IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Request for *Ex Parte* Reexamination of:	Group Art Unit: Not Yet Assigned
U.S. Patent No. 6,936,936	Examiner: Not Yet Assigned
Inventor: Fischer, et al.	Customer No. 34313
Assignee: BlackBerry Limited, Waterloo Ontario (CA)	Confirmation No.: Not Yet Assigned
Filed: March 1, 2002	
Issued: August 30, 2005	
For: **Multifunctional Charger System and Method**	

REQUEST FOR *EX PARTE* REEXAMINATION OF UNITED STATES PATENT NO. 6,936,936

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. 6,936,936 ("The '936 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.

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 U.S. Patent No. 5,799,196 ("Flannery")

PA-E Universal Serial Bus Specification 2.0

PA-F USB Serial Bus Specification 1.1

PA-G Dell Inspiron 3800 Service Manual

B. RELEVANT PATENT MATERIALS (PAT)

PAT-A U.S. Patent No. 6,936,936 ("'936 Patent")

PAT-B File Wrapper for the '936 Patent

PAT-C U.S. Provisional Patent Application No. 60/273,201 ("'201 Provisional")

PAT-D U.S. Provisional Patent Application No. 60/330,486 ("'486 Provisional")

C. CLAIM CHARTS (CC)

CC-A Claim Chart demonstrating substantial new question of patentability for claims 1-3, 6, 12-18, 25, 26, 28-29, 32, 63, 84-86, 99, and 101 based on Yang in view of Matsumoto.

CC-B Claim Chart demonstrating substantial new question of patentability for claims 1-3, 6, 12-18, 25, 26, 28-29, 32, 63, 84-86, 99, and 101 based on Kerai.

CC-C Claim Chart demonstrating substantial new question of patentability for claims 1-3, 6, 12-18, 25, 26, 28-29, 32, 63, 84-86, 99, and 101 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 ’936 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 ’936 patent.

The ’936 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 2:3-7 (“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 ’936 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 1:54-60.

The ’936 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 2:9-15 (“[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 ’936 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 logic high on both the D+ and D- data lines 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, disclosed such a logic high signal, sometimes called an SE1 signal, on both the D+ and D- lines. All the '936 patent attempts to do is use this SE1 signal for a new purpose – to signal to a mobile device that it is connected to a charging adapter and not a USB hub. But again, Yang, Matsumoto, and Kerai already used the SE1 signal condition as a charge-only condition for a USB connection. Thus, even the '936 patent's purported new use of existing technology was in the prior art.

Accordingly, Requestors request that the examiner institute reexamination of those claims.

II. PROCEDURAL BACKGROUND AND RELATED PROCEEDINGS

A. Related Proceedings

Patent Owner recently asserted the '936 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 '936 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)

- *Fundamental Innovation Systems International LLC v. TCT Mobile (US) Inc. et al,* 1-20-cv-00552 (DDE)

Anker has not previously requested *ex parte* reexamination or *inter partes* review of the '936 Patent. The '936 Patent has been subject to *inter partes* review in several proceedings, but the Patent Trials and Appeal Board ("PTAB") did not consider the prior art or arguments made herein. The examiner also did not consider these references or argument 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 '936 Patent.

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

Requestors authorize 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 **$12,000**. 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 '936 Patent Application was filed on March 1, 2002. It claims priority 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 '936 Patent.

As set forth below, substantial new questions of patentability exist as to Claims 1-3, 6, 7, 9, 12-18, 25, 26, 28-29, 32, 33, 63, 65, 84-86, 99, and 101 of the '936 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 Yang application was filed on December 2, 1999 and published on December 13, 2000. The Yang patent issued on September 16, 2000. Yang constitutes prior art to the '936 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 patent titled "Portable Electronic Device Comprising Common Serial Bus Connector." The Matsumoto application was filed on December 21, 2000 and published on June 28, 2001. The Matsumoto patent issued on June 7, 2005. Matsumoto constitutes prior art to the '936 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 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 constitutes prior art to the '936 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 '936 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 Prior Art to Requested Claims (37 C.F.R. § 1.510(b)(2))

Requestors Request reexamination of Claims 1-3, 6, 7, 9, 12-18, 25, 26, 28-29, 32, 33, 63, 65, 84-86, 99, and 101 of the '936 Patent on the following grounds:

1. Yang, when considered in view of Matsumoto and the knowledge of those skilled in the art, renders obvious Claims 1-3, 6, 7, 9, 12-18, 25, 26, 28-29, 32, 33, 63, 65, 84-86, 99, and 101 under 35 U.S.C. § 103. A claim chart demonstrating the pertinency and manner of

applying Yang in view of Matsumoto to Claims 1-3, 6, 12-18, 25, 26, 28-29, 32, 63, 84-86, 99, and 101 is attached hereto as **Exhibit CC-A**.

2. Kerai anticipates claims 1-3, 6, 12-18, 25, 26, 28-29, 32, 63, 84-86, 99, and 101 under 35 U.S.C. § 102. A claim chart demonstrating the disclosure of Kerai is attached hereto as **Exhibit CC-B**.

3. Kerai renders Claims 1-3, 6, 7, 9, 12-18, 25, 26, 28-29, 32, 33, 63, 65, 84-86, 99, and 101 obvious under 35 U.S.C. § 103.

4. Kerai, when considered in view of Yang and the knowledge of those skilled in the art, renders Claims 11-3, 6, 7, 9, 12-18, 25, 26, 28-29, 32, 33, 63, 65, 84-86, 99, and 101 obvious under 35 U.S.C. § 103. A claim chart demonstrating the pertinency and manner of applying Kerai in view of Yang to Claims 1-3, 6, 12-18, 25, 26, 28-29, 32, 63, 84-86, 99, and 101 is attached hereto as **Exhibit CC-C**.

5. Yang, when considered in combination with Matsumoto and Flannery renders obvious claims 7, 9, 33, and 65 under 35 U.S.C. § 103.

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

Requestors have attached 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. 6,936,936 (37 C.F.R. § 1.510(b)(4))

Requestors have attached a copy of the ’936 Patent as **Exhibit PAT-A** and a copy of the file history of the ’936 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 '936 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 Requestors 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 Requestors under 37 C.F.R. § 1.34.

III. OVERVIEW OF THE '936 PATENT AND RELEVANT PRIOR ART

A. USB Specification

The Universal Serial Bus (USB) Specification is 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 '936 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 '936 Patent under at least 35 U.S.C. §§ 102(a) and (b). Moreover, because the '936 Patent incorporates the conditions and limitations of the USB Specification, a person of ordinary skill in the art to which the '936 Patent claims are directed would have been knowledgeable about the USB Specifications. Baker Decl., ¶ 47-48.

1. Configuration of a USB Network

Figure 4-1, 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.

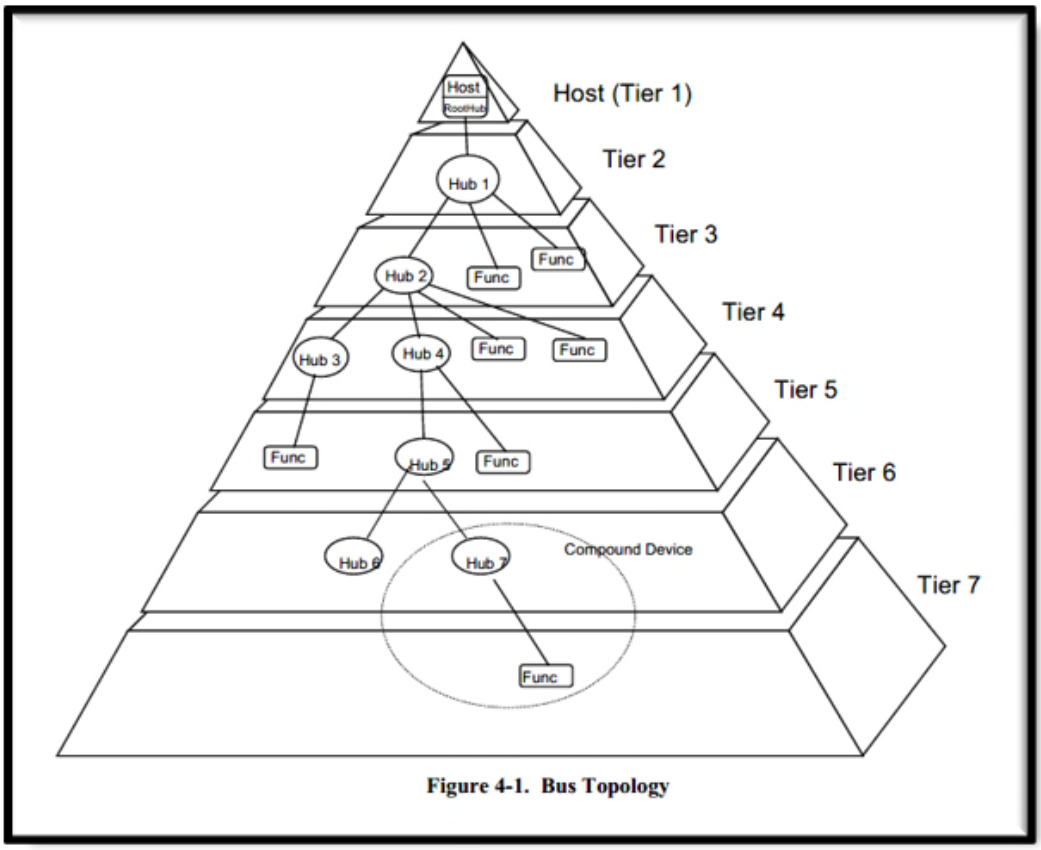


Figure 4-1. Bus Topology

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 a USB device and a USB connector on a host or hub.

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

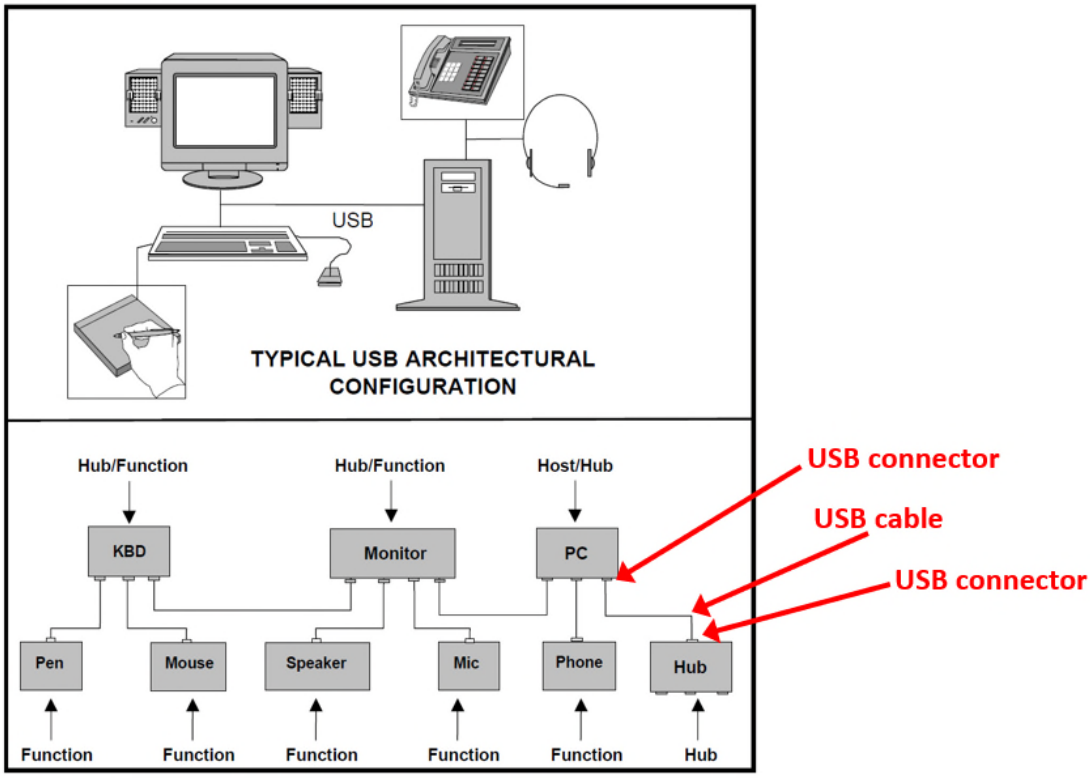


Figure 4-4. Hubs in a Desktop Computer Environment

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.

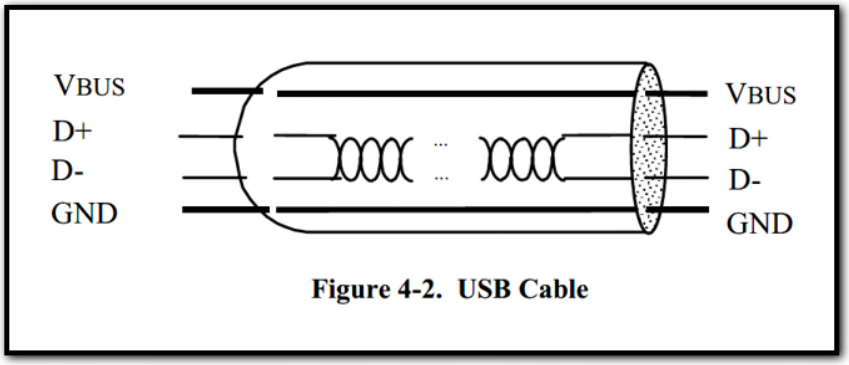


Figure 4-2. USB Cable

USB 2.0 at 17.

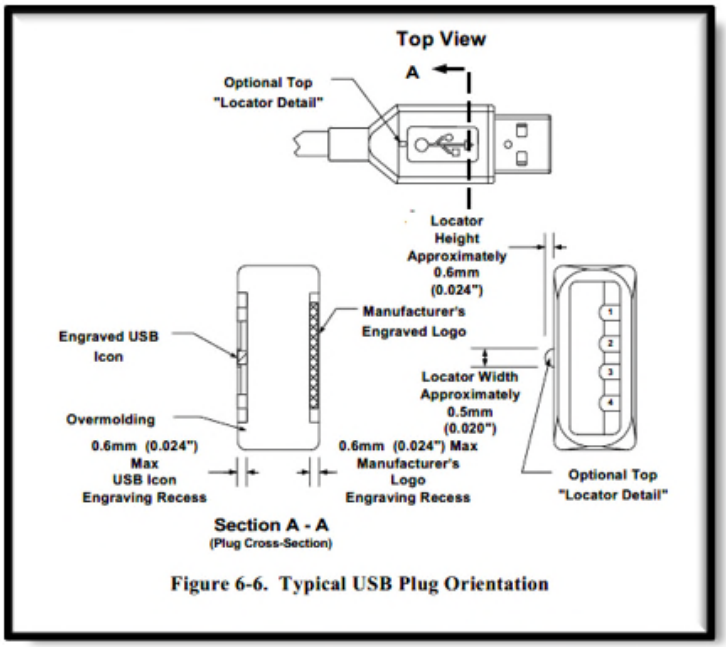


Figure 6-6. Typical USB Plug Orientation

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

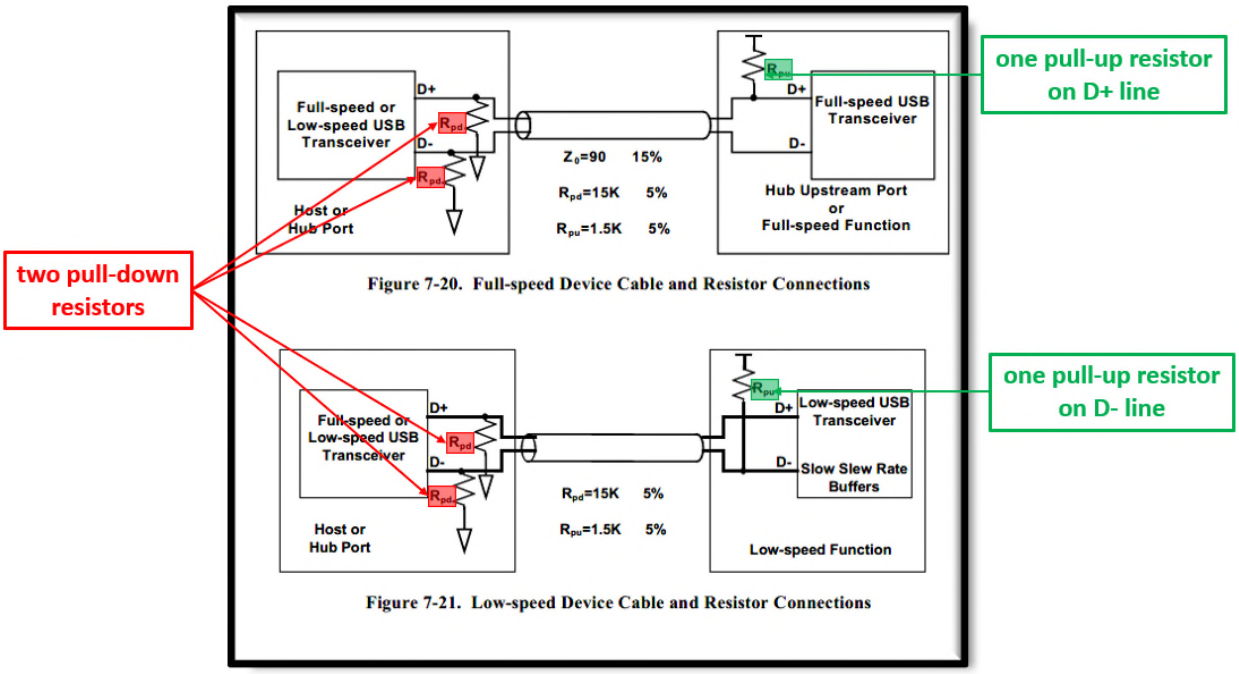
USB 2.0 at 178 (annotated).

