IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Request for *Ex Parte* Reexamination of:	Group Art Unit: Not Yet Assigned
U.S. Patent No. 7,453,233	Examiner: Not Yet Assigned
Inventor: Fischer, *et al*.	Customer No. 34313
Assignee: Fundamental Innovation Systems International LLC	Confirmation No.: Not Yet Assigned
Filed: May 16, 2007	
Issued: Nov. 18, 2008	
For: **AN ADAPTER SYSTEM AND METHOD FOR POWERING A DEVICE**	

REQUEST FOR *EX PARTE* REEXAMINATION OF UNITED STATES PATENT NO. 7,453,233

EFS Web
Commissioner for Patents

Dear Sir:

Pursuant to 35 U.S.C. §§ 302 *et seq.* and 37 C.F.R. § 1.510, Anker Innovations Ltd. ("Anker" or "Requestor") hereby request *ex parte* reexamination of United States Patent No. 7,453,233 ("the '233 Patent"). The undersigned is counsel of record and represents that he is authorized to act in a representative capacity for Anker under 37 C.F.R. § 1.34.

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TABLE OF EXHIBITS

List of Exhibits

The Exhibits to the present Request are arranged in four groups: prior art ("PA"), relevant patent prosecution file history (including patents) ("PAT"), claim charts ("CC"), and other documents ("OTH").

A. PRIOR ART (PA)

PA-SB/08A	USPTO Form SB/08A
PA-A	China Patent No. CN2410806Y ("Yang") and Certified Translation
PA-B	U.S. Patent No. 6,904,488 ("Matsumoto")
PA-C	U.S. Patent No. 6,531,845 ("Kerai")
PA-D	Universal Serial Bus Specification 2.0
PA-E	USB Serial Bus Specification 1.1
PA-F	Dell Inspiron 3800 Service Manual

B. RELEVANT PATENT MATERIALS (PAT)

PAT-A	U.S. Patent No. 7,453,233 ("'233 Patent")
PAT-B	File Wrapper for the '233 Patent

C. CLAIM CHARTS (CC)

CC-A	Claim Chart demonstrating a substantial new question of patentability for claims 1-8, 15-18, and 21 based on Kerai
CC-B	Claim Chart demonstrating a substantial new question of patentability for claims 1-8, 15-18, and 21 based on Yang in view of Matsumoto
CC-C	Claim Chart demonstrating a substantial new question of patentability for claims 1-8, 15-18, and 21 based on Kerai in view of Yang

D. OTHER DOCUMENTS (OTH)

OTH-A	Declaration of Dr. Jacob Baker
OTH-B	*Fundamental Innovation Systems International LLC v. Lenovo, et al.*, Case No. 1:20-cv-00552 (Del.), Dkt. No. 55 (Joint Claim Construction Brief).

I. INTRODUCTION

The ’233 Patent is directed to charging devices via a conventional USB port. Ex. PAT-A at 2:34-36. It discloses and claims an adapter that can connect the USB port of a mobile device to a wall outlet and convert the power from the outlet for use by the mobile device. *Id.* Mobile devices, however, were capable of charging through a USB connection for years prior to the priority date of ‘233 Patent.

The ’233 Patent explains that although prior art USB devices could draw power from USB ports, this *typically* only occurred when those devices were connected to other USB devices or hubs. This is because the USB Specification generally requires that two connected USB devices undergo a specific USB communication process called “enumeration” before one device can supply power to another. *Id.* at 1:48-52 (“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.”). Wall adapters—which simply provide power—do not generally engage in enumeration and, therefore, were not generally compatible with the USB Specification. For this reason, according to the ’233 Patent, it was common for prior art USB devices to include two separate interfaces, *i.e.*, one that provided power only (*e.g.*, from an adapter through a “barrel connector”) and one for communicating with other devices (*e.g.*, a USB interface). *Id.* at 1:27-37.

The ’233 Patent proposes a system for charging mobile devices via a USB connection using an adapter to connect the mobile device to a wall outlet or car socket. *Id.* at 1:54-60 (“[I]t would be preferable in many situations . . . to be able to utilize alternate power sources such as conventional AC outlets and DC car sockets . . . .”). Specifically, the ’233 Patent claims this can be done by sending an identification signal to the mobile device when it is connected to an

adapter. *Id.* This "identification signal" can be nothing more than a voltage level on a D+ or D- data line of the USB connection. *See, e.g.,* Claim 1.

But numerous prior art references, as well as versions of the USB Specification that existed at the time of filing the '233 Patent, disclosed such a signal, sometimes called an SE1 signal, on both the D+ and D- lines. The '233 Patent merely attempts to use this conventional SE1 signal for a different purpose–to signal to a mobile device that it is connected to a charging adapter and not a USB hub. But again, it was well-known (*e.g.*, *see*, Yang, Matsumoto, and Kerai) to use the SE1 signal condition as a charge-only condition for a USB connection. Thus, even the '233 Patent's purported new use of existing technology was in the prior art.

Accordingly, Requestor requests that the Examiner institute reexamination of Claims 1-8, 15-18, and 21 ("Challenged Claims") of the '233 Patent.

II. PROCEDURAL BACKGROUND AND RELATED PROCEEDINGS

A. Related Proceedings

Patent Owner recently asserted the '233 Patent against Anker in *Fundamental Innovation Systems International LLC v. Anker Innovations Limited et al*., 1-21-cv-00339 (DDE), which was filed on March 5, 2021. Patent Owner has also asserted the '233 Patent against numerous other defendants, including in the following pending matters:

- *Fundamental Innovation Systems International LLC v. Toyota Motor Corporation et al.,* 2-21-cv-00281 (EDTX)
- *Fundamental Innovation Systems International LLC v. General Motors Company et al*., 2-21-cv-00282 (EDTX)
- *Fundamental Innovation Systems International LLC v. Hyundai Motor Company et al.,* 2-21-cv-00283 (EDTX)
- *Fundamental Innovation Systems International LLC v. Cyber Power Systems (USA), Inc.,* 1-21-cv-00340 (DDE)
- *Fundamental Innovation Systems International LLC v. Lenovo (United States) Inc., et al*., 1-20-cv-00551 (DDE)

Anker has not previously requested *ex parte* reexamination or *inter partes* review of the '233 Patent. The '233 Patent has not been subject to *inter partes* review. The Examiner also did not consider these references or arguments during prosecution

B. Requirements for *Ex Parte* Reexamination Under 37 C.F.R. § 1.510

Pursuant to 37 C.F.R. § 1.510, this request satisfies each requirement for *ex parte* reexamination of the '233 Patent.

1. Payment of Fees (37 C.F.R. § 1.510(a))

Requestor authorizes the Patent Office to charge Deposit Account No. 15-0665 for the fee set forth in 37 CFR § 1.20(c)(1) for reexamination. The fee for reexamination is **$12,600**. Requestor further authorizes the Patent Office to charge Deposit Account No. 15-0665 for any other fees necessary in connection with this request for reexamination.

2. Statement Pointing out Each Substantial New Question of Patentability (37 C.F.R. § 1.510(b)(1))

The '233 Patent Application was filed on May 16, 2007. It claims priority to a series of applications and ultimately to two provisional applications: (1) Provisional Application No. 60/273,021, filed on March 1, 2001, and (2) Provisional Application No. 60/330,486, filed on October 23, 2001. As explained herein, however, the Challenged Claims are entitled only to a priority date of no earlier than October 23, 2001, because the substance of the challenged claims is not disclosed in the March 2, 2001 provisional application. Pre-AIA 35 U.S.C. section 102 applies to the '233 Patent.

As set forth below, substantial new questions of patentability exist as to Claims 1-8, 15-18, and 21 of the '233 Patent in view of the following references.

1. **Exhibit PA-A**: China Patent No. CN2410806Y ("Yang"): Yang is a Chinese Patent titled "Mobile Phone Charger with Multiple Power Supply Inputs." The application for the Yang patent was filed on December 2, 1999, and published on December 13, 2000. The

Yang patent issued on September 16, 2000. Yang is prior art to the '233 Patent under at least pre-AIA 35 U.S.C. §§ 102(a) and (b).

2. **Exhibit PA-B**: U.S. Patent No. 6,904,488 ("Matsumoto"): Matsumoto is a United States patent titled "Portable Electronic Device Comprising Common Serial Bus Connector." The application for the Matsumoto patent was filed on December 21, 2000, and published on June 28, 2001. The Matsumoto patent issued on June 7, 2005. Matsumoto is prior art to the '233 Patent under at least pre-AIA 35 U.S.C. §§ 102(a) and (e).

3. **Exhibit PA-C:** U.S. Patent No. 6,531,845 ("Kerai"): Kerai is a United States patent titled "Battery Charging." Kerai was filed on May 25, 2001, and published on January 17, 2002. Kerai claims priority to GB0012946, which was filed on May 26, 2000. Kerai is prior art to the '233 Patent at least under pre-AIA 35 U.S.C. § 102(e).

4. **Exhibits PA-D** through **PA-F** are various patent documents and publications that were all filed or published prior to the priority date of the '233 Patent and thus constitute prior art under 35 U.S.C. §§ 102(a).

3. Identification of Claims for Reexamination and Detailed Explanation of the Pertinency and Manner of Applying The Prior Art to Each Challenged Claim (37 C.F.R. § 1.510(b)(2))

Requestor requests reexamination of Claims 1-8, 15-18, and 21 of the '233 Patent on the following grounds:

1. Kerai anticipates claims 1-8, 15-18, and 21 under 35 U.S.C. § 102. A claim chart demonstrating the disclosure of Kerai is attached hereto as **Exhibit CC-B**.

2. Kerai renders claims 1-8, 15-18, and 21 obvious under 35 U.S.C. § 103.

3. Yang in view of Matsumoto and the knowledge of those skilled in the art renders claims 1-8, 15-18, and 21 obvious under 35 U.S.C. § 103. A claim chart demonstrating the

pertinency and manner of applying Yang in view of Matsumoto and the knowledge of those skilled in the art to Claims 1-8, 15-18, and 21 is attached hereto as **Exhibit CC-A**.

4. Kerai in view of Yang and the knowledge of those skilled in the art, renders Claims 1-8, 15-18, and 21 obvious under 35 U.S.C. § 103. A claim chart demonstrating the pertinency and manner of applying Kerai in view of Yang to Claims 1-8, 15-18, and 21 is attached hereto as **Exhibit CC-C**.

In addition to the disclosures in Exhibits CC-A through CC-C, a detailed explanation of the pertinency and manner of applying the prior art cited above to the claims for which reexamination is requested is provided in Section IV below.

4. Copies of Prior Art and Translations (37 C.F.R. § 1.510(b)(3))

Requestor submits herewith a copy of each prior art patent and printed publication, including translation of foreign patents and publications, relied upon in this Request as **Exhibits PA-A** through **PA-J**.

5. Copy of U.S. Patent No. 7,453,233 (37 C.F.R. § 1.510(b)(4))

Requestor has attached a copy of the '233 Patent as **Exhibit PAT-A** and a copy of the file history of the '233 Patent as **Exhibit PAT-B**.

6. Certification of Service on Patent Owner (37 C.F.R. § 1.510(b)(5))

The undersigned certifies that a complete and entire copy of this request for *ex parte* reexamination and all supporting documents have been provided to the Patent Owner by serving the attorneys of record at the Patent Office for the '233 Patent as set forth in 37 C.F.R. § 1.33(c):

Richard Botos
Botos Churchill IP Law LLP
430 Mountain Avenue, Suite 401
New Providence, NJ 07974

7. Certification That Estoppel Does Not Apply (37 C.F.R. § 1.510(b)(6))

The undersigned certifies that the statutory estoppel provisions of 35 U.S.C. § 315(e)(1) and 35 U.S.C. § 325(e)(1) do not prohibit Requestor from filing this *ex parte* reexamination request.

8. Representative Capacity (37 C.F.R. § 1.510(f))

The undersigned is counsel of record and represents that he is authorized to act in a representative capacity for Requestor under 37 C.F.R. § 1.34.

III. OVERVIEW OF THE '233 PATENT AND RELEVANT PRIOR ART

A. USB Specification

The Universal Serial Bus (USB) Specification defines a standardized data and power connection for connecting electronic devices. Baker Decl., ¶ 47. Revision 1.1 of the USB Specification was published by the USB Implementers Forum, Inc. on September 23, 1998. Ex. PA-J; Baker Decl., ¶ 47. It is prior art to the '233 Patent under at least 35 U.S.C. §§ 102(a) and (b). Revision 2.0 of the Specification ("USB 2.0") was published on April 27, 2000. Ex. PA-H; Baker Decl., ¶ 48. It is prior art to the Challenged Claims of the '233 Patent under at least 35 U.S.C. §§ 102(a) and (b). Moreover, because the '233 Patent incorporates the conditions and limitations of the USB Specification, a person of ordinary skill in the art at the time of the invention of the '233 Patent (POSITA) would have been knowledgeable about the USB Specifications. Baker Decl., ¶ 47-48.

1. Configuration of a USB Network

Figure 4-1 of the USB 2.0 Specification, reproduced below, shows the bus topology for a USB system. Generally, each USB network requires a "host" with a "root hub" for purposes of communication. USB 2.0 at 16. Without such a hub, there will be no communication among the devices. Baker Decl., ¶ 49. For example, connecting, Hub 1 to a node (a node is a connected

device, also called a "function") or Hub 2 without connecting Hub 1 to the Host via the Root Hub will not result in a functioning/communicating USB system. Baker Decl., ¶ 50.

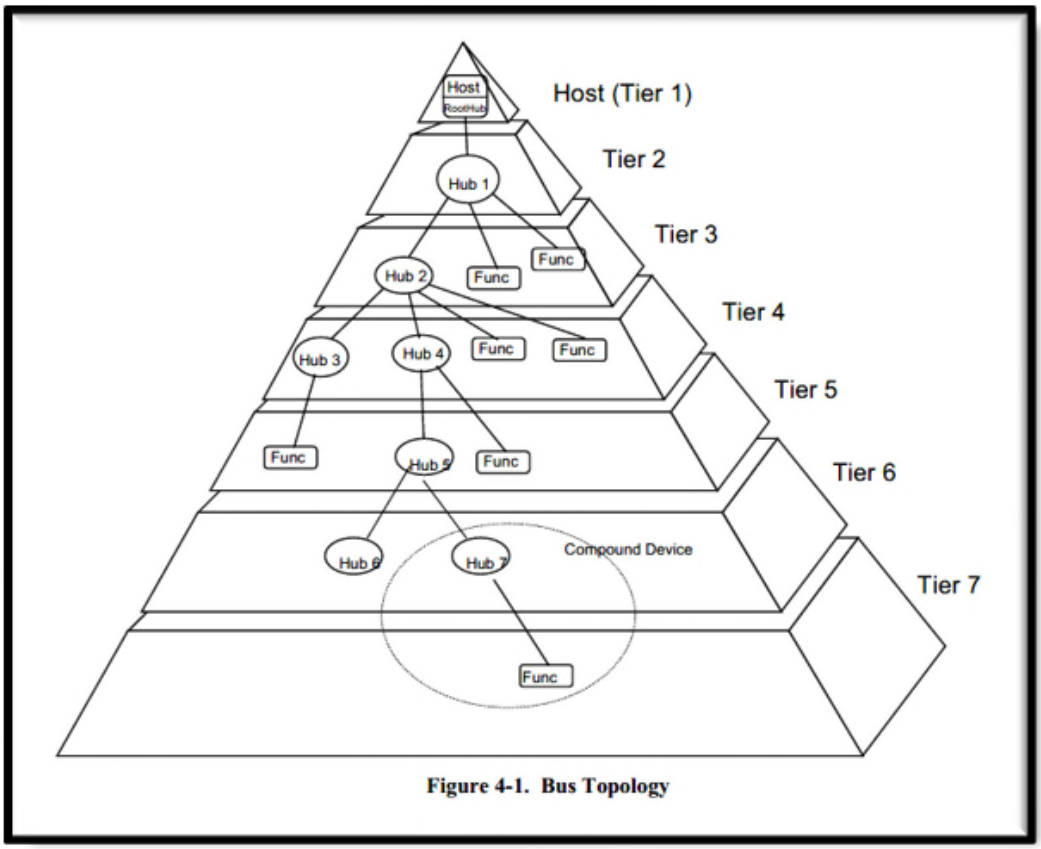


Figure 4-1. Bus Topology

USB 2.0 at 16.

Generally, the USB Specification instructs that a USB device (*i.e.*, node or function) is plugged into a port on a hub using a cable. The cable is connected between a USB connector on the USB device and a USB connector on a host or hub.

Figure 4-4 illustrates how hubs provide connectivity in a typical computer environment.

