**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

| | |
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| **Request for *Ex Parte* Reexamination of:** | Group Art Unit: Not Yet Assigned |
| U.S. Patent No. 7,239,111 | Examiner: Not Yet Assigned |
| Inventor: Fischer, et al. | Customer No. 34313 |
| Assignee: Research in Motion Limited, Waterloo Ontario (CA) | Confirmation No.: Not Yet Assigned |
| Filed: July 6, 2005 | |
| Issued: July 3, 2007 | |
| For: **Universal Serial Bus Adapter for a Mobile Device** | |

**REQUEST FOR *EX PARTE* REEXAMINATION OF UNITED STATES PATENT NO. 7,239,111**

EFS Web
Commissioner for Patents

Dear Sir:

Pursuant to 35 U.S.C. §§ 302 *et seq.* and 37 C.F.R. § 1.510, Anker Innovations Ltd. ("Anker" or "Requestor") hereby request *ex parte* reexamination of United States Patent No. 7,239,111 ("The '111 Patent."). The undersigned is counsel of record and represents that he is authorized to act in a representative capacity for Anker under 37 C.F.R. § 1.34.

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## TABLE OF EXHIBITS

### List of Exhibits

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

### A. PRIOR ART (PA)

| | |
|---|---|
| **PA-SB/08A** | USPTO Form SB/08A |
| **PA-A** | China Patent No. CN2410806Y ("Yang") and Certified Translation. |
| **PA-B** | U.S. Patent No. 6,904,488 ("Matsumoto") |
| **PA-C** | U.S. Patent No. 6,531,845 ("Kerai") |
| **PA-D** | 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. 7,239,111 ("'111 Patent") |
| **PAT-B** | File Wrapper for the '111 Patent |
| **PAT-C** | U.S. Provisional Patent Application No. 60/273,021 ("'021 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 1-8, 12, and 16-18 based on Yang in view of Matsumoto. |
| **CC-B** | Claim Chart demonstrating substantial new question of patentability for claims 1-8 and 16-18 based on Kerai. |
| **CC-C** | Claim Chart demonstrating substantial new question of patentability for claims 1-8, 12, and 16-18 based on Kerai in view of Yang |
| **CC-D** | Claim Chart demonstrating substantial new question of patentability for claims 12 and 14 based on Yang in view of Matsumoto and Flannery. |

## D. OTHER DOCUMENTS (OTH)

**OTH-A** Declaration of R. Jacob Baker, Ph.d. ("Baker")

**OTH-B** *Fundamental Innovation Systems International LLC v. LG Electronics, Inc., et al.*, Case No. 2:16-cv-014255 (E.D. Texas), Dkt. No. 123 (Plaintiff FISI's Opening Claim Construction Brief).

**OTH-C** *Fundamental Innovation Systems International LLC v. LG Electronics, Inc., et al.*, Case No. 2:16-cv-014255 (E.D. Texas), Dkt. No. 146 (Claim Construction Memorandum and Order).

## I. INTRODUCTION

The '111 Patent is directed to charging devices via a conventional USB port. Ex. PAT-A at 2:19-21. 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.* at 21-28. Although attempting to phrase this common procedure differently, mobile devices were capable of charging through a USB connection for years prior to the '111 patent.

The '111 Patent explains that although prior art USB devices could draw power from USB ports, this *typically* only occurred when those devices were connected to other USB devices or hubs. This is because the USB Specification generally requires that two connected USB devices undergo a specific USB communication process called "enumeration" before one device can supply power to another. *Id.* at 1:54-59 ("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 '111 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 1:39-43.

The '111 Patent proposes a system for charging mobile devices via a USB connection using an adapter to connect the mobile device to a wall outlet or car socket. *Id.* at 1:61-67 ("[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 '111 Patent claims this can be done by sending an identification signal to the mobile device when it is connected to an adapter.

*Id.* at 2:16-18. 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., Id*. at 9:26-42.

But numerous prior art references, as well as versions of the USB Specification that existed at the time of filing, disclosed sending an ID signal such a logic high signal, sometimes called an SE1 signal, on both the D+ and D- lines. All the '111 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 '111 patent's purported new use of existing technology (which is not by itself patentable in these apparatus claims) was in the prior art.

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

## II. PROCEDURAL BACKGROUND AND RELATED PROCEEDINGS

### A. Related Proceedings

Patent Owner recently asserted the '111 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 '111 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 '111 Patent. The '111 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 '111 Patent.

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

Requesters 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**. Requester 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 application that led to the '111 Patent was filed on July 6, 2005. 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 '111 Patent.

As set forth below, substantial new questions of patentability exist as to Claims 1-8, 12, 14, and 16-18 of the '111 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 '111 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 '111 Patent under at least pre-AIA 35 U.S.C. §§ 102(a) and (b).

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 '111 patent at least under pre-AIA 35 U.S.C. §§ 102(a) and (b).

4. **Exhibits PA-D:** U.S. Patent No. 5,799,196 ("Flannery"): Flannery is a patent titled "Method and Apparatus of Providing Power Management Using a Self-Powered Universal Serial Bus (USB) Device." Flannery was filed on July 2, 1996 and published on August 25, 1998. Flannery constitutes prior art to the '111 patent at least under pre-AIA 35 U.S.C. §§102(a) and (b).

5. **Exhibits PA-E** through **PA-G** are various patent documents and publications that were all filed or published prior to the priority date of the '111 Patent and thus constitute prior art under at least 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))

Requesters Request reexamination of Claims 1-8, 12, 14 and 16-18 the '111 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 1-8, 12, and 16-18 under 35 U.S.C. § 103. A claim chart demonstrating the pertinency and manner of applying Yang in view of Matsumoto to Claims 1-8, 12, 14 and 16-18 is attached hereto as **Exhibit CC-A**.

2. Kerai renders Claims 1-8 and 16-18 obvious under 35 U.S.C. § 103. A claim chart demonstrating the disclosure of Kerai is attached hereto as **Exhibit CC-B**.

3. Kerai, when considered in view of Yang and the knowledge of those skilled in the art, renders Claims 1-8, 12, and 16-18 obvious under 35 U.S.C. § 103. A claim chart demonstrating the pertinency and manner of applying Kerai in view of Yang to Claims 1-8, 12, 14 and 16-18 is attached hereto as **Exhibit CC-C**.

4. Yang when considered in view of Matsumoto, Flannery and the knowledge of those skilled in the art, renders Claims 12 and 14 obvious under 35 U.S.C. § 103. A claim chart demonstrating the pertinency and manner of applying Yang in view of Matsumoto and Flannery to Claims 12 and 14 is attached hereto as **Exhibit CC-D**.

In addition to the disclosures in Exhibits CC-A through CC-D, 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))

Requesters 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-G**.

**5.** Copy of U.S. Patent No. 7,239,111 (37 C.F.R. § 1.510(b)(4))

Requesters have attached a copy of the '111 Patent as **Exhibit PAT-A** and a copy of the file history of the '111 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 '111 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 Requesters 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 Requesters under 37 C.F.R. § 1.34.

## III. OVERVIEW OF THE '111 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, ¶ 47. Revision 1.1 of the USB Specification was

published by the USB Implementers Forum, Inc. on September 23, 1998. Ex. PA-F; Baker, ¶ 47. It is prior art to the '111 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-E; Baker, ¶ 48. It is prior art to the challenged claims of the '111 Patent under at least 35 U.S.C. §§ 102(a) and (b). Moreover, because the '111 Patent incorporates the conditions and limitations of the USB Specification, a person of ordinary skill in the art to which the '111 Patent claims are directed would have been knowledgeable about the USB Specifications. Baker, ¶ 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, ¶ 50. 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, ¶ 50.

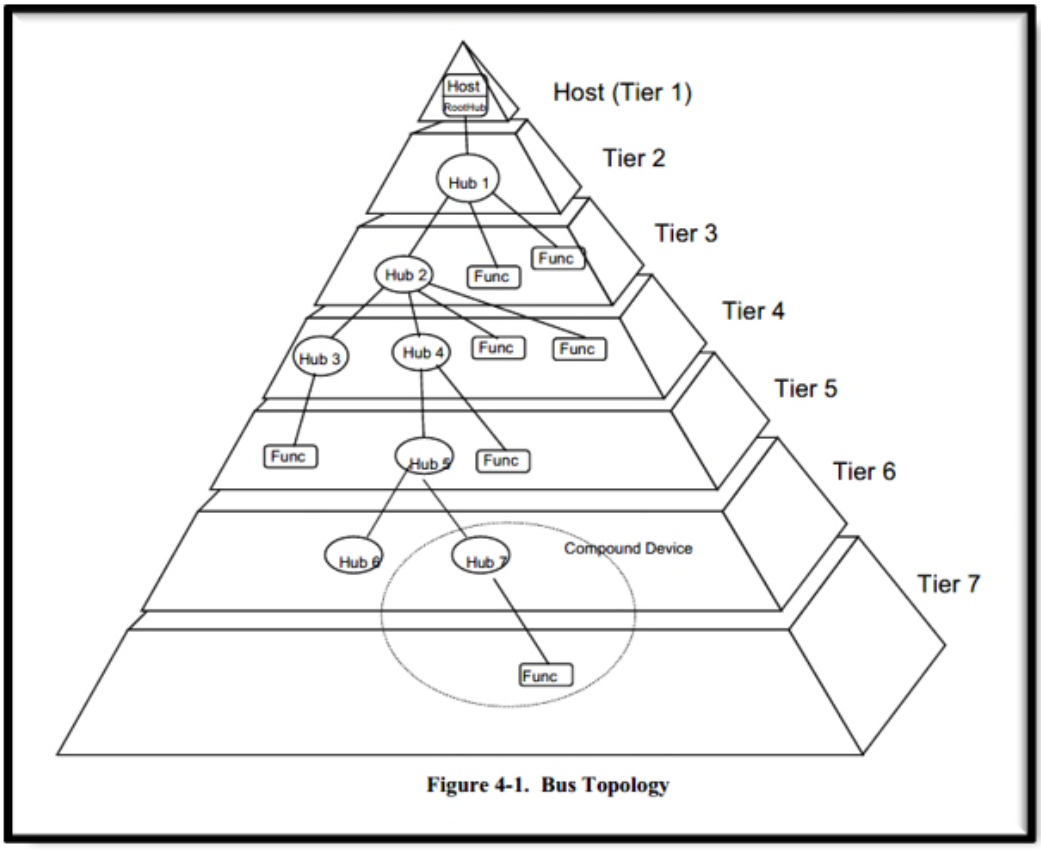



**Figure 4-1. Bus Topology**

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.

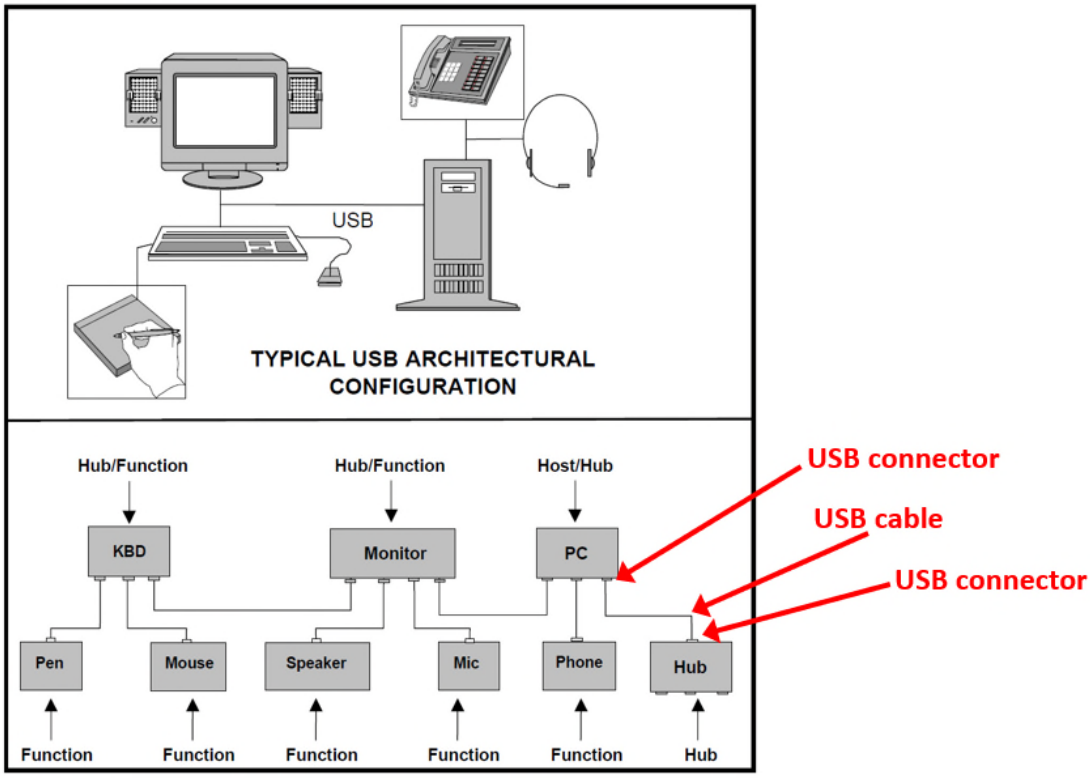



**Figure 4-4. Hubs in a Desktop Computer Environment**

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.

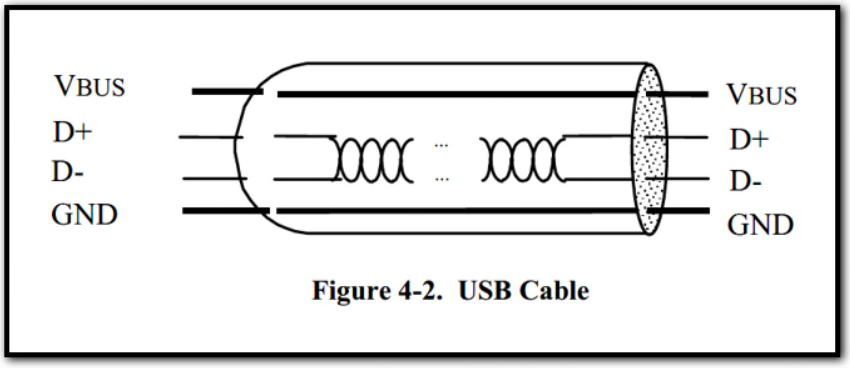



**Figure 4-2. USB Cable**

USB 2.0 at 17.

