESEARCH IN MOTION LIMITED

   The document was recorded in the United States Patent and Trademark Office at
   Reel 031533, Frame 0304, or for which a copy thereof is attached.

2. From: RADUT, DAN G To: RESEARCH IN MOTION LIMITED

   The document was recorded in the United States Patent and Trademark Office at
   Reel 031533, Frame 0304, or for which a copy thereof is attached.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

3. From: HABICHER, MICHAEL F To: RESEARCH IN MOTION LIMITED

The document was recorded in the United States Patent and Trademark Office at
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4. From: LUONG, QUANG A To: RESEARCH IN MOTION LIMITED

The document was recorded in the United States Patent and Trademark Office at
Reel 031533, Frame 0304, or for which a copy thereof is attached.

5. From: MALTON, JONATHAN T To: RESEARCH IN MOTION LIMITED

The document was recorded in the United States Patent and Trademark Office at
Reel 031533, Frame 0304, or for which a copy thereof is attached.

6. From: RESEARCH IN MOTION LIMITED To: BLACKBERRY LIMITED

The document was recorded in the United States Patent and Trademark Office at
Reel 031558, Frame 0922, 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(c)(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.

/Richard J. Botos/	7/12/17
Signature	Date
Richard J. Botos	32,016
Printed or Typed Name	Title or Registration Number

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/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

7. From: BLACKBERRY LIMITED To: FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 037324, Frame 0978, or for which a copy thereof is attached.

8. From: BLACKBERRY LIMITED To: FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 040792, Frame 0483, or for which a copy thereof is attached.

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.

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/175,885	07/06/2005	Daniel M. Fischer	TNT 3.0-001 CON

CONFIRMATION NO. 5606

POA ACCEPTANCE LETTER

147655
Botos Churchill IP Law LLP
(TNT IP LLC)
430 Mountain Avenue, Suite 401
New Providence, NJ 07974

OC000000092919718

Date Mailed: 07/24/2017

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/17/2017.

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**.

/dtdinh/

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/175,885	07/06/2005	Daniel M. Fischer	TNT 3.0-001 CON

CONFIRMATION NO. 5606

POWER OF ATTORNEY NOTICE

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

OC000000092919715

Date Mailed: 07/24/2017

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/17/2017.

- 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**.

/dtdinh/

AO 120 (Rev. 08/10)

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

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 Northern District of Texas, Dallas Division on the following

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

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
3:17-cv-1827-L	7/12/2017	Northern District of Texas, Dallas Division

PLAINTIFF	DEFENDANT
Fundamental Innovation Systems International LLC	ZTE Corporation et al

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,232,766 B2	7/31/2012	Fundamental Innovation Systems International LLC
2	7,834,586 B2	11/16/2010	Fundamental Innovation Systems International LLC
3	7,239,111 B2	7/3/2007	Fundamental Innovation Systems International LLC
4	8,624,550 B2	1/7/2017	Fundamental Innovation Systems International LLC
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
Karen Mitchell	s/A. Lowe	7/12/2017

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**

Trials@uspto.gov
571.272.7822

Paper No. 11
Entered: August 10, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HUAWEI DEVICE CO., LTD.,
Petitioner,

v.

FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC,
Patent Owner.

Case IPR2018-00487
Patent 7,239,111 B2

Before LYNNE E. PETTIGREW, JON B. TORNQUIST, and CHRISTOPHER L. OGDEN, *Administrative Patent Judges.*

OGDEN, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

A. INTRODUCTION

Huawei Device Co., Ltd. ("Petitioner")[1] filed a Petition for *inter partes* review (Paper 2, "Pet.") of claims 1–3, 6–8, and 16–18 of U.S. Patent No. 7,239,111 B2 (Ex. 1001, "the '111 patent"). Fundamental Innovation Systems International LLC ("Patent Owner")[2] filed a Preliminary Response ("Prelim. Resp.") to the Petition. Paper 6.

We have discretion to institute an *inter partes* review when "the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Applying that standard, we decline to institute an *inter partes* review based on the information presented.

B. BACKGROUND

1. RELATED PROCEEDINGS

The parties identify the following related matters pursuant to 37 § C.F.R. 42.8(b)(2):[3]

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[1] Petitioner identifies Huawei Device Co., Ltd., Huawei Technologies Co., Ltd., Huawei Device USA Inc., Huawei Investment & Holding Co., Ltd., Huawei Device (Dongguan) Co., Ltd., Huawei Tech. Investment Co., Ltd., and Huawei Device (Hong Kong) Co., Ltd. as the real parties in interest. Pet. 4.

[2] Patent Owner states that it is the owner of the '111 patent, that Fundamental Innovation Systems International Holdings LLC is its parent entity, and that it has contracted with TnT IP, LLC to manage its patent portfolio. Paper 4, 1.

[3] *See* Pet. 4; Paper 4, 1–3; Ex. 1025, 3–4.

District court cases: *Fundamental Innovation Systems International LLC v. Samsung Elecs. Co. et al.*, No. 2:17-cv-00145 (E.D. Tex.); *Fundamental Innovation Systems International LLC v. Huawei Investment & Holding Co. et al.*, No. 2:16-cv-01424-JRG-RSP (E.D. Tex.); *Fundamental Innovation Systems International LLC v. LG Electronics, Inc. et al.*, No. 2:16-cv-01425-JRG-RSP (E.D. Tex.); *Fundamental Innovation Systems International LLC v. ZTE Corp. et al.*, No. 3:17-cv-01827-N (N.D. Tex.).

Inter partes reviews: IPR Nos. 2018-00276, 2018-00465, 2018-00472, 2018-00485, and 2018-00495.

2. THE USB 2.0 SPECIFICATION AND THE SE1 STATE

By way of background, the '111 patent relates to the USB 2.0 specification,[4] an industry-wide serial bus standard, which "describes the bus attributes, the protocol definition, types of transactions, bus management, and the programming interface required to design and build systems and peripherals that are compliant with this standard." Ex. 1007, 1.

Figure 4-2 of the USB 2.0 specification, reproduced below, shows a USB-compliant cable:

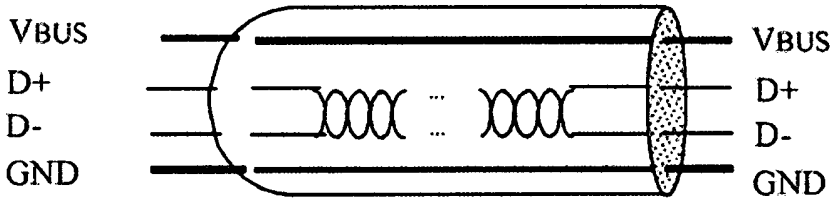

Figure 4-2. USB Cable

[4] COMPAQ COMPUT. CORP. ET AL., UNIVERSAL SERIAL BUS SPECIFICATION, REV. 2.0 (2000) [hereinafter USB 2.0] (Ex. 1007).

Figure 4-2 depicts four conductors: VBUS and GND deliver power to devices, and D+ and D− are a twisted pair of signal conductors. *See* Ex. 1007, 18, 86, 94, 102.

The USB 2.0 specification designates "SE1" as a state in which D+ and D− conductors are both high (i.e., at a voltage greater than 0.8 V). *See id.* at 123, 145. The specification states that "[l]ow-speed and full-speed USB drivers must never 'intentionally' generate an SE1 on the bus." *Id.* at 123; *see also id.* at 148 n.4 ("A high-speed driver must never 'intentionally' generate a signal in which both D+ and D− are driven to a level above 200 mV. The current-steering design of a high-speed driver should naturally preclude this possibility.").

3. THE '111 PATENT (EX. 1001)

The '111 patent discloses "a USB adapter for providing a source of power to a mobile device through a USB port." Ex. 1001, 2:35–36. According to the patent, those in the industry understood that one could use a USB interface for both data and power; however, mobile devices typically did not use the USB interface for that purpose. *See id.* at 1:52–54. This is because USB devices, according to the USB specification, must "participate in a host-initiated process called enumeration in order to be [USB] compliant" in drawing power from the USB interface, but "alternate power sources such as conventional AC outlets and DC car sockets" were "not capable of participating in enumeration." *Id.* at 1:54–67.

To allow mobile devices to be recharged using a broader range of power sources, the '111 patent describes a USB adapter for providing power to a mobile device without first participating in enumeration. *Id.* at 9:1–14.