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). 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 is connected:

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

Low	High	Low-speed

Baker Decl., ¶ 57.

B. The '936 Patent

1. Disclosure and Claims of the '936 Patent

The '936 Patent has 104 claims and contains many different formulations for an "[a]n adapter for providing a source of power to a mobile device through an industry standard port." '936 Patent, 2:15-16. 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.*, Abstract, 1:23-25. At its heart, the '936 Patent relates to 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.*, 1:48-63, 8:1-6, 8:60-9:4. 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.*, 8:60-9:4, 9:15-32. The '936 Patent discloses several variations of the identification signal, such as "a logic high signal" on both USB data lines (known as a SE1 condition, *see* Section VI.A). *Id.*, 8:21-23; 9:21-25. 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.*, 7:3-56. The '936 Patent alleges that an adapter configured in such a manner, namely, with an identification signal such as SE1, is allegedly new and non-obvious over prior art. *See, e.g., id.*, 2:31-3:19, Section IV.B (file history summary).

Figure 2, reproduced below, is a schematic diagram of the disclosed USB adapted (100) coupled to an exemplary mobile device (10). *Id.*, 3:23-24.

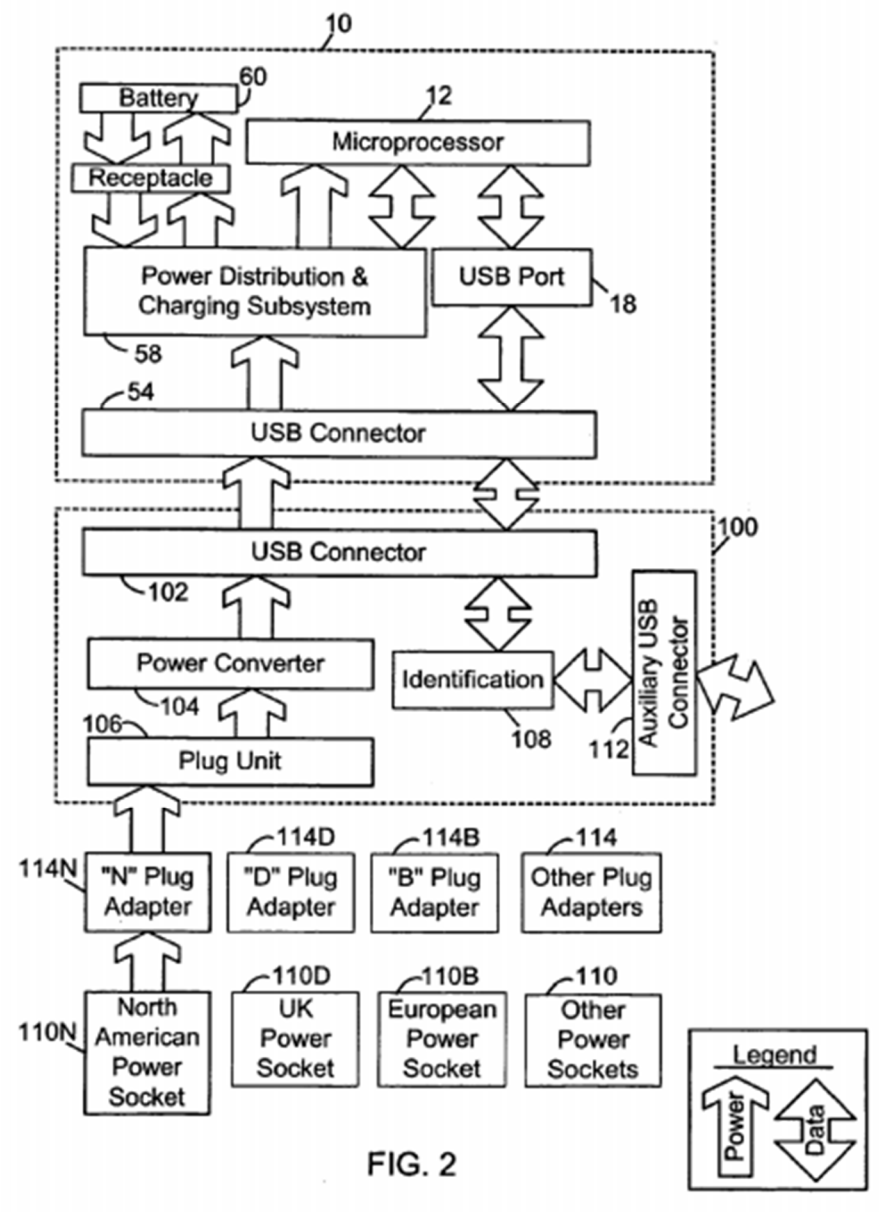


FIG. 2

The claims of the ’936 patent are numerous, but the eleven independent claims being challenged in this petition can be grouped into three basic categories. Independent claims 1, 13, 25, and 84 are apparatus claims directed to an “adapter.” Independent claims 63, 99, and 101 are system claims directed to a “powering system” that includes a mobile device and an adapter that includes the same limitations as the other apparatus claims. Independent claims 51 and 55 are method claims that essentially mirror the apparatus claims.

The only differentiating feature in the claims contained in the last limitation of each claim that specifies the type of identification signal.

- "the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line."
- "the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector."
- "the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector."

Requestor addresses the three categories of claims together in each section below while separately addressing the identification signal element of each.

2. Prosecution History of the '936 Patent

The '936 Patent issued from U.S. Pat. App. No. 10/087,629. Ex. 1002 ("'936 File History"), 137. The below table correlates the independent issued claims that are being challenged in this Petition with the originally filed claims:

1. Issued '939 Independent Claim	2. Prosecution Claim
3. 1	4. 1
5. 13	6. 8
7. 25	8. 9
9. 63	10. 23
11. 84	12. 37
13. 99	14. 93
15. 101	16. 95

Id., 79.

On September 7, 2004, the Examiner rejected claims 1, 2, 4, 6, and 16-24 as anticipated by U.S. Patent No. 6,668,296 ("Dougherty") and claims 3, 5, 13-15, 25-27, and 34-36 as obvious over Dougherty. Id., 116-17. The Examiner objected to claims 7-12 and 28-33 for being based on an independent claim but noted they would be allowable if written in independent form. Id.

The Applicant used limitations in the allowable claims to ultimately obtain allowance of the issued claims. Allowable prosecution claim 7 recites "wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- line." *Id.,* 27. This is known as a SE1 signal condition on the data lines. See Section VI.A. And allowable prosecution claim 8 recites "wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector." '936 File History, 27. Dougherty does not disclose the use of the USB date lines to provide an identification signal—unlike the prior art in this Petition.

On December 6, 2004, the Applicant entered an amendment. *Id*., 83-108. A summary of the relevant amendments to this Petition are as follows:

Issued '939 Independent Claim	Prosecution Claim	Amendment
1	1	Added last limitation (identification signal comprises logic high on D+/D- lines, i.e., SE1 condition)
13	8	Rewritten to independent form, includes limitation of hard-wiring voltage level to data lines (D+/D- lines)
25	9	Amended to include that identification signal comprises logic high on D+/D- lines, i.e., SE1 condition
63	23	Amended to include that identification signal comprises logic high on D+/D- lines, i.e., SE1 condition
84	37	New claim, includes that identification signal comprises logic high on D+/D- lines, i.e., SE1 condition
99	93	New claim, includes that includes limitation of hard-wiring voltage level to data lines (D+/D- lines)
101	95	New claim, includes that USB is operable to provide voltage level to one or more data lines

Id.

As can be seen from above, issuance of the allowed claims was based on limitations requiring that the identification signal comprise applying voltage values to the USB data lines (D+/D-), e.g., the SE1 signal condition in which both lines are logic high values. As this Petition explains, however, the D+ and D- lines in a USB connector always utilize some voltage to relay a signal, and simply using the SE1 signal condition as an identifying signal was known and obvious. On January 10, 2005, the Examiner allowed the claims without comment. *Id*., 74.

3. Priority of the '936 Patent.

The '936 patent claims priority to two provisional applications: (1) U.S. Provisional Application 60/273,021 (the "'021 Application") (Ex. 1008), filed March 1, 2001; and (2) U.S. Provisional Application No. 60/330,486 (the "'486 Application") (Ex. 1009), filed October 23, 2001. Patent Owner has taken the position in litigation that the claims are entitled to a priority date of no earlier than October 23, 2001.

a. *The '021 Application*

The '021 Application was filed on March 1, 2001. Ex. PAT-C. The application does not disclose, describe, or purport to invent any novel adapter or charger. Baker Decl., ¶ 70-72. To the contrary, the specification discloses "a charging circuit" that is part of a mobile device and that can use current received from the mobile device's USB connection to charge the device's battery. *Id.* at 18 (". . . this invention relates to adapting power from the USB for use as a power source by the charging system of the mobile device . . . ."") (emphasis added); *id.* at 20 ("It is an object of the invention . . . to use the power traditionally available on the USB as an alternate power source for recharging the portable power supply of the mobile device.") (emphasis added); *id.* at 20 (describing embodiments of "charging circuit" in mobile device). The specification

states that the mobile device is connected to typical prior art USB ports and does not disclose any novel adapter for this purpose. *Id.* at 22 ("Typical means of providing a high-power USB port are ensuring that the invention is the only USB device to attach to the USB port of a desktop computer, a laptop computer, or a self-powered hub.")

The '021 Application also noticeably omits any discussion of using an "identification signal" on the USB communication path that comprises a "logic high signal on each of said D+ and D- lines." *Id.* at 20-30 (discussing various embodiments); Baker Decl., ¶ 71.

Although the '021 Specification does not purport to invent a USB device that supplies current "without regard" to the USB Specifications, it does make clear that such devices existed at the time. Specifically, the application discloses that the patentee tested existing USB hubs to see how much current they would supply. *Id*. at 22-33 ("It was determined experimentally that current can be drawn from several USB ports at a high rate"). The patentee noted that the tested "high powered" hubs were configured to provide up to 700mA-800mA of current before automatically shutting off the power. *Id.* at 22 ("Furthermore, it seems that certain high-power USB ports, such as a self-powered hub, appear to implement only an over-current protection, i.e., they turn off the voltage on the VBUS line for current valued exceeding 700mA-800mA.").

b. *The '486 Application*

The '486 Application was filed on October 23, 2001. Ex. PAT-D ('486 Application). The application, for the first time, discussed "a USB power adapter that can provide power to charge a USB chargeable device via the device USB interface." *Id.* at 14. The application also discusses, again for the first time, the use of an identification signal including a signal in which D+ and D- are held high. *Id.* at 24-25.

c. *Priority Date*

Because the '021 Application does not describe various elements of the Challenged Claims, those claims are not entitled to the March 1, 2001 priority date of the '021 Application. Therefore, all references utilized in this request are prior art to the Challenged Claims.

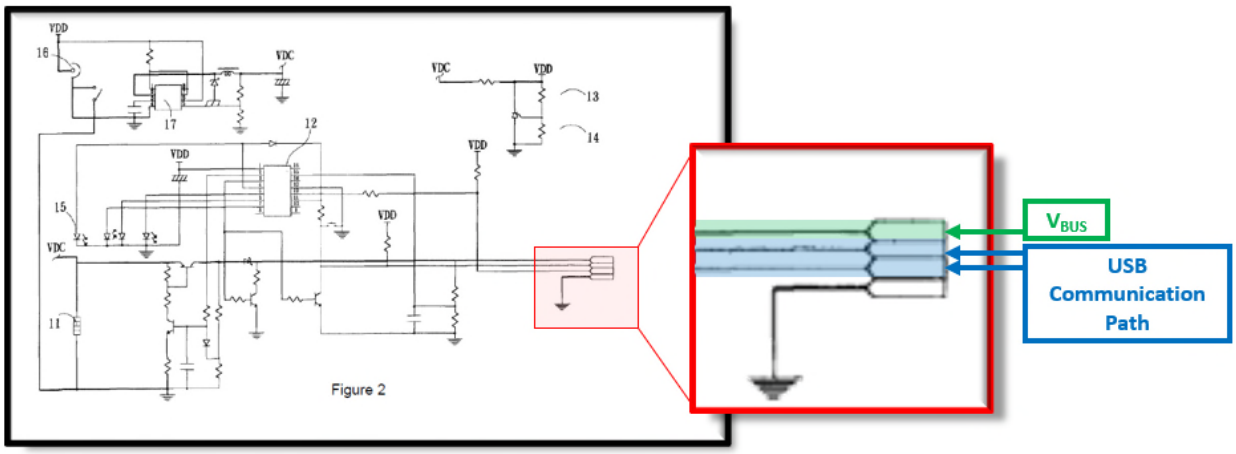
C. Summary of Relevant Prior Art

1. Yang

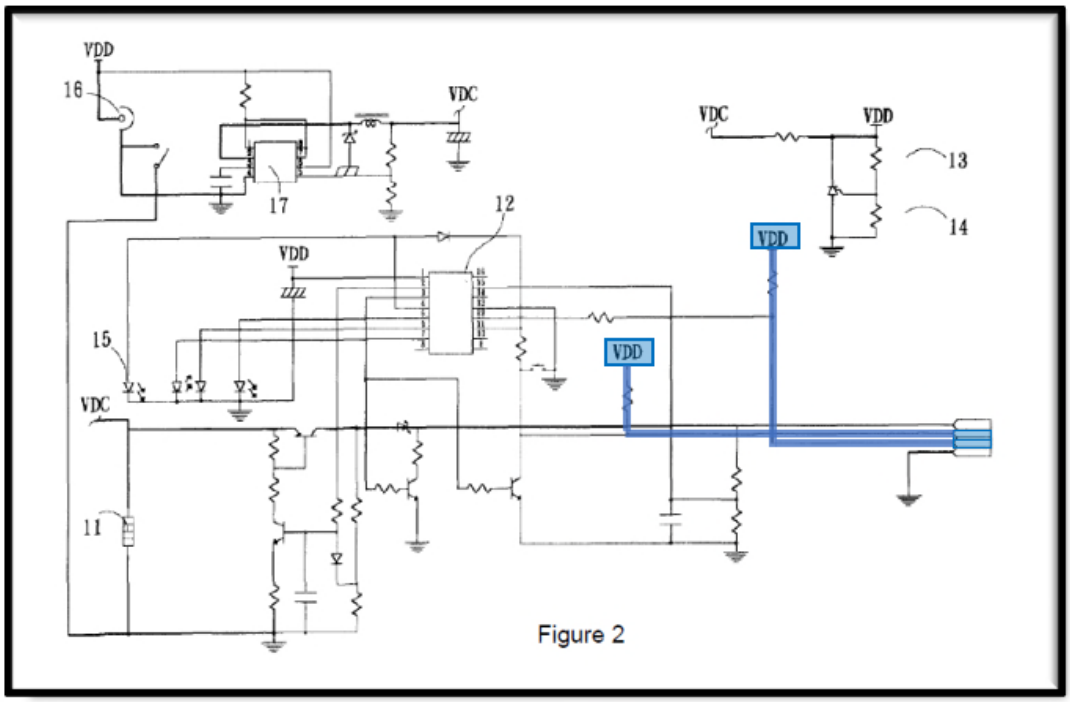
Yang is directed to a "Mobile Phone Charger with Multiple Power Supply Inputs." PA-B (Yang) at [54]. Yang teaches an adapter that can draw power from multiple power sources (including a wall-socket, an automobile power supply, or a USB connection) and convert the power to be used a mobile device. *Id.*, Abstract ("The utility model can achieve the purpose of adapting multiple power supply inputs."); *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."); Baker Decl., ¶ 75.