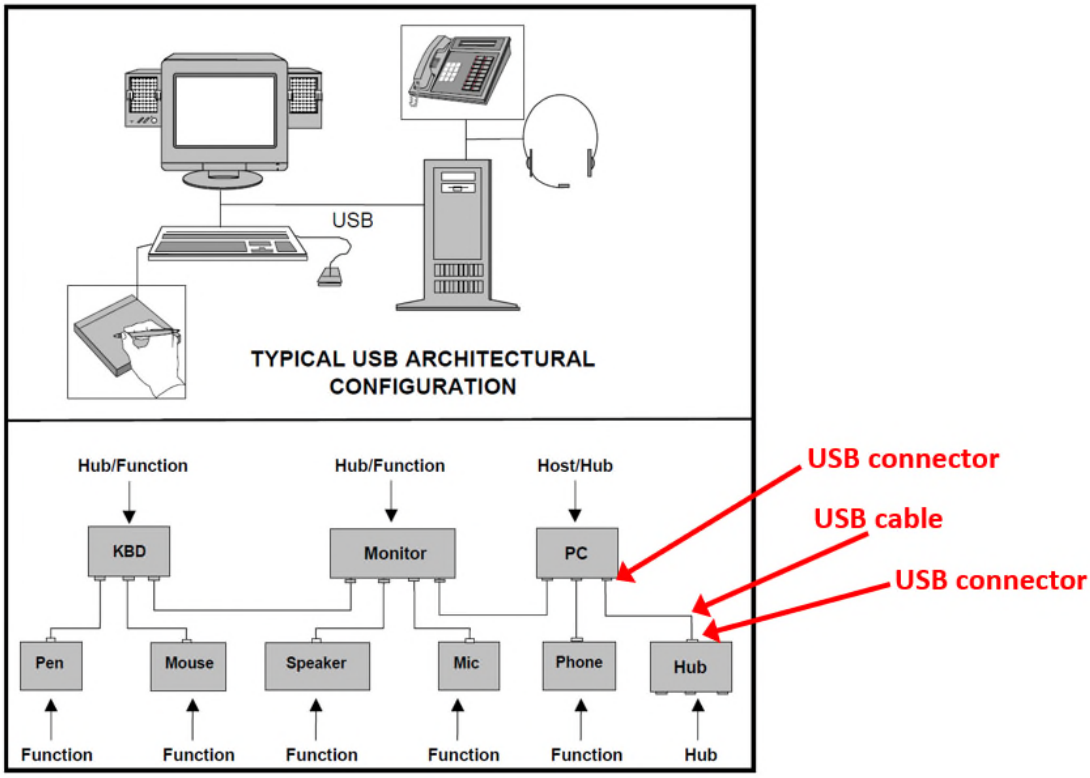


Figure 4-4. Hubs in a Desktop Computer Environment

USB 2.0 at 23 (annotated).

2. Configuration of USB Connectors

The USB Specifications teach a person of ordinary skill in the art how to implement USB connections, which require at least four contacts: A power contact (V_{BUS}), a Ground contact (GND), and two data lines (D+ and D-):

Table 6-1. USB Connector Termination Assignment

Contact Number	Signal Name	Typical Wiring Assignment
1	VBUS	Red
2	D-	White
3	D+	Green
4	GND	Black
Shell	Shield	Drain Wire

USB 2.0 at 94.

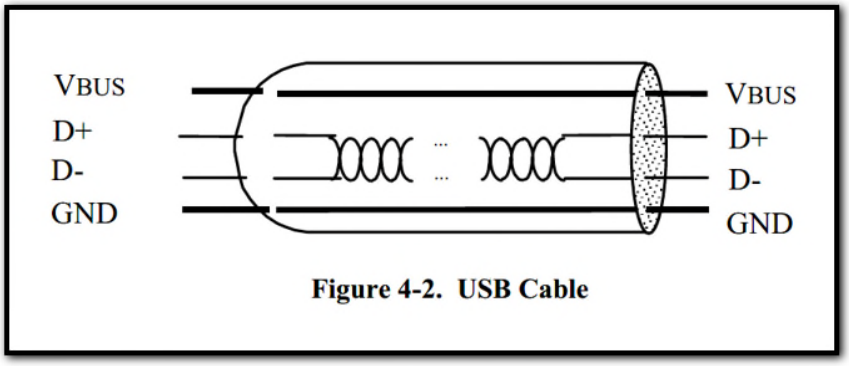


Figure 4-2. USB Cable

USB 2.0 at 17.

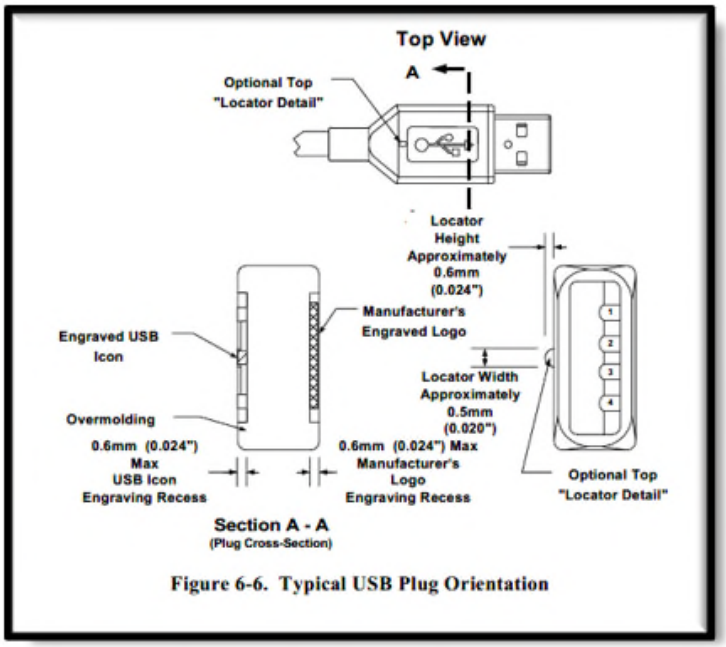


Figure 6-6. Typical USB Plug Orientation

USB 2.0 at 93.

3. USB Specification for Supplying and Drawing Power

The Specifications describe how much power a device may supply or draw and when such devices may do so. The Specifications do so in terms of milliamps (mA) of current and in terms of "unit loads." USB 2.0 at 171. "A unit load is defined to be 100mA" of current. *Id.* Notably, the USB Specification includes the following current conditions/limitations:

- A "low-power" device/function draws a maximum of 100mA of current

- A "high-power" device/function draws a maximum of 500 mA of current. These conditions/limitations, as well as others, are listed in table 7-5 of the USB 2.0 Specification:

Table 7-7. DC Electrical Characteristics

Parameter	Symbol	Conditions	Min.	Max.	Units
Supply Voltage:					
High-power Port	VBUS	Note 2, Section 7.2.1	4.75	5.25	V
Low-power Port	VBUS	Note 2, Section 7.2.1	4.40	5.25	V
Supply Current:					
High-power Hub Port (out)	ICCPRT	Section 7.2.1	500		mA
Low-power Hub Port (out)	ICCUPT	Section 7.2.1	100		mA
High-power Function (in)	ICCHPF	Section 7.2.1		500	mA
Low-power Function (in)	ICCLPF	Section 7.2.1		100	mA
Unconfigured Function/Hub (in)	ICCINIT	Section 7.2.1.4		100	mA
Suspended High-power Device	ICCSH	Section 7.2.3; Note 15		2.5	mA
Suspended Low-power Device	ICCSL	Section 7.2.3		500	µA

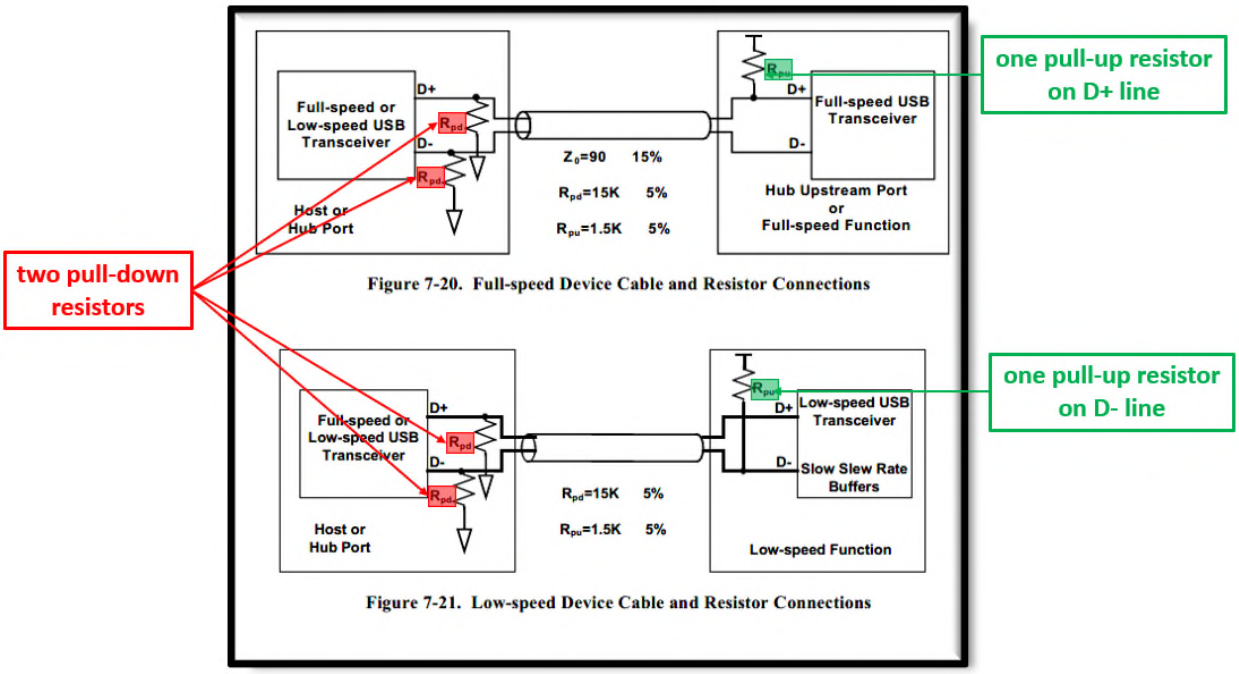
USB 2.0 at 178 (annotated).

4. USB Specification for Communicating Between Devices

The USB Specifications also dictate how USB devices in a USB network can communicate with each other. In order for a host or hub to communicate with a function (device), it must first determine whether the device is a low-speed device, a full-speed device, or a high-speed device. Baker Decl., ¶ 55. Low-speed devices communicate at 1.5 Mb/s, full-speed devices communicate at 12 Mb/s, and high-speed devices communicate at 480 Mb/s. USB 2.0 at 6-7 and 17.

A device indicates whether it is a hub, a low-speed device, or a full-speed device using termination resistors within the device. USB 2.0 at 242 ("The speed selection for low- and full-speed is determined by the device termination resistors."); Baker Decl., ¶ 56. Specifically, USB hubs and hosts have two pull-down resistors attached to the data lines; full-speed devices have a pull-up resistor attached to the D+ line; and low-speed devices have a pull-up resistor on the D-

line. USB 2.0 at 141 (Section 7.1.5.1 Low-/Full-Speed Device Speed Identification) ("The USB is terminated at the hub and function ends as shown in Figure 7-20 and Figure 7-21. Full-speed and low-speed devices are differentiated by the position of the pull-up resistor on the downstream end of the cable: Full-speed devices are terminated as shown in Figure 7-20 with the pull-up resistor on the D+ line. Low-speed devices are terminated as shown in Figure 7-21 with the pull-up resistor on the D- line.").



USB 2.0 at Figures 7-20 and 7-21 (annotated) (showing that typical USB hubs and hosts will have two pull down resistors and typical USB functions/devices will have one pull-up resistor to signal either low-speed or full-speed); *see also* Baker Decl., ¶ 56. Accordingly, full-speed devices will signal a default (idle) high/low on the D+/D- lines and low-speed devices will signal a default (idle) low/high signal on the D+/D- lines. Baker Decl., ¶ 57. When no pull-up resistor is present on D+ and/or D- lines, it signals that no devices are connected:

D+	D-	Port configuration
Low	Low	No device connected
High	Low	Full-speed

Low	High	Low-speed

Baker Decl., ¶ 57.

B. The ’233 Patent

1. Disclosure and Claims of the ’233 Patent

The ’233 Patent relates to an “[a]n adapter for providing a source of power to a mobile device through an industry standard port.” ’233 Patent, 1:64-65. In general, an “adapter” refers to a device that receives a power source (*e.g.*, from a wall socket) and delivers the power to another device (*e.g.*, a mobile device). *E.g.*, *see id*., Abstract, 1:24-60. At its heart, the ’233 Patent teaches a standard USB adapter that may choose to ignore certain limitations in the USB Specifications, or use common conditions in the USB specification for a different purpose. *E.g., id.*, 1:64-2:55. To ignore these USB protocols or limits, the adapter sends an identification signal to inform a connected device that the adapter is able to perform charging without data communication. *Id*. The ’233 Patent discloses several variations of the identification signal, such as “a logic high signal” on both USB data lines (known as a SE1 condition). *Id.*, 9:7-23. The adapter is made of conventional components like a plug unit that attaches to a power socket, a power converter (*e.g.*, that down-converts a standard AC wall voltage), and standard USB components. *See id*. The ’233 Patent alleges that an adapter configured in such a manner is new and non-obvious over prior art. *See, e.g., id*.

Figure 2 of the ’233 Patent, reproduced below, is a schematic diagram of the disclosed USB adapted (100) coupled to an exemplary mobile device (10). *Id.*, 3:13-16.

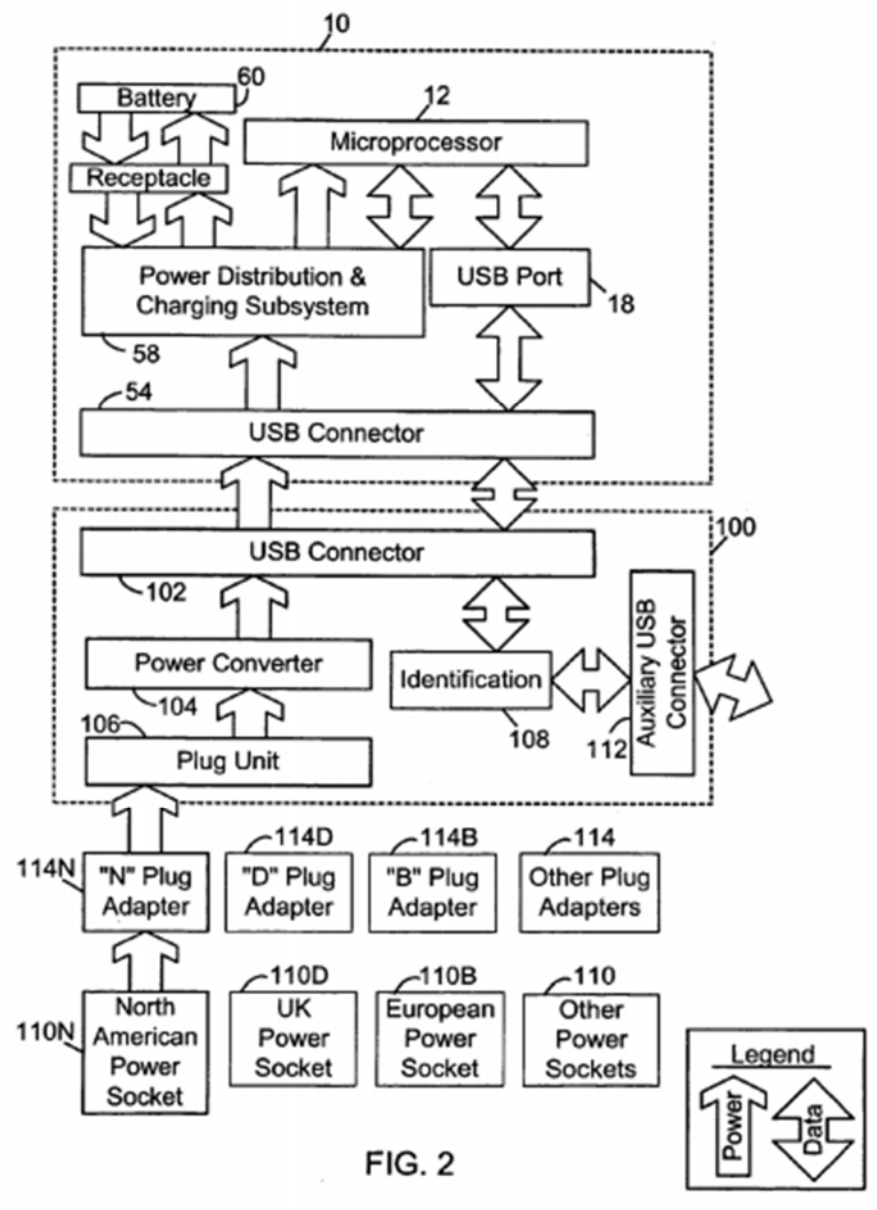


FIG. 2

2. Prosecution History of the ’233 Patent

The prosecution of the ’233 Patent involved a double patenting rejection and an objection to certain wording in the claims. None of the prosecution history specific to the ’233 Patent affects this Request.

3. Priority of the ’233 Patent

Patent Owner has taken the position in litigation that the claims are entitled to a priority date of no earlier than October 23, 2001. Requestor accepts and uses this admitted priority date

for purposes of this Request. Therefore, all references used in this request are prior art to the Challenged Claims.