Figure 2 of the patent, reproduced below, is a schematic diagram of such a USB adapter coupled to an exemplary mobile device:

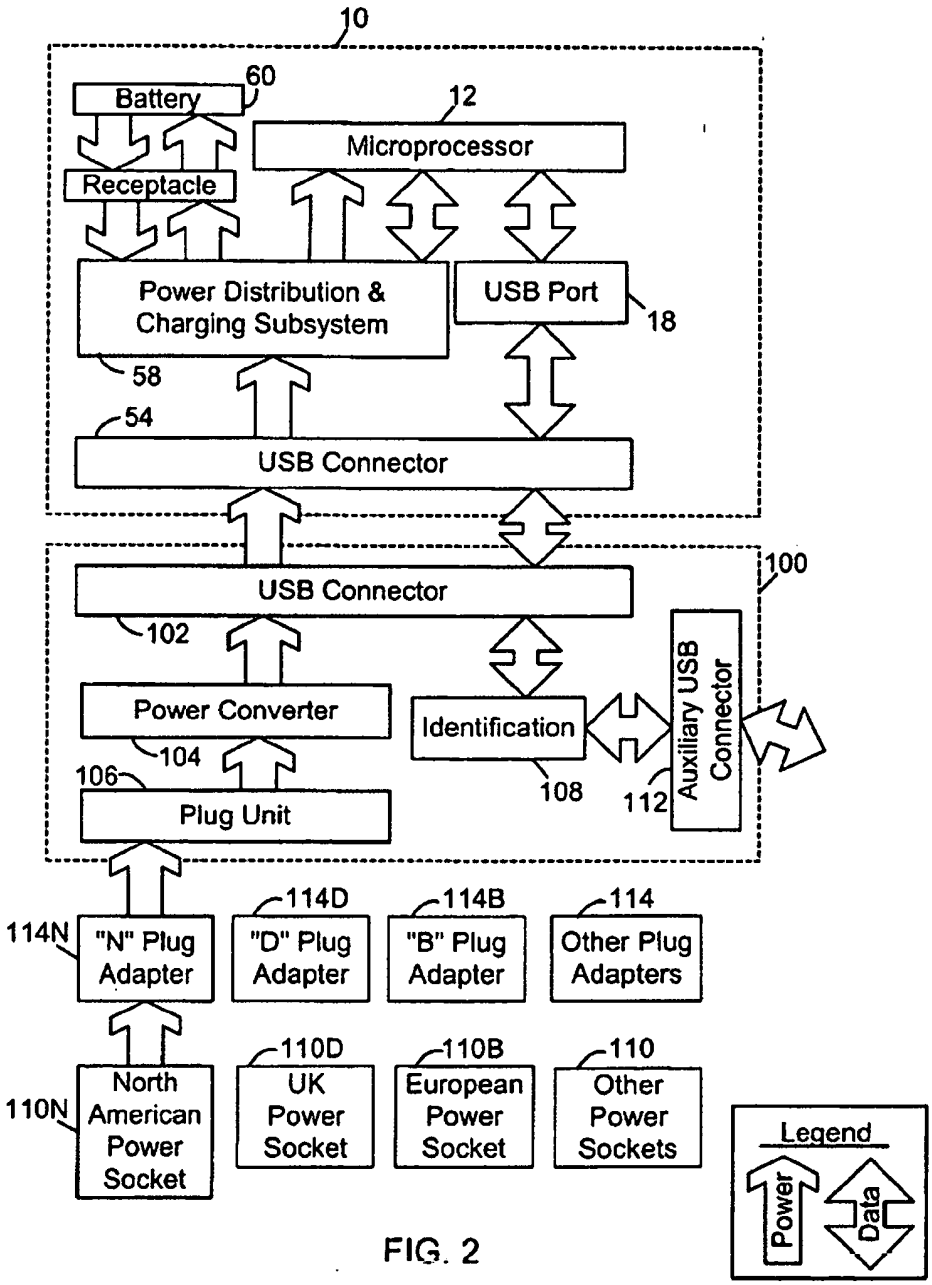

FIG. 2

Figure 2 depicts USB adapter 100, which couples mobile device 10 to various types of power sockets, 100N, 110D, 110B, or 110. *Id.* at 6:65–67, Certificate of Correction 1. The figure shows plug adapters 114N, 114D,

114B, and 114 for connecting to each of these sockets, respectively. *Id.* at 7:17–22, Certificate of Correction 1. The plug adapters allow USB Adapter 100 to receive energy from various local or specialized power sources, such as North American power socket 110N (115 VAC), a 12 VDC automobile power socket, or an air power socket. *Id.* at 7:49–52.

USB adapter 100 comprises primary USB connector 102, power converter 104, plug unit 106, and identification subsystem 108. *Id.* at 6:57–60. According to the '111 patent, when one connects USB adapter 100 to mobile device 10 (via USB connector 102 on the adapter side and USB connector 54 on the mobile device side), identification subsystem 108 provides an identification signal to mobile device 10, indicating that the power source is not subject to the power limitations imposed by the USB specification. *Id.* at 8:17–25, 9:3–8, 35–39.

In the preferred embodiment, this identification signal is "the application of voltage signals greater than 2 volts to both the D+ and D− lines in the USB connector."[5] *Id.* at 9:21–23. If mobile device 10 detects this identification signal, it determines that the device connected to its USB connector 54 "is not a typical USB host or hub," and that it is USB adapter 100. *Id.* at 9:35–39. Thus, mobile device 10 can charge battery 60 or otherwise use power provided by power adapter 100, without waiting for USB enumeration. *Id.* at 9:39–42, 9:60–65. Otherwise, if mobile device 10 detects that both D+ and D− lines are not greater than 2 volts, mobile device 10 determines that it is connected to a USB host or hub, and signals the connected host or hub to initiate the enumeration process, and it can power

[5] This corresponds to the SE1 state on the USB data bus. *See* Ex. 1007, 123.

or charge battery 60 according to the power limits imposed by the USB specification. *Id.* at 9:43–55, 10:1–6; *see also id.*, Fig. 3.

4. CHALLENGED CLAIMS AND ASSERTED GROUNDS OF UNPATENTABILITY

Petitioner challenges the patentability of claims 1–3, 6–8, and 16–18 of the '111 patent under 35 U.S.C. § 103(a) (2006).[6] Pet. 5. Independent claim 1 is as follows:

> 1. A Universal Serial Bus ("USB") adapter for providing power to a mobile device through a USB port, comprising:
> a plug unit configured to receive energy from a power socket;
> a power converter coupled to the plug unit, the power converter being configured to regulate the received energy from the power socket to generate a power output;
> *an identification subsystem configured to generate an identification signal, wherein the identification signal is configured to indicate to the mobile device that the power socket is not a USB host or hub*; and
> a USB connector coupled to the power converter and the identification subsystem, the USB connector being configured to couple the power output and the identification signal to the mobile device.

Ex. 1001 at 11:60–12:8 (emphasis of key phrase added).

Independent claim 17 recites a "method for providing energy to a mobile device," using an adapter substantially similar to claim 1, that includes "generating an identification signal that is configured to indicate to the mobile device that the power socket is not a USB host or hub." *Id.* at

[6] Because the '111 patent was filed before March 16, 2013, the version of 35 U.S.C. § 103 that existed prior to the Leahy–Smith America Invents Act applies. *See* Pub. L. No. 112-29, sec. 3(n)(1), 125 Stat. 284, 293 (2011).

13:1–13. Independent claim 18 recites a USB adapter, substantially similar to claims 1 and 17, but written in "means plus function" form. *See id.* at 14:1–11. It includes, among other limitations, "means for generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host." *Id.* at 14:7–9.

The remaining challenged claims, 2, 3, 6–8, and 16, depend directly or indirectly from claim 1. *See id.* at 12:9–67.

In the table below is a summary of the grounds in the Petition:

References	Basis	Challenged Claims
Theobald,[7] USB 2.0,[8] and Shiga[9]	§ 103(a)	1–3, 6–8, and 16–18
Dougherty[10] and Shiga	§ 103(a)	1–3, 6–8, and 16–18

Pet. 5.

C. ANALYSIS

1. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner argues that a person with ordinary skill in the art, relevant to the subject matter of the '111 patent,

> would have had either (i) a bachelor's degree in electrical engineering, computer science, or a related field, plus 2–4 years of experience in design of systems with Universal Serial Bus ("USB") or equivalent buses, or (ii) a master's degree in electrical engineering, computer science, or a related field, plus 1–2 years of experience in design of systems with USB or equivalent buses at the time of the '111 patent's priority date.

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[7] Theobald, US 5,859,522 (issued Jan. 12, 1999) (Ex. 1006).

[8] *Supra* note 4.

[9] Shiga, US 6,625,738 B1 (issued Sept. 23, 2003) (Ex. 1009).

[10] Dougherty et al., US 7,360,004 B2 (issued Apr. 15, 2008) (Ex. 1010).

Pet. 8; *see also* Ex. 1005 ¶¶ 22–24. For its Preliminary Response, Patent Owner does not contest this as the applicable level of skill. Prelim. Resp. 20. Therefore, we adopt Petitioner's characterization of the level of ordinary skill in the art for the purpose of this Decision.