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:



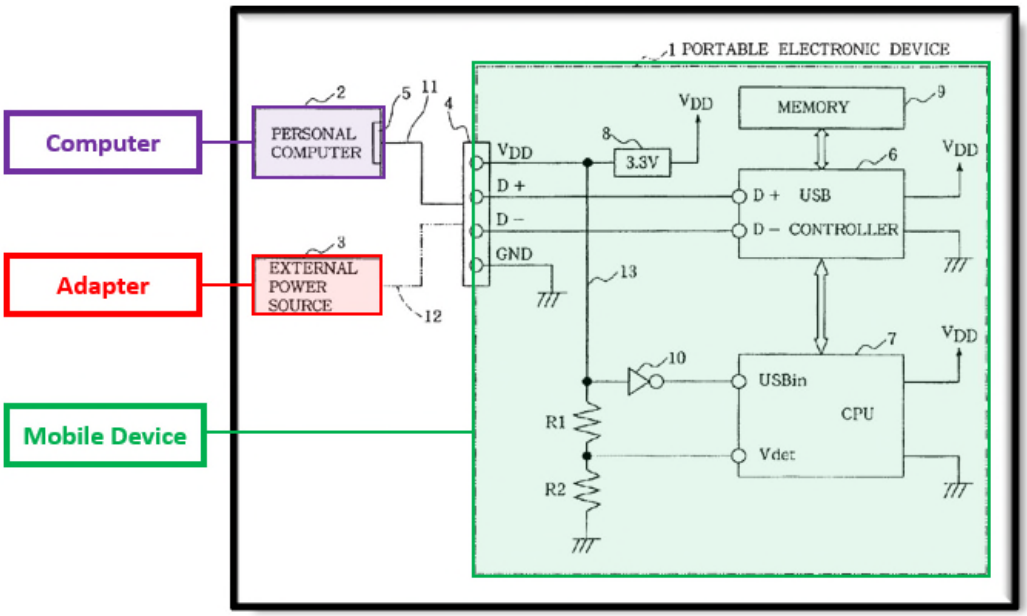
Yang, Figure 2 (annotated); Baker Decl., ¶ 78.

The examiner does not appear to have considered Yang during prosecution of the '936 Patent.

2. **Matsumoto**

Like the '936 Patent, Matsumoto discloses a USB device that can be charged using a USB adapter. Baker Decl., ¶ 79. Also like the '936 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., ¶ 79.

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."); *id.*, 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."); *id.* at 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., ¶ 81-82.

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 using "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 . . . ."); *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 . . . . 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., ¶ 83.

The examiner does not appear to have considered Matsumoto during prosecution of the '936 Patent.

3. **Kerai**

U.S. Patent 6,531,845 was filed as Application No. 09/864,273 on May 25, 2001, claimed a priority date of May 26, 2000, 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." Kerai, 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." Kerai, 5:45-48 (emphasis added); Baker, ¶ 85.

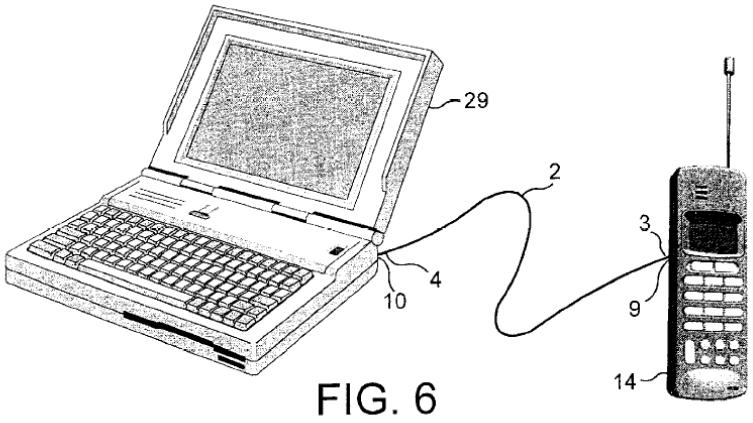


FIG. 6

4. **Flannery**

U.S. Patent No. 5,799,196 ("Flannery") was filed on July 2, 1996 and issued on August 25, 1998. It is prior art to the '936 patent under at least pre-AIA §102(b). Flannery is directed to powering multiple downstream devices via a USB remote hub that may include two or more USB connectors or ports. Flannery, Fig. 1A, 6:12-47.

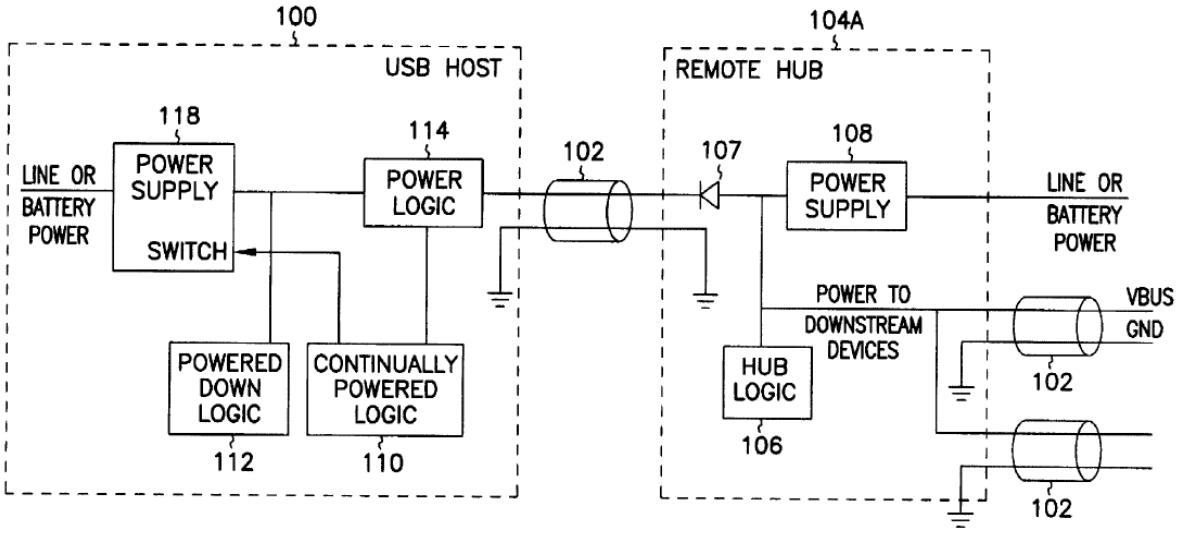


FIG. 1A

Flannery also discloses "Each hub has multiple attachment points, known as "ports," to which its functions and other hubs are connected by means of USB-specific cables. Hubs are interconnected to form a USB network containing up to 127 functions." Flannery, 4:13-17. Each of elements 102 are USB connectors that share a common ground and VBUS power line. 6:12-47 (noting that D+ and D- lines are "not shown" in Fig. 1A).

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 '936 Patent will expire no later than June 8, 2023. Accordingly, the Broadest Reasonable Interpretation applies.

E. Prior Requests for Review

The grounds and reasoning asserted in this request for *ex parte* reexamination are unique. 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. Yang in Combination with Matsumoto Renders Obvious Claims 1-3, 6, 7, 9, 12-18, 25, 26, 28-29, 32, 33, 63, 65, 84-86, 99, and 101

For the reasons stated below, Yang in combination with Matsumoto renders obvious Claims 1-3, 6, 12-18, 25, 26, 28-29, 32, 63, 84-86, 99, and 101. Neither reference, nor the combination of the two references, was presented during prosecution of the '936 patent. Thus, this combination, which renders obvious all Challenged Claims, presents a substantial new question of patentability.

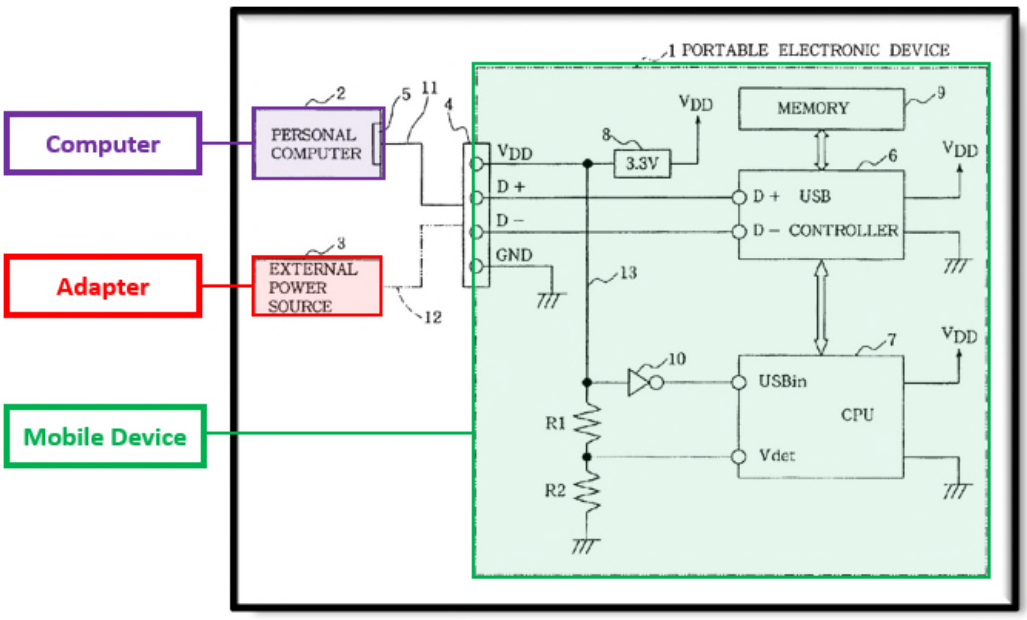
1. Motivation to Combine

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.,), ¶ 86.

Both Matsumoto and Yang relate to systems and methods for powering portable electronic devices (i.e., mobile devices). Baker Decl., ¶ 87. 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., ¶ 87.

As noted in Section III.C.1, *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."):

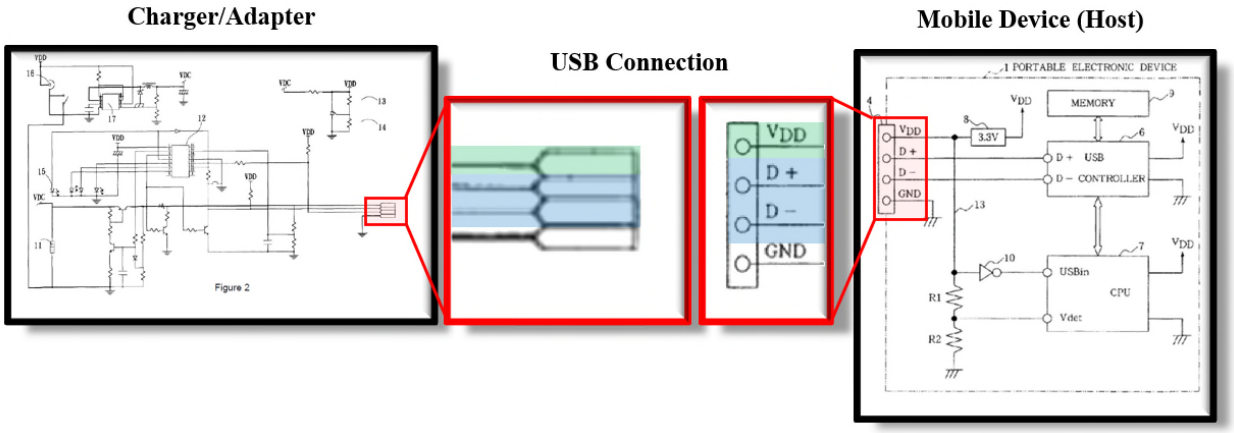


Matsumoto, Figure 1 (annotated) (showing mobile device (green), which can be connected through USB connector (4) to either a personal computer (purple) or an adapter (red)). Matsumoto further teaches that, when connected to the adapter, the mobile device need not undergo enumeration and, accordingly, it is beneficial to include distinguishing means for determining when the mobile device is connected to an adapter (as opposed to a computer).

Accordingly, Matsumoto teaches combining the mobile device with a wall adapter, but does not disclose or limit the precise configuration of the adapter. Baker Decl., ¶ 86-92. 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 search for references disclosing such adapters and would find 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 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), a person of ordinary skill in the art would immediately understand that the teachings of Yang regarding the adapter could be used in combination with the teaching of Matsumoto regarding a mobile device. Baker Decl., ¶ 91.

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



Yang Figure 2 and Matsumoto Figure 1 (annotated); Baker Decl., ¶ 92.

2. Independent Claims 1, 13, 25, 65, and 84

Yang in view of Matsumoto renders Claim 1 obvious under 35 U.S.C. § 103. Below, Requestor provides a concise statement of the substantial new question of patentability for the claims based on Yang in view of Matsumoto under 35 U.S.C. §103.

a. ***Claims 1, 13, 25, 65, 84 Preamble: A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising***

Patent Owner has taken the position in district court litigation that the preamble is not a limitation on 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."); *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."). A person of ordinary skill in the art would have understood that the charger of Yang is an "adapter." Baker Decl., ¶ 95.

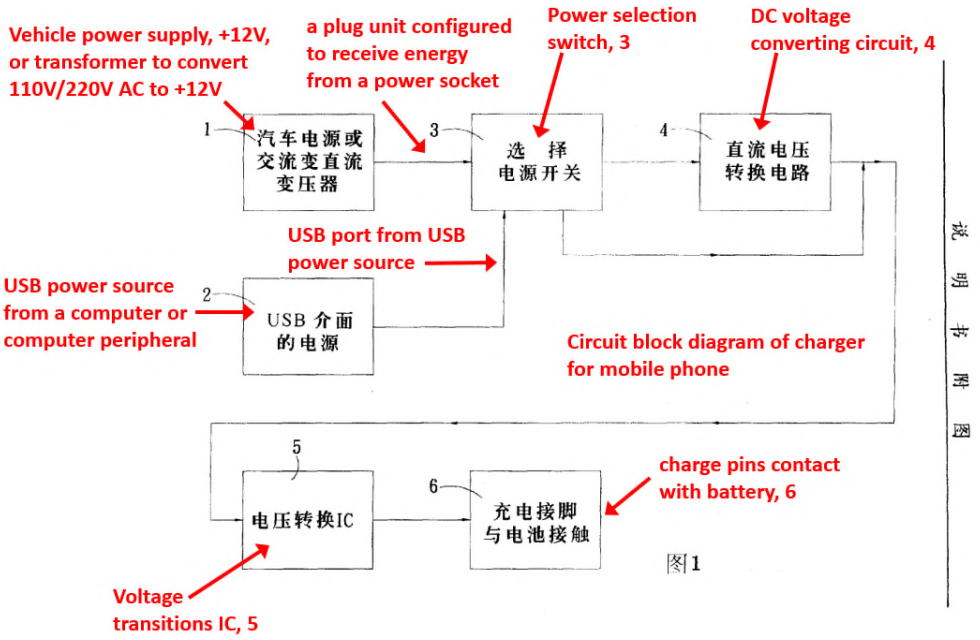
Matsumoto also discloses an adapter. Specifically, Matsumoto discloses a portable electronic device with a USB connection that can be connected to (1) a computer or (2) an "a.c. adaptor" for charging a device from an "external power source" like a wall-socket. Matsumoto, Abstract ("A portable electronic 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); *id.*, 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."); *id.*, 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."); *id.* 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.") Matsumoto, 3:46-47.