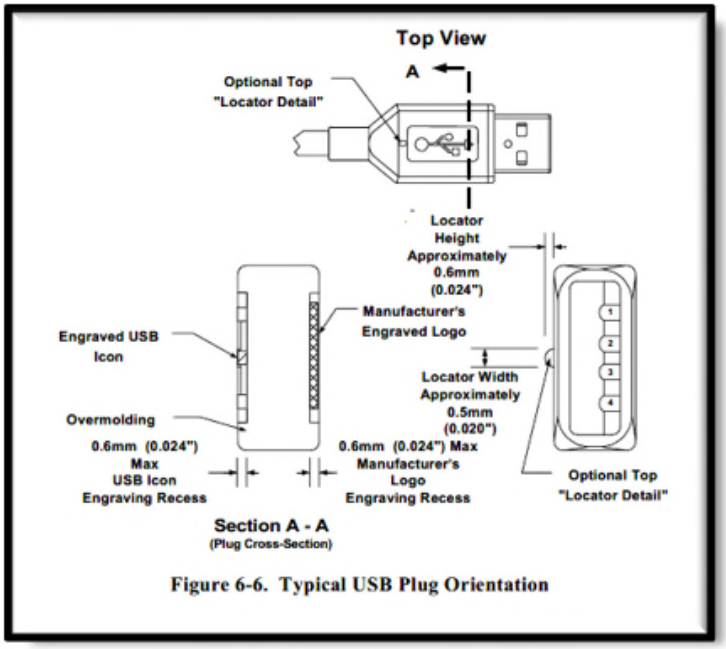



**Figure 6-6. Typical USB Plug Orientation**

USB 2.0 at 93.

**3.** <u>USB Specification for Supplying and Drawing Power.</u>

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

Baker, ¶ 63. 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 |

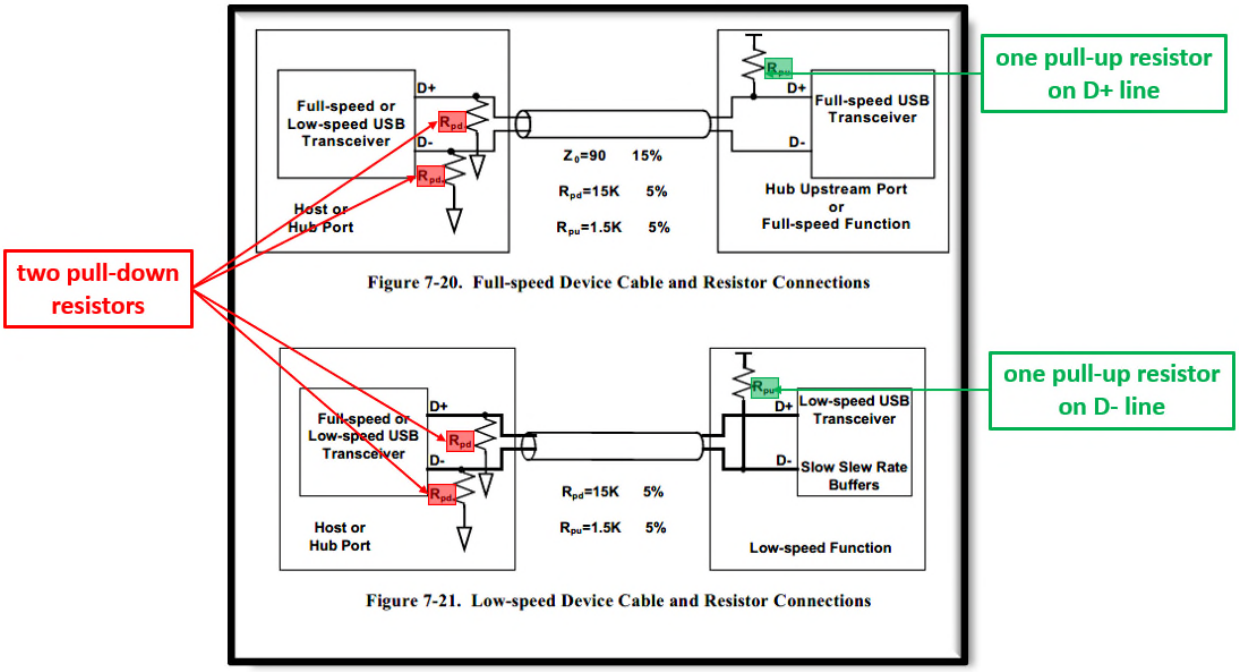
USB 2.0 at 178 (annotated).

**4.** <u>USB Specification for Communicating Between Devices.</u>

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, ¶ 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, ¶ 56. Specifically, USB hubs and hosts have two <u>pull-down</u> 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, ¶ 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, ¶ 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, ¶ 57.

### B. The '111 Patent

#### 1. Disclosure and Claims of the '111 Patent

The '111 Patent has 18 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." '111 Patent, 2:3-4. 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, 1:25-27. The '111 Patent states that this can be achieved by the transmission of an identification signal from the adapter to the mobile device. *Id.*, 6:23-42; 9:3-8. Specifically, the '111 Patent discloses an identification signal, such as the application of "voltages on both the D+ and D- lines of the USB connector [that] are greater than 2 volts," which allows the mobile device to determine that "the device connected to the USB connector 54 is not a typical USB host or hub and that a USB adapter 100 has been detected." *Id.*, 9:35-38. Once the mobile device receives the identification signal, the mobile device can draw power from the USB adapter, while bypassing the USB handshaking process, *i.e.*, enumeration, imposed by the USB Specification. *Id.*, 9:39-42.

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 (mentioning, for example, "conventional plug unit" 7:12; "conventional power socket" 7:13; "power converter of conventional construction" 7:30-32; and "typical" USB components that follow "USB specifications" already known and adopted as of the priority date of the '111 Patent 8:1-42). The '111 Patent alleges that an adapter configured in such a manner, namely, with an identification subsystem, is allegedly new and non-obvious over prior art. *See, e.g., id.*, 2:1-3:13.

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.

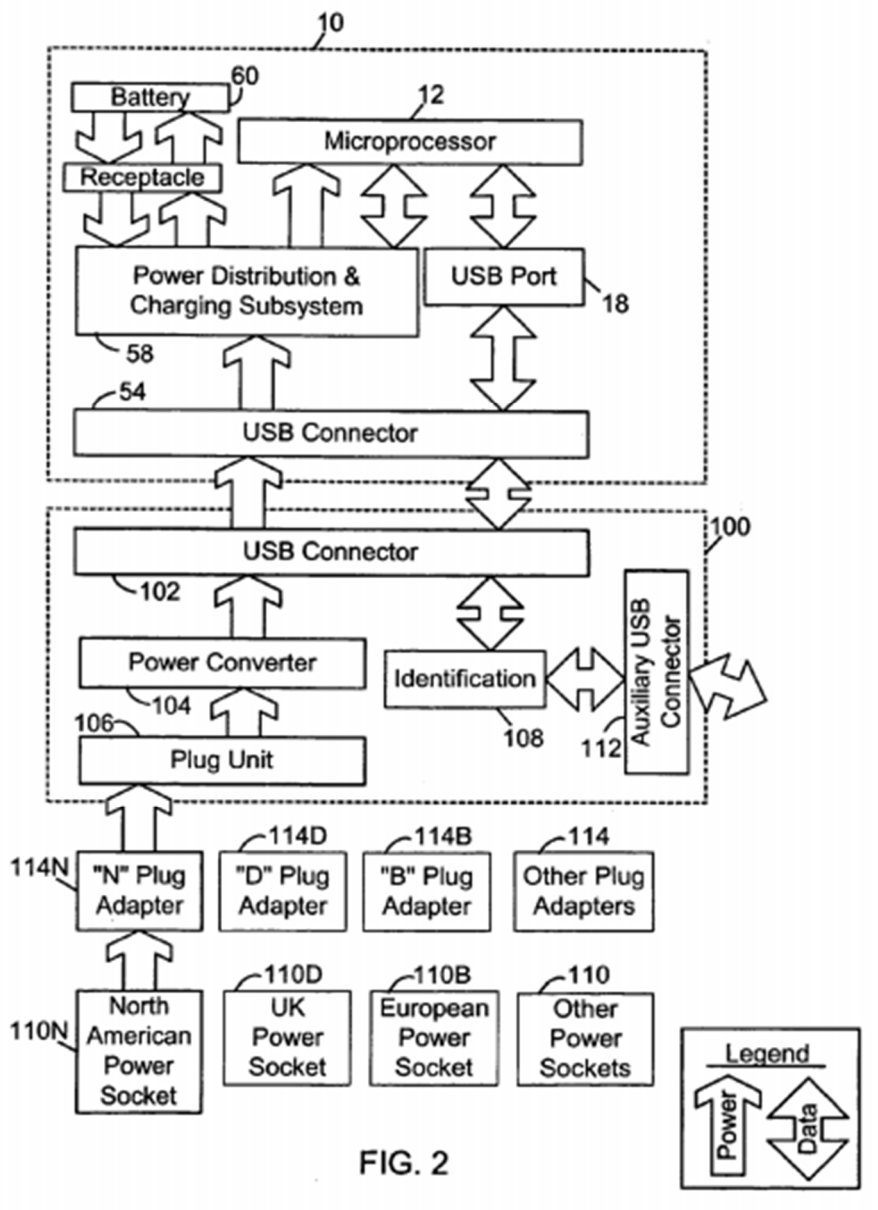



FIG. 2

The claims of the ’111 patent have only three independent claims. Independent claims 1 and 18 are apparatus claims directed to an “adapter.” Independent claim 17 is a method claim that essentially mirrors the apparatus claims.

The only differentiating feature in the claims is that the adapter has an "identification subsystem" capable of generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host.

**2.** Prosecution History of the '111 Patent

The '111 Patent issued from U.S. Patent Application No. 11/175,885, filed on July 6, 2005. '111 File History, 96.

On October 20, 2005, the Examiner rejected claims 1, 2, 4, 6-18 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 6,130,518 ("Gabehart") and rejected claims 3 and 5 as being obvious over Gabehart under 35 U.S.C. §103(a). *Id.*, 85-89.

In the response filed on January 20, 2006, the Applicants traversed the rejections without making amendments to the claims. Applicants argued that Gabehart does not disclose transmitting an identification signal that is configured to indicate that the power source is not a USB host or hub. *Id.*, 81-84.

In the non-final rejection dated April 4, 2004, the Examiner rejected claims 1, 2, 4, and 6-18 under 35 U.S.C. §102(a) as anticipated by U.S. Patent Application 2004/0215878 ("Veselic") and rejected claims 3 and 5 as being obvious over Veselic under 35 U.S.C. §103(a). *Id.*, 75-77.

In the response dated June 15, 2006, the Applicants noted that the application claims priority to two provisional applications, the latest of which was dated October 23, 2001. Applicants argued that because Veselic has an earliest possible priority date of June 11, 2003, Veselic is not prior art. *Id.*, 54-55.

In the non-final rejection dated August 24, 2006, the Examiner provisionally rejected claims 1-18 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the claims of co-pending Application No. 10/087,628 (now U.S. 6,936,936). *Id.*, 44-47. Applicant subsequently filed a terminal disclaimer on November 22, 2006. *Id.*, 42.

The terminal disclaimer was approved on February 20, 2007. Notices of Allowances and Allowability followed on March 8, 2007. *Id.*, 26-29. No reasons for allowance were indicated.

**3.** Priority of the '111 Patent.

The '111 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, ¶¶ 72-74. 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 indicates 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. *Id.* at 20-30 (discussing various embodiments); Baker, ¶ 71.

**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. Baker, ¶71-74. For example, and importantly for the ’111 claims, the ’021 Application noticeably omits any discussion of using an “identification signal” on the USB communication path, that is configured to “indicate to the mobile device that that power socket is not a USB hub or host.” *Id.* at 20-30; Baker, ¶71. Therefore, all references utilized in this request are prior art to the Challenged Claims.

## C. Summary of Relevant Prior Art

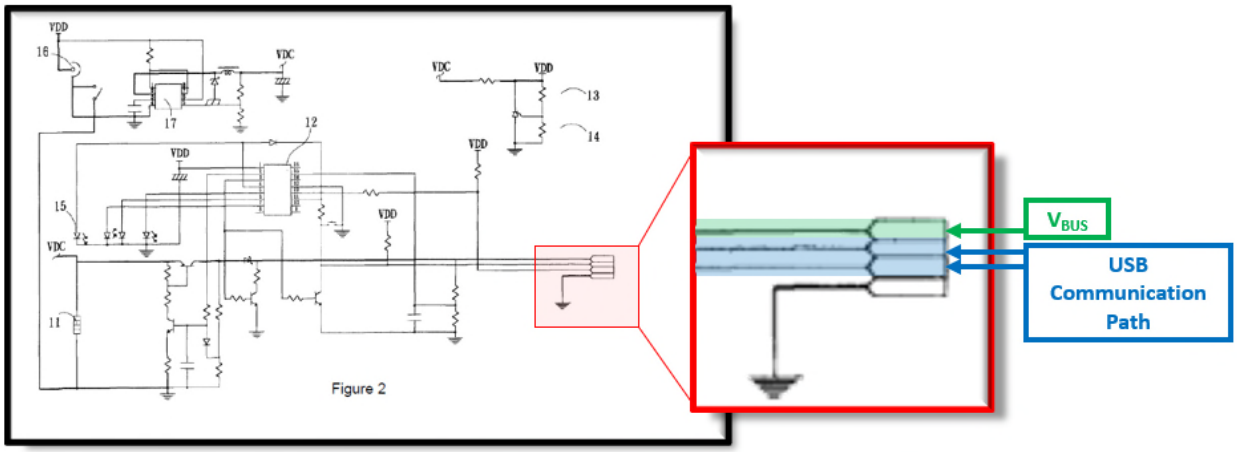
### 1. Yang

CN2410806Y is a Chinese patent identifying Mr. Yang as the sole inventor and is directed to a “Mobile Phone Charger with Multiple Power Supply Inputs.” PA-A (Yang) at [54] and [73]. 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