2. CLAIM CONSTRUCTION

We need only construe claim terms "that are in controversy, and only to the extent necessary to resolve the controversy." *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). For the purpose of this Decision, the only claim term requiring an express construction is "identification signal . . . configured to indicate to the mobile device that *the power socket* is not a USB host or hub" in claims 1 and 17. Ex. 1001 at 12:2–4, 13:7–9 (emphasis added).[11] Petitioner urges us to construe this term as "identification signal . . . configured to indicate to the mobile device that *the USB adapter* is not a USB host or hub." Pet. 22.[12] In essence, Petitioner proposes that we adopt a construction that replaces the words "the power socket" with "the USB adapter." We disagree.

We interpret a patent claim term using the "broadest reasonable construction in light of the specification of the patent in which it appears."

[11] Our construction of this phrase also applies to claim 18, which contains the similar phrase "identification signal that indicates to the mobile device that the power socket is not a USB hub or host." *Id.* at 14:7–9. We consider this phrase to be synonymous with the phrase we are construing in claims 1 and 17.

[12] Patent Owner does not contest this construction in the Preliminary Response. Prelim. Resp. 22–23 n.4.

37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016). "Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history." *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). The plain meaning of a term is "its meaning to the ordinary artisan after reading the entire patent." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1321 (Fed. Cir. 2005) (en banc).

Petitioner offers no evidence that replacing "the power socket" with "the USB adapter" is consistent with the plain and ordinary meaning of the term in question, in light of the patent disclosure. To the contrary, the '111 patent consistently discloses USB adapters that are distinct from associated power sockets. Claim 1 itself is directed to a USB adapter, which comprises a plug unit configured to receive energy from a power socket. *See* Ex. 1001, 11:60–63. The power socket, therefore, is something other than the claimed USB adapter itself. In Figure 2, "power sockets" 110N, 110D, 110B, and 110 are depicted outside the box identified as USB adapter 100. *See id.*, Fig. 2, 6:64–67. Likewise, passages in the specification consistently treat USB adapters and power sockets as distinct. *See, e.g., id.* at 2:38–40 ("The plug unit is operative to couple the USB adapter to a power socket."), 7:46–47 ("[T]he USB adapter . . . can be adapted to receive energy from various types of power sockets."), 7:63–65 (plug adapters "allow[] the USB power adapter . . . to connect to a local power supply via the local power socket").[13]

[13] Petitioner also argues, inconsistently with its proposed construction, that Theobald discloses a power socket because Theobald's power adapter can "mate with a conventional wall outlet." *See* Pet. 31 (quoting Ex. 1006, 4:18–25).

However, Petitioner argues that its proposed construction is "[t]he only plausible interpretation" of the term consistent with Patent Owner's complaint in the parallel district court litigation, given that Patent Owner "asserts the '111 patent against a number of USB power adapters." Pet. 22 (citing Ex. 1024 ¶¶ 14, 56; Ex. 1005 ¶ 46). This is extrinsic evidence, and as such, it is less relevant to the construction than the intrinsic record including the patent disclosure. *See Phillips*, 415 F.3d at 1317. It is improper to rely on extrinsic evidence when, as here, an analysis of the intrinsic evidence alone resolves any ambiguity as to the meaning of the term. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996).

In light of the above considerations, we determine that a person of ordinary skill in the art at the time of invention would have understood that "the power socket" and "the USB adapter" are distinct elements in claims 1, 17, and 18, and would not have interpreted "the power socket" to mean "the USB adapter."

3. ASSERTED UNPATENTABILITY OF CLAIMS 1–3, 6–8, AND 16–18 AS OBVIOUS OVER THEOBALD IN VIEW OF USB 2.0 AND SHIGA

a. Theobald (Ex. 1006)

Theobald describes an apparatus for identifying an accessory as it is attached to an electronic device, based on a voltage level generated by the accessory. Ex. 1006, 1:53–59. In the preferred embodiment, the device is a Motorola cell phone, and the accessory is either a mid or fast rate charger that uses an eight-pin J3-type connector attached to a Motorola cell phone. *Id.* at 3:5–8, 4:29–33. However, Theobald states that the connector "may be any other suitable multiple pin accessory connector having an external power supply pin and at least one information pin." *Id.* at 3:8–10. Theobald

also discloses that data communication between the accessory and the electronic device may be by any "suitable high speed data communication protocol." *See id.* at 6:4–13.

We reproduce Figure 1 of Theobald below:

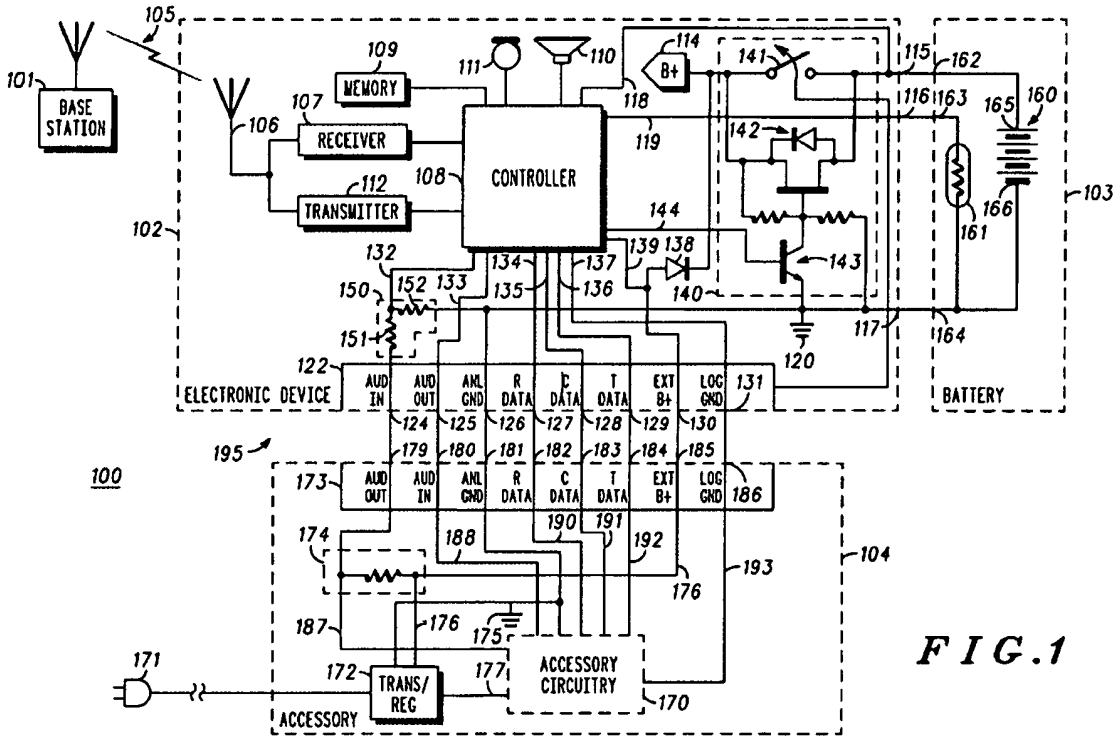


FIG.1

Figure 1 depicts electronic device 102 attached to accessory 104. Ex. 1006, 2:4–6. Accessory 104 has plug 171, transformer and regulator 172, connector 173, and identification element 174. *Id.* at 4:6–8. Plug 171 is compatible to mate with a conventional wall outlet (not shown in Figure 1) to provide external power to accessory 104. *Id.* at 4:18–21. Connector 173 includes AUD OUT line 179. *Id.* at 4:41–45. Identification element 174, a resistor that is uniquely valued depending on whether accessory 104 is a mid or fast rate charger, is coupled between transformer and regulator 172 and AUD OUT line 179, via lines 176 and 187, respectively. *See id.* at 4:55–67. Controller 108 in electronic device 102 identifies accessory 104 by

measuring the voltage level from the accessory's AUD OUT line 179, and comparing that level to an accessory lookup table. *See id.* at 6:14–50.

b. Shiga (Ex. 1009)

Shiga describes a system for turning on a host computer's power supply using an input device, such as a keyboard, via a USB interface. Ex. 1009, 1:13–19. Shiga's Figure 1, which we reproduce below, shows an embodiment of the system:

FIGURE 1

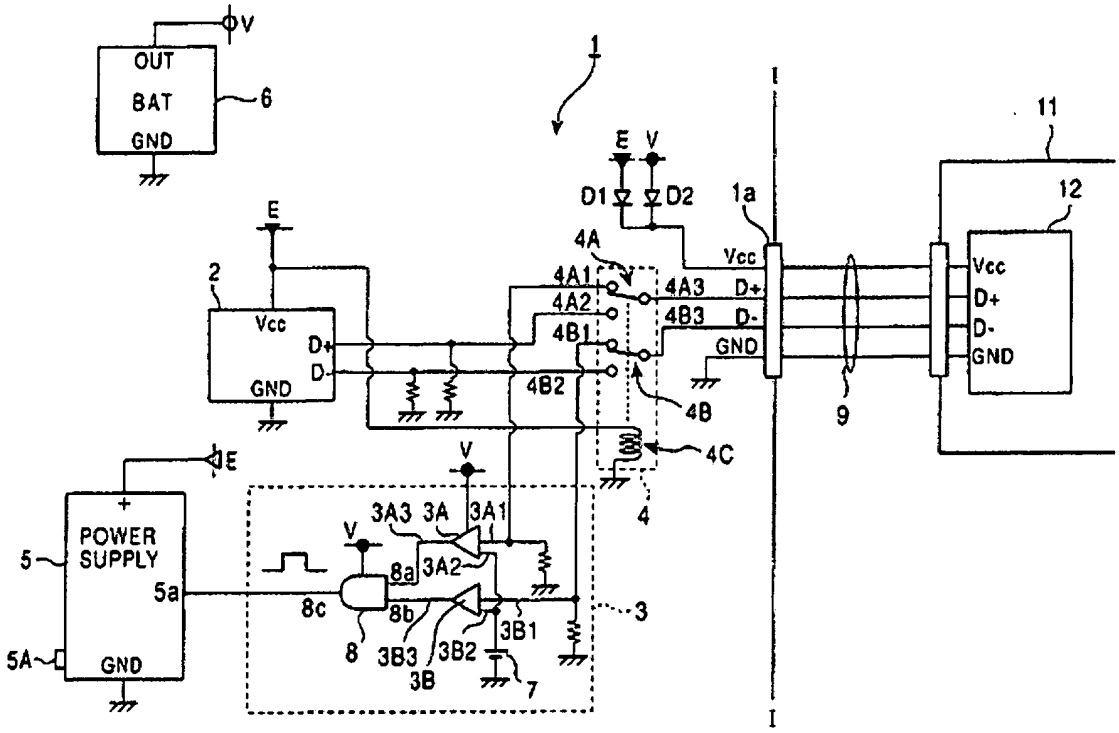


Figure 1 depicts host computer 1, which includes USB chip 2, wake-up means 3, switching means 4 (depicted as a relay), power supply 5, and sub-power supply 6. *Id.* at 4:12–14, 4:54. Keyboard 11, containing USB chip 12, is connected via USB cable 9 to host computer 1. *Id.* at 4:47–53.

The system operates as follows: When power supply 5 is off, keyboard 11 is connected as shown in the figure, via relay 4, to wake-up

means 3, which draws a small amount of power from sub-power supply 6. *See id.* at 6:4–34. When a user activates a power-on key on keyboard 11, chip 12 sends an SE1 signal to host 1, which turns on main power supply 5. *Id.* at 6:35–7:15. When main power supply 5 is on, relay 4 connects keyboard 11 to USB chip 2, thus enabling USB data transmissions. *Id.* at 7:16–30.

c. Analysis

Petitioner argues that a person of ordinary skill in the art would have had reason to modify Theobald by replacing the disclosed eight-pin J3-type connector with a USB 2.0 connector, and by using USB 2.0 as the communications protocol. Pet. 17–18 (citing Ex. 1005, ¶¶ 85–86), 42. Petitioner also argues that a skilled artisan would have further modified Theobald, according to the teachings of Shiga, to use an SE1 signal for identification, rather than a resistor as disclosed in Theobald. Pet. 33, 43–47.

However, Petitioner's analysis, and the analysis presented by its declarant Dr. Levy, are premised on Petitioner's proposed construction for the phrase "identification signal . . . configured to indicate to the mobile device that *the power socket* is not a USB host or hub," Ex. 1001, 12:2–4 (emphasis added), as meaning "identification signal . . . configured to indicate to the mobile device that *the USB adapter* is not a USB host or hub." *See* Pet. 22, 26–26; Ex. 1005 ¶¶ 46–47 ("I have been asked to interpret 'power socket' . . . to refer to the USB adapter itself."). In particular, Petitioner argues that Theobald, as modified by USB 2.0 and Shiga, teaches that an SE1 "signal transmitted by the fast-rate adapter additionally indicates to the connected electronic device that the *fast-rate*

adapter is not a USB hub or host." Pet. 33 (emphasis added) (citing Ex. 1005 ¶ 103).

Petitioner has not shown that Theobald, USB 2.0, Shiga, or any combination of these references would have taught or suggested this limitation, as we have construed it above. While Theobald may identify accessory 104 as either a mid rate or fast rate charger, Petitioner has not provided a rationale for how or why a person of ordinary skill in the art would have used Theobald's identification system, as modified by the teachings of USB 2.0 and Shiga, to indicate that the *power socket* is not a USB host or hub.

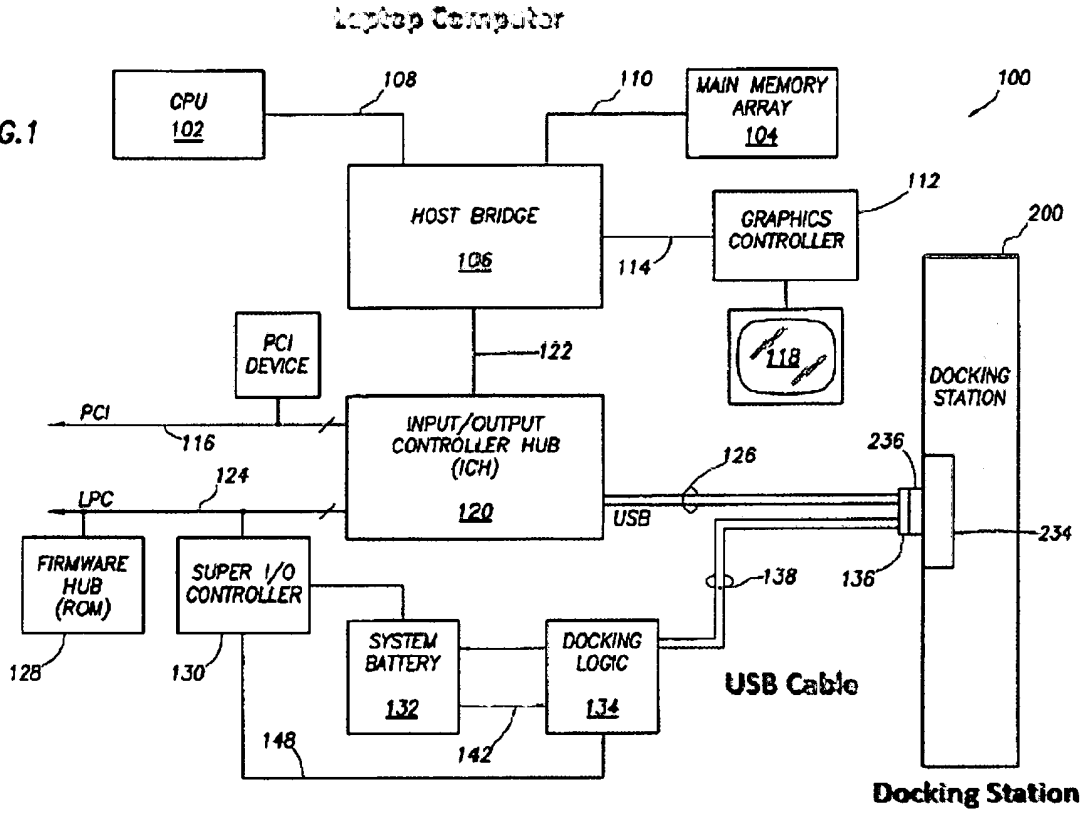
Therefore, based on this record, Petitioner is not reasonably likely to prevail at trial in showing that claims 1–3, 6–8, and 16 of the '111 patent or independent claims 17 and 18, which recite the same "power socket" limitation, would have been obvious over the combination of Theobald, USB 2.0, and Shiga.

4. ASSERTED UNPATENTABILITY OF CLAIMS 1–3, 6–8, AND 16–18 AS OBVIOUS OVER DOUGHERTY IN VIEW OF SHIGA

a. Dougherty

Dougherty discloses a method and system for powering a laptop across a USB interface when it is docked with a docking station. Ex. 1010, 1:21–26. Figure 1 of Dougherty, reproduced below with Petitioner's color annotations (Pet. 19) is a schematic of the disclosed system:

FIG. 1



As shown in Figure 1, the system of Dougherty includes laptop computer 100 (orange) and docking station 200 (blue), which are connected (in the green portion that Petitioner labels as "USB Cable") via USB bus serial communication lines 126, USB power rail 138, USB connector 136 (of laptop computer 100), and USB connector 236 (of docking station 200). Ex. 1010, 3:44–5:7.