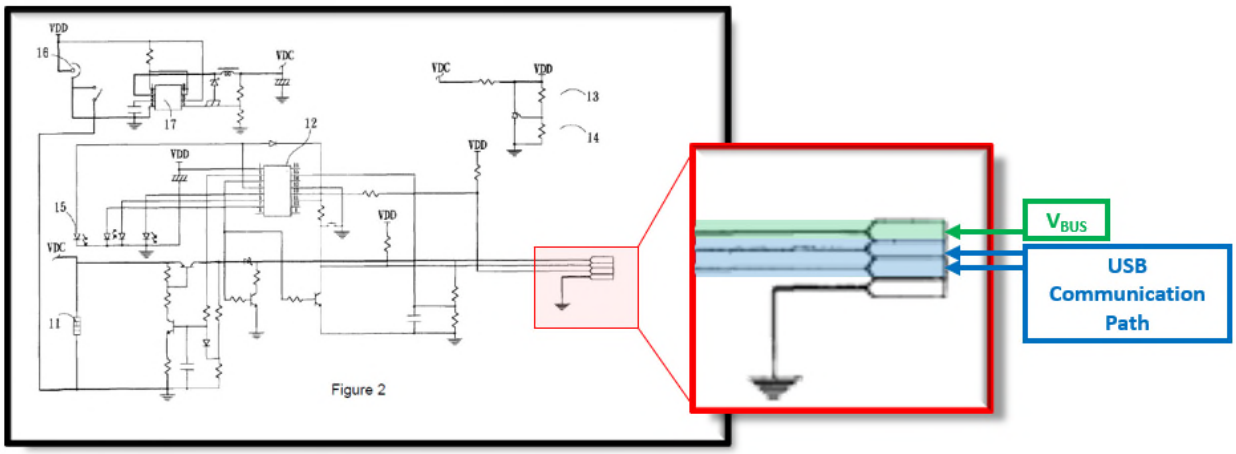
C. Summary of Relevant Prior Art

1. Yang

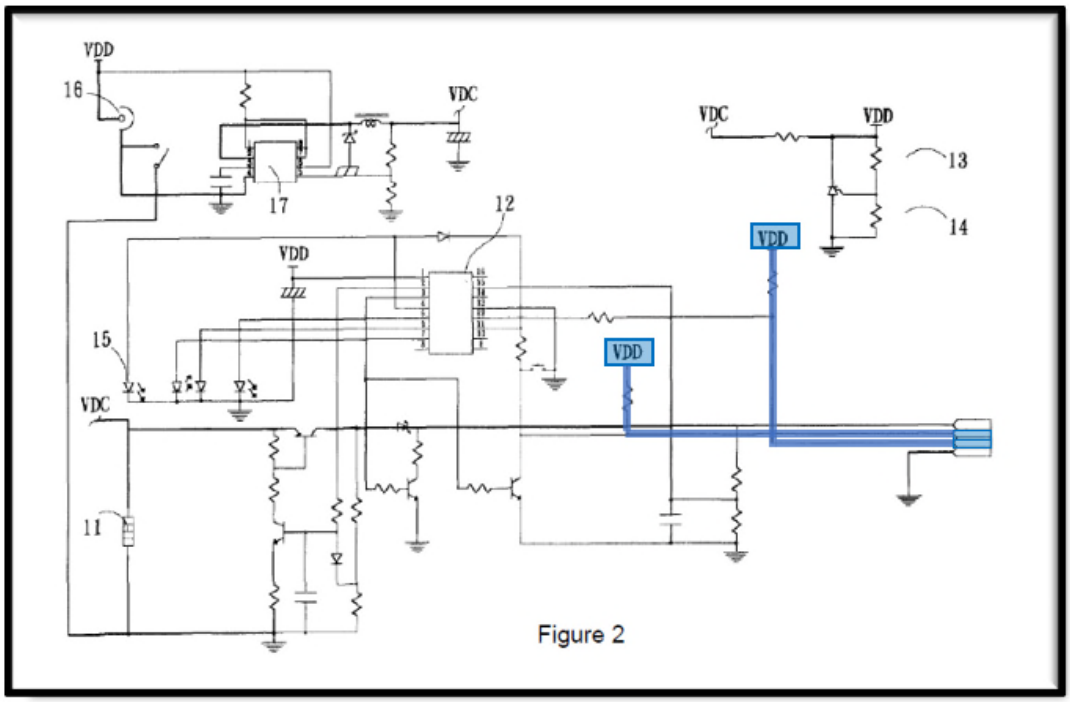
Yang is directed to a "Mobile Phone Charger with Multiple Power Supply Inputs." PA-A (Yang) at [54]. Yang teaches an adapter that can draw power from multiple power sources (including a wall-socket, an automobile power supply, or a USB connection) and convert the power to be used a mobile device. *Id.*, Abstract ("The utility model can achieve the purpose of adapting multiple power supply inputs."), Specification Page 1 ("The second purpose of this utility model is to provide a mobile phone charger with multiple power supply inputs so that the dock charger can use the regular household AC 110V/220V power supply for charging mobile phone batteries."); Baker Decl., ¶ 67.

If the power is drawn from a wall socket, it is (1) converted into the same voltage as the automobile power supply using an AC transformer, then (2) converted to the same voltage as the USB interface using a DC voltage conversion circuit. *Id.*, Claim 1. If the power is drawn from the automobile power supply, it is simply converted to the USB voltage using the DC conversion circuit. The voltage can then be converted into the voltage required by a particular mobile device battery and provided to that mobile device through a connection such as a USB connection. *Id.*

Figure 2 of Yang discloses a schematic for the mobile device charger. Like the USB connector of Matsumoto, the connector includes four connections: power, ground, and two data lines.



Yang, Figure 2 (annotated). The schematic shows that the charger comprises two pull-up resistors attached to the data lines of the connection with the mobile device. *Id.* In other words, the default signal on the data lines is a high/high signal on the data lines:



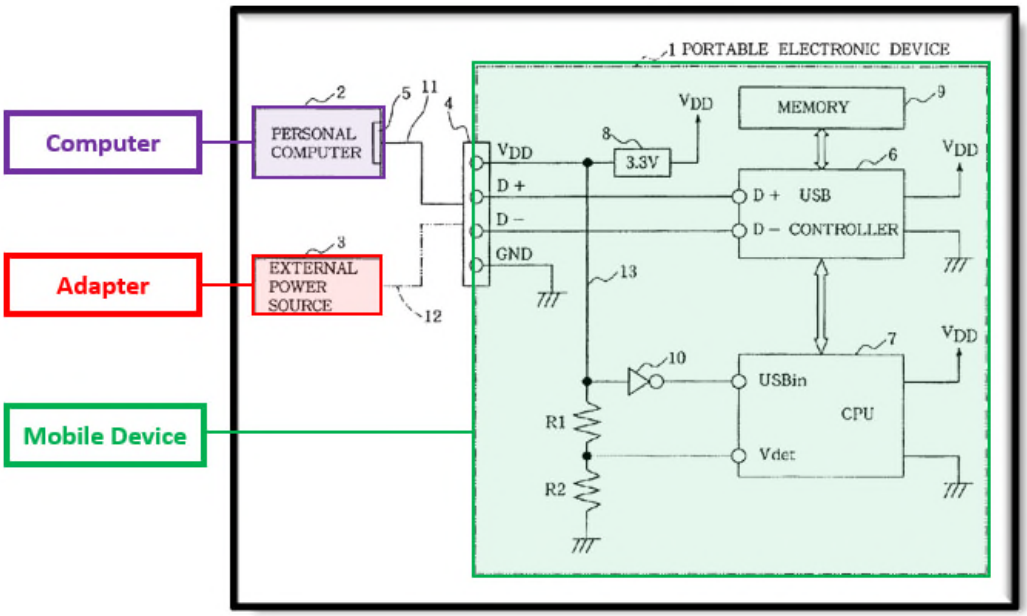
Yang, Figure 2 (annotated); Baker Decl., ¶ 69-70.

The Examiner does not appear to have considered Yang during prosecution of the '233 Patent.

2. Matsumoto

Like the ’233 Patent, Matsumoto discloses a USB device that can be charged using a USB adapter. Baker Decl., ¶ 72. Also like the ’233 Patent, Matsumoto discloses that the USB device should be able to determine when it is connected to the adapter for charging (as opposed to a personal computer for communication). Baker Decl., ¶ 72.

Specifically, Matsumoto explains that the USB device can be connected to either (1) a personal computer or (2) an external power source (*e.g.*, an AC outlet) through an adapter. Matsumoto, Abstract (“A portable electronic device according to the invention comprises a USB connector . . . . and is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4.”), 3:41-47 (“FIG. 1 shows a portable electronic device 1 of the invention, which has a USB connector 4. A USB connector 5 of a personal computer 2 serving as a host can be connected to the USB connector 4 by a USB cable 11, or an external power source 3 such as an a.c. adaptor can be connected to the USB connector 4 by a power source cable 12.”).



Matsumoto, Figure 1 (annotated) (showing mobile device (green), which can be connected through USB connector (4) to either a personal computer (purple) or an adapter (red)).

Matsumoto teaches that—consistent with the USB Specification—the mobile device will typically engage in USB communication (*e.g.*, enumeration) when connected to the personal computer. *Id.*, 1:54-2:1 ("When the personal computer is connected to the USB connector on the portable electronic device in this case, it is necessary for the USB controller to conduct data communication with the personal computer with a definite period as required by the USB Standard [enumeration/configuration], so that the leadership in data processing is taken over by the USB controller from the main CPU . . . . Further while the USB controller is connected to the personal computer for data communication, some kind of data is handled also between the main CPU and the USB controller."). Matsumoto further discloses, however, that such communication slows down the operation of the mobile device. *Id.*, 1:60-64 ("This entails the problem that even if the user gives the portable electronic device a command for data reproduction (play operation), the main CPU is unable to rapidly execute device operation processing for data reproduction."), 2:1-4 ("This gives rise to the problem that the main CPU must execute very complicated processing since there is a need for the main CPU to execute device processing for data reproduction in this state."). Baker Decl., 74-75.

Because such communication (and the slowdown that occurs therewith) is not necessary when the mobile device is connected to the adapter (which only needs to charge the portable electronic device), Matsumoto discloses "discriminating means" to determine when the mobile device is connected to the adapter (as opposed to a typical USB device). Matsumoto, 2:58-59 ("The discriminating means identifies the source of supply of power . . . ."), 2:46-50 ("Stated more specifically, the control circuit comprises discriminating means for judging which of the information processing device [computer] and the external power source [adapter/charger] is

connected to the common serial bus connector . . . ."), 2:13-27 ("The present invention provides a portable electronic device comprising . . . a control circuit connected to the common serial bus controller . . . . The control circuit discriminates among the sources of supply of power.") (emphasis added).

When the mobile device is connected to the adapter (instead of a typical USB device like the computer), the "distinguishing means" cause the device to avoid the costly communication process (including enumeration/configuration) and simply move forward with charging and usual device operation/processing. Matsumoto, 2:36-42 ("[T]he control circuit causes the common serial bus controller to execute the predetermined data communication processing [including enumeration] when the information processing device [computer] is the power source, or executes the usual device operation processing [*i.e.*, no enumeration], such as data reproduction control, when the external power source [adapter] or the internal power source is the source of supply of power."). This allows the device to use the power from the adapter and still engage in faster processing. *Id.*, 2:42-46 ("Thus, the control circuit and the common serial bus controller perform processing as distinctly dividedly assigned thereto according to the source of supply of power. This ensures simplified processing at a higher speed."); Baker Decl., ¶ 76.

The Examiner does not appear to have considered Matsumoto during prosecution of the '233 Patent.

3. Kerai

U.S. Patent 6,531,845 issued from Application No. 09/864,273, was filed on May 25, 2001, claiming priority to a May 26, 2000 appliation, and issued on March 11, 2003 to Kanji Kerai and Kalle Tuulos. Thus, Kerai is prior art under at least pre-AIA §102(e).

Kerai uses a high state on its USB D+ and D- lines for charging with a charging system. Kerai, Fig 3, 5:43-51. Kerai states "A battery charging circuit is described in which power is

derived from a communications port such as a USB interface (22) and is supplied to a rechargeable battery of a communications device." *Id*., Abstract. "As is well known, the data lines of a serial connection (D+ and D- in the USB interface) are held high when the connection is inactive and will vary between a high and low state whilst communication over the ports takes place." *Id*., 5:45-48 (emphasis added); Baker, ¶ 77.

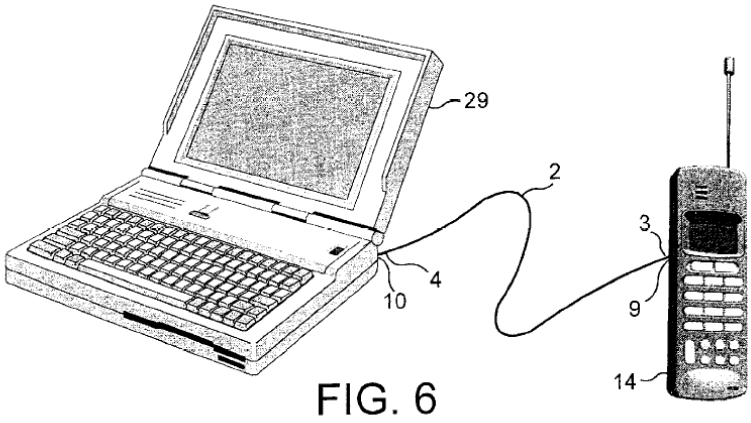


FIG. 6

D. Claim Construction

"During reexamination proceedings of unexpired patents . . . the Board uses the 'broadest reasonable interpretation consistent with the specification' standard, or BRI" when construing claim terms. *In re CSB-Sys. Int'l, Inc.*, 832 F.3d 1335, 1340 (Fed. Cir. 2016). "The rationale for permitting this broader standard in reexaminations is that a patent owner before the Patent and Trademark Office ('PTO') with an unexpired patent 'may amend claims to narrow their scope,' negating any unfairness that may otherwise result from adopting the BRI standard." *Id.* at 1340-41.

The '233 Patent will expire no later than March 1, 2022. Accordingly, the Broadest Reasonable Interpretation applies. Requestor further notes that it is not aware of any claim construction issues, even if the *Philips* standard were to apply, that would affect any of the invalidity arguments in this Request.

E. Prior Requests for Review

The grounds and reasoning asserted in this Request for *ex parte* reexamination are unique. And there have been no prior requests for review. As noted above, the Examiner did not consider any of the references cited herein during examination.

IV. DETAILED STATEMENT OF SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY

A. Kerai Anticipates Claims 1-8, 15-18, and 21

For the reasons stated below, Kerai anticipates claims 1-8, 15-18, and 21. Kerai was not considered during prosecution of the '233 Patent. Thus, Kerai and the arguments below present a substantial new question of patentability.

1. Claim 1 Preamble: A Universal Serial Bus ("USB") adapter for providing power through a USB connector, the USB connector configured to be connectable to a USB-equipped mobile device, comprising

The preamble is not a limitation. Even if it were, Kerai discloses a USB adapter for providing a source of power to a mobile device through a USB port.

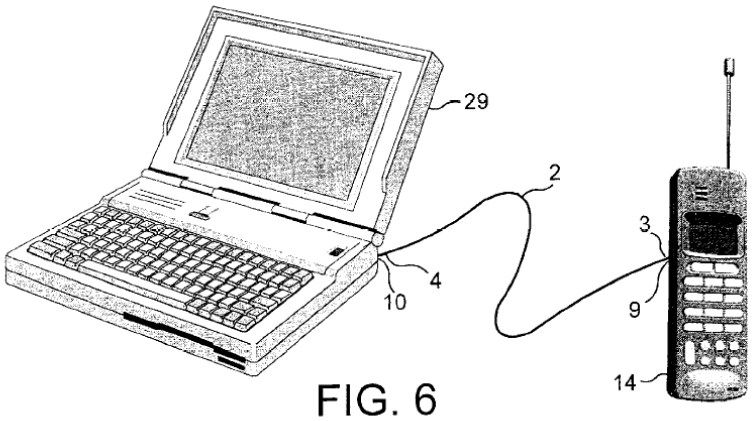


FIG. 6

Kerai discloses that "[a] battery charging circuit is described in which power is derived from a communications port such as a USB interface (**22**) and is supplied to a rechargeable battery of a communications device." Kerai, Abstract. As depicted below, Kerai discloses a

USB interface (22) that connects to a Charger Control Circuit. Kerai, 2:45-3:36. This Charger Control Circuit "delivers power to the rechargeable battery" that is received via the USB connector 22. *Id.*; Baker Decl., ¶ 79. Kerai discloses the use of standard USB connectors or ports 9, 10, at each end of the USB cable 2, in both the laptop computer (adaptor) and the mobile device (phone handset), both of which are described as USB devices. Kerai 2:45-3:36.