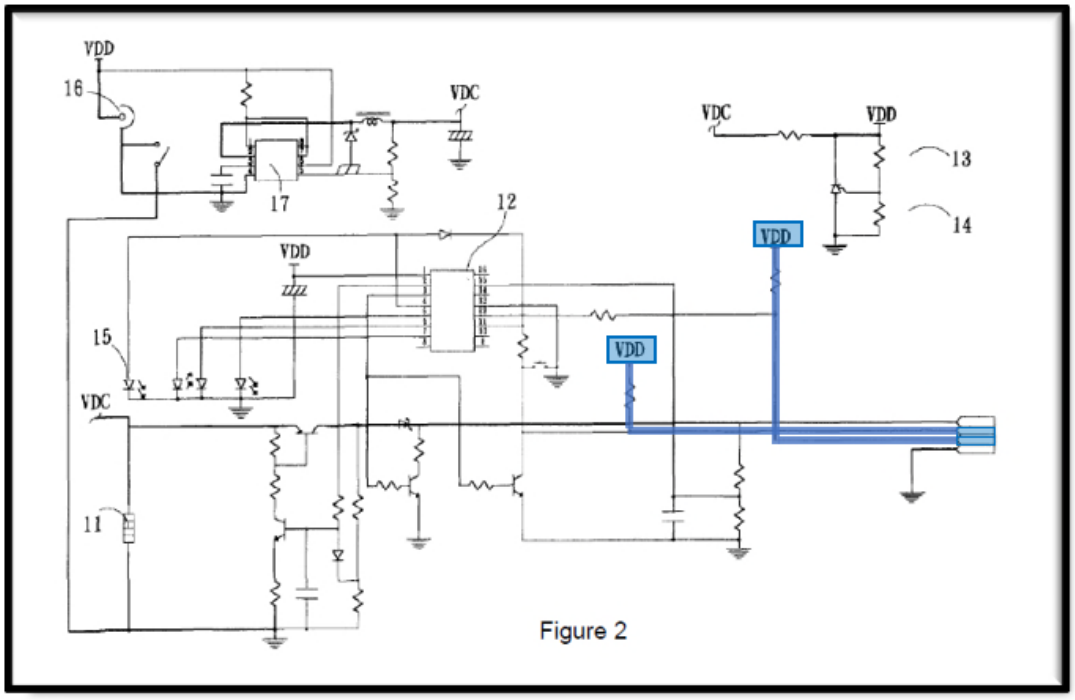
power supply inputs."); *id.* at Specification Page 1 ("The second purpose of this utility model is to provide a mobile phone charger with multiple power supply inputs so that the dock charger can use the regular household AC 110V/220V power supply for charging mobile phone batteries."); Baker, ¶ 75.

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.* at 76. 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. Baker, ¶¶ 77-78. In other words, the default signal on the data lines is a high/high signal on the data lines:




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

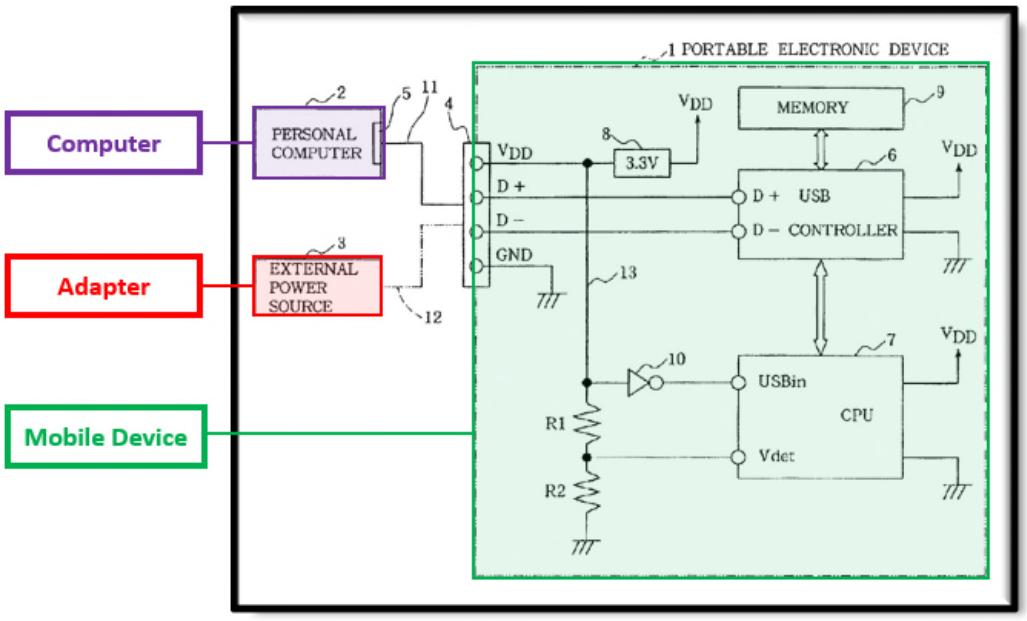
CN2410806Y (Yang) was not of record during prosecution of the '111 Patent.

**2.** Matsumoto

Like the '111 Patent, Matsumoto discloses a USB device that can be charged using a USB adapter. Baker, ¶ 79. Also like the '111 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). *Id.*

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.* at 80, Matsumoto at 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. Baker, ¶ 81, Matsumoto at 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. Baker, ¶ 81; Matsumoto at 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."); Baker, ¶ 81; Matsumoto 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.").

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 . . . ."); 2:46-50 ("Stated more specifically, the control circuit comprises discriminating means for judging which of the information processing device [computer] and the external power source [adapter/charger] is connected to the common serial bus connector . . . ."); 2:13-27 ("The present invention provides a portable electronic device comprising . . . a control circuit connected to the common serial bus controller . . . . The control circuit discriminates among the sources of supply of power.") (emphasis added); Baker, ¶ 82.

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, ¶ 83.

The examiner does not appear to have considered Matsumoto during prosecution of the '111 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 used 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, ¶ 84.

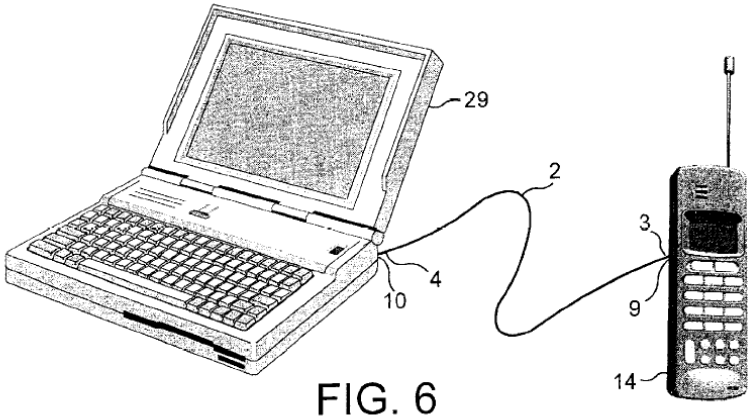


FIG. 6

### 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.

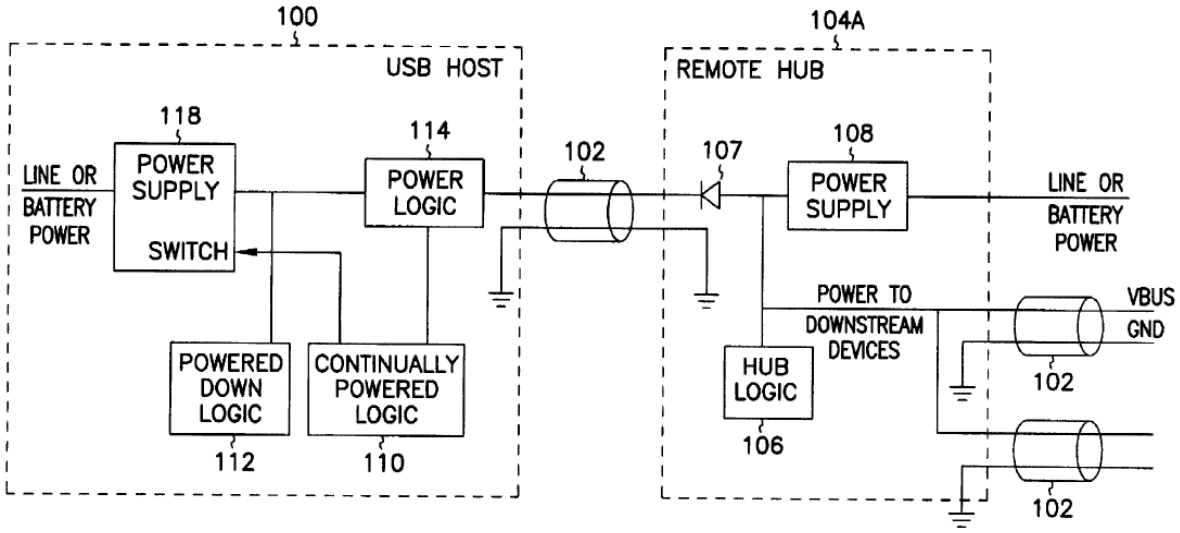



FIG. 1A

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. Any claim construction issues are discussed directly in the analysis of the claims.

The '111 Patent will expire March 1, 2022. 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 1-8, 12 and 16-18

For the reasons stated below, Yang in combination with Matsumoto renders obvious Claims 1-8, 12 and 16-18. Neither reference, nor the combination of the two references, was presented during prosecution of the '111 patent. Thus, this combination, which renders obvious all Challenged Claims, presents a substantial new question of patentability.

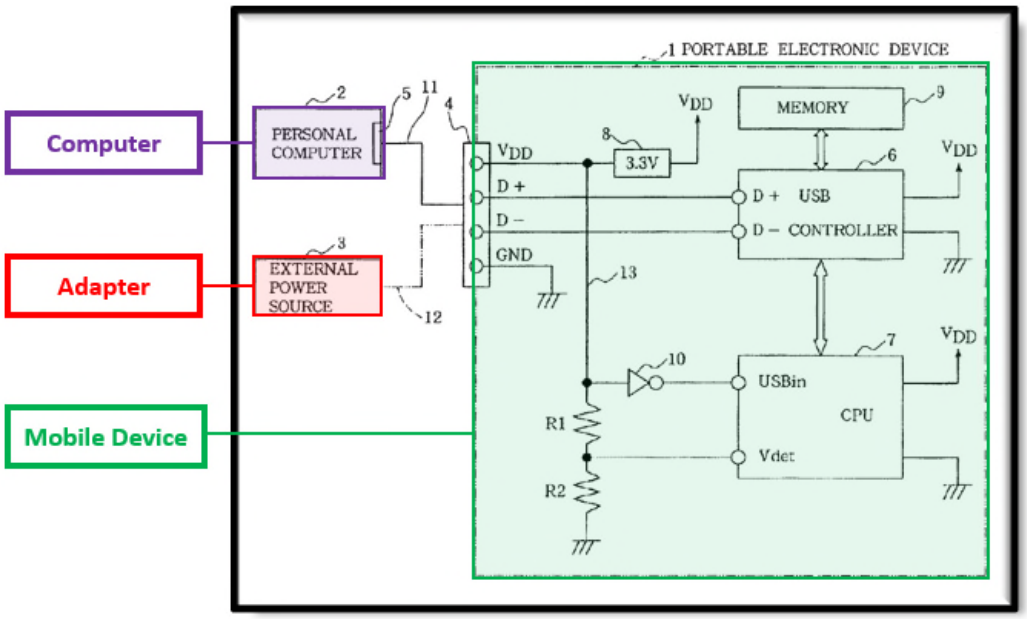
#### 1. Motivation to Combine

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,), ¶ 85.

Both Matsumoto and Yang relate to systems and methods for powering portable electronic devices (i.e., mobile devices). Baker, ¶ 86. 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.").

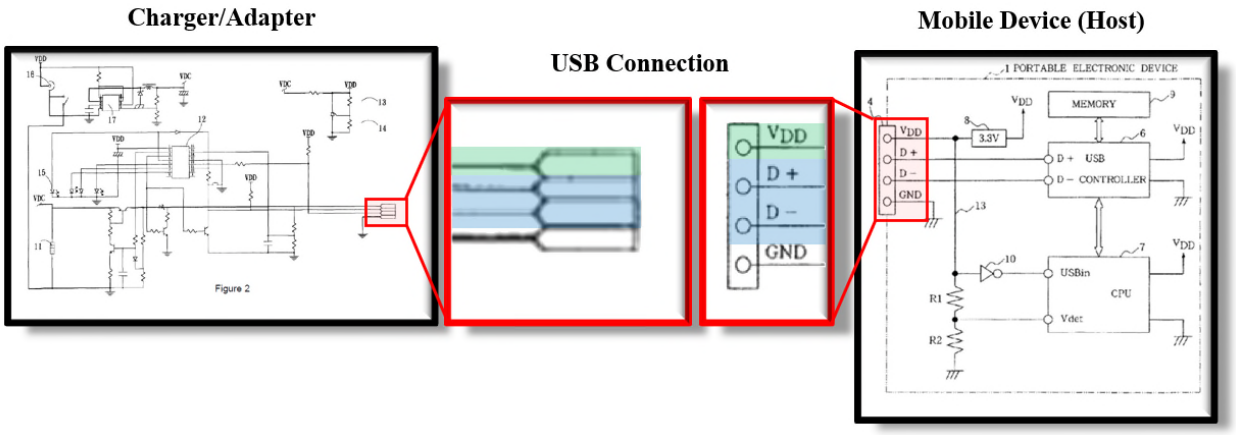
As noted in Section III.C.1, *supra*, Matsumoto discloses that such mobile devices can be connected through a USB connection to either (1) a computer or (2) an adapter connected to a wall outlet. Matsumoto, Abstract ("A portable electronic device according to the invention comprises a USB connector . . . . 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, ¶ 89. 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. Baker, ¶ 90. Yang discloses precisely what is suggested by Matsumoto, an adapter that can power a mobile device from, for example, a wall outlet. Yang, Abstract and 3:46-47; Baker, ¶ 90. 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, ¶ 90.

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, ¶ 91.

**2.** Claim 1

Yang in view of Matsumoto renders Claim 1 obvious under 35 U.S.C. § 103. Below, Requester 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.** ***Preamble: A Universal Serial Bus ("USB") adapter for providing 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, ¶ 94.