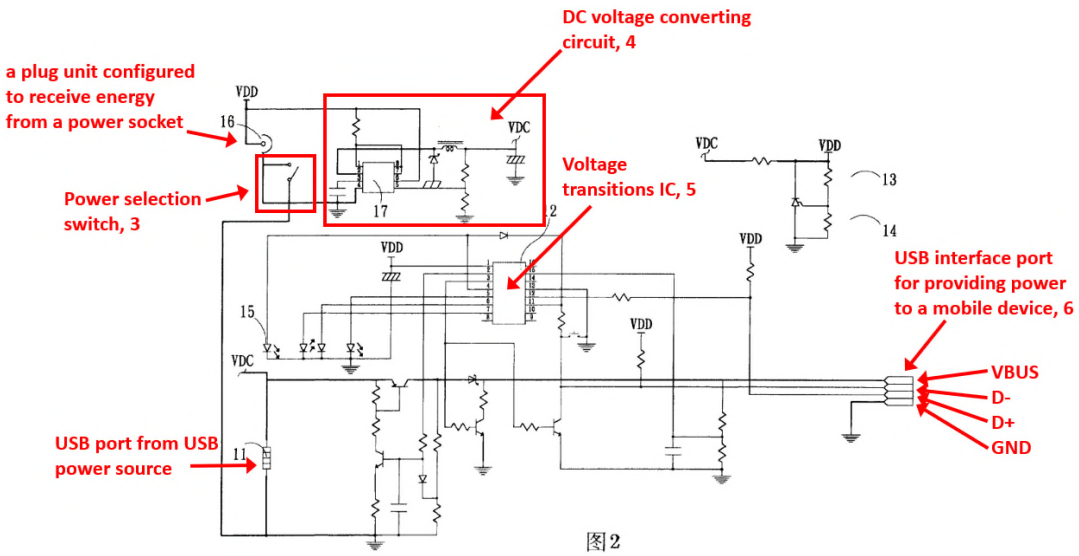
A person of ordinary skill in the art would thus have understood that the charger of Yang implemented pursuant to the teachings of Matsumoto would constitute an "adapter." Baker Decl., ¶ 96.

b. ***Claims 1, 13, 25, 65, 84: a plug unit for coupling to a power socket and for receiving energy from the power socket***

The combination of Yang and Matsumoto discloses the claimed plug unit. Baker Decl., ¶ 100. Yang discloses in Figure 1 (below, annotated) that its adapter is designed to be coupled to a power socket for receiving energy.



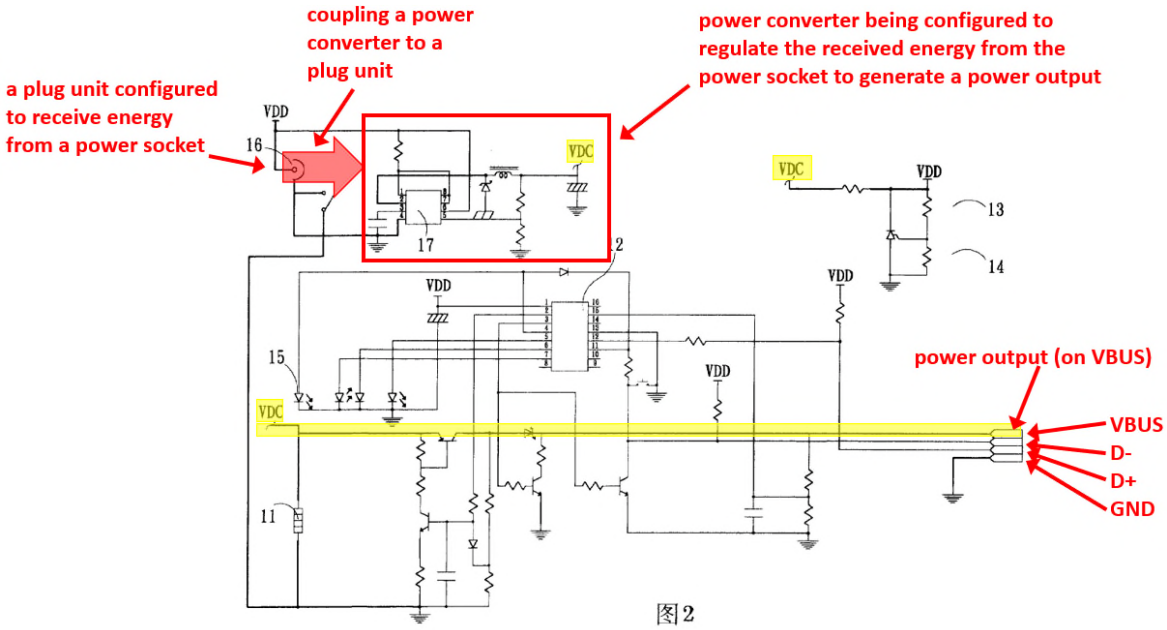
Yang notes that its mobile phone charger has "multiple power supply inputs" including "household AC 110V/220V." Yang at 2. Yang discloses its charging circuit in more detail in Figure 2 below.



Accordingly, Yang discloses the claimed plug unit.

c. ***Claims 1, 13, 25, 65, 84: a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device***

The combination of Yang and Matsumoto discloses the claimed power converter. Baker Decl., ¶ 101. Yang discloses in Figure 1 (below, annotated) that its adapter includes a power converter to take the 110V/220V household electricity and convert it into 12V DC power. Yang at 2.



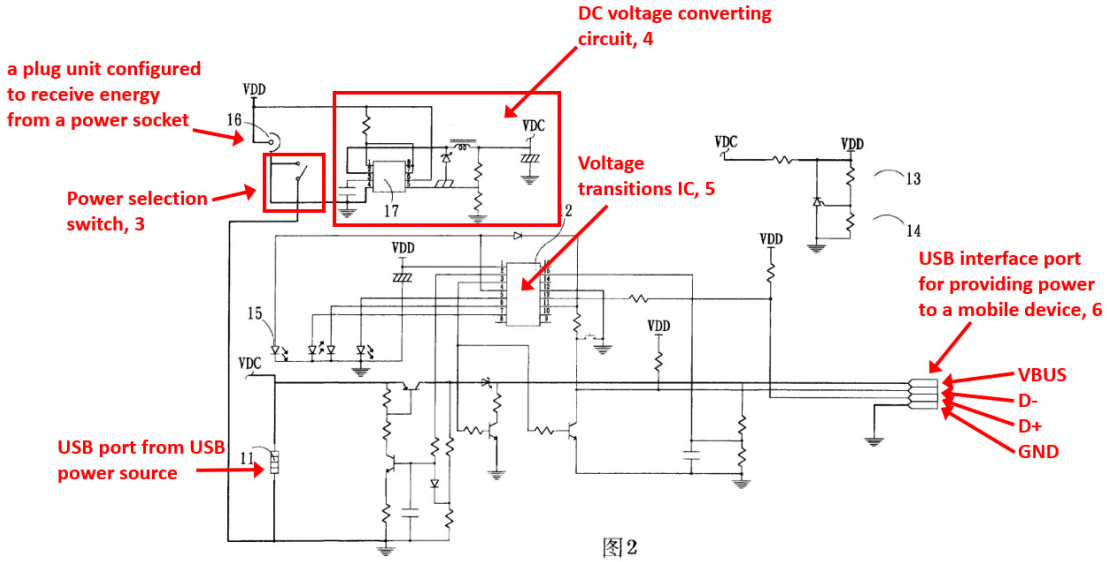
Yang Fig. 2. As shown above, a power converter is included within the red box and is able to regulate the received 110V energy and convert it into an output power requirement of a mobile device. Yang explains that "the commercial power supply is converted to DC +12V through the transformer (16), so its 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."

Accordingly, Yang discloses the claimed power converter.

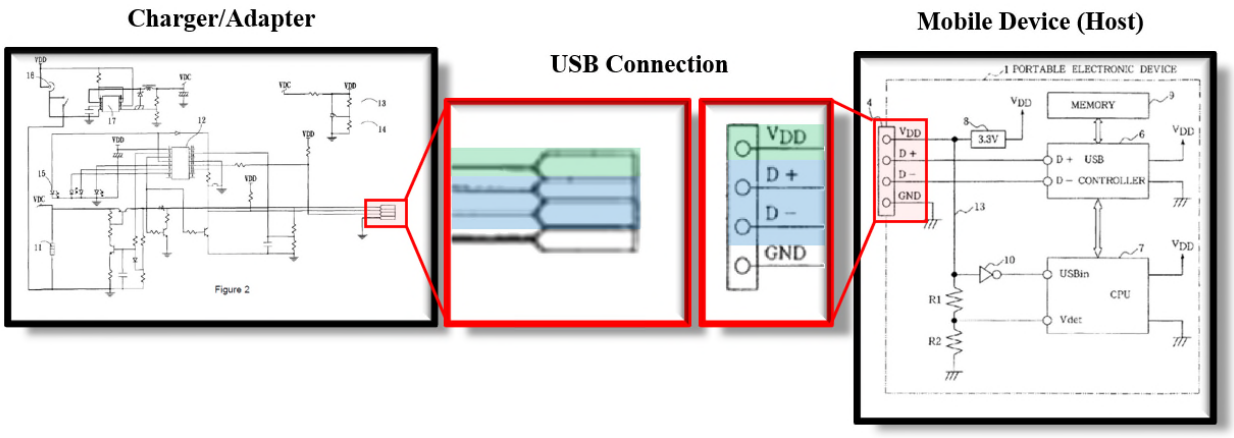
d. ***Claims 1, 13, 25, 65, 84: a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the power requirement to the mobile device***

Yang discloses a USB connector that is coupled to the power converter and supplies power to a mobile device. Baker Decl., ¶ 98-99. 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 ’936 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.



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. 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.



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

e. ***Claims 1, 13, 25, 65, 84: an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector***

Yang discloses the claimed identification subsystem that provides an identification signal on the data lines of the USB connector. Baker Decl., ¶ 103. As depicted below, Yang's identification subsystem consists of at least two pull-up resistors that are coupled to the D+ and D- lines of the USB connection.

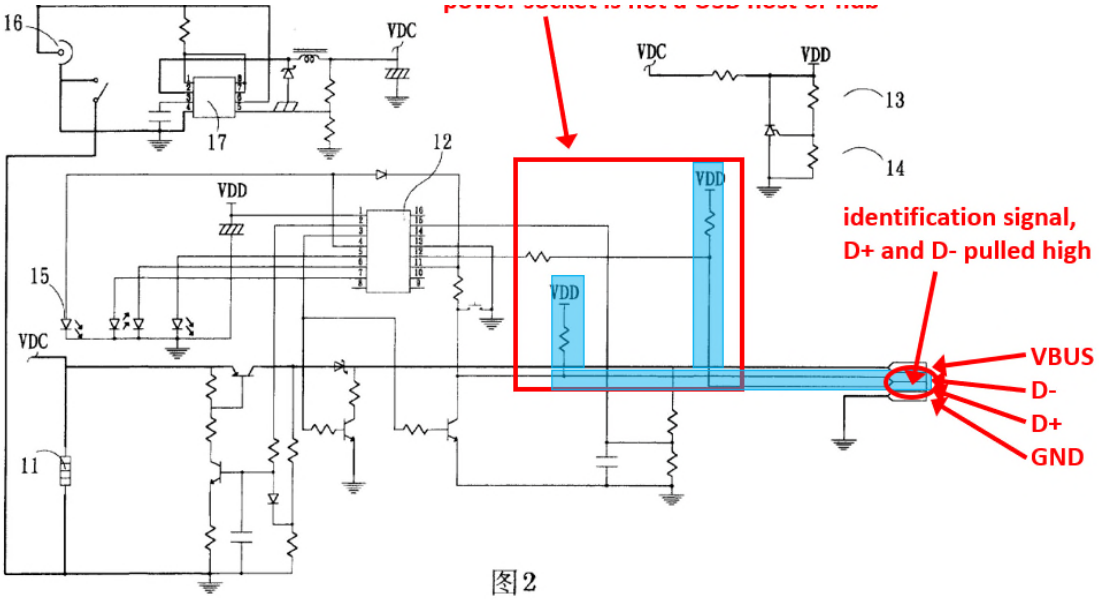
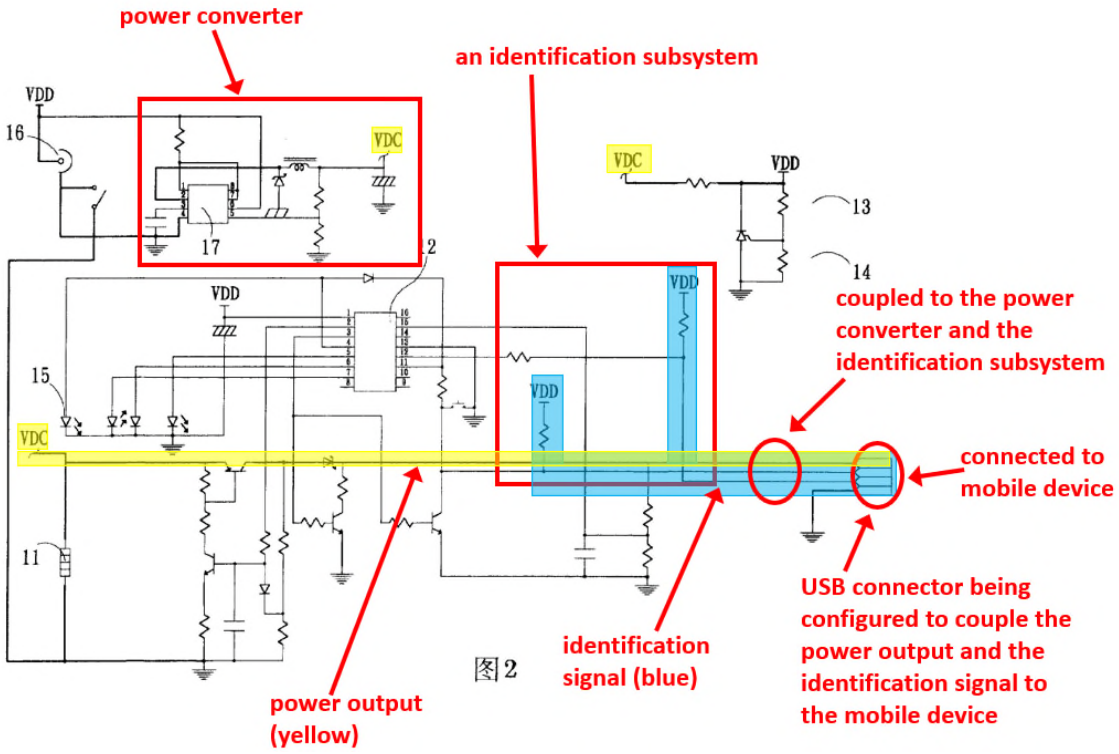


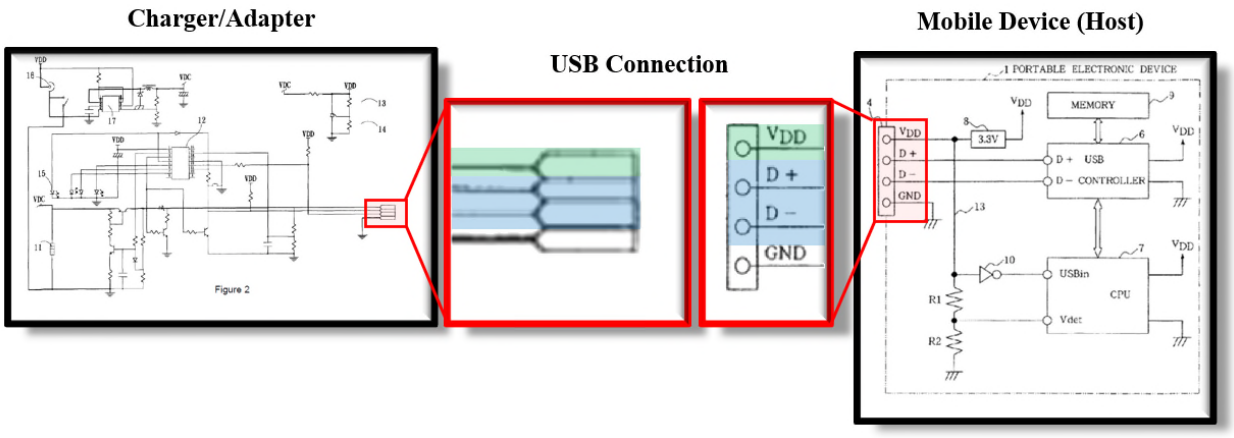
图2

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.