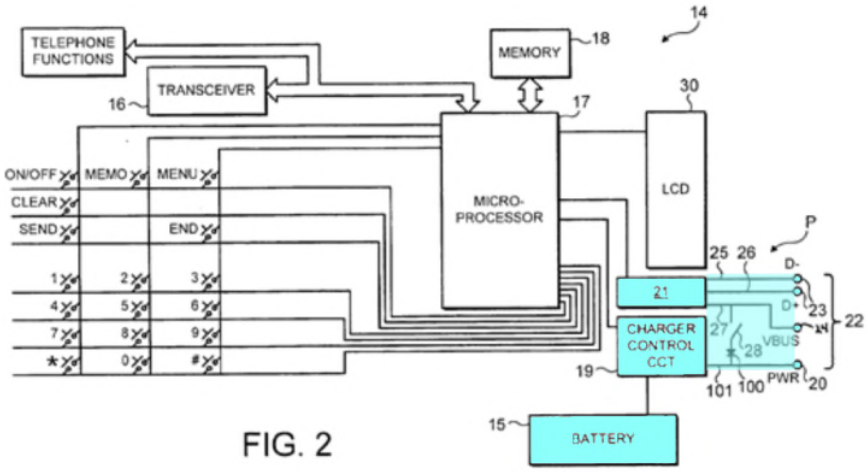


FIG. 2

Accordingly, Kerai discloses the preamble to the extent it is limiting.

2. Claim 1[a]: a plug unit configured to receive energy from a power socket

Kerai discloses that the adapter (laptop) can receive power from a publicly available power source (*i.e.*, AC power outlet). Baker Decl., ¶ 79-82. It was well-known as of 2001 that a laptop computer connects to an AC power outlet via a plug and some type of AC to DC converter. Baker Decl., ¶80. Indeed, Kerai expressly acknowledges that its disclosed laptop computer indicates to a user whether it "is operating on its own internal batteries rather than on publically available power." Kerai, 4:21-43. Kerai also notes that the battery of the mobile device can be charged via the power supply of the laptop batter. *Id.*, Abstract. Furthermore, the '233 Patent admits that a plug unit was "known in the art." '233 Patent, 6:46-5:16 (further referring to the claimed plug unit as "a conventional plug unit").

Even though the intrinsic record and common knowledge of a POSITA are enough to find that Kerai discloses this claim element, Patent Owner admitted that virtually identical claims in related U.S. Patent No. 6,939,936 patent (the "'936 Patent"), from which the '233 Patent claims priority, expressly contemplated the exact arrangement disclosed by Kerai with respect to a laptop computer being the charging adapter:

> Indeed, to the extent Defendants' proposed negative limitation is intended to exclude portable computers, such as laptops, Defendants' proposed construction is directly contradicted by the intrinsic evidence. Specifically, the written description of the Fischer Patents teaches that "[i]t is also contemplated that a USB adapter may be embodied in a USB host or hub." Ex02 ['111], 11:38-39. Similarly, dependent claim 10 of the '936 patent recites "The USB adapter of claim 1, wherein the USB adapter is integrated with a USB hub or host." Ex01 ['936], claim 10. ***A USB host is typically a PC, such as a laptop, which may be considered a mobile device.*** Ex14 [Fernald] at ¶¶32-33. This understanding is consistent with the USB 2.0 Specification, which states that "[t]he specification is intended as an enhancement to the PC architecture, spanning portable, business desktop, and home environments." Ex15 [USB 2.0] at 1. Thus, portable (i.e., mobile) USB hosts are contemplated by USB 2.0, and **the Fischer Patents expressly allow for the elements of the claimed USB adapters to be integrated within such a mobile device**.

Ex. OTH-B at 20. (emphasis added).

3. Claim 1[b]: 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

Kerai discloses that the adapter (laptop) can receive power from a publicly available power source (*i.e.*, AC power outlet). Baker Decl., ¶ 130-32. Furthermore, Kerai discloses that the mobile device in its system receives power at "around five volts." Kerai 5:37-42. Because Kerai's mobile device receives this five volts from the laptop, and because the laptop receives its power from a conventional AC wall outlet, it is necessarily true that the laptop has a power converter to regulate the AC power from a wall outlet to DC power suitable for the mobile device over the USC connection. Baker ¶79-82. It was well-known as of 2001 that a laptop computer connects to an AC power outlet via a plug and some type of AC to DC converter. *Id.*

Indeed, Kerai expressly acknowledges that its disclosed laptop computer indicates to a user whether it "is operating on its own internal batteries rather than on publicly available power." Kerai 4:21-43. Furthermore, the '233 Patent admits that a power converter was "known in the art." '233 Patent, 6:46-61.

4. Claim 1[c]: an identification subsystem configured to generate an identification signal, the identification signal configured to indicate the USB adapter is configured to send substantial energy through the USB connector before completing device enumeration

Kerai discloses an identification subsystem that is coupled to the USB connector and provides an identification signal at the D+ and D- data lines of the USB connector. Baker Decl., ¶ 83-85. Kerai uses a logic high signal on both the D+ and D- data lines to indicate a charge-only connection between the laptop and the mobile device. Kerai 3:25-36; 5:44-53. As explained above, the '233 Patent discloses several variations of the identification signal, including "a logic high signal" on both USB data lines (known as a SE1 condition). '233 Patent, 9:7-23. Because Kerai uses a charge-only condition, it is configured to use substantial energy that can be used for charging before USB enumeration (in fact completely without enumeration) to charge the mobile device. . Kerai 3:25-36; 5:44-53.

Kerai further discloses an additional embodiment in Fig. 3. Although similar to Fig. 2, in the embodiment of Figure 3, the D+ and D- lines are used to provide charging power to the mobile device. Kerai, 5:24-59; Baker Decl., ¶84. As shown below, when the laptop holds the D+ and D- data lines (25 and 26) at a logic high, there is no data communication across the USB communication path. *Id.* At this point, the switches (28) close and the voltage on the data lines is used to supply power to the mobile device's battery charging circuit. *Id.* This is done before and without USB enumeration. *Id.*

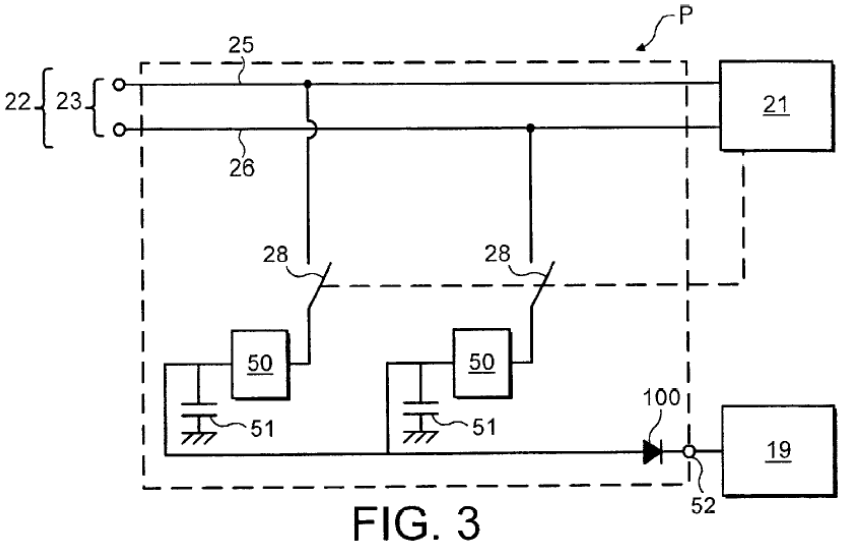


FIG. 3

Accordingly, under either embodiment of Kerai, this claim element is met.

5. Claim 1[d]: where the USB connector is coupled to the power converter and the identification subsystem, the USB connector configured to be able to send the power output and the identification signal

Kerai discloses that power is received at the mobile device over a USB connection between a "USB port" on the laptop and a "USB interface" on the mobile device. As explained above, the USB connection receives its power from a power converter, which converts AC power to DC power, and is provided with the identification signal. Kerai, Abstract; 1:10-25; 2:45-3:36. Baker Decl., ¶86.

6. Claim 2 - The USB adapter of claim 1, wherein the plug unit is configured to couple directly with the power socket

It was well-known in the art that the plug unit of laptop computers connects directly to a power socket. Baker Decl. ¶87. Indeed, the '233 Patent admits that such plug units were "conventional" and Patent Owner's infringement allegations in district court proceedings read this claim element on a typical laptop computer connecting to a power socket with a well-known and ubiquitous power cord. *See, e.g., Fundamental Innovation Systems International LLC v. Lenovo (United States) Inc. et al*, 1-20-cv-00551 (Del. 2020), Complaint at ¶¶ 64-77 (Complaint

directed to alleged infringement by laptop computers with conventional power cords and adapters).

7. Claim 3 - The USB adapter of claim 1, 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

Kerai discloses that a typical laptop computer may connect to various power sockets, including those that would require adapters when "travelling abroad." Kerai 1:21-25. Baker Decl., ¶88. Kerai is a US patent and notes that the laptop will be plugged into an AC power source, which a POSITA would understand to include at least a North American power socket. *Id.*

8. Claim 4: The USB adapter of claim 1, further comprising a plug adapter that is configured to couple the plug unit to the power socket

Kerai discloses that a plug unit may require an adapter to couple to different types of power sockets throughout the world and recognizes that "a power outlet adapter will almost certainly be necessary.". Kerai 1:10-25; Baker ¶89.

9. Claim 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

See claims 3 and 4 above, which together are substantively identical.

10. Claim 6 - wherein the identification signal comprises a voltage level that is applied to at least one data line in the USB connector

See claim element 1[c] above, which describes how Kerai discloses an identification signal that comprises a voltage level that is applied to at least one data line in the USB connector, and also claim 7 below showing the voltage level applied to the data lines. As explained above, holding the data lines logic high requires applying a voltage level to the data line.

11. Claim 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

See claim element 1[c] explaining how the D+ and D- lines are hard-wired to a logic high level. Figs. 2 and 3 of Kerai show how the voltage level supplied to the data lines is hard-wired. Baker Decl., ¶ 83-84.

12. Claim 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

See claim element 1[c] and claims 6 and 7 above, explaining how the voltage level is applied to the D+ and D- lines of the USB connector. Baker Decl., ¶ 83-84.

13. Claim 15 [Preamble]: A method for using a USB adapter to provide power, the USB adapter comprising a USB connector configured to be operable with at least one USB-equipped mobile device, comprising

See claim element 1[preamble] for the same limitation in the apparatus claim. Claim 15 is directed to a method of using the apparatus of claim 1. Therefore, claims 1 and 15 are substantively the same except as noted below in claim element 15[d], which references an invalid USB state. The invalid USB state is disclosed by Kerai as described above and as further noted below for claim element 15[d].

14. Claim 15[a]: receiving a power input from a power socket

See claim element 1[a] for the same limitation.

15. Claim 15[b]: generating a regulated DC power output from the power input

See claim element 1[b] for the same limitation.

16. Claim 15[c]: generating an identification signal configured to allow an indication that the USB adapter is configured to send substantial energy through the USB connector before completing device enumeration

See claim element 1[c] for the same limitation.

17. Claim 15[d]: providing the identification signal at the USB connector, the identification signal indicating an invalid USB state using two data lines; and providing the power output on a power pin of the USB connector

See claim elements 1[c] and 1[d]. A logic high signal on both data lines, as disclosed in Kerai and described above, falls within the scope of an invalid USB state at least under Patent Owner's interpretation in litigation because it is not a valid USB state as defined in either the USB 1.1 or 2.0 specifications and it used to signal the power charging on the power pin. Baker Decl. ¶98.

18. Claim 16: The method of claim 15, wherein the identification signal comprises a voltage level that is applied to at least one of the two data lines

See claim element 1[c].

19. Claim 17: The method of claim 16, wherein the voltage level is applied by the identification subsystem further comprising a hard-wired connection of a voltage level to the at least one of the two data lines

See claim element 1[c] and claim 7.

20. Claim 18: The method of claim 15, wherein the identification signal comprises a voltage level that is applied to the two data lines

See claim element 1[c].

21. Claim 21[Preamble]: A method for using a USB adapter to provide power, the USB adapter comprising a USB connector configured to be operable with at least one USB-equipped mobile device, comprising

See claim element 1[preamble] for the same limitation. Claim 21 is directed to a method of using the apparatus described in claim 1. Claims 1 and 21 are substantively the same except as noted below in claim element 21[d], which adds that the power output is providing on a power pin of the USB connector.

22. Claim 21[a]: receiving a power input from a power socket

See claim element 1[a] for the same limitation.

23. Claim 21[b]: generating a regulated DC power output from the power input

See claim element 1[b] for the same limitation.

24. Claim 21[c]: generating an identification signal configured to indicate the USB adapter is configured to send substantial energy through the USB connector before completing device enumeration

See claim element 1[c] for the same limitation.

25. Claim 21[d]: providing the identification signal at the USB connector such that the signal is configured to propagate through a USB connection using two data lines, the signal comprising each of the two data lines being a high state; and providing the power output on a power pin of the USB connector.

See claim elements 1[c] and 1[d] for the same limitations. As noted above for claim element 1[c], both data lines are held logic high when providing the power output, which meets this claim element. Kerai further discloses, at least in the embodiment described in Figure 2, providing the power output on a power pin (VBUS line) of the USB connector. Kerai 3:25-36, Figure 2. The '233 Patent does not distinguish between a data line and a power pin of a connector, as both pins can carry the same voltage and current. Thus, data lines may also be power pins and either embodiment of Kerai discloses this claim element. However, even to the extent that Patent Owner would argue that a separate and distinct pin in the connector must only be used for power, then the embodiment of Figure 2 in Kerai, as described above, meets this element as it includes two data lines and separate power and ground pins in its USB connector.

B. Kerai Renders Obvious Claims 1-8, 15-18, and 21

As described above in Section IV.A, Requestor presents a substantial new question of patentability that Kerai anticipates the Challenged Claims. To the extent that details of Kerai's laptop are found not adequately disclosed, a POSITA would have been motivated and would have found it obvious to implement the well-known functions and components of laptop computers at the time of the alleged invention of the '233 Patent in 2001. Baker Decl., ¶107.

Specifically, a POSITA would find it obvious to implement the claimed plug unit and power converter present in each of the independent claims as they inherently existed in all laptop computers at the time, which is likely why Kerai did not feel the need to explicitly recite these well-known and trivial details..

Patent Owner expressly admitted that a conventional laptop computer is encompassed within the prior art known at the time of the alleged invention. During claim construction in district court, Patent Owner argued that the claimed "adapter" included laptop computers such that it could read claims on a laptop computer that operates much in the same manner as Kerai:

> [T]o the extent Defendants' proposed negative limitation is intended to exclude portable computers, such as laptops, Defendants' proposed construction is directly contradicted by the intrinsic evidence. Specifically, the written description of the Fischer Patents teaches that "[i]t is also contemplated that a USB adapter may be embodied in a USB host or hub." Ex02 ['111], 11:38-39. Similarly, dependent claim 10 of the '936 patent recites "The USB adapter of claim 1, wherein the USB adapter is integrated with a USB hub or host." Ex01 ['936], claim 10. ***A USB host is typically a PC, such as a laptop, which may be considered a mobile device***. Ex14 [Fernald] at ¶¶32-33. This understanding is consistent with the USB 2.0 Specification, which states that "[t]he specification is intended as an enhancement to the PC architecture, spanning portable, business desktop, and home environments." Ex15 [USB 2.0] at 1. Thus, portable (i.e., mobile) USB hosts are contemplated by USB 2.0, and ***the Fischer Patents expressly allow for the elements of the claimed USB adapters to be integrated within such a mobile device***.

OTH-B at 20 (emphasis added).

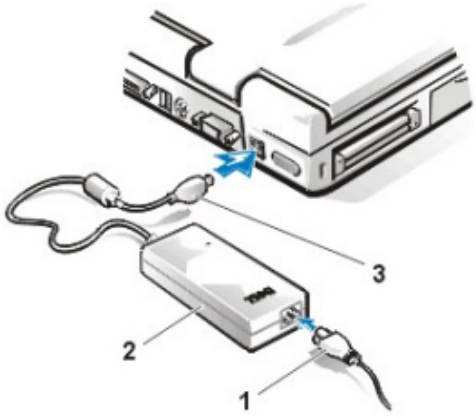
Furthermore, Patent Owner told the district court that the form taken by what is claimed in the Challenged Claims is irrelevant:

> If a laptop is configured to serve as a power supply for a user's smart phone (e.g., one can plug a smart phone into a USB connector on the laptop to charge the phone) and meets the elements of the claim, ***there is no basis to exclude that laptop from the scope of the claim*** simply because of its form factor (i.e., because it might be called a "mobile device").

OTH-B at 38. (emphasis added).

A POSITA would also be armed with knowledge of laptop computers that existed as of 2001. Baker Decl. ¶107. As Dr. Baker explains, these laptops necessarily included power cords with voltage regulators to convert AC power from a wall socket to DC power usable by the laptop. As just one example, the widely available Dell Inspiron 3800 used a common AC adapter.