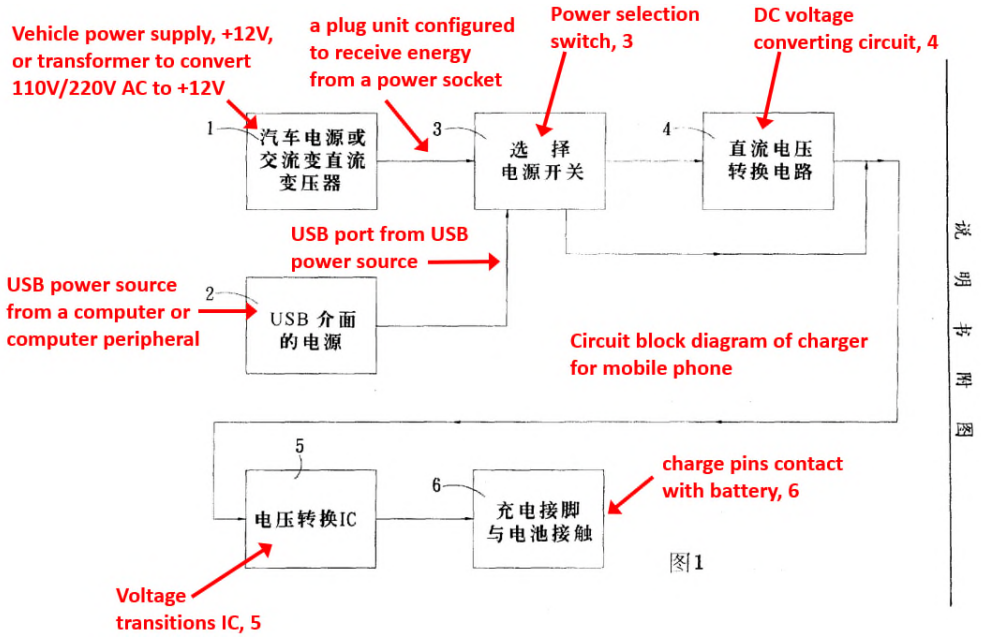
Matsumoto also discloses an adapter. Specifically, Matsumoto discloses a portable electronic device with a USB connection that can be connected to (1) a computer or (2) an "a.c. adaptor" for charging a device from an "external power source" like a wall-socket. Matsumoto, Abstract ("A portable electronic 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."); *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, ¶ 95.

**b.** ***a plug unit configured to receive energy from a power socket***

The combination of Yang and Matsumoto discloses the claimed plug unit. 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.

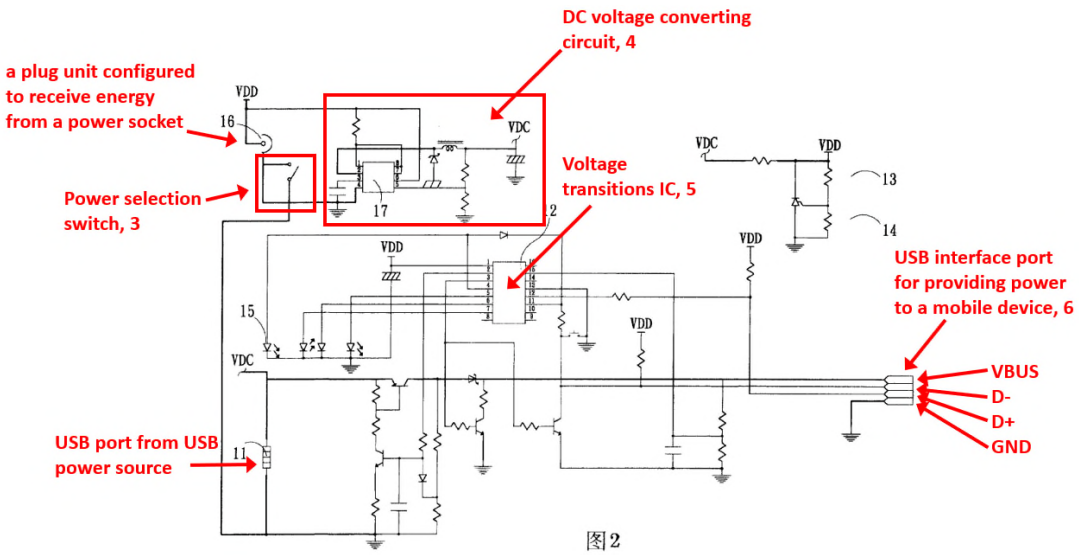
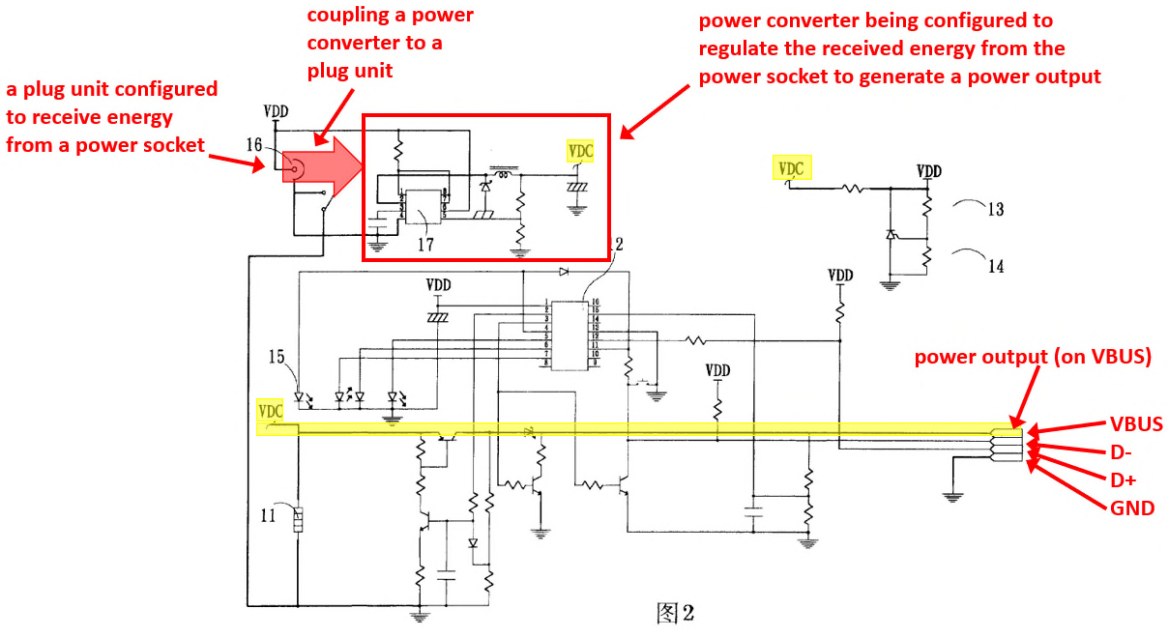


图2

Accordingly, Yang discloses the claimed plug unit as shown in Figure 2 above. To the extent not expressly disclosed, a person of ordinary skill in the art would have understood Yang's disclosure to include and/or render obvious a plug unit that could be coupled with a household power socket.

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

The combination of Yang and Matsumoto discloses the claimed power converter. 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.



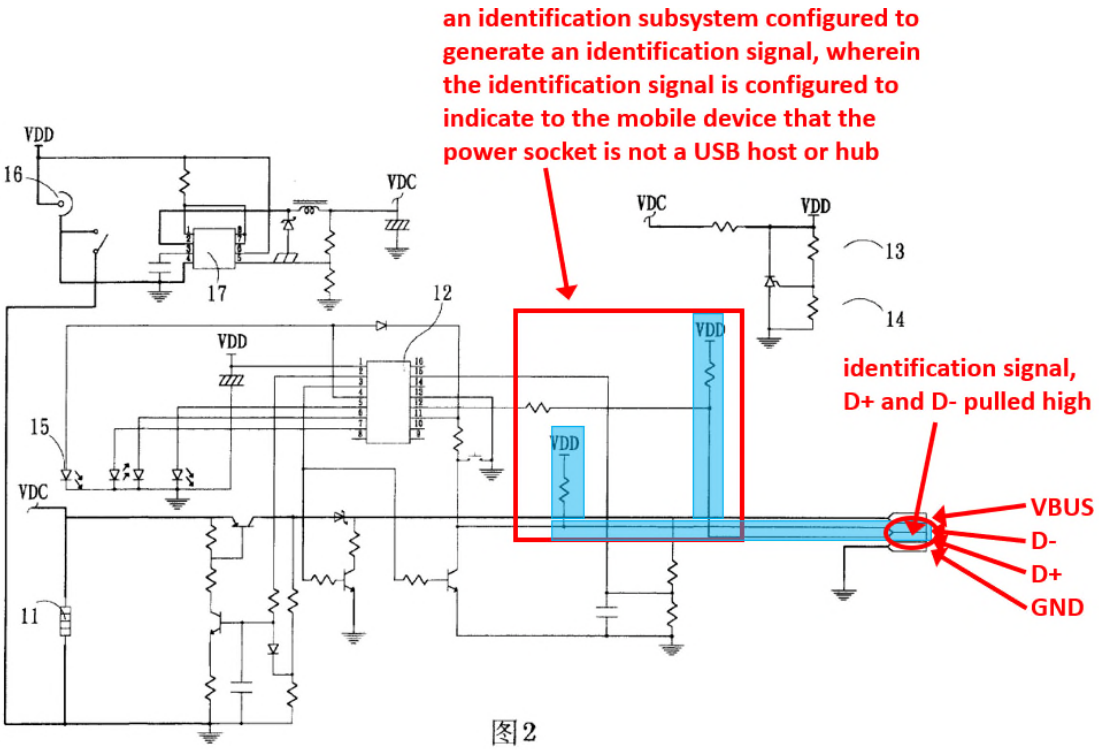

Yang Fig. 2. As shown above, a power converter is included within the red box and is able to regulate the received 110V energy and convert it into an output power requirement of a mobile device. Yang explains that "the commercial power supply is converted to DC +12V through the transformer (16), so its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

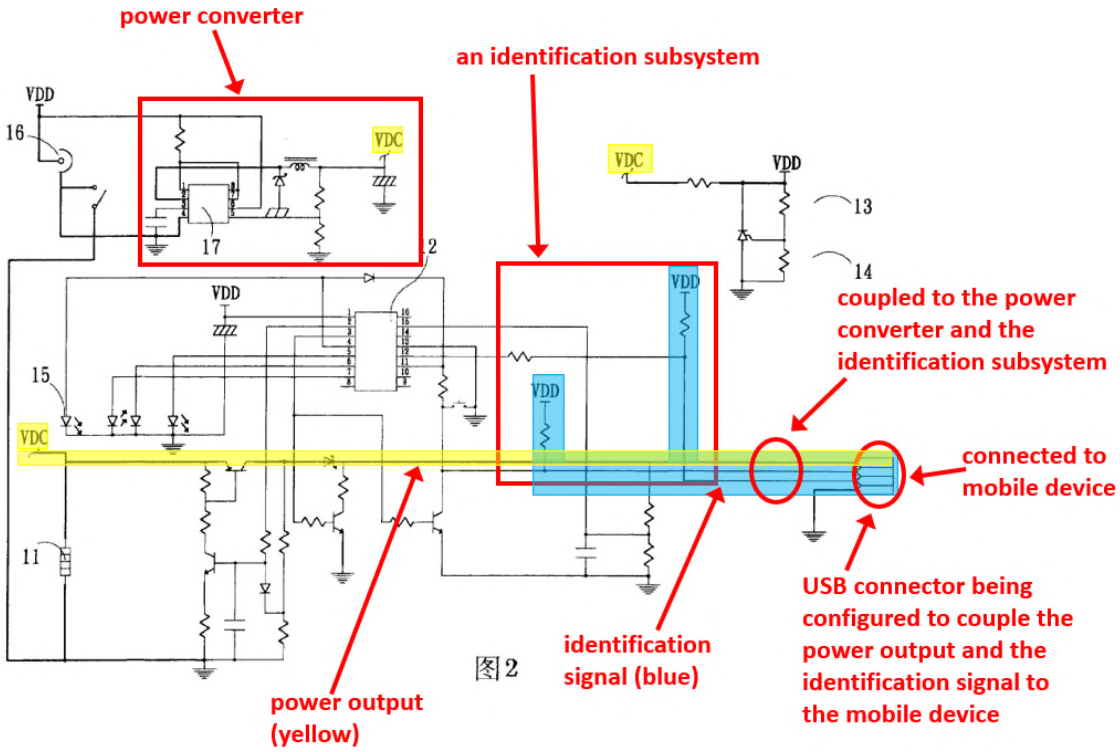
**d.** ***an identification subsystem configured to generate an identification signal, wherein the identification signal is configured to indicate to the mobile device that the power socket is not a USB host or hub; and***

Yang discloses the claimed identification subsystem that provides an identification signal on the data lines of the USB connector. 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. As explained previously, the '111 patent expressly discloses that the "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.,* '111 Patent at 9:26-42.

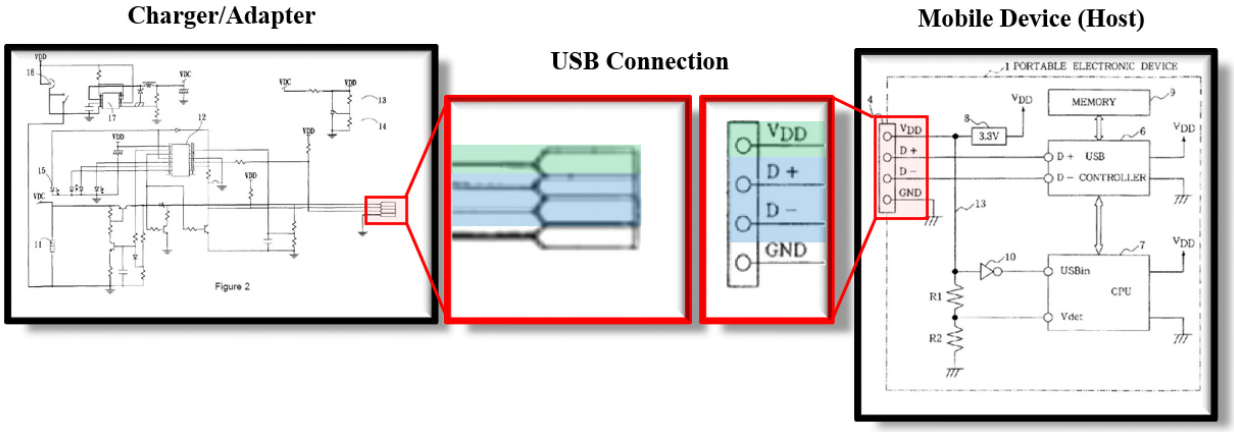



Yang, Fig. 2 (annotated). Further annotating Figure 2 of Yang demonstrates how each element of claim 1 is disclosed by Yang in conjunction with the identification subsystem.




*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.