Id. 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. Baker Decl., ¶ 103.

As explained above for the preceeding limitation, to the extent an express disclosure of a USB connector is required in Yang, the combination with Matsumoto renders this claim element obvious. As depicted below, Matsumoto provides the USB connector to mate with the four pins of Yang.



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. Matsumoto at XXX.

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

f. ***Claims 1, 65, and 84: wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line (Claims 1 and 84)[1]***

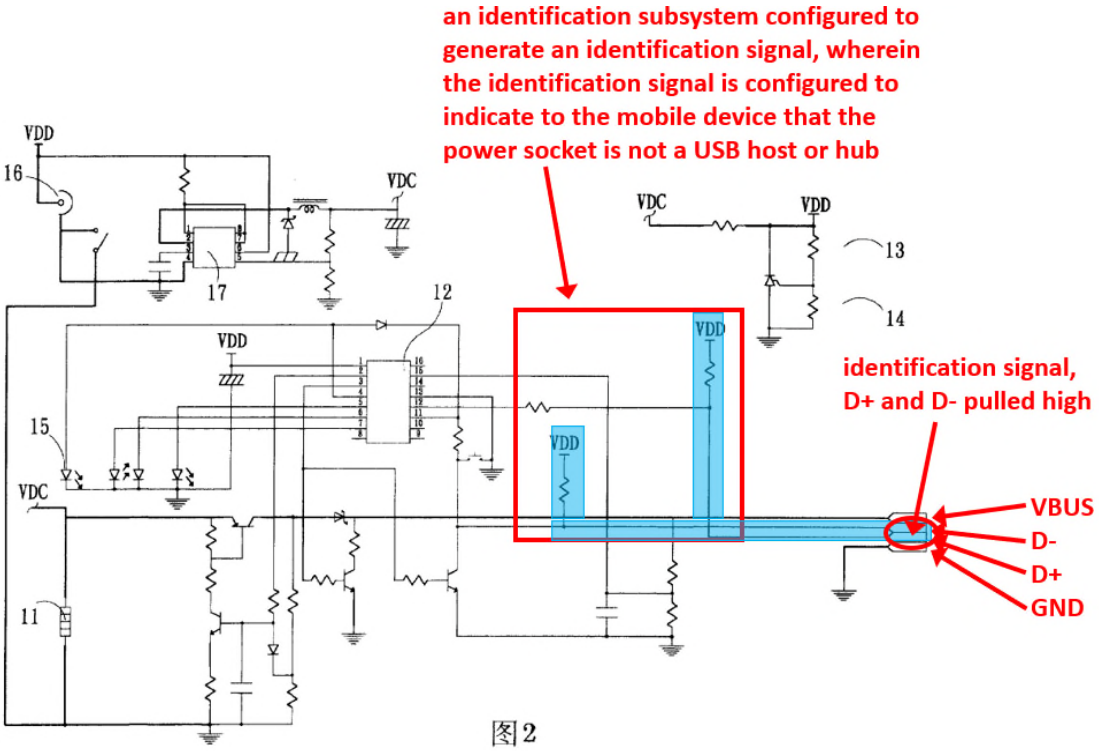
Yang expressly discloses that the D+ and D- lines are held logic high. Baker Decl., ¶ 104. As explained and depicted above, Yang utilizes two pull-up resistors that are held at a logic high signal.

Accordingly, all elements of claims 1 and 84 are met by Yang or Yang in combination with Matsumoto.

[1] Claim 1 also includes the language "wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector"

g. ***Claim 13: wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary 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., ¶ 106. This hard-wired connection is depicted below and highlighted in blue:



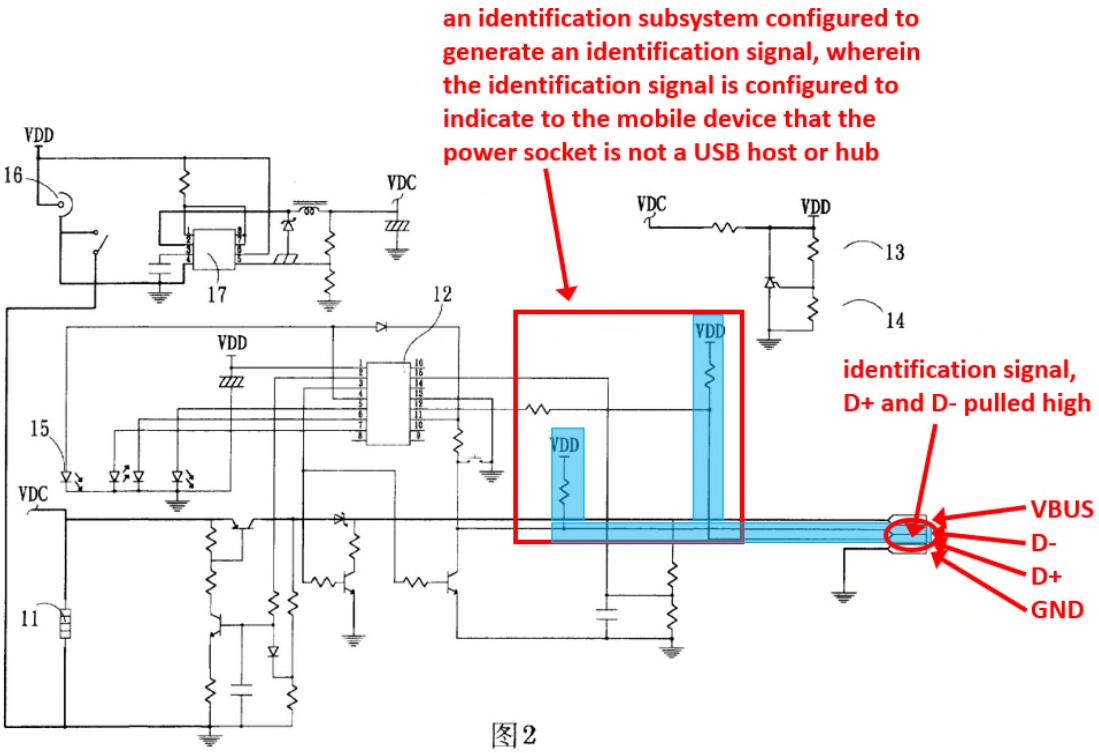
Yang, Fig. 2 (annotated).

Accordingly, all elements of claim 13 are met by Yang or at least by Yang in combination with Matsumoto.

h. ***Claim 25: wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector***

Yang expressly discloses that the D+ and D- lines are held logic high through a hard-wired connection with two pull-up resistors. One or both of these pull-up resistors meet the USB controller claim element as they are operable to provide a voltage level to one or more data lines

(D+ or D-) of the USB connector. Baker Decl., ¶ 108. This hard-wired connection is depicted below and highlighted in blue:



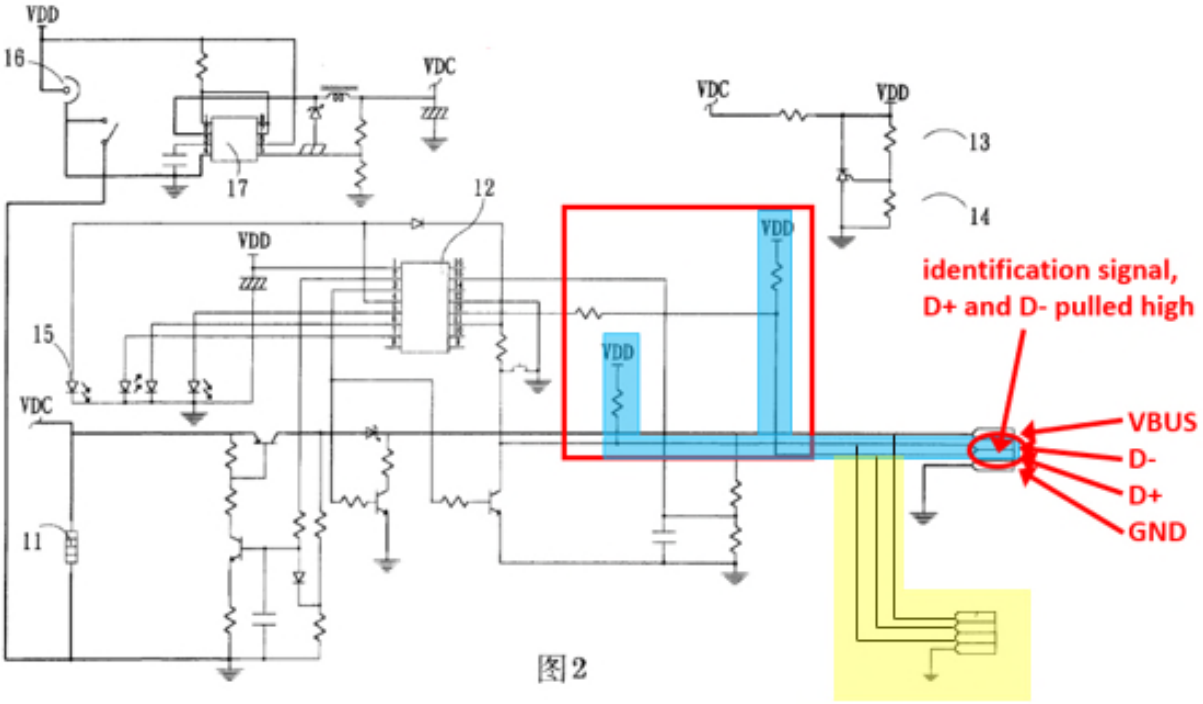
Yang, Fig. 2 (annotated).

Accordingly, all elements of claims 25 and 74 are met by Yang or at least by Yang in combination with Matsumoto.

i. ***Claim 65: an auxiliary USB connector having data lines that are electrically coupled to the data lines of the primary USB connector***

Claim 65 adds only "an auxiliary USB connector having data lines that are electrically coupled to the data lines of the primary USB connector." Connecting a second USB connector to accomplish the exact same function and operation as the first USB connector in Yang would be obvious to a POSITA. Baker Decl. ¶110. Such secondary/auxiliary USB connectors were well-known and contemplated by the USB specifications at the time and would involve nothing more than tying the VBUS and D+/D- lines to the secondary connector. *Id.* As shown in the annotated

Figure from Yang below, the auxiliary USB connector (yellow highlighting) has a D+ and D- data line connected to the USB connector, a characteristic which is necessarily present in any USB connector.



3. Dependent Claims 2-3, 6, 7, 9, 12-18, 26, 28-29, 32, 33, 63, and 85-86

a. ***Claims 2, 14, 28, and 85 - 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., ¶ 112. 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, Yang discloses claims 2, 14, 28, and 85.

b. ***Claims 3, 15, 29, and 86 - 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 Decl., ¶ 113. In addition, Yang discloses that its charger adapter may couple to an "automobile power supply." *Id.* Accordingly, Yang discloses claims 3, 15, 29, and 86.

c. ***Claims 6, 18, and 32 - wherein the identification signal comprises a voltage level that is applied to at least one data line in the USB connector***

See Section IV.A.2.f-h above, which describes how Yang discloses an identification signal that comprises a voltage level that is applied to at least one data line.

d. ***Claims 12 and 26 - wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier***

Yang discloses that its power converter may be an "AC transformer," and further discloses the use of a DC voltage conversion circuit." Yang at 2. Accordingly, Yang discloses claims 12 and 26. Baker Decl., ¶ 115.

e. ***Claim 16: The USB adapter of claim 13, 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. ¶116. Accordingly, claim 16 is rendered obvious by Yang.

f. ***Claim 17: The USB adapter of claim 16, 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 Section j above.

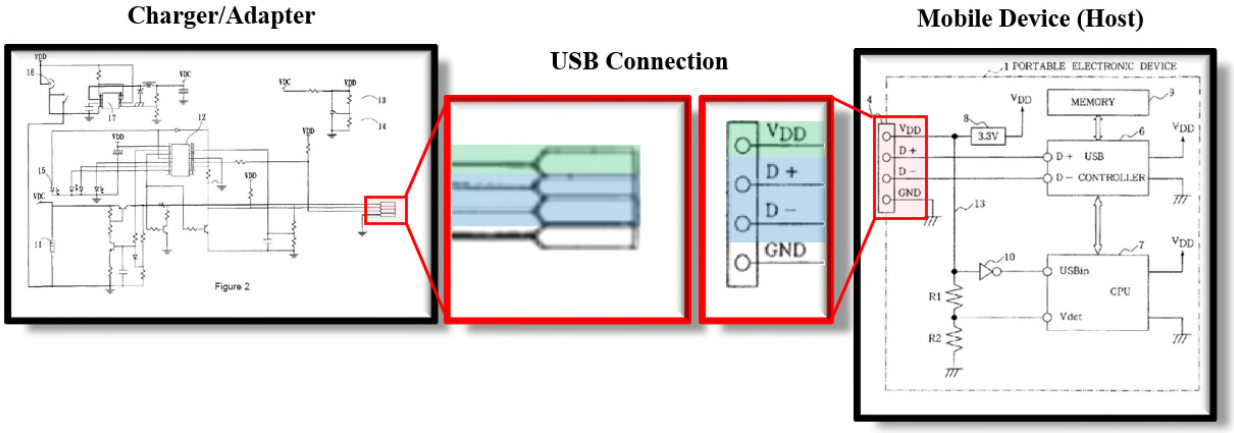
g. ***Claims 7, 9, and 33***

See analysis for claim 65 above regarding the auxiliary USB connector rendered obvious by the combination of Yang and Matsumoto.

4. **<u>Claims 63, 99, and 101</u>**

a. *A powering system for a mobile device having a USB connector; comprising*

As described above with respect to claim 1, a person of ordinary skill in the art would have been motivated to combine the teachings of Yang and Matsumoto in order to implement a USB Mobile device and associated wall adapter:



Yang Figure 2 and Matsumoto Figure 1 (annotated); Baker Decl., ¶ 119

The resultant system is a powering system for a mobile device of Matsumoto that has a USB connector.

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

Matsumoto discloses a charging subsystem that receives the power over the USB connector and "controls charging of the built-in secondary cell [] as required." Baker Decl., ¶ 120. Matsumoto at 4:39-43. Matsumoto further describes its system as "The pair of data terminals D+ and D− of the USB connector 4 are connected to a pair of data terminals D+ and D− provided on the USB controller 6. The power source voltage obtained from the power source terminal VDD of the USB connector 4 is adjusted to 3.3 V by a voltage regulator 8 and then supplied to the USB controller 6 and the main CPU 7." *Id.* at 3:59-65.

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

See Sections IV.A.2.a-b for the same claim element.