In order to establish a powered connection between a battery-powered laptop 100 and docking station 200, laptop 100 first identifies docking station 200, via normal USB handshaking protocol across data lines 126, as a device capable of providing external power. *Id.* at 5:39–52. Laptop 100 then loads a driver, which turns off the laptop's ability to provide 5 V to USB power rails 138. *Id.* at 5:53–6:3. When this occurs, the laptop is in the same state it would be in if it had no battery or the battery were completely

discharged. *Id.* at 6:4–10. Next, docking station docking logic 234 establishes whether laptop 100 is capable of receiving power, by attempting to establish communications across power rails 138 with a reactive signaling circuit in laptop docking logic 134. *Id.* at 6:10–7:2; *see also id.*, Fig. 2 (depicting logic 134 and logic 234 in more detail). If so, docking logic 234 ramps the voltage in power rails 138 up to 18 V in order to charge laptop battery 132. *Id.* at 7:3–19.

a. Analysis

Petitioner argues that a person of ordinary skill in the art would have had reason to replace Dougherty's elaborate communication between the laptop and docking station with a simple transmission or exchange of identifying SE1 signals as taught by Shiga. *See* Pet. 60–61. According to Petitioner, this modification would not require specific hardware modifications to the laptop, and would be a simpler and faster alternative. *Id.* Petitioner argues that this substitution would be a predictable and trivial change, given that Dougherty's system is already configured to transmit USB signals such as SE1 over data lines 126. *See id.* at 62. Petitioner argues that this change "would merely be the use of a known technique to improve a similar device in the same way." *Id.* at 63 (citing Ex. 1005 ¶ 192; *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007)); *accord id.* at 64. Furthermore, Petitioner argues that Dougherty teaches the desirability of reducing complexity and latency, and that Shiga teaches the desirability of using SE1 as a non-USB-standard signal. *Id.* at 62–63.

According to Petitioner, Dougherty as modified by Shiga teaches the "identification signal" as recited in claim 1, because an SE1 signal "is not a USB standard state," therefore, "this signal indicates to the mobile device

(*i.e.*, the laptop) that the USB adapter (*i.e.*, the docking station) is not a USB hub or host." *Id.* at 51.

However, claim 1, as we have construed it above, requires that the identification signal indicate to the mobile device that the *power socket*, not the *USB adapter*, is not a USB host or hub. Petitioner's argument, which relies on interpreting "the power socket" in claim 1 as "the USB adapter," is not consistent with the plain and ordinary meaning of the term "power adapter," in light of the '111 patent disclosure. Petitioner has not provided a rationale for how or why a person of ordinary skill in the art would have used Dougherty's system, as modified by the teachings of Shiga, to indicate that the *power socket* is not a USB host or hub.

Therefore, based on this record, Petitioner is not reasonably likely to prevail at trial in showing that claims 1–3, 6–8, and 16, of the '111 patent, or independent claims 17 and 18, which recite the same "power socket" limitation, would have been obvious over the combination of Dougherty and Shiga.

5. CONCLUSION

After considering the evidence and arguments presented in the Petition and the Preliminary Response, we determine that there is not a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition. Therefore, pursuant to 35 U.S.C. § 314(a), we decline to institute an *inter partes* review.

D. ORDER

It is

ORDERED that pursuant to 35 U.S.C. § 314(a), the Petition is DENIED, and no *inter partes* review is instituted.

PETITIONER:

David A. Garr
Anupam Sharma
COVINGTON & BURLING LLP
dgarr@cov.com
asharma@cov.com

PATENT OWNER:

Hong Annita Zhong
Michael Fleming
IRELL & MANELLA LL
hzhong@irell.com
mfleming@irell.com
FundamentalIPRs@irell.com

Trials@uspto.gov
571-272-7822

Paper 17
Entered: October 1, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZTE (USA) INC.,
Petitioner,

v.

FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC,
Patent Owner.

Case IPR2018-00276
Patent 7,239,111 B2

Before LYNNE E. PETTIGREW, JON B. TORNQUIST, and ARTHUR M. PESLAK, *Administrative Patent Judges.*

PESLAK, *Administrative Patent Judge*

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314(a)

I. INTRODUCTION

ZTE (USA) Inc. ("Petitioner"), filed a Petition (Paper 1, "Pet.") requesting an *inter partes* review of claims 1–3, 6–8, 12, and 14–18 of U.S. Patent 7,239,111 B2 (Ex. 1001, "the '111 Patent").[1] Petitioner supports its Petition with the Declaration of Mr. James Geier. Ex. 1009. Fundamental Innovation Systems International LLC ("Patent Owner") timely filed a Preliminary Response (Paper 8, "Prelim. Resp."). Patent Owner supports its Preliminary Response with the Declaration of Robert Baranowski and the Declaration of Dr. Kenneth Fernald. Exs. 2001, 2002.

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition shows "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Taking into account the evidence and arguments presented in the Petition and the Preliminary Response, we determine that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to any challenged claim of the '111 Patent. Therefore, we do not institute an *inter partes* review.

A. Related Matters

The parties identify Civil Actions No. 2:17-cv-00145, No. 2:16-cv-01424, and No. 2:16-cv-01425 in the Eastern District of Texas and Civil Action No. 3:17-cv-01827 in the Northern District of Texas as involving the

[1] Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. were dismissed from this proceeding by Order entered July 18, 2018. Paper 12.

'111 Patent. Pet. 1, Paper 6, 1. The parties also identify IPR2018-00487 and IPR2018-00495 as having been filed against the '111 Patent. Pet. 1, Paper 6, 3.

B. Technology Background

An overview of USB cables is helpful in understanding the technology involved in the '111 Patent which relates to charging a mobile device through a USB connector. *See* Ex. 1001, Fig. 3. Cables compliant with the USB 2.0 standard have four conductors: VBUS, D+, D-, and GND. Ex. 1008, 17–18, 86. The VBUS and GND conductors of the USB cable are used to deliver power to devices and the D+ and D- conductors carry communication signals between a USB host and a connected device. *Id.* at 17–18; Ex. 1001, 7:4–11. Figure 4–2 of the USB 2.0 specification, reproduced below, depicts these four conductors within a USB cable:

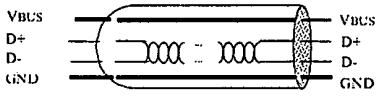


Figure 4-2. USB Cable

Ex. 1008, 17. Figure 4–2 illustrates the arrangement of conductors in a USB cable.

C. The '111 Patent

The '111 Patent is directed to a Universal Serial Bus Adapter for a Mobile Device. Ex. 1001, at [54]. The '111 Patent discloses "a USB adapter for providing a source of power to a mobile device through a USB port." *Id.* at 2:19–21. The '111 Patent explains that although it was understood in the art that a USB interface could be used as a power interface, it was typically not used for that purpose by mobile devices. *Id.* at 1:52–54. This is because USB hubs and hosts require USB devices to

"participate in a host-initiated process called enumeration in order to be compliant" with the USB specification in drawing power from the USB interface, and "alternate power sources such as conventional AC outlets and DC car sockets" were "not capable of participating in enumeration." *Id.* at 1:56–66. Additionally, "the power limits imposed by the USB specification" limit the amount of power available to charge a battery. *Id.* at 2:63–64.

In order to, *inter alia*, avoid the power limits imposed by the USB Specification, the '111 Patent discloses a USB adapter that is capable of providing power to a mobile device without first participating in USB enumeration. *Id.* at 9:15–41. Figure 2 of the '111 Patent, reproduced below, is a schematic diagram of the disclosed USB adapter coupled to an exemplary mobile device (*id.* at 3:23–24):

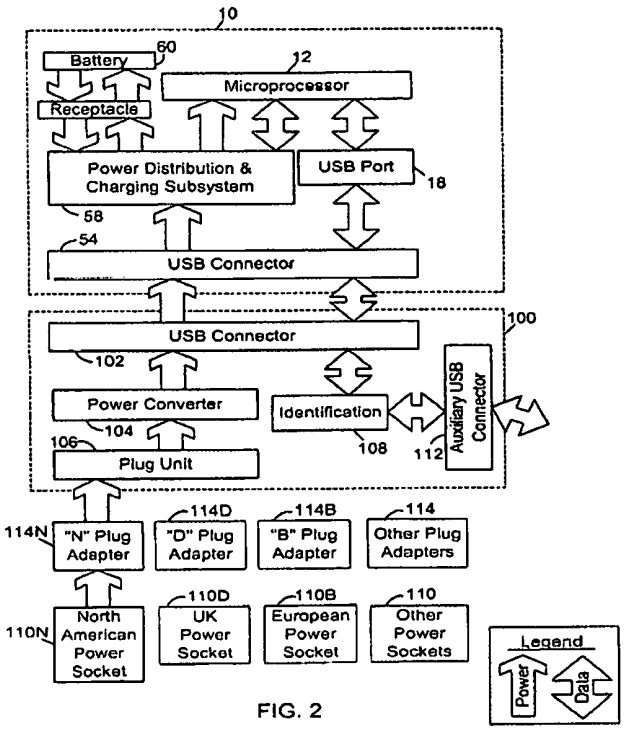


FIG. 2

As shown in Figure 2, USB adapter 100 comprises primary USB connector 102, power converter 104, plug unit 106, identification subsystem 108, and auxiliary USB connector 112. *Id.* at 6:57–7:1. The '111 Patent discloses that when USB adapter 100 is connected to mobile device 10 via USB connector 54 of mobile device 10 and USB connector 102 of USB adapter 100, identification subsystem 108 provides an identification signal to mobile device 10 indicating that the power source is not a USB limited source. *Id.* at 6:57–7:1, 8:23–25. 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." *Id.* at 8:25–29. "The preferred identification signal," however, "results from the application of voltage signals greater than 2 volts to both the D+ and D- lines in the USB connector." *Id.* at 9:21–23.