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. Baker ¶ 102. Accordingly, this claim element is met by Yang, or at least by Yang in view of Matsumoto.

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

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 '111 patent, which include D+, D-, Ground, and VBUS. Yang further notes that the "power supply is converted into a +5V voltage, which is the same as the USB interface voltage." Yang at 2. Therefore, a POSA would find it disclosed by Yang that the output charge pins of the Yang charger are a USB connector for providing power to a mobile device as annotated in Yang, Fig. 2.

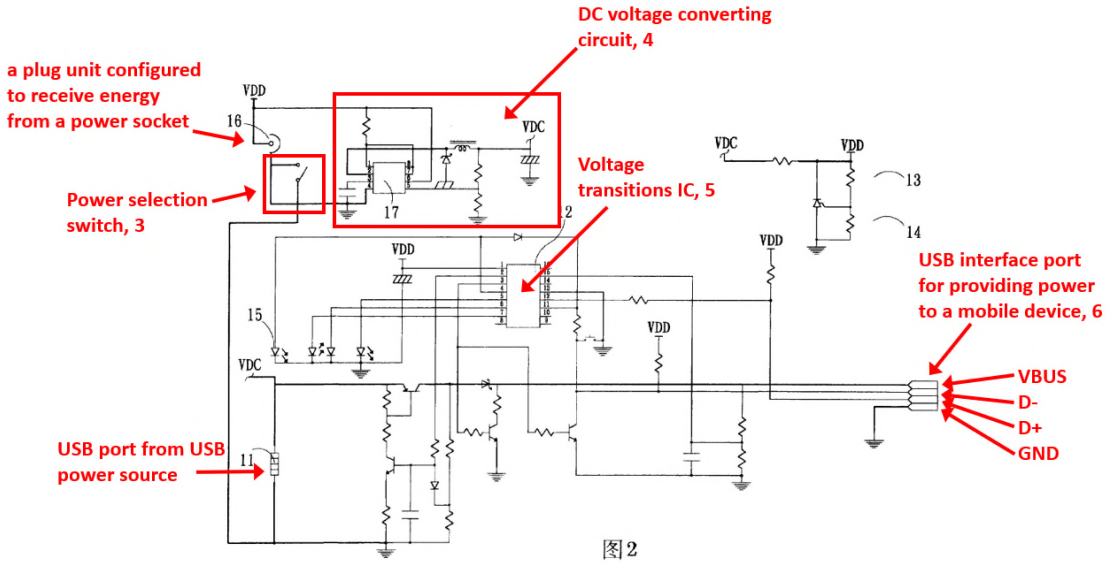
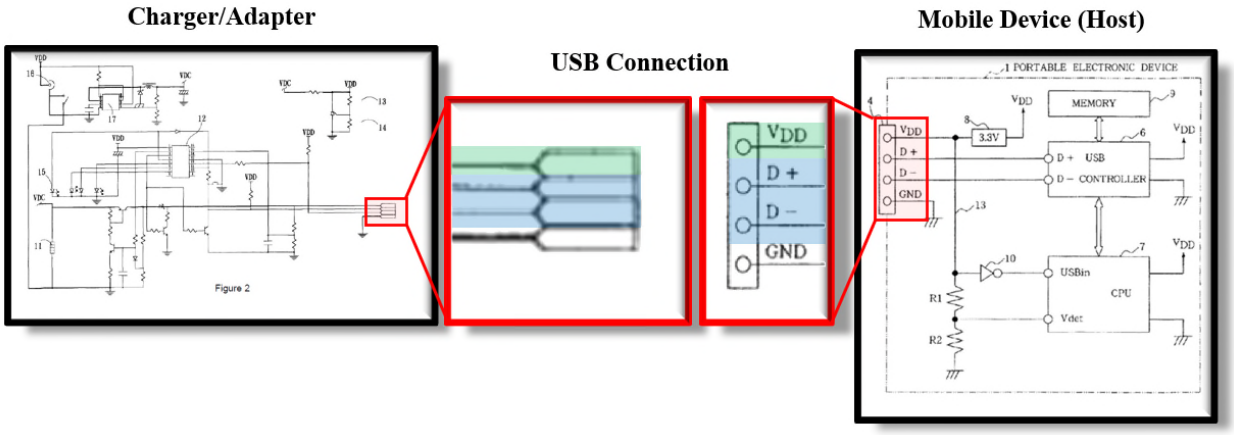


图2

To the extent not expressly disclosed by Yang, Matsumoto discloses that its mobile device battery charging circuit includes a USB connector that would connect to the four disclosed pins of

Yang. 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.

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

Yang discloses that its adapter includes a plug that is configured to coupled directly with a power socket to power the charger with the converted DC +12V or +5V. 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 claim 2.

**4.** Claims 3 and 5 ***- The USB adapter of claim 2 [claim 4], 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. In addition, Yang discloses that its charger adapter may couple to an "automobile power supply." *Id.* Accordingly, Yang discloses claims 3 and 5.

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

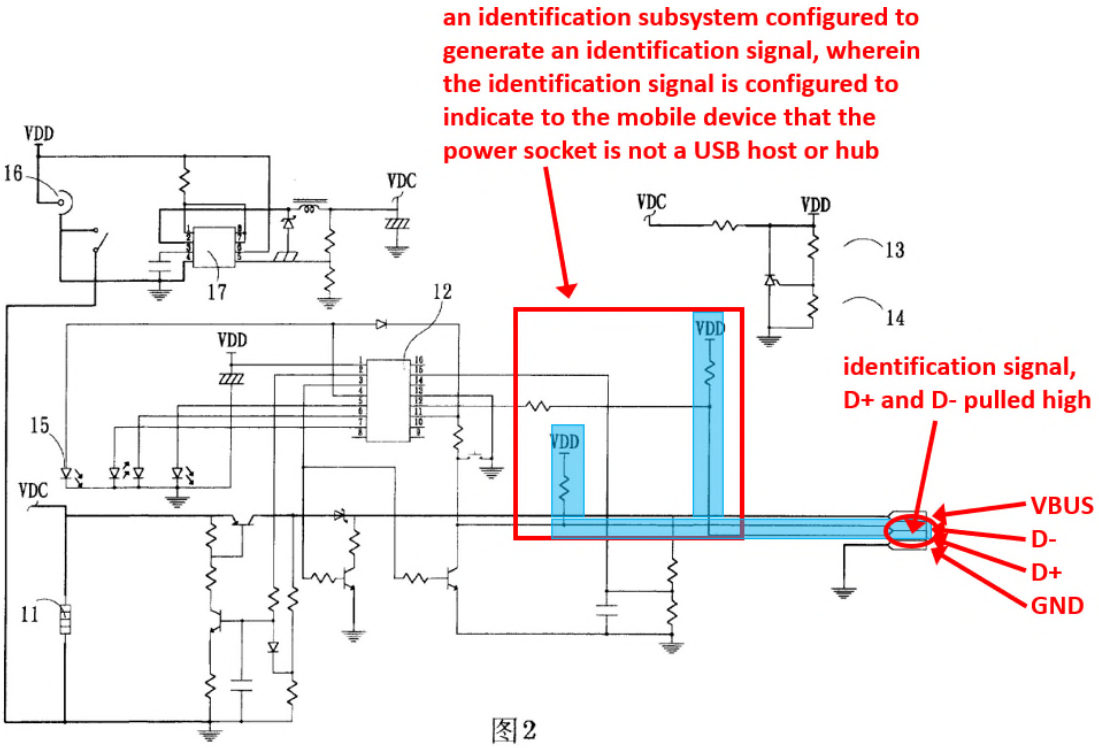
Yang discloses the use of multiple types of power supply inputs. Yang at 1. Determining the type of plug adapter to use in order to couple the plug unit to a certain type of wall outlet was within the skill of a layman, and well within the skill and knowledge of a POSITA. Baker, ¶ 107. Accordingly, claim 4 is rendered obvious by Yang.

**6.** Claim 6 ***- The USB adapter of claim 1, wherein the identification signal comprises a voltage level that is applied to at least one data line in the USB connector.***

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

**7.** Claim 7 ***- The USB adapter of claim 1, wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the 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:

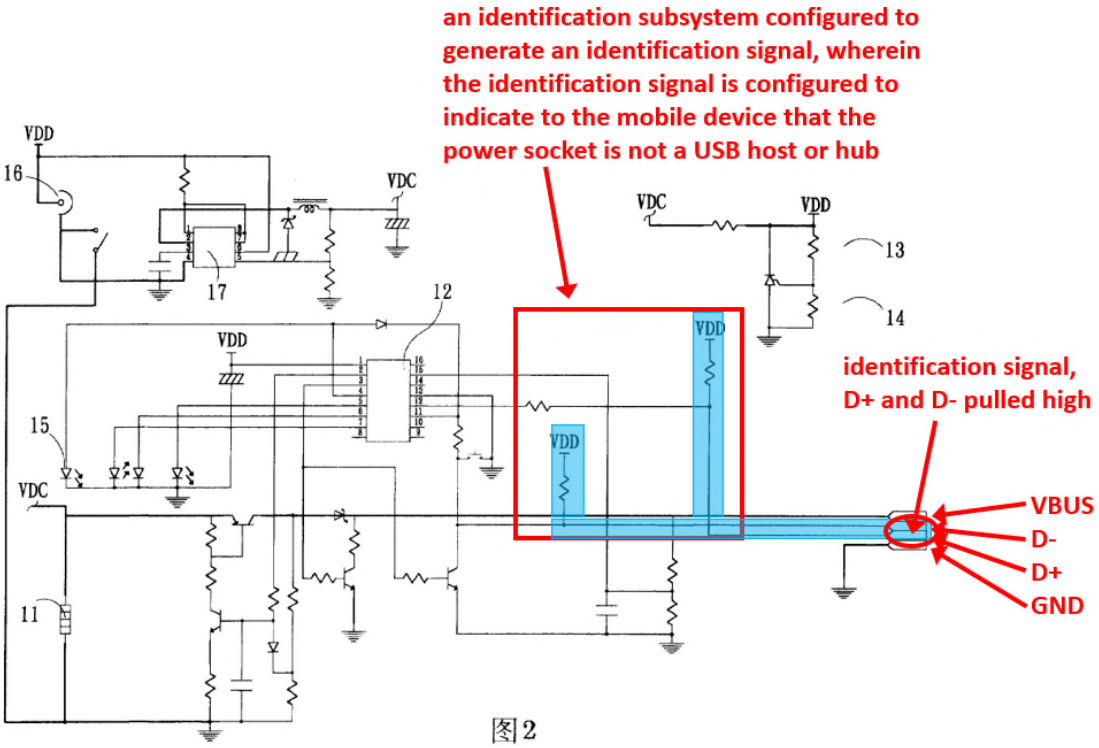



Yang, Fig. 2 (annotated).

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

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

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, ¶110. This hard-wired connection is depicted below and highlighted in blue:

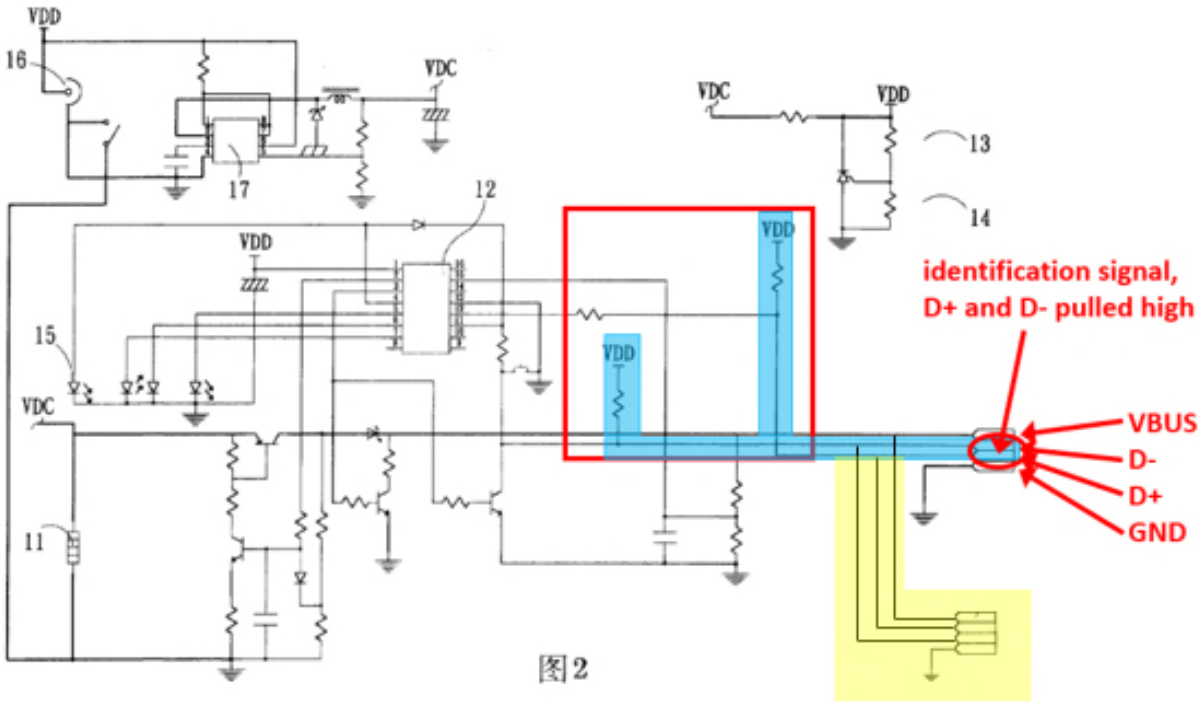



Yang, Fig. 2 (annotated).

Accordingly, all this claim element are met by Yang or at least by Yang in combination with Matsumoto.

**9.** Claim 12 – ***The USB adapter of claim 1, further comprising an auxiliary USB connector.***

Claim 12 adds only having "an auxiliary 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 ¶ 112. 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.




**10.** Claim 16 - ***The USB adapter of claim 1, wherein the power converter comprises at least one component selected from the group consisting of: switching converter, transformer, DC source, voltage regulator, linear regulator and rectifier.***

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 claim 16.

**11.** Claim 17

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

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. As explained above, both Matsumoto and Yang relate to systems and methods for powering portable electronic devices (i.e., mobile devices). Baker, ¶¶ 114, 160. Specifically, each involves a system and method for powering such mobile devices

using an USB adapter (using USB connectors) 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, ¶ 114; *see also* Section IV.A.2.a.