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

See Section IV.A.2.c for the same claim element.

e. *and an identification subsystem that is operable to transmit an identification signal that is operative to identify the USB adapter as not being limited by the power limits imposed by the USB specification,*

See Section IV.A.2.e for the same claim element. In addition, the charging adapter disclosed by the combination of Yang and Matsumoto meets the additional portion of this claim element regarding "not being limited by the power limits imposed by the USB specification." Baker Decl., ¶ 123-24. As described above, the charging adapter of Yang holds both the D+ and D- lines logic high. Thus, Yang is not being limited by the USB specification, which forbids such an arrangement. Baker ¶124. Second, Matsumoto's mobile device includes "discriminating

means" to determine when the mobile device is connected to the adapter and not a typical USB host device. *Id.* When the mobile device is connected to a USB host it will engage in typical USB communication (including enumeration) and be limited by the USB specification. *Id.* When the mobile device is connected to the adapter the devices will not engage in enumeration, and thus, is not limited to any restrictions imposed by the USB specification. *Id.*

That the charging adapter of Yang is not limited by the power limits imposed by the USB specification is expressly disclosed in Yang. For example, Yang recognizes that the USB specification in place as of 2000 (presumably version 1.1) has limits regarding +5V and .5A. Yang at 3. However, a purpose of Yang's invention is to ignore these limits and its charging adapter must "adjust its voltage to adapt to the mobile phones of different brands and models." *Id.* Accordingly, Yang uses its "voltage conversion IC… to convert the +5V voltage of the USB interface into different voltages such as +5.8V or +8V used by mobile phones." *Id.*

Accordingly, Yang in view of Matsumoto discloses and renders obvious that the charging adapter is not limited by any limits imposed by the USB specification.

f. *Claim 63: wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.*

See Section IV.A.2.f for the same claim element.

g. *Claim 99: wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector.*

See Section IV.A.2.g for the same claim element.

h. *Claim 101: wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector.*

See Section IV.A.2.h for the same claim element.

B. Kerai Anticipates Claims 1-3, 6, 12-18, 25, 26, 28-29, 32, 63, 84-86, 99, and 101

For the reasons stated below, Kerai anticipates claims 1-3, 6, 12-18, 25, 26, 28-29, 32, 63, 84-86, 99, and 101. Kerai was not presented during prosecution of the '936 patent. Thus, Kerai and the arguments below presents a substantial new question of patentability.

1. Independent Claims: 1, 13, 25, and 84

a. *Claims 1, 13, 25, and 84: Preamble: A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, 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.

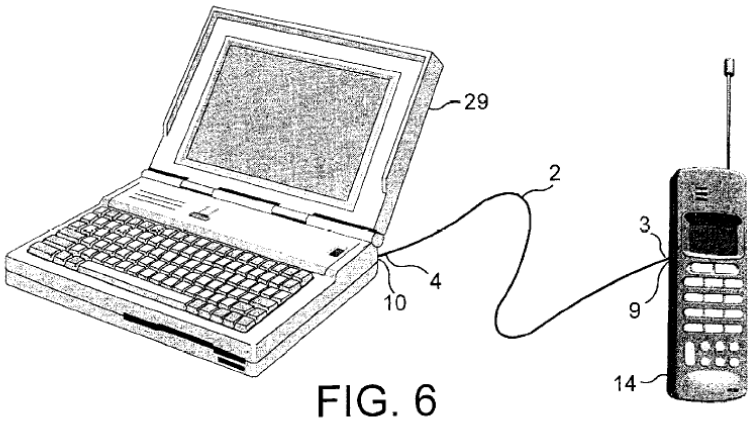


FIG. 6

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., ¶ 129.

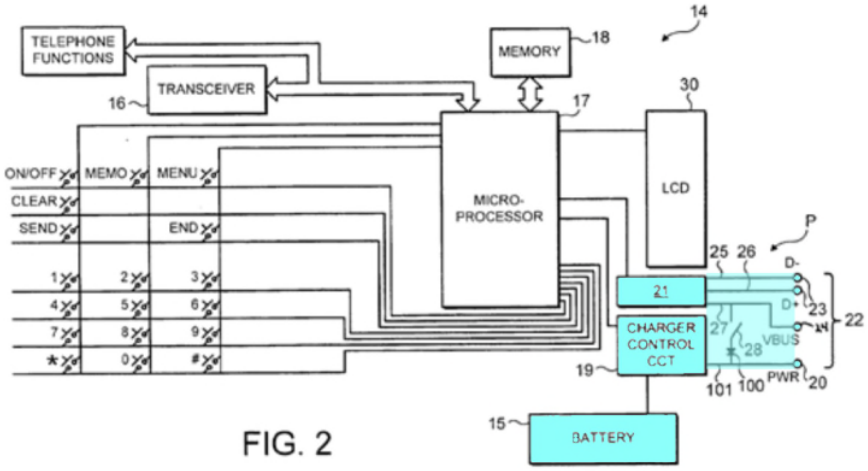


FIG. 2

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

b. ***Claims 1, 13, 25, and 84: a plug unit for coupling to a power socket and for receiving energy from the power socket***

Kerai discloses that the adapter (laptop) can receive power from a publicly available power source (i.e., AC power outlet). Baker Decl., ¶ 130-32. 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. ¶130. 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. Kerai, Abstract. Furthermore, the '936 patent admits that a plug unit was "known in the art." 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 the '936 patent 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)

c. ***Claims 1, 13, 25, and 84: a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device***

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 ¶130-31. 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 '936 patent admits that a power converter was "known in the art." 6:46-61.

d. ***Claims 1, 13, 25, and 84: a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the power requirement to the mobile device***

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. Kerai, Abstract; 1:10-25; 2:45-3:36. Baker Decl., ¶ 130-32.

e. ***Claims 1, 13, 25, and 84: an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector***

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., ¶ 133-34. Kerai utilizes 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; 5:44-47.

In addition to the embodiment described above and shown in Fig. 2 of Kerai, there is further disclosed an additional embodiment in Fig. 3 of Kerai. This embodiment is identical to the embodiment of Figure 2, except that in Figure 3, the D+ and D- lines are used to provide charging power to the mobile device. Kerai, 5:24-59; Baker Decl., ¶ 134. 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.*

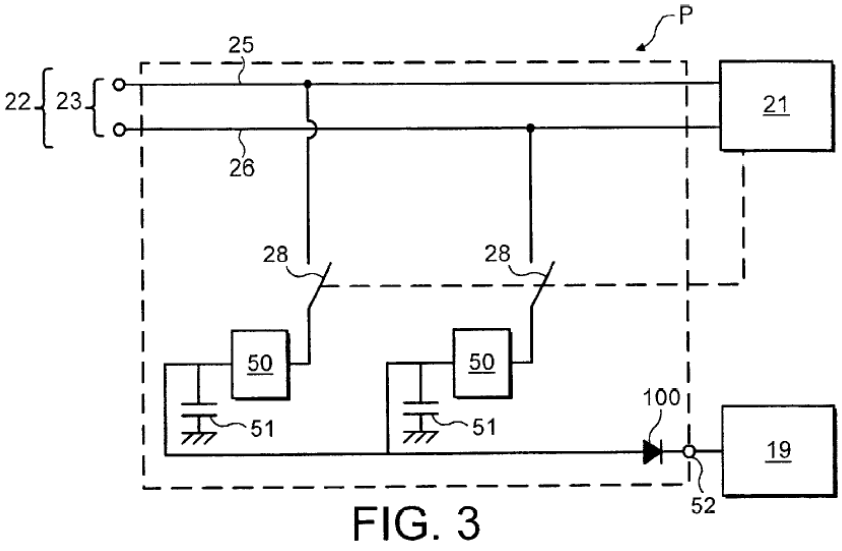


FIG. 3

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

f. ***Claims 1 and 84: wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line[2]***

As noted above, Kerai expressly discloses (in both of its Figure 2 and Figure 3 embodiments) the use of an identification signal in which both the D+ and D- data lines are "held high." Kerai, 5:25-59.

Accordingly, Kerai (in each of two embodiments) anticipates all elements of claims 1, 65, and 84.

g. ***Claim 13: wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector***

As described above, Fig. 3 of Kerai discloses an embodiment in which a voltage level is a hard-wired connection to the data lines. Baker Decl., ¶ 138. As Kerai explains, each data line (25, 26) is "tapped, via a switch 28, to a respective logic detector 50… A connection from the

[2] Claim 1 also includes the language "wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector," which is redundant to the language that follows regarding a logic high signal on both data lines.

output of each detector 50 is made to a corresponding reservoir capacitor 51. The capacitors 51 themselves are connected in parallel and supply a power or charging terminal 52 via a diode 100 with current of some tens of milliamps at a typical voltage of around five volts." 5:25-39. Accordingly, Kerai anticipates claim 13.

h. ***Claim 25: wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector***

See discussion above for claims 1, 65, 84, and 13.

2. Dependent Claims: 2-3, 6, 12-18, 26, 28-29, 32, 63, and 85-86

a. ***Claims 2, 14, 28, and 85 - wherein the plug unit is configured to couple directly with the power socket***

It was well-known in the art that laptop computers connect directly to a power socket via a conventional plug unit. Baker Decl. ¶140. Indeed, the '936 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).

b. ***Claims 3, 15, 29, and 86 - 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 that would require adapters. Kerai 1:10-25. Baker Decl., ¶ 141.

c. ***Claims 6, 18, and 32 - wherein the identification signal comprises a voltage level that is applied to at least one data line in the USB connector***

See Section IV.B.2.f-h above, which describes how Kerai discloses an identification signal that comprises a voltage level that is applied to at least one data line.

d. ***Claims 12 and 26 - wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier***

See Section IV.B.1.c above, which describes how Kerai discloses a power converter that regulates voltage.

e. ***Claim 16: The USB adapter of claim 13, 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.

f. ***Claim 17: The USB adapter of claim 16, 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 Section j above.

3. Claims 63, 99, and 101

a. *A powering system for a mobile device having a USB connector; comprising*

Kerai discloses a power system that comprises a laptop computer used to charge a mobile device over a USB connection. *See* Section IV.B.1.a above.

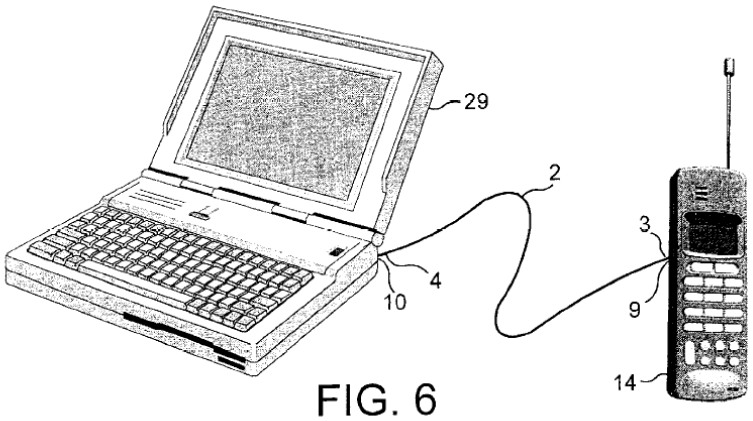


FIG. 6

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

See Section IV.B.1.a above.

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

See Section IV.B.1.a above.

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

See Section IV.B.1.b above.

e. *and an identification subsystem that is operable to transmit an identification signal that is operative to identify the USB adapter as not being limited by the power limits imposed by the USB specification,*

See Section IV.B.1.e above.

f. *Claim 63: wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.*

See Section IV.B.1.f above.

g. *Claim 99: wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector.*

See Section IV.B.1.g above.

h. *Claim 101: wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector.*

See Section IV.B.1.h above.

C. Kerai Renders Obvious Claims 1-3, 6, 7, 9, 12-18, 25, 26, 28-29, 32, 33, 63, 65, 84-86, 99, and 101

As described above in Section B, Requestor presented 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 find it obvious to implement the well-known functions and components of laptop computers at the time of the alleged invention of the '936 patent in 2001. Baker Decl., ¶ 154-58. Specifically, a POSITA would find it obvious to implement the claimed plug unit and power converter present in each of the independent claims.

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 computer such that it could read these Challenged Claims on a laptop computer that operates much in the same manner as Kerai:

> 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.

OTH-B at 20 (emphasis added).

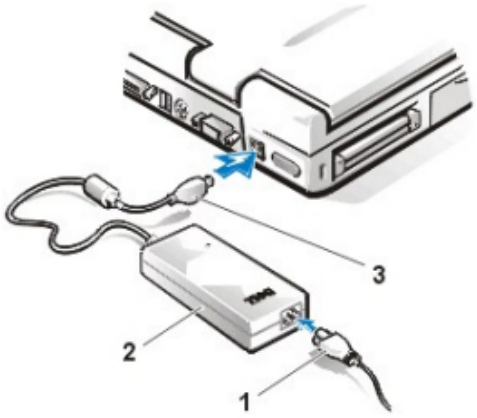
Furthermore, Patent Owner told the district court that the form taken by what is claimed in the Challenged Claims is irrelevant:

> 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. ¶155. 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 utilized 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 ¶155-56. In

addition, the Dell Inspiron 3800 came equipped with at least one USB connector. *Id.;* Ex. PA-G at 71.

Finally, with respect to claims 7, 9, 33, and 65, which relate to an auxiliary USB connector, Kerai also renders these claims obvious. As noted above in Section IV.A.2.i, the use of two USB connectors using the same data and power lines was well-known in the art and contemplated by the USB specifications. Baker Decl. ¶157. Indeed, it was not uncommon for laptop computers at the time in 2001 to have multiple USB connectors. Accordingly, Kerai renders these claims obvious as well.

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 '936 patent to utilize a common and well-known AC adapter and plug unit to provide power to the laptop computer. Baker Decl. ¶158.

D. Kerai in Combination with Yang Renders Obvious 1-3, 6, 7, 9, 12-18, 25, 26, 28-29, 32, 33, 63, 65, 84-86, 99, and 101

For the reasons stated below, Kerai in combination with Yang renders obvious Claims 1-3, 6, 12-18, 25, 26, 28-29, 32, 63, 84-86, 99, and 101. Neither reference, nor the combination of the two references, was presented during prosecution of the '936 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., ¶ 159.

Both Kerai and Yang relate to systems and methods for powering portable electronic devices (i.e., mobile devices). Baker Decl., ¶ 159-60. 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:

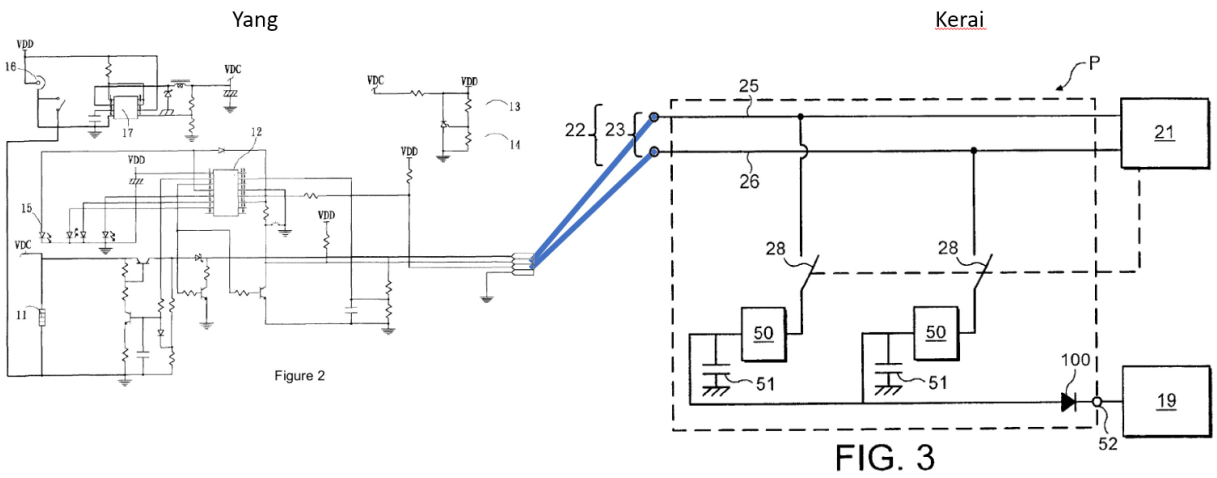


Figure 2

FIG. 3

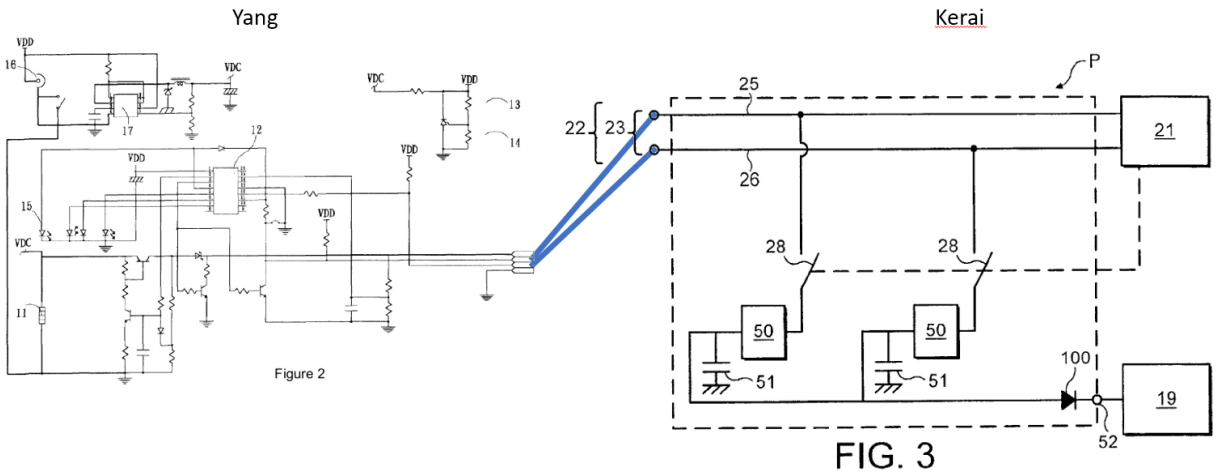
As depicted, no modifications would be required to either reference, and the charging systems disclosed in both references would be used as designed and intended. Baker ¶160. That is, Yang's system is designed to hold the D+ and D- data lines at a logic high level. *Id.* Kerai's system, as embodied in Figure 3 of Kerai, 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 renders each of the claims invalid as obvious.