D. Illustrative Claim

Independent claim 1 is illustrative of the challenged claims and is reproduced below:

> 1. A Universal Serial Bus ("USB") adapter for providing power to a mobile device through a USB port comprising:
>
> a plug unit configured to receive energy from a power socket;
>
> a power converter coupled to the plug unit, the power converter being configured to regulate the received energy from the power socket to generate a power output;
>
> an identification subsystem configured to generate an identification signal, wherein the identification signal is configured to indicate to the mobile device that the power socket is not a USB host or hub; and
>
> a USB connector coupled to the power converter and the identification subsystem, the USB connector being configured to

couple the power output and the identification signal to the mobile device.

Ex. 1001, 11:60–12:8.

E. Asserted Grounds of Unpatentability

Petitioner challenges claims 1–3, 6–8, 12, and 14–18 of the '111 Patent as upatentable under 35 U.S.C. § 103(a) based on the grounds set forth in the following table. Pet. 3–4.

References	**Basis**	**Claim(s) Challenged**
Theobald[2] and Shiga[3]	§ 103	1–3, 6–8, and 16–18
Theobald, Shiga, and Kfoury[4]	§ 103	15
Dougherty,[5] Hahn,[6] and Amoni[7]	§ 103	12 and 14

I. ANALYSIS

A. Overview

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter 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. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual

[2] U.S. Patent No. 5,925,942, issued July 20, 1999 (Ex. 1005, "Theobald").
[3] U.S. Patent No. 6,625,738 B1, issued Sept. 23, 2003 (Ex. 1006, "Shiga").
[4] U.S. Patent No. 6,049,192, issued Apr. 11, 2000 (Ex. 1016, "Kfoury").
[5] U.S. Patent No. 7,360,004 B2, issued Apr. 15, 2008 (Ex. 1013, "Dougherty").
[6] U.S. Patent No. 5,973,948, issued Oct. 16, 1999 (Ex. 1014, "Hahn").
[7] U.S. Patent No. 5,884,086, issued Mar. 16, 1999 (Ex. 1015, "Amoni").

determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective indicia of non-obviousness (i.e., secondary considerations). *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We analyze the asserted grounds based on obviousness with these principles in mind.

B. Claim Construction

In an inter partes review, claim terms in an unexpired patent are construed according to their broadest reasonable interpretation in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). We construe claim terms "that are in controversy, and only to the extent necessary to resolve the controversy." *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

The Board previously construed the claim term "identification signal . . . configured to indicate to the mobile device that *the power socket* is not a USB host or hub" in independent claims 1, 17, and 18. Ex. 1001, 12:2–4, 13:7–9, 14:7–9; *see Huawei Dev. Co., Ltd. v. Fund. Innov. Sys. Intl. LLC*, IPR2018-00487, slip op. at 9–11 (Aug. 10, 2018) (Paper 11). In that case, the Board determined that "a person of ordinary skill in the art at the time of invention would have understood that 'the power socket' and 'the USB adapter' are distinct elements in claims 1, 17, and 18, and would not have interpreted 'the power socket' to mean 'the USB adapter.'" *Huawei*,

slip op. at 11. In support of this construction, the Board relied on intrinsic evidence from the '111 Patent. *Id.* at 10. In particular the Board found that

> the '111 patent consistently discloses USB adapters that are distinct from associated power sockets. Claim 1 itself is directed to a USB adapter, which comprises a plug unit configured to receive energy from a power socket. *See* Ex. 1001, 11:60–63. The power socket, therefore, is something other than the claimed USB adapter itself. In Figure 2, "power sockets" 110N, 110D, 110B, and 110 are depicted outside the box identified as USB adapter 100. *See id.*, Fig. 2, 6:64–67. Likewise, passages in the specification consistently treat USB adapters and power sockets as distinct. *See, e.g., id.* at 2:38–40 ("The plug unit is operative to couple the USB adapter to a power socket."), 7:46–47 ("[T]he USB adapter . . . can be adapted to receive energy from various types of power sockets."), 7:63–65 (plug adapters "allow[] the USB power adapter . . . to connect to a local power supply via the local power socket").

Id. After reviewing the evidence relied on in the claim construction analysis in IPR2018-00487, we adopt the prior claim construction stated above for the purposes of this Decision.

C. Alleged Obviousness over Theobald and Shiga

Petitioner contends that claims 1–3, 6–8, and 16–18 are unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Theobald and Shiga. Pet. 18–56. We begin our analysis with brief overviews of Theobald and Shiga. We then address the parties' respective contentions with respect to the challenged claims.

1. Theobald

Theobald is directed to a method and apparatus for charging the battery in a cellular telephone using a charger coupled to the cellular telephone by a standard J3-type accessory connector. Ex. 1005, 1:53–57, 3:21–27. Figure 1 of Theobald illustrates "a charging system including an

electronic device having a power supply control apparatus, a battery, and an accessory." *Id.* at 1:62–64.

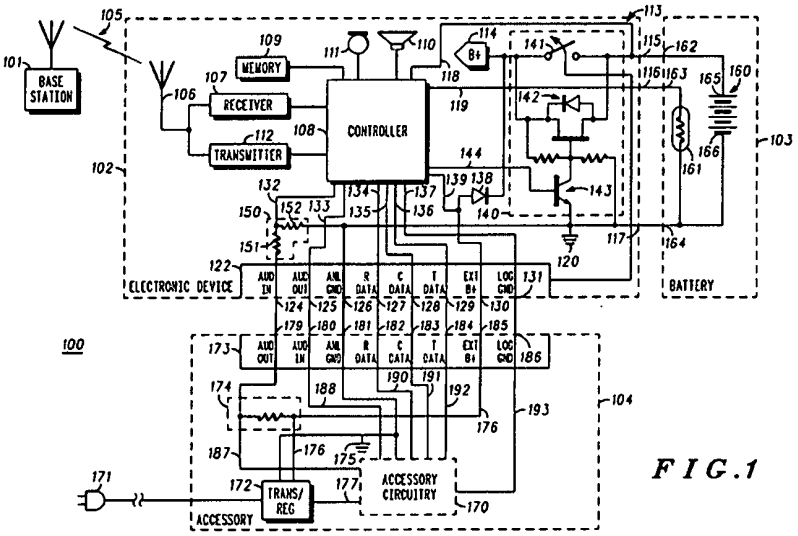


FIG.1

As shown in Figure 1, Theobald's system 100 comprises a cellular telephone 102, a battery 103, and an accessory 104. *Id.* at 2:17–19, 28–29. Accessory 104 is "a low cost mid rate charger or fast rate charger." *Id.* at 4:31–33. Charger 104 is coupled to cellular telephone 102 by connector 122 which "is preferably the standardized eight pin J3-type accessory connector . . . but may be any other suitable multiple pin accessory connector having an external power supply pin and at least one information pin." *Id.* at 2:63–64, 3:21–27.

Connector 122 shown in Figure 1 has "information pins 124, 125, 127, 128, and 129 designated as AUD IN, AUD OUT, and R, C, and T DATA, respectively; grounding pins 126 and 131 designated ANL GND and LOG GND; and an external power supply pin 130." *Id.* at 2:64–3:2. Information pin 124 "is coupled to the controller 108 via audio in line 132

and an identification network 150 . . . to identify accessory 104." *Id.* at 3:2–5. The charger includes an "identification element 174 . . . to identify" the charger to the cellular telephone 102. *Id.* at 5:3–4. Identification element 174 "is selected to have a different electrical value for each different type of the accessory 104." *Id.* at 5:6–8. Theobald discloses that identification element 174 for a mid rate charger would be a 120 kΩ resistor and for a fast rate charger would be a 36 kΩ resistor. *Id.* at 5:9–12. When cellular telephone 102 and charger 104 are coupled through connector 122, identification element 174 in charger 104 is electrically connected to identification network 150 in cellular telephone 102 and the external supply voltage of charger 104 generates a voltage level on audio in line 132 of the cellular telephone 102 of 1.72 V for a mid rate charger or 3.91 V for a fast rate charger. *Id.* at 5:59–6:6. "[C]ontroller 108 measures the voltage on the audio in line 132" and from the measured voltage "identifies the accessory 104 from the accessory look-up table" as either the mid rate charger or the fast rate charger. *Id.* at 6:19–42.