Figure 1. Connecting the AC Adapter



1 AC adapter power cable

2 AC adapter

3 AC adapter cable

Ex. PA-G (Dell Inspiron 3800 Service Manual, February 22, 2000). A POSITA would be well-aware of this type of adapter that was used in virtually all laptops at the time. Baker ¶107. In addition, the Dell Inspiron 3800 came equipped with at least one USB connector. *Id.;* Ex. PA-G at 71.

Accordingly, to the extent Kerai is found to not disclose, either expressly or inherently, the AC power adapter and plug unit of its disclosed laptop computer, it would be obvious to a POSITA at the time of the alleged invention of the ’233 Patent to use a common and well-known AC adapter and plug unit to provide power to the laptop computer. Baker Decl. ¶108.

C. Yang in Combination with Matsumoto Renders Obvious Claims 1-8, 15-18, and 21

For the reasons stated below, Yang in combination with Matsumoto renders obvious Claims 1-8, 15-18, and 21. Neither reference, nor the combination of the two references, was

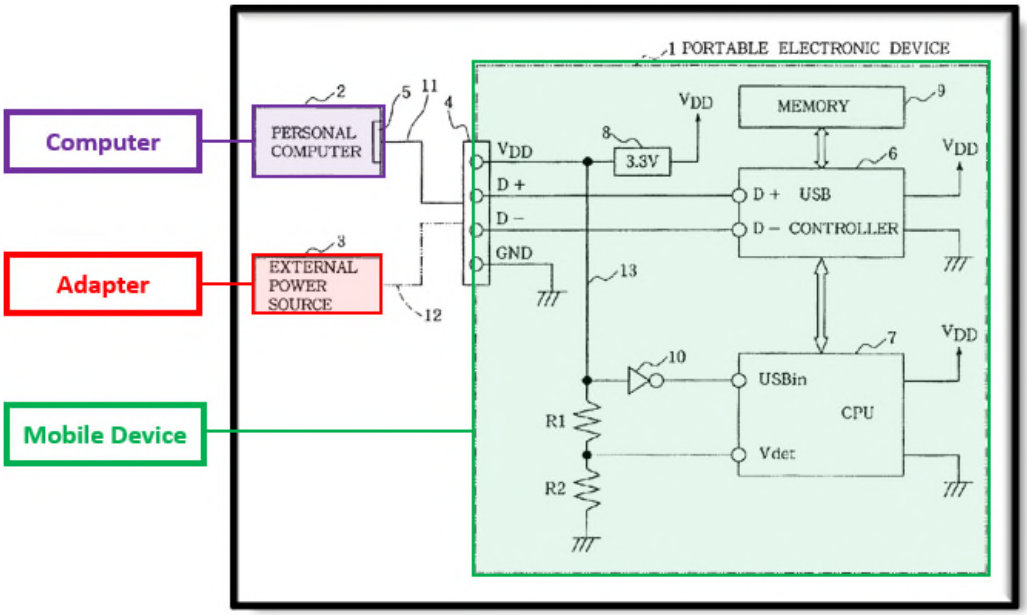
cited or relied on during prosecution of the '233 Patent. Thus, this combination, which renders obvious all Challenged Claims, presents a substantial new question of patentability.

1. Motivation to Combine

A person of ordinary skill in the art would have been motivated to combine the teachings of Yang with the teachings of Matsumoto. OTH-A (Baker Decl.,), ¶ 111.

Both Matsumoto and Yang relate to systems and methods for powering portable electronic devices (*i.e.*, mobile devices). Baker Decl., ¶ 112. Specifically, each involves a system and method for powering such mobile devices using an adapter that connects directly between a wall outlet and the mobile device. Ex. PA-A (Matsumoto), Abstract ("A portable electronic device . . . is adapted to receive a power supply from . . . an external power source.") and 3:46-47 ("an external power source 3 such as an a.c. adaptor can be connected to the USB connector 4 by a power source cable 12."); Ex. PA-B (Yang) at Abstract ("A mobile phone charger with multiple power supply inputs") and Specification Page 1 ("The second purpose of this utility model is to provide a mobile phone charger with multiple power supply inputs so that the dock charger can use the regular household AC 110V/220V power supply for charging mobile phone batteries."); Baker Decl., ¶ 112.

As noted in Section IV.C.2, *supra*, Matsumoto discloses that such mobile devices can be connected through a USB connection to either (1) a computer or (2) an adapter connected to a wall outlet. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector . . . . and is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4."):



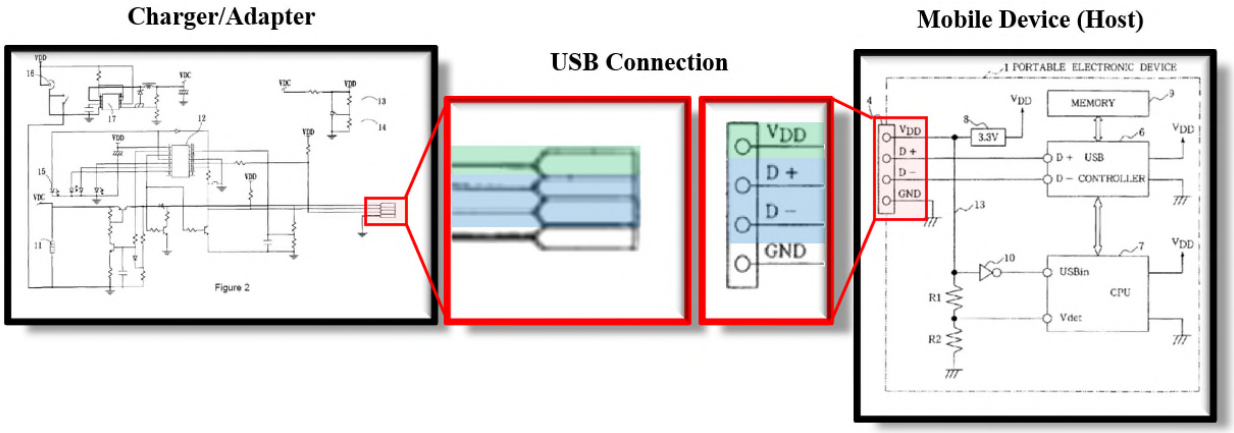
Matsumoto, Figure 1 (annotated) (showing mobile device (green), which can be connected through USB connector (4) to either a personal computer (purple) or an adapter (red)).

Matsumoto further teaches that, when connected to the adapter, the mobile device need not undergo enumeration and, accordingly, it is beneficial to include distinguishing means for determining when the mobile device is connected to an adapter (as opposed to a computer). *See* Matsumoto, 2:58-59 ("The discriminating means identifies the source of supply of power . . . ."); *id.* at 2:46-50 ("Stated more specifically, the control circuit comprises discriminating means for judging which of the information processing device [computer] and the external power source [adapter/charger] is connected to the common serial bus connector . . . ."); *id.* at 2:13-27 ("The present invention provides a portable electronic device comprising . . . a control circuit connected to the common serial bus controller . . . . <u>The control circuit discriminates among the sources of supply of power</u>.") (emphasis added).

Accordingly, Matsumoto teaches combining the mobile device with a wall adapter. Baker Decl., ¶111-15. A person of ordinary skill in the art seeking to implement a mobile device and USB wall adapter pursuant to the teachings of Matsumoto would therefore be motivated to

combine such adapters with Matsumoto, such as those adapters taught by Yang. *Id.* Yang discloses precisely what is suggested by Matsumoto—an adapter that can power a mobile device from, for example, a wall outlet. *Id.*; Yang, Abstract and Matsumoto 3:46-47. Moreover, because Yang discloses a flexible design that can be used with various mobile devices and a connector comprising the same four lines as a USB connection (*i.e.*, Power (VBUS), data lines (D+/D-), and ground (GND)), a person of ordinary skill in the art would immediately understand that the adapter taught by Yang could be used in combination with the mobile device taught by Matsumoto. Baker Decl., ¶ 114-16.

Accordingly, a person of ordinary skill in the art would have been motivated to combine the teachings of Yang with Matsumoto to implement a USB Mobile device and associated wall adapter:



Yang Figure 2 (annotated) and Matsumoto Figure 1 (annotated); Baker Decl., ¶ 117.

2. Claims 1-8, 15-18, and 21

Yang in view of Matsumoto renders Claims 1-8, 15-18, and 21 obvious under 35 U.S.C. § 103. Below, Requestor provides a concise statement of the substantial new question of patentability for the Challenged Claims based on Yang in view of Matsumoto under 35 U.S.C. §103.

a. Claim 1 Preamble: A Universal Serial Bus ("USB") adapter for providing power through a USB connector, the USB connector configured to be connectable to a USB-equipped mobile device, comprising

Patent Owner has taken the position in district court litigation that the preamble is not a limitation of the claims. OTH-B at 16. Under the broadest reasonable interpretation standard applied here, that position should be adopted. Regardless, even if the preamble is limiting, it is satisfied by Yang in view of Matsumoto. Specifically, Yang discloses a "mobile phone charger" for powering and charging a mobile phone. Yang, Title ("Mobile Phone Charger with Multiple Power Supply Inputs") and Abstract ("A mobile phone charger with multiple power supply inputs."). The charger can draw power from any of three different types of sources (including a wall-socket, an automobile power supply, or a USB connection) and convert or "adapt" that power to be used by a mobile device. *Id.*, Abstract ("The utility model can achieve the purpose of adapting multiple power supply inputs.") (PA-A at 8); *id.* at Specification Page 1 ("The second purpose of this utility model is to provide a mobile phone charger with multiple power supply inputs so that the dock charger can use the regular household AC 110V/220V power supply for charging mobile phone batteries.") (PA-A at 10). A person of ordinary skill in the art would have understood that the charger of Yang discloses an "adapter for providing power through a USB connector," such as claimed. Baker Decl., ¶ 119.

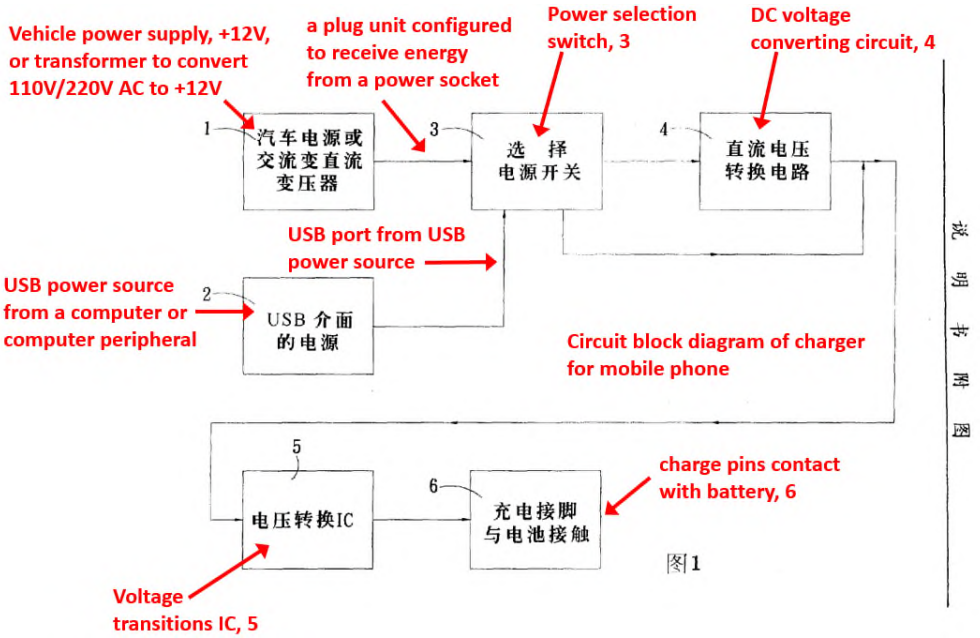
Matsumoto also discloses an adapter. Specifically, Matsumoto discloses a portable electronic device with a USB connection that can be connected to (1) a computer or (2) an "a.c. adaptor" for charging a device from an "external power source" like a wall-socket. Matsumoto, Abstract ("A portable electronic device . . . is adapted to receive a power supply from the personal computer 2 or an external power source 3 as connected to the USB connector 4.") (emphasis added), 1:20-23 ("In some cases . . . it is desired to connect a commercial a.c. power source or like external power source to such a device and operate the device therewith."), 1:36-

42 ("Accordingly, it appears feasible to provide the USB connector on a portable electronic device for use with an a.c. adaptor (external power Source) . . . to connect the a.c. adaptor to the power source terminal of the USB connector for the supply of power to the device."), at 3:43-47 ("an external power source 3 such as an a.c. adaptor can be connected to the USB connector 4 by a power source cable 12."), 3:46-47.

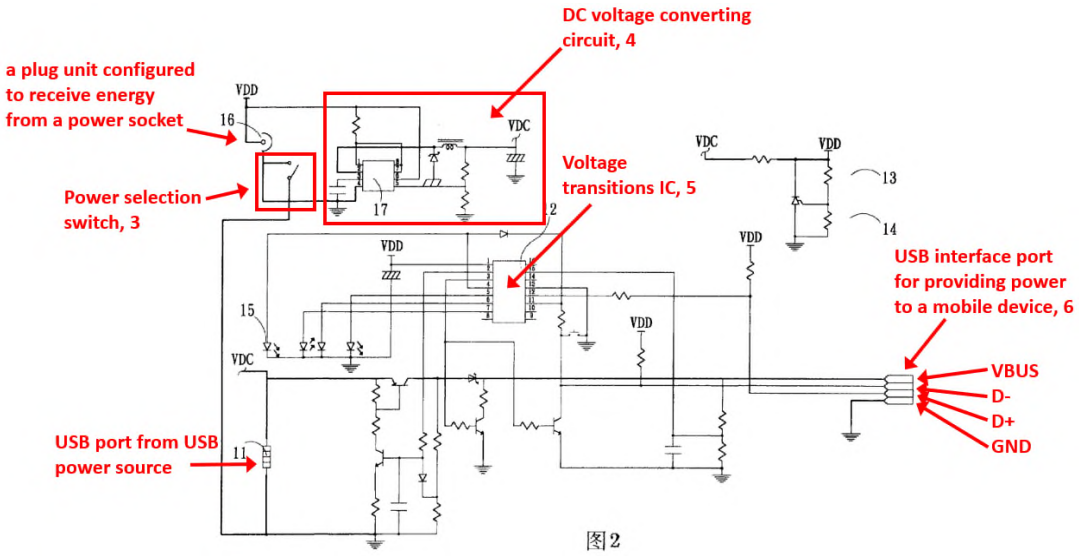
A person of ordinary skill in the art would thus have understood that the charger of Yang implemented pursuant to the teachings of Matsumoto, which demonstrates how it would connect and be implemented with a mobile device, would constitute an "adapter." Baker Decl., ¶ 119-120.

b. Claim 1[a]: a plug unit configured to receive energy from a power socket

The combination of Yang and Matsumoto discloses the claimed plug unit. Baker Decl., ¶ 125. Figure 1 (below, annotated) (PA-A at 13) of Yang illustrates that its adapter is designed to be coupled to a power socket for receiving energy.



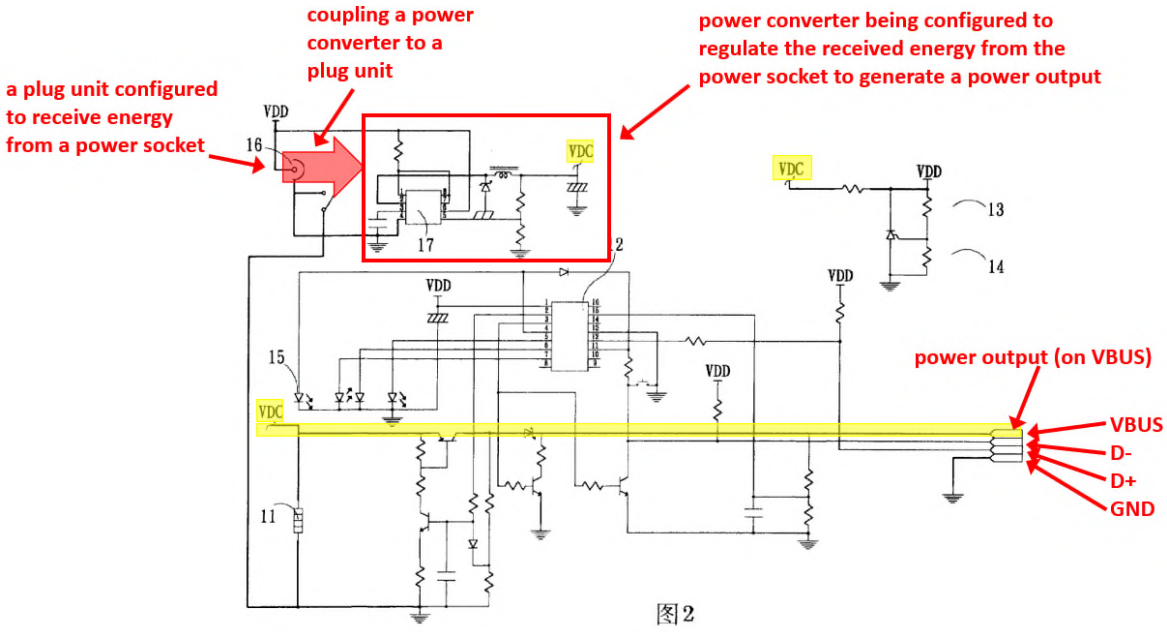
Yang notes that its mobile phone charger has "multiple power supply inputs" including "household AC 110V/220V." Yang, Specification at 2 (PA-A at 11). Yang discloses its charging circuit in more detail in Figure 2 below.