2. Independent Claims: 1, 13, 25, 65, and 84

a. ***Claims 1, 13, 25, 65, 84 Preamble: A Universal Serial Bus ("USB") adapter for providing a source of power to a mobile device through a USB port, comprising***

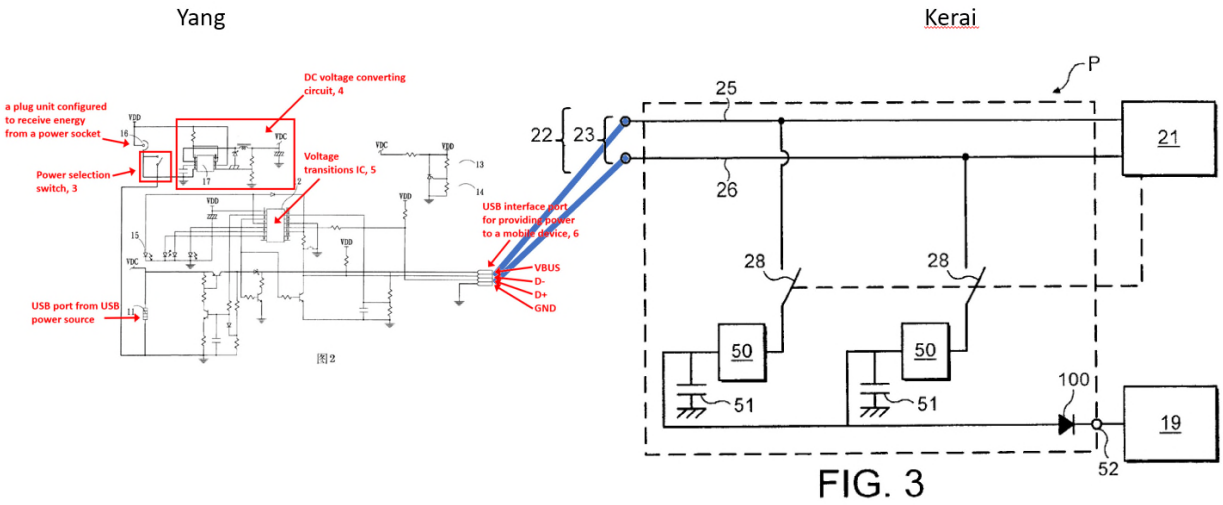
The preamble is not a limitation of the claims. Regardless, the combination of Kerai and Yang discloses a USB adapter for providing a source of power to a mobile device through a USB

port. Baker ¶161. As shown below, the charging circuit of Yang provides power to the mobile device of Kerai.



b. ***Claims 1, 13, 25, 65, 84: a plug unit for coupling to a power socket and for receiving energy from the power socket***

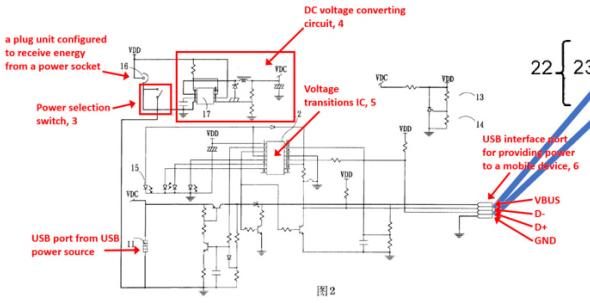
The combination of Kerai and Yang discloses a plug unit that couples to a power socket. As shown below in the red box on the left, the charging circuit of Yang includes a plug unit. Yang notes that its mobile phone charger has "multiple power supply inputs" including "household AC 110V/220V." Yang at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



c. ***Claims 1, 13, 25, 65, 84: a power converter electrically coupled to the plug unit, the power converter being operable to regulate the received energy from the power socket and to output a power requirement to the mobile device***

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 ¶161.

Yang



Kerai

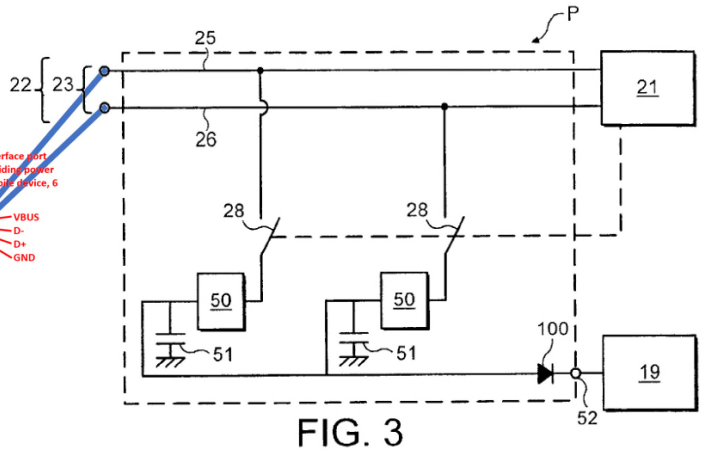


FIG. 3

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."

d. ***Claims 1, 13, 25, 65, 84: a primary USB connector electrically coupled to the power converter for connecting to the mobile device and for delivering the power requirement to the mobile device***

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 ¶162-64.

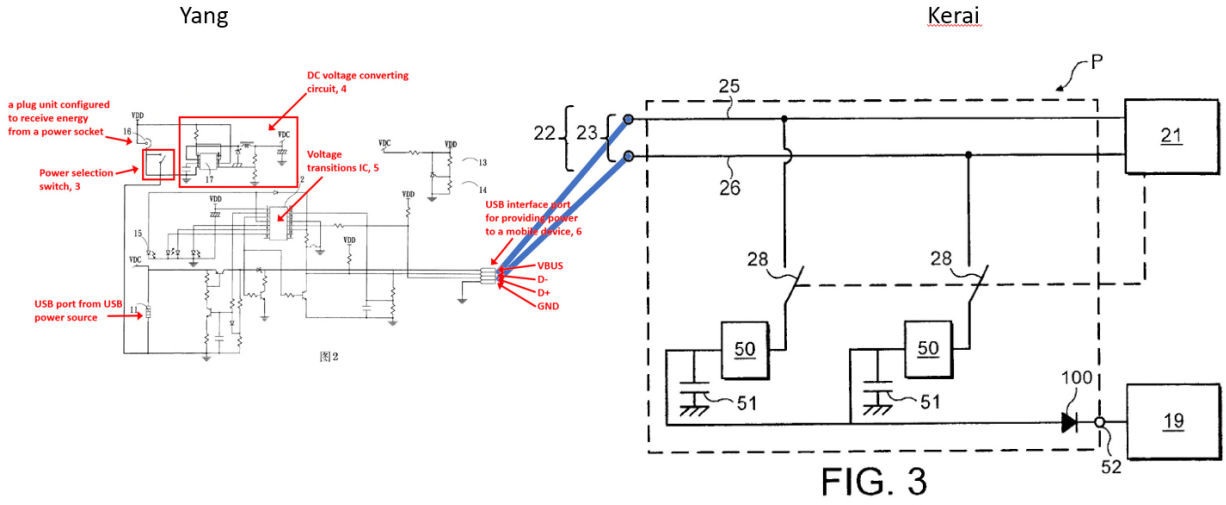


FIG. 3

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 '936 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.

e. ***Claims 1, 13, 25, 65, 84: an identification subsystem electrically coupled to the primary USB connector for providing an identification signal at one or more data lines of the primary USB connector***

The 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 ¶164-65.

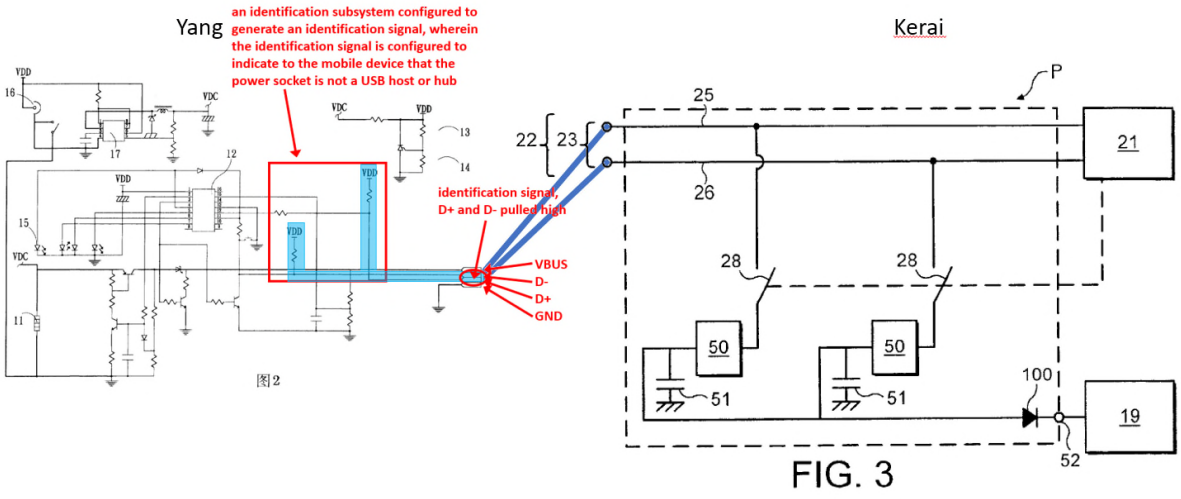


FIG. 3

As shown above, Yang utilizes 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

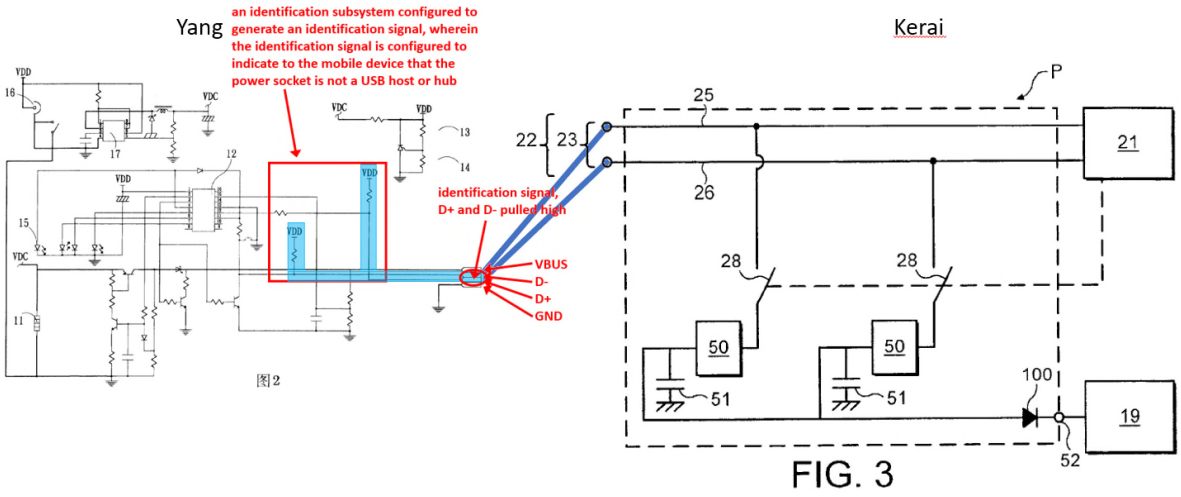
communication path. *Id.* At this point, the switches (28) close and the voltage on the data lines is used to supply power to the mobile device's battery charging circuit. *Id.*

f. ***Claims 1 and 84: wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line (Claims 1 and 84)***[3]

As described in claim element 1e above, the combination of Kerai and Yang utilizes an identification signal that is a logic high on both the D+ and D- data lines. Accordingly, the combination of Kerai and Yang renders obvious claims 1 and 84.

g. ***Claim 13: wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary 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. This hard-wired connection is depicted below and highlighted in blue:



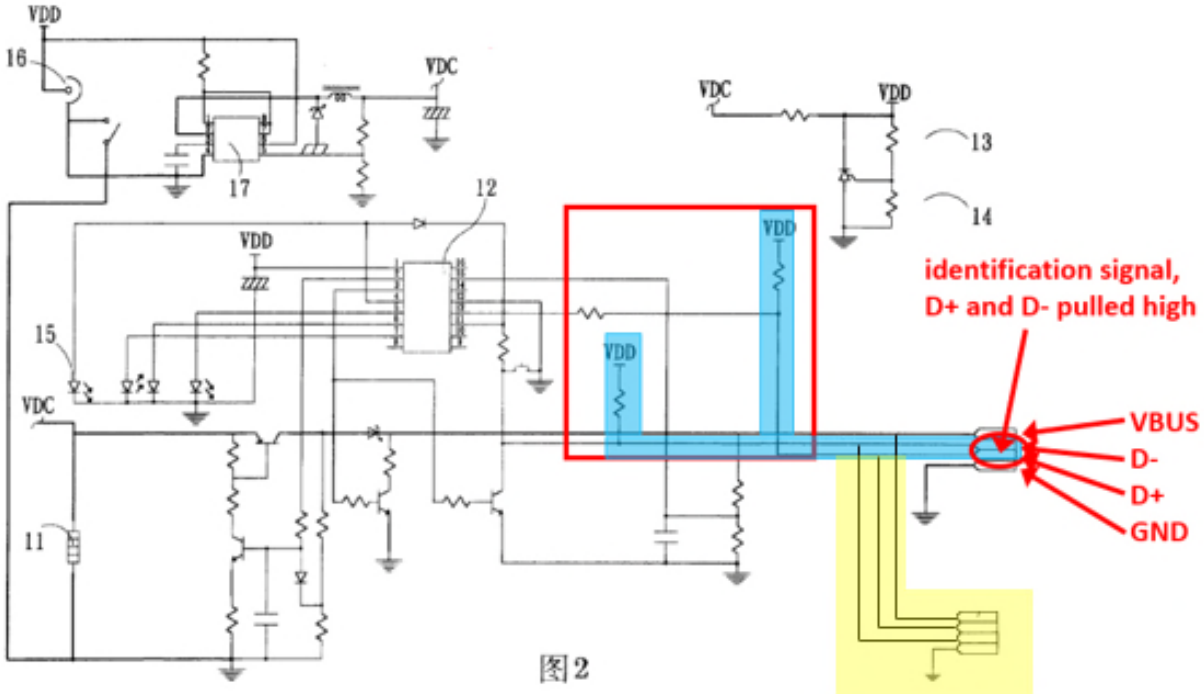
[3] Claim 1 also includes the language "wherein the identification signal comprises a voltage level that is applied to at least one of the data lines in the primary USB connector"

h. ***Claims 25: wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector***

See discussion above for claims 1, 65, 84, and 13.

i. ***Claim 65: an auxiliary USB connector having data lines that are electrically coupled to the data lines of the primary USB connector***

Claim 65 adds only "an auxiliary USB connector having data lines that are electrically coupled to the data lines of the primary USB connector." Connecting a second USB connector to accomplish the exact same function and operation as the first USB connector in Yang would be obvious to a POSITA. Baker ¶172. Such secondary/auxiliary USB connectors were well-known and contemplated by the USB specifications at the time and would involve nothing more than tying the VBUS and D+/D- lines to the secondary connector. *Id.* As shown in the annotated Figure from Yang below, the auxiliary USB connector (yellow highlighting) has a D+ and D- data line connected to the USB connector, a characteristic which is necessarily present in any USB connector.