Theobald discloses an alternate embodiment for identifying the mid rate or fast rate charger to the cellular telephone. *Id.* 6:55–65. In this embodiment, the mid rate or fast rate chargers "could be implemented with a logic circuit or a microcontroller that communicates predefined identification information to the controller 108 via the data lines 190-192 and pins 182-184 upon attachment" of charger 104. *Id.* at 6:60–65.

2. Shiga

Shiga discloses turning on a computer power supply by means of signals transmitted over signal lines "of a USB chip provided in a keyboard." Ex. 1006, Abstract. Shiga's USB connected keyboard 11 starts

the host computer "by a key input operation at a keyboard." *Id.* at 2:4–8. Shiga's keyboard signals a "wake-up means" in the computer when a power-on key is pressed on the keyboard. *Id.* at 3:1–7.

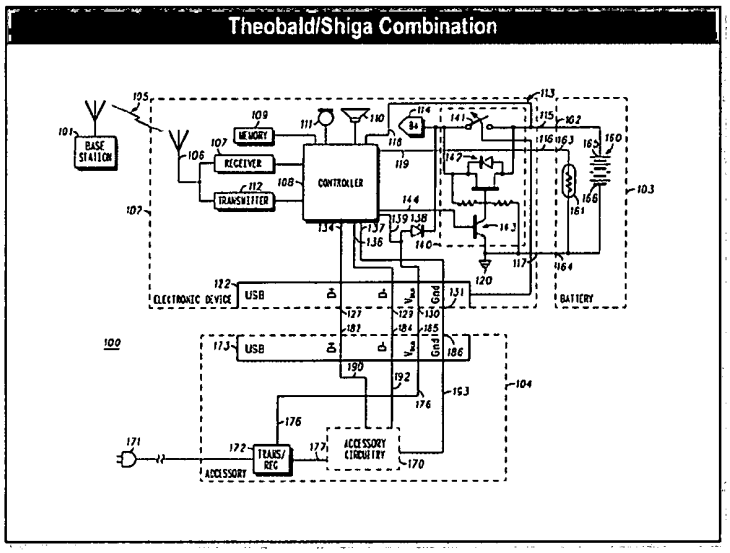
Shiga explains that pursuant to the USB specification, when a host computer is in a suspended mode there are three standard signal line states. *Id.* at 5:46–54. In the first, or low speed state, signal line D+ is in an L (Hi-Z or high impedance) state and D- is in an H (high level) state. *Id.* at 5:55–57. In the second, or high speed state, signal line D+ is in the H state and signal line D- is in the L state. *Id.* at 5:58–59. In the third, or unconnected state, both D- and D+ signal lines are in the L state. *Id.* at 5:59–60. In addition to these three standard signal line states, Shiga discloses that the signal lines may also be placed into a fourth, non-standard state, wherein both the D+ and D- signal lines are in the H state. *Id.* at 5:60–62, 6:48–58. Shiga provides this non-standard, or "fourth mode" signal, to a "wakeup means" in response to a user pressing the keyboard's power-on key. *Id.* at 3:1–3, 4:33–53, 6:59–65. Shiga explains that, because this line state is not a standard USB state and is provided as a 50 ms pulse at 3 volts, it is "easily distinguished from USB standard data signals." *Id.* at 6:48–58.

3. Analysis

Claim 1 recites, *inter alia*, "an identification signal . . . configured to indicate to the mobile device that the power socket is not a USB host or hub." Ex. 1001, 12:1–4. Independent claims 17 and 18 contain substantially similar limitations.

Petitioner, relying on the Declaration testimony of Mr. Geier, contends that it would have been obvious to one of ordinary skill in the art to modify Theobald's alternative embodiment for identifying the charger with

"a few trivial modifications." Pet. 29.[8] The "trivial modifications" are replacing Theobald's J3 connector with a USB connector as disclosed in Shiga, using Shiga's fourth mode signals as the "predefined identification information" that Theobald calls for, and implementing "routine programming into circuitry 170 and controller 108 in order to communicate the fourth-mode signals." *Id.* at 29–30. Petitioner submits the following modified version of Theobald's Figure 1 to illustrate the proposed modification to Theobald in light of Shiga:



Id. at 30.

Petitioner's modified version of Theobald's Figure 1 illustrates the replacement of Theobald's J3 connector with a USB connector as well as other modifications to the circuitry of Theobald.

[8] Petitioner refers to Theobald's alternative embodiment as the "controller embodiment." Pet. 27.

Petitioner states that "[t]he Theobald/Shiga embodiment uses Shiga'a fourth-mode signals as the predefined identification information for a fast-rate charger." *Id.* at 32–33.

Petitioner contends that "[a]ccessory circuitry 170 constitutes the *identification subsystem* by which *an identification signal* is generated," as required by claim 1. *Id.* at 44. With respect to the configuration of the identification signal, Petitioner argues that mobile phone 102 could be disconnected from fast rate charger 104 "and then connected to a USB-compliant host such as a computer," which according to the USB 2.0 Specification must never intentionally generate Shiga's fourth mode signals. *Id.* at 43–44. Based on this, Petitioner contends that in

> the fast-rate charger situation . . . the accessory circuitry 170 (i.e., *identification subsystem*) is configured to indicate to the mobile device that the power socket is not a USB host or hub through use of Shiga's fourth mode identification signals. In other words, the accessory 104 is configured to tell the electronic device 102 that the accessory 104 is not a USB host or hub so that it may be allowed to provide power to the electronic device 102.

Id. at 45.

Patent Owner contends, for a number of reasons, that Petitioner fails to present competent evidence to establish this claim limitation. *See* Prelim. Resp. 24–28.

Claim 1 requires that "the identification signal is *configured* to indicate to the mobile device that the *power socket* is not a USB host or hub." Ex. 1001, 12:2–4 (emphasis added). Theobald discloses that "accessory circuitry 170" can be used to "identif[y] the accessory 104 to the electronic device 102." Ex. 1005, 6:57–59. Petitioner's proposed combination of Theobald and Shiga starts from the premise that the

combination uses "Shiga's fourth-mode signals as the predefined identification information for a fast-rate charger." Pet. 32–33. Petitioner does not direct us to any disclosure in Theobald where the identification information in Theobald is configured to indicate to the mobile device that *a power socket*, from which plug 171 of accessory 104 is configured to receive energy, is not a USB host or hub, nor do we discern any such disclosure. *See id.* at 18–24. Further, Petitioner, in effect, concedes that this claim limitation is not established in the proposed combination with the statement that "[i]n other words, the accessory 104 is configured to tell the electronic device 102 that *the accessory 104* is not a USB host or hub." *Id.* at 45 (emphasis added). As discussed above in our claim construction section, the "power socket" in claim 1 is a separate element from the USB adapter. Petitioner, thus, fails to provide sufficient evidence or argument establishing that the combination of Theobald and Shiga teaches "the identification signal is configured to indicate to the mobile device that the power socket is not a USB host or hub," as recited in independent claims 1, 17, and 18. Therefore, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that any of the challenged claims 1–3, 6–8, or 16–18 would have been obvious over the combined teachings of Theobald and Shiga.

D. Alleged Obviousness over Theobald, Shiga, and Kfoury

This ground is directed only to claim 15, which depends from claim 1. Pet. 57; Ex. 1001, 12:56–63. Petitioner contends that claim 15 is unpatentable based on the same combination of Theobald and Shiga as for claim 1 with additional disclosure from Kfoury. Pet. 57–65. Petitioner does not rely on Kfoury in any way that would cure the deficiencies in the

combination of Theobald and Shiga discussed above. *Id.* Therefore, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claim 15 would have been obvious over the combined teachings of Theobald, Shiga, and Kfoury.