A person of ordinary skill in the art would thus have understood that Yang and Matsumoto renders the preamble to claim 17 obvious.

**b.** ***receiving a power input from a power socket;***

As explained in Section IV.A.2.b., this element is rendered obvious by the combination of Yang and Matsumoto. *See* Section IV.A.2.b. For example, Yang discloses receiving power from a power socket via the plug unit.

**c.** ***generating a regulated DC power output from the power input;***

As explained in Section IV.A.2.c., this element is rendered obvious by the combination of Yang and Matsumoto. *See* Section IV.A.2.c. For example, Yang discloses that its adapter discloses a power converter that converts 110V/220V household electricity (*i.e.*, power input from the power socket) into 12V DC power output (*i.e.*, regulated DC power output).

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

As explained in Section IV.A.2.d., this element is rendered obvious by the combination of Yang and Matsumoto. *See* Section IV.A.2.d. For example, Yang discloses an identification

subsystem that provides an identification signal on the data line of the USB connector. Yang expressly discloses that the D+ and D- lines are held logic high using pull-up resistors. Further, Matsumoto expressly discloses and renders obvious in combination with Yang the use of USB connectors, which would recognize the signal (data lines set at high logic) in Yang. Baker ¶ 102.

**e.** ***providing the identification signal on one or more data pins of the USB connector, and***

As explained in Sections IV.A.2.d. and IV.A.6-7., this element is rendered obvious by the combination of Yang and Matsumoto. *See* Sections IV.A.2.d. and IV.A.6-7. Yang discloses that the D+ and D- lines (i.e., data pins) are held logic high (i.e., an identification signal) using pull-up resistors. To the extent Yang does not expressly disclose a USB connector, the 4-pin connector in Yang renders a USB connector obvious. Baker, ¶118. Moreover, Matsumoto expressly discloses and renders obvious in combination with Yang the use of USB connectors. *Id*.

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

A person of ordinary skill in the art would have understood that power was routinely transferred and provided on one or more of the "power" pins of a USB connector. Baker, ¶ 119. Indeed, in Yang it would have been understood that the power was provided across the VDD and ground pins. *Id*. To the extent such pin is not considered an express disclosure of a USB connector, the 4-pin connector in Yang renders a USB connector obvious. *Id*. Moreover, Matsumoto expressly discloses and renders obvious in combination with Yang the use of USB connectors. *Id*. A person of ordinary skill in the art would have understood that power was transferred and provided on one or more of the "power" pins of a USB connector disclosed in Matsumoto identified as $V_{DD}$ and Ground. *Id*.

**12.** Claim 18

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

*See* Section IV.A.2.a.

**b.** ***means for receiving energy from a power socket;***

The '111 patent expressly discloses that the structure that performs the function of receiving energy from a power socket is a plug unit. *See, e.g.*, '111 patent at Abstract ("The plug unit is operative to couple the adapter to a power socket and operative to receive energy from the power socket."); 2:7-9. Plug unit 106 is described as a "conventional plug unit that can be used to couple with a conventional power socket" and can take the form of two or three prong plug types such as those used in North America. *Id*. at 7:12-26.

Yang expressly discloses that its mobile phone charger has "multiple power supply inputs" including a "regular household AC 110V/220V power supply." Yang at 2. A person of ordinary skill in the art would have understood that Yang disclosed a plug unit and that it was used for receiving energy from a power socket. *See* Section IV.A.2.b.

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

The '111 patent expressly discloses that the structure that performs the function of regulating the received energy from the power socket to generate a power output is a power converter. *See, e.g.*, '111 patent at 2:41-44 ("The power converter is electrically coupled to the plug unit and is operable to regulate the received energy from the power socket and to output a power requirement to the mobile device."). The power converter is described as being of conventional construction such as a "switching converter" or "DC regulator circuit." 7:27-43.

As explained in Section IV.A.2.c., Yang discloses a power converter that regulated the power from the power socket and generates a regulated power output. *See* Section IV.A.2.c.

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

The '111 patent expressly discloses that the structure that performs the function of generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host is an identification subsystem. *See, e.g.*, '111 patent at 2:16-18 ("The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal.").

As explained in Section IV.A.2.d., Yang and Matsumoto render this element obvious. *See* Section IV.A.2.d.

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

The '111 patent expressly discloses that the structures that can perform the function of coupling the power output and identification signal to the mobile device are connectors and/or USB connectors. *See, e.g.*, '111 patent at 2:13-18 ("The primary connector is electrically coupled to the power converter and is operative to couple to the mobile device and to deliver the outputted power requirement to the mobile device. The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal."); 2:28-34 ("The primary USB connector is electrically coupled to the power converter and is operative to couple to the mobile device and to deliver the outputted power requirement to the mobile device. The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal.").

As explained in Section IV.A.2.e., Yang and Matsumoto render this element obvious. *See* Section IV.A.2.e. Yang discloses a connector and Matsumoto discloses a USB connector. To the extent a USB connector is required and to the extent Yang does not expressly disclose or render

obvious a USB connector, a person of ordinary skill in the art would have found it obvious to use Matsumoto's USB connector when practicing Yang for all of the reasons provided Section IV.

### B. Kerai renders obvious Claims 1-8 and 16-18

For the reasons stated below, anticipates claims 1-8 and 16-18. Kerai was not presented during prosecution of the '111 patent. Thus, Kerai and the arguments below presents a substantial new question of patentability. To the extent any limitation is not found to be expressly 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 '111 patent. 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 this same language 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). Although the '936 patent is referenced above, it is the parent to the '111 patent, which is a continuation of the '936 (i.e., has the same specification and disclosure).

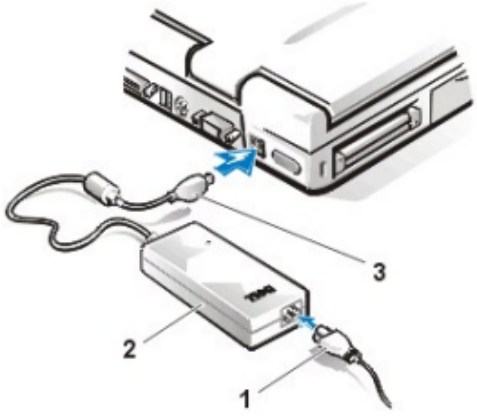
Furthermore, Patent Owner told the district court that the form taken by what is claimed in the Challenged Claims is irrelevant:

> 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. 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, ¶131. In

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

Accordingly, to the extent Kerai is found to not disclose, either expressly or inherently, the AC power adapter and plug unit of its disclosed laptop computer, it would be obvious to a POSITA at the time of the alleged invention of the '111 patent to utilize a common and well-known AC adapter and plug unit to provide power to the laptop computer.

**1.** Claim 1

**a.** ***Preamble: A Universal Serial Bus ("USB") adapter for providing 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 power to a mobile device through a USB port.

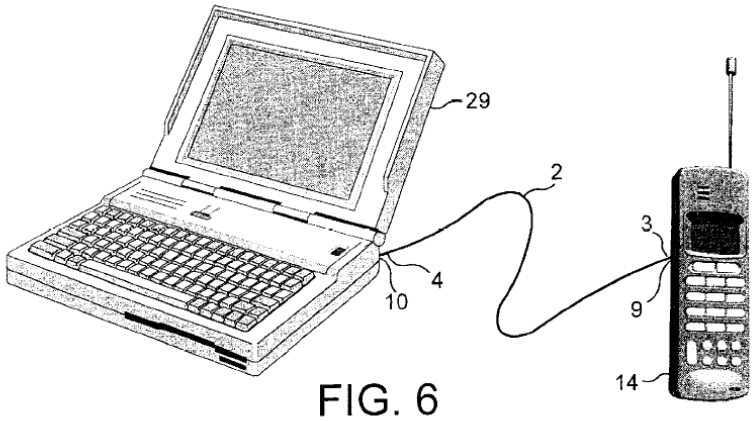


FIG. 6

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.*

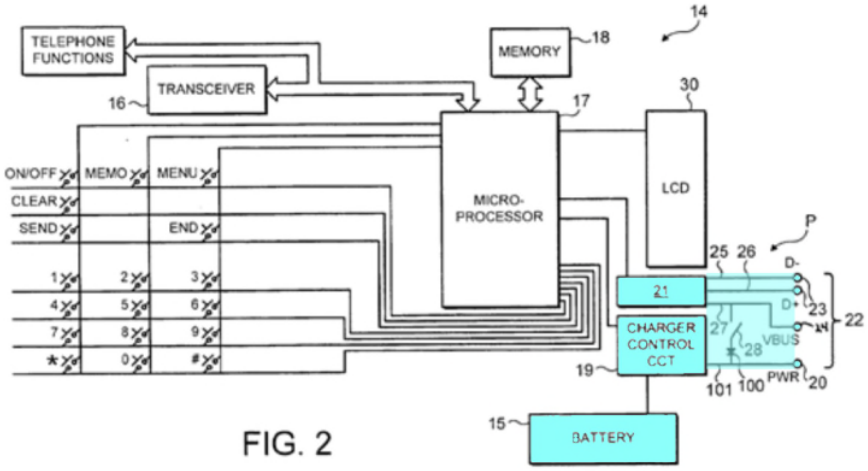



FIG. 2

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 (parent to the '111 patent, a continuation patent with a common specification) 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.

OTH-B at 20.

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

**b.** ***a plug unit configured to receive energy from a power socket***

Kerai discloses that the adapter (laptop) can receive power from a publicly available power source (i.e., AC power outlet), which is a power socket. 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 ¶ 134. 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. Furthermore, the '111 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"). Thus, Kerai renders this element obvious.

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

Kerai discloses that the adapter (laptop) can receive power from a publicly available power source (i.e., AC power outlet). 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 ¶ 135. 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 publically available power." Kerai 4:21-43. Furthermore, the '111 patent admits that a power converter was "conventional." 7:30-32. Thus, Kerai discloses and/or renders this element obvious.

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

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. Kerai's identification subsystem is used to create 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. 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.*

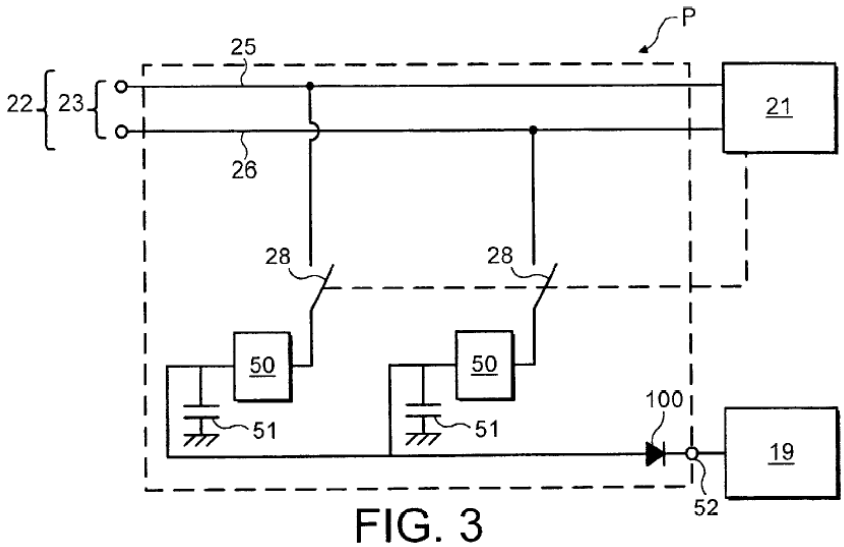


FIG. 3

A POSITA would have logically understood that holding the D+ and D- lines high would identify to the connected mobile device that the power socket is not a USB host or hub. Baker, ¶139. It was well known that holding both D+ and D- high was an abnormal condition (SE1) as discussed above in paragraph 57. *Id*. Normal USB communications are not possible; however, the power, VDD, is still present in the USB connector and thus available to charge a connected electronic device. *Id*. Stated differently, a POSITA would have found it obvious and logical to use the SE1 condition (the only state on the data lines not being used to identify that communications from a USB host or hub were about to take place) to signal to the mobile device that the power socket, i.e., the sole source of the signal and power, was not coming from a USB host or hub. *Id*. Accordingly, under either embodiment of Kerai, this claim element is met as obvious.

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

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. As explained above, the identification signal is provided on the data lines of the USB connector. *See* Section IV.B.1.d. Thus, the USB connector is configured to couple the identification subsystem to the mobile device. Baker, ¶140. Likewise, as explained above, the power converter must convert the power from the power socket and provide it to the mobile device. *Id.* The mobile device has specific voltage requirements. Power is transferred via the Vbus or power lines of the USB connector.

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

*See* section 1.b. and 1.c. above. It was well-known in the art that laptop computers connect directly to a power socket via a conventional plug unit. Baker, ¶145. Indeed, the '111 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. *Id*.

**3.** Claims 3 and 5 ***- The USB adapter of claim 2 [claim 4], 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. 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 A POSITA would have understood it to be obvious that the devices need utility and power in these countries and circumstances, such that these types of configurations of plug units would be obvious. Baker, ¶140.

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

*See* claim 3. 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.

**5.** Claim 6***– The USB adapter of claim 1, wherein the identification signal comprises a voltage level that is applied to at least one data line in the USB connector.***

*See* Section IV.B.1.d. above, which describes how Kerai discloses an identification signal that comprises a voltage level that is applied to at least one data line. 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.

**6.** Claim 7 **-** ***The USB adapter of claim 1, wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the 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. As Kerai explains, each data line (25, 26) is "tapped, via a switch 28, to a respective logic detector 50…A connection A connection from the 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 7.

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

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. Kerai further discloses that holding lines high can be accomplished "in accordance with usual practice." Kerai, 6:17-18. A POSITA would have understood that one of the most common and routine ways of holding the D+ and D- lines high would be to use pull up resistors. This is because pull up resistors connect the data lines high while at the same time controlling, if the data lines are shorted, excessive current from flowing. Moreover, a POSITA would have understood that a controller would have been needed to provide the correctly regulated voltages to the mobile device or any other device attached to ensure proper operation and charging. Baker, ¶147. Because the connection expressly uses a USB connector, a POSITA would have considered it obvious to use a USB controller. *Id*. Thus, Kerai's express teaching suggests and renders obvious the use of a USB controller.

**8.** Claims 16 - ***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.***

Kerai discloses a power converter that regulates voltage, i.e., voltage regulator. *See* claim 1, Section IV.B.1.c.