Accordingly, Yang discloses the claimed plug unit configured to receive energy from a power socket.

c. Claims 1[b]: 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

The combination of Yang and Matsumoto discloses the claimed power converter. Baker Decl., ¶ 126. Figure 2 (reproduced below, annotated) of Yang shows that its adapter includes a power converter to regulate the 110V/220V household electricity and convert it into 12V DC power. Yang, Specification at 2 (PA-A at 11).



Yang, Fig. 2 (annotated). As shown above, a power converter is included within the red box and is able to regulate the received 110V energy and convert it into an output power requirement of a mobile device. Yang explains that "the commercial power supply is converted to DC +12V through the transformer (16), so its voltage becomes the same as the voltage DC +12V of an automobile cigarette lighter, and the same circuit can be used. Then the DC voltage conversion circuit (17) (MC34063) converts DC +12V to DC +5V, which is the same voltage as the USB interface, and the same circuit can be used." Yang at 3 (PA-A at 12).

Accordingly, Yang discloses the claimed power converter.

d. Claim 1[c]: an identification subsystem configured to generate an identification signal, the identification signal configured to indicate the USB adapter is configured to send substantial energy through the USB connector before completing device enumeration

Yang discloses the claimed identification subsystem that generates an identification signal on the data lines of the USB connector. Baker Decl., ¶ 128. As depicted below, Yang's identification subsystem includes at least two pull-up resistors that are coupled to the D+ and D- lines of the USB connection.

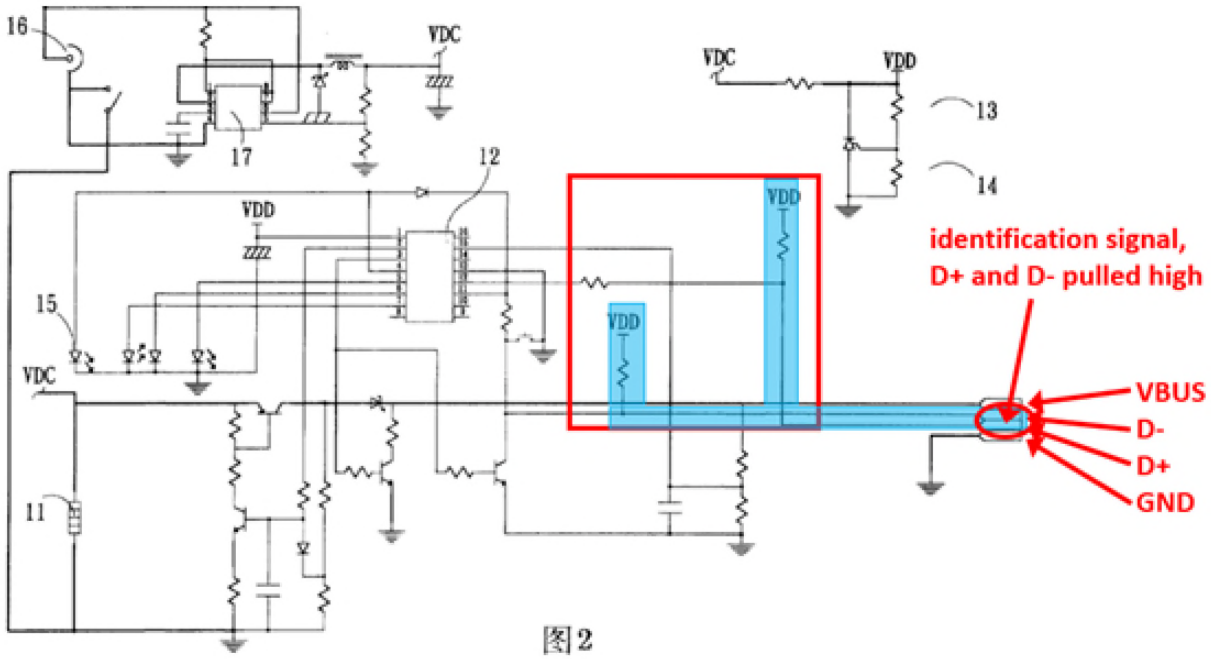


图2

Yang, Fig. 2 (annotated). Further annotating Figure 2 of Yang demonstrates how each element of claim 1 is disclosed by Yang in conjunction with the identification subsystem discussed above and shown in the red box below.

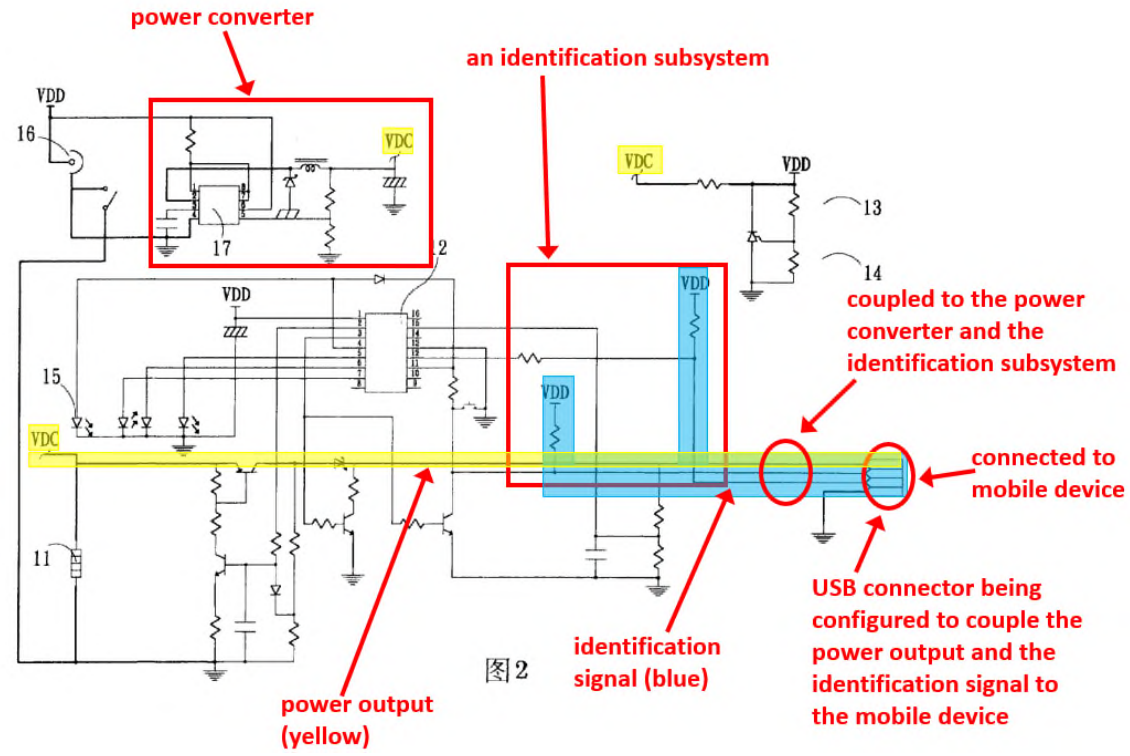
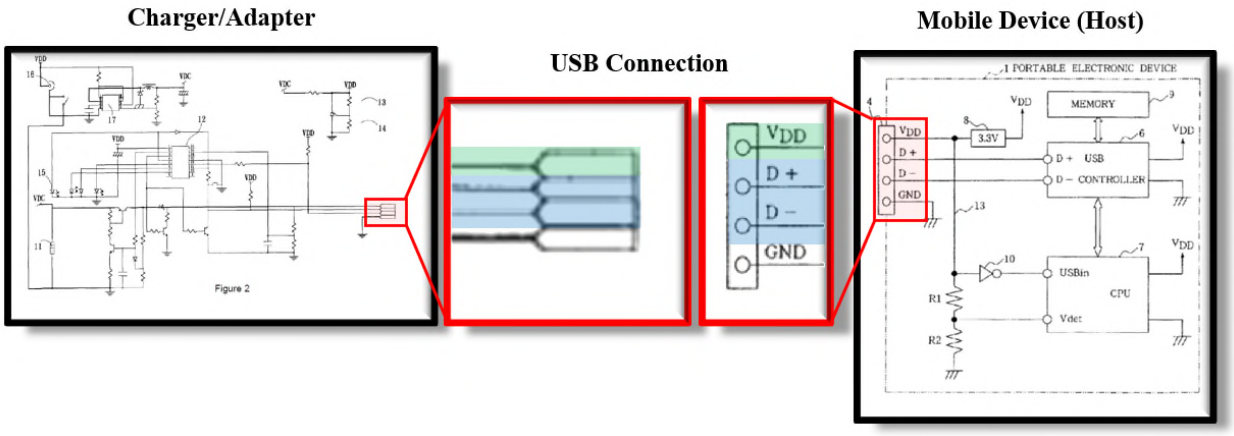


图2

Id. Yang's two pull-up resistors along with the corresponding connections are used to signal to a mobile device that the adapter of Yang is available for charging via a USB connection. Accordingly, this combinations discloses the claimed identification subsystem. Baker Decl., ¶ 128. This means that Yang's system provides substantial energy before and without USB enumeration.

As explained above for the preceeding limitation, to the extent a more express disclosure of a USB connector is required in Yang, the combination with Matsumoto renders this claim element obvious. As depicted below, Matsumoto (shown in right) teaches that its USB connector can mate with the four pins of a charger/adapter, such as the charger/adpater taught byYang, to couple a mobile device.



Yang Figure 2 (annotated) and Matsumoto Figure 1 (annotated). The USB mobile device of Matsumoto will know that the device in Yang is a charger because its D+ and D- lines are both logic high. Baker Decl. ¶128. The '233 Patent discloses several variations of the identification signal, such as "a logic high signal" on both USB data lines (known as a SE1 condition). *Id.*, 9:7-23.

As explained above, in Matsumoto, when the mobile device is connected to the adapter (instead of a typical USB device like the computer), the "distinguishing means" cause the device to avoid

the costly communication process (including enumeration/configuration) and simply move forward with charging and usual device operation/processing. Matsumoto, 2:36-42 ("[T]he control circuit causes the common serial bus controller to execute the predetermined data communication processing [including enumeration] when the information processing device [computer] is the power source, or executes the usual device operation processing [*i.e.*, no enumeration], such as data reproduction control, when the external power source [adapter] or the internal power source is the source of supply of power.") This allows the device to use the power from the adapter and still engage in faster processing. *Id.*, 2:42-46 ("Thus, the control circuit and the common serial bus controller perform processing as distinctly dividedly assigned thereto according to the source of supply of power. This ensures simplified processing at a higher speed.").

Accordingly, this claim element is met by Yang, or at least by Yang in view of Matsumoto.

e. Claim 1[d]: where the USB connector is coupled to the power converter and the identification subsystem, the USB connector configured to be able to send the power output and the identification signal

Yang discloses a USB connector that is coupled to the power converter and the identification subsystem described above and supplies power to a mobile device. Baker Decl., ¶129-30. Yang teaches through its circuit diagram that the output of the mobile phone charger are pins that are for connecting to a battery. These four pins correspond to the four pins in a standard USB connector at the time of the alleged invention of the '233 Patent, which include D+, D-, Ground, and VBUS. Yang further notes that the "power supply is converted into a +5V voltage, which is the same as the USB interface voltage." Yang at 2. Therefore, a POSA would find it disclosed by Yang that the output charge pins of the Yang charger are a USB connector for providing power to a mobile device as annotated in Yang, Fig. 2.

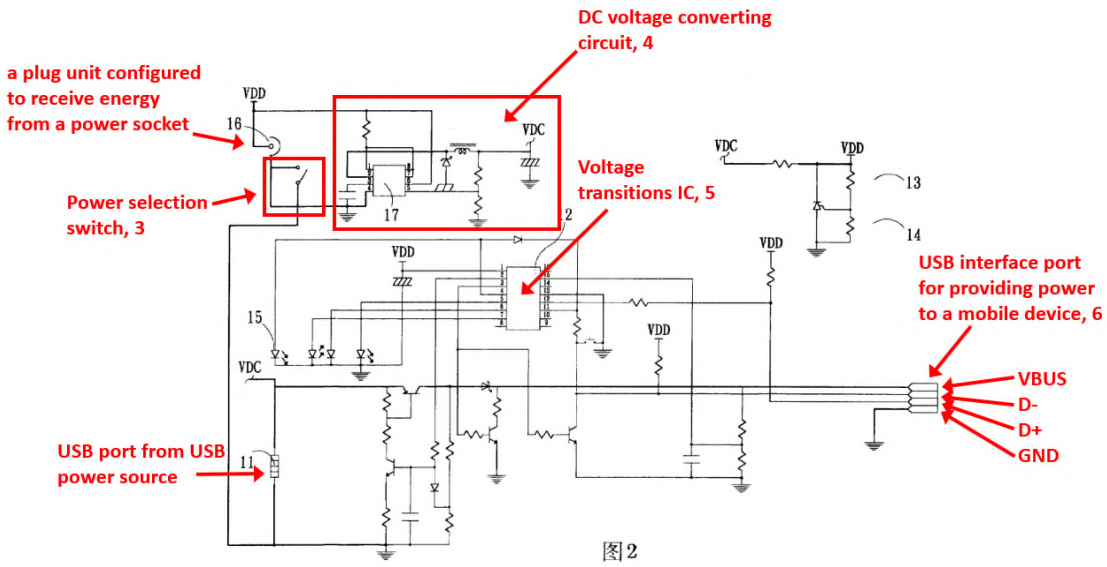
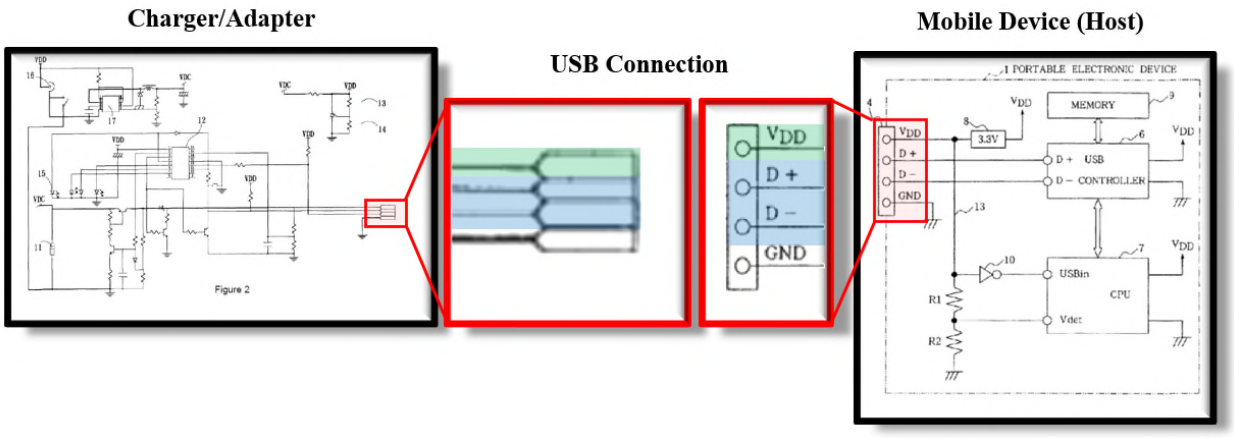


图2

To the extent not expressly disclosed by Yang, Matsumoto discloses that its mobile device battery charging circuit includes a USB connector that would connect to the four disclosed pins of Yang, such that the adapter of Yang would power the mobile device through the USB connector. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector" and is "adapted to receive power supply from … an external power source 3 as connected to the USB connector 4.") (emphasis added). *See id.* 1:33-35 ("The USB connector has a pair of data terminals D+ and D-, power source terminal [V_{DD}] and ground terminal [GND], and can be used for supplying power to peripheral devices by way of the power source terminal."). As shown below, and as further evidence that a POSITA would naturally appreciate that Yang discloses a USB connector, Yang and Matsumoto pair up perfectly. A POSITA would find it obvious to implement Yang's disclosure in this manner.



Baker Decl. ¶ 124.

Baker Decl. ¶ 130; Matsumoto, Figure 1 (annotated) (showing USB Connector (red), VBUS line (green), and USB communication path (Blue). A POSITA would have understood that the voltage line of Matsumoto represents the VBUS line. *Id.*

Accordingly, Yang, or at least Yang in view of Matsumoto, discloses the claimed USB connector.

f. Claim 2 - The USB adapter of claim 1, wherein the plug unit is configured to couple directly with the power socket.