3. Dependent Claims: 2-3, 6, 7, 9, 12-18, 26, 28-29, 32, 33, 63, and 85-86

a. *Claims 2, 14, 28, and 85 - 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 ¶173. 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 claims 2, 14, 28, and 85.

b. *Claims 3, 15, 29, and 86 - 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 ¶174. 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 claims 3, 15, 29, and 86.

c. *Claims 6, 18, and 32 - wherein the identification signal comprises a voltage level that is applied to at least one data line in the USB connector*

See Section IV.D.2.f-h above, which describes how the combination of Kerai and Yang discloses an identification signal that comprises a voltage level that is applied to at least one data line.

d. *Claims 12 and 26 - wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier*

Yang discloses that its power converter may be an "AC transformer," and further discloses the use of a DC voltage conversion circuit." Yang at 2. Accordingly, the combination of Kerai and Yang renders obvious claims 12 and 26.

e. ***Claim 16: The USB adapter of claim 13, 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 ¶174. Accordingly, claim 16 is rendered obvious by Kerai and Yang.

f. ***Claim 17: The USB adapter of claim 16, 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 Section j above.

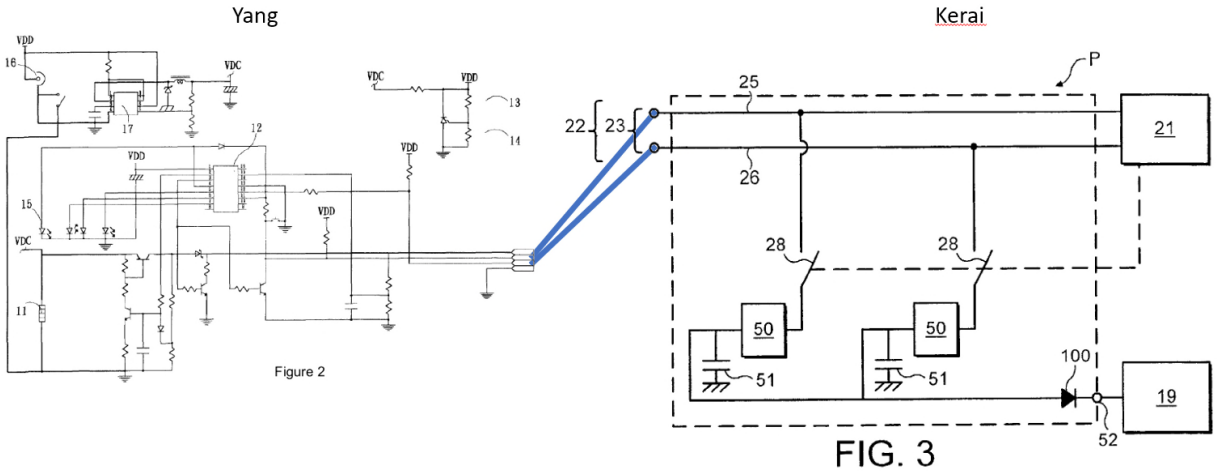
g. ***Claims 7, 9, and 33***

See analysis for claim 65 above regarding the auxiliary USB connector rendered obvious by the combination of Yang and Kerai.

4. Claims 63, 99, and 101

a. ***A powering system for a mobile device having a USB connector; comprising***

As described above with respect to claim 1, a person of ordinary skill in the art would have been motivated to combine the teachings of Kerai and Yang in order to implement a USB Mobile device and associated wall adapter:



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

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; Baker ¶181. 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.*

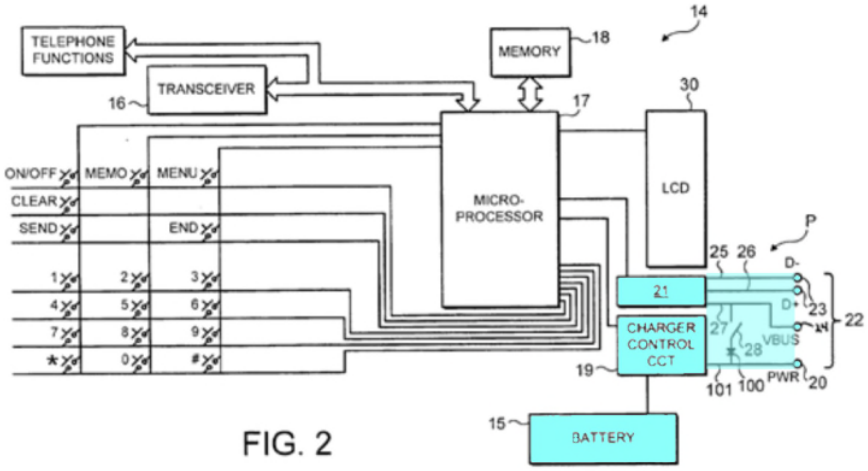


FIG. 2

Accordingly, the combination of Kerai and Yang meets this element.

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

See Sections IV.D.2.a-b for the same claim element.

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

See Section IV.D.2.c for the same claim element.

e. ***and an identification subsystem that is operable to transmit an identification signal that is operative to identify the USB adapter as not being limited by the power limits imposed by the USB specification,***

See Section IV.D.2.e for the same claim element. In addition, the charging adapter disclosed by the combination of Yang and Kerai meets the additional portion of this claim element regarding "not being limited by the power limits imposed by the USB specification." As described above, the charging adapter of Yang holds both the D+ and D- lines logic high. Thus, Yang is not being limited by the USB specification, which forbids such an arrangement. Baker ¶184. Second, Kerai's circuit allows for charging without USB enumeration at least because it is utilizing the data lines held at the logic high level for charging, which means there can be no data communication taking place. Baker ¶181-82. When the mobile device is connected to the

adapter the devices will not engage in enumeration, and thus, is not limited to any restrictions imposed by the USB specification. *Id.*

That the charging adapter of Yang is not limited by the power limits imposed by the USB specification is expressly disclosed in Yang. For example, Yang recognizes that the USB specification in place as of 2000 (presumably version 1.1) has limits regarding +5V and .5A. Yang at 3. However, a purpose of Yang's invention is to ignore these limits and its charging adapter must "adjust its voltage to adapt to the mobile phones of different brands and models." *Id.* Accordingly, Yang uses its "voltage conversion IC… to convert the +5V voltage of the USB interface into different voltages such as +5.8V or +8V used by mobile phones." *Id.*

Accordingly, the combination of Kerai and Yang renders obvious that the charging adapter is not limited by any limits imposed by the USB specification

f. ***Claim 63: wherein the identification signal comprises a logic high signal on the D+ data line and a logic high signal on the D- data line.***

See Section IV.D.2.f for the same claim element.

g. ***Claim 99: wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector.***

See Section IV.D.2.g for the same claim element.

h. ***Claim 101: wherein the identification subsystem comprises a USB controller that is operable to provide a voltage level to one or more data lines in the primary USB connector.***

See Section IV.D.2.h for the same claim element.

E. Yang in Combination with Matsumoto and Flannery Renders Obvious Claims 7, 9, 33, and 65

Claims 7, 9, 33, and 65 are each directed to the addition of a single trivial element to the claims covered above in Section IV.A. That is, these claims relate to the addition of a second

USB connector, which was a well-known and routinely implemented use of USB as of 2001. Baker ¶189. As noted above, this would be rendered obvious by the combination of Yang and Matsumoto as it is within the common knowledge of a POSITA. However, to the extent an express teaching of the use of two USB ports is required, many references, including Flannery expressly demonstrate the routine implementation of a second USB port that simply ties its four lines to the first USB port, as shown below.

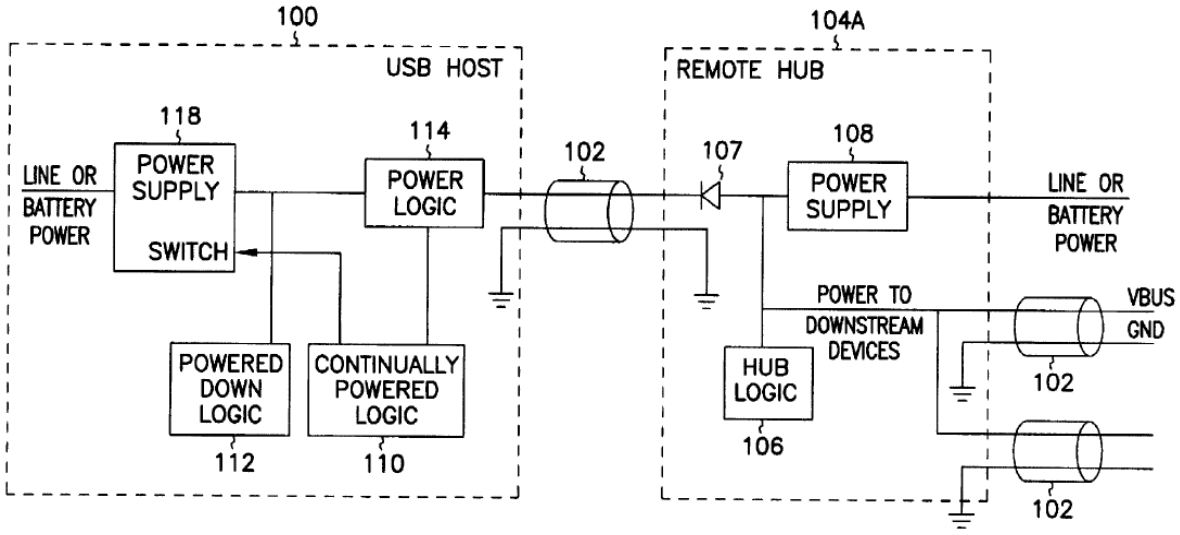


FIG. 1A

Flannery teaches the use of USB devices, including USB hosts such as computer, for example, in connection with the disclosed invention. Auxiliary USB ports for supplying power requirements were well known in the art, and would have been obvious to implement with Flannery. Motivation would have at least come from providing additional ports to users consistent with, for example, the well-known notion of port replication and the usage of multiple ports in a device and the desire to make such additional ports available to an end user. Baker ¶190. Indeed, Flannery is simply being used here to demonstrate what was already within the common knowledge of a POSITA and known via the USB specifications. *Id.*

1. Claim 7: The USB adapter of claim 1, further comprising an auxiliary USB connector.

As shown below, utilizing the same auxiliary USB connector arrangement from Flannery, the charging adapter of Yang discloses an auxiliary USB connector. Baker ¶191. The yellow highlighting demonstrates the adaptation of Flannery's auxiliary USB connector as used in the system of Yang. These auxiliary USB connectors have the same connection to the same data lines and power/ground lines, serve the same purpose, and connect to a peripheral device in the same manner. Accordingly, a POSITA would find claim 7 obvious.

Yang

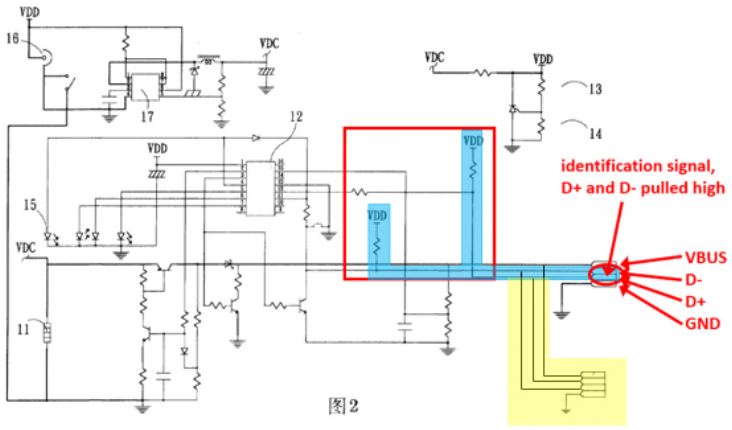
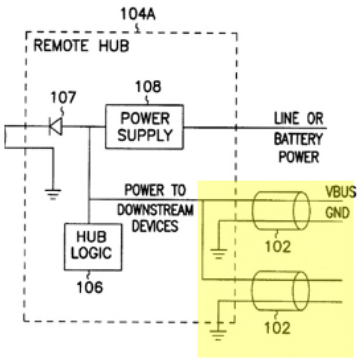


图2

Flannery



2. Claim 9: The USB adapter of claim 7, wherein the power converter is operable to output a power requirement to the auxiliary USB connector.

As described above in Section IV.A.2.c, Yang discloses a power converter that provides power to a USB connector. Baker ¶193. The power converter of Yang (shown in green below) provides power to the auxiliary USB connector as well. Thus, claim 9 is invalid as obvious.

Yang

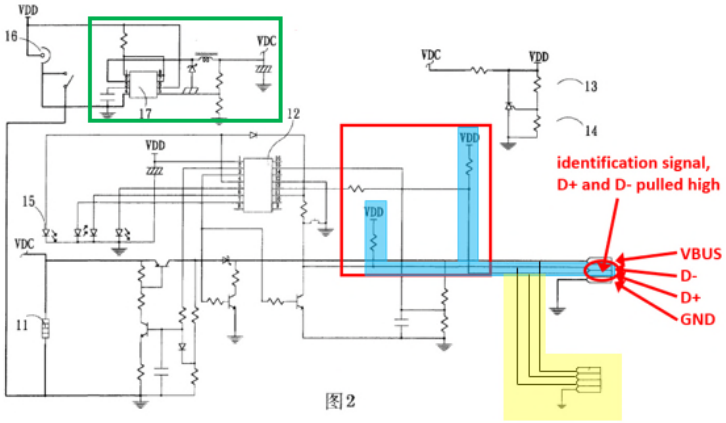
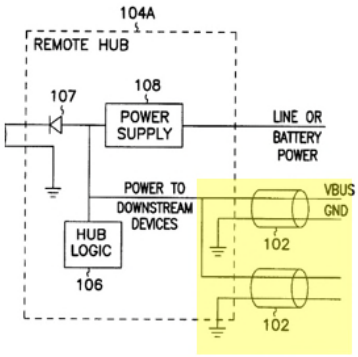


图2

Flannery



3. Claim 33: The USB adapter of claim 25, further comprising an auxiliary USB connector.

See analysis of claim 7 above for the identical claim limitation.

4. Claim 65

Claim 65 is identical to claim 84, which is covered above in Section IV.A.2 for the combination of Yang and Matsumoto. Claim 65 adds only "an auxiliary USB connector having data lines that are electrically coupled to the data lines of the primary USB connector." As analyzed above the claim 7, implementing the auxiliary USB connector of Flannery meets this claim limitation. In addition, as shown in the annotated Figures above for claim 7, the auxiliary USB connector has a D+ and D- data line connected to the USB connector, a characteristic which is necessarily present in any USB connector. Baker ¶194.

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 1-3, 6, 7, 9, 12-18, 25, 26, 28-29, 32, 33, 63, 65, 84-86, 99, and 101 of the '936 Patent and requests that *ex parte* reexamination be ordered.

Dated: October 21, 2021

Respectfully submitted,

/Richard Martinelli/

Richard Martinelli
Reg. No. 52,003
ORRICK, HERRINGTON &
SUTCLIFFE LLP
51 West 52nd Street
New York, NY 10019-6142
Telephone: (212) 506-5000