**9.** Claim 17

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

Patent Owner has taken the position in district court litigation that the preamble is not a limitation on the claims. Under the broadest reasonable interpretation standard applied here, that position should be adopted. Regardless, even if the preamble is limiting, it is satisfied by Kerai. See claim 1.

**b.** ***receiving a power input from a power socket;***

As explained in Section IV.B.1.b., this element is rendered obvious by Kerai. *See* Section IV.B.1.b.

**c.** ***generating a regulated DC power output from the power input;***

As explained in Section IV.B.1.c., this element is rendered obvious by Kerai.

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

As explained in Section IV.B.1.d., this element is rendered obvious by Kerai.

**e.** ***providing the identification signal on one or more data pins of the USB connector, and***

As explained in Sections IV.B.1.d. and IV.B.3, 6 and 7, this element is rendered obvious by Kerai.

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

A person of ordinary skill in the art would have understood that power was routinely transferred and provided on one or more of the "power" pins of a USB connector. See, e.g., section III.A.3. Indeed, in Kerai it would have been understood that the power was provided across the "power" pin. See, for example, power pins 20 and 24 in Figure 2.

**10.** Claim 18

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

*See* Section IV.A.2.a.

**b.** ***means for receiving energy from a power socket;***

The '111 patent expressly discloses that the structure that performs the function of receiving energy from a power socket is a plug unit. *See, e.g.*, '111 patent at Abstract ("The plug unit is operative to couple the adapter to a power socket and operative to receive energy from the power socket."); 2:7-9. Plug unit 106 is described as a "conventional plug unit that can be used to couple with a conventional power socket" and can take the form of two or three prong plug types such as those used in North America. *Id*. at 7:12-26.

Kerai discloses and/or renders obvious a plug unit. *See* Section IV.B.1.b.

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

The '111 patent expressly discloses that the structure that performs the function of regulating the received energy from the power socket to generate a power output is a power converter. *See, e.g.*, '111 patent at 2:41-44 ("The power converter is electrically coupled to the plug unit and is operable to regulate the received energy from the power socket and to output a

power requirement to the mobile device."). The power converter is described as being of conventional construction such as a "switching converter" or "DC regulator circuit." 7:27-43.

As explained in Section IV.B.1.c., Kerai discloses a power converter that regulates the power from the power socket and generates a regulated power output.

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

The '111 patent expressly discloses that the structure that performs the function of generating an identification signal that indicates to the mobile device that the power socket is not a USB hub or host is an identification subsystem. *See, e.g.*, '111 patent at 2:16-18 ("The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal.").

As explained in Section IV.B.1.d., Kerai discloses an identification subsystem that renders this element obvious. *See* Section IV.B.1.d.

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

The '111 patent expressly discloses that the structures that can perform the function of coupling the power output and identification signal to the mobile device are connectors and/or USB connectors. *See, e.g.*, '111 patent at 2:13-18 ("The primary connector is electrically coupled to the power converter and is operative to couple to the mobile device and to deliver the outputted power requirement to the mobile device. The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal."); 2:28-34 ("The primary USB connector is electrically coupled to the power converter and is operative to couple to the mobile device and to deliver the outputted power requirement to the mobile device. The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal.").

As explained in Section IV.B.1.e., Kerai discloses and/or renders this element obvious.

### C. Kerai in Combination with Yang Renders Obvious Claims 1-8, 12 and 16-18

For the reasons stated below, Kerai in combination with Yang renders obvious Claims 1-8, 12 and 16-18. Neither reference, nor the combination of the two references, was presented during prosecution of the '111 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. Both Kerai and Yang relate to systems and methods for powering portable electronic devices (i.e., mobile devices). Baker, ¶ 160. Specifically, each involves a system and method for powering such mobile devices using an adapter that connects directly between a wall outlet and the mobile device. The combination of Kerai and Yang would appear as shown below:

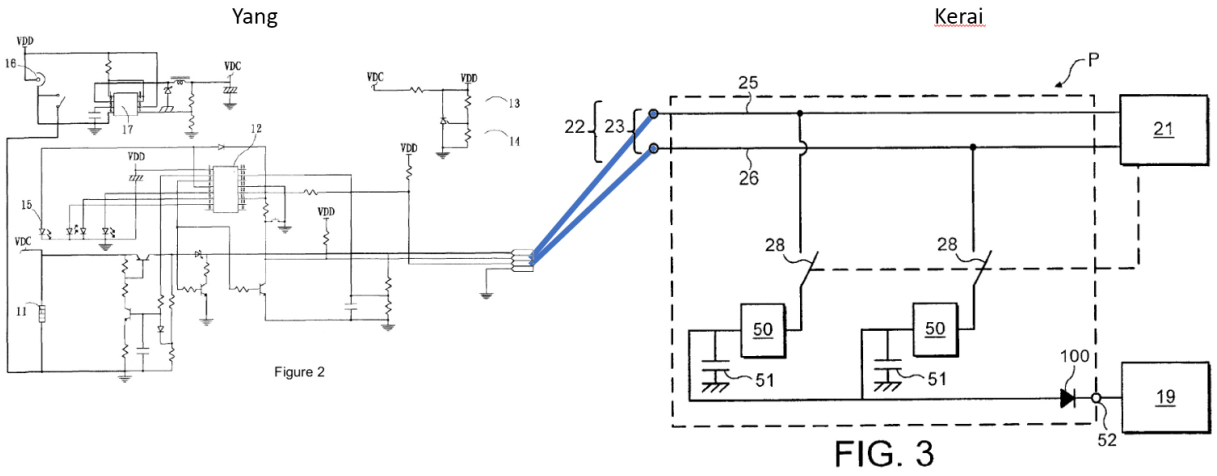


FIG. 3

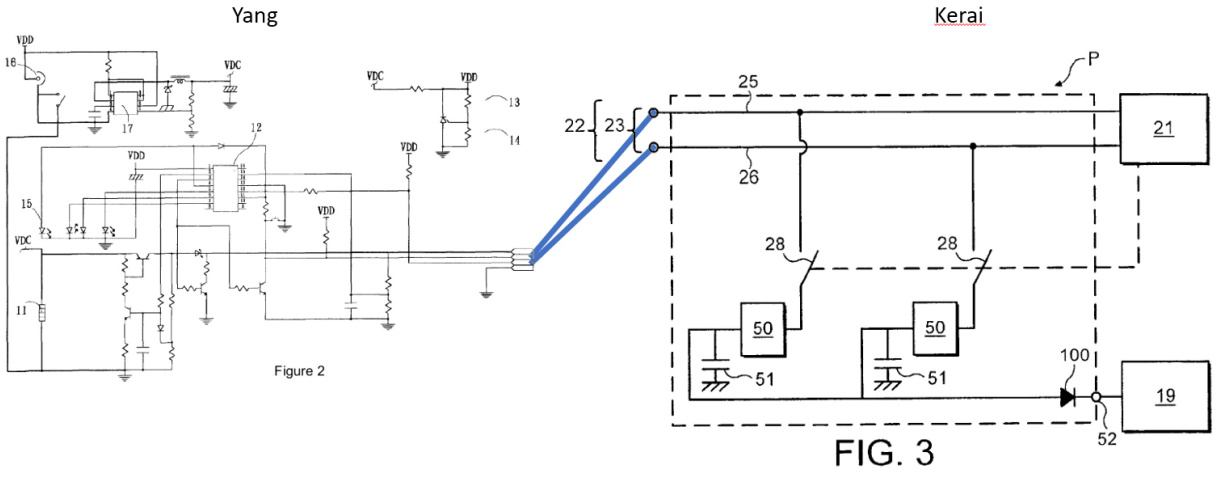
As depicted, no modifications would be required to either reference, and the charging systems disclosed in both references would be used as designed and intended. Baker, ¶ 161. That is, Yang's system is designed to hold the D+ and D- data lines at a logic high level. *Id.* Kerai's

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.** Claim 1

**a.** ***Preamble: A Universal Serial Bus ("USB") adapter for providing 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. See analysis of the preamble to claim 1 for each of Kerai (section IV.B.1) and Yang (section IV.A.2). As shown below, the charging circuit of Yang provides power to the mobile device of Kerai.




**b.** ***a plug unit configured to receive energy from a power socket***

As discussed in Sections IV.A.1.b. and IV.B.1.b, both Yang and Kerai disclose this element. To the extent not expressly disclosed, 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.

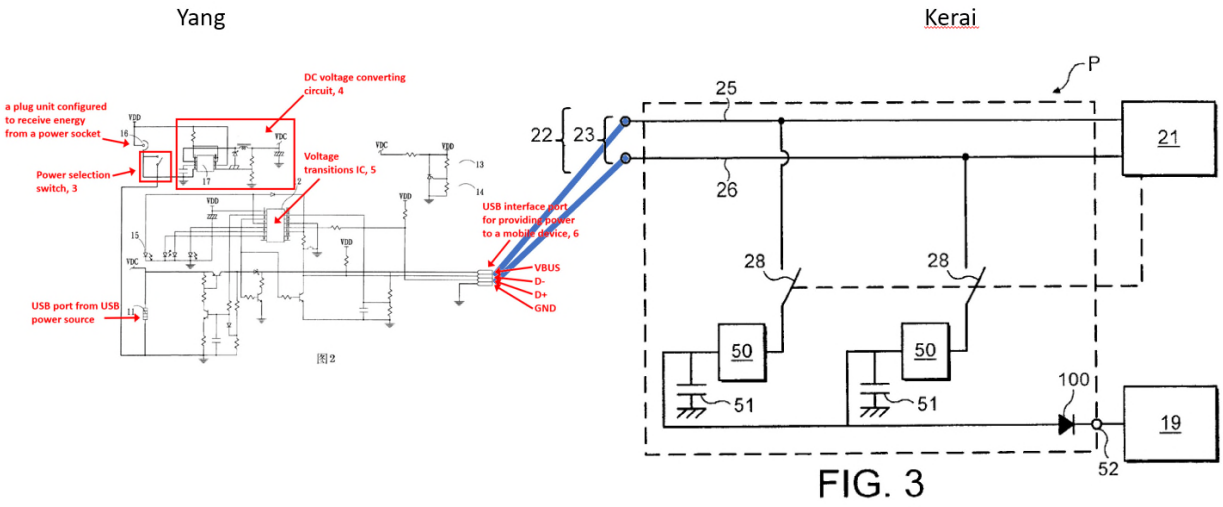



FIG. 3

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

As discussed in Sections IV.A.1.c. and IV.B.1.c, Yang and Kerai each disclose and/or render obvious this claim element. Further, as shown below, the combination of Kerai and Yang discloses this claim element.

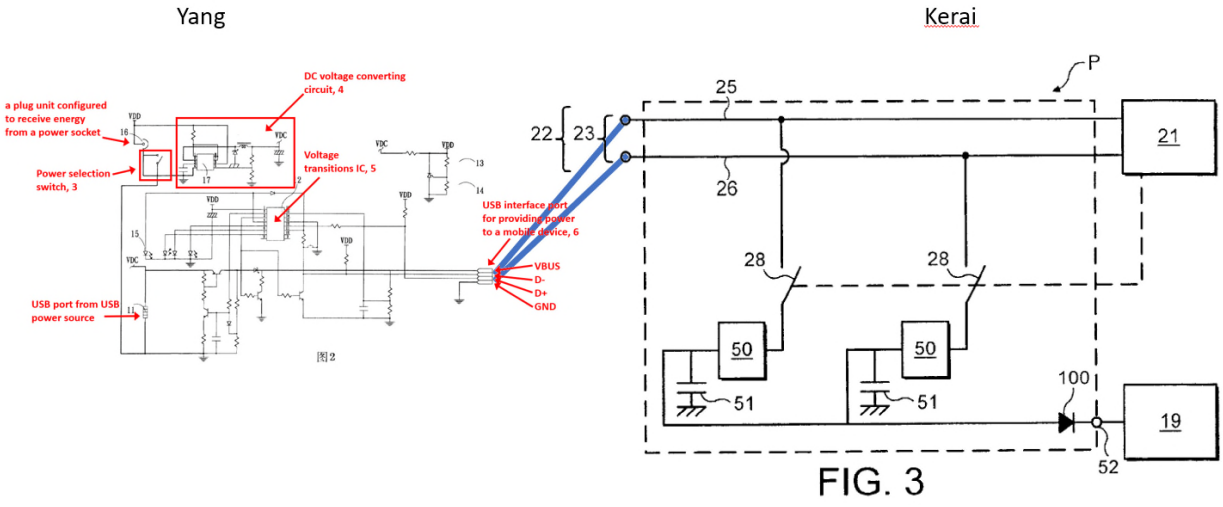



FIG. 3

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.** ***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***

As discussed in Sections IV.A.1.d. and IV.B.1.d, Yang and Kerai each disclose and/or render obvious this claim element. 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.