Yang discloses that its adapter includes a plug that is configured to coupled directly with a power socket to power the charger with the converted DC +12V or +5V. Baker Decl., ¶ 131. Yang explains that its adapter uses "the power supply from the AC 110V/220V transformer and automobile cigarette lighter. In this case, the commercial power supply is converted to DC +12V through the transformer (16)." Yang, Specification at 2. Yang notes that its mobile phone charger has "multiple power supply inputs" including "household AC 110V/220V." *Id.* Accordingly, Yang discloses the limitations of claim 2.

g. Claim 3 - The USB adapter of claim 1, 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

Yang teaches that its charger adapter can be coupled directly to a 110V/220V "regular household" power supply. Yang, Specification at 2; Baker Decl., ¶ 132. In addition, Yang discloses that its charger adapter may couple to an "automobile power supply." *Id.* "Accordingly, Yang discloses claim 3.

h. Claim 4: The USB adapter of claim 1, further comprising a plug adapter that is configured to couple the plug unit to the power socket.

Yang discloses the use of multiple types of power supply inputs. Yang at 1. Determining the type of plug adapter to use in order to couple the plug unit to a certain type of wall outlet was well within the skill of a layman, much less within the skill and knowledge of a POSITA. Baker Decl. ¶133. Accordingly, claim 4 is rendered obvious by Yang.

i. Claim 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

See Claims 3 and 4, which together are substantively identical.

j. Claim 6: wherein the identification signal comprises a voltage level that is applied to at least one data line in the USB connector

Yang expressly discloses that the D+ and D- lines are held logic high through a hard-wired connection with two pull-up resistors. [CITE?] One or both of these pull-up resistors are a USB controller as they are operable to provide a voltage level to one or more data lines (D+ or D-) of the USB connector. Baker Decl., ¶ 135. This hard-wired connection is depicted below and highlighted in blue:

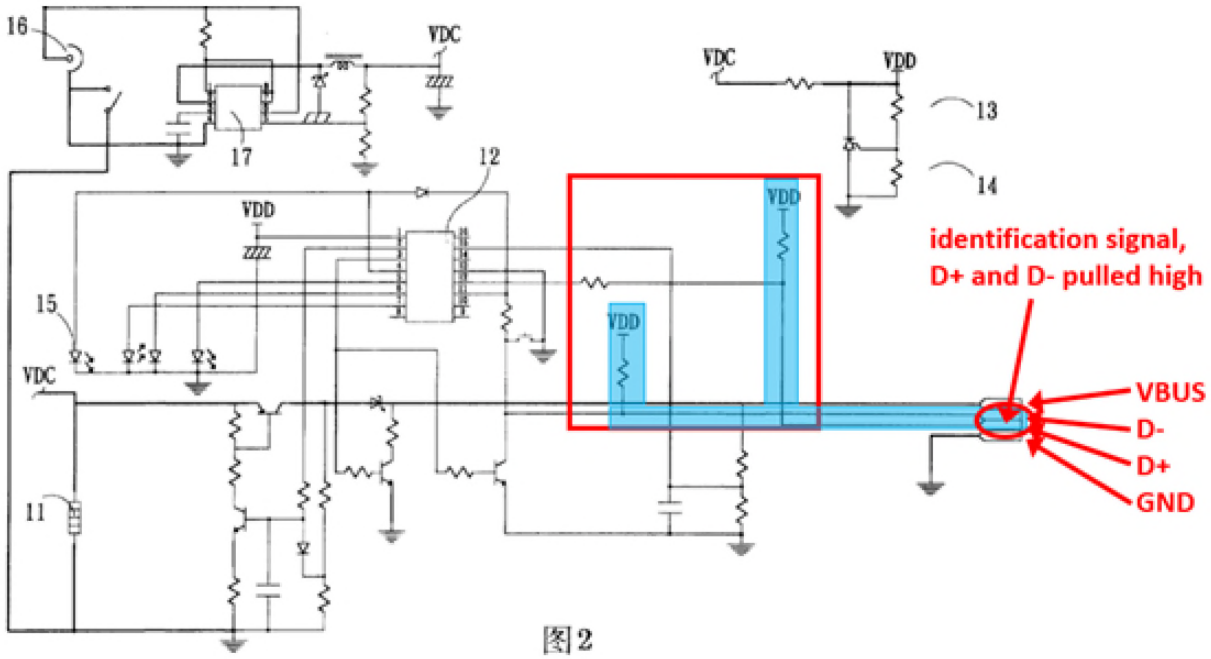


图 2

Yang, Fig. 2 (annotated).

Accordingly, claim 6 is taught by Yang or at least by Yang in combination with Matsumoto.

k. Claim 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

Yang expressly discloses that the D+ and D- lines are held logic high through a hard-wired connection with two pull-up resistors. Baker Decl., ¶ 136. This hard-wired connection is depicted below and highlighted in blue:

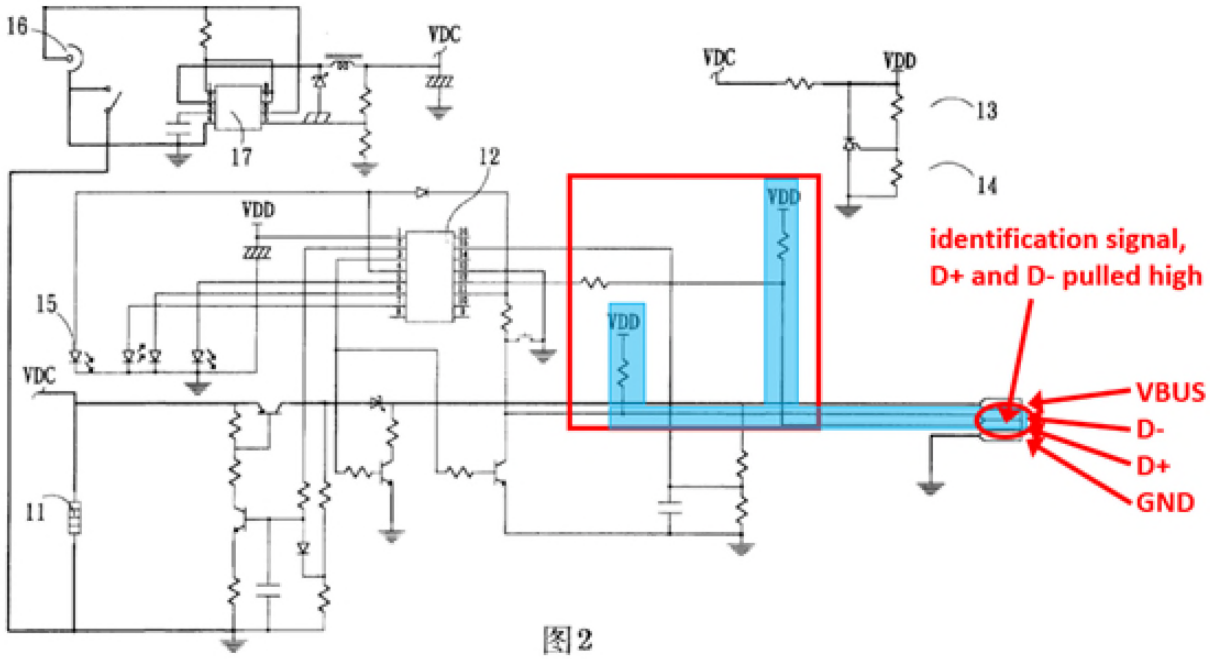


图 2

Yang, Fig. 2 (annotated with the identification subsystem shown in red box).

Accordingly, all elements of claim 7 are taught by Yang or at least by Yang in combination with Matsumoto.

l. Claim 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.

See claim element 1[c] and claims 6 and 7 above.

m. Claim 15 [Preamble]: A method for using a USB adapter to provide power, the USB adapter comprising a USB connector configured to be operable with at least one USB-equipped mobile device, comprising

See claim element 1[preamble].

n. Claim 15[a]: receiving a power input from a power socket

See claim element 1[a].

o. Claim 15[b]: generating a regulated DC power output from the power input

See claim element 1[b].

p. Claim 15[c]: generating an identification signal configured to allow an indication that the USB adapter is configured to send substantial energy through the USB connector before completing device enumeration

See claim element 1[c].

q. Claim 15[d]: providing the identification signal at the USB connector, the identification signal indicating an invalid USB state using two data lines; and providing the power output on a power pin of the USB connector

See claim elements 1[c] and 1[d]. A logic high signal on both data lines falls within the scope of an invalid USB state because it is not a valid USB state as defined in either the USB 1.1 or 2.0 specifications. Baker Decl. ¶146.

r. Claim 16: The method of claim 15, wherein the identification signal comprises a voltage level that is applied to at least one of the two data lines

See claim element 1[c].

s. Claim 17: The method of claim 16, wherein the voltage level is applied by the identification subsystem further comprising a hard-wired connection of a voltage level to the at least one of the two data lines

See claim element 1[c] and claim 6.

t. Claim 18: The method of claim 15, wherein the identification signal comprises a voltage level that is applied to the two data lines

See claim element 1[c] and claim 7.

u. Claim 21[Preamble]: A method for using a USB adapter to provide power, the USB adapter comprising a USB connector configured to be operable with at least one USB-equipped mobile device, comprising

See claim element 1[preamble].

v. Claim 21[a]: receiving a power input from a power socket

See claim element 1[a].

w. Claim 21[b]: generating a regulated DC power output from the power input

See claim element 1[b].

x. Claim 21[c]: generating an identification signal configured to indicate the USB adapter is configured to send substantial energy through the USB connector before completing device enumeration

See claim element 1[c].

y. Claim 21[d]: providing the identification signal at the USB connector such that the signal is configured to propagate through a USB connection using two data lines, the signal comprising each of the two data lines being a high state; and providing the power output on a power pin of the USB connector.

See claim elements 1[c] and 1[d].

D. Kerai in Combination with Yang Renders Obvious Claims 1-8, 15-18, and 21

For the reasons stated below, Kerai in combination with Yang renders obvious claims 1-8, 15-18, and 21. Neither reference, nor the combination of the two references, was relied on during prosecution of the '233 Patent. Thus, this combination, which renders obvious all Challenged Claims, presents a substantial new question of patentability.

1. Motivation to Combine

A person of ordinary skill in the art would have been motivated to combine the teachings of Kerai with the teachings of Yang. Baker Decl., ¶ 153.

Both Kerai and Yang relate to systems and methods for powering portable electronic devices (*i.e.*, mobile devices). Baker Decl., ¶ 153-54. Specifically, each involves a system and method for powering such mobile devices using an adapter that connects directly between a wall outlet and the mobile device. The combination of Kerai and Yang would appear as shown below:

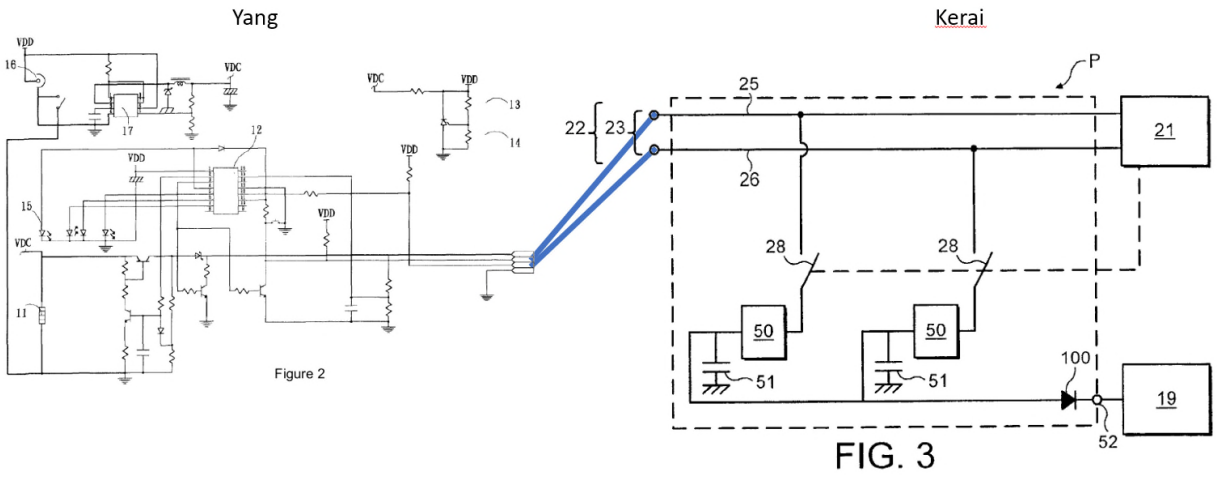


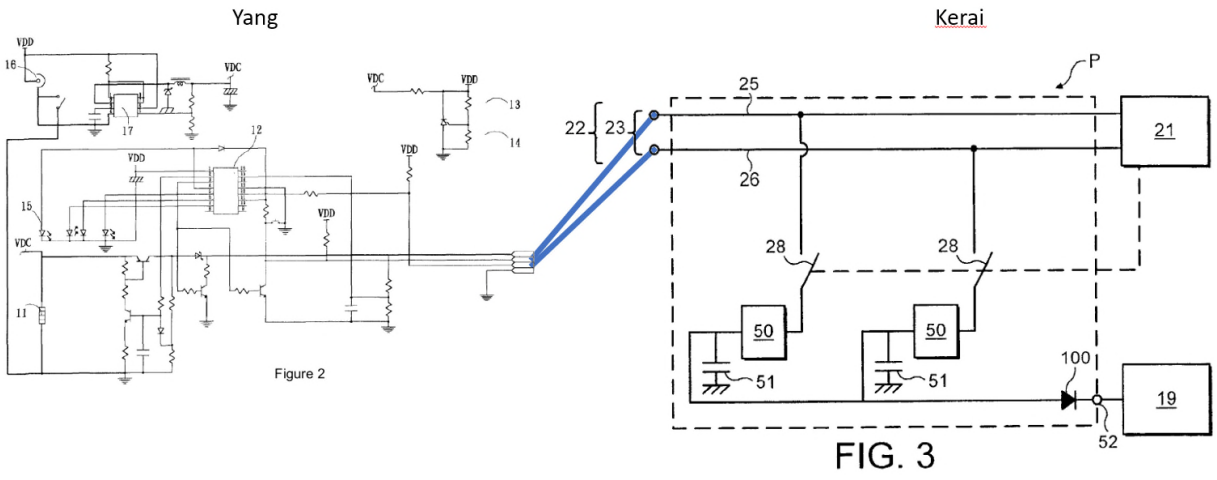
FIG. 3

As depicted, no modifications would be required to either reference, and the charging systems disclosed in both references would be used as designed and intended. Baker ¶154. That is, Yang's system is designed to hold the D+ and D- data lines at a logic high level. *Id.* Kerai's system, as embodied in Figure 3, is designed and intended to recognize a logic high on both the D+ and D- lines and enter a charging only state. *Id.* Accordingly, when the mobile device of Kerai is connected to the dedicated charging circuit of Yang, it becomes a dedicated USB charging only adapter. This is what the Challenged Claims attempt to cover and the combination of Kerai and Yang, which are both directed to the same goal, renders each of the claims obvious.

2. Claims 1-8, 15-18, and 21

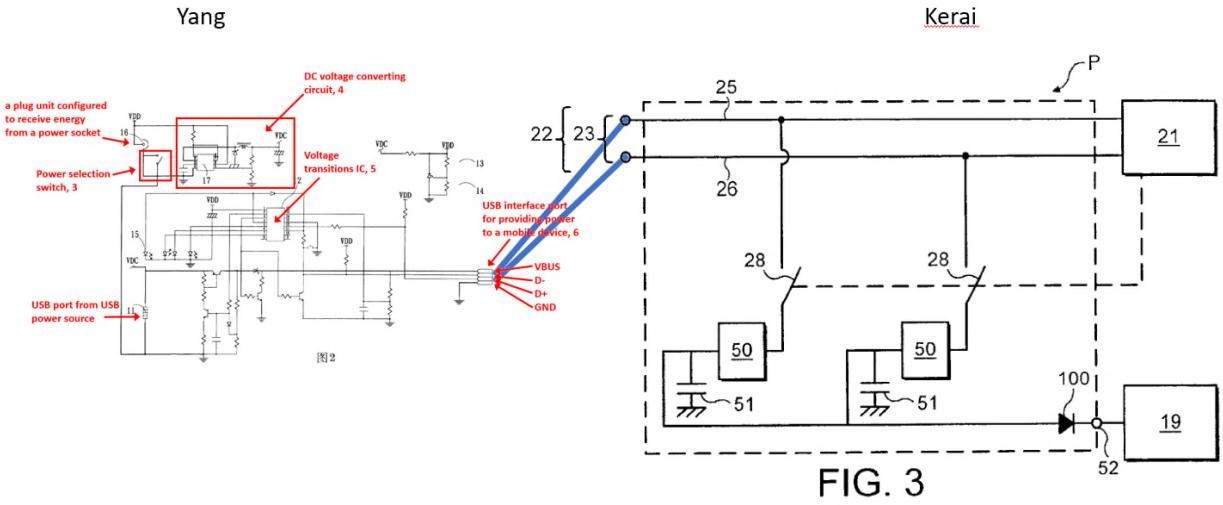
a. Claim 1 Preamble: A Universal Serial Bus ("USB") adapter for providing power through a USB connector, the USB connector configured to be connectable to a USB-equipped mobile device, comprising

As previously described, the preamble is not a limitation of the claims. Regardless, the combination of Kerai and Yang discloses a USB adapter for providing a source of power to a mobile device through a USB port. Baker ¶155-56. *See also supra* Sections IV.A.1, B, C.2(a). As shown below, the charging circuit of Yang provides power to the mobile device of Kerai.



b. Claim 1[a]: a plug unit configured to receive energy from a power socket

The combination of Kerai and Yang discloses a plug unit that couples to a power socket. As shown below in the red box on the left, the charging circuit of Yang includes a plug unit. Yang notes that its mobile phone charger has "multiple power supply inputs" including "household AC 110V/220V." Yang at 2. *See also supra* Sections IV.A.2, B, C.2(b).



c. Claims 1[b]: 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

The combination of Kerai and Yang discloses a power converter that is coupled to the plug unit and regulates the received 110V AC power from the power socket into a DC voltage suitable for charging a mobile device. Baker ¶156-57.