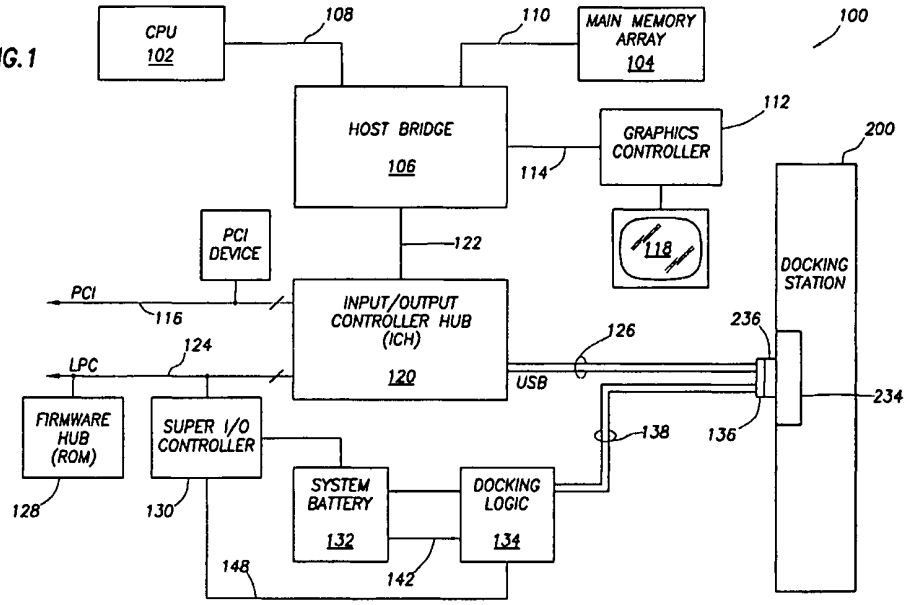
E. Alleged Obviousness over Dougherty, Hahn, and Amoni

Petitioner contends that claims 12 and 14 are unpatentable based on the combination of Dougherty, Hahn, and Amoni. Pet. 65–86. Claim 12 depends from claim 1 and claim 14 depends from claim 12. Ex. 1001, 12:46–47, 52–54. Petitioner relies on Dougherty to teach the limitation in claim 1 of "an identification subsystem configured to generate an identification signal . . . configured to indicate to the mobile device that the power socket is not a USB host or hub." Pet. 81–83.

1. Dougherty

Dougherty is directed to using a docking station to provide power to a laptop computer. Ex. 1013, Abstract. Figure 1 of Dougherty, reproduced below, illustrates a preferred embodiment of Dougherty's computer system. *Id.* at 3:17–18.

FIG. 1



As shown in Figure 1, Dougherty's laptop computer 100 and docking station 200 are operatively coupled by USB connectors 136 and 236 respectively. *Id.* 5:11–14. Laptop computer 100 utilizes docking station 200 to provide a plurality of USB ports for attaching peripheral devices to laptop computer 100. *See id.* 1:61–67, 2:24–28. Recognizing that laptop computers require a source of power, which was previously provided by a connector separate from the docking station, Dougherty's invention relates to supplying "power from the docking station to the laptop computer across the USB connection." *Id.* 2:55–58.

Dougherty discloses that "coupling of USB devices requires a series of USB handshaking protocols to identify the host . . . which would be the laptop computer 100, and any downstream, device, which in this exemplary case is the docking station 200." *Id.* at 5:39–43. During the handshaking protocol, a "driver loaded by the operating system of the laptop computer

100 preferably commands the Super I/O controller 130 to issue a five volt shutoff command signal 148." *Id.* at 5:59–61. As a result of five volt shutoff command signal 148, power rails 138 of laptop computer 100 "are no longer capable of providing power to downstream devices," which Dougherty indicates "breaks with standard USB protocol." *Id.* at 5:64–6:3.

2. Analysis

Petitioner, relying on the declaration testimony of Mr. Geier, contends that when Dougherty's "docking station 200 is connected to a laptop 100, the docking station has to identify itself to the laptop in order to indicate to the laptop that the docking station is not a USB host or hub, but rather is capable of providing upstream power to the laptop." Pet. 81 (citing Ex. 1009 ¶ 151). Petitioner further contends that a person of ordinary skill in the art "would understand that as part of the 'handshaking protocol' between the docking station and laptop computer, *an identification signal is configured to indicate to the mobile device* (i.e. laptop) that the docking station connected to a *power socket is not a USB host or hub*." *Id.*

Petitioner's contention is based on a theory that because Dougherty's docking station 200 informs laptop 100 that it "is capable of providing upstream power to the laptop," one of ordinary skill in the art would understand this to be equivalent to informing laptop 100 that docking station 200 is not a USB host or hub. *Id.* The only evidentiary basis cited by Petitioner for this alleged understanding by one of ordinary skill in the art is Paragraph 151 of the Declaration of Mr. Geier. *See id.* Mr. Geier's Declaration cites to Dougherty at column 5, lines 44–48. Ex. 1009 ¶ 51. The cited portion of Dougherty does not provide sufficient support for the proposition that one of ordinary skill in the art would understand that the

ability of Dougherty's docking station to provide power to the laptop is equivalent to an identification signal configured to indicate to the mobile device that the docking station is not a USB host or hub. Because this opinion by Mr. Geier is conclusory and not sufficiently supported by objective corroborating evidence, we accord the opinion little or no weight. *See Velander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) ("[W]hat the [PTAB] consistently did was accord little weight to broad conclusory statements that it determined were unsupported by corroborating references. It is within the discretion of the trier of fact to give each item of evidence such weight as it feels appropriate." (citation omitted)); *see also In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) ("[T]he [PTAB] is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations . . . ." (citations omitted)); 37 C.F.R. § 42.65(a).

Even if Mr. Geier's opinion concerning the understanding of one of ordinary skill in the art were sufficiently supported by objective corroborating evidence, Petitioner's contention is still not sufficient to establish that Dougherty teaches the claim limitation of "the identification signal is configured to indicate to the mobile device that the *power socket* is not a USB host or hub," because Mr. Geier's opinion would only establish that Dougherty discloses identification information that the *docking station*, not the *power socket*, is not a USB host or hub. Petitioner, thus, has not provided sufficient evidence or argument to establish that Dougherty teaches this claim limitation. Therefore, we determine that Petitioner has not demonstrated a reasonable likelihood it would prevail in showing that either

claim 12 or 14 is unpatentable based on the combined teachings of Dougherty, Hahn, and Amoni.

II. CONCLUSION

Upon consideration of the Petition, the Preliminary Response, and the evidence of record, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that any of claims 1–3, 6–8, 12, or 14–18 of the '111 Patent are unpatentable. Accordingly, we do not institute an *inter partes* review.

III. ORDER

It is hereby, ORDERED that the Petition is *denied* and no trial is instituted.

PETITIONER:

Charles M. McMahon
Brian A. Jones
MCDERMOTT WILL & EMERY LLP
cmcmahon@mwe.com
bajones@mwe.com

Gregory S. Arovas
Robert A. Appleby
Todd M. Friedman
Eugene Goryunov
Alan Rabinowitz
KIRKLAND & ELLIS LLP
greg.arovas@kirkland.com
robert.appleby@kirkland.com
todd.friedman@kirkland.com
eugene.goryunov@kirkland.com
arabinowitz@kirkland.com

PATENT OWNER:

Hong Zhong
Michael Fleming
IRELL & MANELLA LLP
hzhong@irell.com
mfleming@irell.com

AO 120 (Rev. 08/10)

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

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
2:16-cv-1425	12/16/2016	Eastern District of Texas, Marshall Division

PLAINTIFF	DEFENDANT
Fundamental Innovation Systems International LLC	LG Electronics, Inc., LG Electronics U.S.A., Inc., LG Electronics MobileComm U.S.A. Inc., LG Electronics Mobile Research U.S.A. LLC, and LG Electronics Alabama, Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,232,766 B2	7/31/2012	Fundamental Innovation Systems International LLC
2	7,834,586 B2	11/16/2010	Fundamental Innovation Systems International LLC
3	7,239,111 B2	7/3/2007	Fundamental Innovation Systems International LLC
4	8,624,550 B2	1/7/2014	Fundamental Innovation Systems International LLC
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
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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**

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	

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

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:16-cv-1425	12/16/2016	Eastern District of Texas, Marshall Division

PLAINTIFF	DEFENDANT
Fundamental Innovation Systems International LLC	LG Electronics, Inc., LG Electronics U.S.A., Inc., LG Electronics MobileComm U.S.A. Inc., LG Electronics Mobile Research U.S.A. LLC, and LG Electronics Alabama, Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	8,232,766 B2	7/31/2012	Fundamental Innovation Systems International LLC
2	7,834,586 B2	11/16/2010	Fundamental Innovation Systems International LLC
3	7,239,111 B2	7/3/2007	Fundamental Innovation Systems International LLC
4	8,624,550 B2	1/7/2014	Fundamental Innovation Systems International LLC
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In the above—entitled case, the following patent(s)/ trademark(s) have been included:

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

DECISION/JUDGEMENT
ORDERED that all claims and counterclaims in this matter are DISMISSED WITH PREJUDICE

CLERK	(BY) DEPUTY CLERK	DATE
David A. O'Toole	ch	**10/23/18**

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**

AO 120 (Rev. 08/10)

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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 for the Eastern District of Texas on the following

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

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:19-cv-00048	2/11/2019	for the Eastern District of Texas

PLAINTIFF	DEFENDANT
FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LLC	APPLE, 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 INTERNATIONAL LI
2	7,239,111	7/3/2007	FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LI
3	7,834,586	11/16/2010	FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LI
4	8,232,766	7/31/2012	FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LI
5	8,624,550	1/7/2014	FUNDAMENTAL INNOVATION SYSTEMS INTERNATIONAL LI

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

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