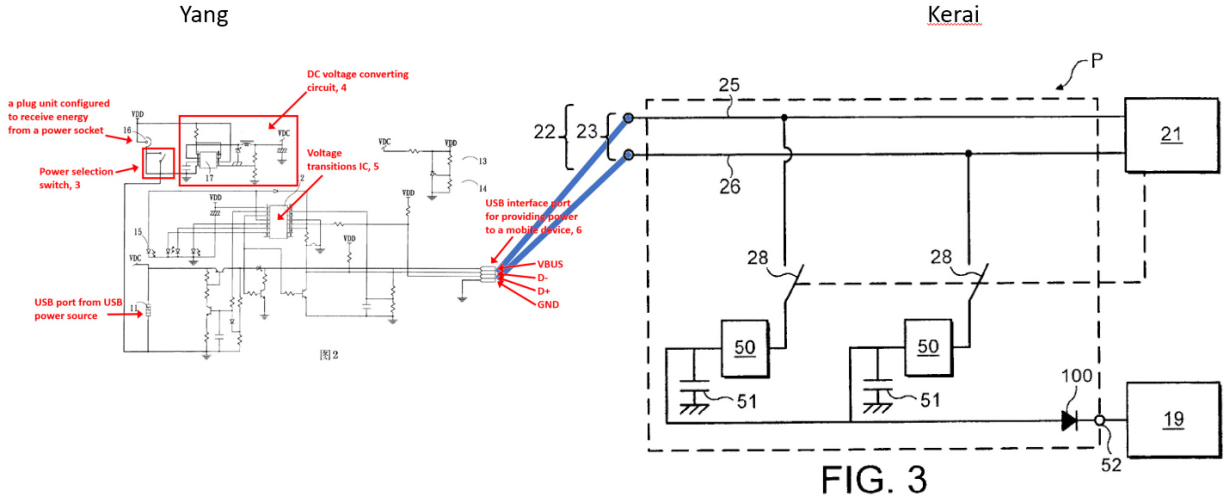


FIG. 3

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

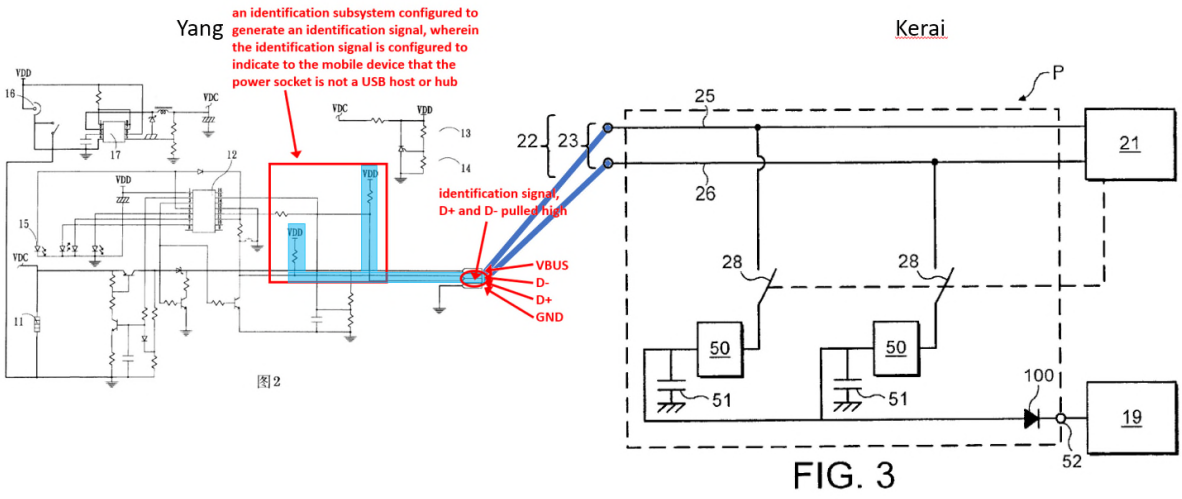
in a standard USB connector at the time of the alleged invention of the '111 patent, which include D+, D-, Ground, and VBUS. Yang further notes that the "power supply is converted into a +5V voltage, which is the same as the USB interface voltage." Yang at 2. Therefore, a POSA would find it disclosed 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.** ***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***

As discussed in Sections IV.A.1.d. and IV.B.1.d, Yang and Kerai each disclose and/or render obvious this claim element. 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.




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.*

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

Yang discloses that its adapter includes a plug that is configured to couple directly with a power socket to power the charger with the converted DC +12V or +5V. Baker ¶ 163. 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 Yang and Kerai

disclose and/or render obvious the limitations of this element. *See* sections IV.A.3. and IV.B.2. above.

**4.** Claims 3 and 5 ***- The USB adapter of claim 2 [claim 4], 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 ¶ 75. 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 the limitations of this element. *See* sections IV.A.4. and IV.B.3. above.

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

Both Yang and Kerai disclose and/or render obvious the limitations of this element. *See* sections IV.A.5. and IV.B.4. above.

**6.** Claim 6– ***The USB adapter of claim 1, wherein the identification signal comprises a voltage level that is applied to at least one data line in the USB connector.***

Both Yang and Kerai disclose and/or render obvious the limitations of this element. *See* sections IV.A.6. and IV.B.5. above.

**7.** Claim 7 ***- The USB adapter of claim 1, wherein the identification subsystem comprises a hard-wired connection of a voltage level to one or more data lines in the primary USB connector.***

Both Yang and Kerai disclose and/or render obvious the limitations of this element. *See* sections IV.A.8. and IV.B.6. above.

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

Both Yang and Kerai disclose and/or render obvious the limitations of this element. *See* sections IV.A.8. and IV.B.7. above.

**9.** Claim 12 – ***The USB adapter of claim 1, further comprising an auxiliary USB connector.***

Claim 12 adds only having "an auxiliary 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 ¶ 112. 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.

**10.** Claims 16 - ***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.***

Both Yang and Kerai disclose and/or render obvious the limitations of this element. *See* sections IV.A.9. and IV.B.8. above.

**11.** Claim 17

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

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 Kerai. See preamble discussion for preamble in Sections IV.A.1.a and IV.B.2.a.

**b.** ***receiving a power input from a power socket;***

As explained in Sections IV.A.1.b and IV.B.2.b., this element is disclosed and/or rendered obvious by one or more of Yang and Kerai. Thus, the combination of Yang and Kerai renders obvious the limitations of this claim element.

**c.** ***generating a regulated DC power output from the power input;***

As explained in Sections IV.A.1.c and IV.B.2.c., this element is disclosed and/or rendered obvious by one or more of Yang and Kerai. Thus, the combination of Yang and Kerai renders obvious the limitations of this claim element.

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

As explained in Sections IV.A.1.d and IV.B.2.d., this element is disclosed and/or rendered obvious by one or more of Yang and Kerai. Thus, the combination of Yang and Kerai renders obvious the limitations of this claim element.

**e.** ***providing the identification signal on one or more data pins of the USB connector, and***

As explained in Sections IV.A.1.e and IV.B.2.e., this element is disclosed and/or rendered obvious by one or more of Yang and Kerai. Thus, the combination of Yang and Kerai renders obvious the limitations of this claim element.

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

As explained in Sections IV.A.1.f and IV.B.2.f., this element is disclosed and/or rendered obvious by one or more of Yang and Kerai. Thus, the combination of Yang and Kerai renders obvious the limitations of this claim element.

**12.** Claim 18

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

*See* Sections IV.A.2.a. and IV.B.1.a.

**b.** ***means for receiving energy from a power socket;***

As explained in Sections IV.A.12.b. and IV.B.10.b., this element is disclosed and/or rendered obvious by one or more of Yang and Kerai. Thus, the combination of Yang and Kerai renders obvious the limitations of this claim element. The '111 patent expressly discloses that the structure that performs the function of receiving energy from a power socket is a plug unit. *See, e.g.*, '111 patent at Abstract ("The plug unit is operative to couple the adapter to a power socket and operative to receive energy from the power socket."); 2:7-9. Plug unit 106 is described as a "conventional plug unit that can be used to couple with a conventional power socket" and can take the form of two or three prong plug types such as those used in North America. *Id*. at 7:12-26.

Kerai discloses and/or renders obvious a plug unit. *See* Section IV.B.1.b.

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

The '111 patent expressly discloses that the structure that performs the function of regulating the received energy from the power socket to generate a power output is a power converter. *See, e.g.*, '111 patent at 2:41-44 ("The power converter is electrically coupled to the plug unit and is operable to regulate the received energy from the power socket and to output a power requirement to the mobile device."). The power converter is described as being of conventional construction such as a "switching converter" or "DC regulator circuit." 7:27-43.

As explained in Sections IV.A.12.c. and IV.B.10.c., this element is disclosed and/or rendered obvious by one or more of Yang and Kerai. Thus, the combination of Yang and Kerai renders obvious the limitations of this claim element.

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

The '111 patent expressly discloses that the structure that performs the function of generating an identification signal that indicates to the mobile device that the power socket is not

a USB hub or host is an identification subsystem. *See, e.g.*, '111 patent at 2:16-18 ("The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal.").

As explained in Sections IV.A.12.d. and IV.B.10.d., this element is disclosed and/or rendered obvious by one or more of Yang and Kerai. Thus, the combination of Yang and Kerai renders obvious the limitations of this claim element.

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

The '111 patent expressly discloses that the structures that can perform the function of coupling the power output and identification signal to the mobile device are connectors and/or USB connectors. *See, e.g.*, '111 patent at 2:13-18 ("The primary connector is electrically coupled to the power converter and is operative to couple to the mobile device and to deliver the outputted power requirement to the mobile device. The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal."); 2:28-34 ("The primary USB connector is electrically coupled to the power converter and is operative to couple to the mobile device and to deliver the outputted power requirement to the mobile device. The identification subsystem is electrically coupled to the primary connector and is operative to provide an identification signal.").

As explained in Sections IV.A.12.e. and IV.B.10.e., this element is disclosed and/or rendered obvious by one or more of Yang and Kerai. Thus, the combination of Yang and Kerai renders obvious the limitations of this claim element.

## D. Yang in Combination with Matsumoto and Flannery Renders Obvious Claims 12 and 14

Claim 12 is directed to the addition of a single trivial element to the claims. That is, claim 12 requires the addition of a second USB connector, which was a well-known and routinely

implemented use of USB as of 2001. Baker ¶¶ 112, 175. As noted above, this would be rendered obvious by the combination of Yang and Matsumoto or the combination of Yang and Kerai 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. Baker ¶ 175.

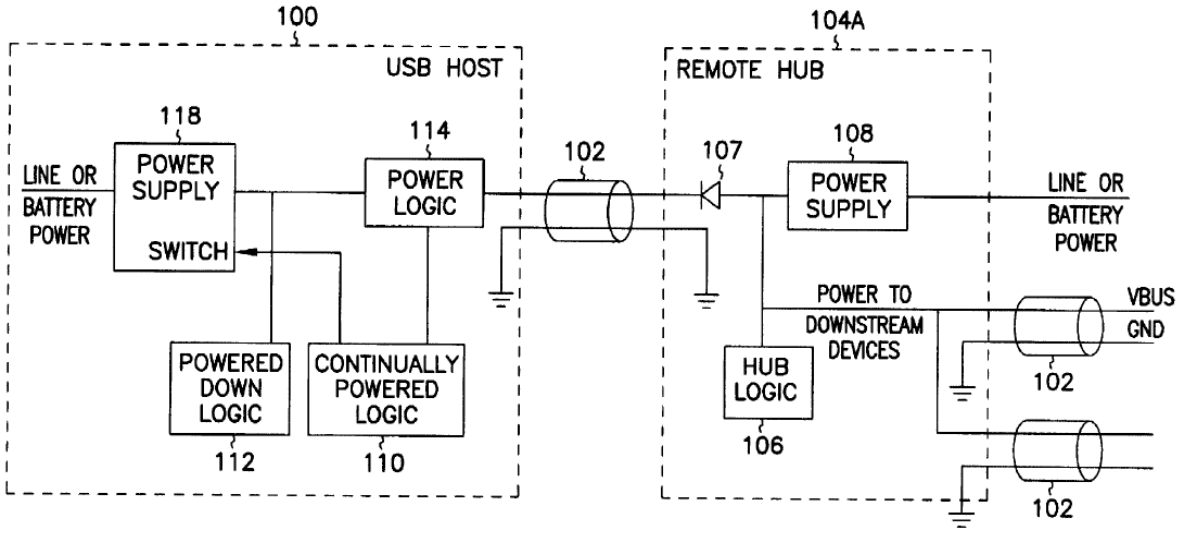



FIG. 1A

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 ¶ 176. 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 12 - ***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 ¶ 177. 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

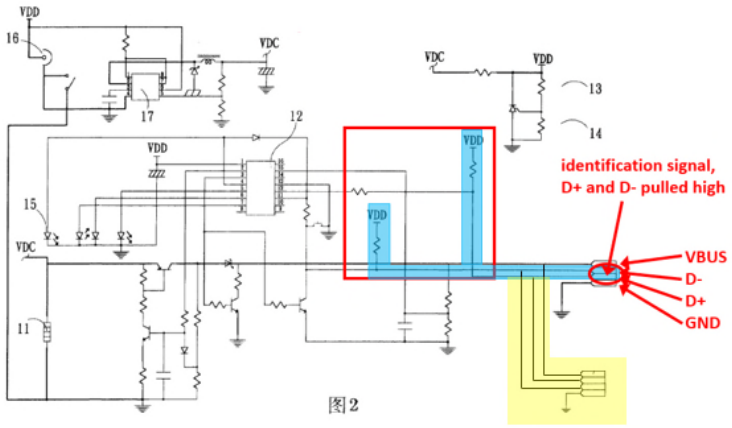
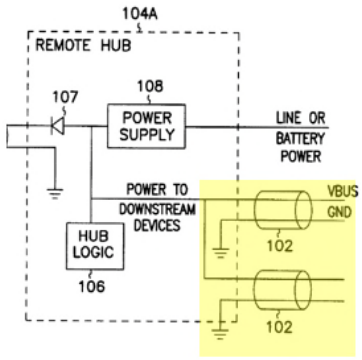



图2

Flannery




**2.** Claim 14 - ***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 ¶ 178. The power converter of Yang (shown in green below) provides power to the auxiliary USB connector as well. Thus, claim 14 is invalid as obvious.

Yang

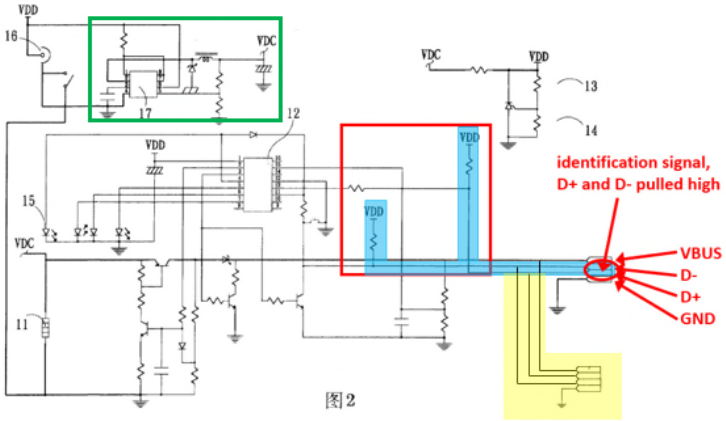
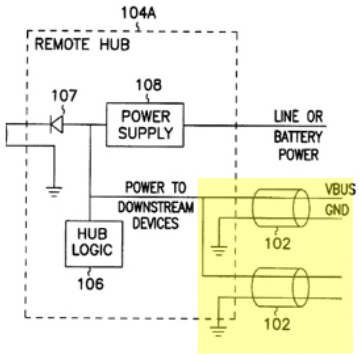



图2

Flannery




## 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 believe that substantial new questions of patentability exist with respect to claims 1-8, 12, 14, and 16-18 of the '111 Patent and requests that *ex parte* reexamination be ordered.

Dated: November 10, 2021

Respectfully submitted,

/Richard Martinelli/

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