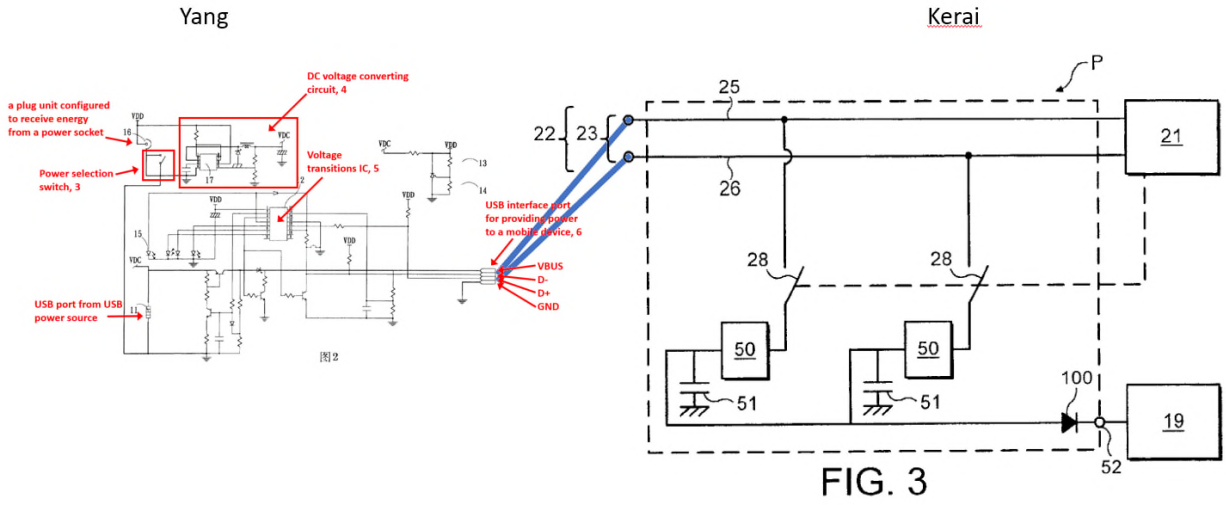
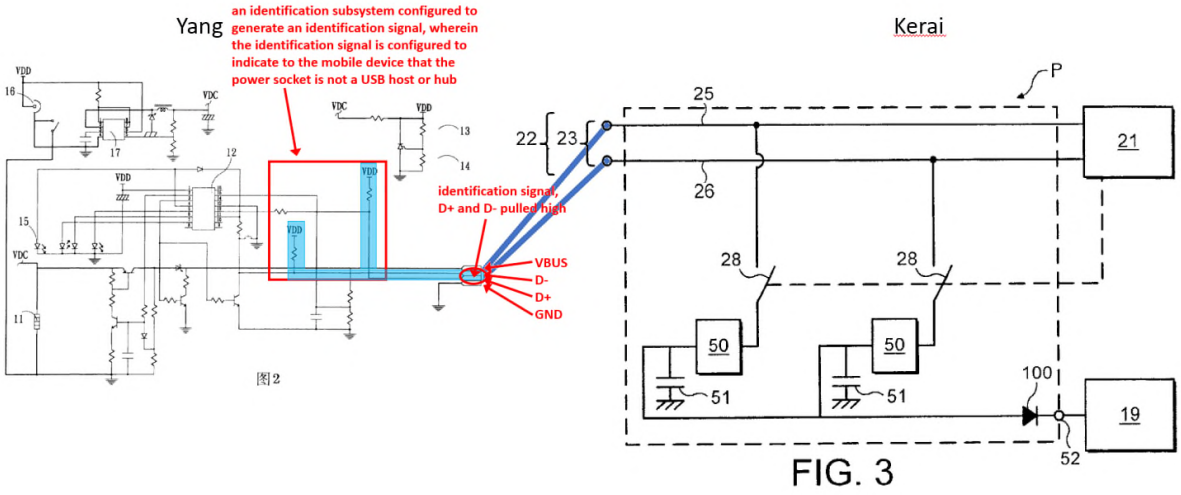


FIG. 3

As shown above, a power converter is included within the larger red box and is able to regulate the received 110V energy and convert it into an output power requirement of a mobile device. Yang explains that "the commercial power supply is converted to DC +12V through the transformer (16), so its voltage becomes the same as the voltage DC +12V of an automobile cigarette lighter, and the same circuit can be used. Then the DC voltage conversion circuit (17) (MC34063) converts DC +12V to DC +5V, which is the same voltage as the USB interface, and the same circuit can be used." *See also supra* Sections IV.A.3, B, C.2(c).

d. Claim 1[c]: an identification subsystem configured to generate an identification signal, the identification signal configured to indicate the USB adapter is configured to send substantial energy through the USB connector before completing device enumeration

The combination of Kerai and Yang discloses an identification subsystem that is coupled to the USB connector and provides an identification signal on the data lines. Baker ¶158-59.

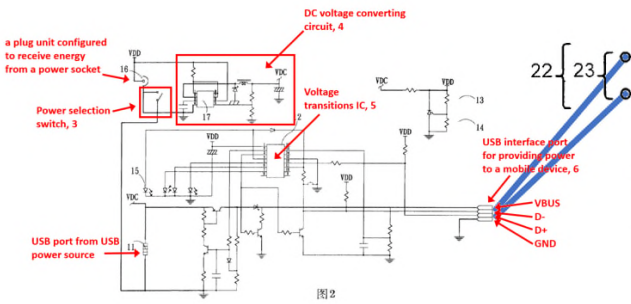


As shown above, Yang uses two pull-up resistors on the D+ and D- data lines and holds them at a logic high level. Yang's two pull-up resistors along with the corresponding connections constitute an identification subsystem at least because they are used to signal to a mobile device that the adapter of Yang is available for charging via a USB connection. Kerai's system is designed to recognize the exact implementation of Yang, and when a logic high is on both the D+ and D- lines, in Figure 3, the D+ and D- lines are used to provide charging power to the mobile device. Kerai, 5:24-59. As shown above, when the charging adapter holds the D+ and D- data lines (25 and 26) at a logic high, there is no data communication across the USB communication path. *Id.* At this point, the switches (28) close and the voltage on the data lines is used to supply power to the mobile device's battery charging circuit before any USB enumeration is performed or completed. *Id.* *See also supra* Sections IV.A.4, B, C.2(d).

e. Claim 1[d]: where the USB connector is coupled to the power converter and the identification subsystem, the USB connector configured to be able to send the power output and the identification signal

The combination of Kerai and Yang discloses a USB connection that is coupled to the power converter and delivers power to the mobile device to provide charging. Baker ¶160.

Yang



Kerai

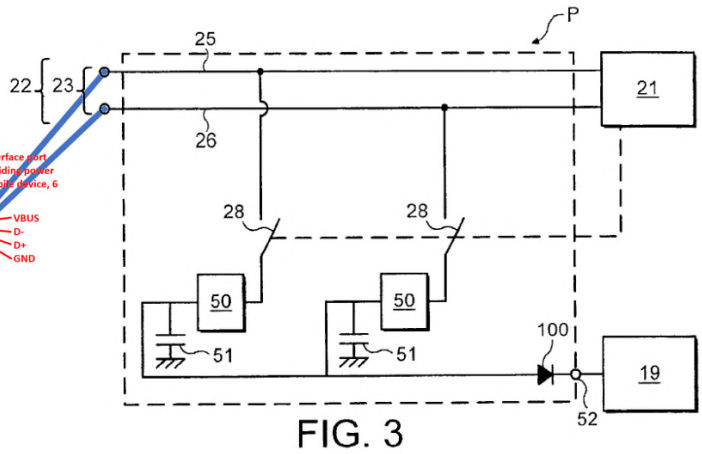


FIG. 3

Yang discloses a USB connector that is coupled to the power converter and supplies power to a mobile device. Yang teaches through its circuit diagram that the output of the mobile phone charger are pins that are for connecting to a battery. These four pins correspond to the four pins in a standard USB connector at the time of the alleged invention of the '233 Patent, which include D+, D-, Ground, and VBUS. Yang further notes that the "power supply is converted into a +5V voltage, which is the same as the USB interface voltage." Yang at 2. Therefore, a POSA would find it disclosed by Yang that the output charge pins of the Yang charger are a USB connector for providing power to a mobile device as annotated in Yang, Fig. 2.

Kerai expressly discloses that its mobile device receives power through a USB connector. Kerai teaches that "[a] battery charging circuit is described in which power is derived from a communications port such as a USB interface (**22**) and is supplied to a rechargeable battery of a communications device." Kerai, Abstract. As depicted above, Kerai discloses a USB interface (22) that connects to a Charger Control Circuit. Kerai 2:45-3:36. This Charger Control Circuit "delivers power to the rechargeable battery" that is received via the USB connector 22. *Id.*

Accordingly, the combination of Kerai and Yang meets this claim limitation.. *See also supra* Sections IV.A.5, B, C.2(e).

f. Claim 2 - The USB adapter of claim 1, wherein the plug unit is configured to couple directly with the power socket.

Yang discloses that its adapter includes a plug that is configured to coupled directly with a power socket to power the charger with the converted DC +12V or +5V. Baker ¶161. Yang explains that its adapter uses "the power supply from the AC 110V/220V transformer and automobile cigarette lighter. In this case, the commercial power supply is converted to DC +12V through the transformer (16)." Yang at 2. Accordingly, the combination of Kerai and Yang renders obvious claim 2. *See also supra* Sections IV.A.6, B, C.2(f).

g. Claim 3 - The USB adapter of claim 1, 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

Yang teaches that its charger adapter can be coupled directly to a 110V/220V "regular household" power supply. Yang at 2; Baker ¶162. In addition, Yang discloses that its charger adapter may couple to an "automobile power supply." *Id.* Accordingly, the combination of Kerai and Yang renders obvious claim 3. *See also supra* Sections IV.A.7, B, C.2(g).

h. Claim 4: The USB adapter of claim 1, further comprising a plug adapter that is configured to couple the plug unit to the power socket.

Kerai discloses that a plug unit may require an adapter to couple to different types of power sockets throughout the world. Kerai 1:10-25. In addition, Yang discloses the use of multiple types of power supply inputs. Yang at 1. Determining the type of plug adapter to use in order to couple the plug unit to a certain type of wall outlet was well within the skill of a layman, much less within the skill and knowledge of a POSITA. Baker ¶163. Accordingly, claim 4 is rendered obvious by Kerai and Yang. *See also supra* Sections IV.A.8, B, C.2(h).

i. Claim 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

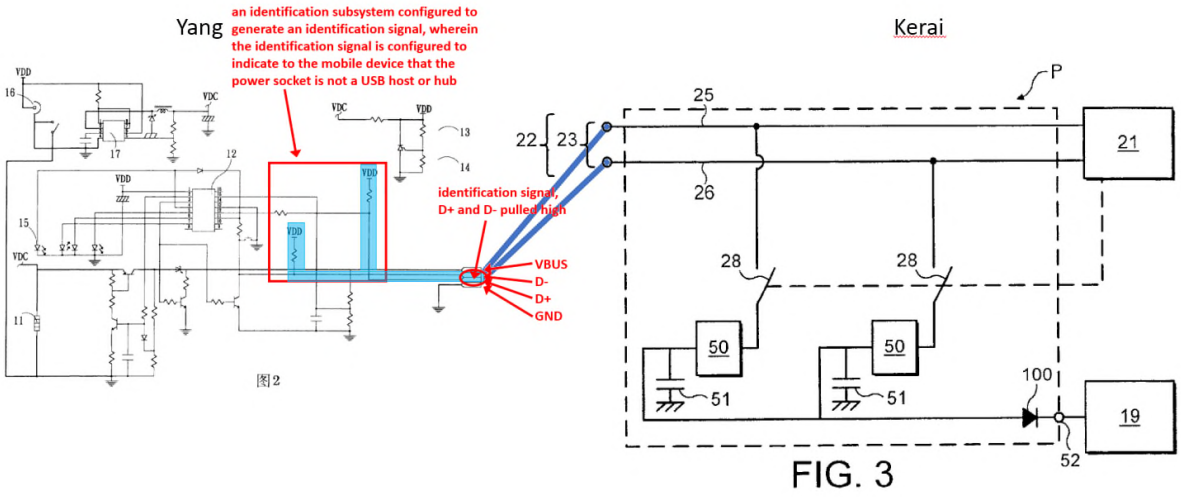
See Claims 3 and 4, which together are substantively identical.

j. Claim 6: wherein the identification signal comprises a voltage level that is applied to at least one data line in the USB connector

See discussion above for claim element 1[c] and also claim 7 below showing the voltage level applied to the data lines.

k. Claim 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

See discussion above for claim element 1[c]. Yang expressly discloses that the D+ and D- lines are held logic high through a hard-wired connection with two pull-up resistors. This hard-wired connection is depicted below and highlighted in blue:



Baker Decl. ¶ 166.

l. Claim 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.

See claim element 1[c] and claims 6 and 7 above, showing the voltage level applied by the USB controller to at least one data line.

m. Claim 15 [Preamble]: A method for using a USB adapter to provide power, the USB adapter comprising a USB connector configured to be operable with at least one USB-equipped mobile device, comprising

See claim element 1[preamble].

n. Claim 15[a]: receiving a power input from a power socket

See claim element 1[a].

o. Claim 15[b]: generating a regulated DC power output from the power input

See claim element 1[b].

p. Claim 15[c]: generating an identification signal configured to allow an indication that the USB adapter is configured to send substantial energy through the USB connector before completing device enumeration

See claim element 1[c].

q. Claim 15[d]: providing the identification signal at the USB connector, the identification signal indicating an invalid USB state using two data lines; and providing the power output on a power pin of the USB connector

See claim elements 1[c] and 1[d]. A logic high signal on both data lines falls within the scope of an invalid USB state because it is not a valid USB state as defined in either the USB 1.1 or 2.0 specifications. Baker Decl. ¶174.

r. Claim 16: The method of claim 15, wherein the identification signal comprises a voltage level that is applied to at least one of the two data lines

See claim element 1[c].

s. Claim 17: The method of claim 16, wherein the voltage level is applied by the identification subsystem further comprising a hard-wired connection of a voltage level to the at least one of the two data lines

See claim element 1[c] and claim 7.

t. Claim 18: The method of claim 15, wherein the identification signal comprises a voltage level that is applied to the two data lines

See claim element 1[c].

u. Claim 21[Preamble]: A method for using a USB adapter to provide power, the USB adapter comprising a USB connector configured to be operable with at least one USB-equipped mobile device, comprising

See claim element 1[preamble].

v. Claim 21[a]: receiving a power input from a power socket

See claim element 1[a].

w. Claim 21[b]: generating a regulated DC power output from the power input

See claim element 1[b].

x. Claim 21[c]: generating an identification signal configured to indicate the USB adapter is configured to send substantial energy through the USB connector before completing device enumeration

See claim element 1[c].

y. Claim 21[d]: providing the identification signal at the USB connector such that the signal is configured to propagate through a USB connection using two data lines, the signal comprising each of the two data lines being a high state; and providing the power output on a power pin of the USB connector.

See claim elements 1[c] and 1[d].

V. CONCLUSION

Requestor is willing to provide any appropriate assistance to permit the Examiner to address and decide the issues presented by this Request. As the M.P.E.P. explains, the Examiner may, when appropriate, cut and paste claim charts or other material within the Request to incorporate them within the body of an Office Action. *See* M.P.E.P. § 2262. Requestor is therefore, through the undersigned counsel, available to provide the Examiner with a digital copy of this Request, or any portion of it, in response to a request by email or phone. Requestor also understands that the Examiner may, in appropriate circumstances, set forth specific rejections in an Office Action and incorporate by reference Requestor's reasons for the proposed rejections, if the Examiner agrees with the proposed rejections and reasons supporting them.

For the reasons set forth above, Requestor believes that substantial new questions of patentability exist with respect to claims 1-8, 15-18, and 21 of the '233 Patent and requests that *ex parte* reexamination be ordered.

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Respectfully submitted,

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